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SESSIONAL PAPERS



VOLUME 7

FIRST-SESSION OF THE THIRTEENTH PARLIAMENT

OF THE

DOMINION OF CANADA

SESSION 1918



VOLUME LIII.



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ALPHABETICAL INDEX

TO THE

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2. The Public Accounts of Canada, for the fiscal year ended 31st March, 1917. Presented by Hon. Mr. Maclean, March 20, 1918. *Printed for distribution and sessional papers.*

3. Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1919, and, in accordance with the provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, March 22, 1918. *Printed for distribution and sessional papers.*

4. Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1918, and, in accordance with the provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, May 18, 1918. *Printed for distribution and sessional papers.*

5. Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1919, and, in accordance with the provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, May 20, 1918. *Printed for distribution and sessional papers.*

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9. Abstract of Statements of Insurance Companies in Canada for the year ended 31st December, 1917. (Subject to corrections.) Presented by Hon. Mr. Maclean, May 13, 1918.

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- 10b.** Report of the Trade and Commerce Department. Grain Statistics for the fiscal year 1916, and the Report of the Board of Grain Commissioners.
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- 12.** Inland Revenue, Annual Report, Part I—Excise. The Senate.
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- 13.** Inland Revenue, Annual Report, Part II—Weights and Measures, Gas and Electricity. The Senate.
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- 14.** Inland Revenue—Part III—Adulteration of Food. The Senate.
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- 15.** Report of the Minister of Agriculture for the Dominion of Canada, for the year ended 31st March, 1917. Presented by Hon. Mr. Crerar, March 25, 1918.
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- 15b.** Report of the Veterinary Director General for the year 1917.
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- 15c.** Report on "The Agricultural Instruction Act," 1916-17, pursuant to Section 8, Chapter 5 of 3-4 George V. Presented by Hon. Mr. Crerar, March 25, 1918.
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- 16.** Report of the Director and Officers of the Experimental Farms for the year ending 31st March, 1917.
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- 20b.** Railway Statistics for the Dominion of Canada, for the year ended 30th June, 1917.
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- 22.** List of shipping issued by the Department of Marine and Fisheries, being a list of vessels on the Registry Books of the Dominion of Canada, on the 31st of December, 1917.
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- 23.** Supplement to the Fiftieth Annual Report of the Department of Marine and Fisheries (Marine)—Steamboat Inspection Report. *Printed for distribution and sessional papers.*

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- 25.** Annual Report of the Department of the Interior, for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Meighen, March 27, 1918.
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- 25a.** Annual Report of the Topographical Surveys Branch of the Department of the Interior, for the fiscal year ending 31st March, 1917. *Printed for distribution and sessional papers.*
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- 33.** Report of the Secretary of State for External Affairs, for the year ended 31st March, 1917. Presented by Sir Robert Borden, May 8, 1918.
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36. Report of the Department of Labour for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Crothers, March 26, 1918. . . . *Printed for distribution and sessional papers.*
- 36a. Tenth Report of the Registrar of Boards of Conciliation and Investigation under "The Industrial Disputes Investigation Act, 1917," for the fiscal year of 1917.
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38. Report of the Department of the Naval Service, for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Ballantyne, March 19, 1918.
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- 38a. Supplement to the Seventh Annual Report of the Department of the Naval Service (Fisheries Branch). Contributions to Canadian Biology, being studies from the Biological Stations of Canada, 1916-17. *Printed for distribution and sessional papers.*

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40. The Report of the Joint Librarians of Parliament. Presented by Hon. The Speaker, March 18, 1918. *Not printed.*
41. Minute of Council appointing the Honourable Martin Burrell, Secretary of State; the Honourable John Dowsley Reid, Minister of Railways and Canals; the Honourable Arthur L. Sifton, Minister of Customs, and the Honourable James A. Calder, Minister of Immigration and Colonization, to act with the Speaker of the House of Commons, as Commissioners for the purposes, and under the Provisions of the Eleventh Chapter of the Revised Statutes of Canada, 1906, intituled: "An Act respecting the House of Commons." Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
42. Copies of Orders in Council, as follows:—
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P.C. 558, dated 8th of March, 1918, amending P.C. 987, dated 10th April, 1917.—Regulation respecting the employment of look-outs on merchant vessels of 2,500 gross tonnage and upwards.
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CONTENTS OF VOLUME 14—*Continued.*

42a. Copies of Orders in Council, as follows:—

P.C. 17, dated 4th January, 1918.—Wearing military or naval uniforms by unauthorized persons.

P.C. 86, dated 15th January, 1918.—“Defence of Canada Order, 1917,” coaling of vessels.

P.C. 87, dated 17th January, 1918.—“Defence of Canada Order, 1917,” export of firearms.

P.C. 91, dated 15th January, 1918.—“Defence of Canada Order, 1917,” radio-telegraph equipment on vessels.

P.C. 261, dated 1st February, 1918.—Carrying of explosives on passenger trains.

P.C. 329, dated 8th February, 1918.—Rates of pay R.N.C.V.R.

P.C. 387, dated 20th February, 1918.—Allowance to officers and men travelling on duty.

P.C. 462, dated 2nd March, 1918.—Treatment of insane members of the naval service.

P.C. 524, dated 2nd March, 1918.—“Defence of Canada Order, 1917,” enforcement of provisions.

P.C. 2769, dated 4th October, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* lights on vessels.

P.C. 2791, dated 9th October, 1917.—Retention of services of men in the R.N.C.V.R. after termination of the war.

P.C. 3017, dated 3rd December, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* carriage of explosives in merchant ships.

P.C. 3064, dated 2nd November, 1917.—Rates of pay to officials officiating at courts martial and disciplinary courts for the Royal Canadian Navy.

P.C. 3072, dated 6th November, 1917.—Regulations governing the issue of war badges.

P.C. 3192, dated 13th November, 1917.—Rates of pay on discharge to men not eligible for three months' gratuity.

P.C. 3306, dated 29th November, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* communicating information with regard to the movements of ships.

P.C. 3307, dated 29th November, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* release of imprisoned seamen.

P.C. 3319, dated 29th November, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* carrying of matches in the vicinity of inflammable substances.

P.C. 3362, dated 24th December, 1917.—Amendment to “Defence of Canada Order, 1917,” *re* transportation of explosives on passenger trains.

P.C. 3391, dated 24th December, 1917.—Retention of services of men in the Royal Canadian Navy after the termination of the war.

P.C. 3392, dated 22nd December, 1917.—Institution of rank of commander, R.N.C.V.R.

P.C. 3470, dated 26th December, 1917.—Institution of warrant ranks, Royal Canadian Navy.

P.C. 3474, dated 27th December, 1917.—Rates of pay to paymasters, R.N.C.V.R.

P.C. 3475, dated 5th January, 1918.—Separation allowance.

P.C. 558, dated 8th March, 1918.—Look-outs on merchant vessels.

P.C. 560, dated 8th March, 1918.—Admitting United States vessels to privileges in Canadian ports. Presented by Hon. Mr. Ballantyne, March 19, 1918....*Not printed.*

42b. Copy of Order in Council, P.C. 863, dated 12th April, 1918; amendments of “Defence of Canada Order, 1917.”—Equipment of ships for protection against the enemy. Presented by Hon. Mr. Ballantyne, April 19, 1918....*Not printed.*

42c. Copy of Order in Council P.C. 950, dated 19th of April, 1918.—Establishment of the rank of warrant writer in the R.N.C.V.R. Also,—Copy of Order in Council P.C. 70/942, dated 19th April, 1918.—Allowance to chief examining officers at Canadian naval ports. Presented by Hon. Mr. Ballantyne, April 24, 1918....*Not printed.*

42d. Copy of Order in Council, P.C. 974, dated 23rd April, 1918. “Defence of Canada Order, 1917,”—Entry in Canada of vesse's carrying explosives in self defence. Also, Copy of Order in Council, P.C. 957, dated 19th April, 1918.—Institution of the rank of surgeon probationer, Royal Naval Canadian Volunteer Reserve. Presented by Hon. Mr. Ballantyne, May 1, 1918....*Not printed.*

42e. Order in Council No. P.C. 1102, dated 10th May, 1918.—Amendments of “Defence of Canada Order, 1917,” Section 23c, *re* fitting and supplying vessels registered in Canada with defensive armaments. Order in Council No. P.C. 1129, dated 11th May, 1918.—Amendments of “Defence of Canada Order of 1917,” Section 22A, *re* ships' lights. (*The Senate*)....*Not printed.*

42f. Copy of Order in Council No. P.C. 1208, dated 17th May, 1918, *re* allowances to officers appointed for navigating duties in H.M.C. ships. Presented by on. Mr. Ballantyne, May 23, 1918....*Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

43. P.C. 632, dated 14th March, 1918, respecting the increase in freight and passenger rates on Canadian railways. P.C. 631, dated 14th March, 1918, respecting the collection of special taxes from the Canadian Pacific Railway Company. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
44. P.C. 3116, dated 2nd November, 1917.—Regulations forbidding the use of grain for the distillation of potable liquors.
 P.C. 3473, dated 22nd December, 1917.—Regulations respecting the prohibition of the importation of intoxicating liquors except wine for use in Divine service; liquor for medicinal purposes; liquor for manufacturing purposes; and specifying the strength of an intoxicating liquor.
 P.C. 3484, dated 26th December, 1917, amending P.C. 3473, dated 22nd December, 1917, by striking out the word "alcohol" and substituting the words "proof spirits."
 P.C. 134, dated 19th January, 1918, amending P.C. 3473, dated 22nd December, 1917, respecting the importation of liquors after 24th December, 1917, if actually purchased and shipped before 31st January, 1918.
 P.C. 224, dated 26th January, 1918, amending P.C. 3473, dated 22nd December, 1917, providing for the issuing of a special license by the Minister of Customs for the importation of liquors under certain circumstances.
 P.C. 589, dated 11th March, 1918.—Regulations regarding the manufacture and sale of intoxicating liquors in Canada. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
45. P.C. 3073, dated 29th October, 1917.—Establishment of a Department of Immigration and Colonization; provision of a salary for the Secretary of State for External Affairs. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
46. P.C. 432, dated 21st February, 1918.—Establishment of a Department of Soldiers' Civil Re-Establishment.
 P.C. 433, dated 21st February, 1918.—Regulations *re* Military Hospitals Commission.
 P.C. 434, dated 21st February, 1918.—Invalided Soldiers' Commission.
 P.C. 442, dated 21st February, 1918.—Appointing Sir James Lougheed, K.C.M.G., Minister of Soldiers' Civil Re-Establishment.
 P.C. 443, dated 23rd February, 1918.—Accepting resignation of Mr. F. B. McCurdy, as Parliamentary Secretary of the Department of Militia and Defence.
 P.C. 444, dated 23rd February, 1918.—Appointing F. B. McCurdy, Esq., Parliamentary Secretary of the Department of Soldiers' Civil Re-Establishment.
 P.C. 445, dated 23rd February, 1918.—Accepting the resignation of Sir James Lougheed, K.C.M.G., as Chairman of the Invalided Soldiers' Commission; and appointing F. B. McCurdy, Esq., M.P., as Chairman of the said Commission.
 P.C. 446, dated 23rd February, 1918.—Placing the Invalided Soldiers' Commission under the direction and control of the Minister of Soldiers' Civil Re-Establishment. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
47. P.C. 307, dated 6th February, 1918.—Purchases to be made by the War Purchasing Commission for the several departments of Government. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
48. P.C. 272, dated 2nd February, 1918.—Appointment of a Canadian War Mission in the United States of America.
 P.C. 281, dated 2nd February, 1918.—Appointing Lloyd Harris, Chairman of the Canadian War Mission in the United States of America.
 P.C. 653, dated 16th March, 1918.—Appointing Messrs. Frank A. Rolph, A. H. Scott and Ross H. McMaster, members of the Canadian War Mission in the United States of America. Presented by Sir Robert Borden, March 18, 1918. *Not printed.*
- 48a. Return to an Address to His Excellency the Governor General of the 20th March, 1918, for a copy of the Orders in Council creating the War Mission at Washington, appointments to the same, with instructions as to the extent of its powers and scope of its work. Presented by Mr. Clark (Bruce), March 26, 1918. *Not printed.*
49. P.C. 112, dated 22nd January, 1918.—Appointment of T. Sherman Rogers, K.C., William B. Wallace, Judge of the County Court, both of Halifax, and Frederick Luther Fowke, of Oshawa, gentleman, as Commissioners under the name of the Halifax Relief Commission.
 P.C. 576, dated 9th March, 1918.—Regulations *re* payment of claims arising out of the Halifax disaster. First report of Halifax Relief Commission attached. Presented by Sir Robert Borden, March 18, 1918. *Printed for sessional papers only.*
50. P.C. 3005, dated 23rd October, 1917.—Appointment of a War Committee of the Cabinet.
 P.C. 3006, dated 23rd October, 1917.—Appointment of a Committee of the Cabinet to be known as "The Reconstruction and Development Committee." Presented by Sir Robert Borden, March 18, 1918. *Not printed.*

CONTENTS OF VOLUME 14—Continued.

51. P.C. 358, dated 13th February, 1918.—Regulations *re* appointments to the Public Service.
P.C. 491, dated 28th February, 1918.—Respecting appointments, promotions, etc., in the Civil Service other than in the several departments.
P.C. 372, dated 18th February, 1918.—Appointment of a Committee of Council *re* preparation of a Bill respecting the Civil Service.
P.C. 548, dated 15th March, 1918.—Approval of Interim Regulations made by the Civil Service Commission, under clause 3 of O.C. P.C. 358, dated 13th February, 1918.
P.C. 637, dated 18th March, 1918.—Regulations *re* dismissal of public officials on the ground of offensive partisanship during the recent election. Presented by Sir Robert Borden, March 18, 1918.*Not printed.*
52. P.C. 2833, dated 8th October, 1917.—Public Service Committee of National Service. Presented by Sir Robert Borden, March 18, 1918*Not printed.*
- 52a. Registration Regulations made by the Canada Registration Board. Presented by Hon. Mr. McCurdy, April 23, 1918.*Not printed.*
- 52b. Memorandum respecting the plans of the Canada Registration Board and the progress it is making in its work. Presented by Sir George Foster, May 23, 1918.*Not printed.*
53. P.C. 1433, dated 24th May, 1917.—Regulations *re* departure out of Canada of male persons liable to or capable of military service.
P.C. 1531, dated 4th June, 1917.—Statutory declaration—Schedule 'B' of O.C. May 24, 1917, may be made before certain persons.
P.C. 1799, dated 30th June, 1917.—Regulations made by O.C. May 24, 1917, amended.
P.C. 2245, dated 3rd September, 1917.—Military Service Council: Appointment Deputy Minister of Justice, O. M. Biggar, John H. Moss, L. Loranger, and L.-Col. H. A. C. Machin *as*.
P.C. 2497, dated 8th September, 1917.—Central Appeal Judge: Appointment Mr. Justice Duff *as*.
P.C. 2498, dated 11th September, 1917.—Members of local tribunals: Minister of Justice may appoint after September 25, 1917.
P.C. 2554, dated 15th September, 1917.—Registrar for British Columbia—R. S. Lennie, K.C.
P.C. 2555, dated 15th September, 1917.—Registrar for New Brunswick—W. A. Ewing, K.C.
P.C. 2556, dated 15th September, 1917.—Registrar for Quebec—Eugene Godin, K.C.
P.C. 2557, dated 15th September, 1917.—Registrar for Saskatchewan—A. L. Haining.
P.C. 2558, dated 15th September, 1917.—Registrar for Manitoba—E. R. Chapman.
P.C. 2559, dated 15th September, 1917.—Registrar for Toronto—Glynn Osler.
P.C. 2563, dated 15th September, 1917.—Franking privilege extended to Registrars and Deputy Registrars.
P.C. 2564, dated 15th September, 1917.—Regulations *re* departure out of Canada of male persons capable of military service, made on May 24 and June 30, 1917, amended.
P.C. 2591, dated 17th September, 1917.—Registrar for Calgary—John M. Carson.
P.C. 2598, dated 17th September, 1917.—Registrar for Prince Edward Island—W. Stanley.
P.C. 2603, dated 18th September, 1917.—O. M. Biggar authorized to sign requisitions for printing and stationery for use of Military Service Council.
P.C. 2618, dated 20th September, 1917.—Registrar for the Yukon—John Black.
P.C. 2623, dated 21st September, 1917.—Deputy Registrars, Ontario—W. E. Wismer and Major H. P. Cook.
P.C. 2624, dated 21st September, 1917.—Deputy Registrar for Quebec—A. Gobeil.
P.C. 2635, dated 28th September, 1917.—Deputy Registrar for Quebec—F. A. Labelle.
P.C. 2637, dated 28th September, 1917.—*Re* making alien residents of Allied nationality in Canada liable to military service.
P.C. 2664, dated 24th September, 1917.—Deputy Registrar for Ontario—G. A. Toole.
P.C. 2699, dated 3rd October, 1917.—Registrar for Nova Scotia—E. H. Nichols.
P.C. 2725, dated 3rd October, 1917.—List of officials to sign Letter of Credit cheques.
P.C. 2781, dated 4th October, 1917.—Approval of Proclamation calling out for military service of Class 1.
P.C. 2833, dated 8th October, 1917.—Public Service Committee of National Service Board, to investigate claims of Civil Servants for exemption.
P.C. 2936, dated 15th October, 1917.—Time extended for calling out Class 1 in the Yukon.
P.C. 2958, dated 19th October, 1917.—Regulations under Military Service Act, 1917.
P.C. 3007, dated 20th October, 1917.—Travelling expenses of members of Board of Selection.
P.C. 3008, dated 20th October, 1917.—Living and travelling expenses of members of Military Service Council.

CONTENTS OF VOLUME 14—*Continued.*

- P.C. 3025, dated 20th October, 1917.—Regulations *re* reporting for service and claims for exemption for men residing outside of Canada.
- P.C. 3033, dated 23rd October, 1917.—Convention Great Britain and United States calling out for military service under its own colours its citizens resident in the other country.
- P.C. 3036, dated 23rd October, 1917.—*Re* exemption of members of the R.N.W.M. Police.
- P.C. 3093, dated 2nd November, 1917.—Clerk of Central Appeal Judge—J. L. McDougall—at salary of \$250 a month.
- P.C. 3095, dated 2nd November, 1917.—Expenses of Military Service Branch to be paid from War Appropriation.
- P.C. 3112, dated 2nd November, 1917.—Expenses of Judges *re* making appointments to local tribunals.
- P.C. 3118, dated 7th November, 1917.—Further regulations under Military Service Act, 1917.
- P.C. 3168, dated 9th November, 1917.—Regulations *re* dealing with deserters and absentees without leave, etc.
- P.C. 3169, dated 9th November, 1917.—Regulations *re* claims for exemptions by persons who have failed to comply with Proclamation under Military Service Act, 1917.
- P.C. 3230, dated 19th November, 1917.—Regulations fixing penalties for non-compliance with the law.
- P.C. 3231, dated 19th November, 1917.—*Re* applications for exemption in North-west Territories and other remote regions.
- P.C. 3232, dated 19th November, 1917.—J. H. Moss authorized to sign requisitions for printing and stationery for use of Military Service Council.
- P.C. 3283, dated 27th November, 1917.—Regulation *re* repatriation of citizens or subjects of Allied countries resident in Canada.
- P.C. 3285, dated 27th November, 1917.—Minister of Justice authorized to designate a Judge to perform duties assigned to Chief Justice *re* appeal tribunals in case of a vacancy in said office.
- P.C. 3298, dated 29th November, 1917.—Registrars and Deputy Registrars, remuneration of.
- P.C. 3321, dated 30th November, 1917.—Regulations *re* appeal to Central Judge from decisions of tribunals.
- P.C. 3344, dated 3rd December, 1917.—*Re* hearing of appeals as speedily as possible.
- P.C. 3348, dated 3rd December, 1917.—*Re* discharge from military service of persons engaged in agriculture.
- P.C. 3349, dated 3rd December, 1917.—Minister of Agriculture authorized to appoint representatives of Department of Agriculture to attend tribunals.
- P.C. 3356, dated 8th December, 1917.—Remuneration of representatives of the Minister of Agriculture (\$5 per diem).
- P.C. 3463, dated 24th December, 1917.—Regulations *re* departure out of Canada of male persons, made by O.C. May 24, 1917, amended.
- P.C. 33, dated 7th January, 1918.—Regulations *re* establishment of additional tribunals to decide appeals.
- P.C. 35, dated 7th January, 1918.—Regulations; remuneration and expenses of tribunals.
- P.C. 70, dated 8th January, 1918.—Regulations respecting men changing residence.
- P.C. 54, dated 8th January, 1918.—Enlargement of Dominion Police Force in connection with administration of the Military Service Act.
- P.C. 111, dated 17th January, 1918.—Regulations *re* exemption of Indians and other disfranchised British subjects, from Military Service.
- P.C. 115, dated 17th January, 1918.—Regulations prescribing obligations of exempted men under the Military Service Act.
- P.C. 116, dated 17th January, 1918.—Appointment of Douglas Kerr as Commissioner of Police to enforce Military Service Act.
- P.C. 178, dated 21st January, 1918.—Regulations *re* appeal claims for exemption under the Military Service Act, 1917.
- P.C. 181, dated 26th January, 1918.—Regulations *re* furnishing of information by employers of employees liable for Military Service.
- P.C. 182, dated 26th January, 1918.—Regulations *re* reporting for military duty in case of an appeal for exemption.
- P.C. 195, dated 24th January, 1918.—Extension of time for appeals from decisions of local tribunals.
- P.C. 196, dated 26th January, 1918.—Regulations *re* appeals from the grants of exemption by tribunals—production of foodstuffs.
- P.C. 237, dated 30th January, 1918.—Liability to Military Service of United States citizens in Canada, and Canadian British subjects in the United States.
- P.C. 271, dated 2nd February, 1918.—Regulations *re* hearing of appeals in the Province of Quebec.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 384, dated 18th February, 1918.—Appointment of an agricultural representative for each Military District to act as adviser to the Leave of Absence Boards.

P.C. 435, dated 23rd February, 1918.—Accepting resignation of Mr. Glyn Osler, K.C., as Registrar under the Military Service Act, at Toronto, and appointing Mr. C. Leslie Watson, Registrar for Ontario.

P.C. 450, dated 2nd March, 1918.—Constitution of a Directorship under the Military Service Act, 1917; and appointing Lt.-Col. H. A. C. Machin, to the said office.

P.C. 451, dated 23rd February, 1918.—Use of certain of the Judges of the Circuit Court of the District of Montreal for the determination of appeals under the Military Service Act, 1917

P.C. 452, dated 23rd February, 1918.—Accepting the resignation of Mr. E. R. Chapman, Registrar under the Military Service Act for Manitoba, and appointing Mr. George A. Toole to succeed him.

P.C. 572, dated 9th March, 1918.—Application of the provisions of the Canadian Military Service Act, 1917, to aliens of allied nationality resident in Canada. (Copy of the Military Service Act, 1917, attached.) *Not printed.*

53a. Copies of Orders in Council—

P.C. 815, dated 4th April, 1918.—Regulations, under the War Measures Act, 1914, in respect to the utilization of the human energy of Canada for purposes essential to the prosecution of the present war.

And P.C. 834, dated 4th April, 1918.—Conferring certain powers on the General Officer or the Officer Commanding Military Districts, in case of riot, insurrection or civil disturbance, or obstructing the enforcement of the Military Service Act, 1917, etc. Presented by Sir Robert Borden, April 5, 1918. *Not printed.*

54. Copies of Orders in Council, as follows—

P.C. 3160, dated 9th November, 1917.—Regulations *re* appointment of a Director of Public Information.

P.C. 3161, dated 9th November, 1917.—Appointing Mark E. Nichols, Esq., Director of Public Information. Presented by Hon. Mr. Rowell, March 18, 1918. *Not printed.*

55. Copy of the Minutes of the meetings of the Conference between the Dominion and Provincial Governments of Canada, held at Ottawa, during February, 1918, respecting the general war situation as concerned with financial, food, shipping, and military necessities. Presented by Hon. Mr. Calder, March 18, 1918. *Printed for sessional papers only.*

56. Copies of Orders in Council, as follows—

P.C. 1460, dated 16th June, 1917.—Regulations for appointment of Food Controller.
P.C. 1684, dated 21st June, 1917.—Appointment of Hon. W. J. Hanna as Food Controller.

P.C. 1844, dated 3rd July, 1917.—Staff, office of Food Controller; appointment of Todd, Willison and French.

P.C. 2079, dated 1st August, 1917.—Franking privilege extended to Food Controller.

P.C. 2190, dated 9th August, 1917.—Regulations applicable to public eating places and use of wheat for alcohol prohibited; penalties imposed, etc.

P.C. 2210, dated 11th August, 1917.—Food Controller's Office; \$25,000 for salaries and expenses of.

P.C. 2292, dated 18th August, 1917.—Export of flour prohibited.

P.C. 2333, dated 23rd August, 1917.—Food Controller's Office; appointment of officers, clerks and others; authority to make such appointments, fix salaries, etc.

P.C. 2352, date 24th August, 1917.—Canned vegetables; prohibition of use of white fresh vegetables are available.

P.C. 2730, dated 3rd October, 1917.—Franking privilege to secretaries of Provincial Committee of Food Controller's Office.

P.C. 2689, dated 8th October, 1917.—Food Control; Educational Bureau; appointments.

P.C. 2688, dated 11th October, 1917.—Regulations *re* wholesale producers and dealers. Must make returns, etc.

P.C. 2959, dated 19th October, 1917.—Cereal foods. Regulations *re* sale of.

P.C. 2959 (a), dated Extra Canada Gazette, 25th October, 1917.—Order of Food Controller extending time for commencement of Cereal Food Regulations.

P.C. 3044, dated 23rd October 1917.—Oleomargarine; Regulations *re* importation and sale of.

P.C. 3116, dated 2nd November, 1917.—Use of grain for distillation of potable liquors, prohibited.

P.C. 3141, dated 6th November, 1917.—\$70,000 for expenses office of Food Controller.

P.C. 3211, dated 15th November, 1917.—Export of foodstuffs; prohibition of.

P.C. 3214, dated 15th November, 1917.—Licensing of dealers in food, etc. Regulations *re*. Food Controller authorized to fix profits, etc.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 3223, dated 15th November, 1917.—Licensing of mills for the grinding of flour; regulations *re*.

P.C. 3215, dated 19th November, 1917.—Food Controller's Office; \$100,000 for salaries and other expenses in.

P.C. 3236, dated 19th November, 1917.—Oleomargarine; Regulations *re* handling of; Licenses for importation of to be issued from Office of Veterinary Director General.

P.C. 3236 (a), dated 2nd Extra Canada Gazette, 17th November, 1917.—Order of Food Controller *re* manufacture, importation and sale of oleomargarine.

P.C. 3239, dated 19th November, 1917.—Food Control Regulations framed by Food Controller *re* licenses for exportation of goods to allied countries, etc., approved.

P.C. 3203, dated 27th November, 1917.—Manufacture of malt; regulations *re*.

P.C. 3347, dated 3rd December, 1917.—Prohibition of export of certain foods to the United Kingdom, British possessions, etc., except under license from Minister of Customs.

P.C. 3430, dated 24th December, 1917.—Food Control Regulations *re* cars containing food being held for longer period than four days, etc.

P.C. 163, dated 19th January, 1918.—\$50,000 for expenses of Food Controller's office.

P.C. 180, dated 21st January, 1918.—Regulations *re* licensing flour mills made by Order in Council 3223, 15th November, 1917, to extend to all flour mills.

P.C. 200, dated 24th January, 1918.—Resignation, Hon. W. J. Hanna as Food Controller.

P.C. 53, dated 26th January, 1918.—Regulations *re* exportation of certain goods.

P.C. 212, dated 26th January, 1918.—Staff, office of Food Controller. Former Orders in Council *re* cancelled, and Food Controller authorized to appointment of certain members of.

P.C. 223, dated 4th February, 1918.—Appointment Mr. H. B. Thomson as Food Controller *vice* Hon. W. J. Hanna.

P.C. 344, dated 11th February, 1918.—Canada Food Board.

P.C. 345, dated 11th February, 1918.—Appointment members of Canada Food Board: Messrs. Thomson, Dunning and McGregor.

P.C. 370, dated 12th February, 1918.—Regulations *re* Public Eating Places. O.C., 9th August, 1917, amended.

P.C. 420, dated 26th February, 1918.—Amending O.C. of February 11, 1918, creating The Canada Food Board—Powers not to include any of the powers or duties vested in the Board of Grain Supervisors for Canada.

P.C. 470, dated 28th February, 1918.—Prohibiting removal of flint or dent corn from the counties of Lambton, Essex, Kent and Elgin to any place outside of said district.

P.C. 543, dated 7th March, 1918.—Regulations *re* use of grain for feed purposes in stock yards, etc.

P.C. 567, dated 8th March, 1918.—Placing of sums of money to the credit of the Canada Food Board for the purchase of Ford tractors.

P.C. 580, dated 9th March, 1918.—Regulations *re* licensing of packing houses—Limitation on profit of sales.

P.C. 586, dated 12th March, 1918.—Regulations *re* power of The Canada Food Board to make orders regarding the kinds and amounts of foods that may be used, etc.

P.C. 597, dated 12th March, 1918.—Regulations forbidding the wilful waste of any food or food products; penalties imposed, etc. *Not printed.*

56a. Report of the Food Controller, Hon. W. J. Hanna, K.C., to the Prime Minister, dated 24th January, 1918. Presented by Sir Robert Borden, March 27, 1918. *Not printed.*

56b. Return to an Order of the House of the 20th March, 1918, for a return showing—1. When and upon whose recommendation the office of Food Controller in Canada was authorized and established. 2. To which Ministerial Department the Food Controller reports, and what member of the cabinet, if any, is responsible for the administration of the office of Food Controller. 3. The total amount incurred as salaries for Food Controller and his assistants and staff at Ottawa and throughout Canada from the establishment of the office up to and including end of February, 1918. 4. The total expense of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishing, equipment, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephones, postage, and all other expenses of Food Controller's Office, Ottawa, and branch offices throughout Canada, since the establishment of the office, up to and including February, 1918. 5. The total cost of administration of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishings, equipments, heat, light, salaries, traveling expenses, stationery, printing, advertising, telegrams, telephones, postage, etc., including all and every expense of Food Controller's Office at Ottawa and branch offices throughout Canada for each of following months, viz.: December, 1917, and February, 1918. 6. Whether there are any claims for salary or expenses from the Food Controller's Office outstanding or in dispute; if so, the amount involved. 7. How many employees there are on the Food Controller's staff at Ottawa and throughout Canada. 8. How many of the employees are returned soldiers who have been on active service since 1914. Presented April 18, 1918.—*Mr. Lapointe (St. James)* *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

- 56c. Return to an Address to His Excellency the Governor General of the 20th March, 1918, for a copy of the Order in Council recently passed making provision for the staff, the number of persons to be employed and their salaries, in the Food Controller's Office. Also a list of the names of those at present employed, showing their respective salaries and duties, former occupations, where formerly employed and salary received in former occupation. Presented April 18, 1918.—*Mr. Devlin* *Not printed.*
- 56d. Return to an Address to His Excellency the Governor General, of the 27th March, 1918, for a copy of the Orders in Council creating the Canada Food Board, and all correspondence antecedent or posterior to the Order in Council with respect to the same, as well as all regulations not already brought down. Presented May 20, 1918.—*Sir Wilfrid Laurier* *Not printed.*
- 56e. Supplementary return to an Order of the House of the 20th March, 1918, for a return showing—1. When and upon whose recommendation the office of Food Controller in Canada was authorized and established. 2. To which Ministerial Department the Food Controller reports, and what member of the cabinet, if any, is responsible for the administration of the office of Food Controller. 3. The total amount incurred as salaries for Food Controller and his assistants and staff at Ottawa and throughout Canada from the establishment of the office up to and including end of February, 1918. 4. The total expense of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishing, equipment, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephones, postage, and all other expenses of Food Controller's Office, Ottawa, and branch offices throughout Canada, since the establishment of the office, up to and including February, 1918. 5. The total cost of administration of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishings, equipments, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephone, postage, etc., including all and every expense of Food Controller's Office at Ottawa and branch office throughout Canada for each of following months, viz.: December, 1917, and February, 1918. 6. Whether there are any claims for salary or expenses from the Food Controller's Office outstanding or in dispute; if so, the amount involved. 7.—How many employees there are on the Food Controller's staff at Ottawa and throughout Canada. 8. How many of the employees are returned soldiers who have been on active service since 1914. Presented May 20, 1918.—*Mr. Lapointe (St. James)* *Not printed.*
57. Copies of Orders in Council, as follows:—
P.C. 1579, dated 11th June, 1917.—Fuel Controller.—Report on coal situation and appointment of Chas. A. Magrath as.
P.C. 1651, dated 15th June, 1917.—Fuel Controller vested with powers under Inquiries Act.
P.C. 1862, dated 6th July, 1917.—Fuel Controller; \$10,000 allocated from War Appropriation.
P.C. 1887, dated 12th July, 1917.—Fuel Controller.—Report on coal situation and appointment of Chas. A. Magrath as.
P.C. 2060, dated 27th July, 1917.—Assistant Fuel Controller. Appointment of H. P. McCue as.
P.C. 2289, dated 22nd August, 1917.—Fuel Control. Appointment of Donald S. Kerr to assist and C. W. Paterson as Deputy Fuel Controller.
P.C. 2611, dated 19th September, 1917.—“David S. Kerr” instead of “Donald S. Kerr” (O.C. 22nd August, 1917—P.C. No. 2289, amended).
P.C. 3068, dated 26th October, 1917.—Regulations re importation and sale of coal.
P.C. 105/3341, dated 3rd December, 1917.—Salary of Deputy Fuel Controller, C. W. Peterson, fixed at \$500 per month
P.C. 285, dated 4th February, 1918.—Duties of Fuel Controller; O.C. 12th July, 1917.—P.C. 1887, defining, amended
P.C. 298, dated 5th February, 1918.—Fuel Regulation. Providing for heatless days in factories, theatres, etc.
P.C. 325, dated 11th February, 1918.—Powers of Fuel Controller extended.
Sir George Foster laid on the Table, by Command of His Excellency,—Copies of Orders in Council, as follows:—
P.C. 359, dated 20th February, 1918.—Regulations providing for the conservation of fuel necessary to the national security.
P.C. 564, dated 8th March, 1918.—Amending regulations re conservation of fuel as regards the closing of golf, country, yacht, canoe or hunt clubs and places of amusement on certain days. Presented by Sir George Foster, March 19, 1918. *Not printed.*
58. Annual Report of the Editorial Committee on Government Publications, on its operations from the date of its appointment, 4th October, 1917, to 20th March, 1918. Presented by Sir George Foster, April 24, 1918. *Printed for distribution and sessional papers.*
- 58a. P.C. 2729, dated 4th October, 1917.—Establishment of Editorial Committee re printing of public documents. Presented by Sir George Foster, March 19, 1918.
Printed for sessional papers only.

CONTENTS OF VOLUME 14—*Continued.*

59. P.C. 337, dated 8th February, 1918.—Constitution of a Sub-Committee of the War Committee of the Cabinet to be known as The War Trade Board. Presented by Sir George Foster, March 19, 1918.*Not printed.*
- 59a. Return to an Address to His Excellency the Governor General of the 20th March, 1918, for a copy of all Orders in Council creating the War Trade Board, appointments to the same, instructions, and reports from the Board to this date. Presented by Sir Wilfrid Laurier, April 4, 1918.*Not printed.*
60. Statement of Governor General's Warrants issued since the last Session of Parliament on account of 1917-18. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
61. Statement of receipts and expenditures of the National Battlefields Commission to 31st March, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
62. Statement showing distribution of the \$25,000,000 advanced by the Dominion Government to the Canadian Northern Railway and its constituent companies, as provided for in Chapter 24, Statutes of 1917. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
- 62a. Return showing:—1. What sums, if any, have been paid since the first day of August, 1917, to the Canadian Northern Railway or to any person, firm, corporation, bank or company in trust for and on behalf of the Canadian Northern. 2. Under what authority these sums have been paid. 3. If by virtue of Orders in Council, the date of each of said Orders in Council, and the amount authorized by each of said Orders, and so paid. Presented March 27, 1918.—*Mr. Verville.**Not printed.*
63. Statement of the Receipts and Expenditures of the Royal Society of Canada, for the year ended April 30, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
64. Interim Report of R. A. Pringle, K.C., Commissioner inquiring into the manufacture, sale, price and supply of news print in Canada. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
- 64a. Return to an Address to His Excellency the Governor General of the 8th April, 1918, for a copy of the Order in Council creating a paper commission, and also a copy of the subsequent Orders in Council in regard to the work of this Commission. Presented April 13, 1918.—*Mr. Devlin.**Not printed.*
- 64b. Return to an Order of the House of the 8th April, 1918, for a copy of all correspondence respecting Orders in Council creating a paper commission, and subsequent Orders in Council respecting the same, which have passed between newspaper publishers in Canada, more particularly those publishers in Toronto, and the Government. Presented April 25, 1918.—*Mr. Devlin.**Not printed.*
65. Report and Statement of Receipts and Expenditures of the Ottawa Improvement Commission to March 31, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
66. Statement of Superannuation and Retiring Allowances in the Civil Service during the year ending 31st December, 1917, showing name, rank, salary, service allowance and cause of retirement of each person superannuated or retired, also whether vacancy has been filled by promotion, or by appointment, and the salary of any new appointee. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
67. Report of Women's War Conference, called by the War Committee of the Cabinet, at Ottawa, February 28th to March 2nd, 1918. Presented by Hon. Mr. Rowell, March 20, 1918.*Not printed.*
68. Statement of Expenditure on account of "Miscellaneous Unforeseen Expenses," from the 1st April, 1917, to the 18th March, 1918, in accordance with the Appropriation Act of 1917. Presented by Hon. Mr. Maclean, March 20, 1918.*Not printed.*
69. Letter of the Honourable Albert Sévigny to the Right Honourable the Prime Minister, resigning his position as Minister of Inland Revenue, and the letter of the Prime Minister in acknowledgment thereof. Presented by Sir Robert Borden, March 26, 1918.*Not printed.*
70. Return to an Order of the House of the 21st March, 1918, for a Return showing:—1. Who were the officers of the Engineers Training Depot stationed at St. Johns, Quebec, barracks during the months of October and December, 1917. 2. Who were the officers of the Engineers Training Depot stationed at St. Johns, Quebec, barracks on the 17th December, 1917. 3. Where these officers enlisted. 4. Where these officers resided before their enlistment. 5. Where these officers were residing at the time of their enlistment. Presented March 27, 1918.—*Mr. Archambault.**Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

71. Return of Orders in Council which have been published in the *Canada Gazette* and in the *British Columbia Gazette*, between 1st January 1917, and the 8th March, 1918, in accordance with provisions of subsection (d) of section 38 of the regulations for the survey, administration, disposal and management of Dominion lands within the 40-mile Railway Belt in the Province of British Columbia, as follows:—
- P.C. 3277, 5th January, 1917. License of occupation of a portion of the bed of the Fraser river to the Kettle Valley Railway Company.
- P.C. 159, 19th January, 1917. Limiting the right of homestead entry in the Railway Belt to persons who were British subjects or subjects of a country allied to Great Britain, or subject of a neutral country and who have continued to be so.
- P.C. 107, 12th February, 1917. Waiving completion of naturalization, before issue of patent for Dominion Lands in certain cases where entrant is on active service.
- P.C. 572, 5th March, 1917. Regulations *re* natural resources necessitated on account of war conditions.
- P.C. 736, 17th March, 1917. Providing for homesteaders being given credit for time spent at agricultural labour in Canada during the year 1918, towards the performance of residence duties.
- P.C. 982, 10th April, 1917. Authorizing the sale of certain lands in British Columbia to Canadian Pacific Railway Company for pipe-line purposes.
- P.C. 2076, 1st August, 1917. Authorizing certain changes in the Timber Regulations.
- P.C. 2562, 15th September 1917. Vesting the title to certain lands in the Railway Belt in His Majesty for the purposes of the Province of British Columbia.
- P.C. 3210, 15th November, 1917. Authorizing the cutting of timber on Dominion lands for ship-building purposes.
- P.C. 3243, 27th November, 1917. Confirming certain Orders in Council *re* administration of Dominion Lands in the Railway Belt in British Columbia.
- P.C. 3245, 27th November, 1917. Permitting a man on active service giving power of attorney with respect to his rights to Dominion lands in Railway Belt, British Columbia.
- P.C. 185, 24th January, 1918. Repealing Order in Council P.C. 159, January 19, 1917, and substituting certain regulations therefor.
- P.C. 23-425, 20th February, 1918. Authorizing the issue of a lease to J. H. Morrison, Kamloops, of certain lands in the Railway Belt, British Columbia, for mining purposes. Presented by Hon. Mr. Meighen, April 2, 1918.*Not printed.*
72. Return of Orders in Council which have been published in the *Canada Gazette*, between the 1st January, 1917, and the 8th March, 1918, in accordance with the provisions of "The Forest Reserves and Park Act," Section 19, of Chapter 10, 1-2 George V, as follows:—
- P.C. 340, 7th February, 1917, amending Order in Council 19th December, 1916. *re* administration of "Project Meadows" in Forest Reserves in Railway Belt, British Columbia.
- P.C. 2595, 18th September, 1917, placing the control of certain lands in the Waterton Lakes Park under the Director of Forestry.
- P.C. 2594, 18th September, 1917, rescinding Order in Council 8th June *re* Rocky Mountains Park. Presented by Hon. Mr. Meighen, April 2, 1918.*Not printed.*
73. Return of Orders in Council which have been published in the *Canada Gazette*, between 1st January, 1917, and the 8th March, 1918, in accordance with the provisions of Section 77 of the "Dominion Lands Act," Chapter 20, 7-8 Edward VII, as follows:—
- P.C. 13, 8th January, 1917. Rescinding Order in Council 4th March, 1910, *re* S.W. $\frac{1}{4}$ of 4-9-14, W. 2nd Meridian, and making same available for homestead purposes.
- P.C. 60, 13th January, 1917. Transferring certain lands in Cowesses Indian Reserve No. 73, to the Province of Saskatchewan, for road purposes.
- P.C. 102, 15th January, 1917. Withdrawing Order from general disposition certain petroleum and natural gas rights in the vicinity of the City of Edmonton.
- P.C. 108, 17th January, 1917. Authorizing free grant of lot 5, township 70-23, W. 5th, to "La Corporation Episcopale Catholique Romaine d'Athabaska."
- P.C. 110, 17th January, 1917. Authorizing the sale of certain lands to Moses Lessard for irrigation purposes.
- P.C. 159, 19th January, 1917. Providing that a person applying for a homestead entry in the Railway Belt, British Columbia, must be a British subject and has since continued to be a British subject, or a subject of a British Allied or neutral country.
- P.C. 165, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.
- P.C. 166, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.
- P.C. 167, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.
- P.C. 210, 26th January, 1917. Dispensing with residence duties in connection with the entry of Frank Ruppert for the S.W. $\frac{1}{4}$ of 16-33-14, W. 4th.
- P.C. 301, 2nd February, 1917. Dispensing with residence duties in connection with the entry of Wm. Thorburn for the S.W. $\frac{1}{4}$ of 13-28-22, W. 2nd.

CONTENTS OF VOLUME 14—Continued.

P.C. 316, 3rd February, 1917. Authorizing grant to L. F. Cardinal of the W. $\frac{3}{4}$ of 22-108-13, W. 5th, by virtue of his occupation thereof at date of extinguishment of Indian Title.

P.C. 327, 6th February, 1917. Authorizing issue of free patent to Jos. Hewitt for the S.E. $\frac{1}{4}$ of 20-44-3, W. 2nd, in lieu of land occupied by him being included in a Forest Reserve.

P.C. 481, 20th February, 1917. Authorizing the issue of license of occupation to the Canadian Northern Western Railway of certain lands for a bridge site.

P.C. 493, 20th February, 1917. Dispensing with residence duties by Samuel McCall on the E. $\frac{1}{2}$ of 21-31-1, W. 3rd.

P.C. 560, 28th February, 1917. Authorizing time spent at farm labour in Canada during 1917, to count as residence duties on entries for Dominion lands.

P.C. 555, 28th February, 1917. Making provisions of Orders in Council of 8th May, 1915 (P.C. 1042), 20th September, 1915 (P.C. 2150), 9th December, 1915 (P.C. 2888), and the 12th January, 1916 (P.C. 33), applicable to pre-emptions and purchased homesteads.

P.C. 561, 5th March, 1917. Authorizing change in regulations permitting granting of one day's priority of right to make entry for available Dominion lands.

P.C. 526, 5th March, 1917. Authorizing extension of terms of Order in Council 11th March, 1915, for period of four months up to 11th July, 1917.

P.C. 572, 5th March, 1917. Limiting disposal of any natural resources except to a British subject, subject of Allied country, or neutral country.

P.C. 610, 7th March, 1917. Rescinding Order in Council 30th January, 1914, in so far as it affects descriptions of lands granted to Indians, and certain lands described be granted instead thereof.

P.C. 686, 16th March, 1917. Granting right to Mr. Notman to purchase certain lands in Province of Manitoba.

P.C. 687, 16th March, 1917. Granting certain lands to Department of Militia and Defence.

P.C. 688, 16th March, 1917. Granting certain lands for church purposes to Synod of Diocese of Calgary.

P.C. 762, 20th March, 1917. Authorizing sale of certain lands to Council of the town of Maple Creek.

P.C. 848 29th March, 1917. Authorizing sale of lands to Western Canada Power Company for power development purposes.

P.C. 858, 29th March, 1917. Authorizing grant of land for cemetery purposes to Rural Municipality of Bright Sand, No. 529.

P.C. 918, 3rd April, 1917. Amending Order in Council of 14th December, 1916, with respect to application thereof to Canadian Expeditionary Forces.

P.C. 919, 3rd April, 1917. Granting certain lands for cemetery purposes to the village of Vanguard, Saskatchewan.

P.C. 926, 3rd April, 1917. Authorizing sale of N.W. $\frac{1}{4}$ 36-45-25, W. 3rd, to Allan V. Macle.

P.C. 927, 3rd April, 1917. Authorizing sale of certain lands to N. J. Bailey under certain conditions.

P.C. 1068, 18th April, 1917. Authorizing issue of lease of certain lands to Northern Fish Company, Limited, Selkirk, Manitoba.

P.C. 1066, 18th April, 1917. Authorizing issue of license of occupation of certain lands to the city of Winnipeg for water-power purposes.

P.C. 1067, 18th April, 1917. Dispensing with residence duties and authorizing issue of patent to James Wilson, in connection with the N.E. $\frac{1}{4}$ of 35-19-11, W.P.M.

P.C. 1069, 18th April, 1917. Authorizing grant of certain lands for cemetery purposes to the village of Major, Saskatchewan.

P.C. 1071, 18th April, 1917. Authorizing grant of certain lands to rural municipality of Lakeview, No. 454 Alberta, for cemetery purposes.

P.C. 1072, 18th April, 1917. Authorizing issue of patent of certain lands to Mr. D. Ennill.

P.C. 1189, 30th April, 1917. Granting certain lands for the erection of a creamery plant to the Canora Creamery Association, Limited.

P.C. 1222, 3rd May, 1917. Setting apart certain lands for the Indian of the Peguis.

P.C. 1207, 4th May, 1917. Authorizing issue of patent to Allen E. McDonald.

P.C. 1249, 8th May, 1917. *Re* granting patent to any person not a British subject by birth or naturalization who is on active service overseas.

P.C. 1268, 8th May, 1917. Rescinding Order in Council P.C. 572, 5th March, 1917, and enacting new regulations therefor.

P.C. 1315, 11th May, 1917. Granting certain lands for church and cemetery purposes to the Church of God of Edmonton, Alberta.

P.C. 1378, 21st May, 1917. Setting apart certain lands for park purposes and granting the same to the rural municipality of Mariposa, No. 350, Saskatchewan.

P.C. 1377, 21st May, 1917. Relieving Mr. H. Wills of further residence duties on the north half of 22-25-10 W. 4th.

P.C. 1348, 21st May, 1917. Authorizing grant of certain lands to Winnipeg Electric Railway Company.

P.C. 1429, 25th May, 1917. Authorizing certain regulations for the disposal of quartz mining claims on Dominion lands.

CONTENTS OF VOLUME 14—*Continued.*

- P.C. 1455, 29th May, 1917. Authorizing grant of certain lands to the town of The Pas for industrial purposes.
- P.C. 1471, 1st June, 1917. Setting apart certain lands in the Province of Manitoba for Indians.
- P.C. 1532, 4th June, 1917. Authorizing grant of certain lands for church purposes to the Board of Management of the Church and Manse Building Fund of the Presbyterian Church in Canada for Manitoba and the Northwest.
- P.C. 1533, 4th June, 1917. Vesting certain lands in His Majesty in the right of the Province of Alberta.
- P.C. 1536, 5th June, 1917. Authorizing Rev. W. B. Cumming, Saskatoon, to make entry by proxy on behalf of James Grossart.
- P.C. 1580, 11th June, 1917. Withdrawing certain lands which had been reserved for the Hudson's Bay Railway.
- P.C. 1613, 13th June, 1917. Authorizing grant of certain lands to the town of Gimli, for cemetery purposes.
- P.C. 1691, 21st June, 1917. Authorizing sale of certain lands to John Hedberg, Jasper, Alberta.
- P.C. 1675, 21st June, 1917. Authorizing license of occupation to Canadian Northern Railway Company of certain lands on the Red Deer River for bridge construction purposes.
- P.C. 1761, 26th June, 1917. Authorizing sale of certain lands to the Canadian Pacific Railway Company.
- P.C. 1716, 26th June, 1917. Restoring the homestead entry of L. H. Roberts who died while on active service overseas.
- P.C. 1717, 26th June, 1917. Authorizing sale of certain lands to William Rincheshen.
- P.C. 1718, 26th June, 1917. Authorizing grant of certain lands for cemetery purposes to the rural municipality of Bright Sand, No. 529, Saskatchewan.
- P.C. 1817, 30th June, 1917. Authorizing exchange of certain lands to Indians in lieu of lands surrendered.
- P.C. 1820, 30th June, 1917. Authorizing grant of lands for church and cemetery purposes to the Bethel Evangelical Scandinavian Lutheran Congregation.
- P.C. 1821, 30th June, 1917. Authorizing grant of land for cemetery purposes to the Ruthenian Greek Catholic Parish of St. Michael's in Communion with Rome, St. Martin, Manitoba.
- P.C. 1866, 6th July, 1917. Dispensing with residence duties in connection with the entry of W. L. Taylor for the N.W. $\frac{1}{4}$ 13-25-1, W.P.M.
- P.C. 1877, 9th July, 1917. Authorizing person on active service overseas to appoint attorney to make application for patent.
- P.C. 1937, 12th July, 1917. Authorizing grant of certain lands for cemetery purposes to St. George Cemetery Company, Egremont, Alberta.
- P.C. 2039, 26th July, 1917. Authorizing grant of certain lands for park purposes to the town of Drumheller, Alberta.
- P.C. 2036, 27th July, 1917. Authorizing grant of land for cemetery purposes to rural municipality of Bear Lake, No. 740.
- P.C. 2037, 27th July, 1917. Authorizing grant of land for church purposes to Synod of the Diocese of Qu'Appelle.
- P.C. 2038, 27th July, 1917. Authorizing sale of certain lands to Diocese of Ruperts Land.
- P.C. 2066, 27th July, 1917. Authorizing the cancellation of the survey of certain lands along the old Dawson Road.
- P.C. 2075, 30th July, 1917. Amending Order in Council dated 29th May, 1917, with reference to the name of the Board of Trade of the town of The Pas, Manitoba.
- P.C. 2076, 1st August, 1917. Authorizing regulations *re* timber.
- P.C. 2090, 1st August, 1917. Amending forest reserve regulations.
- P.C. 2108, 6th August, 1917. Authorizing certain changes in Dominion lands regulations for the protection of water-power resources.
- P.C. 2109, 6th August, 1917. Authorizing license of occupation to Canadian Northern Pacific Railway Company of certain lands in the bed of the South Thompson River.
- P.C. 2171, 8th August, 1917. Authorizing the disposition of certain lands for town-site purposes.
- P.C. 2239, 15th August, 1917. Confirming the late C. R. Coutts in his entry for the S.E. 6-83-17 W. 6.
- P.C. 2241, 18th August, 1917. Authorizing sale by auction of certain school lands.
- P.C. 2258, 18th August, 1917. Authorizing the lease of certain lands to the Salts and Potash Company of Canada.
- P.C. 2259, 18th August, 1917. Granting certain lands for cemetery purposes to La Corporation Episcopale Catholique Romaine de Regina.
- P.C. 2226, 18th August, 1917. Transferring certain lands from Indian Affairs to Interior Department to be used for church purposes.
- P.C. 2287, 18th August, 1917. Confirming the late Joe White, who died on active service overseas, in his entry for the N.E. 11-89-9 W. 4.
- P.C. 2419, 1st September, 1917. Dispensing with residence duties in connection with the entry of J. L. Crawford for the N.E. 21-2-15 W. 3rd.

CONTENTS OF VOLUME 14—*Continued.*

- P.C. 2436, 1st September, 1917. Transferring certain lands to the Province of Manitoba for drainage purposes.
- P.C. 2420, 1st September, 1917. Granting certain lands to Col. Malloy.
- P.C. 2460, 11th September, 1917. Granting certain lands for church purposes.
- P.C. 2488, 11th September, 1917. Granting certain lands for summer home and shooting purposes.
- P.C. 2489, 11th September, 1917. Granting certain lands for church purposes.
- P.C. 2490, 11th September, 1917. Granting certain lands for cemetery purposes.
- P.C. 2535, 11th September, 1917. Granting a lease of certain lands for cement purposes.
- P.C. 2509, 11th September, 1917. Relieving entrant on active service from necessity of erecting a house on his homestead.
- P.C. 2561, 15th September, 1917. Dispensing with residence duties in case of entry for the S.E. 33-10-15 W. 4.
- P.C. 2593, 17th September, 1917. Granting certain lands to R. B. Clarke in lieu of other lands surrendered to the Crown by him.
- P.C. 2641, 28th September, 1917. Granting certain lands to the Grand Trunk Pacific Development Company, Limited.
- P.C. 2721, 3rd October, 1917. *Re* purchase of certain reclaimed lands in Kleskun Lake.
- P.C. 2728, 3rd October, 1917. Granting certain lands for church purposes.
- P.C. 2857, 12th October, 1917. *Re* certain lands granted for creamery plant purposes.
- P.C. 2856, 12th October, 1917. Granting certain lands for cemetery purposes.
- P.C. 3027, 3rd November, 1917. *Re* status of applicants for homestead entries as to nationality.
- P.C. 3163, 9th November, 1917. Granting certain lands for church and cemetery purposes.
- P.C. 3179, 13th November, 1917. Granting certain lands to A. Thoma, Calais, Alta.
- P.C. 3201, 14th November, 1917. Setting apart certain lands for the Sioux Band of Indians.
- P.C. 3242, 19th November, 1917. Granting certain lands for church purposes.
- P.C. 3210, 15th November, 1917. Granting permission to cut certain timber for ship building purposes.
- P.C. 3244, 29th November, 1917. Authorizing the granting of grazing permits in the Big Stick Forest Reserve.
- P.C. 3499, 4th January, 1918. Transferring certain lands to the Indian Affairs Department.
- P.C. 3512, 4th January, 1918. Granting certain lands for use for Customs purposes.
- P.C. No. 41-72, 10th January, 1918. Granting certain lands for right of way purposes.
- P.C. 65, 12th January, 1918. Granting certain lands to Alex. Cardinal, Jr., Fort Vermillion.
- P.C. 67, 12th January 1918. Granting certain lands to Chas. Enn, Calais, Alberta.
- P.C. 66, 12th January, 1918. Granting certain lands to Chas. Standing Ribbon, Calais, Alberta.
- P.C. 157, 22nd January, 1918. Change in description of certain lands granted personal representatives of the late T. W. Chalmers.
- P.C. 34-238, 30th January, 1918. Granting certain lands for cemetery purposes.
- P.C. 317, 8th February, 1918. Granting certain lands to the province of Saskatchewan for roadway purposes.
- P.C. 332, 11th February, 1918. Authorizing sale of certain lands reclaimed by drainage.
- P.C. 67-352, 11th February, 1918. Granting certain lands to A. McKillop.
- P.C. 69-352, 11th February, 1918. Exchanging certain lands with Hudson Bay Company in order to grant homestead entry for land relinquished by the company.
- P.C. 357, 13th February, 1918. Granting certain lands to the City of Regina for park purposes.
- P.C. 400, 18th February, 1918. Setting apart certain lands as school lands.
- P.C. 401, 20th February, 1918. Enacting regulations affecting men on active service.
- P.C. 23-425, 20th February, 1918. Leasing certain lands for mining purposes.
- P.C. 430, 21st February, 1918. Granting certain lands to the Grand Trunk Pacific Branch lines for terminal purposes.
- P.C. 459, 7th March, 1918. Enacting regulations *re* homesteaders employed as farm labourers.
- P.C. 538, 7th March, 1918. Enacting certain regulations affecting men on active service who hold homestead entries.
- P.C. 37-563, 8th March, 1918. Enacting regulations governing the leasing of unpatented lands held under homestead entry. Presented by Hon. Mr. Meighen, April 2, 1918. *Not printed.*

74. Return called for by section 88, of chapter 62, Revised Statutes of Canada, requiring that the Minister of the Interior shall lay before Parliament, each year, a return of liquor brought from any place out of Canada into the Territories by special permission in writing of the Commissioner of the Northwest Territories, for the year ending 31st December, 1917. Presented by Hon. Mr. Meighen, April 2, 1918. *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

75. Return showing all lands sold by the Canadian Pacific Railway Company during the year ending 30th September, 1917, together with the names of the purchasers, in accordance with the Statutes of Canada, 1886, chapter 9, section 8. Presented by Hon. Mr. Meighen, April 2, 1918. *Not printed.*
76. Return to an Order of the House of March 25, 1918, for a return showing the total money value of the hard coal, soft coal, oil and gasoline imported into Canada during the years ending March 31, 1914, 1915, 1916 and 1917, and for each month since March, 1917. Presented by Hon. Mr. Sifton, April 2, 1918. *Not printed.*
77. Detailed statement of remissions of customs duties and the refund thereof, under section 22, Consolidated Revenue and Audit Act, through the Department of Customs, for the fiscal year ended 31st March, 1917. Presented by Hon. Mr. Sifton, April 3, 1918. *Not printed.*
78. Memorandum of Conferences between representatives of Labour and the War Committee, January, 1918. Presented by Hon. Mr. Rowell, April 3, 1918. *Printed for sessional papers only.*
79. A detailed statement of all bonds or securities registered in the Department of the Secretary of State of Canada, since last return (31st January, 1917) submitted to the Parliament of Canada under section 32 of chapter 19, of the Revised Statutes of Canada, 1906. Presented by Hon. Mr. Sifton, April 3, 1918. *Not printed.*
80. Return to an Order of the House, of the 25th March, 1918, for a copy of all letters, telegrams, petitions and other papers and documents relating to the appointment of a preventive officer at Mulgrave, N.S., to fill the position made vacant by the death of the late David Murray. Presented April 8, 1918.—*Mr. Sinclair.* *Not printed.*
81. Return to an Order of the House of the 25th March, 1918, for a return showing:—1. The total amount of war contracts fulfilled in the Province of Quebec, from August, 1914, to January, 1918. 2. How many war munitions establishments are in activity in the Province of Quebec. 3. How many shells are manufactured weekly in said province. 4. How many hands are engaged in such establishments in said province. Presented April 8, 1918.—*Mr. Prevost.* *Not printed.*
82. Return showing:—1. What sum of money has been spent for repairs to the wharf at Graham, since 1911. 2. Who has superintended the works, and the names of the parties who have been employed thereat. 3. What amount has been paid to each of them, and at what rate per diem. 4. The names of the parties supplying materials, and what amount has been paid to each of them. Presented April 8, 1918.—*Mr. Boyer.* *Not printed.*
83. Return showing:—1. From what person or persons, firm or firms, the stone used in the rebuilding of the new Parliament building was purchased. 2. From what stone quarry or quarries the said stone was taken. 3. Where the said quarry or quarries are situated. 4. Whether public tenders were called for the supplying of said stone. 5. If so, from whom, and at what prices offers were received, and if said offers were f.o.b. at place of shipment or f.o.b. Ottawa. 6. If said stone was supplied from different quarries what quantities were supplied from each quarry respectively. Presented April 8, 1918.—*Mr. Copp.* *Not printed.*
84. Memorandum No. 3, respecting work of the Department of Militia and Defence—European War—from February 1, 1916, to December 31, 1916. Presented by Hon. Mr. Mewburn, April 10, 1918. *Not printed.*
- 84a. Memorandum No. 4 respecting work of the Department of Militia and Defence, from January 1, 1917, to December 31, 1917. Presented by Hon. Mr. Mewburn, April 23, 1918. *Not printed.*
85. Return showing:—1. How many buildings have been rented by the Government in the city of Ottawa since February 1, 1915. 2. The owners of the said buildings. 3. Where said buildings are situated. 4. What rent per annum is paid for each building or part of building. 5. For what time or term said buildings are rented. Presented April 10, 1918.—*Mr. Papineau.* *Not printed.*
86. Return to an Address to His Excellency the Governor General of the 21st March, 1918, for a copy of all Orders in Council appointing members of the National Service Board, and all reports made individually or collectively by the members of the Board. Presented April 10, 1918.—*Sir W. Laurier.* *Not printed.*
87. Return to an Order of the House of the 3rd April, 1918, for a return showing:—1. Who are the commissioned officers employed at Quebec by the Military authorities in connection with Recruiting Branch, Army Service Corps, The Royal Canadian Engineers, The Royal Canadian Garrison Artillery and the Royal Canadian Artillery. 2. How long they have been connected with each branch. 3. What service each of them is

CONTENTS OF VOLUME 14—*Continued.*

- performing. 4. What salary each one of them is receiving. 5. Who among them have performed service overseas, and how long they have been actually at the front. 6. How long they were in the trenches. 7. To which battalion they belonged when overseas. Presented April 11, 1918.—*Mr. Power**Not printed.*
88. Return to an Order of the House of the 4th April, 1918, for a return showing:—1. What properties, if any, have been purchased by the Militia Department or the Military Hospital Commission in Quebec City, since the first of January, 1917. 2. From whom these purchases were made, and on whose recommendation. 3. The purchase price. Presented April 11, 1918.—*Mr. Power**Not printed.*
89. Return to an Order of the House of the 4th April, 1918, for a return showing:—1. How many persons of all ranks are employed by the Military Hospitals Commission in British Columbia, and their names, rank and salaries. 2. Why they were appointed, and where they are stationed. 3. How many of these men have seen service at the front. 4. Who the senior official is of the Military Hospitals Commission in British Columbia. 5. What the total monthly cost of carrying on the work of the Commission in British Columbia is, and how many men are being looked after at present. 6. How many buildings are operated by the Military Hospitals Commission in British Columbia, and where they are situated. 7. How many officials from headquarters in Ottawa found it necessary to visit the Pacific Coast during the past year, and for what purpose. 8. If the Military Hospitals Commission has a regularly appointed publicity agent. If so, what his name is, and what his duties are. 9. If he has seen overseas service, and what his salary is. 10. The total cost of the publicity department during 1917. Presented April 11, 1918.—*Mr. Stevens**Not printed.*
90. Return to an Order of the House of the 20th March, 1918, for a return showing the names of the staff of the Hospital Commission, the number of persons employed, their names, duties, salaries, former occupation and amounts paid to each for travelling expenses. Presented April 11, 1918.—*Mr. Devlin**Not printed.*
91. Return to an Order of the House of the 3rd April, 1918, for a return showing:—1. How many Victoria Crosses have been awarded to members of the Canadian Expeditionary Force to date. 2. The name, address, battalion, and rank of each recipient. 3. The official respective record in respect of which each decoration was given in each case. Presented April 11, 1918.—*Mr. Middlebro**Printed for sessional papers only.*
92. Return to an Order of the House of the 8th April, 1918, for a copy of a certain memorandum sent to the Minister of Public Works by the senior member for Ottawa relating to the abolition of patronage, and of all papers, letters and other documents which passed between him and the Minister of Public Works in relation thereto since the 17th of December, 1917. Presented April 2, 1918.—*Mr. McMaster**Not printed.*
93. Summary Report of the Clerk of the Crown in Chancery of the General Election Returns, 1917. Presented by the Speaker, April 15, 1918*Not printed.*
94. Return to Order of the House of the 11th April, 1918, for a return showing:—1. What steps, if any, have been taken by the Government to investigate war trade conditions in the United States. 2. Apart from members of the Cabinet if any parties have been sent by the Canadian Government on missions respecting war trade conditions in the United States. If so, what the names are of those who have been sent. 3. If any such parties have been sent, what the total expense is to the Government of such missions. Presented April 15, 1918.—*Mr. Devlin**Not printed.*
95. Return to an Address to His Excellency the Governor General, of the 20th March, 1918, for a copy of all Orders in Council, reports and correspondence with respect to the admission free of duty of farm tractors and other agricultural implements. Presented April 15, 1918.—*Sir W. Laurier**Not printed.*
96. Copies of Orders in Council issued in connection with the Military Voters' Act, 1917, and the War-time Elections Act, as follows:—
P.C. 3010, 7th November, 1917.—Instructions for the guidance of electors under the Military Voters' Act, 1917.
P.C. 3158, 9th November, 1917.—Scrutineers; appointment of six and providing payment for services and expenses, etc.
P.C. 3159, 9th November, 1917.—Presiding officers; appointment of certain and providing payment for services as, etc.
P.C. 3276, 24th November, 1917.—Special returning officers and clerks; appointment of and providing payment for services as, etc.
P.C. 3277, 27th November, 1917.—Regulation providing polls for returned military electors who are Indians.
P.C. 3322, 29th November, 1917.—Provision for taking votes of military electors belonging to units or drafts under orders to leave Canada before polling day.
P.C. 3404, 17th December, 1917.—Presiding officers; Engineer Captain W. M. Frowd, appointed in place of Captain F. C. C. Pascoe, at Halifax, N.S.
P.C. 6405, 17th December, 1917.—*Re* taking votes of units under orders to leave Canada, O.C. 29th November, 1917, amended.
P.C. 7, 8th January, 1918.—Special returning officers and clerks; appointment of further number of.

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- P.C. 8, 4th January, 1918.—Scrutineers, travelling and living expenses of defined.
- P.C. 9, 4th January, 1918.—Special returning officers and clerks; remuneration of.
- P.C. 10, 4th January, 1918.—Scrutineers; appointment Major Thomas Gibson, of London, Eng., in place of Brigadier-General J. F. L. Embury.
- P.C. 11, 4th January, 1918.—Further regulations for carrying the Military Voters' Act, 1917, into effect.
- P.C. 12, 8th January, 1918.—Payment for services of Boards of Appeal in Ontario and revising officers in Nova Scotia *re* revision of voters' lists.
- P.C. 13, 4th January, 1918.—Election in Halifax; Ward 6 constituted one single polling division.
- P.C. 63, 8th January, 1918.—Special returning officers and clerks; remuneration of. O.C. 4th January, 1918 (P.C. No. 9) amended.
- P.C. 84, 12th January, 1918.—Special returning officers; appointment Capt. Harold Baker, C.E.F., London, Eng., in place of Lt.-Col. Nelson Spencer.
- P.C. 85, 12th January, 1918.—Clerk of special returning officer; appointment Archibald Dickson, of Harrow, Eng, in place of Capt. Rippon, R.A.M.C.
- P.C. 98, 15th January, 1918.—Clerk of special returning officers; appointment E. L. Ginna in place of Ainslie W. Greene.
- P.C. 162, 19th January, 1918.—Resignation of R. A. Pringle as special returning officer and appointment of John W. P. Ritchie in his stead, and appointment of special returning officers and clerks.
- P.C. 323, 8th February, 1918.—Length of sessions to constitute a day's work.
- P.C. 396, 18th February, 1918.—Lieut. N. G. Charlton, presently in France, appointed to replace Major Powell as special returning officer.
- P.C. 397, 18th February, 1918.—Edgar E. R. Chevrier appointed to replace J. A. Pinard as special returning officer.
- P.C. 602, 12th March, 1918.—Proclamation of returns from overseas issued on receipt of telegraphic information. Presented by Hon. Mr. Doherty, April 15, 1918.
Not printed.
97. Return to an Order of the House of the 3rd April, 1918, for a copy of all judgments rendered up to date under the operation of the Military Service Act, 1917, by the Central Appeal Judge. Presented April 15, 1918.—*Mr. Trahan**Not printed.*
98. Return to an Order of the House of the 20th March, 1918, for a return showing the names of all persons employed in Ottawa in the Military Service Council, their salaries and former occupations. Presented April 15, 1918.—*Mr. Devlin**Not printed.*
99. Report of the Royal Commission appointed to inquire into and report upon the Pilotage System and its administration at the port of Halifax, N.S. Presented by Hon. Mr. Ballantyne, April 15, 1918.*Not printed.*
100. Return to an Order of the Senate, dated 21st March, 1918, showing:—The details of certain totals, being the estimated cost of streets, sewers, etc., given on figures 29-30, placed between pages 96-97 of Rural Planning and Development, written by Thomas Adams, being a report published by the Commission of Conservation dated 1917. The said totals being \$35,584, \$26,736, \$20,748 and \$23,533.—*The Senate**Not printed.*
101. Return to an Order of the Senate, dated 22nd March, 1918, showing:—1. The different aviation camps established by the Canadian Government and their location, with the date of their establishment. 2. The number of aviators who have gone through those camps since their establishment, and of those who have obtained their certificates. 3. The number of aviators now qualifying in each of these camps. 4. The number of accidents which happened in each of these camps, distinguishing: (a) mortal accidents; (b) serious accidents; (c) slight accidents, with their respective dates. 5. The number of machines out of commission, as a total loss or seriously damaged.—*The Senate*.
Not printed.
102. Return to an Order of the House of the 10th April, 1918, for a copy of all correspondence concerning the resignation of W. F. O'Connor, K.C., as Cost of Living Commissioner. Presented April 16, 1918.—*Mr. Lemieux**Not printed.*
103. Copy of Order in Council, P.C. 758, dated 26th March, 1918, relating to the making of a contract with the Dominion Steel Corporation, Limited, for the manufacture of steel plates required in the construction of ships and boilers. Presented by Hon. Mr. Ballantyne, April 18, 1918.*Not printed.*
104. Copy of Order in Council, P.C. 915, dated 16th April, 1918, prohibiting the press from publishing any adverse statement, report or opinion concerning the action of the allied nations in the prosecution of the war; and also prohibiting any person from publicly expressing any adverse statement, report or opinion concerning the same. Presented by Hon. Mr. Doherty, April 18, 1918.
105. Report of the Military Service Council on the administration of the Military Service Act, 1917 Presented by Hon. Mr. Doherty, April 18, 1918.

CONTENTS OF VOLUME 14—*Continued.*

106. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs of a wharf at Ile Perrot Sud, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer* *Not printed.*
107. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs at Hudson's Wharf, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer* *Not printed.*
108. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs of wharf at Ile Perrot Nord, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer* *Not printed.*
109. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs at St. Zotique Wharf, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer* *Not printed.*
110. Return to an Order of the House of the 10th April, 1918, for a copy of all correspondence and other papers concerning the merger of the Bank of British North America with the Bank of Montreal. Presented April 18, 1918.—*Mr. Devlin* *Not printed.*
111. Return to an Order of the House of the 11th April, 1918, for a return showing:—1. Referring to *Canada Gazette* statement of March 30th giving particulars as to circulation and specie, against what approved securities were Dominion notes issued to the value of \$92,820,000. 2. To what banks these notes were issued, and what the respective security was in each case. Presented April 18, 1918.—*Mr. Trahan*.
Not printed.
112. Return to an Order of the Senate, dated April 16th, 1918, to the Clerk of the Senate for the following information:—1. The number of pages of the Senate Debates of last session, giving the number of unrevised and the number of revised. 2. Is the French translation made from the unrevised edition or from the revised? 3. Is the French translation of the Debates of last session completed? If so, when was the last copy delivered to the Printing Bureau? If not yet completed, how many pages remained untranslated on the 18th of March last? 4. How many translators are employed on the regular staff for this work? 5. What is the name and the salary of each? 6. Have they or any of them been employed at any other work for the Senate during or since last session? If so, what work? 7. Has any other person or persons been employed to assist the regular staff in the work of translating the Debates of last session? If so, state the name of each such person, the length of time he has been so employed, and the amount of his remuneration therefor. 8. Is each translator expected to translate a definite minimum number of pages of the Debates each working day? If so, how many printed pages are supposed to constitute a fair day's work for each man? 9. Did the regular staff of translators translate into English the speeches delivered in French during the last session? If so, how many pages? If not, who did this work, and what extra remuneration, if any, was paid for it?—*The Senate* *Not printed.*
113. Statement issued by the War Cabinet at the request of the Board of Admiralty, showing for the United Kingdom and for the World, for the period August, 1914, to December, 1917:—1. Mercantile losses by enemy action and marine risk. 2. Mercantile Shipbuilding Output. 3. Enemy vessels captured and brought into service; together with diagrams, showing mercantile losses and shipbuilding output for the United Kingdom and for the world, for the same period. Presented by Sir Robert Borden, April 18, 1918.
114. Return to an Order of the House of the 21st March, 1918, for a copy of all telegrams, letters, petitions and all other correspondence and documents, concerning the service of the steamer *Amelia* between Pictou and Magdalen Islands Presented April 19, 1918.—*Mr. Lemieux* *Not printed.*
115. Return to an Order of the Senate to the Clerk dated April 18, 1918, for a statement showing:—1. The names of all persons employed in connection with the work of preparing the Minutes of Proceedings, the Order Paper and the Journals of this House (a) in English and (b) in French, and the salary or other remuneration paid to each. 2. The number of each of these documents printed (a) in English and (b) in French, and the cost of printing and binding the same for the fiscal year ending the 31st of March, 1918.—*The Senate* *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

16. Statement showing how many members of the outside service have been transferred to the inside service since October 1, 1917, and how many persons have been appointed under section 21 of the present Civil Service Act since that time. Presented by Hon. Mr. Maclean, April 22, 1918. *Not printed.*
17. Return to an Address to His Excellency the Governor General of the 8th April, 1918, for a copy of Orders in Council in reference to the appointment of Colonel Langton as Paymaster General in the Militia Department. Presented April 22, 1918.—*Mr. Copp.*
Not printed.
18. Return to an Order of the House of the 18th April, 1918, for a return showing:—1. What blue books have been printed during the years 1916 and 1917. 2. Which of said books have been printed in both languages. 3. Which of said books have been printed in the English language only. 4. Which of said books have been printed in the French language only. Presented April 22, 1918.—*Mr. Demers.* *Not printed.*
19. Copy of Order in Council P.C. \$07, dated the 3rd of April, 1918, with respect to the reservation of Dominion Lands for disposition under the Soldiers' Settlement Act (Chapter 21, 7-8 George V). Presented by Hon. Mr. Meighen, April 23, 1918.
Not printed.
20. Statement of amounts paid to newspapers, etc., on account of Victory Loan Advertising. Presented by Sir Robert Borden, April 24, 1918. *Not printed.*
21. Copy of the Report submitted by the Officer in charge of the Canadian War Records Office, London England, to the Right Honourable Sir Robert L. Borden, G.C.M.G., M.P., Prime Minister of Canada, on the work of the Canadian War Records Office since the date of its foundation to the 11th January, 1917. Presented by Sir Robert Borden, April 24, 1918. *Not printed.*
- 21a. Copy of the Second Annual Report of the Canadian War Records Office for the year 1917. Report submitted by the officer in charge to the Hon. Sir Edward Kemp, K.C.M.G., M.P., Overseas Minister of Militia and Defence. Presented by Sir Robert Borden, May 17, 1918. *Not printed.*
22. Return to an Order of the House of the 8th April, 1918, for a return showing:—1. How many persons belonging to class one were liable to be called under the Military Service Act, 1917, in each of the provinces and the Yukon Territory, respectively. 2. How many in each province have reported themselves for service. 3. How many in each province have asked to be exempted from military service. 4. How many in each province have been exempted by local tribunals. 5. How many decisions rendered in each province by local tribunals have been appealed from by: (a) recruits; (b) representatives or military authorities. 6. In how many appeal cases have decisions been rendered in each province, how many appeals have been allowed, and how many rejected in each province. 7. How many cases are still pending before the Central Appeal Judge. 8. Whether it is the intention of the military authorities or public representatives to appeal in some other cases, either before the appeal tribunal or before the Central Appeal Judge. 9. If so, how many in each province. Presented April 24, 1918.—*Mr. Trahan.* *Not printed.*
23. Return to an Order of the House of the 8th April, 1918, for a copy of all correspondence, certificates, recommendations and other documents in reference to the granting of a total disability pension to Colonel R. H. Labatt.—Presented April 24, 1918.—*Mr. Copp.*
Not printed.
24. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. Upon whose recommendation the returning officer for the county of Joliette, in the last Federal election, was appointed. 2. Whether enumerators were appointed in accordance with paragraph one, section forty-two, of the Dominion Elections Act, as amended by the War-time Elections Act of 1917. 3. If so, the names of the enumerators so appointed, when the list of such enumerators was sent, and to what person or persons said list was sent. Presented April 25, 1918.—*Mr. Denis.* *Not printed.*
25. Copy of Order in Council, P.C. \$12, dated 5th April, 1918.—Regulations governing the Soldier Settlement Loan under the authority of the Soldier Settlement Act (Chapter 21, 7-8 George V). Presented by Hon. Mr. Meighen, April 26, 1918. *Not printed.*
26. Return to an Address to His Excellency the Governor General of the 25th March, 1918, for a copy of all letters and telegrams exchanged between the Dominion Government and the various provincial executives concerning the Order in Council of 22nd December, 1917, respecting the sale of securities by provincial, colonial or foreign governments, municipalities and other bodies. Presented April 29, 1918.—*Mr. Lemieux.*
Not printed.

CONTENTS OF VOLUME 14—Continued.

- 127.** Return to an Order of the House of the 25th March, 1918, for a return showing:—1. If any money has been paid to the Dundalk *Herald*, the Flesherston *Advance*, the Markdale *Standard*, the Durham *Chronicle*, the Grey *Review*, or the Hanover *Post* for advertising or for any other reason since 1st October, 1917. If so, how many was paid in the case of each of the papers mentioned. Presented April 29, 1918.—*Mr. Cahill*.
Not printed.
- 128.** Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The officers employed at Quebec on the staff of the Military District No. 5. 2. How long they have been connected with this branch. 3. What service each of them is performing. 4. What salary and allowance each of them is receiving. 5. Names of those amongst them who have performed service overseas. 6. How long they have been actually at the front. 7. How long they were in the trenches. 8. To which battalion they belonged while overseas. Presented April 29, 1918.—*Mr. Power*.*Not printed.*
- 129.** Report of the Commissioners appointed to investigate the businesses of William Davies Co., Ltd., and Matthews-Blackwell, Ltd., dated 1st November, 1917. Presented by Hon. Mr. Crothers, May 1, 1918.
- 130.** Return to an Order of the House of the 24th April, 1918, for a return showing the details of certain totals being the estimated cost of street sewers, etc., given on figures 29 and 30 placed between pages 96-97 of Rural Planning and Development written by Thomas Adams, being a report published by the Commission of Conservation dated 1917. The said totals being \$35,584, \$26,736, \$20,748 and \$23,533. Presented May 1, 1918.—*Mr. Lemieux*.*Not printed.*
- 131.** Statement of expenditure of the Dominion Publicity Committee in account with the Dominion Government, and in connection with the Victory Loan, 1917. Presented by Hon. Mr. Maclean, May 1, 1918.
- 131a.** Report of Mr. A. E. Ames, Chairman of the Dominion Executive Committee of Canada, in connection with the Victory Loan, 1917. Presented by Hon. Mr. Maclean, May 1, 1918.*Not printed.*
- 131b.** Statement showing details of remuneration paid in connection with Victory Loan. Presented by Hon. Maclean, May 11, 1918.*Not printed.*
- 132.** Return to an Order of the House of the 3rd April, 1918, for a return showing:—1. How many local tribunals were established throughout Canada under the Military Service Act. 2. What remuneration per diem was allowed each member of such tribunal. 3. What was remuneration per day for Secretary of tribunal and also for constables or caretaker of the tribunal sessional chamber. 4. What has been the total expenditure to date on account of tribunals under the Military Service Act. 5. Whether there are any outstanding claims unpaid. Presented May 1, 1918.—*Mr. White (Victoria)*.
Not printed.
- 133.** Report of the Ninth Annual Meeting of the Commission of Conservation, Canada, November 27-28, 1917.—(*The Senate*)*Not printed.*
- 134.** Return showing—1. Whether the building of the hospital for invalid soldiers at Ste. Anne de Bellevue is under Government control. 2. If not, through whose agency. Whether it is being built by contract or under the supervision of any public body. 3. What sum has been paid by the Government for the land where this hospital is being erected. 4. What the cost of construction will be. 5. How many invalid soldiers it will accommodate. 6. How far this hospital is from Macdonald College. 7. Whether the Government has considered the very grave inconvenience which may result from the erecting of such an institution in the vicinity of a college where hundreds of young ladies are being educated. Presented May 1, 1918.—*Mr. Boyer*.*Not printed.*
- 135.** Return to an Order of the Senate, dated April 23, 1918, giving the following information:—The names, dates of appointments, salaries or wages of all clerks and employees of the Department of Public Printing and Stationery, under the following heads:—(a) King's Printer's staff, including advertising. (b) Printing Branch. 1. Clerks. 2. Proofreaders. 3. Typesetting rooms: Mono, Lino, Job and Parliamentary. 4. Press rooms: Platen and Cylinder. 5. Binding: Book, Pamphlet. 6. Stereotyping. 7. Map engraving. 8. Any other Departments. (c) Outside Printing Branch. (d) Accountants. (e) Stationery. (f) Distribution. (g) Mechanical staff. (h) *Canada Gazette*. (i) Caretaker. (j) Any other Departments.—(*The Senate*)*Not printed.*
- 136.** Return showing:—1. Whether tenders have been recently submitted to the Department of Militia and Defence or to the War Purchasing Commission for a supply of Smoked Wiltshire Bacon, at Toronto, Kingston and London. 2. If so, who the tenderers are, and what their prices are, in each case. 3. To whom the contract has been awarded in each case, and at what price. Presented May 2, 1918.—*Mr. Murphy*.*Not printed.*

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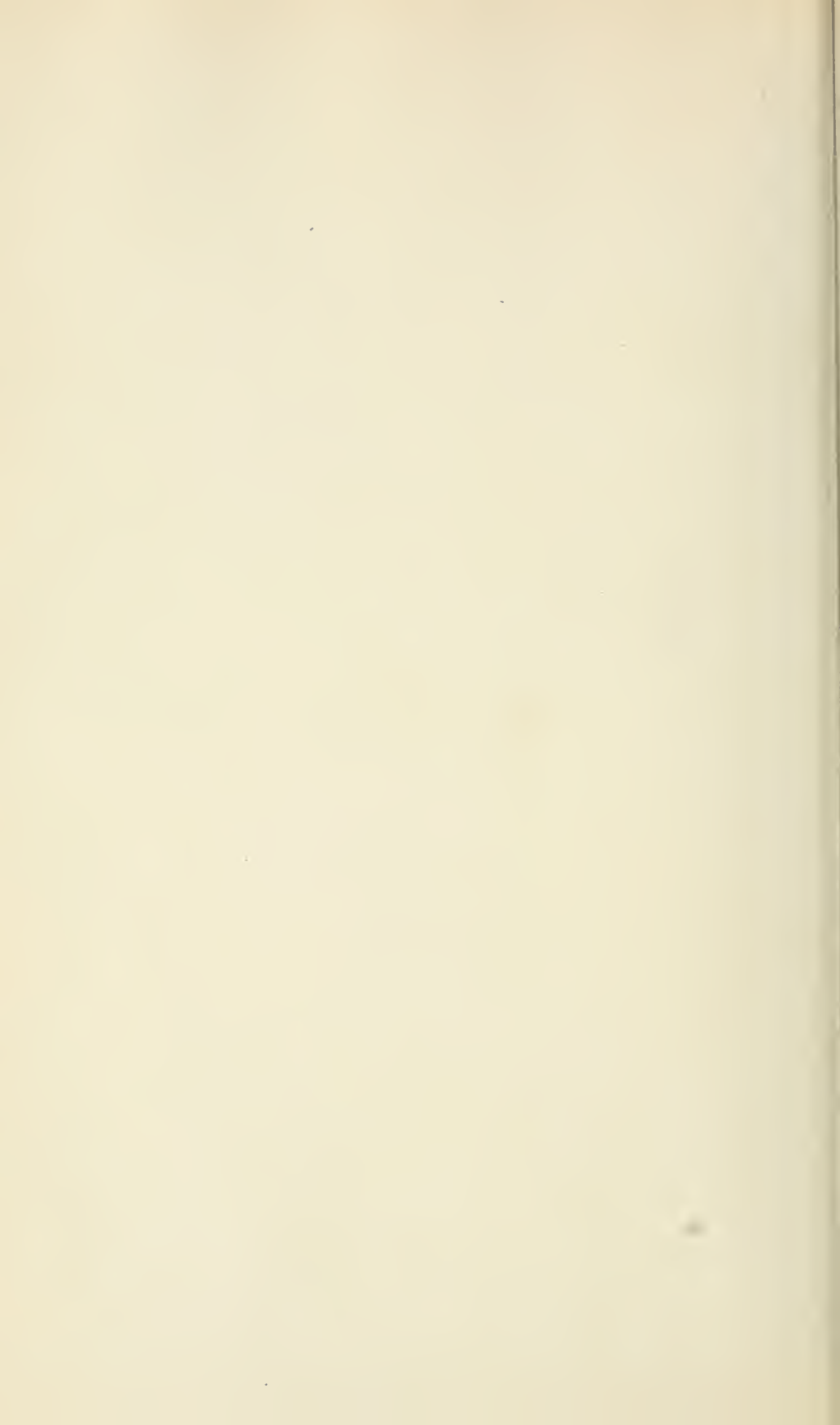
137. Order in Council, P.C. 26/942, dated the 19th April, 1918, with regard to remissions made under section 83 of The Indian Act, chapter 81, R.S.C. 1906, of the interest on arrears of purchase price of Park Lot No. 19, in the village of Southampton, in the County of Bruce, Ontario, amounting to \$18.—(*The Senate*) *Not printed.*
138. Order in Council, P.P. 871, dated 23rd April, 1917, being regulations for the protection of migratory game birds, migratory insectivorous and migratory non-game birds, which inhabit Canada during the whole or any part of the year, under the authority of The Migratory Bird Act, 7-8 George V, 1917.—(*The Senate*) *Not printed.*
139. Return to an Order of the House of the 6th May, 1918, for a return showing:—What the gross earnings of the National Transcontinental railway were for the year ending 31st March, 1918; how much was earned between Moncton and Quebec, between Quebec and Cochrane Junction, between Cochrane Junction and Winnipeg, and between Lake Superior Junction and Fort William, and the amount paid by that railway to the Canadian Pacific for terminal charges at Quebec. Presented May 13, 1918.—*Mr. Lavigneur* *Not printed.*
140. Return to an Order of the House of the 24th April, 1918, for a copy of all correspondence, letters, telegram and other papers exchanged between the Food Controller and the Winnipeg Civic Authorities concerning cold storage conditions at Winnipeg. Presented May 13, 1918.—*Mr. Lemieux* *Not printed.*
141. Interim Report No. 2, Georgian Bay Canal Commission,—Wheat Prices, and a Comparative Study, of United States and Canadian Markets, by W. Sanford Evans. Presented by Hon. Mr. Carvell, May 13, 1918. *Printed for distribution and Sessional Papers.*
142. Interim Report No. 3, Georgian Bay Canal Commission—Transatlantic Passenger and Freight Traffic and Steamship Subsidies, by W. Sanford Evans. Presented by Hon. Mr. Carvel, May 13, 1918. *Printed for distribution and Sessional Papers.*
143. Return to an Order of the House, of the 24th April, 1918, for a copy of all correspondence and petitions passed between the Prime Minister and Civil Service Federation, concerning certain appointments made in the Post Office and Customs Departments since the 17th of December, 1917. Presented May 13, 1918.—*Mr. Lemieux* *Not printed.*
144. Return showing:—1. Whether the Government is aware that in the past sixteen months in the Cities of Winnipeg, Hamilton, Toronto, Ottawa and Montreal, the following quantities of foodstuffs, are reported to have been ordered to be destroyed as unfit for human consumption;—(a) Meats: Winnipeg, 7,262 lbs.; Hamilton, 4,874 lbs.; Toronto, quantities not given in lbs., only sides, quarters, legs, etc.; Ottawa, 7,787 lbs.; Montreal, 105,898 lbs. (b) Poultry: Winnipeg, 11,364 lbs.; Hamilton, 8 fowl; Montreal, 2,344 lbs. (c) Fish: Winnipeg, 9,066 lbs.; Toronto, 74,587 lbs., weight not given, only number of packages for remainder; Montreal, 137,903 lbs. (d) Vegetables: Winnipeg, 265,565 lbs.; Toronto, 5,855 lbs. cabbage, the rest weight not given, only crates, baskets, etc., also recently 48,010 lbs., or 24 tons of food unfit for human consumption; Montreal, 13,940 lbs. (e) Eggs: Winnipeg, 3,013 lbs.; Hamilton, 40 doz.; Toronto, 1,050 doz., 6 tubs, 1 pail, and 8 gallons yolk. (f) Butter: Winnipeg, 3,374 lbs.; Hamilton, 22 lbs. (g) Fruit (fresh and dried): Winnipeg, fresh, 46,375 lbs., dried, 37,207 lbs.; Hamilton, fresh, 12 baskets; Montreal, fresh, 3,862 lbs. 2. If so, what action the Government proposes taking to prevent a continuance of such waste. Presented May 13, 1918.—*Mr. Foster (York)*
145. Return showing:—1. Whether the Government is aware that 236,490 pounds of food were destroyed in the city of Toronto between April 4 and April 29, 1918, according to a report of one of the Departments of the Toronto City Corporation. 2. Whether the Food Controller has taken any action to stop such wholesale waste of food. 3. If so, what he has done in this particular case. Presented May 15, 1918.—*Mr. Proulx* *Not printed.*
146. Return to an Order of the House of the 22nd April, 1918, for a return showing:—1. The names of all persons employed in connections with the work of preparing the Votes and Proceedings, the Order Paper and the Journals of the House (a) in English, and (b) in French, and the salary and other remuneration paid to each. 2. The number of each of these documents printed, (a) in English, and (b) in French, and the cost of printing and binding the same for the fiscal year ending the 31st of March, 1918. Presented May 13, 1918.—*Mr. Currie* *Not printed.*
147. Return to an Order of the House of the 22nd April, 1918, for a return showing:—1. The names of all persons employed in connection with the work of reporting and translating in the House. 2. How long each has been so employed. 3. The rate of remuneration paid to each during the past year, with the total amount paid to each class of persons. 4. Number of copies of the Debates of the House printed during the past year, (a) in English, and (b) in French, specifying the number of the unrevised and of the revised editions, respectively. 5. The cost of printing and binding the same for each year since 1900, inclusive. 6. The amounts paid in addition to the above, in each year since 1900, inclusive, for (a) reporting, (b) translating, (c) typewriting, and (d) printing proceedings before Parliamentary Committees. Presented May 15, 1918. *Mr. Currie* *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

148. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. What control the Canadian Government has over the operations of the Imperial Royal Flying Corps in Canada, and what Department of the Government would exercise this control. 2. Whether the Canadian Government has any officers or representatives on the Canadian Branch of the Imperial Flying Corps. If so, what their names are, and what positions they occupy. 3. Whether the Canadian Government intends to take over all the offices, plant, and equipment, of the Imperial Royal Flying Corps in Canada at an early date. If not, why not. How many accidents and deaths have occurred in Canada, United States and Overseas among our flying men. 5. The nature of the investigations into these accidents, and where the records are kept. 6. Whether the Government of Canada at the close of the war intends to establish and maintain a Canadian Flying Corps. If so, what preparations are under way, with this end in view. 7. How many Canadians and how many Americans, have joined the Imperial Royal Flying Corps in Canada. 8. How many mechanics are employed by the Imperial Royal Flying Corps in Canada. 9. What amount of money has been expended in Canada by the Imperial Royal Flying Corps. 10. How many Canadian Officers who have seen air service overseas are in the employ of the Imperial Royal Flying Corps in Canada. Presented May 16, 1918.—*Mr. Armstrong (Lambton).*
- 148a. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. What status the Canadian recruits of the Royal Flying Corps have in the military affairs of Canada. 2. In the case of permanent injury or death of Canadians in the Royal Flying Corps in the discharge of their duties, what provision has been made to pension their dependents. 3. How many men came to Canada from England to establish training camps for the Royal Flying Corps; if any of these men have returned to England. If so, how many have been replaced by Canadians. 4. What comparative results were obtained in training cadets at the training camps around Toronto and the camps located in Texas. 5. Whether the Royal Flying Corps went to Texas and remained there at the expense of, and on the request of the United States Government. 6. Whether the authorities of the Royal Flying Corps were asked to give consideration to a location in British Columbia. If so, what the nature of the request was. 7. If it is not a fact that the weather conditions in Texas proved very unfavourable for flying corps training purposes. 8. What investigations of a technical character were made of the air conditions in Texas before selecting that place as a training ground for our airmen. 9. What investigations were made as to the atmospherical and climatical conditions in British Columbia regarding the locating of an air squadron training camp in that province. 10. Whether the Imperial Munitions Board took an option to lease a large area of land at Delta, near Vancouver, B.C., to establish winter training camps for the Canadian training squadrons of the Royal Flying Corps, and whether tenders were asked for materials, hangers, buildings, etc. If so, why these negotiations were dropped. 11. How many deaths in the Royal Flying Corps training camps in Texas resulted from atmospherical conditions, which are unfavourable to the successful training of aviators. 12. Whether any requests have been made to the Canadian Government for assistance to the Royal Flying Corps either through appropriation or gifts of money for training machines. If so, the nature of these requests. 13. Where the records are kept of the causes of injury or illness of Canadian cadets and mechanics of the Royal Flying Corps. 14. Whether English-born drill sergeants are exclusively employed in the training of Canadian cadets in the Royal Flying Corps in Canada. 15. What efforts have been made by the Canadian Government or individuals or organizations to develop and assist the Flying Corps in Canada, and whether the Government has extended any assistance to these individuals or organizations. 16. Whether any part of the grant of \$100 provided by Order in Council for each aviator trained in Canada to defray a part of the expense incurred in training has been paid, or whether any request for payment has been made. Presented May 16, 1918.—*Mr. Armstrong (Lambton)**Not printed.*
149. Second Report of the War Purchasing Commission, covering period from 1st January, 1917, to 31st March, 1918. Presntd by Sir Robert Borden, May 16, 1918.*Not printed.*
150. Return to an Order of the Senate dated 9th May, 1918, for a return giving a statement of imports of petroleum oils and spirits (gallons, value and duty) during each of the following fiscal years ending 31st March: 1909-10-11-12-13-14-15-16-17, and for each month of the unexpired year ending 31st March, 1918.—(*The Senate*)*Not printed.*
151. Report of the Administrative Chairman of the Honourary Advisory Council for Scientific and Industrial Research 1917-18. Presented by Sir George Foster, May 17, 1918.*Not printed.*
152. Return to an Address to His Excellency the Governor General, of the 13th May, 1918, for a copy of the Order in Council appointing Mr. Main Johnson and passed under the War Measures Act as mentioned by Hon. Mr. Rowell on page 1350 of *Unrevised Hansard*. Presented May 20, 1918.—*Mr. Archambault**Not printed.*
153. First Report of the Munition Resources Commission, November, 1915, to February, 1918, inclusive. Presented by Hon. Mr. Burrell, 20th May, 1918.*Not printed.*

CONTENTS OF VOLUME 14—*Concluded.*

154. Return to an Order of the House of the 22nd April, 1918, for a return showing:—What amounts have been paid by the Government for printing or advertising to the *Globe*, Toronto, and the *Devoir*, Montreal, during each of the fiscal years ending 31st March, 1915, 1916, 1917 and 1918. Presented May 20, 1918.—*Mr. McMaster*.*Not printed.*
155. Return to an Order of the House of the 25th March, 1918, for a copy of all petitions, letters or communications of any kind either asking for or opposing the importation of coolie labour, from first of September last to date. Presented May 20, 1918.—*Sir Wilfrid Laurier*.*Not printed.*
156. Return to an Order of the House of the 25th March, 1918, for a copy of all memoranda and petitions by Slav subjects of Austria, naturalized in Canada, setting forth grievances and suggesting remedies. Presented May 20, 1918.—*Sir Wilfrid Laurier*.*Not printed.*
157. Return to an Order of the Senate, dated 12th April, 1918, for a return giving:—1. The name, rank, and qualifications of each of the persons, upon whose advice and recommendation, lobster hatcheries, heretofore operated in Canada by the Department of Naval Affairs, are to remain closed. 2. Copies of the reports and recommendations (or if the same are published, the references thereto in official publications), which fully disclose all the facts, reasons, and grounds, upon which the Department makes its decision to abandon the policy of operating lobster hatcheries.—(*The Senate*).*Not printed.*
158. Order in Council P.C. 668, dated 25th March, 1918, *re* procedure for conferring titles of honour upon subjects of His Majesty ordinarily resident in Canada. Presented by Sir Robert Borden, May 21, 1918.*Not printed.*
159. Return to an Order of the House of the 2nd May, 1918, for a return showing:—1. The amount paid the Toronto *Globe* and the Toronto *Star* respectively, from 1st January, 1917, to 1st April, 1918, for all service between the said dates. 2. Whether any contract of any kind was made with either of the said newspapers between the dates mentioned for advertising, publicity, or news editorial and feature service. 3. If so, by whom said contract or contracts were made, and what the particulars are thereof. Presented May 22, 1918.—*Mr. Murphy*.*Not printed.*
160. Return to an Order of the House of the 8th April, 1918, for a return showing:—1. What quantity of bran, shorts, or mill feed have been exported to the United States (*a*) by license; (*b*) without license, between 1st August, 1917, and 28th February, 1918. 2. To what firms in Canada licenses to export this feed have been granted, and for what quantity in each case. Presented May 22, 1918.—*Mr. Kay*.*Not printed.*
161. Return to an Order of the House of the 15th May, 1918, for a return showing:—1. The total amount paid to the Journal Publishing Company of Ottawa, Limited, during the fiscal years 1912-13-14-15-16-17 inclusive, for (*a*) rentals; (*b*) printing. 2. Whether the official cheques of the Government for said rentals and printing jobs were issued directly in favour of the above company, or to P. D. Ross, Esq. Presented May 23, 1918.—*Mr. Brouillard*.*Not printed.*
162. Return to an Order of the House of the 16th May, 1918, for a return showing:—1. The total number of the families of soldiers deceased since the beginning of the war, who receive pensions from the Government. 2. Of this number, how many reside in Great Britain, how many reside in Canada, and how many reside elsewhere. Presented May 23, 1918.—*Mr. Seguin*.*Not printed.*
163. Report dealing with the purchase and sale of Fordson tractors by the Canada Food Board. Presented by Hon. Mr. Crerar, May 23, 1918.*Not printed.*



SHIPPING REPORT

OF THE

DEPARTMENT OF CUSTOMS

CONTAINING THE

STATEMENTS OF NAVIGATION AND SHIPPING

OF THE

DOMINION OF CANADA

FOR

THE FISCAL YEAR ENDED MARCH 31

1917

COMPILED FROM OFFICIAL RETURNS IN THE

DEPARTMENT OF CUSTOMS

PRINTED BY ORDER OF PARLIAMENT



OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918



To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:—

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Customs, containing Statements of Navigation and Shipping of the Dominion of Canada for the Fiscal Year ended March 31, 1917, as compiled from official returns and laid before me by the Commissioner of Customs.

All of which is respectfully submitted.

A. L. SIFTON,
Minister of Customs.

OTTAWA, February 28, 1918.

CUSTOMS DEPARTMENT,
OTTAWA, January 22, 1918.

Hon. A. L. SIFTON,
Minister of Customs.

I have the honour to hand you the Annual Report of the Department of Customs, containing Statements of Navigation and Shipping of the Dominion of Canada for the fiscal year ended March 31, 1917.

I have the honour to be, sir,

Your obedient servant,

JOHN McDOUGALD,
Commissioner of Customs.

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EXPLANATORY NOTE

TONNAGE SHOWN IN STATEMENTS ARE NET TONS.

No. 1.—COMPARATIVE STATEMENT showing the Tonnage of all Vessels entered Inwards and Outwards in the Dominion of Canada, during each Fiscal Year, from 1868 to 1917, inclusive.

NAVIGATION.

| Fiscal Year. | Tonnage of Vessels built. | Tonnage of Vessels registered. | Tonnage of Vessels entered Inwards and Outwards (Sea-going and Inland Navigation exclusive of Coasting). | Tonnage of Vessels employed in the Coasting Trade entered Inwards and Outwards. | Tonnage and value of vessels sold to other countries. | |
|--------------|---------------------------|--------------------------------|--|---|---|-----------|
| | | | | | Tonnage. | Value. |
| | Tons. | Tons. | Tons. | Tons. | Tons. | \$ |
| 1868..... | 87,230 | 113,692 | 12,982,825 | | | |
| 1869..... | 96,439 | 125,408 | 10,461,044 | | | |
| 1870..... | 93,166 | 110,852 | 11,415,870 | | | |
| 1871..... | 106,101 | 121,724 | 13,126,028 | | | |
| 1872..... | 114,065 | 127,371 | 12,808,160 | | | |
| 1873..... | 140,370 | 152,226 | 11,748,997 | | | |
| 1874..... | 174,404 | 163,016 | 11,399,857 | | | |
| 1875..... | 188,098 | 204,002 | 9,537,155 | | | |
| 1876..... | 165,041 | 144,422 | 9,911,199 | 10,300,939 | 64,134 | 2,189,270 |
| 1877..... | 127,297 | 126,160 | 11,091,244 | 8,968,862 | 46,329 | 1,576,244 |
| 1878..... | 106,976 | 100,089 | 12,054,890 | 11,047,661 | 35,039 | 1,218,145 |
| 1879..... | 103,551 | 94,882 | 11,646,812 | 12,066,683 | 19,318 | 529,824 |
| 1880..... | 68,756 | 64,982 | 13,577,845 | 14,053,013 | 16,208 | 464,327 |
| 1881..... | 79,364 | 70,210 | 13,802,432 | 15,116,766 | 16,808 | 348,018 |
| 1882..... | 68,240 | 78,076 | 13,379,882 | 14,791,064 | 16,161 | 402,311 |
| 1883..... | 73,576 | 78,229 | 13,770,735 | 15,683,566 | 23,896 | 506,538 |
| 1884..... | 70,287 | 80,822 | 14,359,026 | 15,473,707 | 17,368 | 416,756 |
| 1885..... | 57,486 | 65,962 | 14,084,712 | 15,944,422 | 13,177 | 246,277 |
| 1886..... | 37,531 | 40,872 | 13,969,232 | 16,368,274 | 14,343 | 266,363 |
| 1887..... | 26,798 | 67,662 | 14,090,998 | 17,513,677 | 9,263 | 143,772 |
| 1888..... | 22,698 | 33,298 | 15,217,308 | 18,789,279 | 14,479 | 289,969 |
| 1889..... | 23,835 | 31,998 | 16,054,221 | 19,834,577 | 16,173 | 266,817 |
| 1890..... | 39,434 | 53,853 | 18,446,100 | 22,797,115 | 22,844 | 442,781 |
| 1891..... | 55,477 | 52,506 | 18,803,648 | 24,694,580 | 15,143 | 280,474 |
| 1892..... | 44,321 | 61,457 | 18,692,455 | 24,783,844 | 36,399 | 506,747 |
| 1893..... | 38,521 | 45,796 | 18,539,534 | 24,579,123 | 31,317 | 363,916 |

No. 1.—COMPARATIVE STATEMENT showing the Tonnage of all Vessels entered Inwards and Outwards, etc.—*Concluded.*

NAVIGATION.

| Fiscal Year. | Tonnage of Vessels built. | Tonnage of Vessels registered. | Tonnage of Vessels entered Inwards and Outwards (Sea-going and Inland Navigation exclusive of Coasting). | Tonnage of Vessels employed in the Coasting Trade entered Inwards and Outwards. | Tonnage and value of vessels sold to other Countries. | |
|--------------|---------------------------|--------------------------------|--|---|---|-----------|
| | | | | | Tonnage. | Value. |
| | Tons. | Tons. | Tons. | Tons. | Tons. | \$ |
| 1894..... | 23,497 | 29,878 | 20,353,081 | 26,560,968 | 21,960 | 243,429 |
| 1895..... | 18,728 | 26,125 | 19,100,963 | 25,473,434 | 16,567 | 172,563 |
| 1896..... | 10,753 | 14,144 | 21,870,473 | 27,431,753 | 12,203 | 99,392 |
| 1897..... | 12,058 | 22,959 | 23,373,933 | 27,267,979 | 9,158 | 105,164 |
| 1898..... | 22,426 | 27,716 | 24,746,116 | 29,663,950 | 17,210 | 191,069 |
| 1899..... | 22,085 | 28,257 | 25,420,110 | 30,212,496 | 7,562 | 126,466 |
| 1900..... | 28,544 | 40,443 | 26,914,095 | 33,631,730 | 13,354 | 205,618 |
| 1901..... | 20,156 | 35,156 | 26,029,808 | 34,444,796 | 4,490 | 66,468 |
| 1902..... | 28,288 | 34,236 | 30,025,404 | 40,700,907 | 11,360 | 235,865 |
| 1903..... | 30,856 | 41,405 | 33,655,043 | 44,990,358 | 11,172 | 220,602 |
| 1904..... | 28,397 | 33,192 | 31,202,205 | 45,505,122 | 7,208 | 87,115 |
| 1905..... | 21,865 | 27,583 | 32,277,820 | 44,377,261 | 3,696 | 100,363 |
| 1906..... | 18,724 | 37,639 | 34,732,172 | 46,324,062 | 9,487 | 187,725 |
| *1907..... | 33,205 | 31,635 | 30,595,891 | 31,691,420 | 3,855 | 68,190 |
| 1908..... | 49,928 | 78,144 | 39,575,031 | 50,529,835 | 4,515 | 132,900 |
| 1909..... | 29,023 | 32,899 | 40,701,603 | 52,670,198 | 3,644 | 98,643 |
| 1910..... | 24,059 | 33,383 | 44,567,991 | 56,750,928 | 5,047 | 133,800 |
| 1911..... | 22,812 | 50,006 | 47,429,545 | 66,627,934 | 5,885 | 201,526 |
| 1912..... | 31,065 | 30,021 | 52,973,127 | 66,267,662 | 4,265 | 140,350 |
| 1913..... | 24,325 | 30,225 | 57,849,783 | 73,644,713 | 7,976 | 610,650 |
| 1914..... | 46,887 | 46,909 | 61,919,483 | 78,356,809 | 8,258 | 169,618 |
| 1915..... | 45,721 | 55,384 | 53,604,153 | 73,099,982 | 17,044 | 1,150,950 |
| 1916..... | 13,497 | 102,239 | 57,721,098 | 68,709,424 | 4,529 | 192,575 |
| 1917..... | 28,638 | 105,826 | 65,712,544 | 64,895,622 | 24,954 | 4,398,570 |

* 9 months.

SESSIONAL PAPER No. 11a

No. 2.—STATEMENT showing the Description, Number and Tonnage of Vessels built and registered, also the Number, Tonnage and Value of Vessels sold to other Countries at each Port and Outport in the Dominion of Canada, during the Fiscal Year ended March 31, 1917.

| | PORTS AND OUTPORTS. | | | | BUILT. | | | | REGISTERED. | | | | SHIPS SOLD TO OTHER COUNTRIES. | | |
|--------------------------|---------------------|----------|-------|----------|--------|----------|--------|----------|-------------|----------|--------|----------|--------------------------------|----------|-----------|
| | Steam. | | Sail. | | Total. | | Steam. | | Sail. | | Total. | | Total. | | |
| | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | |
| | | | | | | | | | | | | | | | Value. |
| Annapolis Royal, N.S. | 1 | 32 | 1 | 384 | 2 | 416 | 1 | 32 | 1 | 384 | 2 | 416 | | \$ | |
| Arichat, N.S. | | | | | | | 3 | 44 | 1 | 16 | 4 | 60 | 1 | 99 | 4,500 |
| Barrington Passage, N.S. | | | | | | | 5 | 55 | | | 5 | 55 | | | |
| Canso, N.S. | | | 1 | 12 | 1 | 12 | 1 | 12 | | | | 1 | 12 | 1 | 10,000 |
| Charlottetown, P.E.I. | | | | | | | | | 5 | 214 | 5 | 214 | | | |
| Chatham, N.B. | 4 | 72 | 11 | 186 | 15 | 258 | 6 | 94 | 13 | 214 | 19 | 308 | | | |
| Collingwood, Ont. | 3 | 6,171 | | | 3 | 6,171 | | | | | | | | | |
| Goderich, Ont. | 2 | 50 | | | 2 | 50 | 2 | 50 | | | 2 | 50 | | | |
| Halifax, N.S. | 1 | 23 | 2 | 75 | 3 | 98 | 6 | 777 | 2 | 526 | 8 | 1,303 | 1 | 20 | 2,000 |
| Kenora, Ont. | | | | | | | 1 | 10 | | | 1 | 10 | | | |
| Kingston, Ont. | | | | | | | 1 | 5 | | | 1 | 5 | | | |
| Liverpool, N.S. | | | 2 | 515 | 2 | 515 | 1 | 12 | 2 | 363 | 3 | 375 | | | |
| Lockport, N.S. | | | | | | | | | | | | | | | |
| Lunenburg, N.S. | 7 | 77 | 19 | 2,279 | 26 | 2,356 | 14 | 174 | 23 | 3,158 | 37 | 3,332 | 18 | 350 | 19,000 |
| Montreal, Que. | 4 | 3,600 | 7 | 1,408 | 11 | 5,008 | 26 | 43,075 | 20 | 12,057 | 46 | 55,132 | 9 | 2,521 | 212,000 |
| New Westminster, B.C. | 8 | 62 | 2 | 1,345 | 10 | 1,407 | 13 | 96 | 7 | 2,174 | 20 | 2,270 | | | 3,244,304 |
| Ottawa, Ont. | 2 | 43 | | | 2 | 43 | 4 | 132 | 2 | 298 | 6 | 430 | | | |
| Parrsboro, N.S. | | | 6 | 2,633 | 6 | 2,633 | | | 6 | 2,633 | 6 | 2,633 | | | |
| Paspébiac, Que. | 1 | 33 | 12 | 125 | 13 | 158 | 1 | 33 | 12 | 125 | 13 | 158 | 1 | 99 | 3,000 |
| Peterboro, Ont. | 1 | 7 | 2 | 78 | 3 | 85 | 1 | 5 | | | 1 | 5 | | | |
| Pictou, N.S. | | | | | | | | 1,806 | | | 1 | 1,806 | | | |
| Port Arthur, Ont. | 2 | 28 | | | 2 | 28 | 2 | 1,405 | 2 | 1,932 | 4 | 3,337 | 1 | 1,806 | 240,000 |
| Port Dover, Ont. | 1 | 81 | | | 1 | 81 | 1 | 55 | | | 1 | 55 | | | |
| Port Hawkesbury, N.S. | | | | | | | | 24 | | | 1 | 24 | | | |
| Prince Albert, Sask. | | | | | | | 4 | 385 | 1 | 145 | 5 | 530 | | | |
| Prince Rupert, B.C. | 3 | 35 | | | 3 | 35 | 6 | 64 | 1 | 337 | 7 | 337 | | | |
| Quebec, Que. | 3 | 280 | 7 | 1,018 | 10 | 1,298 | 4 | 2,813 | 13 | 4,155 | 17 | 6,968 | | | |
| St. Andrews, N.B. | | | | | | | 3 | 37 | 2 | 114 | 5 | 151 | | | |
| St. Catharines, Ont. | | | | | | | 3 | 81 | | | 3 | 81 | | | |

No. 2.—STATEMENT showing the Description, Number and Tonnage of Vessels built and registered—Concluded.

| PORTS AND OUTPORTS. | BUILT. | | | | REGISTERED. | | | | SHIPS SOLD TO OTHER COUNTRIES. | | | | |
|------------------------|--------|----------|--------|----------|-------------|----------|--------|----------|--------------------------------|----------|-----|--------|-----------|
| | Steam. | | Sail. | | Steam. | | Sail. | | No. | Tonnage. | No. | Value. | |
| | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | No. | Tonnage. | | | | | |
| | Total. | Total. | Total. | Total. | Total. | Total. | Total. | Total. | | | | | |
| St. John, N.B. | 2 | 19 | | | 4 | 109 | 2 | 394 | 6 | 503 | 1 | 2,159 | 369,865 |
| Sault Ste. Marie, Ont. | 1 | 5 | | | 1 | 5 | 2 | 174 | 3 | 179 | 1 | 167 | 600 |
| Shelburne, N.S. | | | 8 | 1,197 | 3 | 1,197 | 6 | 2,342 | 9 | 2,555 | 1 | 278 | 35,000 |
| Sorel, Que. | | | 6 | 2,342 | 3 | 831 | 2 | 170 | 3 | 1,001 | | | |
| Sydney, N.S. | | | 2 | 20 | 2 | 20 | 1 | 11,150 | 9 | 11,150 | 2 | 1,168 | 86,000 |
| Toronto, Ont. | 1 | 38 | | | 9 | 4,512 | 8 | 2,941 | 53 | 7,453 | 4 | 2,682 | 162,000 |
| Vancouver, B.C. | 32 | 2,176 | | | 45 | 40 | 3 | 683 | 6 | 716 | 1 | 14 | 2,700 |
| Victoria, B.C. | 6 | 195 | | | 3 | 542 | 3 | 542 | 3 | 542 | | | |
| Weymouth, N.S. | 2 | 33 | | | 2 | 336 | 2 | 332 | 2 | 332 | | | |
| Windsor, N.S. | | | 2 | 332 | 2 | 332 | 2 | 332 | 2 | 332 | | | |
| Winnipeg, Man. | | | | | 11 | 875 | 4 | 698 | 15 | 1,573 | | | |
| Yarmouth, N.S. | | | 1 | 545 | 1 | 545 | 3 | 599 | 3 | 599 | 2 | 172 | 7,000 |
| Total | 87 | 13,060 | 97 | 15,578 | 184 | 28,638 | 190 | 69,044 | 144 | 36,782 | 334 | 24,954 | 4,398,570 |

SESSIONAL PAPER No. 11a

No. 3.—STATEMENT showing the Trade via St. Lawrence River (Sea-going Vessels) Inwards and Outwards, during the Fiscal year ended March 31, 1917.

| | Vessels. | | Freight | |
|------------------|----------|----------------|--------------|-------------------|
| | No. | Tons Register. | Tons Weight. | Tons Measurement. |
| Inwards..... | 882 | 2,117,136 | 246,787 | 93,628 |
| Outwards..... | 943 | 2,639,065 | 2,686,669 | 663,126 |
| Total trade..... | 1,825 | 4,756,201 | 2,933,456 | 756,754 |

No. 4.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

| Number. | Ports and Outports. | WITH CARGOES. | | | | | | | | | |
|---------|--------------------------|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|----------------------|-------------------|---------------|
| | | BRITISH. | | | | CANADIAN. | | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. |
| | | | | Tons Weight. | Tons Measurement. | | | | Tons Weight. | Tons Measurement. | |
| 1 | Albert, N.B. | | | | | | | | | | |
| 2 | Alberton, P.E.I. | | | | | 2 | 32 | 41 | | 10 | |
| 3 | Alert Bay, B.C. | | | | | | | | | | |
| 4 | Amherst, N.S. | 2 | 418 | 800 | 12 | | | | | | |
| 5 | Annapolis Royal, N.S. | | | | | 4 | 751 | 1,479 | 1,520 | 22 | |
| 6 | Anyox, B.C. | | | | | 30 | 17,539 | 31,296 | | 479 | |
| 7 | Arichat, N.S. | | | | | 74 | 2,001 | 1,642 | | 459 | |
| 8 | Baddeck, N.S. | | | | | 14 | 355 | 7 | | 65 | |
| 9 | Barrington Passage, N.S. | | | | | 2 | 196 | 340 | | 10 | |
| 10 | Barton, N.S. | | | | | 6 | 666 | 53 | | 35 | |
| 11 | Bathurst, N.B. | 1 | 2,280 | | 36 | 16 | 334 | 75 | | 66 | |
| 12 | Bear River, N.S. | | | | | 10 | 1,102 | 618 | | 59 | |
| 13 | Belliveau's Cove, N.S. | | | | | 1 | 123 | | 6 | 5 | |
| 14 | Bridgetown, N.S. | | | | | 3 | 352 | 711 | 740 | 15 | |
| 15 | Bridgewater, N.S. | 3 | 681 | 1,130 | 17 | 4 | 474 | 855 | | 21 | |
| 16 | Buctouche, N.B. | | | | | | | | | | |
| 17 | Campbellton, N.B. | | | | | | | | | | |
| 18 | Campo Bello, N.B. | | | | | | | | | | |
| 19 | Canning, N.S. | | | | | 25 | 4,144 | 233 | | 234 | |
| 20 | Canso, N.S. | 3 | 195 | 250 | 16 | 14 | 431 | | | 12 | |
| 21 | Caraquet, N.B. | | | | | 2 | 1,813 | 2,740 | | 74 | |
| 22 | Charlottetown, P.E.I. | 3 | 677 | 1,009 | 22 | 45 | 2,337 | 2,355 | | 664 | |
| 23 | Chatham, N.B. | | | | | 1 | 29,724 | 6,667 | | 1,496 | |
| 24 | Chemainus, B.C. | | | | | 1 | 99 | 198 | | 6 | |
| 25 | Chester, N.S. | | | | | 32 | 551 | 554 | | 108 | |
| 26 | Chicoutimi, Que. | 1 | 2,780 | 356 | 68 | | | | | | |
| 27 | Church Point, N.S. | | | | | 1 | 99 | | 203 | 5 | |
| 28 | Clarks Harbour, N.S. | | | | | 3 | 205 | 448 | | 13 | |
| 29 | Clementsport, N.S. | | | | | 4 | 596 | 74 | 92 | 24 | |
| 30 | Dalhousie, N.B. | | | | | | | | | | |
| 31 | Digby, N.S. | | | | | 8 | 694 | 1,095 | | 35 | |
| 32 | Dorchester, N.B. | | | | | 2 | 268 | 469 | | 9 | |
| 33 | Fredericton, N.B. | | | | | 3 | 952 | 1,785 | | 18 | |
| 34 | Freeport, N.S. | | | | | 2 | 186 | 328 | | 9 | |
| 35 | Gaspe, Que. | | | | | 6 | 755 | 900 | | 24 | |
| 36 | Georgetown, P.E.I. | | | | | 1 | 197 | 316 | | 5 | |
| 37 | Glace Bay, N.S. | | | | | 140 | 7,354 | 6,566 | | 450 | |
| 38 | Halifax, N.S. | 321 | 981,801 | 126,217 | 29,907 | 183 | 90,719 | 51,548 | | 3,496 | |
| 39 | Hantsport, N.S. | | | | | 2 | 224 | 462 | | 8 | |
| 40 | Hillsboro, N.B. | | | | | 1 | 825 | 40 | | 4 | |
| 41 | Indian Island, N.B. | | | | | | | | | | |
| 42 | Isaac's Harbour, N.S. | | | | | 2 | 180 | 50 | | 10 | |
| 43 | Joggins Mines, N.S. | | | | | | | | | | |
| 44 | Kentville, N.S. | | | | | 2 | 257 | | | 10 | |
| 45 | Kingsport, N.S. | | | | | 1 | 96 | | | 4 | |
| 46 | Ladner, B.C. | | | | | | | | | | |
| 47 | Ladysmith, B.C. | | | | | 31 | | | | | |
| 48 | La Have, N.S. | 5 | 1,400 | 2,668 | 31 | 87 | 7,975 | 10,247 | | 1,186 | |
| 49 | Levis, Que. | 1 | 3,046 | 20 | 38 | | | | | | |
| 50 | Liverpool, N.S. | 1 | 59 | 100 | 4 | 9 | 1,258 | 2,179 | | 51 | |
| 51 | Lockeport, N.S. | | | | | 47 | 2,073 | 3,039 | | 454 | |
| 52 | Lord's Cove, N.B. | | | | | 128 | 944 | 505 | | 252 | |
| 53 | Louisburg, N.S. | 65 | 91,473 | 179,525 | 2,011 | 18 | 4,698 | 4,261 | | 247 | |
| 54 | Lower East Pubnico, N.S. | | | | | 29 | 1,555 | 365 | | 381 | |
| 55 | Lunenburg, N.S. | 9 | 2,026 | 3,225 | 56 | 268 | 23,260 | 29,804 | | 3,746 | |
| 56 | Magdalen Islands, Que. | 6 | 453 | 51 | 31 | | | | | | |
| 57 | Mahone Bay, N.S. | | | | | 19 | 1,750 | 2,025 | | 264 | |
| 58 | Maitland, N.S. | | | | | 1 | 99 | 1 | | 5 | |
| 59 | Meteghan River, N.S. | | | | | 1 | 145 | 16 | | 6 | |

SESSIONAL PAPER No. 11a

from Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917.

| FOREIGN. | | | | | IN BALLAST. | | | | | | | | | | |
|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|---------|--|
| FOREIGN. | | | | | BRITISH. | | | CANADIAN. | | | FOREIGN. | | | Number. | |
| Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | | |
| | | Tons Weight. | Tons Measurement. | | | | | | | | | | | | |
| | | | | | 5 | 11,902 | 151 | 1 | 96 | 4 | 6 | 3,158 | 48 | 60 | |
| | | | | | 1 | 35 | 5 | | | | | | | 61 | |
| 2 | 4,711 | 9,166 | | 56 | 315 | 966,226 | 14,950 | 1 | 2,263 | 25 | 23 | 73,915 | 1,006 | 62 | |
| | | | | | | | | | 39 | 8 | | | | 63 | |
| 46 | 23,856 | 4,982 | 4,000 | 611 | 37 | 14,334 | 299 | 94 | 11,982 | 667 | 607 | 243,244 | 4,686 | 64 | |
| | | | | | | | | 2 | 88 | 8 | 1 | 1,472 | 21 | 66 | |
| 2 | 2,157 | 4,274 | | 32 | 1 | 2,263 | 26 | | | | 27 | 12,633 | 256 | 67 | |
| 12 | 3,721 | 1,839 | | 218 | 1 | 1,142 | 14 | 88 | 26,042 | 892 | 60 | 13,721 | 330 | 68 | |
| | | | | | 1 | 2,577 | 55 | 5 | 322 | 31 | 14 | 1,751 | 48 | 69 | |
| 2 | 109 | 12 | | 30 | | | | | | | 2 | 141 | 36 | 70 | |
| 4 | 49 | 114 | | 8 | | | | 108 | 11,174 | 683 | 24 | 441 | 64 | 71 | |
| 31 | 45,220 | | | 738 | 502 | 100,113 | 4,511 | 208 | 42,933 | 2,522 | 70 | 14,408 | 1,268 | 72 | |
| 7 | 5,588 | 3,166 | 328 | 220 | | | | 3 | 417 | 14 | 1 | 69 | 10 | 73 | |
| | | | | | 6 | 7,386 | 100 | 25 | 11,064 | 124 | 62 | 19,507 | 883 | 74 | |
| 10 | 2,404 | 3,910 | | 75 | 4 | 8,539 | 100 | | | | 20 | 9,733 | 210 | 75 | |
| 1 | 58 | 15 | | 5 | | | | 1 | 44 | 3 | | | | 76 | |
| | | | | | 2 | 5,506 | 60 | | | | 5 | 5,788 | 90 | 77 | |
| | | | | | | | | 2 | 798 | 9 | 6 | 2,610 | 146 | 78 | |
| 1 | 399 | 500 | 418 | 10 | | | | 2 | 114 | 8 | 1 | 253 | 6 | 79 | |
| 35 | 3,208 | 2,156 | | 519 | 1 | 48 | 5 | 2 | 1,149 | 60 | 12 | 1,142 | 155 | 81 | |
| 3 | 282 | 33 | | 59 | | | | | | | | | | 82 | |
| | | | | | | | | 3 | 34 | 11 | 3 | 200 | 43 | 83 | |
| 3 | 122 | 130 | | 12 | 1 | 2,094 | 24 | 6 | 577 | 117 | 13 | 4,564 | 205 | 84 | |
| | | | | | | | | 4 | 499 | 53 | 9 | 246 | 105 | 85 | |
| | | | | | | | | 5 | 490 | 29 | | | | 86 | |
| 1 | 173 | | | 5 | | | | | | | | | | 87 | |
| 64 | 34,609 | 20,110 | 888 | 1,510 | 15 | 41,578 | 621 | 4 | 285 | 28 | 37 | 15,069 | 680 | 88 | |
| 760 | 210,498 | 14,274 | 1 | 8,306 | 14 | 19,728 | 1,001 | 67 | 47,602 | 1,965 | 124 | 51,801 | 3,202 | 89 | |
| | | | | | | | | | 4,522 | 69 | | 4,522 | 69 | 90 | |
| 1 | 1,379 | 151 | | 22 | 8 | 7,690 | 143 | | | | 11 | 14,603 | 250 | 91 | |
| | | | | | | | | | | | 8 | 1,188 | 46 | 92 | |
| | | | | | 1 | 1,940 | 24 | 9 | 9,100 | 154 | 10 | 10,583 | 163 | 93 | |
| | | | | | | | | 1 | 77 | 3 | | | | 94 | |
| 396 | 16,048 | 11,116 | | 1,544 | | | | 240 | 16,077 | 1,045 | 703 | 33,824 | 3,486 | 95 | |
| 4 | 682 | 590 | | 14 | | | | 7 | 116 | 12 | 100 | 6,343 | 374 | 96 | |
| 207 | 312,925 | 64,208 | 8,027 | 11,559 | 108 | 406,503 | 5,926 | 97 | 2,481 | 320 | 424 | 53,126 | 1,592 | 97 | |
| 1 | 430 | 4 | | 3 | | | | 21 | 7,755 | 88 | 22 | 3,018 | 184 | 98 | |
| 81 | 5,811 | 10,200 | | 201 | | | | 29 | 2,247 | 153 | 33 | 902 | 104 | 99 | |
| 1 | 241 | 413 | | 6 | | | | | | | | | | 100 | |
| | | | | | | | | | | | 4 | 59 | 11 | 101 | |
| 66 | 6,236 | 3,468 | | 1,272 | 1 | 168 | 6 | | | | 85 | 7,156 | 1,698 | 102 | |
| | | | | | | | | | | | 1 | 196 | 7 | 103 | |
| 20 | 1,690 | 571 | | 358 | | | | 2 | 71 | 22 | 24 | 3,193 | 462 | 104 | |
| | | | | | | | | 1 | 357 | 6 | 2 | 371 | 13 | 105 | |
| 3 | 634 | 1,137 | | 37 | | | | | | | | | | 106 | |
| 3 | 1,557 | 76 | | 65 | | | | | | | 4 | 80 | 28 | 107 | |
| 17 | 2,711 | 2,868 | 4 | 74 | | | | 21 | 882 | 80 | 36 | 594 | 112 | 108 | |
| | | | | | | | | | | | | | | 109 | |
| | | | | | 1 | 94 | 6 | 17 | 749 | 163 | 11 | 865 | 162 | 110 | |
| 10 | 1,701 | 636 | | 104 | | | | 44 | 1,234 | 157 | 142 | 3,166 | 405 | 111 | |
| 32 | 522 | 162 | | 131 | | | | | | | 9 | 98 | 37 | 112 | |
| 5 | 2,530 | 4,588 | | 10 | | | | | | | | | | 113 | |
| 78 | 189,717 | 518,873 | | 2,361 | 245 | 663,194 | 10,134 | 79 | 64,167 | 1,600 | 16 | 25,497 | 382 | 114 | |
| | | | | | 13 | 32,934 | 555 | 6 | 8,660 | 108 | 3 | 4,485 | 84 | 115 | |
| | | | | | | | | | | | | | | 116 | |
| | | | | | | | | 1 | 283 | 5 | 3 | 626 | 16 | 117 | |
| 1 | 86 | 220 | | 18 | | | | | | | 2 | 188 | 44 | 118 | |

No. 4.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

| Number. | Ports and Outports. | WITH CARGOES. | | | | | | | | | |
|---------|---------------------|--------------------|----------------|----------------------|--------------------|---------------|--------------------|----------------|----------------------|--------------------|---------------|
| | | BRITISH. | | | | | CANADIAN. | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew. Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew. Number. |
| | | | | Tons Weight. | Tons Measure-ment. | | | | Tons Weight. | Tons Measure-ment. | |
| 119 | Union Bay, B.C. | | | | | | | | | | |
| 120 | Vancouver, B.C. | 205 | 544,878 | 197,435 | 151,751 | 21,447 | 560 | 812,385 | 83,614 | 33,861 | 30,454 |
| 121 | Victoria, B.C. | 353 | 481,293 | 15,857 | 3,596 | 27,061 | 144 | 191,418 | 14,926 | 126 | 6,222 |
| 122 | Westport, N.S. | | | | | | 7 | 468 | 500 | | 24 |
| 123 | Weymouth, N.S. | | | | | | 9 | 948 | 636 | | 45 |
| 124 | White Rock, B.C. | | | | | | 17 | 469 | 2,423 | | 31 |
| 125 | Windsor, N.S. | | | | | | 17 | 10,065 | 2,804 | | 75 |
| 126 | Wolfville, N.S. | | | | | | 6 | 665 | | | 25 |
| 127 | Yarmouth, N.S. | 10 | 2,848 | 5,259 | | 69 | 228 | 145,985 | 24,398 | | 13,273 |
| 128 | York Factory, Man. | 1 | 1,004 | 300 | | 42 | | | | | |
| | Total | 1,928 | 4,691,442 | 1,375,673 | 313,758 | 160,067 | 3,324 | 1,541,133 | 425,116 | 38,044 | 73,768 |

SESSIONAL PAPER No. 11a

from Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917.

| FOREIGN. | | | | | IN BALLAST. | | | | | | | | | Number. |
|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|---------|
| Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | BRITISH. | | | CANADIAN. | | | FOREIGN. | | | |
| | | Tons Weight. | Tons Measurement. | | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | |
| 477 | 526,761 | 532,550 | 82,991 | 14,559 | 22 | 78,773 | 1,571 | 25 | 15,469 | 242 | 106 | 63,091 | 937 | 119 |
| 557 | 723,650 | 54,855 | 20,735 | 30,319 | 22 | 46,928 | 1,792 | 147 | 19,153 | 1,089 | 201 | 92,995 | 3,182 | 120 |
| | | | | | 68 | 262,456 | 11,721 | 264 | 30,298 | 1,579 | 249 | 286,769 | 8,884 | 121 |
| 1 | 121 | 100 | | 4 | | | | 4 | 72 | 8 | | | | 122 |
| 20 | 477 | 54 | | 64 | | | | 8 | 870 | 43 | 11 | 1,806 | 75 | 123 |
| 7 | 2,904 | 2,499 | | 36 | | | | 52 | 847 | 124 | 51 | 762 | 121 | 124 |
| 3 | 553 | | | 13 | | | | 55 | 67,979 | 403 | 36 | 33,136 | 166 | 125 |
| 40 | 7,212 | 4,255 | | 877 | | | | 12 | 1,151 | 122 | 90 | 3,688 | 957 | 126 |
| | | | | | | | | | | | | | | 127 |
| | | | | | | | | | | | | | | 128 |
| 3,749 | 2,442,979 | 1,763,929 | 117,497 | 85,389 | 1,814 | 3,619,689 | 70,126 | 2,671 | 593,971 | 23,745 | 5,680 | 1,900,567 | 58,845 | |

No. 5.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards
ABSTRACT BY

| Number. | Countries from which Arrived. | WITH CARGOES. | | | | | | | | | |
|---------|-------------------------------|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|----------------------|-------------------|---------------|
| | | BRITISH. | | | | | CANADIAN. | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. |
| | | | | Tons Weight. | Tons Measurement. | | | | Tons Weight. | Tons Measurement. | |
| 1 | United Kingdom..... | 549 | 2,474,510 | 401,555 | 129,806 | 69,016 | 160 | 18,993 | 14,388 | 402 | 742 |
| 2 | Australia..... | 38 | 192,000 | 36,966 | 38,744 | 5,977 | | | | | |
| 3 | B. South Africa..... | 1 | 2,304 | 1,048 | | 42 | | | | | |
| 4 | B. West Africa..... | | | | | | | | | | |
| 5 | B. W. Indies..... | 85 | 158,710 | 117,080 | 32,738 | 9,780 | 98 | 13,559 | 24,461 | | 640 |
| 6 | B. Oceania, other..... | | | | | | | | | | |
| 7 | B. Straits Settlements..... | | | | | | | | | | |
| 8 | Egypt..... | | | | | | | | | | |
| 9 | Fiji Islands..... | 2 | 4,366 | 7,303 | | 72 | | | | | |
| 10 | Gibraltar..... | | | | | | | | | | |
| 11 | Malta..... | | | | | | | | | | |
| 12 | Newfoundland..... | 406 | 349,473 | 408,471 | | 12,773 | 115 | 36,098 | 51,826 | 100 | 1,601 |
| 13 | Brazil..... | | | | | | | | | | |
| 14 | Canary Islands..... | | | | | | | | | | |
| 15 | Chili..... | 2 | 8,075 | | | 144 | | | | | |
| 16 | China..... | 21 | 125,883 | 18,354 | 36,302 | 4,046 | 4 | 11,254 | 16,326 | 20,626 | 189 |
| 17 | Cuba..... | 1 | 3,043 | 4,900 | | 67 | 1 | 147 | | | 5 |
| 18 | Denmark..... | | | | | | | | | | |
| 19 | Dutch E. Indies..... | 1 | 3,048 | 6,000 | | 41 | | | | | |
| 20 | France..... | | | | | | 1 | 2,263 | 200 | | 26 |
| 21 | French Africa..... | | | | | | | | | | |
| 22 | Greece..... | | | | | | | | | | |
| 23 | Greenland and Iceland..... | | | | | | | | | | |
| 24 | Hawaii..... | | | | | | | | | | |
| 25 | Holland..... | | | | | | | | | | |
| 26 | Italy..... | | | | | | | | | | |
| 27 | Japan..... | 24 | 157,365 | 40,769 | 75,374 | 6,882 | 1 | 2,798 | 3,257 | 4,684 | 49 |
| 28 | Mexico..... | | | | | | 4 | 6,188 | 7,933 | | 97 |
| 29 | Nicaragua..... | | | | | | | | | | |
| 30 | Norway..... | | | | | | | | | | |
| 31 | Panama..... | | | | | | | | | | |
| 32 | Peru..... | 8 | 22,286 | 44,792 | | 241 | 1 | 1,384 | 2,776 | | 23 |
| 33 | Philippines..... | 2 | 8,941 | 4,667 | 794 | 171 | 1 | 2,804 | 4,450 | 8,000 | 48 |
| 34 | Portugal..... | | | | | | 14 | 1,367 | 2,310 | | 89 |
| 35 | Russia..... | | | | | | 3 | 6,423 | 9,016 | | 120 |
| 36 | San Domingo..... | | | | | | | | | | |
| 37 | St. Pierre..... | 3 | 2,640 | 2,530 | | 45 | 6 | 528 | 660 | | 47 |
| 38 | Sea Fisheries..... | 85 | 8,113 | 2,612 | | 1,946 | 1,249 | 44,518 | 32,687 | | 11,669 |
| 39 | Spain..... | 3 | 4,591 | 10,555 | | 63 | 4 | 396 | 670 | | 27 |
| 40 | United States..... | 697 | 1,166,094 | 268,071 | | 48,761 | 1,662 | 1,392,413 | 254,156 | 4,232 | 58,396 |
| 41 | Sea Cable and Admiralty..... | | | | | | | | | | |
| | Total..... | 1,928 | 4,691,442 | 1,375,673 | 313,758 | 160,067 | 3,324 | 1,541,133 | 425,116 | 38,044 | 73,768 |

SESSIONAL PAPER No. 11a

from Sea, in the Dominion of Canada during the Fiscal Year ended March 31, 1917.
COUNTRIES.

| FOREIGN. | | | | | IN BALLAST. | | | | | | | | | | | |
|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|---------|--|--|
| Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | BRITISH. | | | CANADIAN. | | | FOREIGN. | | | Number. | | |
| | | Tons Weight. | Tons Measurement. | | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | | | |
| 27 | 23,370 | 7,362 | | 492 | 568 | 1,845,357 | 27,270 | 36 | 27,476 | 437 | 213 | 221,032 | 3,766 | 1 | | |
| | | | | | 19 | 59,939 | 1,246 | | | | 3 | 2,264 | 33 | 2 | | |
| | | | | | 1 | 2,308 | 45 | | | | 4 | 3,431 | 55 | 3 | | |
| | | | | | 2 | 4,612 | 87 | | | | | | | 4 | | |
| 19 | 12,102 | 19,014 | | 375 | 8 | 13,863 | 191 | | | | 2 | 2,257 | 42 | 5 | | |
| | | | | | 1 | 4,921 | 194 | | | | | | | 6 | | |
| 7 | 18,971 | 7,673 | 5,727 | 309 | 6 | 26,305 | 598 | | | | | | | 7 | | |
| | | | | | | | | | | | | | | 8 | | |
| | | | | | 51 | 143,589 | 2,109 | | | | 9 | 16,706 | 256 | 10 | | |
| | | | | | 1 | 2,475 | 29 | | | | | | | 9 | | |
| 79 | 197,496 | 484,414 | | 2,396 | 552 | 121,677 | 5,509 | 338 | 120,164 | 5,007 | 16 | 8,754 | 265 | 12 | | |
| | | | | | 1 | 384 | 8 | | | | 1 | 2,397 | 46 | 13 | | |
| 3 | 7,375 | 10,080 | | 108 | | | | | | | 1 | 689 | 17 | 14 | | |
| 34 | 140,142 | 7,228 | 16,377 | 2,897 | 23 | 144,031 | 8,603 | | | | | | | 15 | | |
| | | | | | 1 | 393 | 7 | 1 | 475 | 8 | | | | 16 | | |
| | | | | | | | | | | | 71 | 16,423 | 455 | 17 | | |
| | | | | | | | | | | | | | | 18 | | |
| 2 | 1,959 | 166 | | 32 | 172 | 527,046 | 8,171 | 2 | 2,534 | 32 | 49 | 42,703 | 798 | 19 | | |
| | | | | | 9 | 30,325 | 545 | | | | 4 | 5,192 | 87 | 20 | | |
| | | | | | 6 | 20,576 | 440 | | | | | | | 21 | | |
| | | | | | | | | | | | 27 | 4,949 | 175 | 22 | | |
| | | | | | | | | | | | 2 | 1,936 | 25 | 23 | | |
| | | | | | 26 | 67,803 | 907 | 1 | 396 | 8 | 3 | 5,465 | 95 | 24 | | |
| 62 | 203,813 | 53,818 | 41,725 | 5,165 | 4 | 11,846 | 177 | | | | 21 | 67,273 | 864 | 25 | | |
| 2 | 6,081 | 14,980 | | 64 | 2 | 7,595 | 83 | | | | 9 | 27,106 | 441 | 26 | | |
| | | | | | | | | | | | 2 | 1,671 | 28 | 27 | | |
| 1 | 989 | | | 14 | | | | 1 | 3,007 | 37 | 9 | 8,479 | 131 | 28 | | |
| | | | | | 1 | 124 | 14 | | | | | | | 29 | | |
| 7 | 20,042 | 36,558 | | 247 | | | | | | | | | | 30 | | |
| 1 | 3,192 | 2,685 | 2,648 | 37 | | | | | | | | | | 31 | | |
| 4 | 1,978 | 812 | | 43 | 6 | 14,173 | 187 | | | | 9 | 2,697 | 142 | 32 | | |
| 9 | 23,810 | 8,232 | 14,764 | 352 | 1 | 2,615 | 42 | | | | 4 | 14,534 | 258 | 33 | | |
| 15 | 13,262 | 25,925 | | 319 | | | | | | | | | | 34 | | |
| 15 | 3,301 | 880 | | 303 | 16 | 1,056 | 76 | 15 | 1,251 | 74 | 25 | 5,400 | 550 | 35 | | |
| 1,140 | 156,554 | 19,435 | | 11,706 | 90 | 11,698 | 1,307 | 314 | 18,192 | 3,920 | 527 | 26,626 | 6,765 | 36 | | |
| 29 | 10,228 | 16,897 | | 260 | 3 | 6,248 | 72 | 1 | 3,122 | 86 | 9 | 9,736 | 161 | 37 | | |
| 2,292 | 1,596,748 | 1,047,770 | 36,256 | 60,246 | 230 | 522,903 | 11,423 | 1,961 | 417,270 | 14,125 | 4,646 | 1,392,856 | 42,873 | 38 | | |
| 1 | 1,566 | | | 24 | 14 | 25,827 | 786 | 1 | 84 | 11 | 14 | 9,991 | 517 | 39 | | |
| | | | | | | | | | | | | | | 40 | | |
| 3,749 | 2,442,979 | 1,763,929 | 117,497 | 85,389 | 1,814 | 3,619,689 | 70,126 | 2,671 | 593,971 | 23,745 | 5,680 | 1,900,567 | 58,845 | 41 | | |

8 GEORGE V, A. 1918

No. 5.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

RECAPIT-

| | Number. of Vessels. | Tons Register. | QUANTITY OF FREIGHT. | | Crew Number. |
|---------------|---------------------------|-------------------|----------------------|---------------------------|-----------------|
| | | | Tons Weight. | Tons Measure- ment. | |
| With Cargo— | | | | | |
| British | 1,928 | 4,691,442 | 1,375,673 | 313,758 | 160,067 |
| Canadian..... | 3,324 | 1,541,133 | 425,116 | 38,044 | 73,768 |
| Foreign..... | 3,749 | 2,442,979 | 1,763,929 | 117,497 | 85,389 |
| Total..... | 9,001 | 8,675,554 | 3,564,718 | 469,299 | 319,224 |

SESSIONAL PAPER No. 11a

from Sea, in the Dominion of Canada during the Fiscal Year, ended March 31, 1917
 ULATION.

| | Number of Vessels. | Tons Register. | QUANTITY OF FREIGHT. | | Crew Number. |
|------------------|--------------------------|-------------------|----------------------|---------------------------|-----------------|
| | | | Tons Weight. | Tons Measure- ment. | |
| In Ballast— | | | | | |
| British..... | 1,814 | 3,619,689 | | | 70,126 |
| Canadian..... | 2,671 | 593,971 | | | 23,745 |
| Foreign..... | 5,680 | 1,900,567 | | | 58,845 |
| Total..... | 10,165 | 6,114,227 | | | 152,716 |
| Grand total..... | 19,166 | 14,789,781 | 3,564,718 | 469,299 | 471,940 |

No. 6.—STATEMENT of Vessels, British, Canadian and Foreign entered Outwards

| Number. | Ports and Outports. | WITH CARGOES. | | | | | | | | | |
|---------|--------------------------|--------------------|----------------|----------------------|--------------------|---------------|--------------------|----------------|----------------------|--------------------|---------------|
| | | BRITISH. | | | | | CANADIAN. | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. |
| | | | | Tons Weight. | Tons Measure-ment. | | | | Tons Weight. | Tons Measure-ment. | |
| 1 | Albert, N.B. | 1 | 246 | 492 | 282 | 7 | 6 | 747 | 1,494 | 23 | |
| 2 | Alberton, P.E.I. | | | | | | | | | | |
| 3 | Alert Bay, B.C. | | | | | | | | | | |
| 4 | Amherst, N.S. | | | | | | | | | | |
| 5 | Annapolis Royal, N.S. | | | | | | 3 | 614 | 1,570 | 18 | |
| 6 | Anyox, B.C. | | | | | | 17 | 12,328 | 9,966 | 252 | |
| 7 | Arichat, N.S. | | | | | | 6 | 546 | 670 | 44 | |
| 8 | Baddeck, N.S. | | | | | | 53 | 2,995 | 28 | 654 | |
| 9 | Barrington Passage, N.S. | | | | | | 2 | 196 | 40 | 15 | |
| 10 | Barton, N.S. | | | | | | 19 | 2,063 | 2 | 3,412 | |
| 11 | Bathurst, N.B. | 5 | 10,334 | | | 203 | | | | | |
| 12 | Bear River, N.S. | 1 | 268 | | 547 | 7 | 19 | 2,651 | | 125 | |
| 13 | Belleveau's Cove, N.S. | 3 | 597 | | 1,839 | 18 | 2 | 154 | | 307 | |
| 14 | Bridgewater, N.S. | 13 | 3,588 | 7,210 | | 85 | 18 | 3,572 | 6,494 | 104 | |
| 15 | Buetouhe, N.B. | | | | | | | | | | |
| 16 | Campbellton, N.B. | 10 | 27,307 | | 57,900 | 375 | | | | | |
| 17 | Campo Bello, N.B. | | | | | | 2 | 39 | 19 | 9 | |
| 18 | Canning, N.S. | | | | | | 2 | 596 | | 14 | |
| 19 | Canso, N.S. | 4 | 270 | 472 | | 21 | 12 | 1,113 | 1,128 | 40 | |
| 20 | Caraquet, N.B. | | | | | | | | | | |
| 21 | Cardigan, P.E.I. | 1 | 76 | 111 | 2 | 6 | 5 | 473 | 712 | 28 | |
| 22 | Charlottetown, P.E.I. | 8 | 5,610 | 3,420 | 12 | 106 | 44 | 27,924 | 5,717 | 270 | |
| 23 | Chatham, N.B. | 18 | 24,731 | | 59,452 | 295 | | | | 1,517 | |
| 24 | Chemainus, B.C. | 1 | 1,920 | | 3,183 | 21 | 18 | 3,937 | 1,933 | 151 | |
| 25 | Chester, N.S. | | | | | | 3 | 272 | 475 | 15 | |
| 26 | Cheticamp, N.S. | | | | | | | | | | |
| 27 | Chicoutimi, Que. | 9 | 20,322 | 46,151 | | 344 | | | | | |
| 28 | Church Point, N.S. | | | | | | 9 | 1,114 | | 2,288 | |
| 29 | Clark's Harbour, N.S. | | | | | | | | | | |
| 30 | Clementsport, N.S. | | | | | | 12 | 1,576 | 3,315 | 4,144 | |
| 31 | Dalhousie, N.B. | 4 | 7,390 | | 20,457 | 98 | | | | | |
| 32 | Digby, N.S. | | | | | | 14 | 7,456 | 678 | 150 | |
| 33 | Dorechester, N.B. | 1 | 296 | | 783 | 6 | 1 | 124 | | 330 | |
| 34 | Fredericton, N.B. | | | | | | | | | | |
| 35 | Gaspé, Que. | 10 | 9,276 | 200 | 8,200 | 162 | 11 | 2,000 | | 2,600 | |
| 36 | Georgetown, P.E.I. | 7 | 384 | 375 | 1 | 31 | | | | | |
| 37 | Glace Bay, N.S. | | | | | | 82 | 4,747 | 8,390 | 320 | |
| 38 | Halifax, N.S. | 489 | 1,552,260 | 482,772 | 270,877 | 37,969 | 445 | 87,100 | 34,875 | 4,420 | |
| 39 | Hantsport, N.S. | | | | | | | | | | |
| 40 | Hillsboro, N.B. | | | | | | 8 | 7,574 | 10,250 | | |
| 41 | Indian Island, N.B. | | | | | | | | | | |
| 42 | Isaacs Harbour, N.S. | | | | | | 1 | 99 | 145 | 5 | |
| 43 | Joggins Mines, N.S. | 4 | 781 | 1,550 | | 21 | 10 | 958 | 1,687 | 37 | |
| 44 | Kinsport, N.S. | | | | | | 6 | 3,608 | 3,272 | 107 | |
| 45 | Ladner, B.C. | | | | | | 1 | 128 | 154 | 8 | |
| 46 | Ladysmith, B.C. | | | | | | 45 | 12,474 | 11,065 | 255 | |
| 47 | LaHave, N.S. | 3 | 1,000 | 1,735 | | 20 | 17 | 1,674 | 3,015 | 103 | |
| 48 | Liverpool, N.S. | 9 | 1,814 | 2,896 | | 52 | 49 | 6,647 | 11,754 | 266 | |
| 49 | Lockeport, N.S. | | | | | | 51 | 1,936 | 1,002 | 466 | |
| 50 | Lord's Cove, N.S. | | | | | | 98 | 776 | 1,108 | 196 | |
| 51 | Louisburg, N.S. | 145 | 240,684 | 473,470 | | 4,294 | 131 | 93,365 | 161,591 | 2,230 | |
| 52 | Lower East Pubnico, N.S. | | | | | | 11 | 713 | 322 | 130 | |
| 53 | Lunenburg, N.S. | 4 | 988 | 1,735 | | 26 | 44 | 6,073 | 10,710 | 253 | |
| 54 | Magdalen Island, Que. | 7 | 533 | 701 | | 39 | | | | | |
| 55 | Mahone Bay, N.S. | | | | | | 7 | 870 | 1,540 | 41 | |
| 56 | Maitland, N.S. | | | | | | 7 | 795 | 1,263 | 35 | |
| 57 | Meteghan River, N.S. | | | | | | 9 | 975 | 7 | 2,033 | |
| 58 | Moneton, N.B. | 6 | 14,952 | 29,326 | | 190 | 1 | 281 | 550 | 5 | |

No. 6.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outwards

| Number. | Ports and Outports. | WITH CARGOES. | | | | | | | | | |
|---------|--------------------------|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|----------------------|-------------------|---------------|
| | | BRITISH. | | | | | CANADIAN. | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. |
| | | | | Tons Weight. | Tons Measurement. | | | | Tons Weight. | Tons Measurement. | |
| 59 | Montague Bridge, P.E.I. | 2 | 90 | 91 | | 9 | 4 | 361 | 665 | | 23 |
| 60 | Montreal, Que. | 506 | 1,805,977 | 2,276,751 | 549,430 | 36,391 | 7 | 6,967 | 7,971 | 1,840 | 112 |
| 61 | Moose Factory, Man. | | | | | | 1 | 1,541 | 9 | 2 | 50 |
| 62 | Murray Harbour, P.E.I. | | | | | | | | | | |
| 63 | Nanaimo, B.C. | 38 | 27,761 | 7,805 | | 1,241 | 135 | 22,282 | 26,993 | | 1,210 |
| 64 | Newcastle, N.B. | 1 | 2,263 | | 5,000 | 26 | 1 | 99 | | 250 | 5 |
| 65 | Newport, B.C. | 1 | 1,142 | 2,500 | | 16 | 115 | 38,578 | 60,486 | | 1,111 |
| 66 | New Westminster, B.C. | 1 | 2,577 | 1,240 | | 55 | 4 | 351 | 398 | | 26 |
| 67 | North East Harbour, N.S. | | | | | | | | | | |
| 68 | North Head, N.B. | | | | | | 48 | 1,394 | 708 | | 122 |
| 69 | North Sydney, N.S. | 225 | 119,745 | 1,235 | | 7,411 | | | | | |
| 70 | Ocean Falls, B.C. | 1 | 1,625 | 20 | | 78 | | | | | |
| 71 | Parrsboro, N.S. | 20 | 15,255 | 24,350 | | 221 | 46 | 10,145 | 16,830 | | 248 |
| 72 | Paspebiac, Que. | 5 | 8,583 | 43 | 15,906 | 103 | 2 | 259 | | 545 | 7 |
| 73 | Percé, Que. | 3 | 123 | 439 | | 19 | 1 | 92 | 213 | | 6 |
| 74 | Pictou, N.S. | 4 | 10,248 | 18,000 | | 119 | 1 | 92 | 134 | | 4 |
| 75 | Port Alberni, B.C. | | | | | | 3 | 1,197 | | 2,988 | 12 |
| 76 | Port Clyde, N.S. | 1 | 272 | 406 | | 6 | 1 | 97 | | 170 | 5 |
| 77 | Port Hawkesbury, N.S. | 1 | 248 | 380 | | 6 | 40 | 21,522 | 2,616 | | 1,126 |
| 78 | Port Hood, N.S. | | | | | | | | | | |
| 79 | Port La Tour, N.S. | | | | | | | | | | |
| 80 | Port Mulgrave, N.S. | 1 | 2,094 | 1,449 | | 24 | | | | | |
| 81 | Port Simpson, B.C. | | | | | | | | | | |
| 82 | Port Wade, N.S. | | | | | | 5 | 490 | 350 | 400 | 30 |
| 83 | Port Williams, N.S. | | | | | | 1 | 299 | 270 | | 7 |
| 84 | Powell River, B.C. | 15 | 41,446 | 21,574 | 6,657 | 624 | 1 | 1,904 | 7 | | 75 |
| 85 | Prince Rupert, B.C. | 34 | 52,583 | 2,335 | | 2,567 | 79 | 80,912 | 13,378 | | 3,330 |
| 86 | Pugwash, N.S. | | | | | | | | | | |
| 87 | Quebec, Que. | 107 | 283,116 | 28,477 | 29,508 | 5,467 | | | | | |
| 88 | Richibucto, N.B. | | | | | | | | | | |
| 89 | Rimouski, Que. | 3 | 4,854 | 5,628 | | 67 | 7 | 6,186 | 10,703 | | 114 |
| 90 | River Hebert, N.S. | 1 | 209 | 400 | | 6 | | | | | |
| 91 | St. Andrews, N.B. | | | | | | 124 | 4,435 | 1,656 | | 358 |
| 92 | St. George, N.B. | 1 | 1,808 | | 6,635 | 24 | 3 | 147 | | 240 | 9 |
| 93 | St. John, N.B. | 206 | 710,957 | 946,413 | 185,332 | 13,813 | 78 | 4,549 | 1,054 | 10,350 | 195 |
| 94 | St. Martins, N.B. | 1 | 209 | | 573 | 6 | 19 | 8,376 | | 19,452 | 78 |
| 95 | St. Peters, N.S. | | | | | | | | | | |
| 96 | St. Stephen, N.B. | | | | | | 4 | 30 | 48 | | 9 |
| 97 | Sackville, N.B. | | | | | | | | | | |
| 98 | Salmon River, N.S. | 1 | 71 | | 966 | 5 | 4 | 188 | 192 | | 14 |
| 99 | Sandy Cove, N.S. | | | | | | | | | | |
| 100 | Sandy Point, N.S. | 6 | 1,913 | 2,135 | | 52 | 13 | 1,789 | 1,180 | 1,755 | 76 |
| 101 | Shediac, N.B. | | | | | | 5 | 467 | | | 21 |
| 102 | Sheet Harbour, N.S. | | | | | | 1 | 17 | | | 4 |
| 103 | Shelburne, N.S. | 5 | 576 | 490 | 490 | 29 | 12 | 1,371 | 150 | 1,239 | 68 |
| 104 | Sherbrooke, N.S. | 1 | 357 | | | 6 | 2 | 456 | | | 11 |
| 105 | Shippegan, N.B. | | | | | | 2 | 186 | 400 | | 9 |
| 106 | Shusharti Bay, B.C. | | | | | | | | | | |
| 107 | Sidney, B.C. | | | | | | 10 | 52 | 37 | | 21 |
| 108 | Sorel, Que. | | | | | | 4 | 427 | 413 | | 21 |
| 109 | Souris, P.E.I. | 2 | 142 | 150 | 21 | 11 | 5 | 430 | 401 | 96 | 25 |
| 110 | Steveston, B.C. | | | | | | 43 | 1,242 | 873 | | 152 |
| 111 | Stickeen, B.C. | | | | | | | | | | |
| 112 | Summerside, P.E.I. | 1 | 276 | 349 | | 20 | 17 | 5,534 | 1,910 | | 359 |
| 113 | Sydney, N.S. | 429 | 441,786 | 882,330 | | 7,572 | 163 | 76,185 | 143,393 | | 2,194 |
| 114 | Three Rivers, Que. | 14 | 32,934 | 15,886 | | 571 | 5 | 8,660 | 15,934 | | 124 |
| 115 | Tignish, P.E.I. | | | | | | | | | | |
| 116 | Truro, N.S. | | | | | | 2 | 255 | | | 10 |

SESSIONAL PAPER No. 11a

for Sea at each Port and Outport during the Fiscal Year ended March 31, 1917.

| FOREIGN. | | | | | IN BALLAST. | | | | | | | | | Number. |
|--------------------|--------------|----------------------|---------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|---------|
| Number of Vessels. | | Quantity of Freight. | | Crew. Number. | BRITISH. | | | CANADIAN. | | | FOREIGN. | | | |
| | | | | | Number of Vessels. | Tons Register. | Crew. Number. | Number of Vessels. | Tons Register. | Crew. Number. | Number of Vessels. | Tons Register. | Crew. Number. | |
| Tons Register. | Tons Weight. | Tons Measure-ment. | | | | | | | | | | | | |
| 71 | 67,028 | 74,848 | | 667 | | | | 1 | 11 | 4 | 3 | 274 | 66 | 117 |
| 365 | 302,522 | 212,788 | 63,569 | 11,688 | 45 | 95,930 | 3,626 | 165 | 2,553 | 86 | 43 | 3,242 | 389 | 118 |
| 228 | 262,519 | 1,591 | 261 | 12,224 | 114 | 359,694 | 14,421 | 346 | 36,087 | 1,553 | 313 | 310,178 | 6,337 | 119 |
| | | | | | | | | | 232,472 | 8,779 | 541 | 744,601 | 26,614 | 120 |
| 15 | 4,414 | 2,338 | 4,243 | 108 | | | | | | | | | | 121 |
| 62 | 1,096 | 4,994 | | 168 | | | | 18 | 335 | 46 | 10 | 157 | 29 | 122 |
| 48 | 37,011 | 53,386 | 5,001 | 232 | | | | | | | | | | 123 |
| 98 | 8,109 | 4,707 | | 982 | | | | 59 | 2,511 | 633 | 25 | 4,036 | 908 | 124 |
| | | | | | | | | | | | | | | 125 |
| | | | | | | | | | | | | | | 126 |
| 5,092 | 2,545,754 | 2,070,825 | 611,406 | 76,191 | 739 | 1,316,931 | 39,754 | 2,999 | 541,339 | 32,883 | 3,979 | 1,889,453 | 71,718 | |

8 GEORGE V, A. 1918

No. 7.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outward^S

ABSTRACT BY

| Number. | Countries to which Departed. | WITH CARGOES. | | | | | | | | | |
|---------|------------------------------|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|----------------------|-------------------|---------------|
| | | BRITISH. | | | | | CANADIAN. | | | | |
| | | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. |
| | | | | Tons Weight. | Tons Measurement. | | | | Tons Weight. | Tons Measurement. | |
| 1 | United Kingdom..... | 761 | 2,903,956 | 2,048,596 | 704,287 | 63,984 | 107 | 21,120 | 32,704 | 2,232 | 588 |
| 2 | Australia..... | 65 | 268,748 | 86,870 | 103,738 | 6,946 | | | | | |
| 3 | British South Africa..... | 19 | 53,395 | 79,493 | 33,800 | 846 | | | | | |
| 4 | British Guiana..... | 26 | 73,984 | 114,250 | | 2,445 | 3 | 294 | 479 | 672 | 16 |
| 5 | British West Indies..... | 15 | 4,090 | 5,540 | 3,425 | 109 | 45 | 6,475 | 9,357 | 4,518 | 286 |
| 6 | British Oceania, other..... | 4 | 15,360 | 6,202 | 3,183 | 459 | | | | | |
| 7 | Bermuda..... | 1 | 7,029 | | | 234 | | | | | |
| 8 | Egypt..... | 1 | 2,749 | 5,106 | | 33 | | | | | |
| 9 | Fiji Islands..... | | | | | | | | | | |
| 10 | Gibraltar..... | 11 | 28,202 | 51,480 | | 352 | | | | | |
| 11 | Newfoundland..... | 687 | 233,657 | 101,707 | 15 | 12,888 | 381 | 114,945 | 163,335 | 142 | 4,974 |
| 12 | New Zealand..... | 3 | 18,293 | | | 358 | | | | | |
| 13 | Argentina..... | 2 | 1,006 | 1,994 | | 14 | | | | | |
| 14 | Azores and Madeira..... | 4 | 1,293 | 2,511 | | 28 | | | | | |
| 15 | Brazil..... | 6 | 1,584 | 1,841 | | 40 | 1 | 308 | 350 | | 7 |
| 16 | Canary Islands..... | 1 | 384 | | 939 | 8 | 1 | 449 | | 1,047 | 9 |
| 17 | Chili..... | | | | | | | | | | |
| 18 | China..... | 29 | 188,416 | 53,870 | 76,097 | 9,677 | 1 | 900 | 19 | | 14 |
| 19 | Cuba..... | 3 | 822 | 975 | | 21 | 15 | 6,412 | 6,350 | 3,104 | 172 |
| 20 | Denmark..... | | | | | | | | | | |
| 21 | Danish West Indies..... | | | | | | | | | | |
| 22 | France..... | 242 | 661,576 | 1,116,201 | 94,415 | 9,427 | 12 | 12,822 | 31,930 | 300 | 245 |
| 23 | Greece..... | 3 | 10,758 | 7,156 | | 167 | | | | | |
| 24 | Holland..... | | | | | | | | | | |
| 25 | Italy..... | 5 | 11,590 | 21,745 | | 151 | | | | | |
| 26 | Japan..... | 3 | 14,921 | 1,580 | 4,905 | 584 | | | | | |
| 27 | Mexico..... | | | | | | | | | | |
| 28 | Norway..... | | | | | | | | | | |
| 29 | Panama..... | | | | | | | | | | |
| 30 | Peru..... | 7 | 19,200 | 3,446 | 186 | 237 | 1 | 180 | 273 | | 14 |
| 31 | Philippines..... | 9 | 56,326 | 6,231 | 938 | 976 | | | | | |
| 32 | Portugal..... | | | | | | | | | | |
| 33 | Porto Rico..... | | | | | | 28 | 3,045 | 4,555 | 1,147 | 153 |
| 34 | Russia..... | 3 | 7,669 | 1,650 | | 104 | 8 | 22,471 | 41,102 | 21,335 | 382 |
| 35 | St. Pierre..... | 9 | 621 | 985 | 21 | 46 | 13 | 1,022 | 1,067 | 250 | 68 |
| 36 | San Domingo..... | | | | | | | | | | |
| 37 | Sea Fisheries..... | 40 | 4,474 | 2,085 | | 1,029 | 400 | 22,666 | 2,414 | | 5,039 |
| 38 | Spain..... | | | | | | | | | | |
| 39 | Sweden..... | | | | | | | | | | |
| 40 | United States..... | 647 | 966,781 | 306,726 | 31,684 | 40,107 | 2,228 | 1,447,107 | 594,711 | 74,468 | 56,146 |
| 41 | Sea Cable and Admiralty | 300 | 959,927 | 1,444,297 | 304,607 | 16,014 | 3 | 6,789 | 10,467 | | 75 |
| | Total..... | 2,906 | 6,516,811 | 5,472,537 | 1,362,240 | 167,284 | 3,247 | 1,667,005 | 899,113 | 109,215 | 68,188 |

SESSIONAL PAPER No. 11a

for Sea, in the Dominion of Canada during the Fiscal Year ended March 31, 1917.

COUNTRIES.

| FOREIGN. | | | | | IN BALLAST. | | | | | | | | | Number. |
|--------------------|----------------|----------------------|-------------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|--------------------|----------------|---------------|---------|
| FOREIGN. | | | | | BRITISH. | | | CANADIAN. | | | FOREIGN. | | | |
| Number of Vessels. | Tons Register. | Quantity of Freight. | | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | Number of Vessels. | Tons Register. | Crew, Number. | |
| | | Tons Weight. | Tons Measurement. | | | | | | | | | | | |
| 494 | 383,439 | 490,134 | 306,104 | 6,423 | 36 | 224,325 | 7,783 | 82 | 3,886 | 244 | 25 | 7,300 | 235 | 1 |
| 9 | 7,555 | 968 | 9,811 | 96 | 4 | 19,323 | 663 | | | | 4 | 3,708 | 56 | 2 |
| 19 | 12,761 | 18,410 | 1,478 | 381 | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | 4 |
| | | | | | | | | | | | | | | 5 |
| | | | | | | | | | | | | | | 6 |
| | | | | | | | | | | | | | | 7 |
| 2 | 1,182 | | 2,847 | 19 | | | | | | | 1 | 491 | 10 | 8 |
| 29 | 103,230 | 174,464 | | 1,322 | | | | | | | | | | 9 |
| 26 | 6,077 | 5,422 | | 341 | 275 | 233,505 | 4,966 | 189 | 60,366 | 2,725 | 89 | 194,821 | 2,620 | 10 |
| | | | | | | | | | | | | | | 11 |
| 18 | 22,101 | 7,980 | 29,716 | 262 | | | | | | | | | | 12 |
| | | | | | | | | | | | | | | 13 |
| | | | | | | | | | | | | | | 14 |
| | | | | | | | | | | | | | | 15 |
| 3 | 1,795 | 1,119 | 2,879 | 21 | | | | | | | | | | 16 |
| 2 | 6,384 | 1,500 | | 74 | | | | | | | | | | 17 |
| 13 | 54,438 | 864 | 3,777 | 1,148 | 30 | 184,269 | 8,578 | | | | 13 | 56,446 | 1,186 | 18 |
| 8 | 3,903 | 4,744 | 2,146 | 59 | | | | | | | | | | 19 |
| 17 | 41,475 | | | 635 | | | | | | | | | | 20 |
| 1 | 161 | 100 | | 11 | | | | | | | | | | 21 |
| 88 | 129,656 | 211,271 | 61,647 | 2,094 | 15 | 37,128 | 461 | 1 | 63 | 9 | 11 | 13,801 | 196 | 22 |
| | | | | | | | | | | | | | | 23 |
| 51 | 95,878 | 43,941 | | 1,185 | | | | | | | | | | 24 |
| 17 | 49,279 | 108,091 | | 607 | | | | | | | | | | 25 |
| 20 | 57,021 | 12,489 | 3,832 | 1,186 | | | | | | | 34 | 125,816 | 3,613 | 26 |
| | | | | | | | | 5 | 7,573 | 120 | | | | 27 |
| 22 | 53,735 | 7,430 | | 604 | | | | | | | | | | 28 |
| | | | | | 1 | 124 | 14 | | | | | | | 29 |
| 1 | 1,188 | 2,186 | 4,109 | 36 | | 6,522 | 108 | | | | | | | 30 |
| | | | | | 1 | | | | | | | | | 31 |
| 4 | 1,951 | 3,300 | 1,292 | 38 | | | | | | | | | | 32 |
| | | | | | | | | | | | | | | 33 |
| 37 | 104,991 | 158,815 | 32,742 | 1,610 | | | | | | | 2 | 6,265 | 116 | 34 |
| 19 | 4,104 | 5,150 | | 426 | 7 | 493 | 36 | 2 | 202 | 23 | 26 | 5,530 | 559 | 35 |
| | | | | | | | | | | | 11 | 10,094 | 245 | 36 |
| 562 | 30,731 | 13,997 | | 7,873 | 146 | 16,275 | 2,419 | 1,395 | 49,832 | 12,389 | 1,302 | 50,293 | 14,085 | 37 |
| 2 | 2,037 | 3,446 | | 32 | | | | | | | | | | 38 |
| 3 | 7,700 | | | 73 | | | | | | | | | | 39 |
| 3,616 | 1,358,224 | 795,004 | 149,026 | 49,211 | 200 | 526,728 | 13,169 | 1,320 | 418,972 | 17,311 | 2,459 | 1,414,418 | 48,737 | 40 |
| 9 | 4,758 | | | 424 | 24 | 68,239 | 1,557 | 5 | 445 | 62 | 2 | 470 | 60 | 41 |
| 5,092 | 2,545,754 | 2,070,825 | 611,406 | 76,191 | 739 | 1,316,931 | 39,754 | 2,999 | 541,339 | 32,883 | 3,979 | 1,889,453 | 71,718 | |

8 GEORGE V, A. 1918

No. 7.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outwards

RECAPITU

| | Number of Vessels. | Tons Register. | QUANTITY OF FREIGHT. | | Crew Number. |
|---------------|--------------------------|-------------------|----------------------|---------------------------|-----------------|
| | | | Tons Weight. | Tons Measure- ment. | |
| With Cargoes— | | | | | |
| British..... | 2,906 | 6,516,811 | 5,472,537 | 1,362,240 | 167,284 |
| Canadian..... | 3,247 | 1,667,005 | 899,113 | 109,215 | 68,188 |
| Foreign..... | 5,092 | 2,545,754 | 2,070,825 | 611,406 | 76,191 |
| Total..... | 11,245 | 10,729,570 | 8,442,475 | 2,082,861 | 311,663 |

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for Sea, in the Dominion of Canada, during the Fiscal Year ended March 31, 1917.

LATION.

| | Number of Vessels. | Tons Register. | QUANTITY OF FREIGHT. | | Crew Number. |
|------------------|--------------------------|-------------------|----------------------|---------------------------|-----------------|
| | | | Tons Weight. | Tons Measure- ment. | |
| In Ballast— | | | | | |
| British..... | 739 | 1,316,931 | | | 39,754 |
| Canadian..... | 2,999 | 541,339 | | | 32,883 |
| Foreign..... | 3,979 | 1,889,453 | | | 71,718 |
| Total..... | 7,717 | 3,747,723 | | | 144,355 |
| Grand Total..... | 18,962 | 14,477,293 | 8,442,475 | 2,082,861 | 456,018 |

No. 8.—SUMMARY STATEMENT OF Sea-going Vessels entered and cleared at each Port and Outport in the Dominion of Canada during the Twelve Months ended March 31, 1917.

RECAPITULATION BY PORTS AND OUTPORTS.

| Ports and Outports. | VESSELS ARRIVED. | | | | VESSELS DEPARTED. | | | | Total. | |
|--------------------------|------------------|--------|----------|--------|-------------------|---------|----------|--------|--------|---------|
| | British. | | Foreign. | | British. | | Foreign. | | | |
| | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. | | |
| Albert, N.B. | 4 | 531 | | | 4 | 531 | 7 | 993 | 7 | 993 |
| Alberton, P.E.I. | 2 | 32 | | | 2 | 32 | 3 | 44 | 3 | 44 |
| Alert Bay, B.C. | 3 | 355 | 36 | 5,606 | 39 | 5,961 | 3 | 5,500 | 39 | 5,855 |
| Amherst, N.S. | 5 | 418 | 3 | 578 | 5 | 996 | 4 | 2,091 | 4 | 2,091 |
| Annapolis Royal, N.S. | 5 | 846 | 2 | 18 | 7 | 864 | 2 | 18 | 5 | 632 |
| Arrochar, N.S. | 53 | 22,591 | 114 | 88,456 | 167 | 111,047 | 68 | 51,614 | 175 | 117,134 |
| Baddeck, N.S. | 77 | 2,857 | 15 | 1,223 | 92 | 4,080 | 84 | 2,131 | 100 | 3,505 |
| Barrington Passage, N.S. | 41 | 2,104 | 12 | 3,345 | 53 | 5,449 | 56 | 6,288 | 78 | 9,344 |
| Barton, N.S. | 8 | 296 | 69 | 1,483 | 77 | 1,739 | 8 | 256 | 77 | 1,739 |
| Bathurst, N.B. | 19 | 2,036 | 1 | 92 | 20 | 2,128 | 19 | 2,063 | 19 | 2,063 |
| Bear River, N.S. | 20 | 10,521 | 17 | 10,449 | 37 | 20,970 | 16 | 10,477 | 33 | 20,926 |
| Belleveau's Cove, N.S. | 12 | 1,328 | 1 | 261 | 13 | 1,589 | 20 | 2,919 | 20 | 2,919 |
| Bridgetown, N.S. | 3 | 421 | | | 3 | 421 | 5 | 751 | 5 | 751 |
| Bridgewater, N.S. | 3 | 352 | | | 3 | 352 | | | | |
| Buctouche, N.B. | 10 | 2,105 | 54 | 21,297 | 64 | 23,402 | 33 | 7,447 | 53 | 20,779 |
| Campbellton, N.B. | 5 | 11,232 | 15 | 16,009 | 20 | 27,241 | 10 | 27,307 | 8 | 1,428 |
| Campo Bello, N.B. | 117 | 19,183 | 548 | 12,487 | 665 | 31,670 | 119 | 20,515 | 39 | 41,053 |
| Canning, N.S. | 2 | 431 | | | 2 | 431 | 2 | 596 | 2 | 596 |
| Canso, N.S. | 128 | 16,548 | 240 | 12,152 | 368 | 28,700 | 130 | 15,716 | 241 | 28,051 |
| Carouac, N.B. | 158 | 2,337 | | | 158 | 2,337 | 157 | 2,249 | 157 | 2,249 |
| Cardigan, P.E.I. | 54 | 30,839 | 13 | 5,109 | 67 | 35,948 | 56 | 34,955 | 56 | 34,955 |
| Charlottetown, P.E.I. | 8 | 18,482 | 93 | 32,291 | 101 | 50,773 | 18 | 24,731 | 108 | 51,621 |
| Chatham, N.B. | 6 | 263 | 51 | 3,618 | 57 | 3,881 | 22 | 6,119 | 55 | 5,884 |
| Chester, N.S. | 32 | 551 | 2 | 20 | 34 | 571 | 25 | 513 | 8 | 120 |
| Chicoutimi, Que. | 8 | 18,494 | 7 | 10,678 | 15 | 29,172 | 9 | 20,322 | 14 | 19,865 |
| Chicoutimi, N.S. | | | | | | | | | 1 | 97 |
| Church Point, N.S. | 6 | 980 | | | 6 | 980 | 9 | 1,114 | 9 | 1,114 |
| Clarks Harbour, N.S. | 6 | 274 | 66 | 969 | 72 | 1,243 | 6 | 969 | 72 | 1,243 |
| Clementsport, N.S. | 10 | 1,337 | | | 10 | 1,337 | 12 | 1,576 | 12 | 1,576 |
| Dalhousie, N.B. | 13 | 3,720 | 15 | 1,183 | 28 | 4,903 | 4 | 7,390 | 11 | 10,224 |
| Digby, N.S. | 2 | 968 | | | 2 | 968 | 14 | 7,456 | 687 | 8,143 |
| Dorchester, N.B. | 3 | 952 | 12 | 2,574 | 15 | 3,526 | 3 | 260 | 260 | 680 |
| Fredericton, N.B. | 2 | 186 | | | 2 | 186 | 3 | 952 | 3 | 3,526 |
| Freeport, N.S. | | | | | | | | | 12 | 2,574 |

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| | 6 | 755 | 18 | 13,404 | 24 | 14,159 | 21 | 11,276 | 31 | 19,367 | 52 | 31,243 |
|--------------------------|-----|-----------|-----|---------|-------|-----------|-------|-----------|-----|---------|-------|-----------|
| Gaspé, Que. | 6 | 436 | 6 | | 6 | 436 | 7 | 384 | 4 | | 7 | 3,753 |
| Georgetown, P.E.I. | 6 | 7,685 | 4 | | 6 | 7,685 | 7 | 8,390 | 4 | | 3 | 7,760 |
| Glace Bay, N.S. | 149 | 153 | 4 | 62 | 153 | 7,757 | 159 | 8,390 | 4 | 62 | 163 | 8,452 |
| Halifax, N.S. | 808 | 1,849,608 | 415 | 531,908 | 1,283 | 2,381,516 | 1,033 | 1,938,866 | 325 | 419,907 | 1,358 | 2,355,773 |
| Hantsport, N.S. | 3 | 1,049 | 16 | 4,736 | 19 | 5,785 | 8 | 7,574 | 16 | 4,308 | 16 | 4,308 |
| Hillshoro, N.B. | 5 | 4,612 | 8 | 3,352 | 13 | 7,964 | 8 | 7,574 | 11 | 4,747 | 19 | 12,321 |
| Indian Island, N.B. | 5 | 8 | 100 | 3,352 | 13 | 7,964 | 8 | 7,574 | 11 | 4,747 | 19 | 12,321 |
| Isaacs Harbour, N.S. | 3 | 190 | 15 | 1,118 | 18 | 844 | 5 | 149 | 15 | 654 | 20 | 803 |
| Joggin's Mines, N.S. | 2 | 255 | 5 | 1,064 | 7 | 1,319 | 14 | 1,739 | 6 | 1,201 | 20 | 2,940 |
| Kentville, N.S. | 2 | 257 | 2 | 1,064 | 7 | 257 | 6 | 3,698 | 1 | 145 | 7 | 3,753 |
| Kingsport, N.S. | 3 | 2,327 | 1 | 145 | 5 | 2,472 | 6 | 3,698 | 1 | 145 | 7 | 3,753 |
| Ladner, B.C. | 3 | 136 | 3 | | 3 | 136 | 1 | 128 | 2 | 632 | 3 | 760 |
| Lady-smith, B.C. | 101 | 15,576 | 189 | 59,205 | 260 | 74,781 | 85 | 14,970 | 165 | 57,288 | 250 | 72,258 |
| La Have, N.S. | 100 | 10,291 | 18 | 1,445 | 118 | 11,736 | 100 | 9,161 | 16 | 1,085 | 116 | 10,246 |
| Lewis, Que. | 1 | 3,040 | 1 | | 1 | 3,046 | | | | | | |
| Liverpool, N.S. | 13 | 2,056 | 183 | 16,124 | 196 | 18,180 | 59 | 8,481 | 197 | 21,687 | 256 | 30,168 |
| Lockeport, N.S. | 47 | 2,073 | 88 | 2,242 | 106 | 4,315 | 51 | 1,936 | 40 | 2,302 | 91 | 4,238 |
| Lord's Cove, N.B. | 334 | 4,880 | 122 | 1,753 | 456 | 6,633 | 215 | 4,011 | 100 | 1,614 | 315 | 3,625 |
| Louisburg, N.S. | 272 | 306,821 | 274 | 167,333 | 546 | 474,154 | 296 | 355,769 | 278 | 185,921 | 574 | 541,690 |
| Lower East Pulnico, N.S. | 30 | 1,622 | 39 | 2,139 | 69 | 3,781 | 32 | 1,668 | 20 | 2,190 | 73 | 3,858 |
| Lunenburg, N.S. | 319 | 27,888 | 32 | 2,700 | 351 | 30,588 | 325 | 25,633 | 33 | 3,007 | 358 | 28,640 |
| Magdalen Islands, Que. | 27 | 2,061 | 9 | 925 | 36 | 2,986 | 7 | 533 | 13 | 857 | 20 | 1,490 |
| Mallone Bay, N.S. | 19 | 1,750 | 2 | | 19 | 1,750 | 13 | 1,281 | 13 | | 13 | 1,281 |
| Maitland, N.S. | 2 | 198 | | | 2 | 198 | 7 | 795 | | | 7 | 795 |
| Meteghan River, N.S. | 5 | 659 | 5 | | 5 | 659 | 9 | 975 | | | 9 | 975 |
| Moncton, N.B. | 8 | 12,478 | 6 | 3,158 | 14 | 15,636 | 7 | 15,233 | 6 | 3,158 | 13 | 18,391 |
| Montague Bridge, P.E.I. | 2 | 134 | 2 | | 2 | 134 | 6 | 451 | | | 6 | 451 |
| Montréal, Que. | 510 | 1,819,624 | 25 | 78,626 | 535 | 1,898,250 | 517 | 1,819,143 | 82 | 141,430 | 599 | 1,960,573 |
| Moose Factory, Man. | 1 | 1,541 | 1 | | 1 | 1,541 | 1 | 1,541 | | | 1 | 1,541 |
| Murray Harbour, P.E.I. | 138 | 28,649 | 653 | 267,100 | 791 | 295,749 | 239 | 113 | 681 | 309,582 | 920 | 366,810 |
| Nainaimo, B.C. | 1 | 2,263 | 28 | 12,623 | 28 | 14,896 | 2 | 2,362 | 45 | 16,961 | 47 | 19,323 |
| Newcastle, N.B. | 80 | 27,184 | 62 | 15,878 | 151 | 43,062 | 131 | 42,823 | 61 | 16,335 | 192 | 59,158 |
| Newport, B.C. | 2 | 88 | 1 | 1,472 | 3 | 1,560 | 6 | 2,931 | 27 | 5,597 | 33 | 8,528 |
| New Campbellton, N.S. | 11 | 3,471 | 26 | 5,472 | 37 | 8,943 | 6 | 2,931 | 27 | 5,597 | 33 | 8,528 |
| New Westminster, B.C. | 3 | 82 | 4 | 250 | 7 | 332 | 3 | 99 | 5 | 616 | 8 | 715 |
| North East Harbour, N.S. | 189 | 23,773 | 28 | 490 | 217 | 94,263 | 182 | 22,361 | 22 | 394 | 204 | 22,755 |
| North Head, N.B. | 927 | 248,029 | 101 | 59,625 | 1,028 | 307,657 | 660 | 273,126 | 100 | 60,463 | 760 | 335,589 |
| North Sydney, N.S. | 7 | 4,132 | 8 | 3,657 | 15 | 9,789 | 3 | 4,077 | 10 | 9,273 | 13 | 13,350 |
| Ocean Falls, B.C. | 33 | 18,671 | 62 | 19,507 | 95 | 38,178 | 67 | 25,179 | 85 | 24,637 | 152 | 49,816 |
| Parrishoro, N.S. | 4 | 8,539 | 30 | 12,137 | 34 | 20,076 | 7 | 8,842 | 25 | 10,856 | 32 | 19,698 |
| Paspheiac, Que. | 2 | 124 | 1 | 58 | 3 | 152 | 4 | 215 | | | 4 | 215 |
| Perce, Que. | 2 | 5,786 | 10 | 5,786 | 10 | 11,574 | 5 | 10,340 | 8 | 7,564 | 13 | 17,904 |
| Pictou, N.S. | 5 | 5,786 | 5 | | 5 | 5,786 | 5 | 10,340 | 8 | 7,564 | 13 | 17,904 |
| Port Alberni, B.C. | 3 | 1,078 | 6 | 2,610 | 9 | 3,688 | 3 | 1,197 | 7 | 3,200 | 10 | 4,457 |
| Port Clyde, N.S. | 2 | 114 | 1 | 253 | 3 | 367 | 3 | 384 | 2 | 459 | 5 | 843 |
| Port Elgin, N.B. | 51 | 23,007 | 47 | 399 | 1 | 399 | 50 | 22,298 | 43 | 6,058 | 93 | 28,356 |
| Port Hawkesbury, N.S. | 3 | 4,350 | 98 | 27,357 | 3 | 282 | 3 | 282 | 3 | 282 | 3 | 282 |
| Port Hood, N.S. | 3 | 282 | 3 | | 3 | 282 | 3 | 282 | 3 | 282 | 3 | 282 |
| Port La Tour, N.S. | 9 | 34 | 6 | 200 | 6 | 234 | 3 | 34 | 3 | 200 | 6 | 234 |
| Port Mulgrave, N.S. | 3 | 2,852 | 16 | 4,686 | 8 | 7,538 | 8 | 2,711 | 18 | 9,245 | 26 | 11,856 |
| Port Simpson, B.C. | 4 | 499 | 9 | 246 | 13 | 745 | 3 | 1,899 | 9 | 246 | 12 | 2,145 |

No. 8.—SUMMARY STATEMENT of Sea-going Vessels entered and cleared at each Port in the Dominion of Canada during the Twelve Months ended March 31, 1917—*Concluded.*

RECAPITULATION BY PORTS AND OUTPORTS.

| Ports and Outports. | VESSELS ARRIVED. | | | | | | VESSELS DEPARTED. | | | | | |
|---------------------|------------------|---------|----------|---------|--------|-----------|-------------------|---------|----------|---------|--------|-----------|
| | British. | | Foreign. | | Total. | | British. | | Foreign. | | Total. | |
| | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. |
| Port Wade, N.S. | 6 | 588 | 1 | ..... | 6 | 588 | 5 | 490 | 1 | ..... | 6 | 496 |
| Port Williams, N.S. | 3 | 592 | 1 | 173 | 4 | 765 | 4 | 289 | ..... | ..... | 4 | 289 |
| Powell River, B.C. | 20 | 41,934 | 101 | 49,078 | 121 | 91,612 | 16 | 43,350 | 108 | 49,797 | 124 | 93,147 |
| Prince Rupert, B.C. | 627 | 253,941 | 884 | 262,299 | 1,511 | 516,240 | 587 | 159,555 | 883 | 150,583 | 1,470 | 310,118 |
| Pugwash, N.S. | ..... | ..... | 4 | 4,522 | 4 | 4,522 | ..... | ..... | 6 | 5,057 | 6 | 5,057 |
| Quebec, Que. | 152 | 570,461 | 12 | 15,982 | 164 | 586,443 | 116 | 284,916 | 27 | 38,522 | 143 | 323,438 |
| Richibucto, N.B. | ..... | ..... | 8 | 1,188 | 8 | 1,188 | ..... | ..... | 8 | 1,306 | 8 | 1,306 |
| Rimouski, Que. | 37 | 203,189 | 10 | 10,583 | 47 | 213,772 | 37 | 203,189 | 10 | 10,583 | 47 | 213,772 |
| River Hebert, N.S. | 1 | 77 | 1 | 77 | 1 | 77 | 1 | 209 | ..... | ..... | 1 | 209 |
| St. Andrews, N.B. | 286 | 17,970 | 1,099 | 49,572 | 1,385 | 67,842 | 249 | 16,428 | 1,087 | 50,770 | 1,336 | 67,198 |
| St. George, N.B. | 10 | 120 | 104 | 7,025 | 114 | 7,145 | 5 | 1,964 | 110 | 9,867 | 115 | 11,831 |
| St. John, N.B. | 447 | 975,072 | 631 | 366,051 | 1,078 | 1,341,123 | 332 | 745,419 | 630 | 375,521 | 962 | 1,120,940 |
| St. Martins, N.B. | 21 | 7,755 | 23 | 3,448 | 44 | 11,203 | 22 | 8,612 | 32 | 5,012 | 54 | 13,624 |
| St. Peters, N.S. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 11 | ..... | ..... | ..... | 11 |
| St. Stephen, N.B. | 30 | 2,279 | 114 | 6,713 | 144 | 8,992 | 17 | 1,900 | 103 | 4,348 | 120 | 6,248 |
| Sackville, N.B. | 3 | 529 | 1 | 241 | 4 | 770 | ..... | ..... | 1 | 241 | 1 | 241 |
| Salmon River, N.S. | 6 | 399 | 4 | 59 | 10 | 458 | 8 | 311 | ..... | ..... | 8 | 311 |
| Sandy Cove, N.S. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sandy Point, N.S. | 10 | 2,192 | 151 | 13,392 | 161 | 15,584 | 23 | 3,761 | 153 | 14,064 | 176 | 17,825 |
| Shediac, N.B. | ..... | ..... | ..... | ..... | ..... | ..... | 5 | 467 | 1 | 760 | 6 | 1,227 |
| Sheet Harbour, N.S. | ..... | ..... | 1 | 196 | 1 | 196 | 1 | 196 | ..... | ..... | 1 | 196 |
| Shelburne, N.S. | 24 | 1,537 | 44 | 4,883 | 68 | 6,420 | 34 | 2,502 | 49 | 9,604 | 83 | 12,106 |
| Sherbrooke, N.S. | 1 | 357 | 2 | 371 | 3 | 728 | ..... | ..... | 5 | 1,499 | 8 | 2,312 |
| Shippagan, N.B. | 84 | 1,185 | 3 | 634 | 87 | 1,819 | 95 | 1,479 | 1 | 1,571 | 96 | 1,571 |
| Shushart Bay, B.C. | ..... | ..... | 7 | 1,637 | 7 | 1,637 | 1 | 60 | 7 | 1,637 | 8 | 1,697 |
| Sidney, B.C. | 41 | 2,984 | 53 | 3,305 | 94 | 6,289 | 29 | 613 | 46 | 801 | 75 | 1,414 |
| Sorel, Que. | 1 | 2,725 | ..... | ..... | 1 | 2,725 | 4 | 427 | ..... | ..... | 4 | 427 |
| Souris, P.E.I. | 26 | 1,450 | 11 | 865 | 37 | 2,295 | 44 | 2,026 | 12 | 909 | 56 | 2,935 |
| Steveston, B.C. | 62 | 3,055 | 152 | 4,867 | 214 | 7,922 | 55 | 1,531 | 154 | 4,897 | 209 | 6,428 |
| Stuckey, B.C. | 10 | 835 | 41 | 620 | 51 | 1,455 | ..... | ..... | 51 | 1,430 | 101 | 1,860 |
| Summerside, P.E.I. | 8 | 2,351 | 5 | 2,530 | 13 | 4,881 | 18 | 5,810 | ..... | ..... | 18 | 5,810 |
| Sydney, N.S. | 405 | 940,570 | 94 | 215,214 | 499 | 1,155,784 | 664 | 758,144 | 158 | 310,066 | 822 | 1,068,210 |
| Three Rivers, Que. | 20 | 43,965 | 3 | 4,485 | 23 | 48,450 | 20 | 43,965 | 3 | 4,485 | 23 | 48,450 |
| Tignish, P.E.I. | 3 | 94 | | | 3 | 94 | 4 | 206 | | | 4 | 206 |
| Turo, N.S. | 1 | 283 | 3 | 626 | 4 | 909 | 2 | 255 | 3 | 789 | 5 | 1,044 |
| Tusket, N.S. | | | 3 | 274 | 3 | 274 | 1 | 11 | | | 1 | 11 |

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| | | | | | | | | | | | |
|-------|------------|-------|-----------|--------|------------|-------|------------|-------|-----------|--------|------------|
| 47 | 94,242 | 106 | 63,091 | 153 | 157,333 | 57 | 164,948 | 114 | 70,270 | 171 | 235,218 |
| 934 | 1,423,344 | 678 | 619,756 | 1,612 | 2,043,100 | 866 | 1,157,065 | 678 | 612,700 | 1,544 | 1,769,765 |
| 829 | 965,465 | 806 | 1,010,419 | 1,635 | 1,975,884 | 804 | 1,225,173 | 769 | 1,007,120 | 1,573 | 2,232,293 |
| 11 | 540 | 540 | 11 | 11 | 3,745 | 8 | 173 | 173 | 4,426 | 8 | 7,782 |
| 17 | 1,818 | 12 | 1,927 | 29 | 3,745 | 25 | 3,356 | 16 | 4,426 | 41 | 7,782 |
| 69 | 1,316 | 71 | 1,239 | 140 | 2,555 | 78 | 1,704 | 72 | 1,253 | 150 | 2,957 |
| 72 | 78,044 | 43 | 36,040 | 115 | 114,084 | 97 | 94,947 | 48 | 37,011 | 145 | 131,958 |
| 6 | 665 | 3 | 553 | 9 | 1,218 | 254 | 155,544 | 123 | 12,145 | 377 | 167,689 |
| 250 | 149,384 | 130 | 10,900 | 380 | 160,884 | 1 | 1,004 | 1 | 1,004 | 1 | 1,004 |
| | 1,004 | | | 1 | 1,004 | | | | | | |
| | 10,446,235 | 9,429 | 4,343,546 | 19,166 | 14,789,781 | 9,891 | 10,042,086 | 9,071 | 4,435,297 | 18,962 | 14,477,293 |
| 9,737 | | | | | | | | | | | |
| Total | | | | | | | | | | | |

No. 9.—STATEMENT of Nationalities of Sea-going Vessels entered and cleared in the Dominion of Canada during the Twelve Months ended March 31, 1917.

ABSTRACT BY NATIONALITIES.

| ARRIVED. | | | DEPARTED. | | |
|---------------------|--------|------------|-------------------|------------|--|
| Under the Flag of | | | Under the Flag of | | |
| No. | Tons. | | No. | Tons. | |
| United Kingdom..... | 9,737 | 10,446,235 | 9,891 | 10,042,086 | |
| Belgium..... | 18 | 37,137 | 26 | 46,690 | |
| Brazil..... | 2 | 466 | 2 | 466 | |
| Chili..... | 1 | 1,179 | 1 | 1,179 | |
| Cuba..... | 1 | 1,151 | 1 | 1,151 | |
| Denmark..... | 251 | 158,789 | 251 | 163,132 | |
| France..... | 39 | 23,756 | 80 | 39,936 | |
| Holland..... | 33 | 87,827 | 20 | 44,142 | |
| Italy..... | 24 | 80,018 | 41 | 146,110 | |
| Japan..... | 182 | 652,089 | 183 | 679,301 | |
| Norway..... | 449 | 829,132 | 490 | 894,662 | |
| Peru..... | 1 | 650 | 4 | 2,069 | |
| Russia..... | 47 | 44,230 | 1 | 650 | |
| Spain..... | 1 | 2,289 | 1 | 167 | |
| Sweden..... | 22 | 36,083 | 47 | 43,533 | |
| United States..... | 8,337 | 2,387,002 | 20 | 4,271 | |
| Uruguay..... | 1 | 1,748 | 20 | 19,103 | |
| Total..... | 19,166 | 14,789,781 | 18,962 | 14,477,293 | |

DESCRIPTION OF VESSELS.

| | ARRIVED. | | | | — | DEPARTED. | | | | |
|--------------|-----------|------------|------------------|---------|--------|------------|-------|------------------|--------|------------|
| | Steamers. | | Sailing Vessels. | | | Steamers. | | Sailing Vessels. | | |
| | No. | Tons. | No. | Tons. | | No. | Tons. | No. | Tons. | |
| British..... | 6,765 | 10,077,172 | 2,972 | 369,063 | 6,629 | 9,659,716 | 3,262 | 382,370 | 9,891 | 10,042,086 |
| Foreign..... | 6,807 | 3,796,077 | 2,622 | 547,469 | 6,421 | 3,884,979 | 2,650 | 530,228 | 9,071 | 4,435,207 |
| Total..... | 13,572 | 13,873,249 | 5,594 | 916,532 | 13,050 | 13,544,695 | 5,912 | 932,598 | 18,962 | 14,477,293 |

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No. 10.—SUMMARY STATEMENT of Sea-going Vessels entered Inwards and Outwards in the Dominion of Canada during the Fiscal Year ended March 31, 1917.

| Nationalities | SEA-GOING VESSELS, INWARDS. | | | | SEA-GOING VESSELS, OUTWARDS. | | | | TOTAL SEA-GOING VESSELS, INWARDS AND OUTWARDS. | | | | | |
|---------------|-----------------------------|----------------|----------------------|--------------------|------------------------------|----------------|----------------------|--------------------|--|----------------------|----------------|----------------------|--------------------|---------------|
| | Num-ber of Ves-sels. | Tons Register. | Quantity of Freight. | | Num-ber of Ves-sels. | Tons Register. | Quantity of Freight. | | Crew Num-ber. | Num-ber of Ves-sels. | Tons Register. | Quantity of Freight. | | Crew Num-ber. |
| | | | Tons Weight. | Tons Measure-ment. | | | Tons Weight. | Tons Measure-ment. | | | | Tons Weight. | Tons Measure-ment. | |
| British..... | 3,742 | 8,311,131 | 1,375,673 | 313,758 | 230,193 | 7,833,742 | 5,472,537 | 1,362,240 | 207,038 | 7,387 | 16,144,873 | 6,848,210 | 1,675,998 | 437,231 |
| Canadian..... | 5,995 | 2,135,104 | 425,116 | 38,044 | 97,513 | 2,208,344 | 899,113 | 109,215 | 101,071 | 12,241 | 4,343,448 | 1,324,229 | 147,259 | 198,584 |
| Foreign..... | 9,429 | 4,343,546 | 1,763,929 | 117,497 | 144,234 | 4,435,207 | 2,070,825 | 611,406 | 147,909 | 18,500 | 8,778,753 | 3,834,754 | 728,903 | 292,143 |
| Total..... | 19,166 | 14,789,781 | 3,564,718 | 469,299 | 471,940 | 14,477,293 | 8,442,475 | 2,082,861 | 456,018 | 38,128 | 29,267,074 | 12,007,193 | 2,552,160 | 927,958 |

No. 11.—SUMMARY STATEMENT of Vessels arrived and departed (exclusive of Coasting Vessels) during the Fiscal Year ended March 31, 1917.

| Nationalities. | SEA-GOING VESSELS, INWARDS AND OUTWARDS. | | | | VESSELS OF THE INLAND WATERS BETWEEN CANADA AND THE UNITED STATES. | | | | TOTAL SHIPPING (EXCLUSIVE OF COASTING VESSELS) INWARDS AND OUTWARDS. | | | |
|----------------|--|----------------|--------------|----------------------|--|----------------|--------------|----------------------|--|----------------|--------------|----------------------|
| | Number of Vessels. | Tons Register. | Crew Number. | Quantity of Freight. | Number of Vessels. | Tons Register. | Crew Number. | Quantity of Freight. | Number of Vessels. | Tons Register. | Crew Number. | Quantity of Freight. |
| | | | | | | | | | | | | |
| Canadian..... | 12,241 | 4,343,448 | 198,584 | 56,350 | 20,498,066 | 564,939 | 39,978 | 20,290,252 | 697,837 | | | |
| Foreign..... | 18,500 | 8,778,753 | 292,143 | 84,087 | 36,445,470 | 1,064,192 | 74,850 | 29,277,419 | 927,082 | | | |
| Total..... | 38,128 | 29,267,074 | 927,958 | 122,215 | 65,712,544 | 1,992,150 | | | | | | |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Bathurst, N.B.— <i>Con.</i> | | | | | | | | | | |
| France..... Steam. | 2 | 5,059 | | | | | | | | |
| France..... Sail... | | | | | 1 | 145 | | | | |
| Norway..... "..... | | | | | | | | | | |
| Spain..... Steam. | | | | | 1 | 699 | | | | |
| United States..... Sail... | | | | | | | | | | |
| British S. Africa..... Steam. | | | | | | | | | | |
| British S. Africa..... Sail... | | | | | 1 | 225 | | | | |
| Greenland and Iceland "..... | | | | | | | | | | |
| Denmark..... "..... | | | | | | | | | | |
| Sea Fisheries..... "..... | 15 | 187 | | | | | | | | |
| Total..... | 20 | 10,521 | 1 | 260 | 8 | 6,595 | | | | |
| Bear River, N.S.— | | | | | | | | | | |
| United States..... Sail... | 12 | 1,328 | 1 | 261 | | | | | | |
| Belliveau's Cove, N.S.— | | | | | | | | | | |
| United States..... Sail... | 3 | 421 | | | | | | | | |
| Bridgetown, N.S.— | | | | | | | | | | |
| United States..... Sail... | 3 | 352 | | | | | | | | |
| Bridgewater, N.S.— | | | | | | | | | | |
| Great Britain..... Sail... | | | 1 | 741 | | | | | | |
| France..... "..... | | | | | 1 | 1,080 | | | | |
| Italy..... "..... | | | 1 | 538 | | | | | | |
| United States..... Steam. | | | 9 | 1,572 | | | | | | |
| United States..... Sail... | 10 | 2,105 | 42 | 17,366 | | | | | | |
| Total..... | 10 | 2,105 | 53 | 20,217 | 1 | 1,080 | | | | |
| Buctouche, N.B.— | | | | | | | | | | |
| Great Britain..... Sail... | | | | | | | | | | |
| Newfoundland..... "..... | | | | | | | | | | |
| Denmark..... Steam. | | | | | | | | | | |
| Total..... | | | | | | | | | | |
| Campbellton N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 4 | 9,458 | | | 10 | 9,917 | | | | |
| Great Britain..... Sail... | | | | | | | | | | |
| Spain..... Steam. | 1 | 1,774 | | | | | | | | |
| Total..... | 5 | 11,232 | | | 10 | 9,917 | | | | |
| Campo Bello, N.B.— | | | | | | | | | | |
| United States..... Steam. | 117 | 19,183 | 546 | 12,353 | | | | | | |
| United States..... Sail... | | | 2 | 134 | | | | | | |
| Total..... | 117 | 19,183 | 548 | 12,487 | | | | | | |
| Canning, N.S.— | | | | | | | | | | |
| United States..... Sail... | 2 | 431 | | | | | | | | |
| Canso, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail... | 10 | 910 | 3 | 280 | | | | | | |
| United States..... Steam. | | | 2 | 121 | | | | | | |
| United States..... Sail... | 13 | 1,658 | 29 | 2,778 | | | | | | |
| Panama..... Steam. | 1 | 124 | | | | | | | | |
| Sea Fisheries..... "..... | 56 | 9,557 | 99 | 1,989 | | | | | | |
| Sea Fisheries..... Sail... | 48 | 4,299 | 107 | 6,984 | | | | | | |
| Total..... | 128 | 16,548 | 240 | 12,152 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, &c.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 2 | 5,059 |
| | | | | | | | | | | | | | 1 | 145 |
| 1 | 178 | | | | | | | | | | | | 1 | 178 |
| | | | | | | | | | | | | | 1 | 699 |
| 1 | 285 | | | | | | | | | | | | 1 | 285 |
| 1 | 1,223 | | | | | | | | | | | | 1 | 1,223 |
| | | | | | | | | | | | | | 1 | 225 |
| 3 | 531 | | | | | | | | | | | | 3 | 531 |
| 1 | 154 | | | | | | | | | | | | 1 | 154 |
| | | | | | | | | | | | | | 15 | 187 |
| 8 | 3,594 | | | | | | | | | | | | 37 | 20,970 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 13 | 1,589 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 3 | 421 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 3 | 352 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 741 |
| | | | | | | | | | | | | | 1 | 1,080 |
| | | | | | | | | | | | | | 1 | 538 |
| | | | | | | | | | | | | | 9 | 1,572 |
| | | | | | | | | | | | | | 52 | 19,471 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 64 | 23,402 |
| | | | | | | | | | | | | | | |
| 1 | 281 | | | | | | | | | | | | 1 | 281 |
| 1 | 79 | | | | | | | | | | | | 1 | 79 |
| 2 | 206 | | | | | | | | | | | | 2 | 206 |
| 4 | 566 | | | | | | | | | | | | 4 | 566 |
| | | | | | | | | | | | | | | |
| 3 | 4,641 | | | | | | | | | Swedish..... | 1 | 1,069 | 18 | 25,085 |
| | | | | | | | | 1 | 382 | | | | 1 | 382 |
| | | | | | | | | | | | | | 1 | 1,774 |
| | | | | | | | | | | | | | | |
| 3 | 4,641 | | | | | | | 1 | 382 | | 1 | 1,069 | 20 | 27,241 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 663 | 31,536 |
| | | | | | | | | | | | | | 2 | 134 |
| | | | | | | | | | | | | | 665 | 31,670 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | 431 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 13 | 1,190 |
| | | | | | | | | | | | | | 2 | 121 |
| | | | | | | | | | | | | | 42 | 4,436 |
| | | | | | | | | | | | | | 1 | 124 |
| | | | | | | | | | | | | | 155 | 11,546 |
| | | | | | | | | | | | | | 155 | 11,283 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 368 | 28,700 |

8 GEORGE V, A. 1918

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Caraquet, N.B.— | | | | | | | | | | |
| United States..... Sail.... | 1 | 88 | | | | | | | | |
| Sea Fisheries..... "..... | 157 | 2,249 | | | | | | | | |
| Total..... | 158 | 2,337 | | | | | | | | |
| Charlottetown, P.E.I.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 1,454 | | | | | | | | |
| Great Britain..... Sail.... | | | | | | | | | | |
| British W. Indies..... " | 6 | 1,016 | 1 | 452 | | | | | | |
| Newfoundland..... Steam. | 12 | 4,092 | | | | | | | | |
| Newfoundland..... Sail.... | 3 | 201 | | | | | | | | |
| St. Pierre..... "..... | 3 | 237 | | | | | | | | |
| Spain..... "..... | | | | | | | | | | |
| United States..... Steam. | 21 | 22,944 | | | | | | | | |
| United States..... Sail.... | 7 | 881 | 8 | 3,328 | | | | | | |
| Sea Fisheries..... "..... | 1 | 14 | | | | | | | | |
| Total..... | 54 | 30,839 | 9 | 4,280 | | | | | | |
| Chatham, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 7 | 18,383 | | | 6 | 5,440 | | | | |
| Great Britain..... Sail.... | 1 | 99 | | | 1 | 997 | | | | |
| Newfoundland..... " | | | | | | | | | | |
| France..... Steam. | | | | | 1 | 1,287 | | | | |
| France..... Sail.... | | | | | | | | | | |
| Portugal..... "..... | | | | | | | | | | |
| Spain..... "..... | | | | | | | | | | |
| United States..... Steam. | | | 1 | 1,281 | 1 | 2,213 | | | | |
| Denmark..... Sail.... | | | | | | | | | | |
| Total..... | 8 | 18,482 | 1 | 1,281 | 9 | 9,937 | | | | |
| Chemainus, B.C.— | | | | | | | | | | |
| United States..... Steam. | 6 | 263 | 45 | 1,618 | | | | | | |
| United States..... Sail.... | | | 6 | 2,000 | | | | | | |
| Total..... | 6 | 263 | 51 | 3,618 | | | | | | |
| Chester, N.S.— | | | | | | | | | | |
| United States..... Steam. | | | 2 | 20 | | | | | | |
| United States..... Sail.... | 2 | 198 | | | | | | | | |
| Sea Fisheries..... Steam. | 1 | 11 | | | | | | | | |
| Sea Fisheries..... Sail.... | 29 | 342 | | | | | | | | |
| Total..... | 32 | 551 | 2 | 20 | | | | | | |
| Chicoutimi, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 7 | 16,692 | | | 2 | 3,513 | | | | |
| France..... "..... | 1 | 1,802 | | | 1 | 1,260 | | | | |
| United States..... "..... | | | | | 1 | 1,379 | | | | |
| Total..... | 8 | 18,494 | | | 4 | 6,152 | | | | |
| Church Point, N.S.— | | | | | | | | | | |
| Italy..... Sail.... | 1 | 396 | | | | | | | | |
| United States..... "..... | 5 | 584 | | | | | | | | |
| Total..... | 6 | 980 | | | | | | | | |
| Clark's Harbour, N.S.— | | | | | | | | | | |
| United States..... Steam. | | | 41 | 575 | | | | | | |
| United States..... Sail.... | 3 | 205 | | | | | | | | |
| Sea Fisheries..... Steam. | 3 | 69 | 25 | 394 | | | | | | |
| Total..... | 6 | 274 | 66 | 969 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

| OF VESSELS. | | | | | | | | | | | | | | |
|-------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 88 |
| | | | | | | | | | | | | | 157 | 2,249 |
| | | | | | | | | | | | | | 158 | 2,337 |
| 1 | 181 | | | | | | | 1 | 321 | | | | 1 | 1,454 |
| | | | | | | | | | | | | | 2 | 502 |
| | | | | | | | | | | | | | 7 | 1,468 |
| | | | | | | | | | | | | | 12 | 4,092 |
| | | | | | | | | | | | | | 3 | 201 |
| | | 1 | 107 | | | | | 1 | 220 | | | | 3 | 237 |
| | | | | | | | | | | | | | 2 | 327 |
| | | | | | | | | | | | | | 21 | 22,944 |
| | | | | | | | | | | | | | 15 | 4,709 |
| | | | | | | | | | | | | | 1 | 14 |
| 1 | 181 | 1 | 107 | | | | | 2 | 541 | | | | 67 | 35,948 |
| 2 | 1,292 | | | | | | | | | | | | 15 | 25,115 |
| 14 | 2,901 | | | | | | | 4 | 3,277 | Swedish | 2 | 1,310 | 22 | 8,584 |
| 1 | 78 | | | | | | | | | | | | 1 | 78 |
| 1 | 1,217 | | | | | | | | | | | | 2 | 2,504 |
| 7 | 1,199 | | | | | | | | | | | | 7 | 1,199 |
| 1 | 212 | | | | | | | | | | | | 1 | 212 |
| 2 | 368 | | | | | | | 2 | 415 | | | | 4 | 783 |
| 45 | 8,404 | | | | | | | 2 | 400 | | | | 2 | 3,494 |
| | | | | | | | | | | | | | 47 | 8,804 |
| 73 | 15,671 | | | | | | | 8 | 4,092 | | 2 | 1,310 | 101 | 50,773 |
| | | | | | | | | | | | | | 51 | 1,881 |
| | | | | | | | | | | | | | 6 | 2,000 |
| | | | | | | | | | | | | | 57 | 3,881 |
| | | | | | | | | | | | | | 2 | 20 |
| | | | | | | | | | | | | | 2 | 198 |
| | | | | | | | | | | | | | 1 | 11 |
| | | | | | | | | | | | | | 29 | 342 |
| | | | | | | | | | | | | | 34 | 571 |
| 2 | 3,188 | | | | | | | | | | | | 11 | 23,393 |
| 1 | 1,338 | | | | | | | | | | | | 2 | 3,062 |
| | | | | | | | | | | | | | 2 | 2,717 |
| 3 | 4,526 | | | | | | | | | | | | 15 | 29,172 |
| | | | | | | | | | | | | | 1 | 396 |
| | | | | | | | | | | | | | 5 | 584 |
| | | | | | | | | | | | | | 6 | 980 |
| | | | | | | | | | | | | | 41 | 575 |
| | | | | | | | | | | | | | 3 | 205 |
| | | | | | | | | | | | | | 28 | 463 |
| | | | | | | | | | | | | | 72 | 1,243 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 10 | 1,337 |
| 2 | 2,377 | | | | | | | | | | | | 3 | 3,596 |
| 3 | 554 | | | | | | | 4 | 6,279 | | | | 10 | 10,707 |
| 4 | 728 | 1 | 370 | | | | | 2 | 1,702 | | | | 1 | 1,528 |
| | | | | | | | | 1 | 191 | | | | 10 | 7,085 |
| 11 | 2,065 | | | | | | | | | | | | 1 | 191 |
| | | | | | | | | | | | | | 12 | 3,108 |
| 20 | 5,724 | 1 | 370 | | | | | 7 | 8,172 | | | | | |
| | | | | | | | | | | | | | 37 | 26,215 |
| | | | | | | | | | | | | | 12 | 1,115 |
| | | | | | | | | | | | | | 16 | 3,788 |
| | | | | | | | | | | | | | 28 | 4,903 |
| | | | | | | | | | | | | | 2 | 268 |
| | | | | | | | | | | | | | 15 | 3,526 |
| | | | | | | | | | | | | | 2 | 186 |
| | | | | | | | 1 | 1,999 | | | | | 6 | 7,944 |
| | | | | | | | | | | | | | 1 | 2,547 |
| | | | | | | | | | | | | | 2 | 296 |
| 1 | 760 | | | | | | | | | | | | 1 | 760 |
| 4 | 810 | | | | | | | 4 | 1,057 | | | | 8 | 1,867 |
| | | | | | | | | | | | | | 6 | 745 |
| 5 | 1,570 | | | | | | 1 | 1,999 | 4 | 1,057 | | | 24 | 14,159 |
| | | | | | | | | | | | | | 5 | 239 |
| | | | | | | | | | | | | | 1 | 197 |
| | | | | | | | | | | | | | 6 | 436 |
| | | | | | | | | | | | | | 9 | 861 |
| | | | | | | | | | | | | | 140 | 6,834 |
| | | | | | | | | | | | | | 4 | 62 |
| | | | | | | | | | | | | | 153 | 7,757 |
| 1 | 218 | | | | | | | | | {Swedish ... | 1 | 2,710 | 253 | 889,642 |
| 1 | 161 | | | | | | | 1 | 765 | {Uruguayan | 1 | 1,748 | | |
| | | | | | | | | | | {Swedish ... | 3 | 1,101 | | |
| | | | | | | | | | | | | | 19 | 15,152 |
| | | | | | | | | | | | | | 46 | 90,971 |
| | | | | | | | | | | | | | 35 | 6,058 |
| | | 2 | 432 | | | | | | | | | | 68 | 76,696 |
| 1 | 82 | | | | | | | | | | | | 67 | 5,443 |
| 2 | 390 | 1 | 1,116 | | | | | 2 | 482 | | | | 13 | 32,870 |
| | | | | | | | | | | | | | 6 | 4,222 |
| | | | | | | | | | | Cuban... | 1 | 1,151 | 6 | 5,758 |
| | | | | | | | | | | Dutch... | 1 | 2,266 | 1 | 2,266 |
| | | | | | | | 1 | 1,999 | | | | | 3 | 9,698 |
| | | | | | | | | | | | | | 1 | 3,007 |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports—and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Ladysmith, B.C.— | | | | | | | | | | |
| United States..... Steam. | 64 | 8,507 | 82 | 36,196 | | | | | | |
| United States..... Sail.... | 37 | 7,069 | 77 | 23,009 | | | | | | |
| Total..... | 101 | 15,576 | 159 | 59,205 | | | | | | |
| La Have, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail.... | 12 | 1,467 | | | | | | | | |
| Newfoundland..... "..... | 5 | 466 | | | | | | | | |
| Portugal..... "..... | 1 | 99 | | | | | | | | |
| Spain..... "..... | 1 | 99 | | | | | | | | |
| United States..... "..... | 20 | 3,475 | 2 | 360 | | | | | | |
| Sea Fisheries..... Steam. | 2 | 30 | 14 | 924 | | | | | | |
| Sea Fisheries..... Sail.... | 59 | 4,655 | 2 | 161 | | | | | | |
| Total..... | 100 | 10,291 | 18 | 1,445 | | | | | | |
| Levis, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 3,046 | | | | | | | | |
| Liverpool, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | | | | | 1 | 2,200 | | | | |
| Great Britain..... Sail.... | 1 | 374 | 2 | 578 | | | | | | |
| Newfoundland..... Steam. | 1 | 59 | | | | | | | | |
| Newfoundland..... Sail.... | | | 1 | 91 | | | | | | |
| United States..... Steam. | | | 40 | 1,539 | | | | | | |
| United States..... Sail.... | 11 | 1,623 | 43 | 5,890 | | | | | | |
| Sea Fisheries..... Steam. | | | 56 | 2,662 | | | | | | |
| Sea Fisheries..... Sail.... | | | 40 | 3,164 | | | | | | |
| Total..... | 13 | 2,056 | 182 | 13,924 | 1 | 2,200 | | | | |
| Lockeport, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 1 | 91 | | | | | | | | |
| United States..... "..... | 3 | 394 | 12 | 255 | | | | | | |
| Sea Fisheries..... "..... | 43 | 1,588 | 29 | 1,987 | | | | | | |
| Total..... | 47 | 2,073 | 41 | 2,242 | | | | | | |
| Lord's Cove, N.B.— | | | | | | | | | | |
| United States..... Steam. | 334 | 4,880 | 122 | 1,753 | | | | | | |
| Louisburg, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 10 | 26,912 | | | 9 | 11,330 | | | | |
| British W. Indies..... "..... | 1 | 2,265 | | | | | | | | |
| Newfoundland..... "..... | 90 | 60,016 | 1 | 813 | | | | | | |
| Newfoundland..... Sail.... | 32 | 2,512 | 3 | 300 | | | | | | |
| Brazil..... Steam..... | | | | | | | | | | |
| Cuba..... "..... | 1 | 3,043 | | | | | | | | |
| France..... "..... | 1 | 3,490 | | | 2 | 2,753 | | | | |
| Sea Cable & Admiralty "..... | 3 | 3,310 | 3 | 705 | | | | | | |
| Holland..... "..... | | | | | | | | | | |
| Italy..... "..... | | | | | | | | | | |
| Portugal..... "..... | 1 | 2,274 | | | | | | | | |
| Saint Pierre..... Sail.... | 8 | 607 | | | | | | | | |
| Spain..... Steam..... | | | | | 2 | 2,160 | | | | |
| United States..... "..... | 104 | 177,924 | 3 | 9,184 | 51 | 88,215 | | | 1 | 1,848 |
| United States..... Sail.... | 10 | 4,848 | 13 | 1,172 | | | | | | |
| Gibraltar..... Steam. | 3 | 8,213 | | | | | | | | |
| French Africa..... "..... | 4 | 11,103 | | | 4 | 5,192 | | | | |
| Sea Fisheries..... Sail.... | 4 | 304 | 156 | 6,380 | | | | | | |
| Total..... | 272 | 306,821 | 179 | 18,554 | 68 | 109,650 | | | 1 | 1,848 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 146 | 44,703 |
| | | | | | | | | | | | | | 114 | 30,078 |
| | | | | | | | | | | | | | 260 | 74,781 |
| | | | | | | | | | | | | | 12 | 1,467 |
| | | | | | | | | | | | | | 5 | 466 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 22 | 3,835 |
| | | | | | | | | | | | | | 16 | 954 |
| | | | | | | | | | | | | | 61 | 4,816 |
| | | | | | | | | | | | | | 118 | 11,736 |
| | | | | | | | | | | | | | 1 | 3,046 |
| | | | | | | | | | | | | | 1 | 2,200 |
| | | | | | | | | | | | | | 3 | 952 |
| | | | | | | | | | | | | | 1 | 59 |
| | | | | | | | | | | | | | 1 | 91 |
| | | | | | | | | | | | | | 40 | 1,539 |
| | | | | | | | | | | | | | 54 | 7,513 |
| | | | | | | | | | | | | | 56 | 2,662 |
| | | | | | | | | | | | | | 40 | 3,164 |
| | | | | | | | | | | | | | 196 | 18,180 |
| | | | | | | | | | | | | | 1 | 91 |
| | | | | | | | | | | | | | 15 | 649 |
| | | | | | | | | | | | | | 72 | 3,575 |
| | | | | | | | | | | | | | 88 | 4,315 |
| | | | | | | | | | | | | | 456 | 6,633 |
| 4 | 4,916 | | | | | | | | | | | | 23 | 43,158 |
| | | | | | | | | | | | | | 1 | 2,265 |
| | | | | | | | | | | | | | 91 | 60,829 |
| | | | | | | | | | | | | | 35 | 2,812 |
| 1 | 2,397 | | | | | | | | | | | | 1 | 2,397 |
| | | | | | | | | | | | | | 1 | 3,043 |
| | | | | | | | | | | | | | 3 | 6,243 |
| | | | | | | | | | | | | | 6 | 4,015 |
| | | | | | | | | | | Dutch..... | 1 | 1,671 | 1 | 1,671 |
| 1 | 1,175 | | | | | | | | | | | | 1 | 1,175 |
| | | | | | | | | | | | | | 1 | 2,274 |
| 1 | 2,195 | | | | | | | | | | | | 8 | 607 |
| | | | | | | | | | | | | | 3 | 4,319 |
| 13 | 17,712 | | | | | | | | | Spanish..... | 1 | 1,982 | 175 | 299,768 |
| | | | | | | | | | | Dutch..... | 2 | 2,903 | 23 | 6,020 |
| 2 | 2,366 | | | | | | | | | | | | 5 | 10,579 |
| | | | | | | | | | | | | | 8 | 16,295 |
| | | | | | | | | | | | | | 160 | 6,684 |
| 22 | 30,725 | | | | | | | | | | 4 | 6,556 | 546 | 474,154 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 67 |
| | | | | | | | | | | | | | 26 | 1,283 |
| | | | | | | | | | | | | | 42 | 2,431 |
| | | | | | | | | | | | | | 69 | 3,781 |
| | | | | | | | | | | | | | 38 | 4,330 |
| | | | | | | | | | | | | | 7 | 773 |
| | | | | | | | | | | | | | 13 | 1,268 |
| | | | | | | | | | | | | | 3 | 297 |
| | | | | | | | | | | | | | 28 | 3,885 |
| | | | | | | | | | | | | | 53 | 2,237 |
| | | | | | | | | | | | | | 209 | 17,798 |
| | | | | | | | | | | | | | 351 | 30,588 |
| | | | | | | | | | | | | | 22 | 1,683 |
| | | 3 | 519 | | | | | | | | | | 3 | 519 |
| | | | | | | | | | | | | | 11 | 784 |
| | | 3 | 519 | | | | | | | | | | 36 | 2,986 |
| | | | | | | | | | | | | | 2 | 188 |
| | | | | | | | | | | | | | 2 | 184 |
| | | | | | | | | | | | | | 3 | 277 |
| | | | | | | | | | | | | | 12 | 1,101 |
| | | | | | | | | | | | | | 19 | 1,750 |
| | | | | | | | | | | | | | 2 | 198 |
| | | | | | | | | | | | | | 5 | 659 |
| | | | | | | | | | | | | | 5 | 11,902 |
| | | | | | | | | | | | | | 1 | 199 |
| | | | | | | | | | | | | | 1 | 2,200 |
| | | | | | | | | | | | | | 7 | 1,335 |
| | | | | | | | | | | | | | 14 | 15,636 |
| | | | | | | | | | | | | | 1 | 35 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 2 | 134 |
| 1 | 1,145 | 1 | 4,537 | | | | | | | | | | 366 | 1,379,915 |
| | | | | | | | | | | | | | 3 | 5,655 |
| | | | | | | | | | | | | | 1 | 1,541 |
| | | | | | | | | | | | | | 1 | 147 |
| | | | | | | | | | | | | | 5 | 17,751 |
| | | | | | | | | | | | | | 14 | 38,760 |
| | | | | | | | | | | | | | 5 | 23,501 |
| | | | | | | | | | | | | | 93 | 287,540 |
| | | | | | | | | | | | | | 1 | 2,475 |
| | | | | | | | | | | | | | 2 | 4,612 |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Montreal, Que.— <i>Con.</i> | | | | | | | | | | |
| Italy..... Steam. | 16 | 43,770 | | | | | | | | |
| Portugal..... “ | 4 | 10,079 | | | | | | | | |
| French Africa..... “ | 2 | 9,189 | | | | | | | | |
| Spain..... “ | 1 | 1,940 | | | | | | | | |
| United States..... “ | 6 | 16,378 | 1 | 241 | 1 | 2,418 | | | | |
| Mexico..... “ | | | 1 | 3,049 | | | | | | |
| Total..... | 510 | 1,819,624 | 3 | 5,536 | 7 | 13,390 | | | 1 | 4,729 |
| Moose Factory, Man.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 1,541 | | | | | | | | |
| Murray Harbour, P.E.I.— | | | | | | | | | | |
| Sea Fisheries..... Sail... | 4 | 113 | | | | | | | | |
| Nanaimo, B.C.— | | | | | | | | | | |
| United States..... Steam. | 107 | 17,085 | 332 | 89,443 | 19 | 50,879 | | | | |
| United States..... Sail... | 29 | 4,741 | 289 | 102,634 | | | | | | |
| Japan..... “ | 1 | 3,149 | | | | | | | | |
| Mexico..... “ | 1 | 3,674 | | | | | | | | |
| Sea Fisheries..... Steam. | | | 3 | 45 | | | | | | |
| Total..... | 138 | 28,649 | 624 | 192,122 | 19 | 50,879 | | | | |
| New Campbellton, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail... | 2 | 88 | | | | | | | | |
| United States..... Steam. | | | 1 | 1,472 | | | | | | |
| Total..... | 2 | 88 | 1 | 1,472 | | | | | | |
| Newcastle, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 2,263 | | | 2 | 2,062 | | | 1 | 1,136 |
| Great Britain..... Sail... | | | | | | | | | | |
| France..... “ | | | | | | | | | | |
| Italy..... Steam. | | | | | | | | | 1 | 969 |
| Portugal..... “ | | | | | 1 | 745 | | | | |
| United States..... “ | | | | | 1 | 2,473 | | | 1 | 1,477 |
| Greenland and Iceland. Sail... | | | | | | | | | | |
| Total..... | 1 | 2,263 | | | 4 | 5,280 | | | 3 | 3,582 |
| Newport, B.C.— | | | | | | | | | | |
| United States..... Steam. | 89 | 27,184 | 62 | 15,878 | | | | | | |
| New Westminster, B.C.— | | | | | | | | | | |
| United States..... Steam. | 11 | 3,471 | 22 | 4,183 | | | | | | |
| United States..... Sail... | | | 4 | 1,289 | | | | | | |
| Total..... | 11 | 3,471 | 26 | 5,472 | | | | | | |
| North East Harbour, N.S.— | | | | | | | | | | |
| United States..... Sail... | | | 2 | 141 | | | | | | |
| Sea Fisheries..... “ | 3 | 82 | 2 | 109 | | | | | | |
| Total..... | 3 | 82 | 4 | 250 | | | | | | |
| North Head, N.B.— | | | | | | | | | | |
| United States..... Steam. | 189 | 23,773 | 26 | 370 | | | | | | |
| United States..... Sail... | | | 2 | 120 | | | | | | |
| Total..... | 189 | 23,773 | 28 | 490 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 1 | 2,294 | | | | | 11 | 46,995 | | | | | | 28 | 93,059 |
| | | | | | | | | | | | | | 4 | 10,079 |
| | | | | | | | | | | | | | 2 | 9,189 |
| | | | | | | | | | | | | | 1 | 1,940 |
| | | | | | | | | | | | | | 8 | 19,037 |
| | | | | | | | | | | | | | 1 | 3,049 |
| 2 | 3,439 | 1 | 4,537 | | | 11 | 46,995 | | | | | | 535 | 1,898,250 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 1,541 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 4 | 113 |
| | | | | | | | | | | Japanese.... | 9 | 21,848 | 467 | 179,255 |
| | | | | | | | | | | Japanese.... | 1 | 2,251 | 318 | 107,375 |
| | | | | | | | | | | | | | 2 | 5,400 |
| | | | | | | | | | | | | | 1 | 3,674 |
| | | | | | | | | | | | | | 3 | 45 |
| | | | | | | | | | | | 10 | 24,099 | 791 | 295,749 |
| | | | | | | | | | | | | | 2 | 88 |
| | | | | | | | | | | | | | 1 | 1,472 |
| | | | | | | | | | | | | | 3 | 1,560 |
| | | | | | | | | | | | | | | |
| 2 | 406 | | | | | | | 2 | 520 | Brazilian.... | 1 | 235 | 4 | 5,461 |
| 2 | 315 | | | | | | | | | | | | 5 | 1,161 |
| | | | | | | | | | | | | | 2 | 315 |
| | | | | | | | | | | | | | 1 | 969 |
| | | | | | | | | | | | | | 1 | 745 |
| | | | | | | | | | | | | | 2 | 3,950 |
| 13 | 2,295 | | | | | | | | | | | | 13 | 2,295 |
| 17 | 3,016 | | | | | | | 2 | 520 | | 1 | 235 | 28 | 14,896 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 151 | 43,062 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 33 | 7,654 |
| | | | | | | | | | | | | | 4 | 1,289 |
| | | | | | | | | | | | | | 37 | 8,943 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | 141 |
| | | | | | | | | | | | | | 5 | 191 |
| | | | | | | | | | | | | | 7 | 332 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 215 | 24,143 |
| | | | | | | | | | | | | | 2 | 120 |
| | | | | | | | | | | | | | 217 | 24,263 |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| North Sydney, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 2 | 2,605 | | | 6 | 8,682 | | | | |
| Great Britain..... Sail... | 2 | 415 | 1 | 599 | 6 | 5,616 | | | | |
| British W. Indies..... " | 1 | 198 | | | | | | | | |
| Newfoundland..... Steam. | 397 | 206,209 | 1 | 235 | 13 | 26,387 | | | | |
| Newfoundland..... Sail... | 463 | 29,696 | 1 | 95 | | | | | | |
| France..... Steam. | | | | | 1 | 1,547 | | | | |
| Italy..... " | 2 | 4,579 | | | 1 | 1,411 | | | | |
| Norway..... " | | | | | 1 | 646 | | | | |
| Portugal..... Steam | | | | | 1 | 1,379 | | | | |
| Portugal..... Sail..... | | | | | | | | | | |
| Saint Pierre..... Steam. | | | | | | | | | | |
| Saint Pierre..... Sail... | 17 | 1,260 | | | | | | | | |
| United States..... Steam | | | | | 2 | 1,580 | | | | |
| United States..... Sail... | 9 | 779 | 2 | 188 | | | | | | |
| Greenland and Iceland | | | | | | | | | | |
| Sea Fisheries..... " | 34 | 2,288 | 27 | 2,788 | | | | | | |
| Total..... | 927 | 248,029 | 32 | 3,905 | 31 | 47,248 | | | | |
| Ocean Falls, B.C.— | | | | | | | | | | |
| United States..... Steam. | 4 | 3,345 | 6 | 5,185 | | | | | | |
| United States..... Sail... | 3 | 787 | 2 | 472 | | | | | | |
| Total..... | 7 | 4,132 | 8 | 5,657 | | | | | | |
| Parrsboro, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 2 | 6,002 | | | 1 | 2,340 | | | | |
| Great Britain..... Sail... | 6 | 1,959 | 1 | 360 | 1 | 1,615 | | | | |
| Cuba..... " | 1 | 475 | | | | | | | | |
| France..... " | 1 | 271 | | | | | | | | |
| United States..... Steam. | | | 33 | 7,828 | 2 | 2,470 | | | | |
| United States..... Sail... | 23 | 9,964 | 23 | 4,527 | | | | | | |
| Total..... | 33 | 18,671 | 57 | 12,715 | 4 | 6,425 | | | | |
| Paspebiac, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 2 | 5,314 | | | 4 | 4,354 | | | | |
| Great Britain..... Sail... | | | | | 4 | 2,731 | | | | |
| France..... " | | | | | | | | | | |
| Norway..... " | | | | | 1 | 548 | | | | |
| Portugal..... " | | | | | | | | | | |
| Spain..... " | | | | | 2 | 661 | | | | |
| United States..... Steam. | 1 | 3,038 | | | | | | | | |
| United States..... Sail... | | | 1 | 282 | | | | | | |
| Denmark..... " | | | | | | | | | | |
| Gibraltar..... " | 1 | 187 | | | | | | | | |
| Greenland and Iceland | | | | | | | | | | |
| Total..... | 4 | 8,539 | 1 | 282 | 11 | 8,294 | | | | |
| Percé, Que.— | | | | | | | | | | |
| Newfoundland..... Sail... | 2 | 124 | | | | | | | | |
| United States..... " | | | 1 | 58 | | | | | | |
| Total..... | 2 | 124 | 1 | 58 | | | | | | |
| Pietou, N.S.— | | | | | | | | | | |
| Great Britain..... Sail... | | | | | 2 | 2,358 | | | | |
| France..... Steam. | 1 | 2,753 | | | | | | | | |
| Italy..... " | | | | | | | | | 1 | 1,115 |
| United States..... " | 1 | 2,753 | | | 1 | 1,898 | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 5 | 900 | | | | | | | | | | | | 13 | 12,187 |
| | | | | | | | | | | | | | 9 | 6,630 |
| 1 | 176 | | | | | | | | | | | | 1 | 198 |
| | | | | | | | | | | | | | 412 | 233,007 |
| 1 | 297 | | | | | | | | | | | | 464 | 29,791 |
| 1 | 989 | | | | | | | | | | | | 2 | 1,844 |
| | | | | | | | | | | | | | 3 | 5,990 |
| | | | | | | | | | | | | | 2 | 1,635 |
| | | | | | | | | | | | | | 1 | 1,379 |
| | | 1 | 134 | | | | | | | | | | 1 | 134 |
| | | 25 | 5,400 | | | | | | | | | | 25 | 5,400 |
| | | | | | | | | | | | | | 17 | 1,260 |
| | | | | | | | | | | | | | 2 | 1,580 |
| | | | | | | | | | | | | | 11 | 967 |
| 2 | 440 | | | | | | | | | | | | 2 | 440 |
| 1 | 81 | 1 | 58 | | | | | | | | | | 63 | 5,215 |
| 11 | 2,883 | 27 | 5,592 | | | | | | | | | | 1,028 | 307,657 |
| | | | | | | | | | | | | | 10 | 8,530 |
| | | | | | | | | | | | | | 5 | 1,259 |
| | | | | | | | | | | | | | 15 | 9,789 |
| | | | | | | | | | | | | | 3 | 8,342 |
| | | | | | | | | | | | | | 8 | 3,934 |
| | | | | | | | | | | | | | 1 | 475 |
| | | | | | | | | | | | | | 1 | 271 |
| 1 | 367 | | | | | | | | | | | | 35 | 10,298 |
| | | | | | | | | | | | | | 47 | 14,858 |
| 1 | 367 | | | | | | | | | | | | 95 | 38,178 |
| | | | | | | | | | | | | | 6 | 9,668 |
| 5 | 921 | | | | | | | 2 | 597 | Brazilian.... | 1 | 231 | 10 | 3,883 |
| 1 | 157 | | | | | | | | | | | | 3 | 754 |
| | | | | | | | | | | | | | 1 | 548 |
| 1 | 168 | | | | | | | | | | | | 1 | 168 |
| 2 | 248 | | | | | | | 3 | 710 | | | | 7 | 1,619 |
| | | | | | | | | | | | | | 1 | 3,038 |
| | | | | | | | | | | | | | 1 | 282 |
| | 1,202 | | | | | | | | | | | | 1 | 202 |
| | | | | | | | | | | | | | 1 | 187 |
| 2 | 327 | | | | | | | | | | | | 2 | 327 |
| 12 | 2,023 | | | | | | | 5 | 1,307 | | 1 | 231 | 34 | 20,676 |
| | | | | | | | | | | | | | 2 | 124 |
| | | | | | | | | | | | | | 1 | 58 |
| | | | | | | | | | | | | | 3 | 182 |
| | | | | | | | | | | | | | 2 | 2,358 |
| | | | | | | | | | | | | | 1 | 2,753 |
| | | | | | | | | | | | | | 1 | 1,115 |
| | | | | | | | | | | | | | 2 | 4,651 |

NO. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Pictou, N.S.— <i>Con.</i> | | | | | | | | | | |
| United States..... Sail... | 3 | 280 | | | | | | | | |
| Greenland and Iceland "..... | | | | | | | | | | |
| Total..... | 5 | 5,786 | | | 3 | 4,256 | | | 1 | 1,115 |
| Port Alberni, B.C.— | | | | | | | | | | |
| United States..... Steam. | 1 | 280 | 6 | 2,610 | | | | | | |
| United States..... Sail... | 2 | 798 | | | | | | | | |
| Total..... | 3 | 1,078 | 6 | 2,610 | | | | | | |
| Port Clyde, N.S.— | | | | | | | | | | |
| United States..... Sail... | 1 | 99 | 1 | 253 | | | | | | |
| Sea Fisheries..... "..... | 1 | 15 | | | | | | | | |
| Total..... | 2 | 114 | 1 | 253 | | | | | | |
| Port Elgin, N.B.— | | | | | | | | | | |
| Russia..... Sail..... | | | | | | | | | | |
| Port Hawkesbury, N.S.— | | | | | | | | | | |
| Great Britain..... Sail..... | | | 1 | 199 | | | | | | |
| British W. Indies..... "..... | 10 | 1,442 | | | | | | | | |
| Newfoundland..... "..... | 5 | 388 | | | | | | | | |
| Saint Pierre..... "..... | 1 | 71 | | | | | | | | |
| United States..... Steam. | 18 | 19,404 | 2 | 409 | | | | | | |
| United States..... Sail.... | 5 | 562 | 24 | 1,828 | | | | | | |
| Sea Fisheries..... Steam. | 1 | 124 | | | | | | | | |
| Sea Fisheries..... Sail.... | 11 | 1,016 | 20 | 1,914 | | | | | | |
| Total..... | 51 | 23,007 | 47 | 4,350 | | | | | | |
| Port Hood, N.S.— | | | | | | | | | | |
| Sea Fisheries..... Sail.... | | | 3 | 282 | | | | | | |
| Port La Tour, N.S.— | | | | | | | | | | |
| Sea Fisheries..... Steam. | 3 | 34 | | | | | | | | |
| Sea Fisheries..... Sail.... | | | 3 | 200 | | | | | | |
| Total..... | 3 | 34 | 3 | 200 | | | | | | |
| Port Mulgrave, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 2,094 | | | | | | | | |
| United States..... "..... | | | 10 | 2,672 | | | | | | |
| United States..... Sail.... | 2 | 181 | 1 | 54 | | | | | | |
| Nicaragua..... Steam.... | | | 2 | 1,671 | | | | | | |
| Sea Fisheries..... Sail.... | 6 | 577 | 3 | 289 | | | | | | |
| Total..... | 9 | 2,852 | 16 | 4,686 | | | | | | |
| Port Simpson, B.C.— | | | | | | | | | | |
| United States..... Steam. | 4 | 499 | 9 | 246 | | | | | | |
| Port Wade, N.S.— | | | | | | | | | | |
| United States..... Sail.... | 6 | 588 | | | | | | | | |
| Port Williams, N.S.— | | | | | | | | | | |
| United States..... Sail.... | 3 | 592 | 1 | 173 | | | | | | |
| Powell River, B.C.— | | | | | | | | | | |
| Australia..... Steam.... | 15 | 41,578 | | | | | | | | |
| Japan..... "..... | | | | | | | | | | |
| United States..... "..... | 5 | 356 | 100 | 47,308 | | | | | | |
| Total..... | 20 | 41,934 | 100 | 47,308 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 3 | 280 |
| | | | | | | | | | | Swedish..... | 1 | 417 | 1 | 417 |
| | | | | | | | | | | | 1 | 417 | 10 | 11,574 |
| | | | | | | | | | | | | | 7 | 2,890 |
| | | | | | | | | | | | | | 2 | 798 |
| | | | | | | | | | | | | | 9 | 3,688 |
| | | | | | | | | | | | | | 2 | 352 |
| | | | | | | | | | | | | | 1 | 15 |
| | | | | | | | | | | | | | 3 | 367 |
| | | | | | | | | 1 | 399 | | | | 1 | 399 |
| | | | | | | | | | | | | | 1 | 199 |
| | | | | | | | | | | | | | 10 | 1,442 |
| | | | | | | | | | | | | | 5 | 388 |
| | | | | | | | | | | | | | 1 | 71 |
| | | | | | | | | | | | | | 20 | 19,813 |
| | | | | | | | | | | | | | 29 | 2,390 |
| | | | | | | | | | | | | | 1 | 124 |
| | | | | | | | | | | | | | 31 | 2,930 |
| | | | | | | | | | | | | | 98 | 27,357 |
| | | | | | | | | | | | | | 3 | 282 |
| | | | | | | | | | | | | | 3 | 34 |
| | | | | | | | | | | | | | 3 | 200 |
| | | | | | | | | | | | | | 6 | 234 |
| | | | | | | | | | | | | | 1 | 2,094 |
| | | | | | | | | | | | | | 10 | 2,672 |
| | | | | | | | | | | | | | 3 | 235 |
| | | | | | | | | | | | | | 2 | 1,671 |
| | | | | | | | | | | | | | 9 | 866 |
| | | | | | | | | | | | | | 25 | 7,538 |
| | | | | | | | | | | | | | 13 | 745 |
| | | | | | | | | | | | | | 6 | 588 |
| | | | | | | | | | | | | | 4 | 765 |
| | | | | | | | | | | Japanese..... | 1 | 2,370 | 15 | 41,578 |
| | | | | | | | | | | | | | 1 | 2,370 |
| | | | | | | | | | | | | | 105 | 47,664 |
| | | | | | | | | | | | 1 | 2,370 | 121 | 91,612 |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Prince Rupert, B.C.— | | | | | | | | | | |
| United States..... Steam. | 189 | 242,585 | 136 | 132,099 | | | | | | |
| United States..... Sail | | | | | | | | | | |
| Sea Fisheries..... Steam. | 438 | 11,356 | 747 | 129,996 | | | | | | |
| Total..... | 627 | 253,941 | 883 | 262,095 | | | | | | |
| Pugwash, N.S.— | | | | | | | | | | |
| Great Britain..... Sail | | | | | 1 | 1,347 | | | | |
| Holland..... Steam. | | | | | 1 | 1,528 | | | | |
| Norway..... Sail | | | | | 1 | 1,136 | | | | |
| Spain..... Sail | | | | | 1 | 511 | | | | |
| Total..... | | | | | 4 | 4,522 | | | | |
| Quebec, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 111 | 559,665 | | | 6 | 8,217 | | | | |
| Newfoundland..... " | 25 | 5,221 | | | | | | | | |
| Newfoundland..... Sail | 13 | 886 | | | | | | | | |
| France..... Steam. | 1 | 2,127 | | | | | | | | |
| Italy..... " | | | | | | | | | | |
| Saint Pierre..... " | 2 | 2,562 | | | | | | | | |
| Total..... | 152 | 570,461 | | | 6 | 8,217 | | | | |
| Richibucto, N.B.— | | | | | | | | | | |
| Great Britain..... Sail | | | | | | | | | | |
| Portugal..... " | | | | | | | | | | |
| Denmark..... " | | | | | | | | | | |
| Total..... | | | | | | | | | | |
| Rimouski, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 37 | 203,189 | | | 1 | 1,117 | | | | |
| Great Britain..... Sail | | | | | 5 | 5,517 | | | | |
| Total..... | 37 | 203,189 | | | 6 | 6,634 | | | | |
| River Hebert, N.S.— | | | | | | | | | | |
| United States..... Sail | 1 | 77 | | | | | | | | |
| St. Andrews, N.B.— | | | | | | | | | | |
| United States..... Steam. | 282 | 17,711 | 1,086 | 48,269 | | | | | | |
| United States..... Sail | 4 | 259 | 13 | 1,603 | | | | | | |
| Total..... | 286 | 17,970 | 1,099 | 49,872 | | | | | | |
| St. George, N.B.— | | | | | | | | | | |
| United States..... Steam. | | | 61 | 2,201 | | | | | | |
| United States..... Sail | 10 | 120 | 43 | 4,824 | | | | | | |
| Total..... | 10 | 120 | 104 | 7,025 | | | | | | |
| St. John, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 191 | 800,097 | | | 3 | 2,627 | | | | |
| Great Britain..... Sail | 2 | 2,888 | | | 4 | 4,267 | | | | |
| British W. Indies..... Steam. | 27 | 74,563 | | | | | | | | |
| British W. Indies..... Sail | 11 | 2,402 | 1 | 432 | | | | | | |
| Newfoundland..... Sail | 1 | 71 | | | | | | | | |
| San Domingo..... Steam. | | | 2 | 1,896 | 7 | 5,608 | | | | |
| Cuba..... Sail | 1 | 393 | | | | | | | | |
| France..... Steam. | 2 | 7,055 | | | | | | | | |
| France..... Sail | 1 | 132 | | | 2 | 2,834 | | | | |
| Canary Islands..... Steam. | | | | | 1 | 689 | | | | |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| St. John, N.B.— <i>Con.</i> | | | | | | | | | | |
| Canary Islands..... Sail.... | 1 | 384 | | | | | | | | |
| Italy..... Steam..... | | | | | | | | | | |
| Portugal..... Sail..... | | | | | | | | | | |
| Greenland & Iceland... "..... | | | | | | | | | | |
| Spain..... Steam..... | 1 | 2,534 | | | | | | | | |
| Spain..... Sail..... | | | | | | | | | | |
| United States..... Steam..... | 21 | 33,961 | 125 | 279,837 | | | | | | |
| United States..... Sail.... | 143 | 22,766 | 457 | 32,804 | | | | | | |
| Gibraltar..... Steam..... | 8 | 22,640 | | | | | | | | |
| French Africa..... "..... | 1 | 4,483 | | | | | | | | |
| Sea Fisheries..... Sail.... | 36 | 703 | | | | | | | | |
| Total..... | 447 | 975,072 | 585 | 314,969 | 17 | 16,025 | | | | |
| Saint Martins, N.B.— | | | | | | | | | | |
| United States..... Steam..... | | | 15 | 1,185 | | | | | | |
| United States..... Sail.... | 21 | 7,755 | 8 | 2,263 | | | | | | |
| Total..... | 21 | 7,755 | 23 | 3,448 | | | | | | |
| St. Stephen, N.B.— | | | | | | | | | | |
| United States..... Steam..... | 28 | 2,215 | 90 | 1,647 | | | | | | |
| United States..... Sail.... | 2 | 64 | 24 | 5,066 | | | | | | |
| Total..... | 30 | 2,279 | 114 | 6,713 | | | | | | |
| Sackville, N.B.— | | | | | | | | | | |
| United States..... Sail.... | 3 | 529 | 1 | 241 | | | | | | |
| Salmon River, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail.... | 1 | 219 | | | | | | | | |
| United States..... "..... | 2 | 139 | 4 | 59 | | | | | | |
| Sea Fisheries..... "..... | 3 | 41 | | | | | | | | |
| Total..... | 6 | 399 | 4 | 59 | | | | | | |
| Sandy Point, N.S.— | | | | | | | | | | |
| Great Britain..... Sail.... | | | 1 | 84 | | | | | | |
| British W. Indies..... "..... | 2 | 258 | | | | | | | | |
| Newfoundland..... Steam..... | 1 | 1,178 | | | | | | | | |
| Newfoundland..... Sail.... | 4 | 362 | 7 | 631 | | | | | | |
| United States..... "..... | 3 | 394 | 85 | 7,736 | | | | | | |
| Sea Fisheries..... Steam..... | | | 1 | 77 | | | | | | |
| Sea Fisheries..... Sail.... | | | 57 | 4,864 | | | | | | |
| Total..... | 10 | 2,192 | 151 | 13,392 | | | | | | |
| Sheet Harbour, N.S.— | | | | | | | | | | |
| Great Britain..... Steam..... | | | | | 1 | 196 | | | | |
| Shelburne, N.S.— | | | | | | | | | | |
| Great Britain..... Sail.... | | | 1 | 84 | | | | | | |
| British W. Indies..... "..... | 1 | 94 | | | | | | | | |
| Newfoundland..... "..... | 1 | 89 | | | | | | | | |
| France..... Steam..... | | | | | | | | | | |
| United States..... "..... | | | 1 | 24 | | | | | | |
| United States..... Sail.... | 9 | 960 | 22 | 2,066 | | | | | | |
| Sea Fisheries..... "..... | 13 | 394 | 19 | 1,593 | | | | | | |
| Total..... | 24 | 1,537 | 43 | 3,767 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | 1 | 3,399 | | | | | | 1 | 384 |
| 1 | 192 | | | | | | | | | | | | 1 | 3,399 |
| 6 | 939 | | | | | | | | | | | | 1 | 192 |
| 1 | 1,175 | | | | | | | | | | | | 6 | 939 |
| | | | | | | | | 1 | 664 | | | | 2 | 3,709 |
| | | | | | | 4 | 10,221 | | | | | | 1 | 664 |
| 1 | 225 | | | | | 3 | 9,135 | | | | | | 150 | 324,019 |
| | | | | | | | | | | | | | 601 | 55,795 |
| | | | | | | | | | | | | | 11 | 31,775 |
| | | | | | | | | | | | | | 1 | 4,483 |
| | | | | | | | | | | | | | 36 | 703 |
| 14 | 6,375 | 4 | 3,318 | | | 9 | 24,435 | 2 | 929 | | | | 1,078 | 1,341,123 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 15 | 1,185 |
| | | | | | | | | | | | | | 29 | 10,018 |
| | | | | | | | | | | | | | 44 | 11,203 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 118 | 3,862 |
| | | | | | | | | | | | | | 26 | 5,130 |
| | | | | | | | | | | | | | 144 | 8,992 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 4 | 770 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 219 |
| | | | | | | | | | | | | | 6 | 198 |
| | | | | | | | | | | | | | 3 | 41 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 10 | 458 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 84 |
| | | | | | | | | | | | | | 2 | 258 |
| | | | | | | | | | | | | | 1 | 1,178 |
| | | | | | | | | | | | | | 11 | 993 |
| | | | | | | | | | | | | | 88 | 8,130 |
| | | | | | | | | | | | | | 1 | 77 |
| | | | | | | | | | | | | | 57 | 4,864 |
| | | | | | | | | | | | | | 161 | 15,584 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 196 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 84 |
| | | | | | | | | | | | | | 1 | 94 |
| | | | | | | | | | | | | | 1 | 89 |
| | | 1 | 1,116 | | | | | | | | | | 1 | 1,116 |
| | | | | | | | | | | | | | 1 | 24 |
| | | | | | | | | | | | | | 31 | 3,026 |
| | | | | | | | | | | | | | 32 | 1,987 |
| | | 1 | 1,116 | | | | | | | | | | 68 | 6,420 |

No. 12.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Sherbrooke, N.S.— | | | | | | | | | | |
| Great Britain..... Sail..... | | | | | | | | | | |
| France..... "..... | | | | | | | | | | |
| United States..... "..... | 1 | 357 | | | | | | | | |
| Total..... | 1 | 357 | | | | | | | | |
| Shippegan, N.B.— | | | | | | | | | | |
| Spain..... Sail..... | | | | | | | | | | |
| Sea Fisheries..... Steam..... | 12 | 133 | | | | | | | | |
| Sea Fisheries..... Sail..... | 72 | 1,052 | 1 | 92 | | | | | | |
| Total..... | 84 | 1,185 | 1 | 92 | | | | | | |
| Shusharti Bay, B.C.— | | | | | | | | | | |
| United States..... Steam..... | | | 4 | 1,572 | | | | | | |
| Sea Fisheries..... "..... | | | 3 | 65 | | | | | | |
| Total..... | | | 7 | 1,637 | | | | | | |
| Sidney, B.C.— | | | | | | | | | | |
| United States..... Steam..... | 40 | 2,843 | 49 | 1,408 | | | | | | |
| United States..... Sail..... | 1 | 141 | 4 | 1,897 | | | | | | |
| Total..... | 41 | 2,984 | 53 | 3,305 | | | | | | |
| Sorel, Que.— | | | | | | | | | | |
| Great Britain..... Steam..... | 1 | 2,725 | | | | | | | | |
| Souris, P.E.I.— | | | | | | | | | | |
| Newfoundland..... Sail..... | 1 | 94 | | | | | | | | |
| Saint Pierre..... "..... | 1 | 71 | | | | | | | | |
| United States..... "..... | 1 | 99 | | | | | | | | |
| Sea Fisheries..... "..... | 23 | 1,166 | 11 | 865 | | | | | | |
| Total..... | 26 | 1,430 | 11 | 865 | | | | | | |
| Steveston, B.C.— | | | | | | | | | | |
| United States..... Steam..... | 52 | 2,065 | 137 | 4,541 | | | | | | |
| United States..... Sail..... | | | 15 | 326 | | | | | | |
| Sea Fisheries..... Steam..... | 10 | 990 | | | | | | | | |
| Total..... | 62 | 3,055 | 152 | 4,867 | | | | | | |
| Stickeen, B.C.— | | | | | | | | | | |
| Great Britain..... Steam..... | 10 | 835 | | | | | | | | |
| United States..... "..... | | | 41 | 620 | | | | | | |
| Total..... | 10 | 835 | 41 | 620 | | | | | | |
| Summerside, P.E.I.— | | | | | | | | | | |
| British W. Indies..... Sail..... | 1 | 99 | | | | | | | | |
| Newfoundland..... Steam..... | 5 | 1,705 | | | | | | | | |
| United States..... Sail..... | 2 | 547 | 5 | 2,530 | | | | | | |
| Total..... | 8 | 2,351 | 5 | 2,530 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 1 | 167 | | | | | | | | | | | | 1 | 167 |
| 1 | 204 | | | | | | | | | | | | 1 | 204 |
| | | | | | | | | | | | | | 1 | 357 |
| 2 | 371 | | | | | | | | | | | | 3 | 728 |
| | | | | | | | | 2 | 542 | | | | 2 | 542 |
| | | | | | | | | | | | | | 12 | 133 |
| | | | | | | | | | | | | | 73 | 1,144 |
| | | | | | | | | 2 | 542 | | | | 87 | 1,819 |
| | | | | | | | | | | | | | 4 | 1,572 |
| | | | | | | | | | | | | | 3 | 65 |
| | | | | | | | | | | | | | 7 | 1,637 |
| | | | | | | | | | | | | | 89 | 4,251 |
| | | | | | | | | | | | | | 5 | 2,038 |
| | | | | | | | | | | | | | 94 | 6,289 |
| | | | | | | | | | | | | | 1 | 2,725 |
| | | | | | | | | | | | | | 1 | 94 |
| | | | | | | | | | | | | | 1 | 71 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 34 | 2,031 |
| | | | | | | | | | | | | | 37 | 2,295 |
| | | | | | | | | | | | | | 189 | 6,606 |
| | | | | | | | | | | | | | 15 | 326 |
| | | | | | | | | | | | | | 10 | 990 |
| | | | | | | | | | | | | | 214 | 7,922 |
| | | | | | | | | | | | | | 10 | 835 |
| | | | | | | | | | | | | | 41 | 620 |
| | | | | | | | | | | | | | 51 | 1,455 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 5 | 1,705 |
| | | | | | | | | | | | | | 7 | 3,077 |
| | | | | | | | | | | | | | 13 | 4,881 |

No. 12.—STATEMENT of the Number of Tonnage of Steam

| Ports and Outports and Countries whence arrived. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Sydney, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 111 | 331,996 | | | 13 | 17,173 | | | | |
| British W. Indies..... " | 2 | 3,244 | | | | | | | | |
| British W. Indies..... Sail... | 1 | 99 | | | | | | | | |
| Newfoundland..... Steam. | 119 | 227,390 | | | 50 | 168,631 | | | | |
| Newfoundland..... Sail... | 25 | 1,843 | | | | | | | | |
| French Africa..... Steam. | 2 | 5,550 | | | | | | | | |
| Sea, Cable and Admiralty..... " | 1 | 984 | | | 1 | 3,579 | | | | |
| France..... " | 66 | 203,846 | | | | | | | | |
| Egypt..... " | 1 | 2,804 | | | | | | | | |
| Portugal..... " | | | | | 1 | 745 | | | | |
| Saint Pierre..... Sail... | 3 | 217 | | | | | | | | |
| United States..... Steam. | 41 | 80,988 | 1 | 920 | 9 | 15,776 | | | | |
| United States..... Sail... | 3 | 653 | 15 | 229 | | | | | | |
| British W. Africa..... Steam. | 2 | 4,612 | | | | | | | | |
| Greece..... " | 1 | 2,825 | | | | | | | | |
| Gibraltar..... " | 20 | 56,250 | | | | | | | | |
| Italy..... " | 7 | 17,269 | | | | | | | | |
| Sea Fisheries..... Sail... | | | 1 | 88 | | | | | | |
| Total..... | 405 | 940,570 | 17 | 1,237 | 74 | 205,904 | | | | |
| Three Rivers, Que.— | | | | | | | | | | |
| Great Britain..... Steam. | 20 | 43,965 | | | 1 | 651 | | | | |
| Tignish, P.E.I.— | | | | | | | | | | |
| Sea Fisheries..... Sail... | 3 | 94 | | | | | | | | |
| Truro, N.S.— | | | | | | | | | | |
| Great Britain..... Sail... | 1 | 283 | | | | | | | | |
| United States..... " | | | 3 | 626 | | | | | | |
| Total..... | 1 | 283 | 3 | 626 | | | | | | |
| Tusket, N.S.— | | | | | | | | | | |
| Sea Fisheries..... Sail... | | | 3 | 274 | | | | | | |
| Union Bay, B.C.— | | | | | | | | | | |
| Russia..... Steam. | 1 | 2,615 | | | | | | | | |
| United States..... " | 31 | 68,108 | 53 | 20,027 | 1 | 2,474 | | | | |
| United States..... Sail... | 11 | 9,901 | 49 | 31,792 | | | | | | |
| Japan..... Steam. | 3 | 8,697 | 1 | 2,727 | 1 | 2,624 | | | | |
| British Oceania, other. " | 1 | 4,921 | | | | | | | | |
| Total..... | 47 | 94,242 | 103 | 54,546 | 2 | 5,098 | | | | |
| Vancouver, B.C.— | | | | | | | | | | |
| Great Britain..... Steam. | 9 | 32,966 | | | | | | | | |
| Australia..... " | 29 | 130,428 | | | | | | | | |
| Australia..... Sail... | | | 2 | 1,253 | | | | | | |
| Japan..... Steam. | 25 | 160,163 | | | | | | | | |
| Dutch East Indies..... " | 1 | 3,048 | | | | | | | | |
| Peru..... " | 9 | 23,670 | 6 | 19,392 | | | | | | |
| Peru..... Sail... | | | | | | | | | | |
| China..... Steam. | 13 | 61,171 | | | 2 | 6,444 | | | | |
| Fiji Islands..... " | 2 | 4,366 | | | | | | | | |
| Philippines..... " | 3 | 11,745 | 1 | 3,192 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Continued.

| OF VESSELS. | | | | | | | | | | | | | | |
|-------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 124 | 349,169 |
| | | | | | | | | | | | | | 2 | 3,244 |
| 1 | 1,203 | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 170 | 397,224 |
| | | | | | | | | | | | | | 25 | 1,843 |
| | | | | | | | | | | | | | 2 | 5,550 |
| | | | | | | | | | | | | | 2 | 4,563 |
| | | | | | | | | | | | | | 66 | 203,846 |
| | | | | | | | | | | | | | 1 | 2,804 |
| | | | | | | | | | | | | | 1 | 745 |
| | | | | | | | | | | | | | 3 | 217 |
| | | | | | | | | 2 | 6,870 | | | | 53 | 104,554 |
| | | | | | | | | | | | | | 18 | 882 |
| | | | | | | | | | | | | | 2 | 4,612 |
| | | | | | | | | | | | | | 1 | 2,825 |
| | | | | | | | | | | | | | 20 | 56,250 |
| | | | | | | | | | | | | | 7 | 17,269 |
| | | | | | | | | | | | | | 1 | 88 |
| 1 | 1,203 | | | | | | | 2 | 6,870 | | | | 499 | 1,155,784 |
| 2 | 3,834 | | | | | | | | | | | | 23 | 48,450 |
| | | | | | | | | | | | | | 3 | 94 |
| | | | | | | | | | | | | | 1 | 283 |
| | | | | | | | | | | | | | 3 | 626 |
| | | | | | | | | | | | | | 4 | 909 |
| | | | | | | | | | | | | | 3 | 274 |
| | | | | | | | | | | | | | 1 | 2,615 |
| | | | | | | | | | | Japanese.... | 1 | 3,447 | 86 | 94,056 |
| | | | | | | | | | | | | | 60 | 41,693 |
| | | | | | | | | | | | | | 5 | 14,048 |
| | | | | | | | | | | | | | 1 | 4,921 |
| | | | | | | | | | | | | | 1 | 3,447 |
| | | | | | | | | | | | | | 153 | 157,333 |
| | | | | | | | | | | | | | 9 | 32,966 |
| | | | | | | | | | | | | | 29 | 130,423 |
| 4 | 12,016 | | | | | | | | | Japanese.... | 25 | 73,588 | 2 | 1,253 |
| | | | | | | | | | | | | | 54 | 245,767 |
| | | | | | | | | | | | | | 1 | 3,048 |
| | | | | | | | | | | | | | 15 | 43,062 |
| | | | | | | | | | | Peruvian.... | 1 | 650 | 1 | 650 |
| 1 | 3,004 | | | | | | | | | Japanese.... | 2 | 4,739 | 18 | 75,358 |
| | | | | | | | | | | | | | 2 | 4,366 |
| | | | | | | | | | | | | | 4 | 14,937 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards from Sea, etc.—Concluded.

OF VESSELS.

| Danish.. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | Total. | | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 972 |
| | | | | | | | | | | | | | 2 | 1,936 |
| 1 | 3,004 | | | | | | | | | | | | 1 | 2,574 |
| | | | | | | | | | | Japanese | 6 | 19,177 | 14 | 40,249 |
| | | | | | | | | | | Japanese | 6 | 15,484 | 7 | 18,971 |
| | | | | | | | | | | Japanese | 4 | 12,662 | 1,329 | 1,418,295 |
| | | | | | | | | | | | | | 1 | 686 |
| | | | | | | | | | | | | | 122 | 7,582 |
| 6 | 18,024 | | | | | | | | | | 44 | 126,300 | 1,612 | 2,043,100 |
| | | | | | | | | | | | | | 13 | 36,204 |
| | | | | | | | | | | | | | 1 | 2,013 |
| | | | | | | | | | | | | | 13 | 79,933 |
| | | | | | | | | | | | | | 1 | 1,011 |
| | | | | | | | | | | | | | 1 | 1,011 |
| | | | | | | | | | | | | | 1 | 3,622 |
| | | | | | | | | | | Chilian | 1 | 1,179 | 1 | 1,179 |
| | | | | | | | | | | Japanese | 29 | 125,955 | 64 | 345,952 |
| | | | | | | | | | | Japanese | 38 | 135,343 | 38 | 135,343 |
| | | | | | | | | | | Japanese | 59 | 235,021 | 1,365 | 1,331,537 |
| | | | | | | | | | | | | | 126 | 27,758 |
| | | | | | | | | | | | | | 4 | 10,113 |
| | | | | | | | | | | | | | 7 | 208 |
| | | | | | | | | | | | 127 | 497,498 | 1,635 | 1,975,884 |
| | | | | | | | | | | | | | 4 | 72 |
| | | | | | | | | | | | | | 7 | 468 |
| | | | | | | | | | | | | | 11 | 540 |
| | | | | | | | | | | | | | 4 | 1,162 |
| | | | | | | | | | | | | | 25 | 2,583 |
| | | | | | | | | | | | | | 29 | 3,745 |
| | | | | | | | | | | | | | 140 | 2,555 |
| | | | | | | | | | | | | | 11 | 10,396 |
| | | | | | | | | | | | | | 104 | 103,688 |
| | | | | | | | | | | | | | 115 | 114,084 |
| | | | | | | | | | | | | | 9 | 1,218 |
| | | | | | | | | | | | | | 4 | 771 |
| | | | | | | | | | | | | | 162 | 143,950 |
| | | | | | | | | | | | | | 91 | 8,572 |
| | | | | | | | | | | | | | 2 | 22 |
| | | | | | | | | | | | | | 121 | 7,569 |
| | | | | | | | | | | | | | 380 | 160,884 |
| | | | | | | | | | | | | | 1 | 1,004 |

8 GEORGE V, A. 1918

No. 13.—SUMMARY STATEMENT of the Nationality of Sea-going Vessels entered
March 31,

| Number. | Countries from which Arrived. | NATIONALITY | | | | | | | | | |
|---------|----------------------------------|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 1 | United Kingdom..... | 1,313 | 4,366,336 | 16 | 13,145 | 124 | 150,945 | | | 4 | 8,303 |
| 2 | Australia..... | 57 | 251,939 | 3 | 2,264 | | | | | | |
| 3 | British South Africa..... | 2 | 4,612 | 2 | 1,983 | 1 | 225 | | | | |
| 4 | British West Africa..... | 2 | 4,612 | | | | | | | | |
| 5 | British West Indies..... | 191 | 186,132 | 4 | 2,437 | 15 | 10,081 | | | | |
| 6 | British Oceania, Other..... | 1 | 4,921 | | | | | | | | |
| 7 | British Straits Settlements..... | | | | | 1 | 3,487 | | | | |
| 8 | Egypt..... | 6 | 26,305 | | | | | | | | |
| 9 | Fiji Islands..... | 2 | 4,366 | | | | | | | | |
| 10 | Gibraltar..... | 51 | 143,589 | 1 | 1,799 | 2 | 3,118 | | | | |
| 11 | Malta..... | 1 | 2,475 | | | | | | | | |
| 12 | Newfoundland..... | 1,411 | 627,412 | 22 | 3,327 | 64 | 195,987 | | | 1 | 3,663 |
| 13 | Brazil..... | | | | | | | | | | |
| 14 | Canary Islands..... | 1 | 384 | | | 1 | 689 | | | | |
| 15 | Chili..... | 2 | 8,075 | 2 | 6,196 | | | | | | |
| 16 | China..... | 48 | 281,168 | | | 2 | 6,444 | | | | |
| 17 | Cuba..... | 4 | 4,058 | | | | | | | | |
| 18 | Denmark..... | | | | | 2 | 3,590 | | | | |
| 19 | Dutch East Indies..... | 1 | 3,048 | | | | | | | | |
| 20 | France..... | 175 | 531,843 | 2 | 5,404 | 19 | 28,651 | | | | |
| 21 | French Africa..... | 9 | 30,325 | | | 4 | 5,192 | | | | |
| 22 | Greece..... | 6 | 20,576 | | | | | | | | |
| 23 | Greenland, Iceland, etc..... | | | | | | | | | | |
| 24 | Hawaii..... | | | 1 | 1,105 | 1 | 831 | | | | |
| 25 | Holland..... | | | | | 1 | 1,528 | | | | |
| 26 | Italy..... | 27 | 68,199 | 2 | 6,052 | 1 | 1,411 | | | 2 | 2,084 |
| 27 | Japan..... | 29 | 172,009 | 1 | 2,727 | 1 | 2,624 | | | | |
| 28 | Mexico..... | 6 | 13,783 | 2 | 6,081 | | | | | | |
| 29 | Nicaragua..... | | | 2 | 1,671 | | | | | | |
| 30 | Norway..... | 1 | 3,007 | | | 8 | 8,301 | | | | |
| 31 | Panama..... | 1 | 124 | | | | | | | | |
| 32 | Peru..... | 9 | 23,670 | 6 | 19,392 | | | | | | |
| 33 | Philippines..... | 3 | 11,745 | 1 | 3,192 | | | | | | |
| 34 | Portugal..... | 20 | 15,540 | | | 3 | 2,869 | | | | |
| 35 | Russia..... | 4 | 9,038 | 1 | 1,193 | 3 | 10,452 | | | | |
| 36 | St. Pierre..... | 40 | 5,475 | | | | | | | | |
| 37 | San Domingo..... | | | 4 | 3,792 | 10 | 8,319 | | | | |
| 38 | Sea Fisheries..... | 1,738 | 82,521 | 1,665 | 183,041 | | | | | | |
| 39 | Spain..... | 11 | 14,357 | | | 10 | 6,579 | | | | |
| 40 | United States..... | 4,550 | 3,498,680 | 6,591 | 2,120,086 | 173 | 371,715 | | | 11 | 23,087 |
| 41 | Sea, Cable and Admiralty..... | 15 | 25,911 | 9 | 2,115 | 3 | 6,094 | | | | |
| | Total..... | 9,737 | 10,446,235 | 8,337 | 2,387,002 | 449 | 829,132 | | | 18 | 37,137 |

SESSIONAL PAPER No. 11a

Inwards from Sea, from each Country, during the Fiscal Year ended 1917.

| OF VESSELS. | | | | | | | | | | | | | | | | | | |
|-------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|---------|--|--|--|
| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | | Number. | | | |
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name of Flag. | Vessels. | Tons Register. | Vessels. | Tons Register. | | | | |
| 65 | 38,989 | 4 | 7,403 | | | 1 | 1,999 | 13 | 11,544 | Brazilian.... | 2 | 466 | 1,553 | 4,610,738 | 1 | | | |
| | | | | | | | | | | Swedish.... | 10 | 9,860 | | | | | | |
| | | | | | | | | | | Uruguayan. | 1 | 1,748 | | | | | | |
| 1 | 1,223 | | | | | | | | | | | | 60 | 254,203 | 2 | | | |
| 1 | 161 | | | | | | | | | | | | 6 | 8,043 | 3 | | | |
| | | | | | | 1 | 1,680 | | | | | | 2 | 4,612 | 4 | | | |
| | | | | | | | | | | | | | 212 | 200,491 | 5 | | | |
| | | | | | | | | | | Japanese.... | 6 | 15,484 | 1 | 4,921 | 6 | | | |
| | | | | | | | | | | | | | 7 | 18,971 | 7 | | | |
| | | | | | | | | | | | | | 6 | 26,305 | 8 | | | |
| | | | | | | | | | | | | | 2 | 4,366 | 9 | | | |
| 2 | 2,366 | | | | | 3 | 9,135 | 1 | 288 | | | | 60 | 160,295 | 10 | | | |
| | | | | | | | | | | | | | 1 | 2,475 | 11 | | | |
| 6 | 2,841 | 2 | 432 | | | | | | | | | | 1,506 | 833,662 | 12 | | | |
| 1 | 2,397 | | | | | | | | | | | | 1 | 2,397 | 13 | | | |
| | | | | | | | | | | | | | 2 | 1,073 | 14 | | | |
| | | | | | | | | | | Chilian.... | 1 | 1,179 | 5 | 15,450 | 15 | | | |
| 1 | 3,004 | | | | | | | | | Japanese.... | 31 | 130,694 | 82 | 421,310 | 16 | | | |
| | | | | | | | | | | | | | 4 | 4,058 | 17 | | | |
| 66 | 11,805 | | | | | | | 3 | 1,028 | | | | 71 | 16,423 | 18 | | | |
| 19 | 4,507 | 4 | 3,054 | | | | | 7 | 3,046 | | | | 1 | 3,048 | 19 | | | |
| | | | | | | | | | | | | | 226 | 576,505 | 20 | | | |
| | | | | | | | | | | | | | 13 | 35,517 | 21 | | | |
| | | | | | | | | | | | | | 6 | 20,576 | 22 | | | |
| 26 | 4,532 | | | | | | | | | Swedish.... | 1 | 417 | 27 | 4,949 | 23 | | | |
| | | | | | | | | | | | | | 2 | 1,936 | 24 | | | |
| | | | | | | | | | | Dutch.... | 2 | 3,937 | 3 | 5,465 | 25 | | | |
| 2 | 3,469 | | | | | 14 | 54,257 | | | | | | 48 | 135,472 | 26 | | | |
| 4 | 12,016 | | | | | | | | | Japanese.... | 65 | 213,552 | 100 | 402,928 | 27 | | | |
| | | | | | | | | | | | | | 8 | 19,864 | 28 | | | |
| | | | | | | | | | | | | | 2 | 1,671 | 29 | | | |
| 2 | 1,167 | | | | | | | | | | | | 11 | 12,475 | 30 | | | |
| | | | | | | | | | | | | | 1 | 124 | 31 | | | |
| | | | | | | | | | | Peruvian.... | 1 | 650 | 16 | 43,712 | 32 | | | |
| | | | | | | | | | | | | | 4 | 14,937 | 33 | | | |
| 5 | 962 | 4 | 653 | | | | | 1 | 191 | | | | 33 | 20,215 | 34 | | | |
| 1 | 3,004 | | | | | | | 2 | 4,518 | Japanese.... | 6 | 19,177 | 17 | 47,382 | 35 | | | |
| | | 40 | 8,701 | | | | | | | | | | 80 | 14,176 | 36 | | | |
| | | | | | | | | | | Cuban.... | 1 | 1,151 | 15 | 13,262 | 37 | | | |
| 1 | 81 | 1 | 58 | | | | | | | | | | 3,405 | 266,701 | 38 | | | |
| 12 | 6,314 | 1 | 107 | | | | | 13 | 3,608 | Spanish.... | 1 | 2,289 | 49 | 33,321 | 39 | | | |
| | | | | | | | | | | Swedish.... | 1 | 1,067 | | | | | | |
| 36 | 59,951 | | | | | 5 | 12,947 | 7 | 20,007 | Dutch.... | 31 | 83,890 | | | | | | |
| | | | | | | | | | | Japanese.... | 74 | 273,182 | 11,488 | 6,488,284 | 40 | | | |
| | | | | | | | | | | Swedish.... | 10 | 24,739 | | | | | | |
| | | 3 | 3,348 | | | | | | | | | | 30 | 37,468 | 41 | | | |
| 251 | 158,789 | 59 | 23,756 | | | 24 | 80,018 | 47 | 44,230 | | 244 | 783,482 | 19,166 | 14,789,781 | | | | |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Bathurst, N.B.— <i>Con.</i> | | | | | | | | | | |
| United States..... Sail..... | | | 1 | 260 | | | | | | |
| Sea Fisheries..... "..... | 11 | 143 | | | | | | | | |
| Total..... | 16 | 10,477 | 1 | 260 | 7 | 6,370 | | | | |
| Bear River, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail..... | 3 | 632 | | | | | | | | |
| Cuba..... Steam..... | 1 | 268 | | | | | | | | |
| United States..... Sail..... | 16 | 2,019 | | | | | | | | |
| Total..... | 20 | 2,919 | | | | | | | | |
| Belleveaus Cove, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail..... | 3 | 597 | | | | | | | | |
| Porto Rico..... "..... | 1 | 64 | | | | | | | | |
| United States..... "..... | 1 | 90 | | | | | | | | |
| Total..... | 5 | 751 | | | | | | | | |
| Bridgewater, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail..... | 3 | 294 | | | | | | | | |
| Newfoundland..... "..... | 1 | 177 | | | | | | | | |
| Argentina..... "..... | 1 | 503 | 1 | 1,005 | 1 | 1,080 | | | | |
| Cuba..... "..... | 2 | 816 | 4 | 2,345 | | | | | | |
| Porto Rico..... "..... | 1 | 268 | | | | | | | | |
| Azores and Maderia..... "..... | 4 | 1,293 | | | | | | | | |
| United States..... Steam..... | 1 | 110 | 6 | 778 | | | | | | |
| United States..... Sail..... | 20 | 3,986 | 41 | 15,571 | | | | | | |
| Total..... | 33 | 7,447 | 52 | 19,699 | 1 | 1,080 | | | | |
| Buctouche, N.B.— | | | | | | | | | | |
| Great Britain..... Sail..... | | | | | | | | | | |
| Campbellton, N.B.— | | | | | | | | | | |
| Great Britain..... Steam..... | 10 | 27,307 | | | 10 | 9,917 | | | | |
| Great Britain..... Sail..... | | | | | 3 | 1,467 | | | | |
| Argentina..... "..... | | | | | 6 | 8,426 | | | | |
| France..... Steam..... | | | | | | | | 1 | 1,219 | |
| France..... Sail..... | | | | | | | | | | |
| Portugal..... "..... | | | | | | | | | | |
| Total..... | 10 | 27,307 | | | 19 | 19,810 | | | 1 | 1,219 |
| Campo Bello, N.B.— | | | | | | | | | | |
| United States..... Steam..... | 118 | 20,447 | 38 | 1,101 | | | | | | |
| United States..... Sail..... | 1 | 68 | 1 | 71 | | | | | | |
| Total..... | 119 | 20,515 | 39 | 1,172 | | | | | | |
| Canning, N.S.— | | | | | | | | | | |
| United States..... Sail..... | 2 | 596 | | | | | | | | |
| Canso, N.S.— | | | | | | | | | | |
| Newfoundland..... Steam..... | | | 1 | 24 | | | | | | |
| Newfoundland..... Sail..... | 4 | 242 | 3 | 320 | | | | | | |
| United States..... Steam..... | 1 | 100 | 4 | 143 | | | | | | |
| United States..... Sail..... | 14 | 1,195 | 17 | 1,890 | | | | | | |
| Sea Fisheries..... Steam..... | 54 | 9,108 | 94 | 1,911 | | | | | | |
| Sea Fisheries..... Sail..... | 57 | 5,071 | 122 | 8,047 | | | | | | |
| Total..... | 130 | 15,716 | 241 | 12,335 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 260 |
| | | | | | | | | | | | | | 11 | 143 |
| 8 | 3,594 | | | | | | | | | | 1 | 225 | 33 | 20,926 |
| | | | | | | | | | | | | | 3 | 632 |
| | | | | | | | | | | | | | 1 | 268 |
| | | | | | | | | | | | | | 16 | 2,019 |
| | | | | | | | | | | | | | 20 | 2,919 |
| | | | | | | | | | | | | | 3 | 597 |
| | | | | | | | | | | | | | 1 | 64 |
| | | | | | | | | | | | | | 1 | 90 |
| | | | | | | | | | | | | | 5 | 751 |
| | | | | | | | | | | | | | 3 | 294 |
| | | | | | | | | | | | | | 1 | 177 |
| | | | | | | | | | | | | | 3 | 2,588 |
| | | | | | | | | | | | | | 6 | 3,161 |
| | | | | | | | | | | | | | 1 | 268 |
| | | | | | | | | | | | | | 4 | 1,293 |
| | | | | | | | | | | | | | 7 | 888 |
| | | | | | | | | | | | | | 61 | 19,557 |
| | | | | | | | | | | | | | 86 | 28,226 |
| 8 | 1,428 | | | | | | | | | | | | 8 | 1,428 |
| 4 | 5,435 | | | | | | | | | Swedish | 2 | 2,138 | 26 | 44,797 |
| 16 | 2,804 | | | | | | | 9 | 3,959 | | | | 28 | 8,230 |
| | | | | | | | | 3 | 4,797 | | | | 9 | 13,223 |
| | | | | | | | | | | | | | 1 | 1,219 |
| | | 2 | 494 | | | | | | | | | | 2 | 494 |
| 2 | 397 | | | | | | | | | | | | 2 | 397 |
| 22 | 8,636 | 2 | 494 | | | | | 12 | 8,756 | | 2 | 2,138 | 68 | 68,860 |
| | | | | | | | | | | | | | 156 | 21,548 |
| | | | | | | | | | | | | | 2 | 139 |
| | | | | | | | | | | | | | 158 | 21,687 |
| | | | | | | | | | | | | | 2 | 596 |
| | | | | | | | | | | | | | 1 | 24 |
| | | | | | | | | | | | | | 7 | 562 |
| | | | | | | | | | | | | | 5 | 243 |
| | | | | | | | | | | | | | 31 | 3,085 |
| | | | | | | | | | | | | | 148 | 11,019 |
| | | | | | | | | | | | | | 179 | 13,118 |
| | | | | | | | | | | | | | 371 | 28,051 |

SESSIONAL PAPER.No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 157 | 2,249 |
| | | | | | | | | | | | | | 1 | 76 |
| | | | | | | | | | | | | | 5 | 473 |
| | | | | | | | | | | | | | 6 | 549 |
| | | | | | | | | | | | | | 17 | 5,797 |
| | | | | | | | | | | | | | 6 | 406 |
| | | | | | | | | | | | | | 2 | 5,089 |
| | | | | | | | | | | | | | 3 | 213 |
| | | | | | | | | | | | | | 21 | 22,944 |
| | | | | | | | | | | | | | 4 | 469 |
| | | | | | | | | | | | | | 3 | 37 |
| | | | | | | | | | | | | | 56 | 34,955 |
| | | | | | | | | | | | | | | |
| 3 | 3,037 | | | | | | | 8 | 1,896 | | | | 29 | 37,600 |
| 60 | 11,171 | | | | | | | | | | | | 63 | 14,965 |
| 2 | 362 | | | | | | | | | | | | 2 | 362 |
| | | | | | | | | | | | | | 18 | 19,839 |
| | | | | | | | | | | Uruguayan.. | 1 | 430 | 14 | 3,586 |
| 65 | 14,570 | | | | | | | 8 | 1,896 | | 1 | 430 | 126 | 76,352 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 67 | 5,418 |
| | | | | | | | | | | | | | 5 | 1,099 |
| | | | | | | | | | | | | | 4 | 3,566 |
| | | | | | | | | | | | | | 1 | 1,920 |
| | | | | | | | | | | | | | 77 | 12,003 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 30 |
| | | | | | | | | | | | | | 10 | 362 |
| | | | | | | | | | | | | | 2 | 21 |
| | | | | | | | | | | | | | 20 | 220 |
| | | | | | | | | | | | | | 33 | 633 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 97 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 5 | 12,960 |
| 2 | 3,188 | | | | | | | | | | | | 12 | 19,539 |
| 1 | 1,338 | | | | | | | | | | | | 1 | 1,338 |
| | | | | | | | | | | | | | 5 | 6,350 |
| 3 | 4,526 | | | | | | | | | | | | 23 | 40,187 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 223 |
| | | | | | | | | | | | | | 8 | 891 |
| | | | | | | | | | | | | | 9 | 1,114 |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Clarks Harbour, N.S.— | | | | | | | | | | |
| United States..... Steam. | | | 41 | 575 | | | | | | |
| United States..... Sail.... | 3 | 205 | | | | | | | | |
| Sea Fisheries..... Steam. | 3 | 69 | 25 | 394 | | | | | | |
| Total..... | 6 | 274 | 66 | 969 | | | | | | |
| Clementsport, N. S..... | | | | | | | | | | |
| United States..... Sail.... | 12 | 1,576 | | | | | | | | |
| Dalhousie, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 2 | 5,130 | | | | | | | | |
| Great Britain..... Sail.... | | | | | 1 | 1,043 | | | | |
| France..... Steam. | | | | | 1 | 1,527 | | | | |
| United States..... “ | 2 | 2,260 | 4 | 3,678 | | | | | | |
| Total..... | 4 | 7,390 | 4 | 3,678 | 2 | 2,570 | | | | |
| Digby, N.S..... | | | | | | | | | | |
| United States..... Steam. | 1 | 888 | 4 | 81 | | | | | | |
| United States..... Sail.... | 13 | 6,568 | 7 | 606 | | | | | | |
| Total..... | 14 | 7,456 | 11 | 687 | | | | | | |
| Dorehester, N.B.— | | | | | | | | | | |
| United States..... Sail.... | 2 | 420 | 1 | 260 | | | | | | |
| Fredericton, N.B.— | | | | | | | | | | |
| United States..... Sail.... | 3 | 952 | 12 | 2,574 | | | | | | |
| Gaspé, Que..... | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 1,131 | | | 7 | 8,395 | | | | |
| Great Britain..... Sail.... | 1 | 146 | 3 | 1,065 | 2 | 2,662 | | | | |
| British W. Indies..... “ | 2 | 196 | | | | | | | | |
| France..... “ | 2 | 198 | 1 | 253 | | | | | | |
| United States..... Steam. | 8 | 8,945 | 4 | 3,677 | | | | | | |
| United States..... Sail.... | 7 | 660 | 9 | 2,661 | | | | | | |
| Total..... | 21 | 11,276 | 17 | 7,656 | 9 | 11,057 | | | | |
| Georgetown, P.E.I.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 7 | 384 | | | | | | | | |
| Glace Bay, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 9 | 861 | | | | | | | | |
| Great Britain..... Sail.... | 150 | 7,529 | | | | | | | | |
| United States..... Steam. | | | 4 | 62 | | | | | | |
| Total..... | 159 | 8,390 | 4 | 62 | | | | | | |
| Halifax, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 192 | 866,676 | 3 | 5,908 | 4 | 4,416 | | | | |
| Great Britain..... Sail.... | 11 | 4,859 | 11 | 3,767 | 18 | 19,378 | | | | |
| British W. Indies..... Steam. | | | | | 16 | 11,598 | | | | |
| British W. Indies..... Sail.... | 6 | 2,570 | | | | | | | | |
| Newfoundland..... Steam. | 67 | 65,379 | | | 1 | 3,578 | | | | |
| Newfoundland..... Sail.... | 94 | 10,313 | 2 | 410 | | | | | | |
| Mexico..... Steam. | 5 | 7,573 | | | | | | | | |
| Brazil..... Steam. | 7 | 1,892 | | | | | | | | |
| Cuba..... “ | 2 | 486 | | | | | | | | |
| France..... Steam. | 17 | 32,675 | | | 3 | 12,413 | | | 1 | 1,219 |
| France..... Sail.... | | | 2 | 704 | 2 | 1,734 | | | | |
| British Guiana..... Steam. | 26 | 73,984 | | | | | | | | |
| British Guiana..... Sail.... | 3 | 294 | | | | | | | | |
| Holland..... Steam. | | | 1 | 2,723 | 13 | 22,073 | | | 9 | 18,471 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 41 | 575 |
| | | | | | | | | | | | | | 3 | 205 |
| | | | | | | | | | | | | | 23 | 463 |
| | | | | | | | | | | | | | 72 | 1,243 |
| | | | | | | | | | | | | | 12 | 1,576 |
| 3 | 3,579 | | | | | | | | | | | | 5 | 8,709 |
| 2 | 397 | | | | | | | | | | | | 3 | 1,440 |
| | | | | | | | | | | | | | 1 | 1,527 |
| | | | | | | | | | | | | | 6 | 5,938 |
| 5 | 3,976 | | | | | | | | | | | | 15 | 17,614 |
| | | | | | | | | | | | | | 5 | 969 |
| | | | | | | | | | | | | | 20 | 7,174 |
| | | | | | | | | | | | | | 25 | 8,143 |
| | | | | | | | | | | | | | 3 | 680 |
| | | | | | | | | | | | | | 15 | 3,526 |
| 3 | 664 | | | | | | | 2 | 590 | | | | 8 | 9,526 |
| | | | | | | | | | | | | | 11 | 5,127 |
| | | | | | | | | | | | | | 2 | 196 |
| | | | | | | | | | | | | | 3 | 451 |
| | | | | | | | | | | | | | 12 | 12,622 |
| | | | | | | | | | | | | | 16 | 3,321 |
| 3 | 664 | | | | | | | 2 | 590 | | | | 52 | 31,243 |
| | | | | | | | | | | | | | 7 | 384 |
| | | | | | | | | | | | | | 9 | 861 |
| | | | | | | | | | | | | | 150 | 7,529 |
| | | | | | | | | | | | | | 4 | 62 |
| | | | | | | | | | | | | | 163 | 8,452 |
| 7 | 1,295 | 1 | 340 | | | | | 2 | 2,545 | Swedish.... | 2 | 2,506 | 203 | 882,051 |
| | | | | | | | | 5 | 2,163 | Swedish.... | 1 | 204 | 54 | 32,006 |
| | | | | | | | | | | | | | 16 | 11,598 |
| | | | | | | | | | | | | | 6 | 2,570 |
| | | | | | | | | | | | | | 68 | 68,957 |
| | | | | | | | | | | | | | 96 | 10,723 |
| | | | | | | | | | | | | | 5 | 7,573 |
| | | | | | | | | | | | | | 7 | 1,892 |
| | | | | | | | | | | | | | 2 | 486 |
| | | 1 | 4,236 | | | | | | | | | | 22 | 50,543 |
| | | 1 | 153 | | | | | | | | | | 5 | 2,591 |
| | | | | | | | | | | | | | 26 | 73,984 |
| | | | | | | | | | | | | | 3 | 294 |
| 1 | 938 | | | | | | | | | Dutch..... | 14 | 30,612 | 38 | 74,817 |

8 GEORGE V, A. 1918

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Halifax, N.S.— <i>Con.</i> | | | | | | | | | | |
| Italy..... Steam. | 1 | 2,475 | | | | | | | | |
| Norway..... "..... | | | 4 | 9,489 | 5 | 5,905 | | | | |
| Denmark..... "..... | | | | | 2 | 3,084 | | | | |
| Denmark..... Sail..... | | | | | | | | | | |
| New Zealand..... Steam. | 3 | 18,293 | | | | | | | | |
| Russia..... "..... | | | | | 1 | 2,474 | | | | |
| Saint Pierre..... "..... | | | | | | | | | | |
| Saint Pierre..... Sail..... | 1 | 84 | | | | | | | | |
| Gibraltar..... Steam. | 2 | 5,658 | | | | | | | | |
| Sweden..... "..... | | | 2 | 5,387 | 1 | 2,313 | | | | |
| United States..... Steam. | 187 | 568,856 | 29 | 40,197 | 22 | 55,826 | | | 2 | 4,632 |
| United States..... Sail..... | 32 | 6,612 | 21 | 7,487 | 3 | 5,089 | | | | |
| Sea, Cable and Admiralty..... Steam. | 78 | 244,502 | 6 | 1,410 | | | | | | |
| San Domingo..... "..... | | | 1 | 948 | 2 | 1,818 | | | | |
| Bermuda..... "..... | 1 | 7,029 | | | | | | | | |
| Danish East Indies..... Sail..... | | | | | | | | | | |
| Canary Islands..... "..... | | | 1 | 605 | | | | | | |
| Sea Fisheries..... Steam. | 10 | 1,441 | | | | | | | | |
| Sea Fisheries..... Sail..... | 288 | 17,215 | 42 | 2,289 | | | | | | |
| Total..... | 1,033 | 1,938,866 | 125 | 81,324 | 113 | 201,905 | | | 12 | 24,322 |
| Hantsport, N.S.— | | | | | | | | | | |
| United States..... Steam. | | | 10 | 3,008 | | | | | | |
| United States..... Sail..... | | | 6 | 1,300 | | | | | | |
| Total..... | | | 16 | 4,308 | | | | | | |
| Hillsborough, N.B.— | | | | | | | | | | |
| United States..... Sail..... | 8 | 7,574 | 11 | 4,747 | | | | | | |
| Indian Island, N.B.— | | | | | | | | | | |
| United States..... Steam. | 5 | 8 | 100 | 1,118 | | | | | | |
| Isaacs Harbour, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail..... | | | 1 | 74 | | | | | | |
| United States..... "..... | 1 | 99 | | | | | | | | |
| Sea Fisheries..... Steam. | 4 | 50 | 11 | 294 | | | | | | |
| Sea Fisheries..... Sail..... | | | 3 | 286 | | | | | | |
| Total..... | 5 | 149 | 15 | 654 | | | | | | |
| Joggins Mines, N.S.— | | | | | | | | | | |
| United States..... Sail..... | 14 | 1,739 | 6 | 1,201 | | | | | | |
| Kingsport, N.S.— | | | | | | | | | | |
| Cuba..... Steam. | 4 | 3,018 | | | | | | | | |
| Cuba..... Sail..... | 2 | 590 | | | | | | | | |
| United States..... "..... | | | 1 | 145 | | | | | | |
| Total..... | 6 | 3,608 | 1 | 145 | | | | | | |
| Ladner, B.C.— | | | | | | | | | | |
| United States..... Steam. | 1 | 128 | 2 | 632 | | | | | | |
| Ladysmith, B.C.— | | | | | | | | | | |
| United States..... Steam. | 43 | 9,002 | 84 | 30,903 | | | | | | |
| United States..... Sail..... | 42 | 5,968 | 81 | 26,385 | | | | | | |
| Total..... | 85 | 14,970 | 165 | 57,288 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 6 | 22,997 | | | | | | | | | | | | 1 | 2,475 |
| | | | | | | | | | | | | | 20 | 50,206 |
| | | | | | | | | | | | | | 15 | 38,391 |
| | | | | | | | | | | | | | 2 | 3,084 |
| | | | | | | | | | | | | | 3 | 18,293 |
| | | | | | | | | | | | | | 4 | 13,126 |
| | | 15 | 3,240 | | | | | 3 | 10,652 | | | | 15 | 3,240 |
| | | | | | | | | | | | | | 1 | 84 |
| | | | | | | | | | | | | | 2 | 5,658 |
| | | | | | | | | | | | | | 3 | 7,700 |
| | | | | | | | | | | Dutch..... | 3 | 8,956 | | |
| | | | | | | | | | | Swedish..... | 3 | 3,274 | | |
| 2 | 5,432 | | | | | | | 1 | 4,119 | Uruguayan... | 1 | 1,745 | | |
| | | | | | | | | | | Spanish..... | 1 | 2,289 | 251 | 695,326 |
| | | | | | | | | | | | | | 56 | 19,188 |
| | | 3 | 3,348 | | | | | | | | | | | |
| | | | | | | | | | | Cuban..... | 1 | 1,151 | 87 | 249,260 |
| | | | | | | | | | | | | | 4 | 3,917 |
| 1 | 161 | | | | | | | | | | | | 1 | 7,029 |
| | | | | | | | | | | | | | 1 | 161 |
| | | | | | | | | | | | | | 1 | 605 |
| | | | | | | | | | | | | | 10 | 1,441 |
| | | | | | | | | | | | | | 330 | 19,504 |
| 17 | 30,823 | 21 | 11,317 | | | | | 11 | 19,479 | | 26 | 50,737 | 1,358 | 2,358,773 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 10 | 3,008 |
| | | | | | | | | | | | | | 6 | 1,300 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 16 | 4,308 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 19 | 12,321 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 105 | 1,126 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1 | 74 |
| | | | | | | | | | | | | | 1 | 99 |
| | | | | | | | | | | | | | 15 | 344 |
| | | | | | | | | | | | | | 3 | 286 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 20 | 803 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 20 | 2,940 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 4 | 3,018 |
| | | | | | | | | | | | | | 2 | 590 |
| | | | | | | | | | | | | | 1 | 145 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 7 | 3,753 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 3 | 760 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 127 | 39,905 |
| | | | | | | | | | | | | | 123 | 32,353 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 250 | 72,258 |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| La Have, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail. | 2 | 197 | | | | | | | | |
| Newfoundland..... "..... | 10 | 1,028 | | | | | | | | |
| United States..... "..... | 14 | 1,601 | | | | | | | | |
| Argentina..... "..... | 1 | 503 | | | | | | | | |
| Sea Fisheries..... Steam. | 1 | 11 | 14 | 924 | | | | | | |
| Sea Fisheries..... Sail.... | 72 | 5,821 | 2 | 161 | | | | | | |
| Total..... | 100 | 9,161 | 16 | 1,085 | | | | | | |
| Liverpool, N.S.— | | | | | | | | | | |
| Great Britain..... Sail.... | | | 1 | 78 | | | | | | |
| British W. Indies..... "..... | 20 | 3,031 | | | | | | | | |
| Newfoundland..... Steam. | | | 2 | 174 | | | | | | |
| Newfoundland..... Sail.... | 1 | 54 | 3 | 277 | | | | | | |
| Cuba..... "..... | | | 1 | 214 | | | | | | |
| Porto Rico..... "..... | 1 | 84 | | | | | | | | |
| United States..... Steam. | 1 | 20 | 14 | 1,353 | 1 | 898 | | | | |
| United States..... Sail.... | 36 | 5,292 | 36 | 10,261 | | | | | | |
| Sea Fisheries..... Steam. | | | 80 | 3,781 | | | | | | |
| Sea Fisheries..... Sail.... | | | 59 | 4,651 | | | | | | |
| Total..... | 59 | 8,481 | 196 | 20,789 | 1 | 898 | | | | |
| Lockeport, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 2 | 163 | | | | | | | | |
| United States..... "..... | 1 | 91 | 10 | 136 | | | | | | |
| Sea Fisheries..... "..... | 48 | 1,652 | 30 | 2,166 | | | | | | |
| Total..... | 51 | 1,936 | 40 | 2,302 | | | | | | |
| Lord's Cove, N.B.— | | | | | | | | | | |
| United States..... Steam. | 215 | 4,011 | 100 | 1,614 | | | | | | |
| Louisburg, N.S.— | | | | | | | | | | |
| Great Britain..... Steam. | 12 | 31,477 | | | 49 | 79,045 | | | | |
| Newfoundland..... "..... | 87 | 53,929 | | | | | | | | |
| Newfoundland..... Sail.... | 51 | 4,814 | 10 | 979 | | | | | | |
| British S. Africa..... Steam. | 1 | 2,304 | | | | | | | | |
| France..... "..... | 22 | 56,247 | | | 7 | 11,932 | | | 1 | 1,219 |
| Egypt..... "..... | 1 | 2,749 | | | | | | | 4 | 7,034 |
| Holland..... "..... | | | | | 6 | 10,057 | | | | |
| Italy..... "..... | 1 | 2,380 | | | | | | | | |
| Russia..... "..... | | | | | 1 | 2,127 | | | | |
| Saint Pierre..... "..... | 1 | 118 | | | | | | | | |
| Saint Pierre..... Sail.... | 2 | 164 | | | | | | | | |
| United States..... Steam. | 74 | 110,859 | 3 | 6,999 | 2 | 1,668 | | | | |
| United States..... Sail.... | 8 | 5,824 | 3 | 219 | | | | | | |
| Gibraltar..... Steam. | 2 | 5,524 | | | 4 | 9,297 | | | | |
| Sea, Cable and Admiralty..... Steam. | 29 | 79,003 | 2 | 470 | | | | | | |
| San Domingo..... "..... | | | 1 | 948 | | | | | | |
| Sea Fisheries..... Sail.... | 5 | 377 | 155 | 6,465 | | | | | | |
| Total..... | 296 | 355,769 | 174 | 16,080 | 69 | 114,126 | | | 5 | 28,253 |
| Lower East Pubnico, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 1 | 12 | 1 | 86 | | | | | | |
| United States..... "..... | 5 | 287 | 14 | 335 | | | | | | |
| Sea Fisheries..... "..... | 26 | 1,369 | 26 | 1,769 | | | | | | |
| Total..... | 32 | 1,668 | 41 | 2,190 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|------------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 2 | 197 |
| | | | | | | | | | | | | | 10 | 1,028 |
| | | | | | | | | | | | | | 14 | 1,601 |
| | | | | | | | | | | | | | 1 | 503 |
| | | | | | | | | | | | | | 15 | 935 |
| | | | | | | | | | | | | | 74 | 5,982 |
| | | | | | | | | | | | | | 116 | 10,246 |
| | | | | | | | | | | | | | 1 | 78 |
| | | | | | | | | | | | | | 20 | 3,031 |
| | | | | | | | | | | | | | 2 | 174 |
| | | | | | | | | | | | | | 4 | 331 |
| | | | | | | | | | | | | | 1 | 214 |
| | | | | | | | | | | | | | 1 | 84 |
| | | | | | | | | | | | | | 16 | 2,271 |
| | | | | | | | | | | | | | 72 | 15,553 |
| | | | | | | | | | | | | | 80 | 3,781 |
| | | | | | | | | | | | | | 59 | 4,651 |
| | | | | | | | | | | | | | 256 | 30,168 |
| | | | | | | | | | | | | | 2 | 163 |
| | | | | | | | | | | | | | 11 | 227 |
| | | | | | | | | | | | | | 78 | 3,848 |
| | | | | | | | | | | | | | 91 | 4,238 |
| | | | | | | | | | | | | | 315 | 5,625 |
| 19 | 25,642 | | | | | | | | | Swedish. Dutch..... | 2 | 2,506 | | |
| | | | | | | | | | | | 1 | 1,597 | 83 | 140,267 |
| | | | | | | | | | | | | | 87 | 53,929 |
| | | | | | | | | | | | | | 61 | 5,793 |
| | | | | | | | | | | | | | 1 | 2,304 |
| | | | | | | | | | | | | | 30 | 69,398 |
| | | | | | | | | | | | | | 1 | 2,749 |
| | | | | | | | | | | Dutch..... | 1 | 1,306 | 11 | 18,397 |
| | | | | | | | | | | | 2 | 5,921 | 3 | 8,301 |
| | | | | | | | | | | | | | 1 | 2,127 |
| | | | | | | | | | | | | | 1 | 118 |
| | | | | | | | | | | | | | 2 | 164 |
| | | | | | | | | | | Dutch..... | 1 | 1,671 | 82 | 124,494 |
| 2 | 3,297 | | | | | | | | | | 1 | 3,540 | 11 | 6,043 |
| | | | | | | | | | | Spanish..... | | | 8 | 20,343 |
| | | | | | | | | | | | 1 | 1,982 | | |
| | | | | | | | | | | | | | 31 | 79,473 |
| | | | | | | | | | | | | | 1 | 948 |
| | | | | | | | | | | | | | 160 | 6,842 |
| 21 | 28,939 | | | | | 3 | 9,461 | | | | 6 | 9,062 | 574 | 541,690 |
| | | | | | | | | | | | | | 2 | 98 |
| | | | | | | | | | | | | | 19 | 622 |
| | | | | | | | | | | | | | 52 | 3,138 |
| | | | | | | | | | | | | | 73 | 3,858 |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Lunenburg, N.S.— | | | | | | | | | | |
| Great Britain..... Sail.... | 1 | 299 | | | | | | | | |
| British W. Indies..... “ | 5 | 471 | | | | | | | | |
| Newfoundland..... “ | 20 | 2,139 | 1 | 83 | | | | | | |
| Porto Rico..... “ | 22 | 2,219 | | | | | | | | |
| United States..... Steam | | | 1 | 331 | | | | | | |
| United States..... Sail.... | 19 | 3,977 | 2 | 491 | | | | | | |
| Sea Fisheries..... Steam | 54 | 711 | 26 | 1,793 | | | | | | |
| Sea Fisheries..... Sail.... | 204 | 15,817 | 3 | 309 | | | | | | |
| Total..... | 325 | 25,633 | 33 | 3,007 | | | | | | |
| Magdalen Islands, Que.— | | | | | | | | | | |
| United States..... Sail.... | 7 | 533 | 13 | 957 | | | | | | |
| Mahone Bay, N.S.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 2 | 182 | | | | | | | | |
| United States..... “ | 7 | 870 | | | | | | | | |
| Sea Fisheries..... “ | 4 | 229 | | | | | | | | |
| Total..... | 13 | 1,281 | | | | | | | | |
| Maitland, N.S.— | | | | | | | | | | |
| United States..... Sail.... | 7 | 795 | | | | | | | | |
| Meteghan River, N.S.— | | | | | | | | | | |
| Cuba..... Sail.... | 1 | 47 | | | | | | | | |
| Porto Rico..... “ | 3 | 410 | | | | | | | | |
| United States..... “ | 5 | 518 | | | | | | | | |
| Total..... | 9 | 975 | | | | | | | | |
| Moncton, N.B.— | | | | | | | | | | |
| Great Britain..... Steam | 5 | 11,902 | | | | | | | | |
| British W. Indies..... Sail.... | 1 | 281 | | | | | | | | |
| France..... Steam | 1 | 3,050 | | | | | | | | |
| Norway..... “ | | | | | 1 | 2,200 | | | | |
| United States..... Sail.... | | | 5 | 958 | | | | | | |
| Total..... | 7 | 15,233 | 5 | 958 | 1 | 2,200 | | | | |
| Montague Bridge, P.E.I.— | | | | | | | | | | |
| Newfoundland..... Sail.... | 2 | 90 | | | | | | | | |
| United States..... “ | 4 | 361 | | | | | | | | |
| Total..... | 6 | 451 | | | | | | | | |
| Montreal, Que... | | | | | | | | | | |
| Great Britain..... Steam | 268 | 1,091,469 | | | 5 | 6,839 | | | 1 | 4,729 |
| Great Britain..... Sail.... | | | 1 | 388 | | | | | | |
| Newfoundland..... Steam | 4 | 4,714 | 2 | 2,109 | | | | | | |
| Newfoundland..... Sail.... | 3 | 737 | | | | | | | | |
| Sea, Cable and Admiralty..... Steam | 152 | 485,241 | | | | | | | | |
| Gibraltar..... “ | 3 | 7,293 | | | 2 | 4,544 | | | | |
| France..... “ | 67 | 168,924 | 2 | 3,051 | 5 | 12,155 | | | | |
| Australia..... “ | 5 | 20,546 | | | | | | | | |
| Greece..... “ | 2 | 7,960 | | | | | | | | |
| Italy..... “ | 2 | 4,526 | | | | | | | | |
| British S. Africa..... “ | 8 | 21,658 | | | | | | | | |
| Portugal..... “ | | | | | 1 | 1,411 | | | | |
| United States..... “ | 3 | 6,075 | 26 | 25,516 | 3 | 4,013 | | | | |
| United States..... Sail.... | | | 4 | 2,490 | | | | | | |
| Total..... | 517 | 1,819,143 | 35 | 33,554 | 16 | 28,962 | | | 1 | 4,729 |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 299 |
| | | | | | | | | | | | | | 5 | 471 |
| | | | | | | | | | | | | | 21 | 2,222 |
| | | | | | | | | | | | | | 22 | 2,21 |
| | | | | | | | | | | | | | 1 | 331 |
| | | | | | | | | | | | | | 21 | 4,468 |
| | | | | | | | | | | | | | 80 | 2,504 |
| | | | | | | | | | | | | | 207 | 16,126 |
| | | | | | | | | | | | | | 358 | 28,640 |
| | | | | | | | | | | | | | 20 | 1,490 |
| | | | | | | | | | | | | | 2 | 182 |
| | | | | | | | | | | | | | 7 | 870 |
| | | | | | | | | | | | | | 4 | 229 |
| | | | | | | | | | | | | | 13 | 1,281 |
| | | | | | | | | | | | | | 7 | 795 |
| | | | | | | | | | | | | | 1 | 47 |
| | | | | | | | | | | | | | 3 | 410 |
| | | | | | | | | | | | | | 5 | 518 |
| | | | | | | | | | | | | | 9 | 975 |
| | | | | | | | | | | | | | 5 | 11,902 |
| | | | | | | | | | | | | | 1 | 281 |
| | | | | | | | | | | | | | 1 | 3,050 |
| | | | | | | | | | | | | | 1 | 2,200 |
| | | | | | | | | | | | | | 5 | 958 |
| | | | | | | | | | | | | | 13 | 18,391 |
| | | | | | | | | | | | | | 2 | 90 |
| | | | | | | | | | | | | | 4 | 361 |
| | | | | | | | | | | | | | 6 | 451 |
| 4 | 5,845 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 278 | 1,108,882 |
| | | | | | | | | | | | | | 1 | 388 |
| | | | | | | | | | | | | | 6 | 6,823 |
| | | | | | | | | | | | | | 3 | 737 |
| | | | | | | | | | | | | | 152 | 485,241 |
| | | | | | | | | | | | | | 16 | 55,337 |
| | | 10 | 13,144 | ..... | ..... | 11 | 43,500 | ..... | ..... | ..... | ..... | ..... | 84 | 197,274 |
| | | | | | | | | | | | | | 5 | 20,546 |
| | | | | | | | | | | | | | 2 | 7,960 |
| | | | | | | 3 | 10,025 | ..... | ..... | ..... | ..... | ..... | 5 | 14,551 |
| | | | | | | | | | | | | | 8 | 21,658 |
| | | | | | | | | | | | | | 1 | 1,411 |
| | | | | | | | | | | Nicaraguan. | 2 | 1,671 | 34 | 37,275 |
| | | | | | | | | | | | | | 4 | 2,490 |
| 4 | 5,845 | 10 | 13,144 | ..... | ..... | 14 | 53,525 | ..... | ..... | ..... | 2 | 1,671 | 599 | 1,960,573 |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|---|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Moose Factory, Man.— Newfoundland..... Steam. | 1 | 1,541 | | | | | | | | |
| Murray Harbour, P.E.I.— Sea Fisheries..... Sail.... | 4 | 113 | | | | | | | | |
| Nanaimo, B.C.— Russia..... Steam. | 159 | 46,725 | 322 | 94,053 | 19 | 53,182 | | | | |
| United States..... "..... | 32 | 5,764 | 289 | 96,921 | | | | | | |
| United States..... Sail..... | | | 1 | 3,192 | | | | | | |
| Chili..... Steam. | | | 1 | 3,121 | 1 | 4,135 | | | | |
| Japan..... "..... | 48 | 4,739 | 26 | 792 | | | | | | |
| Sea Fisheries..... "..... | | | | | | | | | | |
| Total..... | 239 | 57,228 | 639 | 198,079 | 20 | 57,317 | | | | |
| Newcastle, N.B.— Great Britain..... Steam. | 1 | 2,263 | | | 3 | 3,869 | | | | |
| Great Britain..... Sail..... | | | | | | | | | | |
| France..... Steam. | | | | | 1 | 1,411 | | | 3 | 3,582 |
| United States..... Sail..... | 1 | 99 | 3 | 915 | | | | | | |
| Total..... | 2 | 2,362 | 3 | 915 | 4 | 5,280 | | | 3 | 3,582 |
| Newport, B.C.— United States..... Steam. | 131 | 42,823 | 61 | 16,335 | | | | | | |
| New Westminster, B.C.— Great Britain..... Steam. | 1 | 2,577 | | | | | | | | |
| United States..... Steam. | 5 | 354 | 23 | 4,308 | | | | | | |
| United States..... Sail..... | | | 3 | 542 | | | | | | |
| British S. Africa..... "..... | | | 1 | 747 | | | | | | |
| Total..... | 6 | 2,931 | 27 | 5,597 | | | | | | |
| North East Harbour, N.S.— United States..... Sail..... | | | 1 | 366 | | | | | | |
| Sea Fisheries..... "..... | 3 | 99 | 4 | 250 | | | | | | |
| Total..... | 3 | 99 | 5 | 616 | | | | | | |
| North Head, N.B.— United States..... Steam. | 182 | 22,361 | 20 | 274 | | | | | | |
| United States..... Sail..... | | | 2 | 120 | | | | | | |
| Total..... | 182 | 22,361 | 22 | 394 | | | | | | |
| North Sydney, N.S.— Great Britain..... Steam. | 2 | 4,886 | | | 3 | 2,811 | | | | |
| Great Britain..... Sail..... | | | 1 | 388 | 1 | 576 | | | | |
| Newfoundland..... Steam. | 401 | 214,949 | 2 | 1,048 | 9 | 17,151 | | | | |
| Newfoundland..... Sail..... | 190 | 13,337 | 6 | 594 | | | | | | |
| France..... Steam. | 16 | 37,191 | | | 9 | 12,561 | | | | |
| France..... Sail..... | | | 1 | 253 | | | | | | |
| Saint Pierre..... Steam. | | | | | | | | | | |
| Saint Pierre..... Sail..... | 8 | 577 | | | | | | | | |
| United States..... Steam. | 1 | 1,172 | | | 6 | 13,803 | | | | |
| United States..... Sail..... | 6 | 490 | 2 | 280 | | | | | | |
| Sea Fisheries..... "..... | 36 | 2,524 | 27 | 2,420 | | | | | | |
| Total..... | 660 | 275,126 | 39 | 4,983 | 28 | 46,902 | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards, for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 1 | 1,541 |
| | | | | | | | | | | | | | 4 | 113 |
| | | | | | | | | | | Japanese... | 2 | 4,518 | 2 | 4,518 |
| | | | | | | | | | | Japanese... | 15 | 38,992 | 515 | 232,952 |
| | | | | | | | | | | | | | 321 | 102,685 |
| | | | | | | | | | | Japanese... | 5 | 10,676 | 1 | 3,192 |
| | | | | | | | | | | | | | 7 | 17,932 |
| | | | | | | | | | | | | | 74 | 5,531 |
| | | | | | | | | | | | 22 | 54,186 | 920 | 366,810 |
| 28 | 4,924 | 1 | 107 | | | | | 4 | 1,156 | Swedish... | 1 | 762 | 4 | 6,132 |
| | | | | | | | | | | Brazilian... | 1 | 235 | 35 | 7,184 |
| | | | | | | | | | | | | | 4 | 4,993 |
| | | | | | | | | | | | | | 4 | 1,014 |
| 28 | 4,924 | 1 | 107 | | | | | 4 | 1,156 | | 2 | 997 | 47 | 19,323 |
| | | | | | | | | | | | | | 192 | 59,158 |
| | | | | | | | | | | | | | 1 | 2,577 |
| | | | | | | | | | | | | | 28 | 4,662 |
| | | | | | | | | | | | | | 3 | 542 |
| | | | | | | | | | | | | | 1 | 747 |
| | | | | | | | | | | | | | 33 | 8,528 |
| | | | | | | | | | | | | | 1 | 366 |
| | | | | | | | | | | | | | 7 | 349 |
| | | | | | | | | | | | | | 8 | 715 |
| | | | | | | | | | | | | | 202 | 22,635 |
| | | | | | | | | | | | | | 2 | 120 |
| | | | | | | | | | | | | | 204 | 22,755 |
| | | | | | | | | | | | | | 5 | 7,697 |
| | | | | | | | | | | | | | 2 | 964 |
| | | 5 | 1,980 | | | | | | | | | | 417 | 235,128 |
| | | 1 | 987 | | | | | | | | | | 196 | 13,931 |
| | | | | | | | | | | | | | 26 | 50,739 |
| | | 25 | 5,400 | | | | | | | | | | 1 | 253 |
| | | 1 | 130 | | | | | | | | | | 25 | 5,400 |
| | | | | | | | | | | | | | 9 | 707 |
| | | | | | | | | | | | | | 7 | 14,975 |
| | | | | | | | | | | | | | 8 | 770 |
| 1 | 81 | | | | | | | | | | | | 64 | 5,025 |
| 1 | 81 | 32 | 8,497 | | | | | | | | | | 760 | 335,589 |

8 GEORGE V, A. 1918

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Ocean Falls, B.C.— United States..... Steam. | 3 | 4,077 | 10 | 9,273 | | | | | | |
| Parrsboro, N.S.— Great Britain..... Steam. | 1 | 2,927 | | | 2 | 2,470 | | | | |
| Great Britain..... Sail... | 20 | 8,210 | 4 | 1,132 | 2 | 2,161 | | | | |
| France..... Steam. | 2 | 6,028 | | | 1 | 2,340 | | | | |
| United States..... "..... | 1 | 9 | 35 | 8,004 | | | | | | |
| United States..... Sail... | 43 | 8,005 | 40 | 8,163 | | | | | | |
| Total..... | 67 | 25,179 | 79 | 17,299 | 5 | 6,971 | | | | |
| Paspebiac, Que.— Great Britain..... Steam. | | | | | 4 | 3,364 | | | | |
| Great Britain..... Sail... | 1 | 187 | | | 6 | 3,431 | | | | |
| British W. Indies..... "..... | 1 | 147 | | | | | | | | |
| France..... Steam. | 3 | 8,352 | | | 1 | 1,411 | | | | |
| United States..... Sail... | 2 | 156 | | | | | | | | |
| Total..... | 7 | 8,842 | | | 11 | 8,206 | | | | |
| Perce, Que.— United States..... Sail... | 4 | 215 | | | | | | | | |
| Pictou, N.S.— Great Britain..... Sail... | | | 1 | 84 | 2 | 2,358 | | | | |
| Newfoundland..... "..... | 1 | 92 | | | | | | | | |
| France..... Steam. | 4 | 10,248 | | | 2 | 3,391 | | | 1 | 1,115 |
| United States..... Sail... | | | | | | | | | | |
| Total..... | 5 | 10,340 | 1 | 84 | 4 | 5,749 | | | 1 | 1,115 |
| Port Alberni, B.C.— United States..... Steam. | 3 | 1,197 | 7 | 3,260 | | | | | | |
| Port Clyde, N.S.— United States..... Sail... | 2 | 369 | 2 | 459 | | | | | | |
| Sea Fisheries..... "..... | 1 | 15 | | | | | | | | |
| Total..... | 3 | 384 | 2 | 459 | | | | | | |
| Port Hawkesbury, N.S.— British W. Indies..... Sail... | 2 | 395 | | | | | | | | |
| Newfoundland..... "..... | | | 1 | 24 | | | | | | |
| Cuba..... "..... | | | 1 | 519 | | | | | | |
| Saint Pierre..... "..... | 1 | 70 | | | | | | | | |
| United States..... Steam. | 18 | 19,404 | 3 | 1,839 | | | | | | |
| United States..... Sail... | 13 | 1,237 | 12 | 1,275 | | | | | | |
| Sea Fisheries..... "..... | 16 | 1,192 | 25 | 2,202 | | | | | | |
| Total..... | 50 | 22,298 | 42 | 5,859 | | | | | | |
| Port Hood, N.S.— Sea Fisheries..... Sail... | | | 3 | 282 | | | | | | |
| Port La Tour, N.S.— Sea Fisheries..... Steam. | 3 | 34 | | | | | | | | |
| Sea Fisheries..... Sail... | | | 3 | 200 | | | | | | |
| Total..... | 3 | 34 | 3 | 200 | | | | | | |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| St. Andrews, N.B.— | | | | | | | | | | |
| United States..... Steam. | 245 | 16,099 | 1,081 | 49,995 | | | | | | |
| United States..... Sail.... | 4 | 329 | 6 | 775 | | | | | | |
| Total..... | 249 | 16,428 | 1,087 | 50,770 | | | | | | |
| St. George, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 1 | 1,808 | | | | | | | | |
| United States..... “..... | | | 63 | 2,164 | | | | | | |
| United States..... Sail.... | 4 | 156 | 47 | 7,703 | | | | | | |
| Total..... | 5 | 1,964 | 110 | 9,867 | | | | | | |
| Saint John, N.B.— | | | | | | | | | | |
| Great Britain..... Steam. | 112 | 462,755 | | | 3 | 2,865 | | | | |
| Great Britain..... Sail.... | 6 | 4,024 | 13 | 4,348 | 6 | 7,101 | | | | |
| British W. Indies..... “..... | 6 | 1,046 | 1 | 599 | | | | | | |
| France..... Steam. | 59 | 190,822 | | | 3 | 3,564 | | | | |
| France..... Sail.... | | | | | | | | | | |
| Italy..... Steam. | | | | | 1 | 2,710 | | | | |
| Portugal..... Sail.... | | | | | | | | | | |
| San Domingo..... Steam. | | | 2 | 1,896 | 4 | 3,333 | | | | |
| Greece..... “..... | 1 | 2,798 | | | | | | | | |
| United States..... “..... | 29 | 57,335 | 124 | 279,660 | 3 | 2,275 | | | | |
| United States..... Sail.... | 90 | 6,600 | 431 | 21,232 | | | | | | |
| Canary Islands..... “..... | 2 | 833 | 2 | 1,190 | | | | | | |
| British S. Africa..... Steam. | 3 | 8,925 | | | | | | | | |
| Australia..... “..... | 3 | 10,000 | | | | | | | | |
| Argentina..... Sail.... | | | 3 | 1,246 | | | | | | |
| Sea Fisheries..... “..... | 21 | 281 | 1 | 85 | | | | | | |
| Total..... | 332 | 745,419 | 577 | 310,256 | 20 | 21,848 | | | | |
| St. Martins, N.B.— | | | | | | | | | | |
| United States..... Steam. | | | 20 | 1,580 | | | | | | |
| United States..... Sail.... | 20 | 8,585 | 12 | 3,432 | | | | | | |
| Sea Fisheries..... “..... | 2 | 27 | | | | | | | | |
| Total..... | 22 | 8,612 | 32 | 5,012 | | | | | | |
| St. Peters, N.S.— | | | | | | | | | | |
| Sea Fisheries..... Sail.... | 1 | 11 | | | | | | | | |
| St. Stephen, N.B.— | | | | | | | | | | |
| United States..... Steam. | 17 | 1,900 | 88 | 1,608 | | | | | | |
| United States..... Sail.... | | | 15 | 2,740 | | | | | | |
| Total..... | 17 | 1,900 | 103 | 4,348 | | | | | | |
| Sackville, N.B.— | | | | | | | | | | |
| United States..... Sail.... | | | 1 | 241 | | | | | | |
| Salmon River, N.S.— | | | | | | | | | | |
| Great Britain..... Sail.... | 5 | 219 | | | | | | | | |
| United States..... “..... | 1 | 71 | | | | | | | | |
| Sea Fisheries..... “..... | 2 | 21 | | | | | | | | |
| Total..... | 8 | 311 | | | | | | | | |
| Sandy Cove, N.S.— | | | | | | | | | | |
| United States..... Steam. | | | 2 | 12 | | | | | | |
| United States..... Sail.... | | | 1 | 11 | | | | | | |
| Total..... | | | 3 | 23 | | | | | | |

8 GEORGE V, A. 1918

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which Departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Souris, P.E.I.— | | | | | | | | | | |
| Newfoundland.....Sail.... | 2 | 141 | | | | | | | | |
| Saint Pierre.....“..... | 4 | 335 | | | | | | | | |
| United States.....“..... | 1 | 96 | 1 | 44 | | | | | | |
| Sea Fisheries.....Steam.... | 1 | 32 | | | | | | | | |
| Sea Fisheries.....Sail.... | 36 | 1,422 | 11 | 865 | | | | | | |
| Total..... | 44 | 2,026 | 12 | 909 | | | | | | |
| Steveston, B.C.— | | | | | | | | | | |
| United States.....Steam.... | 51 | 1,457 | 137 | 4,529 | | | | | | |
| United States.....Sail.... | 1 | 6 | 16 | 346 | | | | | | |
| Sea Fisheries.....Steam.... | 3 | 68 | 1 | 22 | | | | | | |
| Total..... | 55 | 1,531 | 154 | 4,897 | | | | | | |
| Stickeen, B.C.— | | | | | | | | | | |
| Great Britain.....Steam.... | | | 11 | 838 | | | | | | |
| United States.....“..... | | | 40 | 592 | | | | | | |
| Total..... | | | 51 | 1,430 | | | | | | |
| Summerside, P.E.I.— | | | | | | | | | | |
| Newfoundland.....Steam.... | 17 | 5,732 | | | | | | | | |
| Newfoundland.....Sail.... | 1 | 78 | | | | | | | | |
| Total..... | 18 | 5,810 | | | | | | | | |
| Sydney, N.S.— | | | | | | | | | | |
| Great Britain.....Steam.... | 18 | 46,443 | | | 20 | 22,426 | | | | |
| Newfoundland.....“..... | 119 | 222,394 | 1 | 318 | 50 | 168,577 | | | | |
| Newfoundland.....Sail.... | 338 | 23,310 | | | | | | | | |
| Gibraltar.....Steam.... | 4 | 9,727 | | | | | | | | |
| France.....“..... | 61 | 136,414 | 1 | 805 | 15 | 25,598 | | | 3 | 3,470 |
| Holland.....“..... | | | | | 2 | 2,664 | | | | |
| Italy.....“..... | 1 | 2,209 | | | | | | | | |
| Norway.....“..... | | | | | 1 | 1,329 | | | | |
| Russia.....“..... | | | | | | | | | | |
| Saint Pierre.....“..... | | | | | | | | | | |
| Saint Pierre.....Sail.... | 9 | 635 | | | | | | | | |
| United States.....Steam.... | 32 | 63,584 | 4 | 4,105 | 5 | 10,610 | | | | |
| British S. Africa.....“..... | 7 | 20,508 | | | | | | | | |
| Australia.....“..... | 2 | 6,266 | | | | | | | | |
| Sea Cable & Admiralty.....“..... | 73 | 226,654 | | | | | | | | |
| Sea Fisheries.....Sail.... | | | 18 | 358 | | | | | | |
| Total..... | 664 | 758,144 | 24 | 5,586 | 93 | 231,204 | | | 3 | 3,470 |
| Three Rivers, Que.— | | | | | | | | | | |
| Great Britain.....Steam.... | 20 | 43,965 | | | 1 | 651 | | | | |
| Tignish, P.E.I.— | | | | | | | | | | |
| Sea Fisheries.....Sail.... | 4 | 206 | | | | | | | | |
| Truro, N.S.— | | | | | | | | | | |
| Great Britain.....Sail.... | | | 1 | 357 | | | | | | |
| United States.....“..... | 2 | 255 | 2 | 432 | | | | | | |
| Total..... | 2 | 255 | 3 | 789 | | | | | | |
| Tusket, N.S.— | | | | | | | | | | |
| Sea Fisheries.....Sail.... | 1 | 11 | 3 | 274 | | | | | | |

8 GEORGE V, A. 1918

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Union Bay, B.C.— | | | | | | | | | | |
| Russia..... Steam. | 3 | 7,669 | | | 1 | 2,474 | | | | |
| United States..... " " | 46 | 137,038 | 57 | 24,039 | 3 | 7,486 | | | | |
| United States..... Sail.... | 3 | 669 | 53 | 36,271 | | | | | | |
| Japan..... Steam. | 2 | 6,132 | | | | | | | | |
| British Oceania, other. " " | 3 | 13,440 | | | | | | | | |
| Total..... | 57 | 164,948 | 110 | 60,310 | 4 | 9,960 | | | | |
| Vancouver, B.C.— | | | | | | | | | | |
| Great Britain..... Steam. | 11 | 37,051 | | | | | | | | |
| Australia..... " " | 31 | 129,880 | | | | | | | | |
| China..... " " | 25 | 154,066 | | | 1 | 1,719 | | | | |
| Japan..... " " | 1 | 8,789 | | | | | | | | |
| Chili..... " " | | | 1 | 3,192 | | | | | | |
| Peru..... " " | 8 | 19,380 | 1 | 1,188 | | | | | | |
| Fiji Islands..... " " | | | 1 | 491 | | | | | | |
| Fiji Islands..... Sail.... | | | 1 | 691 | | | | | | |
| Panama..... " " | 1 | 124 | | | | | | | | |
| Russia..... Steam. | 8 | 22,471 | 7 | 14,421 | 4 | 13,938 | | | | |
| Philippines..... " " | 10 | 62,848 | | | | | | | | |
| British S. Africa..... Sail.... | | | 3 | 2,411 | 1 | 831 | | | | |
| United States..... Steam. | 746 | 720,815 | 581 | 396,491 | 10 | 32,137 | | | | |
| United States..... Sail.... | | | | | | | | | | |
| Sea Fisheries..... Steam. | 25 | 1,641 | 17 | 1,796 | | | | | | |
| Total..... | 866 | 1,157,065 | 612 | 420,681 | 16 | 48,625 | | | | |
| Victoria, B.C.— | | | | | | | | | | |
| Great Britain..... Steam. | 5 | 12,442 | | | | | | | | |
| Australia..... " " | 13 | 79,933 | | | | | | | | |
| British S. Africa..... Sail.... | | | 4 | 3,708 | | | | | | |
| China..... Steam. | 35 | 219,519 | | | | | | | | |
| Fiji Islands..... Sail.... | | | 1 | 491 | | | | | | |
| Japan..... Steam. | | | | | | | | | | |
| Russia..... " " | | | | | 1 | 4,410 | | | | |
| United States..... " " | 670 | 894,866 | 603 | 484,648 | 3 | 9,966 | | | | |
| United States..... Sail.... | 69 | 18,043 | 29 | 4,212 | | | | | | |
| Sea Fisheries..... " " | 12 | 370 | | | | | | | | |
| Total..... | 804 | 1,225,173 | 637 | 493,059 | 4 | 14,376 | | | | |
| Westport, N.S.— | | | | | | | | | | |
| United States..... Steam. | 5 | 90 | | | | | | | | |
| United States..... Sail.... | 3 | 83 | | | | | | | | |
| Total..... | 8 | 173 | | | | | | | | |
| Weymouth, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail.... | | | 1 | 204 | | | | | | |
| Newfoundland..... " " | 1 | 219 | | | | | | | | |
| Cuba..... " " | 1 | 377 | 2 | 825 | | | | | | |
| United States..... Steam. | | | 3 | 1,131 | | | | | | |
| United States..... Sail.... | 23 | 2,760 | 10 | 2,266 | | | | | | |
| Total..... | 25 | 3,356 | 16 | 4,426 | | | | | | |
| White Rock, B.C.— | | | | | | | | | | |
| United States..... Steam. | 78 | 1,704 | 72 | 1,253 | | | | | | |

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards for Sea, etc.—Continued.

OF VESSELS.

| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 4 | 10,143 |
| | | | | | | | | | | | | | 106 | 168,563 |
| | | | | | | | | | | | | | 56 | 36,940 |
| | | | | | | | | | | | | | 2 | 6,132 |
| | | | | | | | | | | | | | 3 | 13,440 |
| | | | | | | | | | | | | | 171 | 235,218 |
| | | | | | | | | | | | | | 11 | 37,051 |
| | | | | | | | | | | | | | 31 | 129,880 |
| | | | | | | | | | | | | | 26 | 155,785 |
| | | | | | | | | | | Japanese.... | 13 | 42,521 | 14 | 51,310 |
| | | | | | | | | | | | | | 1 | 3,192 |
| | | | | | | | | | | | | | 9 | 20,568 |
| | | | | | | | | | | | | | 1 | 491 |
| | | | | | | | | | | | | | 1 | 691 |
| | | | | | | | | | | | | | 1 | 124 |
| 4 | 12,016 | | | | | | | 1 | 685 | Japanese.... | 11 | 34,816 | 35 | 98,347 |
| | | | | | | | | | | | | | 10 | 62,848 |
| 2 | 6,008 | | | | | | | | | Japanese.... | 18 | 46,698 | 1,357 | 1,202,149 |
| | | | | | | | | | | Peruvian.... | 1 | 650 | 1 | 650 |
| | | | | | | | | | | | | | 4 | 3,242 |
| | | | | | | | | | | | | | 42 | 3,437 |
| 6 | 18,024 | | | | | | | 1 | 685 | | 43 | 124,685 | 1,544 | 1,769,765 |
| | | | | | | | | | | | | | 5 | 12,442 |
| | | | | | | | | | | | | | 13 | 79,933 |
| | | | | | | | | | | | | | 4 | 3,708 |
| | | | | | | | | | | Japanese.... | 25 | 109,165 | 60 | 328,684 |
| | | | | | | | | | | | | | 1 | 491 |
| | | | | | | | | | | Japanese.... | 33 | 122,180 | 33 | 122,180 |
| | | | | | | | | | | | | | 1 | 4,410 |
| | | | | | | | | | | (Chilian.... | 1 | 1,179 | 1,346 | 1,657,820 |
| | | | | | | | | | | Japanese.... | 69 | 267,161 | | |
| | | | | | | | | | | | | | 98 | 22,255 |
| | | | | | | | | | | | | | 12 | 370 |
| | | | | | | | | | | | 128 | 499,685 | 1,573 | 2,232,293 |
| | | | | | | | | | | | | | 5 | 90 |
| | | | | | | | | | | | | | 3 | 83 |
| | | | | | | | | | | | | | 8 | 173 |
| | | | | | | | | | | | | | 1 | 204 |
| | | | | | | | | | | | | | 1 | 219 |
| | | | | | | | | | | | | | 3 | 1,202 |
| | | | | | | | | | | | | | 3 | 1,131 |
| | | | | | | | | | | | | | 33 | 5,026 |
| | | | | | | | | | | | | | 41 | 7,782 |
| | | | | | | | | | | | | | 150 | 2,957 |

No. 14.—STATEMENT of the Number and Tonnage of Steam

| Ports and Outports and Countries for which departed. | NATIONALITY | | | | | | | | | |
|--|-------------|----------------|----------------|----------------|------------|----------------|-----------|----------------|----------|----------------|
| | British. | | United States. | | Norwegian. | | Austrian. | | Belgian. | |
| | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| Windsor, N.S.— | | | | | | | | | | |
| United States..... Steam. | 18 | 17,327 | | | | | | | | |
| United States..... Sail.... | 79 | 77,620 | 48 | 37,011 | | | | | | |
| Total..... | 97 | 94,947 | 48 | 37,011 | | | | | | |
| Yarmouth, N.S.— | | | | | | | | | | |
| British W. Indies..... Sail.... | 2 | 196 | 1 | 360 | | | | | | |
| Newfoundland..... "..... | 1 | 12 | | | | | | | | |
| Cuba..... "..... | 2 | 713 | | | | | | | | |
| United States..... Steam. | 169 | 150,784 | 6 | 5,394 | | | | | | |
| United States..... Sail.... | 17 | 1,130 | 42 | 986 | | | | | | |
| Sea Fisheries..... Steam. | 2 | 22 | | | | | | | | |
| Sea Fisheries..... Sail.... | 61 | 2,687 | 74 | 5,405 | | | | | | |
| Total..... | 254 | 155,544 | 123 | 12,145 | | | | | | |
| York Factory, Man.— | | | | | | | | | | |
| Newfoundland..... Steam. | 1 | 1,004 | | | | | | | | |

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and Sailing Vessels entered Outwards for Sea, etc.—Concluded.

| OF VESSELS. | | | | | | | | | | | | | | |
|-------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|
| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | |
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Names. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| | | | | | | | | | | | | | 18 | 17,327 |
| | | | | | | | | | | | | | 127 | 114,631 |
| | | | | | | | | | | | | | 145 | 131,958 |
| | | | | | | | | | | | | | 3 | 556 |
| | | | | | | | | | | | | | 1 | 12 |
| | | | | | | | | | | | | | 2 | 713 |
| | | | | | | | | | | | | | 175 | 156,178 |
| | | | | | | | | | | | | | 59 | 2,116 |
| | | | | | | | | | | | | | 2 | 22 |
| | | | | | | | | | | | | | 135 | 8,092 |
| | | | | | | | | | | | | | 377 | 167,689 |
| | | | | | | | | | | | | | 1 | 1,004 |

No. 15.—SUMMARY STATEMENT of the Nationality of Sea-going Vessels entered

| Number. | COUNTRIES TO WHICH DEPARTED. | NATIONALITY | | | | | | | | | |
|---------|-------------------------------|-------------|----------------|---------------|----------------|-----------|----------------|----------|----------------|----------|----------------|
| | | British | | United States | | Norwegian | | Austrian | | Belgian | |
| | | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. |
| 1 | United Kingdom..... | 986 | 3,153,287 | 51 | 18,543 | 188 | 224,835 | | | 1 | 4,729 |
| 2 | Australia..... | 69 | 288,071 | | | | | | | | |
| 3 | British South Africa..... | 19 | 53,395 | 12 | 10,432 | 1 | 831 | | | | |
| 4 | British Guiana..... | 29 | 74,278 | | | | | | | | |
| 5 | British West Indies..... | 60 | 10,565 | 3 | 1,163 | 16 | 11,598 | | | | |
| 6 | British Oceania, other..... | 4 | 15,360 | | | | | | | | |
| 7 | Bermuda..... | 1 | 7,029 | | | | | | | | |
| 8 | Egypt..... | 1 | 2,749 | | | | | | | | |
| 9 | Fiji Islands..... | | | 3 | 1,673 | | | | | | |
| 10 | Gibraltar..... | 11 | 28,202 | | | 6 | 13,841 | | | | |
| 11 | Newfoundland..... | 1,532 | 642,473 | 44 | 7,309 | 60 | 189,306 | | | | |
| 12 | New Zealand..... | 3 | 18,293 | | | | | | | | |
| 13 | Argentina..... | 2 | 1,006 | 4 | 2,251 | 9 | 12,640 | | | | |
| 14 | Azores and Madeira..... | 4 | 1,293 | | | | | | | | |
| 15 | Brazil..... | 7 | 1,892 | | | | | | | | |
| 16 | Canary Islands..... | 2 | 833 | 3 | 1,795 | | | | | | |
| 17 | Chili..... | | | 2 | 6,384 | | | | | | |
| 18 | China..... | 60 | 373,585 | | | 1 | 1,719 | | | | |
| 19 | Cuba..... | 18 | 7,234 | 8 | 3,903 | | | | | | |
| 20 | Denmark..... | | | 4 | 9,489 | 7 | 8,989 | | | | |
| 21 | Danish West Indies..... | | | | | | | | | | |
| 22 | France..... | 270 | 711,589 | 7 | 5,066 | 58 | 100,709 | | | 10 | 11,824 |
| 23 | Greece..... | 3 | 10,758 | | | | | | | | |
| 24 | Holland..... | | | 1 | 2,723 | 21 | 34,794 | | | 13 | 25,505 |
| 25 | Italy..... | 5 | 11,590 | | | 1 | 2,710 | | | | |
| 26 | Japan..... | 3 | 14,921 | 1 | 3,121 | 1 | 4,135 | | | | |
| 27 | Mexico..... | 5 | 7,573 | | | | | | | | |
| 28 | Norway..... | | | | | 22 | 53,735 | | | | |
| 29 | Panama..... | 1 | 124 | | | | | | | | |
| 30 | Peru..... | 8 | 19,380 | 1 | 1,188 | | | | | | |
| 31 | Philippines..... | 10 | 62,848 | | | | | | | | |
| 32 | Portugal..... | | | | | 1 | 1,411 | | | | |
| 33 | Porto Rico..... | 28 | 3,045 | | | | | | | | |
| 34 | Russia..... | 11 | 30,140 | 7 | 14,421 | 8 | 25,423 | | | | |
| 35 | St. Pierre..... | 31 | 2,338 | | | | | | | | |
| 36 | San Domingo..... | | | 4 | 3,792 | 6 | 5,151 | | | | |
| 37 | Sea Fisheries..... | 1,981 | 93,247 | 1,863 | 80,943 | | | | | | |
| 38 | Spain..... | | | | | 1 | 699 | | | | |
| 39 | Sweden..... | | | 2 | 5,387 | 1 | 2,313 | | | | |
| 40 | United States..... | 4,395 | 3,359,588 | 5,859 | 2,162,357 | 82 | 199,823 | | | 2 | 4,632 |
| 41 | Sea, Cable and Admiralty..... | 332 | 1,035,400 | 8 | 1,880 | | | | | | |
| | Total..... | 9,891 | 10,042,086 | 7,887 | 2,343,820 | 490 | 894,662 | | | 26 | 46,690 |

SESSIONAL PAPER No. 11a

Outwards, for Sea, for each Country, during the Fiscal year ended March 31, 1917.

| OF VESSELS. | | | | | | | | | | | | | | | |
|-------------|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|----------------------|----------|----------------|----------|----------------|---------|
| Danish. | | French. | | German. | | Italian. | | Russian. | | Other Nationalities. | | | Total. | | |
| Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Vessels. | Tons Register. | Name of Flag. | Vessels. | Tons Register. | Vessels. | Tons Register. | Number. |
| 219 | 102,982 | 3 | 899 | | | 1 | 7,633 | 36 | 14,555 | Brazilian... | 2 | 466 | | | |
| | | | | | | | | | | Dutch.... | 1 | 1,597 | | | |
| | | | | | | | | | | Portuguese | 1 | 167 | | | |
| | | | | | | | | | | Swedish... | 16 | 14,333 | 1,505 | 3,544,026 | 1 |
| | | | | | | | | | | | | | 69 | 288,071 | 2 |
| | | | | | | | | | | | | | 32 | 64,658 | 3 |
| | | | | | | | | | | | | | 29 | 74,278 | 4 |
| | | | | | | | | | | | | | 79 | 23,326 | 5 |
| | | | | | | | | | | | | | 4 | 15,360 | 6 |
| | | | | | | | | | | | | | 1 | 7,029 | 7 |
| | | | | | | | | | | | | | 1 | 2,749 | 8 |
| | | | | | | | | | | | | | 3 | 1,673 | 9 |
| | | | | | | 22 | 87,407 | | | Spanish.... | 1 | 1,982 | 40 | 131,432 | 10 |
| 1 | 1,223 | 10 | 3,060 | | | | | | | | | | 1,647 | 843,371 | 11 |
| | | | | | | | | | | | | | 3 | 18,293 | 12 |
| 1 | 917 | | | | | | | 3 | 4,797 | Swedish.... | 1 | 1,496 | 20 | 23,107 | 13 |
| | | | | | | | | | | | | | 4 | 1,293 | 14 |
| | | | | | | | | | | | | | 7 | 1,892 | 15 |
| | | | | | | | | | | | | | 5 | 2,628 | 16 |
| | | | | | | | | | | | | | 2 | 6,384 | 17 |
| | | | | | | | | | | Japanese.... | 25 | 109,165 | 86 | 484,469 | 18 |
| | | | | | | | | | | | | | 26 | 11,137 | 19 |
| 6 | 22,997 | | | | | | | | | | | | 17 | 41,475 | 20 |
| 1 | 161 | | | | | | | | | | | | 1 | 161 | 21 |
| 6 | 3,979 | 18 | 21,879 | | | | | | | | | | 369 | 855,046 | 22 |
| | | | | | | | | | | | | | 3 | 10,758 | 23 |
| 1 | 938 | | | | | | | | | Dutch.... | 15 | 31,918 | 51 | 95,878 | 24 |
| | | | | | | 16 | 46,569 | | | | | | 22 | 60,869 | 25 |
| | | | | | | | | | | Japanese.... | 52 | 175,581 | 57 | 197,758 | 26 |
| | | | | | | | | | | | | | 5 | 7,573 | 27 |
| | | | | | | | | | | | | | 22 | 53,735 | 28 |
| | | | | | | | | | | | | | 1 | 124 | 29 |
| | | | | | | | | | | | | | 9 | 20,568 | 30 |
| | | | | | | | | | | | | | 10 | 62,848 | 31 |
| 3 | 540 | | | | | | | | | | | | 4 | 1,951 | 32 |
| | | | | | | | | | | | | | 28 | 3,045 | 33 |
| 4 | 12,016 | | | | | | | 7 | 20,062 | Japanese.... | 13 | 39,334 | 50 | 141,396 | 34 |
| | | 45 | 9,634 | | | | | | | | | | 76 | 11,972 | 35 |
| | | | | | | | | | | Cuban.... | 1 | 1,151 | 11 | 10,094 | 36 |
| 1 | 81 | | | | | | | | | | | | 3,845 | 174,271 | 37 |
| 1 | 1,338 | | | | | | | | | | | | 2 | 2,037 | 38 |
| | | | | | | | | | | | | | 3 | 7,700 | 39 |
| 7 | 15,960 | 1 | 1,116 | | | 2 | 4,501 | 1 | 4,119 | Chilian.... | 1 | 1,179 | | | |
| | | | | | | | | | | Dutch.... | 4 | 10,627 | | | |
| | | | | | | | | | | Japanese.... | 103 | 355,221 | | | |
| | | | | | | | | | | Nicaraguan | 4 | 2,069 | | | |
| | | | | | | | | | | Peruvian... | 1 | 650 | | | |
| | | | | | | | | | | Spanish.... | 1 | 2,289 | | | |
| | | | | | | | | | | Swedish... | 3 | 3,274 | | | |
| | | | | | | | | | | Uruguayan | 4 | 4,825 | 10,470 | 6,132,230 | 40 |
| | | 3 | 3,348 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 343 | 1,040,628 | 41 |
| 251 | 163,132 | 80 | 39,936 | | | 41 | 146,110 | 47 | 43,533 | | 249 | 757,324 | 18,962 | 14,477,293 | |

No. 16.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes, etc.—*Concluded.*

VESSELS ARRIVED.

| Ports and Outports. | CANADIAN. | | | | | | UNITED STATES. | | | | | |
|---------------------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|
| | Steam. | | | Sail. | | | Steam. | | | Sail. | | |
| | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. |
| 84 Walkerville, Ont..... | 5 | 4,259 | 69 | | | | 98 | 25,430 | 1,378 | 23 | 8,520 | 184 |
| 85 Wallaceburg, Ont..... | 13 | 757 | 46 | | | | 504 | 177,170 | 15,995 | 12 | 2,961 | 69 |
| 86 Welland, Ont..... | | | | | | | 54 | 71,284 | 852 | 13 | 22,829 | 124 |
| 87 Wellington, Ont..... | | | | | | | 1 | 177 | 9 | | | |
| 88 West Dock, Ont..... | 96 | 12,112 | 658 | 11 | 594 | 48 | 1,425 | 361,955 | 14,645 | | | |
| 89 Whitby, Ont..... | | | | | | | 2 | 318 | 19 | | | |
| 90 White Horse, Y. T..... | | | | | | | 5 | 2,041 | 129 | 4 | 1,342 | 4 |
| 91 Winston, Ont..... | 122 | 26,034 | 1,349 | 10 | 3,056 | 52 | | | | | | |
| 92 Windsor, Ont..... | 83 | 66,002 | 1,536 | 1 | 315 | 6 | 149 | 39,999 | 1,777 | 21 | 1,606 | 112 |
| 93 Wolfe Island, Ont..... | 17 | 219 | 33 | 3 | 37 | 5 | 123 | 10,362 | 1,825 | | | |
| Total..... | 13,026 | 7,697,451 | 239,914 | 875 | 341,931 | 4,387 | 25,788 | 9,617,072 | 275,494 | 2,139 | 622,010 | 7,693 |

SESSIONAL PAPER No. 11a

No. 16.—SUMMARY STATEMENT of Canadian and United States Vessels trading on Inland Waters, which arrived at Canadian ports during the Fiscal Year ended March 31, 1917.

RECAPITULATION.

| | Number of Vessels. | Tons Register. | Number of Crew. |
|--------------------------|--------------------------|-------------------|-----------------------|
| Canadian—Steam..... | 13,026 | 7,697 451 | 239,914 |
| Sail..... | 875 | 341 931 | 4,387 |
| United States—Steam..... | 25,788 | 9,617 072 | 275,494 |
| Sail..... | 2,139 | 622,010 | 7,693 |
| Total..... | 41,828 | 18,278,464 | 527,488 |

DESCRIPTION OF VESSELS.

| Description. | Number of Vessels. | Tons Register. |
|---------------------|--------------------------|-------------------|
| Steam—Screw..... | 36,200 | 15,380,387 |
| Paddle..... | 2,562 | 1,909,753 |
| Sternwheel..... | 52 | 24,383 |
| Sail—Schooners..... | 781 | 345,926 |
| Sloops..... | 18 | 3,166 |
| Barges..... | 2,215 | 614,849 |
| Total..... | 41,828 | 18,278,464 |

No. 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage) which Departed from each Port and Outport during the Fiscal Year ended March 31, 1917.

VESSELS DEPARTED.

| Number. | CANADIAN. | | | UNITED STATES. | | | | | | | | | |
|---------|-----------------------|----------------|-----------------|---------------------|----------------|-----------------|-------|---------|---------|--------|--------|--------|-------|
| | Ports and Outports. | | | Ports and Outports. | | | | | | | | | |
| | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | | | | | | | |
| 1 | Amherstburg, Ont. | 50 | 3,339 | 5 | 102 | 7 | 735 | 228,373 | 13,339 | 31 | 15,525 | 219 | |
| 2 | Bath, Ont. | 6 | 72 | 12 | 1,173 | 34 | 7 | 1,173 | ..... | ..... | ..... | ..... |  |
| 3 | Belleville, Ont. | 2 | 976 | 20 | 9,287 | 246 | 48 | 9,287 | ..... | ..... | ..... | ..... |  |
| 4 | Blind River, Ont. | 17 | 4,133 | 180 | 3,305 | 55 | 9 | 3,305 | 21,686 | 826 | 34 | 17,676 | 227 |
| 5 | Bowmanville, Ont. | ..... | ..... | ..... | 1,304 | 24 | ..... | 1,304 | ..... | ..... | ..... | ..... |  |
| 6 | Bridgeburg, Ont. | 93 | 153,684 | 7,986 | 2,271 | 18 | 119 | 2,271 | 6,219 | 480 | 247 | 79,970 | 633 |
| 7 | Brookville, Ont. | 83 | 2,942 | 486 | 600 | 20 | 627 | 600 | 101,410 | 7,983 | 32 | 10,217 | 177 |
| 8 | Bruce Mines, Ont. | 8 | 12,222 | 120 | ..... | ..... | 44 | ..... | 6,675 | 376 | 1 | 1,077 | 10 |
| 9 | Byng Inlet, Ont. | 51 | 8,415 | 510 | ..... | ..... | 55 | ..... | 820,117 | 1,284 | 3 | 1,742 | 24 |
| 10 | Cardinal, Ont. | 83 | 23,059 | 1,494 | ..... | ..... | 143 | ..... | 14,054 | 1,026 | 8 | ..... | 60 |
| 11 | Chatham, Ont. | 3 | 3,083 | 54 | ..... | ..... | 11 | ..... | 718 | 88 | ..... | ..... | ..... |
| 12 | Chicoutimi, Que. | ..... | ..... | ..... | ..... | ..... | 2 | ..... | ..... | ..... | ..... | ..... | ..... |
| 13 | Chippawa, Ont. | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... | ..... |
| 14 | Clarenceville, Que. | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... | ..... |
| 15 | Cobourg, Ont. | 626 | 2,053,936 | 22,934 | 889 | 23 | 2 | 889 | ..... | ..... | ..... | ..... | ..... |
| 16 | Cockburn Island, Ont. | 8 | 2,053,936 | 48 | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... | ..... |
| 17 | Collingwood, Ont. | 4 | 4,949 | 65 | ..... | ..... | 12 | ..... | 1,428 | 97 | 11 | 2,218 | 48 |
| 18 | Cornwall, Ont. | 1 | 9 | 9 | ..... | ..... | 9 | ..... | 10,073 | 177 | ..... | ..... | ..... |
| 19 | Courtright, Ont. | 1 | 48 | 7 | 230 | 4 | 145 | 230 | 6,477 | 579 | ..... | ..... | ..... |
| 20 | Cutler, Ont. | 30 | 7,403 | 253 | 312 | 6 | 1,543 | 312 | 240,822 | 18,498 | 53 | 28,017 | 356 |
| 21 | Dawson, Y.T. | 13 | 1,944 | 103 | 1,710 | 18 | 24 | 1,710 | 17,874 | 638 | 20 | 7,866 | 40 |
| 22 | Depot Harbour, Ont. | 2 | 9,201 | 48 | ..... | ..... | 90 | ..... | 11,552 | 1,248 | ..... | ..... | ..... |
| 23 | Deseronto, Ont. | 6 | 3,481 | 108 | 1,978 | 42 | 17 | 1,978 | 214,288 | 343 | ..... | ..... | ..... |
| 24 | Ellis Bay, Que. | 8 | 3,146 | 133 | ..... | ..... | 4 | ..... | 14,476 | 92 | ..... | ..... | ..... |
| 25 | Forty Mile, Y.T. | 1 | 1,932 | 96 | 1,754 | 9 | 26 | 1,754 | 4,272 | 675 | 19 | 7,387 | 20 |
| 26 | Fort Frances, Ont. | 43 | | 177 | | | | | 11,973 | | | | |

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| | | | | | | | | | | | |
|----|----------------------------|---------|-----|--------|-------|--------|-----------|---------|-------|--------|--------|
| 27 | Fort William, Ont. | 1,284 | 2 | 3,674 | 17 | 871 | 2,218,144 | 22,687 | 19 | 38,957 | 154 |
| 28 | Gananoque, Ont. | 1,007 | 10 | 2,350 | 50 | 1,395 | 24,375 | 4,591 | 3 | 612 | 12 |
| 29 | Georgeville, Que. | 55 | | | | | | | | | |
| 30 | Goderich, Ont. | 2,105 | 1 | 1,951 | 8 | 43 | 7,129 | 435 | 1 | 474 | 8 |
| 31 | Gore Bay, Ont. | 283 | | | | | 1,541 | 24 | | | |
| 32 | Hamilton, Ont. | | | | | | | | | | |
| 33 | Iroquois, Ont. | 6,145 | | | | | | | | | |
| 34 | Kenora, Ont. | 383 | | | | | 9,095 | 631 | | | |
| 35 | Key Harbour, Ont. | 23,397 | | | | | 360 | 105 | | | |
| 36 | Kincardine, Ont. | 75 | | 324 | 11 | 8 | 9,295 | 162 | 4 | 5,490 | 31 |
| 37 | Kingsion, Ont. | 791 | | 81,832 | 1,333 | 384 | 30,400 | 4,112 | 6 | 2,383 | 35 |
| 38 | Kingsville, Ont. | 470 | | | | | 8 | 929 | | | |
| 39 | Leamington, Ont. | | | | | | 169 | 44 | | | |
| 40 | Lévis, Que. | 9,836 | 1 | 125 | 2 | 2 | | | 1 | 527 | 8 |
| 41 | Little Current, Ont. | 2,238 | 5 | 1,722 | 31 | 43 | 38,323 | 842 | 15 | 7,296 | 284 |
| 42 | Magog, Que. | 55 | | | | | | | | | |
| 43 | Meaford, Ont. | | | | | | | | | | |
| 44 | Michipicoten Harbour, Ont. | 53,500 | | | | | 2,135 | 69 | 6 | 1,440 | 41 |
| 45 | Midland, Ont. | 29,237 | | | | | 37,587 | 440 | 5 | 10,966 | 41 |
| 46 | Montreal, Que. | 390,633 | 121 | 78,316 | 704 | 69 | 146,238 | 1,603 | 1 | 266 | 7 |
| 47 | Morrisburg, Ont. | 7,170 | | | | | 434 | 386,375 | 8,182 | 133 | 36,678 |
| 48 | Murray Bay, Que. | 259 | 3 | 2,408 | 18 | 279 | 28,388 | 1,993 | | | |
| 49 | Napanee, Ont. | 70 | 3 | 429 | 14 | | | | | | |
| 50 | Niagara, Ont. | 24,715 | | | | | | | | | |
| 51 | Ottawa, Ont. | 245 | | | | | | | | | |
| 52 | Oven Sound, Ont. | 99,663 | 1 | 348 | 5 | 12 | 15,998 | 260 | 163 | 16,767 | 264 |
| 53 | Parry Sound, Ont. | | | | | | | | | | |
| 54 | Pentanguishene, Ont. | 498 | 2 | | | | | | | | |
| 55 | Pictou, Ont. | 186,431 | 38 | 10,037 | 274 | 15 | 16,837 | 1,274 | | | |
| 56 | Point Edward, Ont. | 236,947 | 13 | 1,398 | 44 | 104 | 108,646 | 1,572 | 4 | 2,108 | 36 |
| 57 | Port Arthur, Ont. | 5,674 | 4 | 7,312 | 34 | 575 | 1,165,273 | 13,524 | 71 | 47,361 | 557 |
| 58 | Port Burwell, Ont. | 1,000 | | | | | | | | | |
| 59 | Port Colborne, Ont. | 312,131 | 43 | 27,058 | 221 | 74 | 77,072 | 1,036 | 34 | 18,767 | 102 |
| 60 | Port Dover, Ont. | 5,226 | 9 | 3,742 | 53 | 1 | 712 | 17 | | | |
| 61 | Port Hope, Ont. | 2,259 | 3 | 850 | 16 | 3 | 646 | 94 | | | |
| 62 | Port McNicoll, Ont. | | | | | | | | | | |
| 63 | Port Stanley, Ont. | 337 | 3 | | | | 459 | 27 | 2 | 896 | 14 |
| 64 | Port Stanley, Ont. | 182 | | | | | 56,048 | 668 | | | |
| 65 | Prescott, Ont. | 16,995 | 26 | 15,144 | 133 | 42 | 37,576 | 2,783 | | | |
| 66 | Quebec, Que. | 99,348 | 52 | 38,480 | 416 | 287 | 208,160 | 4,411 | 11 | 5,354 | 65 |
| 67 | Queueston, Ont. | 719,111 | 8 | | | 8 | 4,268 | 128 | 267 | 26,740 | 540 |
| 68 | Rainy River, Ont. | 488 | | | | | | | | | |
| 69 | Rimouski, Que. | 114 | 23 | | | | 276 | 69 | | | |
| 70 | Rockport, Ont. | 6,186 | 7 | | | | | | | | |
| 71 | Rondeau, Ont. | 828 | | | | | | | | | |
| 72 | Sandwich, Ont. | 68,045 | 99 | | | | 488 | 61 | | | |
| 73 | Sarnia, Ont. | 593,079 | 35 | 15,926 | 151 | 469 | 147,273 | 4,524 | 13 | 3,720 | 45 |
| 74 | Sault Ste. Marie, Ont. | 170,984 | 12 | 4,947 | 79 | 13,311 | 1,462,875 | 96,522 | 113 | 68,158 | 668 |
| 75 | Smith's Falls, Ont. | 1,963 | 38 | | | 445 | 630,380 | 6,176 | 38 | 27,892 | 261 |
| 76 | Sorel, Que. | 5,781 | 2 | 1,328 | 10 | 2 | 1,363 | 27 | 156 | 16,341 | 312 |

No 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes, etc.—*Concluded.*

VESSELS DEPARTED.

| Number. | Ports and Outports. | CANADIAN. | | | | | | UNITED STATES. | | | | | | | | | |
|---------|---------------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--|--|--|-------|
| | | Steam. | | | Sail. | | | Steam. | | | Sail. | | | | | | |
| | | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | | | | |
| 77 | Stickeen, B.C. | 11 | 838 | 61 | | | 40 | 592 | 151 | | | | | | | | |
| 78 | St. Johns, Que. | 2 | 83 | 7 | 6,489 | 147 | 57 | 4,133 | 457 | | | 910 | 91,928 | | | | 1,870 |
| 79 | Thessalon, Ont. | 11 | 689 | 53 | 3,531 | 43 | 46 | 16,569 | 617 | | | 30 | 17,837 | | | | 215 |
| 80 | Thorold, Ont. | 19 | 16,560 | 328 | | | 2 | 844 | 22 | | | | | | | | |
| 81 | Three Rivers, Que. | 2 | 314 | 21 | 1,225 | 22 | 10 | 1,225 | 22 | | | | | | | | |
| 82 | Toronto, Ont. | 942 | 836,413 | 44,656 | 1,603 | 35 | 33 | 26,947 | 575 | | | 277 | 28,713 | | | | 554 |
| 83 | Trenton, Ont. | 14 | 3,600 | 30 | | | | | | | | | | | | | |
| 84 | Walkerville, Ont. | 1 | 1,357 | 19 | | | 98 | 22,743 | 1,360 | | | | | | | | 179 |
| 85 | Wallaceburg, Ont. | 5 | 623 | 41 | | | 504 | 176,328 | 15,882 | | | | | | | | 89 |
| 86 | Welland, Ont. | 21 | 20,348 | 344 | 538 | 6 | 50 | 98,283 | 969 | | | 14 | 24,382 | | | | 122 |
| 87 | Wellington, Ont. | | | | | | | 177 | 9 | | | | | | | | |
| 88 | West Dock, Ont. | | | | 648 | 50 | 1,428 | 362,393 | 14,651 | | | | | | | | |
| 89 | Whitby, Ont. | 97 | 12,405 | 671 | | | 2 | 318 | 19 | | | | | | | | |
| 90 | White Horse, Y.T. | | | | | | 5 | 2,019 | 128 | | | 6 | 1,673 | | | | 6 |
| 91 | Warton, Ont. | 122 | 26,034 | 1,349 | | | 149 | 32,255 | 1,630 | | | | | | | | 102 |
| 92 | Windsor, Ont. | 87 | 142,114 | 4,595 | | | 121 | 10,332 | 1,803 | | | | | | | | |
| 93 | Wolfe Island, Ont. | 5 | 109 | 10 | | | | | | | | | | | | | |
| | Total | 12,941 | 7,565,126 | 250,397 | 342,296 | 4,555 | 25,455 | 9,550,386 | 272,675 | | | 2,968 | 709,198 | | | | 9,077 |

SESSIONAL PAPER No. 11a

No. 17.—SUMMARY STATEMENT of Canadian and United States Vessels, trading on Inland Waters, which departed from Canadian Ports during the Fiscal Year ended March 31, 1917.

RECAPITULATION.

| | Number of Vessels. | Tons Register. | Number of Crew. |
|--------------------------|--------------------|----------------|-----------------|
| Canadian—Steam..... | 12,941 | 7,565,126 | 250,397 |
| Sail..... | 895 | 342,296 | 4,555 |
| United States—Steam..... | 25,455 | 9,550,386 | 272,675 |
| Sail..... | 2,968 | 709,198 | 9,077 |
| Total..... | 42,259 | 18,167,006 | 536,704 |

DESCRIPTION OF VESSELS.

| Description. | Number of Vessels. | Tons Register. |
|---------------------|--------------------|----------------|
| Steam—Screw..... | 35,764 | 15,205,108 |
| Paddle..... | 2,560 | 1,880,122 |
| Sternwheel..... | 72 | 30,282 |
| Sail—Schooners..... | 938 | 371,549 |
| Sloops..... | 4 | 75 |
| Barges..... | 2,921 | 679,870 |
| Total..... | 42,259 | 18,167,006 |

No. 18.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage), which Arrived and Departed during the Fiscal Year ended March 31, 1917.

| | CANADIAN. | | | UNITED STATES. | | | TOTAL. | | |
|---------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------|----------------|-----------------|
| | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. | Number of Vessels. | Tons Register. | Number of Crew. |
| Arrived..... | 13,901 | 8,039,382 | 244,301 | 27,927 | 10,239,082 | 283,187 | 41,828 | 18,278,464 | 527,488 |
| Departed..... | 13,836 | 7,907,422 | 254,952 | 28,423 | 10,259,584 | 281,752 | 42,259 | 18,167,006 | 536,704 |
| Total..... | 27,737 | 15,946,804 | 499,253 | 56,350 | 20,498,666 | 564,939 | 84,087 | 36,445,470 | 1,064,192 |

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade of the Dominion of Canada, which arrived at, or departed from, the undermentioned Ports and Outports, during the Fiscal Year ended March 31, 1917.

STEAMERS.

| Ports and Outports. | VESSELS ARRIVED. | | | | VESSELS DEPARTED. | | | |
|--------------------------|--------------------|----------------|--------------|--------------------|-------------------|--------------|--------------------|----------------|
| | BRITISH. | | FOREIGN. | | BRITISH. | | FOREIGN. | |
| | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. |
| Albert, N.B. | 40 | 1,830 | 238 | | | | | |
| Alert Bay, B.C. | 662 | 441,384 | 23,933 | | | | | |
| Amherst, N.S. | 1 | 46 | 6 | | | | | |
| Amherstburg, Ont. | 92 | 18,284 | 859 | | | | | |
| Annapolis Royal, N.S. | 111 | 6,023 | 767 | | | | | |
| Antigonish, N.S. | 43 | 3,001 | 429 | | | | | |
| Anyox, B.C. | 328 | 224,187 | 10,588 | | | | | |
| Arifhat, N.S. | 651 | 57,327 | 5,460 | | | | | |
| Baddeck, N.S. | 256 | 68,825 | 10,479 | 1 | 46 | 6 | | |
| Barrington Passage, N.S. | 674 | 34,203 | 5,409 | 22 | 416 | 86 | | |
| Barton, N.S. | 1 | 48 | 3 | | | | | |
| Bath, Ont. | 419 | 33,061 | 3,086 | | | | | |
| Bathurst, N.B. | 12 | 3,553 | 95 | | | | | |
| Bear River, N.S. | 42 | 2,756 | 285 | | | | | |
| Belliveau's Cove, N.S. | 3 | 56 | 8 | | | | | |
| Bellefleur, Ont. | 54 | 30,537 | 1,459 | | | | | |
| Blind River, Ont. | 123 | 46,497 | 2,602 | | | | | |
| Bowmanville, Ont. | 1 | 28 | 6 | | | | | |
| Bridgetown, N.S. | 37 | 2,072 | 222 | | | | | |
| Bridgewater, N.S. | 49 | 3,035 | 279 | | | | | |
| Brockville, Ont. | 246 | 239,433 | 10,833 | | | | | |
| Bruce Mines, Ont. | 287 | 80,668 | 4,290 | | | | | |
| Buctouche, N.B. | 2 | 34 | 6 | | | | | |
| Byng Inlet, Ont. | 34 | 7,155 | 382 | | | | | |
| Campbellton, N.B. | 34 | 20,089 | 394 | | | | | |
| Campo Bello, N.B. | 179 | 30,291 | 333 | 2 | 3,916 | 51 | | |
| Canning, N.S. | 30 | 2,160 | 210 | 1 | 519 | 39 | | |
| Causo, N.S. | 1,153 | 161,192 | 12,097 | 3 | 60 | 10 | | |
| Carsons, Y.T. | 56 | 8,344 | 896 | | | | | |
| Cardigan, P.E.I. | 30 | 2,940 | 430 | | | | | |
| Charlottetown, P.E.I. | 285 | 99,768 | 4,265 | | | | | |
| Chatham, N.B. | 57 | 17,842 | 487 | | | | | |
| Chatham, Ont. | 80 | 19,958 | 1,133 | 18 | 17,492 | 487 | | |
| Chemamus, B.C. | 308 | 38,621 | 2,786 | | | | | |

No. 19.—STATEMENT OF Vessels, British and Foreign, employed in the Coasting Trade, etc.—Continued.

STEAMERS—Continued.

| Ports and Outports. | VESSELS ARRIVED. | | | | | | VESSELS DEPARTED. | | | | | |
|----------------------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|
| | BRITISH. | | | FOREIGN. | | | BRITISH. | | | FOREIGN. | | |
| | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. |
| Ladysmith, B.C. | 1, 198 | 182, 242 | 14, 035 | | | | 1, 216 | 187, 556 | 13, 174 | | | |
| LeHave, N.S. | 154 | 8, 159 | 1, 007 | | | | 151 | 7, 927 | 954 | | | |
| Leamington, Ont. | 82 | 19, 926 | 902 | | | | | | | | | |
| Levis, Que. | 13 | 12, 678 | 313 | | | | 101 | 55, 897 | 1, 539 | | | |
| Little Current, Ont. | 217 | 128, 743 | 7, 527 | | | | 266 | 9, 831 | 1, 181 | 17 | 2, 399 | 68 |
| Liverpool, N.S. | 268 | 10, 063 | 1, 200 | 19 | 2, 289 | 107 | 43 | 1, 526 | 216 | | | |
| Lockeport, N.S. | 46 | 1, 652 | 240 | | | | 125 | 4, 418 | 560 | 4 | 79 | 8 |
| Lord's Cove, N.B. | 107 | 4, 355 | 507 | | | | 357 | 189, 208 | 4, 799 | 22 | 27, 709 | 496 |
| Louisburg, N.S. | 383 | 248, 497 | 5, 809 | 28 | 46, 006 | 673 | | | | | | |
| Lower East Pubnico, N.S. | 139 | 10, 741 | 1, 324 | | | | 158 | 10, 629 | 1, 299 | | | |
| Lunenburg, N.S. | 199 | 9, 423 | 1, 076 | | | | 209 | 9, 573 | 9, 989 | | | |
| Mabou, N.S. | 20 | 1, 620 | 240 | | | | 20 | 1, 620 | 240 | | | |
| Magdalen Islands, Que. | 49 | 7, 075 | 815 | | | | 44 | 6, 433 | 752 | | | |
| Mahone Bay, N.S. | 53 | 3, 071 | 274 | | | | 52 | 2, 949 | 197 | | | |
| Margaree, N.S. | 94 | 7, 463 | 977 | | | | 95 | 7, 532 | 988 | | | |
| Margaretsville, N.S. | 96 | 4, 803 | 674 | | | | 96 | 4, 803 | 674 | | | |
| Meaford, Ont. | 91 | 38, 439 | 1, 795 | | | | 91 | 38, 439 | 1, 795 | | | |
| Meteghan River, N.S. | 3 | 71 | 13 | | | | 3 | 71 | 13 | | | |
| Michipicoten Harbour, Ont. | 39 | 64, 039 | 744 | | | | 23 | 29, 444 | 435 | | | |
| Middleton, N.S. | 59 | 2, 989 | 413 | | | | 59 | 2, 989 | 413 | | | |
| Midland, Ont. | 199 | 296, 286 | 3, 470 | | | | 199 | 296, 113 | 3, 443 | | | |
| Moncton, N.B. | 109 | 7, 693 | 665 | | | | 106 | 4, 651 | 532 | | | |
| Montague Bridge, P.E.I. | 91 | 8, 678 | 1, 224 | | | | 87 | 8, 334 | 1, 156 | | | |
| Montsagny, Que. | 2 | 4, 001 | 47 | | | | 2 | 4, 001 | 46 | | | |
| Montreal, Que. | 4, 245 | 1, 790, 960 | 84, 701 | | | | 4, 212 | 1, 763, 658 | 83, 866 | | | |
| Murray Bay, Que. | 16 | 13, 000 | 259 | | | | | | | | | |
| Murray Harbour, P.E.I. | 26 | 2, 548 | 364 | | | | 27 | 2, 573 | 358 | | | |
| Nanaimo, B.C. | 2, 804 | 371, 220 | 40, 234 | 34 | 1, 073 | 319 | 2, 778 | 621, 624 | 40, 855 | 33 | 1, 823 | 320 |
| Napanee, Ont. | 3 | 199 | 23 | | | | 3 | 230 | 25 | | | |
| Nelson, B.C. | 1, 088 | 517, 567 | 19, 348 | | | | 1, 088 | 538, 597 | 19, 212 | | | |
| Newcastle, N.B. | 4 | 10, 162 | 115 | 6 | 8, 143 | 121 | | | | | | |
| Newport, B.C. | 602 | 215, 148 | 10, 041 | | | | 567 | 200, 797 | 9, 613 | | | |
| New Campbellton, N.S. | 2 | 215 | 20 | 1 | 1, 472 | 21 | 2 | 215 | 20 | | | |
| New Westminster, B.C. | 790 | 36, 484 | 5, 106 | | | | 808 | 37, 992 | 5, 216 | | | |
| Niagara, Ont. | 978 | 830, 515 | 51, 980 | | | | 1, 023 | 991, 561 | 51, 035 | | | |

SESSIONAL PAPER No. 11a

| | | | | | | | | | |
|--------------------------|-------|-----------|--------|-------|-----------|--------|----|--------|-----|
| North East Harbour, N.S. | 87 | 4,742 | 742 | 88 | 4,824 | 749 | 6 | 98 | 18 |
| North Head, N.B. | 77 | 7,413 | 449 | 91 | 8,792 | 531 | 27 | 17,510 | 584 |
| North Sydney, N.S. | 303 | 107,075 | 4,158 | 294 | 73,317 | 3,670 | | | |
| Ocean Falls, B.C. | 416 | 221,056 | 12,847 | 428 | 224,882 | 13,107 | | | |
| Ottawa, Ont. | 125 | 11,101 | 1,255 | 134 | 10,461 | 1,238 | | | |
| Owen Sound, Ont. | 338 | 179,526 | 7,553 | 303 | 99,663 | 4,952 | | | |
| Parrsboro, N.S. | 153 | 20,103 | 1,074 | 134 | 19,016 | 816 | | | |
| Parry Sound, Ont. | 116 | 26,225 | 2,243 | 119 | 26,887 | 2,314 | | | |
| Paspébiac, Que. | 72 | 17,885 | 1,160 | 70 | 16,013 | 1,225 | | | |
| Pentagouche, Ont. | 97 | 22,312 | 2,005 | 96 | 22,072 | 2,055 | | | |
| Perey, Que. | 59 | 23,163 | 1,260 | 59 | 23,163 | 1,269 | 1 | 1,203 | 20 |
| Pictou, Ont. | 423 | 108,058 | 7,501 | 270 | 40,552 | 3,312 | | | |
| Pictou, N.S. | 210 | 38,998 | 3,042 | 205 | 33,954 | 2,903 | | | |
| Point Edward, Ont. | 248 | 264,892 | 8,595 | 318 | 375,945 | 11,836 | | | |
| Point Alberní, B.C. | 91 | 37,807 | 2,777 | 94 | 37,680 | 2,765 | | | |
| Port Arthur, Ont. | 548 | 1,207,802 | 29,741 | 548 | 1,207,802 | 29,741 | | | |
| Port Barwell, Ont. | 209 | 1,200 | 1,200 | 220 | 8,040 | 1,340 | | | |
| Port Clyde, N.S. | 95 | 4,917 | 795 | 93 | 4,789 | 756 | | | |
| Port Dalhousie, Ont. | 274 | 418,690 | 4,766 | 104 | 167,270 | 2,712 | | | |
| Port Dalhousie, Ont. | 609 | 323,726 | 12,176 | 597 | 315,653 | 11,872 | | | |
| Port Dover, Ont. | 18 | 537 | 116 | 18 | 537 | 108 | | | |
| Port Elgin, N.B. | | | | 1 | 31 | 5 | | | |
| Port George, N.S. | 65 | 3,239 | 448 | 65 | 3,239 | 448 | | | |
| Port Hawkesbury, N.S. | 255 | 58,390 | 2,672 | 262 | 59,436 | 3,015 | 3 | 1,297 | 36 |
| Port Hastings, N.S. | 123 | 10,882 | 1,233 | 128 | 14,296 | 1,304 | | | |
| Port Hood, N.S. | 222 | 16,158 | 2,231 | 222 | 15,969 | 2,231 | | | |
| Port Hope, Ont. | 4 | 1,706 | 45 | 4 | 1,706 | 45 | | | |
| Port La Tour, N.S. | 106 | 5,848 | 877 | 105 | 5,848 | 877 | | | |
| Port Morion, N.S. | 24 | 2,534 | 242 | 24 | 2,534 | 242 | | | |
| Port Mulgrave, N.S. | 1,012 | 91,685 | 8,827 | 1,014 | 112,437 | 8,876 | 3 | 112 | 12 |
| Port McNeill, Ont. | 376 | 815,303 | 12,358 | 352 | 755,602 | 11,822 | | | |
| Port Simpson, B.C. | 268 | 182,703 | 9,705 | 267 | 181,237 | 9,660 | | | |
| Port Stanley, Ont. | 250 | 14,750 | 1,538 | 248 | 13,643 | 1,517 | | | |
| Port Williams, N.S. | 30 | 1,380 | 210 | 30 | 1,380 | 210 | | | |
| Powell River, B.C. | 1,355 | 394,806 | 29,193 | 1,353 | 395,863 | 29,260 | | | |
| Prescott, Ont. | 1,259 | 315,340 | 14,771 | 1,208 | 261,339 | 15,730 | | | |
| Prince Rupert, B.C. | 1,196 | 555,392 | 29,694 | 1,211 | 598,728 | 31,640 | | | |
| Quebec, Que. | 657 | 538,627 | 30,507 | 957 | 1,276,433 | 44,231 | 24 | 22,809 | 561 |
| Queenston, Ont. | 296 | 341,432 | 14,711 | 227 | 159,917 | 12,316 | | | |
| Rainy River, Ont. | 7 | 280 | 34 | 4 | 178 | 24 | | | |
| Ridgbarcto N.B. | 47 | 2,165 | 298 | 51 | 2,214 | 240 | | | |
| River Helbert, N.S. | 25 | 1,150 | 148 | 25 | 1,150 | 150 | | | |
| Rivière du Loup, Que. | 14 | 1,335 | 560 | 13 | 13,418 | 566 | | | |
| Rockport, Ont. | 67 | 12,509 | 899 | 23 | 2,046 | 114 | | | |
| Rondeau, Ont. | 59 | 1,998 | 380 | 60 | 2,005 | 387 | | | |
| Sandy Point, N.S. | 31 | 1,046 | 254 | 29 | 990 | 230 | | | |
| Sandwich, Ont. | 3 | 228 | 15 | 2 | 2,544 | 28 | | | |
| Sandy Cove, N.S. | 38 | 1,644 | 262 | 34 | 1,060 | 290 | 1 | 6 | 2 |
| Sarnia, Ont. | 261 | 435,047 | 12,638 | 288 | 460,369 | 13,624 | | | |
| Sault Ste. Marie, Ont. | 2,161 | 1,639,820 | 55,456 | 785 | 764,525 | 24,083 | | | |

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—Continued.

STEAMERS—Continued.

| Ports and Outports. | VESSELS ARRIVED. | | | | | | VESSELS DEPARTED. | | | | | |
|---------------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|
| | BRITISH. | | | FOREIGN. | | | BRITISH. | | | FOREIGN. | | |
| | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. |
| Sherbrooke, N.S. | 46 | 4,406 | 433 | | | | 46 | 4,406 | 432 | | | |
| St. Etienne, N.B. | 73 | 13,684 | 681 | 1 | 760 | 16 | 73 | 13,342 | 684 | | | |
| Sheet Harbour, N.S. | 171 | 31,206 | 2,375 | | | | 174 | 31,468 | 2,427 | | | |
| Shelburne, N.S. | 17 | 599 | 92 | 4 | 582 | 43 | 17 | 599 | 92 | 1 | 24 | 3 |
| Shippagan, N.B. | 23 | 660 | 93 | | | | 28 | 729 | 108 | | | |
| Sidney, B.C. | 438 | 50,231 | 5,004 | | | | 453 | 52,826 | 5,133 | | | |
| Smith's Falls, Ont. | 24 | 3,768 | 336 | | | | 24 | 3,768 | 336 | | | |
| Sorel, Que. | 645 | 930,546 | 33,222 | | | | 648 | 932,506 | 33,254 | | | |
| Souris, P.E.I. | 103 | 14,991 | 1,740 | | | | 108 | 15,090 | 1,751 | | | |
| Steveston, B.C. | 515 | 28,042 | 3,045 | | | | 565 | 31,244 | 3,701 | | | |
| Stewart, B.C. | 54 | 13,118 | 658 | | | | 52 | 13,116 | 656 | | | |
| St. Andrews, N.B. | 354 | 20,064 | 1,465 | 4 | 217 | 18 | 396 | 21,875 | 2,079 | 6 | 306 | 41 |
| St. George, N.B. | 43 | 4,339 | 338 | | | | 39 | 2,468 | 308 | | | |
| St. John, N.B. | 1,213 | 398,523 | 19,959 | | | | 1,269 | 575,301 | 23,017 | | | |
| St. Johns, Que. | 1 | 17 | 4 | | | | 1 | 17 | 4 | | | |
| St. Martins, N.B. | 23 | 830 | 111 | 4 | 316 | 44 | 24 | 886 | 118 | | | |
| St. Peters, N.S. | 76 | 7,993 | 914 | | | | 77 | 8,027 | 920 | | | |
| St. Stephen, N.B. | 250 | 12,954 | 900 | | | | 257 | 12,017 | 881 | 10 | 3,104 | 54 |
| Summerside, P.E.I. | 38 | 32,535 | 1,340 | | | | 24 | 28,440 | 1,046 | | | |
| Sydney, N.S. | 785 | 942,173 | 19,388 | 90 | 118,207 | 2,292 | 840 | 1,145,313 | 22,665 | 26 | 18,501 | 574 |
| Thessalon, Ont. | 277 | 90,859 | 5,259 | | | | 160 | 50,247 | 2,475 | | | |
| Three Rivers, Que. | 521 | 905,153 | 22,953 | | | | 522 | 905,272 | 22,960 | | | |
| Thorold, Ont. | 24 | 20,730 | 469 | | | | 18 | 15,552 | 303 | | | |
| Toronto, Ont. | 1,409 | 708,226 | 33,519 | | | | 1,319 | 621,130 | 31,756 | | | |
| Truro, N.S. | 28 | 2,016 | 212 | | | | 28 | 2,016 | 212 | | | |
| Union Bay, B.C. | 998 | 224,260 | 15,772 | | | | 1,000 | 221,704 | 15,752 | | | |
| Valleyfield, Que. | 2 | 372 | 17 | | | | 2 | 372 | 17 | | | |
| Vancouver, B.C. | 9,395 | 2,927,760 | 173,573 | | | | 9,065 | 3,197,348 | 175,476 | | | |
| Victoria, B.C. | 3,567 | 2,017,637 | 94,521 | | | | 3,604 | 1,749,506 | 94,684 | | | |
| Walkerville, Ont. | 34 | 8,703 | 229 | | | | 34 | 9,049 | 291 | | | |
| Wallaceburg, Ont. | 33 | 2,757 | 443 | | | | 32 | 2,774 | 429 | | | |
| Welland, Ont. | 22 | 1,041 | 125 | | | | 28 | 1,084 | 132 | | | |
| Wellington, Ont. | 21 | 30,037 | 370 | | | | 3 | 3,112 | 52 | | | |
| West Dock, Ont. | 1 | 50 | 3 | | | | 1 | 50 | 3 | | | |
| | 185 | 44,955 | 2,035 | | | | 185 | 44,955 | 2,035 | | | |

SESSIONAL PAPER No. 11a

| | | | | | | | | | | | |
|--------------------|--------|------------|-----------|-------|---------|-------|--------|------------|-------|---------|-------|
| Westport, N.S. | 180 | 12,082 | 1,658 | 11 | 109 | 25 | 249 | 15,027 | 6 | 92 | 7 |
| Weymouth, N.S. | 315 | 8,880 | 1,067 | ..... | ..... | ..... | 317 | 10,253 | 1 | 8 | 3 |
| Whitby, Ont. | 3 | 891 | 50 | ..... | ..... | ..... | 3 | 891 | ..... | ..... | ..... |
| White Horse, Y.T. | 86 | 41,501 | 1,828 | ..... | ..... | ..... | 87 | 41,949 | ..... | ..... | ..... |
| White Rock, B.C. | 35 | 1,605 | 192 | ..... | ..... | ..... | 35 | 1,035 | ..... | ..... | ..... |
| Warton, Ont. | 122 | 26,034 | 1,349 | ..... | ..... | ..... | 122 | 26,034 | ..... | ..... | ..... |
| Windsor, N.S. | 102 | 9,667 | 692 | ..... | ..... | ..... | 193 | 4,877 | ..... | ..... | ..... |
| Windsor, Ont. | 217 | 209,279 | 6,404 | ..... | ..... | ..... | 153 | 70,315 | ..... | ..... | ..... |
| Wolfe Island, Ont. | 1 | 98 | 7 | ..... | ..... | ..... | 1 | 98 | ..... | ..... | ..... |
| Wolfville, N.S. | 31 | 1,431 | 217 | ..... | ..... | ..... | 31 | 1,420 | ..... | ..... | ..... |
| Yarmouth, N.S. | 381 | 29,474 | 2,667 | ..... | ..... | 67 | 434 | 31,499 | ..... | 49 | 5 |
| Total | 65,846 | 29,433,729 | 1,304,873 | 391 | 299,883 | 7,142 | 62,500 | 28,411,647 | 200 | 118,383 | 3,742 |

SAILING VESSELS.

| | | | | | | | | | | | |
|--------------------------|-------|--------|-------|-------|-------|-------|-------|--------|-------|--------|-------|
| Albert, N.B. | 10 | 1,140 | 36 | 4 | 531 | 14 | 7 | 678 | 7 | 22 | 30 |
| Alberton, P.E.I. | 33 | 1,903 | 120 | ..... | ..... | ..... | 32 | 1,894 | ..... | 123 | ..... |
| Amherst, N.S. | 12 | 376 | 32 | 2 | 1,507 | 25 | 15 | 816 | ..... | 42 | ..... |
| Amherstburg, Ont. | 5 | 981 | 16 | ..... | ..... | ..... | 5 | 981 | ..... | 16 | ..... |
| Annapolis Royal, N.S. | 51 | 2,031 | 153 | 2 | 69 | 5 | 54 | 2,291 | 2 | 69 | 5 |
| Antigonish, N.S. | 94 | 2,779 | 224 | ..... | ..... | ..... | 94 | 2,779 | ..... | 224 | ..... |
| Auxois | 62 | 53,176 | 193 | ..... | ..... | ..... | 276 | 10,503 | ..... | 842 | ..... |
| Arichat | 280 | 10,358 | 829 | 1 | 199 | 5 | 219 | 8,865 | 79 | 10,247 | 856 |
| Barrington Passage, N.S. | 236 | 10,007 | 849 | 53 | 5,527 | 556 | 36 | 1,983 | ..... | 139 | ..... |
| Barton, N.S. | 36 | 1,983 | 139 | ..... | ..... | ..... | 21 | 1,190 | ..... | 69 | ..... |
| Bath, Ont. | 17 | 878 | 56 | ..... | ..... | ..... | 4 | 707 | ..... | 18 | ..... |
| Bathurst, N.B. | 3 | 616 | 14 | ..... | ..... | ..... | 4 | 707 | ..... | 18 | ..... |
| Bear River, N.S. | 53 | 1,302 | 178 | 6 | 2,548 | 53 | 54 | 1,481 | ..... | 191 | ..... |
| Bellefleur, N.S. | 10 | 1,626 | 47 | ..... | ..... | ..... | 1 | 30 | ..... | 4 | ..... |
| Belleveaux Cove, N.S. | 90 | 2,747 | 204 | ..... | ..... | ..... | 90 | 2,563 | ..... | 210 | ..... |
| Belleville, Ont. | 1 | 42 | 2 | ..... | ..... | ..... | 2 | 241 | ..... | 7 | ..... |
| Blind River, Ont. | 6 | 1,428 | 37 | ..... | ..... | ..... | 4 | 712 | ..... | 23 | ..... |
| Birdtown, N.S. | ..... | ..... | ..... | ..... | ..... | ..... | 3 | 352 | ..... | 12 | ..... |
| Bridgewater, N.S. | 35 | 5,888 | 151 | ..... | ..... | ..... | 13 | 1,247 | ..... | 55 | ..... |
| Browville, Ont. | 2 | 962 | 8 | ..... | ..... | ..... | 2 | 962 | ..... | 8 | ..... |
| Buctouche, N.B. | 47 | 2,487 | 142 | ..... | ..... | ..... | 45 | 2,381 | ..... | 135 | ..... |
| Campbellton, N.B. | 44 | 2,726 | 399 | ..... | ..... | ..... | 22 | 1,668 | ..... | 88 | ..... |
| Campo Bello, N.B. | 2 | 135 | 8 | 20 | 3,621 | 127 | ..... | ..... | ..... | ..... | ..... |
| Canning, N.S. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Canso, N.S. | 13 | 1,158 | 42 | ..... | ..... | ..... | 13 | 993 | ..... | 38 | ..... |
| Caraduct, N.B. | 394 | 17,171 | 1,416 | 8 | 1,122 | 77 | 394 | 18,113 | 6 | 651 | 34 |
| Cardigan, P.E.I. | 58 | 2,844 | 223 | ..... | ..... | ..... | 58 | 2,844 | ..... | 223 | ..... |
| Carross, Y.T. | 19 | 1,560 | 81 | ..... | ..... | ..... | 11 | 885 | ..... | 43 | ..... |
| Charlottetown, P.E.I. | 8 | 224 | 16 | ..... | ..... | ..... | 8 | 224 | ..... | 16 | ..... |
| Charlottetown, P.E.I. | 53 | 37,662 | 1,671 | 2 | 134 | 13 | 547 | 38,680 | 1 | 54 | 5 |
| Charlottetown, P.E.I. | 143 | 12,484 | 666 | 7 | 2,885 | 60 | 127 | 7,793 | ..... | 446 | ..... |

No. 19.—STATEMENT OF Vessels, British and Foreign, employed in the Coasting Trade, etc.—Continued.
SAILING VESSELS—Continued.

| Ports and Outports. | VESSELS ARRIVED. | | | | | | VESSELS DEPARTED. | | | | | |
|-----------------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|--------------------|----------------|--------------|
| | BRITISH. | | | FOREIGN. | | | BRITISH. | | | FOREIGN. | | |
| | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. | Number of Vessels. | Tons Register. | Crew Number. |
| Chatham, Ont. | 16 | 3,470 | 75 | | | | 15 | 3,282 | 70 | | | |
| Chenamus, B.C. | 30 | 12,159 | 83 | | | | 33 | 13,293 | 92 | | | |
| Chester, N.S. | 208 | 9,270 | 710 | 1 | 30 | 4 | 221 | 9,472 | 750 | | | |
| Cheticamp, N.S. | 43 | 1,148 | 156 | | | | 44 | 1,053 | 165 | | | |
| Chicoutimi, Que. | 3 | 240 | 9 | 1 | 268 | 6 | 1 | 98 | 4 | | | |
| Church Point, N.S. | 17 | 847 | 40 | 1 | 6 | 2 | 14 | 688 | 30 | | | 2 |
| Clark's Harbour, N.S. | 91 | 3,733 | 289 | | | | 91 | 3,733 | 289 | 1 | 6 | |
| Clementsport, N.S. | 5 | 439 | 20 | | | | 4 | 327 | 13 | | | |
| Cookburn Island, Ont. | 2 | 254 | 10 | | | | 2 | 254 | 10 | | | |
| Courtright, Ont. | 6 | 1,380 | 24 | | | | 6 | 1,380 | 24 | | | |
| Crapaud, P.E.I. | 27 | 2,182 | 95 | | | | 28 | 2,281 | 97 | | | |
| Cutler, Ont. | 7 | 1,696 | 39 | | | | 7 | 1,687 | 39 | | | |
| Dalhousie, N.B. | 16 | 1,276 | 65 | 5 | 1,954 | 41 | | | | | | |
| Dawson, Y.T. | 58 | 10,115 | 116 | | | | 58 | 10,212 | 116 | 35 | 21,604 | 372 |
| Deseronto, Ont. | 6 | 496 | 20 | | | | 1 | 21 | 1 | 3 | 864 | 6 |
| Digby, N.S. | 160 | 8,044 | 635 | 1 | 63 | 7 | 167 | 6,294 | 592 | 2 | 124 | 20 |
| Dorchester, N.B. | 3 | 680 | 16 | | | | 3 | 317 | 10 | | | |
| Ellis Bay, Que. | 8 | 73 | 25 | | | | 8 | 73 | 25 | | | |
| Esquimaux Point, Que. | 3,375 | | 338 | | | | 82 | 3,375 | 338 | | | |
| Fort William, Ont. | 20 | 35,852 | 169 | | | | 15 | 27,795 | 128 | | | |
| Freeport, N.S. | 32 | 1,043 | 101 | | | | 73 | 2,448 | 215 | | | |
| Ganaoque, Ont. | 2 | 36 | 5 | | | | 5 | 90 | 15 | | | |
| Gaspé, Que. | 88 | 22,822 | 692 | | | | 68 | 10,572 | 453 | | | |
| Georgetown, Que. | 79 | 4,174 | 227 | | | | 81 | 4,277 | 239 | | | |
| Glace Bay, N.S. | 140 | 6,834 | 361 | | | | 158 | 7,591 | 457 | | | |
| Goderich, Ont. | 1 | 1,951 | 8 | 4 | 62 | 30 | 1 | 1,951 | 8 | 4 | 62 | 30 |
| Gore Bay, Ont. | 1 | 348 | 5 | | | | | | | | | |
| Grand Narrows, N.S. | 2 | 117 | 6 | | | | 2 | 117 | 6 | | | |
| Guysboro, N.S. | 37 | 1,743 | 106 | | | | 33 | 1,458 | 91 | | | |
| Halifax, N.S. | 2,278 | 151,094 | 9,048 | 10 | 4,141 | 77 | 2,154 | 144,396 | 7,500 | 59 | 19,957 | 362 |
| Hantsport, N.S. | 15 | 1,549 | 44 | 6 | 1,312 | 31 | 17 | 2,501 | 52 | 5 | 825 | 20 |
| Hillsboro, N.B. | 25 | 3,514 | 61 | 3 | 1,395 | 21 | 23 | 614 | 51 | | | |
| Iona, N.S. | 3 | 126 | 7 | | | | 3 | 126 | 7 | | | |
| Isaac's Harbour, N.S. | 31 | 2,131 | 124 | | | | 33 | 2,347 | 133 | | | |
| J'éggs Mines, N.S. | 17 | 1,752 | 51 | 1 | 157 | 6 | 5 | 176 | 11 | | | |

SESSIONAL PAPER No. 11a

| | | | | | | | | | | |
|--------------------------|-----|---------|-------|----|--------|-----|-------|---------|--------|-------|
| Kentville, N.S. | 36 | 580 | 86 | 1 | 108 | 12 | 105 | 2 | 1,557 | 12 |
| Little Current, Ont. | 3 | 832 | 17 | | | | | | | |
| Liverpool, N.S. | 70 | 8,168 | 335 | 21 | 6,625 | 128 | 30 | 8 | 939 | 42 |
| Lockport, N.S. | 57 | 3,111 | 201 | 13 | 301 | 56 | 60 | 13 | 212 | 37 |
| Londonderry, N.S. | 12 | 683 | 35 | | | | 12 | 12 | 685 | 35 |
| Lords' Cove, N.B. | 1 | 71 | 5 | | | | 1 | 1 | 71 | 5 |
| Louisburg, N.S. | 268 | 82,182 | 1,125 | 3 | 829 | 20 | 257 | 5 | 79,425 | 1,040 |
| Lower East Pubnico, N.S. | 92 | 2,724 | 237 | 4 | 87 | 12 | 96 | 4 | 2,854 | 248 |
| Lunenburg, N.S. | 296 | 20,891 | 1,424 | 1 | 268 | 6 | 334 | 1 | 26,177 | 1,666 |
| Magdalen Islands, Que. | 107 | 6,126 | 547 | 32 | 2,628 | 472 | 146 | 45 | 8,483 | 1,137 |
| Mahone Bay, N.S. | 37 | 2,473 | 163 | | | | 22 | 1,331 | 337 | 64 |
| Maitland, N.S. | 27 | 1,801 | 84 | | | | 22 | 1,331 | 337 | 64 |
| Margaree, N.S. | 13 | 586 | 43 | | | | 15 | 649 | 47 | 47 |
| Meteghan River, N.S. | 29 | 1,279 | 30 | 1 | 8 | 5 | 29 | 1 | 288 | 87 |
| Midland, Ont. | 8 | 13,918 | 70 | | | | 8 | 13,918 | 70 | 70 |
| Moncton, N.B. | 47 | 2,833 | 130 | | | | 56 | 3,331 | 177 | 177 |
| Montage Bridge, P.E.I. | 73 | 4,168 | 224 | | | | 69 | 3,902 | 205 | 205 |
| Montreal, Que. | 998 | 331,820 | 4,228 | | | | 1,010 | 360,338 | 4,367 | 4,367 |
| Murray Bay, Que. | 2 | 2,408 | 18 | | | | | | | |
| Murray Harbour, P.E.I. | 69 | 2,227 | 163 | | | | 68 | 2,156 | 162 | 162 |
| Nainaino, B.C. | 36 | 29,210 | 126 | | | | 36 | 29,210 | 126 | 126 |
| Napanee, Ont. | | | | | | | | | | |
| Newcastle, N.B. | 54 | 2,445 | 168 | | | | 4 | 2,372 | 20 | 20 |
| Newport, B.C. | 105 | 81,374 | 422 | 45 | 10,473 | 317 | 103 | 2,000 | 126 | 126 |
| New Campbellton, N.S. | 13 | 592 | 43 | | | | 16 | 631 | 46 | 46 |
| New Glasgow, N.S. | 114 | 2,926 | 240 | -2 | 88 | 8 | 109 | 2,631 | 226 | 226 |
| New Westminster, B.C. | 148 | 74,971 | 432 | | | | 146 | 74,110 | 457 | 457 |
| North East Harbour, N.S. | 5 | 224 | 20 | | | | 4 | 191 | 12 | 12 |
| North Head, N.B. | 15 | 1,004 | 48 | | | | 17 | 1,135 | 54 | 54 |
| North Sydney, N.S. | 350 | 25,869 | 2,380 | 8 | 889 | 92 | 671 | 44,425 | 3,685 | 3,685 |
| Ottawa, Ont. | 172 | 30,212 | 624 | 14 | 1,401 | 29 | 193 | 33,132 | 579 | 579 |
| Owen Sound, Ont. | 1 | 348 | 5 | | | | 1 | 348 | 5 | 5 |
| Parrsboro', N.S. | 636 | 54,816 | 1,865 | | | | 600 | 45,256 | 1,663 | 1,663 |
| Paspébiac, Que. | 77 | 4,570 | 340 | 4 | 513 | 23 | 74 | 4,032 | 327 | 327 |
| Penetanguishene, Ont. | 3 | 822 | 15 | | | | 3 | 832 | 15 | 15 |
| Per 6, Que. | 21 | 1,578 | 186 | 10 | 973 | 222 | 20 | 1,489 | 129 | 129 |
| Pictou, Ont. | 4 | 972 | 26 | | | | 9 | 2,906 | 67 | 67 |
| Pictou, N.S. | 478 | 28,335 | 1,339 | 3 | 735 | 18 | 480 | 28,359 | 1,337 | 1,337 |
| Point Edward, Ont. | 154 | 34,904 | 621 | | | | 191 | 43,969 | 769 | 769 |
| Port Arthur, Ont. | 1 | 1,733 | 8 | | | | 1 | 1,723 | 8 | 8 |
| Port Clyde, N.S. | 6 | 840 | 37 | | | | 5 | 365 | 27 | 27 |
| Port Colborne, Ont. | 121 | 103,592 | 632 | | | | 112 | 94,347 | 713 | 713 |
| Port Dalhousie, Ont. | 149 | 4,948 | 325 | | | | 142 | 4,323 | 311 | 311 |
| Port Elgin, N.B. | 19 | 853 | 40 | | | | 20 | 894 | 43 | 43 |

SESSIONAL PAPER No. 11a

| | | | | | | | | | | | | |
|--------------------|--------|-----------|--------|-----|--------|-------|--------|-----------|--------|-----|--------|-------|
| St. Martin's, N.B. | 92 | 7,982 | 282 | | | | 89 | 6,248 | 267 | | | |
| St. Peters, N.S. | 25 | 1,334 | 77 | | | | 28 | 1,494 | 86 | | | |
| St. Stephen, N.B. | 17 | 1,003 | 50 | | | | 18 | 1,048 | 50 | | | |
| Summerside, P.E.I. | 247 | 15,397 | 773 | 84 | | | 294 | 16,450 | 822 | 6 | 2,614 | 45 |
| Sydney, N.S. | 625 | 56,777 | 2,716 | 2 | 41 | 18 | 298 | 29,669 | 1,138 | 1 | 75 | 18 |
| Tatamagouche, N.S. | 5 | 106 | 10 | | | | 5 | 106 | 10 | | | |
| Three Rivers, Que. | 18 | 3,528 | 49 | | | | 19 | 3,718 | 48 | | | |
| Tignish, P.E.I. | 22 | 678 | 91 | | | | 22 | 713 | 96 | | | |
| Toronto, Ont. | 86 | 4,324 | 206 | | | | 89 | 4,995 | 227 | | | |
| Truro, N.S. | 173 | 13,428 | 522 | | | | 173 | 13,428 | 522 | | | |
| Tusket, N.S. | | | | 3 | 274 | 62 | 1 | 11 | 4 | 3 | 274 | 62 |
| Union Bay, B.C. | 44 | 59,234 | 229 | | | | 46 | 61,674 | 242 | | | |
| Vancouver, B.C. | 817 | 694,148 | 3,903 | | | | 814 | 693,009 | 3,891 | | | |
| Victoria, B.C. | 109 | 92,432 | 549 | | | | 106 | 89,008 | 502 | | | |
| Walkerville, Ont. | 25 | 5,750 | 100 | | | | 25 | 5,750 | 100 | | | |
| Wallace, N.S. | 2 | 145 | 4 | | | | 5 | 317 | 10 | | | |
| Wallaceburg, Ont. | 24 | 4,625 | 104 | | | | 23 | 4,395 | 101 | | | |
| Welland, Ont. | 1 | 538 | 4 | | | | | | | | | |
| Westport, N.S. | 49 | 1,753 | 119 | 11 | | | 60 | 2,475 | 159 | 3 | 56 | 8 |
| Weymouth, N.S. | 207 | 6,694 | 516 | 18 | 2,884 | 66 | 202 | 5,599 | 512 | 7 | 338 | 19 |
| Whitby, Ont. | | | | | | | | | | | | |
| White House, V.T. | 46 | 8,351 | 46 | | | | 47 | 8,523 | 47 | | | |
| Wiaraton, Ont. | 10 | 3,036 | 52 | | | | 12 | 3,646 | 62 | | | |
| Windsor, N.S. | 207 | 37,960 | 634 | 13 | 3,586 | 60 | 189 | 25,369 | 508 | 7 | 2,396 | 33 |
| Windsor, Ont. | 66 | 15,180 | 296 | | | | 66 | 13,335 | 266 | | | |
| Wolfe Island, Ont. | 1 | 18 | 3 | | | | 1 | 18 | 3 | | | |
| Wolfville, N.S. | 60 | 2,563 | 172 | | | | 69 | 3,764 | 207 | | | |
| Yarmouth, N.S. | 208 | 5,053 | 757 | 7 | 346 | 58 | 233 | 11,458 | 1,100 | 15 | 785 | 51 |
| Total..... | 17,161 | 3,260,636 | 65,247 | 418 | 79,144 | 3,257 | 17,507 | 3,204,652 | 64,303 | 376 | 87,548 | 3,184 |

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

RECAPITULATION.

| | STEAMERS. | | | SAILING VESSELS. | | | TOTAL. | | |
|--------------|-------------------|------------|--------------|--------------------|-----------|--------------|--------------------|------------|--------------|
| | Number of Vessels | Tonnage. | Crew Number. | Number of Vessels. | Tonnage. | Crew Number. | Number of Vessels. | Tonnage. | Crew Number. |
| Arrived— | | | | | | | | | |
| British..... | 65,846 | 29,433,729 | 1,304,873 | 17,161 | 3,260,636 | 65,247 | 83,007 | 32,694,365 | 1,370,120 |
| Foreign..... | 391 | 299,883 | 7,142 | 418 | 79,144 | 3,257 | 809 | 379,027 | 10,399 |
| Total..... | 66,237 | 29,733,612 | 1,312,015 | 17,579 | 3,339,780 | 68,504 | 83,816 | 33,073,392 | 1,380,519 |
| Departed— | | | | | | | | | |
| British..... | 62,500 | 28,411,647 | 1,242,047 | 17,507 | 3,204,652 | 64,303 | 80,007 | 31,616,299 | 1,306,350 |
| Foreign..... | 260 | 118,383 | 3,742 | 376 | 87,548 | 3,184 | 636 | 205,931 | 6,926 |
| Total..... | 62,760 | 28,530,030 | 1,245,789 | 17,883 | 3,292,200 | 67,487 | 80,643 | 31,822,230 | 1,313,276 |

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Concluded.*

DESCRIPTION OF VESSELS.

| | ARRIVED. | | DEPARTED. | | TOTAL. | |
|----------------------|--------------------|------------|--------------------|------------|--------------------|------------|
| | Number of Vessels. | Tonnage. | Number of Vessels. | Tonnage. | Number of Vessels. | Tonnage. |
| Steamers— | | | | | | |
| Screw..... | 59,680 | 24,881,708 | 56,569 | 23,745,239 | 116,249 | 48,626,947 |
| Paddle..... | 5,057 | 4,091,234 | 4,703 | 4,005,904 | 9,760 | 8,097,138 |
| Sternwheel..... | 1,500 | 760,670 | 1,488 | 778,887 | 2,988 | 1,539,557 |
| Total, steamers..... | 66,237 | 29,733,612 | 62,760 | 28,530,030 | 128,997 | 58,263,642 |
| Sailing vessels— | | | | | | |
| Ships..... | 38 | 22,006 | 26 | 14,478 | 64 | 36,484 |
| Barques..... | 932 | 781,548 | 934 | 787,368 | 1,866 | 1,568,916 |
| Barquentines..... | 10 | 3,529 | 11 | 3,413 | 21 | 6,942 |
| Brigantines..... | 1 | 144 | 2 | 397 | 3 | 541 |
| Schooners..... | 13,347 | 893,573 | 13,665 | 881,517 | 27,012 | 1,775,090 |
| Sloops..... | 359 | 29,390 | 385 | 24,877 | 744 | 54,267 |
| Barges..... | 2,892 | 1,609,590 | 2,860 | 1,580,150 | 5,752 | 3,189,740 |
| Total, sailing..... | 17,579 | 3,339,780 | 17,883 | 3,292,200 | 35,462 | 6,631,980 |
| Grand total..... | 83,816 | 33,073,392 | 80,643 | 31,822,230 | 164,459 | 64,895,622 |

REPORTS, RETURNS AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART I—EXCISE

PRINTED BY ORDER OF PARLIAMENT

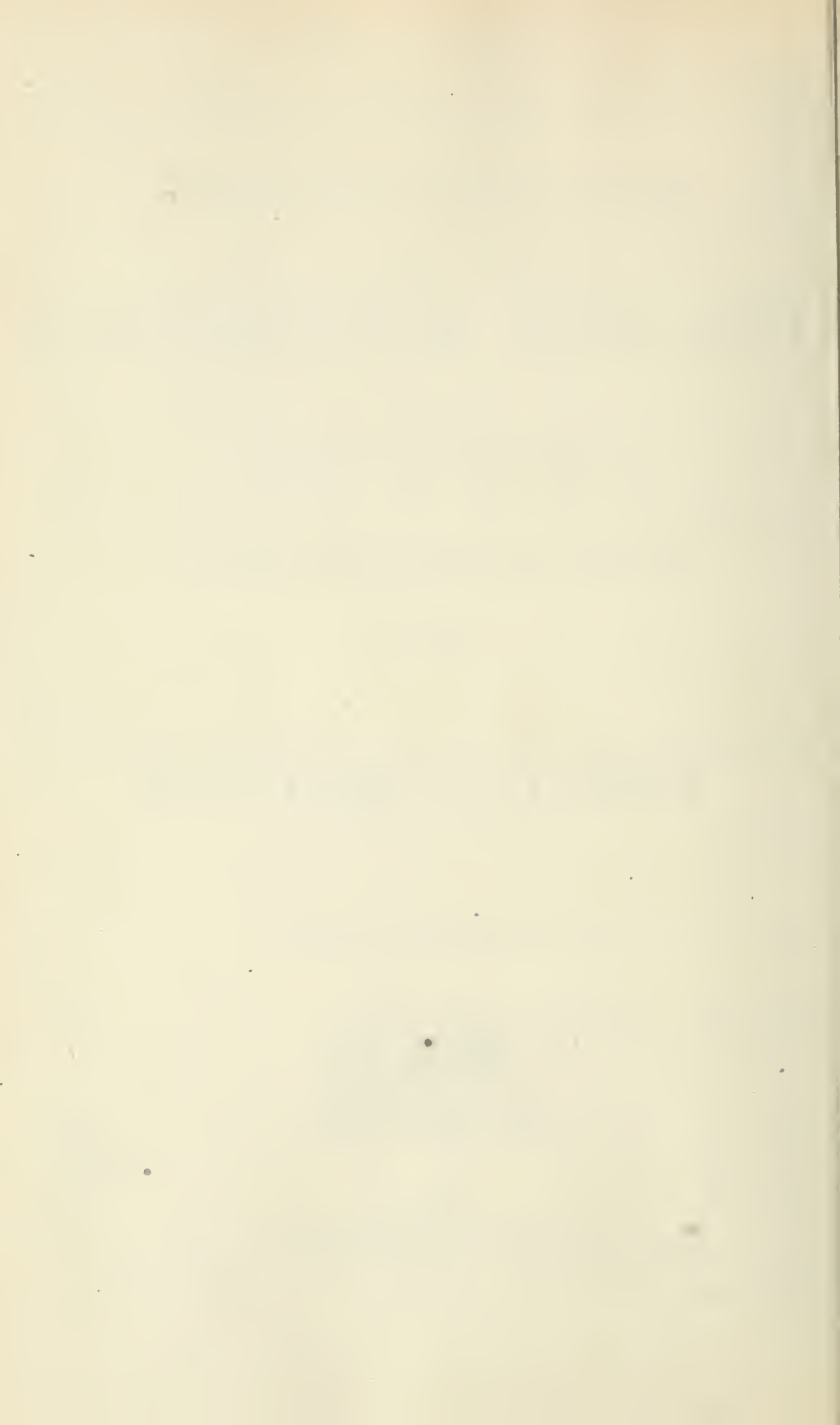


OTTAWA

J. DE LABROQUERIE TACHÉ

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1917



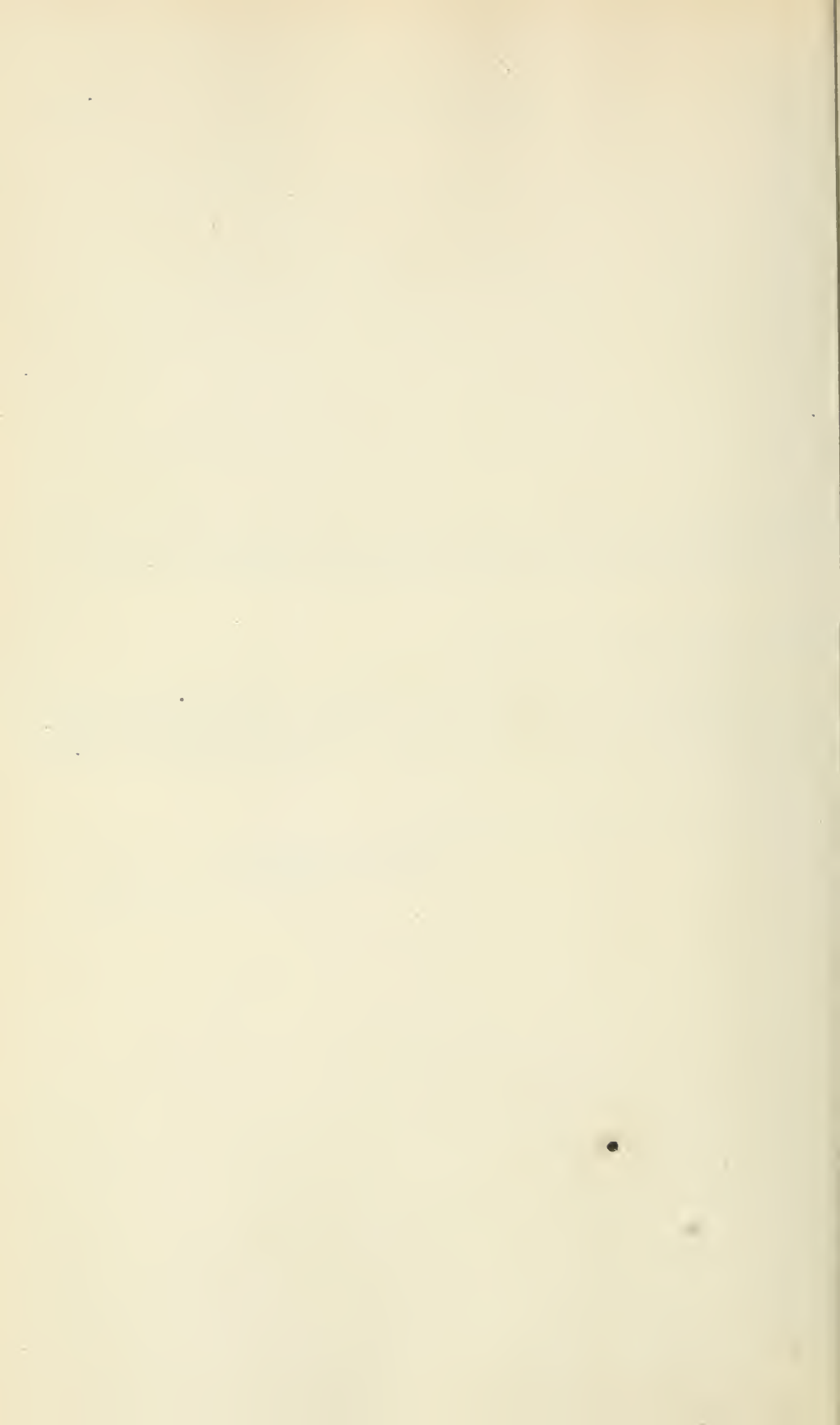
*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to transmit to Your Excellency the RETURNS AND STATISTICS of Inland Revenue of the Dominion of Canada, for the year ended March 31, 1917, as prepared and laid before me by the Deputy Minister of Inland Revenue.

All of which is respectfully submitted.

ALBERT SÉVIGNY,
Minister of Inland Revenue.



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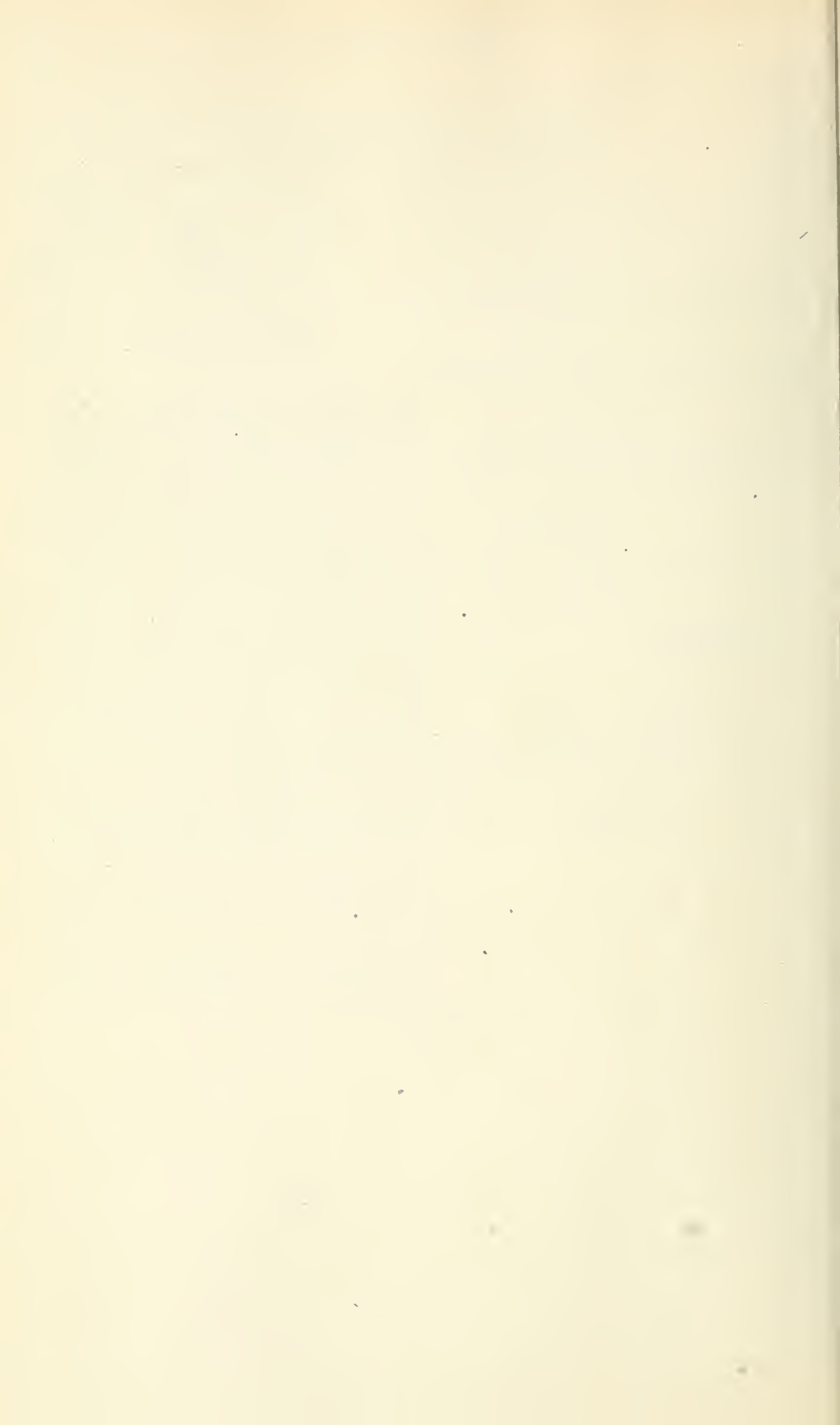
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REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE

To the Hon. ALBERT SÉVIGNY,
Minister of Inland Revenue.

SIR,—Herewith I have the honour to submit statements of the Inland Revenues collected by this department during the fiscal year ended March 31, 1917, with the usual information as to the cost of collections, and statistics respecting the sources whence these revenues were derived.

The following summary comparison shows the accrued revenues for the fiscal years ended March 31, 1913, 1914, 1915, 1916, and 1917.

| | 1913. | 1914. | 1915. | 1916. | 1917. |
|--|------------|------------|------------|------------|------------|
| | \$ | \$ | \$ | \$ | \$ |
| Excise..... | 21,487,918 | 21,488,867 | 21,627,958 | 22,540,406 | 24,525,361 |
| Ferry Licenses..... | 529 | 964 | 989 | 989 | 989 |
| Weights and Measures, Gas and Law Stamps..... | 171,509 | 185,854 | 172,740 | 169,454 | 194,417 |
| Electric Light..... | 74,833 | 80,476 | 82,565 | 70,562 | 71,116 |
| Other Revenues..... | 7,501 | 5,523 | 103,932 | 8,490 | 9,885 |
| War Tax..... | | | | 1,550,488 | 2,072,441 |
| Methylated Spirits..... | 118,077 | 116,208 | 96,747 | 111,846 | 183,708 |
| Totals..... | 21,860,367 | 21,877,892 | 22,084,931 | 24,452,235 | 27,057,917 |

Details of Excise Revenue accrued during the undermentioned fiscal Years:—

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------|------------|------------|------------|------------|------------|
| | 1913. | 1914. | 1915. | 1916. | 1917. |
| | \$ | \$ | \$ | \$ | \$ |
| Spirits..... | 9,474,142 | 9,038,028 | 8,706,481 | 8,701,075 | 9,880,567 |
| Malt liquor..... | 149,437 | 161,416 | 142,903 | 97,779 | 109,215 |
| Malt..... | 1,864,525 | 2,012,301 | 2,616,288 | 2,689,300 | 2,367,902 |
| Tobacco..... | 9,192,181 | 9,489,426 | 9,352,881 | 10,222,784 | 11,197,103 |
| Cigars..... | 602,269 | 588,935 | 655,905 | 635,158 | 730,215 |
| Acetic Acid..... | 10,526 | 11,413 | 7,255 | 8,250 | 8,049 |
| Manufactures in bond..... | 91,460 | 92,160 | 94,904 | 105,812 | 110,409 |
| Seizures..... | 2,062 | 1,434 | 4,141 | 10,349 | 8,353 |
| Other receipts..... | 102,324 | 93,753 | 77,200 | 42,538 | 113,548 |
| Totals..... | 21,488,926 | 21,488,866 | 21,657,958 | 22,513,045 | 24,525,361 |

The quantity of spirits produced during the fiscal year was 6,400,119 proof gallons, as compared with 3,450,012 proof gallons produced in the previous fiscal year. The raw materials taken for use, in the production of spirits, during the fiscal year were as follows:—

| | Lbs. |
|------------------|------------|
| Malt..... | 7,969,353 |
| Indian corn..... | 69,447,487 |
| Rye..... | 10,430,817 |
| Wheat..... | 27,782 |
| Oats..... | 131,580 |
| Molasses..... | 27,416,716 |

The transactions of the several distilleries will be found stated in detail in Appendix A (Statement No. 3), pages 72 and 73.

| | |
|--|-------------------------|
| There was, on April 1, 1916, in process of manufacture..... | Proof galls. 332,731 |
| Manufactured during the fiscal year..... | 6,400,119 |
| Returned to distilleries for redistillation—In bond..... | 265,156 |
| Received into distilleries from other sources—Duty paid..... | * 6,826 570} |
| “ “ “ “ “ “ In bond..... | |
| Total..... | 7,055,402 |

This was disposed of as follows:—

| | |
|---|---------------------------|
| Placed in warehouse..... | Proof galls. 6,778,415 |
| Fusel oil written off..... | 12,981 |
| Deficiency arising from rectification..... | 3,030 |
| Remaining in process of manufacture March 31, 1917, by actual stock taking..... | 260,926 |
| Total..... | 7,055,402 |

SESSIONAL PAPER No. 12

Spirits.—The following statement shows the warehousing transactions in spirits during the fiscal Year ended March 31, 1917, and the four preceding fiscal years:—

| Fiscal Years. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------|--|--|-----------------------|------------------------|------------|--------------------------|--------------------------|---------------------|--|
| | In Warehouse at beginning of year, including transits. | Warehoused during the year. Ex-distillery. | Otherwise warehoused. | Taken for consumption. | Exported. | Used in bonded factories | Otherwise accounted for. | For redistillation. | In Warehouse at end of year, including transits. |
| | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. | Pf. Galls. |
| 1912-1913..... | 20,669,334 | 6,993,602 | 203 | 4,999,937 | 333,802 | 440,826 | 581,305 | 639,109 | 20,668,160 |
| 1913-1914..... | 20,668,160 | 7,488,904 | 66,510 | 4,762,618 | 335,970 | 451,567 | 545,437 | 566,006 | 21,561,976 |
| 1914-1915..... | 21,561,976 | 6,490,682 | 45,918 | 4,021,090 | 275,911 | 474,033 | 459,038 | 369,168 | 22,499,336 |
| 1915-1916..... | 22,499,336 | 3,941,105 | 88,346 | 3,629,324 | 808,135 | 1,160,360 | 388,160 | 443,690 | 20,099,118 |
| Totals..... | 85,398,806 | 24,914,293 | 200,977 | 17,412,969 | 1,753,818 | 2,526,786 | 1,973,940 | 2,017,973 | 84,828,590 |
| Average..... | 21,349,701 | 6,228,573 | 50,244 | 4,353,242 | 438,455 | 631,697 | 493,485 | 504,493 | 21,207,148 |
| 1916-1917..... | 20,099,118 | 6,778,415 | 21,600 | 4,118,147 | 1,289,117 | 4,273,632 | 603,058 | 265,156 | 17,170,242 |

The foreign demand for Canadian distillery products is greater than the average of the last four years, the quantities exported being as follows:—

| | | |
|----------------|--------------|-----------|
| 1912-1913..... | Proof galls. | 333,802 |
| 1913-1914..... | | 335,970 |
| 1914-1915..... | | 275,911 |
| 1915-1916..... | | 808,135 |
| 1916-1917..... | | 1,289,117 |

The following statement shows the entire quantities of spirits upon which duties were collected during the several fiscal years recited therein. To accord with the figures shown in Financial Statement No. 12, pages 26 and 27:—

| Fiscal Years. | CANADIAN SPIRITS. | | Imported Spirits used in Bonded Factories. | Total quantities upon which duty was collected. | Revenue accrued, including License Fees. |
|----------------|--------------------------|-------------------------|--|---|--|
| | Paid duty Ex-distillery. | Paid duty Ex-warehouse. | | | |
| | Pf. Gallons | Pf. Gallons. | Pf. Gallons. | Pf. Gallons. | \$ |
| 1912-1913..... | 2,508 | 4,999,937 | ..... | 5,002,445 | 9,474,142 |
| 1913-1914..... | 2,001 | 4,762,618 | 66,497 | 4,831,116 | 9,038,028 |
| 1914-1915..... | 6,407 | 4,021,090 | 44,690 | 4,072,187 | 8,702,981 |
| 1915-1916..... | 4,066 | 3,629,324 | 85,954 | 3,719,344 | 8,701,075 |
| Totals..... | 14,982 | 17,412,969 | 197,141 | 17,625,092 | 35,916,226 |
| Average..... | 3,745 | 4,353,242 | 49,285 | 4,406,273 | 8,979,057 |
| 1916-1917..... | 3,080 | 4,118,147 | 125,140 | 4,246,367 | 9,850,566 |

Malt.—The following statement shows the transactions in malt during the fiscal Year ended March 31, 1917, and the four preceding fiscal Years:—

| Fiscal Years. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------|--|-------------------------------|------------|------------|------------------------|-----------|--------------------------|--|--|
| | In Warehouse at beginning of year, including transits. | Manufactured during the year. | Imported. | Increases. | Taken for consumption. | Exported. | Otherwise accounted for. | In Warehouse at end of year, including transits. | Revenue accrued, including License Fees. |
| | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | \$ |
| 1912-1913..... | 36,634,900 | 118,673,161 | 5,001,022 | 984,235 | 123,920,607 | 198,800 | 2,911,677 | 34,262,294 | 1,864,525 |
| 1913-1914..... | 34,202,234 | 133,740,168 | 10,263,724 | 736,800 | 133,794,639 | 161,820 | 4,894,662 | 40,151,805 | 2,012,301 |
| 1914-1915..... | 40,151,805 | 119,917,181 | 3,363,587 | 713,406 | 111,037,743 | 228,180 | 3,453,416 | 49,426,640 | 2,616,288 |
| 1915-1916..... | 49,426,640 | 74,053,211 | 1,379,490 | 829,448 | 89,476,590 | 2,501,130 | 3,801,448 | 29,909,621 | 2,689,300 |
| Totals..... | 160,475,579 | 446,383,721 | 20,007,823 | 3,263,889 | 458,229,579 | 3,089,930 | 15,061,203 | 153,750,300 | 9,182,414 |
| Average..... | 40,118,895 | 111,595,930 | 5,001,956 | 815,972 | 114,557,395 | 772,483 | 3,765,301 | 38,437,575 | 2,295,604 |
| 1916-1917..... | 29,909,621 | 78,771,388 | 766,669 | 295,874 | 78,815,746 | 3,888,352 | 4,865,152 | 22,172,062 | 2,367,902 |

Tobacco.—The following statement shows the transactions in Tobacco, Cigarettes and Snuff during the fiscal Year ended March 31, 1917, and the four preceding fiscal Years:—

| Fiscal Years. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|----------------|---|-------------------------------|------------------------|-----------|--------------------------|--|---------------------------------|-------------------------------------|--------------------------------------|--|--|
| | In Warehouse at beginning of year including transits. | Manufactured during the year. | Taken for consumption. | Exported. | Otherwise accounted for. | In Warehouse at end of year, including transits. | Raw Leaf taken for consumption. | Canada Twist taken for consumption. | Total Tobacco taken for consumption. | Other Materials taken for consumption. | Revenue accrued, including License Fees. |
| | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | \$ |
| 1912-1913..... | 718,766 | 25,703,480 | 25,287,332 | 4,519 | 20,630 | 1,103,765 | 19,232,231 | 17,535 | 44,537,098 | 1,615,596 | 9,192,181 |
| 1913-1914..... | 1,103,765 | 25,485,348 | 25,735,773 | 3,358 | 3,916 | 846,066 | 18,775,803 | 11,057 | 44,522,633 | 1,510,010 | 9,489,426 |
| 1914-1915..... | 846,065 | 24,216,866 | 24,444,380 | 10,094 | 44,764 | 563,694 | 15,723,329 | 6,855 | 40,174,564 | 1,280,589 | 9,352,881 |
| 1915-1916..... | 563,694 | 25,390,672 | 23,937,785 | 723,532 | 380,055 | 912,994 | 16,571,311 | 7,430 | 40,516,526 | 1,365,175 | 10,222,784 |
| Totals..... | 3,232,290 | 100,796,366 | 99,405,270 | 741,503 | 455,365 | 3,426,519 | 70,302,674 | 42,877 | 169,750,821 | 5,771,370 | 38,257,272 |
| Average..... | 808,073 | 25,199,092 | 24,851,318 | 185,376 | 113,841 | 856,630 | 17,575,668 | 10,719 | 42,437,705 | 1,442,843 | 9,564,318 |
| 1916-1917..... | 912,994 | 25,980,442 | 24,651,225 | 922,033 | 670,804 | 625,847 | 17,470,422 | 5,685 | 42,127,332 | 1,548,809 | 11,197,103 |

Cigars.—The following statement shows the transactions in Cigars during the fiscal year ended March 31, 1917, and the four preceding fiscal years:—

| Fiscal Years. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------|--|-------------------------------|---|------------------------|-----------|--------------------------|--|--|
| | In Warehouse at beginning of year, including transits. | Manufactured during the year. | Assessments to bring production up to Standard. | Taken for Consumption. | Exported. | Otherwise accounted for. | In Warehouse at end of year, including transits. | Revenue accrued, including License Fees. |
| | No. | No. | No. | No. | No. | No. | No. | \$ |
| 1912-1913..... | 21,940,450 | 297,762,383 | 383,922 | 294,772,933 | 10,100 | 22,500 | 25,281,222 | 602,269 |
| 1913-1914..... | 25,281,222 | 291,359,173 | 349,188 | 288,219,892 | 7,525 | ..... | 28,762,166 | 588,935 |
| 1914-1915..... | 28,762,166 | 226,147,875 | 1,304,626 | 236,866,542 | 16,100 | 30,000 | 19,302,025 | 625,905 |
| 1915-1916..... | 19,302,025 | 209,628,956 | 207,672 | 207,647,808 | 11,225 | 624,925 | 20,854,795 | 635,158 |
| Totals..... | 95,285,863 | 1,024,898,387 | 2,245,408 | 1,027,507,175 | 44,950 | 677,425 | 94,200,208 | 2,452,267 |
| Average..... | 23,821,466 | 256,224,597 | 561,352 | 256,876,794 | 11,237 | 169,356 | 23,550,052 | 613,067 |
| 1916-1917..... | 20,854,795 | 237,647,769 | 658,938 | 239,752,252 | 21,975 | 2,127,395 | 17,258,880 | 730,215 |

The revenues derived from goods manufactured in bond during the fiscal year ended March 31, 1917, and the four preceding fiscal years, were as follows:—

| | |
|----------------|-----------|
| 1912-1913..... | \$ 91,460 |
| 1913-1914..... | 92,160 |
| 1914-1915..... | 94,904 |
| 1915-1916..... | 105,812 |
| 1916-1917..... | 110,409 |

Acetic Acid.—The revenues derived from Acetic Acid during the fiscal year ended March 31, 1917, and the four preceding fiscal years, were as follows:—

| | |
|----------------|-----------|
| 1912-1913..... | \$ 10,526 |
| 1913-1914..... | 11,413 |
| 1914-1915..... | 7,255 |
| 1915-1916..... | 8,250 |
| 1916-1917..... | 8,049 |

Inspection of Petroleum.—The quantity of Petroleum and Naphtha inspected during the fiscal year was as follows:—

| | |
|----------------|----------------------|
| Petroleum..... | Galls. 35,836,338 |
| Naphtha..... | 40,982,270 |
| Total..... | 76,818,608 |

Weights and Measures, Gas and Electric Light.—The usual special reports in relation to these Services have been prepared, containing all statistical information.

The aggregate revenues accrued from these Services were \$257,250.13, the cost of the three Services being \$296,305.56.

SESSIONAL PAPER No. 12

Prevention of Adulteration of Food and Agricultural Fertilizers.—The usual supplementary report in relation to this Service will be submitted, and the report of the Chief Analyst.

Methylated Spirits.—The quantity of methylated spirits manufactured during the fiscal year was 296,929.31 proof gallons, and the sales 298,378.75 proof gallons. A statement of details appears on pages 66, 67, and 116.

The price of this denatured alcohol is practically the actual cost of manufacture, and has been following varying prices on account of the constantly increasing cost of alcohols and naphtha :—

On and after the 14th January, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, 95c. per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, 93c. per Imperial gallon.

Grade No. 2 "Standard" 95c. per Imperial gallon.

On and after the 27th February, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, \$1.10 per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, \$1.08 per Imperial gallon.

Grade No. 2 "Standard" \$1.10 per Imperial gallon.

On and after the 27th April, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, \$1.25 per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, \$1.23 per Imperial gallon.

Grade No. 2 "Standard" \$1.25 per Imperial gallon.

APPENDIX A shows the consumption of, and revenues derived annually, from spirits, tobacco, and other goods subject to Excise, and of similar goods subject to duties of Customs, per head of the population of the Dominion.

APPENDIX B contains, as usual, the details concerning illicit stills seized during the year.

APPENDIX C shows the amount of Excise Revenues collected at each out office and under various headings, separately.

I have the honour to be, Sir,

Your obedient servant,

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

APPENDIX A.

TABLE showing the Annual Consumption, per head, of the undermentioned articles, paying Excise and Customs Duties, and Revenue, per head, derived annually.

| Years. | DOMINION OF CANADA. | | | | | | | | | |
|---------------------|---------------------|--------|--------|----------|------------|----------|-------|--------|----------|------------|
| | Quantity. | | | | | Duty. | | | | |
| | Spirits. | Beer. | Wines. | Tobacco. | Petroleum. | Spirits. | Beer. | Wines. | Tobacco. | Petroleum. |
| Galls. | Galls. | Galls. | Lbs. | Galls. | \$ | \$ | \$ | \$ | \$ | |
| 1869 | 1.124 | 2.290 | .115 | 1.755 | .575 | .761 | .092 | .037 | .193 | .041 |
| 1870 | 1.434 | 2.163 | .195 | 2.190 | 1.103 | .962 | .085 | .049 | .259 | .061 |
| 1871 | 1.578 | 2.490 | .259 | 2.052 | 1.591 | 1.059 | .095 | .056 | .336 | .077 |
| 1872 | 1.723 | 2.774 | .257 | 2.481 | 1.302 | 1.160 | .108 | .070 | .422 | .076 |
| 1873 | 1.682 | 3.188 | .238 | 1.999 | 1.387 | 1.135 | .120 | .066 | .350 | .084 |
| 1874 | 1.994 | 3.012 | .288 | 2.566 | 1.618 | 1.363 | .119 | .086 | .442 | .103 |
| 1875 | 1.394 | 3.091 | .149 | 1.995 | 1.589 | 1.127 | .114 | .069 | .428 | .098 |
| 1876 | 1.204 | 2.454 | .177 | 2.316 | 1.360 | 1.182 | .098 | .075 | .513 | .105 |
| 1877 | .975 | 2.322 | .096 | 2.051 | 1.103 | .949 | .109 | .057 | .446 | .084 |
| 1878 | .960 | 2.169 | .096 | 1.976 | ..... | .927 | .147 | .052 | .439 | ..... |
| 1879 | 1.131 | 2.209 | .104 | 1.954 | ..... | 1.005 | .125 | .057 | .449 | ..... |
| 1880 | .715 | 2.248 | .077 | 1.036 | ..... | .772 | .081 | .055 | .428 | ..... |
| 1881 | .922 | 2.293 | .099 | 2.935 | ..... | .990 | .081 | .073 | .443 | ..... |
| 1882 | 1.009 | 2.747 | .120 | 2.150 | ..... | 1.084 | .098 | .092 | .485 | ..... |
| 1883 | 1.090 | 2.882 | .135 | 2.280 | ..... | 1.186 | .103 | .097 | .473 | ..... |
| 1884 | .988 | 2.924 | .117 | 2.476 | ..... | 1.074 | .104 | .082 | .365 | ..... |
| 1885 | 1.126 | 2.639 | .109 | 2.623 | ..... | 1.198 | .111 | .074 | .393 | ..... |
| 1886 | .711 | 2.839 | .110 | 2.052 | ..... | 1.007 | .091 | .074 | .502 | ..... |
| 1887 | .746 | 3.084 | .095 | 2.062 | ..... | 1.045 | .100 | .066 | .514 | ..... |
| 1888 | .645 | 3.247 | .094 | 2.093 | ..... | .944 | .110 | .066 | .509 | ..... |
| 1889 | .776 | 3.263 | .097 | 1.953 | ..... | 1.107 | .114 | .068 | .529 | ..... |
| 1890 | .883 | 3.360 | .104 | 2.043 | ..... | 1.257 | .121 | .072 | .539 | ..... |
| 1891 | .745 | 3.790 | .111 | 2.292 | ..... | 1.094 | .137 | .080 | .590 | ..... |
| 1892 | .701 | 3.516 | .101 | 2.291 | ..... | 1.156 | .211 | .075 | .650 | ..... |
| 1893 | .740 | 3.485 | .094 | 2.314 | ..... | 1.235 | .218 | .070 | .691 | ..... |
| 1894 | .742 | 3.722 | .089 | 2.264 | ..... | 1.235 | .205 | .060 | .683 | ..... |
| 1895 | .666 | 3.471 | .090 | 2.163 | ..... | 1.124 | .161 | .056 | .645 | ..... |
| 1896 | .623 | 3.528 | .070 | 2.120 | ..... | 1.159 | .164 | .047 | .639 | ..... |
| 1897 | .723 | 3.469 | .084 | 2.248 | ..... | 1.341 | .213 | .041 | .671 | ..... |
| 1898 | .536 | 3.808 | .082 | 2.358 | ..... | 1.306 | .126 | .041 | .615 | ..... |
| 1899 | .661 | 3.995 | .086 | 2.174 | ..... | 1.367 | .174 | .045 | .841 | ..... |
| 1900 | .701 | 4.364 | .085 | 2.300 | ..... | 1.455 | .185 | .044 | .853 | ..... |
| 1901 | .757 | 4.680 | .099 | 2.375 | ..... | 1.574 | .195 | .047 | .864 | ..... |
| 1902 | .786 | 5.035 | .090 | 2.371 | ..... | 1.631 | .211 | .048 | .902 | ..... |
| 1903 | .848 | 4.592 | .094 | 2.483 | ..... | 1.766 | .200 | .049 | .967 | ..... |
| 1904 | .917 | 4.739 | .092 | 2.664 | ..... | 1.913 | .217 | .049 | 1.005 | ..... |
| 1905 | .895 | 5.123 | .093 | 2.768 | ..... | 1.898 | .214 | .049 | 1.036 | ..... |
| 1906 | .898 | 5.484 | .095 | 2.898 | ..... | 1.879 | .238 | .052 | 1.100 | ..... |
| *1907 (nine months) | .977 | 5.765 | .095 | 3.048 | ..... | 2.035 | .257 | .054 | 1.317 | ..... |
| 1908 | .939 | 6.146 | .102 | 3.066 | ..... | 1.965 | .268 | .057 | 1.194 | ..... |
| 1909 | .860 | 5.708 | .091 | 3.105 | ..... | 1.794 | .241 | .050 | 1.101 | ..... |
| 1910 | .883 | 5.713 | .105 | 3.183 | ..... | 1.843 | .242 | .057 | 1.059 | ..... |
| 1911 | .948 | 5.999 | .114 | 3.323 | ..... | 1.988 | .257 | .059 | 1.157 | ..... |
| 1912 | 1.030 | 6.598 | .114 | 3.679 | ..... | 2.170 | .288 | .063 | 1.336 | ..... |
| 1913 | 1.112 | 7.005 | .131 | 3.818 | ..... | 2.340 | .320 | .076 | 1.462 | ..... |
| 1914 | 1.061 | 7.200 | .124 | 3.711 | ..... | 2.249 | .328 | .069 | 1.438 | ..... |
| 1915 | .872 | 6.071 | .095 | 3.427 | ..... | 2.086 | .379 | .051 | 1.361 | ..... |
| 1916 | .745 | 4.950 | .062 | 3.329 | ..... | 1.951 | .362 | .033 | 1.454 | ..... |
| 1917 | .698 | 4.188 | .061 | 3.330 | ..... | 1.788 | .304 | .033 | 1.520 | ..... |
| Average | .958 | 3.915 | .116 | 2.478 | ..... | 1.401 | .176 | .060 | .748 | ..... |

APPENDIX B.

STATEMENT of seizures of illicit Manufactures for the year ended March 31, 1917.

| Divisions. | Number | Date. | Names. | Residence. | Schedule Value. | Remarks. |
|--------------------|--------|----------|---|-----------------------------|-----------------|----------------------------------|
| | | 1916. | | | \$ cts. | |
| Montreal..... | 1375 | April 7. | A. Boissomault..... | Montreal..... | 5 50 | Fine \$100, imposed and paid. |
| "..... | 1376 | July 5. | Bissoy & Giguere..... | "..... | 247 00 | Pending. |
| "..... | 1378 | Aug. 8. | J. B. Baillargeon..... | "..... | 45 00 | " |
| "..... | 1384 | Nov. 20. | A. Lippé..... | "..... | 5 00 | Fine \$100, imposed and paid. |
| | | 1917. | | | | |
| "..... | 1390 | Feb. 5. | Boyer, Corrie, Gauthier & Langue- doc..... | Cartierville..... | 418 96 | " 100 to each, imposed and paid. |
| "..... | 1391 | " 8. | E. Claramont..... | Ouaremont..... | 50 00 | Pending. |
| "..... | 1392 | " 12. | Michaelson & Kramer..... | Montreal..... | 1 50 | " |
| | | 1916.- | | | | |
| Quebec..... | 659 | July 12. | E. Berubé..... | Kamouraska..... | 5 00 | Fine \$ 50, imposed and paid. |
| "..... | 665 | Oct. 26. | H. Croteau..... | St. Narcisse..... | 10 00 | " 125 " |
| St. Hyacinthe..... | 132 | Aug. 14. | T. Duff..... | St. Eulabe..... | 20 75 | Serving 7 months in jail. |
| "..... | 133 | " 14. | A. Leblanc & J. Massé..... | St. Louis de Blandford..... | 6 00 | " 7 " |
| Three Rivers..... | 118 | " 3. | M. Lefebvre..... | St. Flore..... | 4 00 | " 6 " |
| "..... | 119 | Oct. 14. | E. Perron..... | St. Adolphe..... | 2 00 | Fine \$100, imposed and paid. |

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

| | | | | | | | | | | | | |
|--------------------------|--------|-----------|--|-----------|--------|----------|--|----------|-----------|--|----------|-----------|
| Meaford..... | | | | | | | | | | | 29 00 | 4,575 00 |
| Neustadt..... | 100 00 | | | 4,446 00 | | | | | | | 1,033 05 | 7,786 46 |
| Walkerton..... | 100 00 | | | 5,744 94 | | | | | | | | |
| Warton..... | | 908 47 | | | | | | | | | 2 40 | 2,802 76 |
| Armpryor..... | 50 00 | 664 99 | | | | | | | | | 1,585 37 | 9,809 42 |
| Eganville..... | 50 00 | 9,682 92 | | | | | | | | | 76 50 | |
| Haileybury..... | | | | | | | | | | | 31 90 | 2,523 98 |
| Matrwa..... | 50 00 | 2,441 99 | | | | | | | | | 374 85 | 9,942 89 |
| New Liskeard..... | 50 00 | 9,518 04 | | | | | | | | | 1,309 90 | 11,392 53 |
| North Bay..... | 112 50 | 9,970 13 | | | | | | | | | 2,119 62 | 2,125 08 |
| Cobalt..... | | | | | 5 46 | | | | | | 102 72 | 3,638 47 |
| Pembroke..... | 75 00 | 3,164 39 | | | 216 90 | | | | 79 46 | | 400 00 | 2,715 30 |
| Renfrew..... | 825 00 | | | | 290 00 | | | | 0 30 | | 378 50 | 5,408 87 |
| Sturgeon Falls..... | 50 00 | 4,680 37 | | | | | | | 0 30 | | 2,272 55 | 76,793 68 |
| Sudbury..... | 300 00 | 40,020 83 | | 34,200 00 | | | | | | | 1,852 55 | 4,298 65 |
| Cobourg..... | 50 00 | 2,396 10 | | | | | | | | | 3,246 75 | 3,271 75 |
| Lindsay..... | 25 00 | | | | | | | | | | | |
| Port Hope..... | | | | | | | | | | | | |
| Dryden..... | 75 00 | 36,519 97 | | | | | | | 748 60 | | | 37,343 57 |
| Fort Frances..... | 50 00 | 1,077 56 | | | | | | | 1,090 40 | | | 2,217 96 |
| Fort William..... | 175 00 | 25,142 66 | | 12,000 00 | | | | | 1,540 56 | | | 38,858 22 |
| Kenora..... | 200 00 | 56,350 45 | | 1,616 94 | | | | | 649 32 | | | 58,516 71 |
| Rainy River..... | 50 00 | 8,757 00 | | | | | | | 333 94 | | | 9,140 94 |
| Wabigoon..... | | | | | | | | | | | | |
| Brockville..... | 200 00 | 3,393 97 | | 1,200 00 | | 668 36 | | 1,011 60 | 1,772 44 | | | 8,246 37 |
| Cornwall..... | 50 00 | | | 37,672 80 | | | | | 1,770 80 | | | 39,493 60 |
| Beamsville..... | | | | | | | | | | | | |
| Bridgeburg..... | | | | | | | | | | | | |
| Cayuga..... | | | | | | | | | 5,832 62 | | | 5,832 62 |
| Crystal Beach..... | | | | | | | | | 138 60 | | | 138 60 |
| Dunnville..... | | | | | | | | | | | | |
| Font Hill..... | | | | | | | | | | | | |
| Fort Erie..... | | | | | | | | | 79 25 | | | 79 25 |
| Grimsby..... | | | | | | | | | | | | |
| Humberstone..... | 100 00 | | | | 193 20 | | | 517 90 | 87 15 | | | 898 25 |
| Merritton..... | | | | | | | | | 28 00 | | | 28 00 |
| Niagara Falls..... | 75 00 | | | | 239 96 | | | 493 05 | 10,743 41 | | | 11,551 42 |
| Niagara-on-the-Lake..... | | | | | | | | | 24 75 | | | 24 75 |
| Port Colborne..... | 50 00 | | | 11,400 00 | | | | | 574 20 | | | 12,024 20 |
| Port Dalhousie..... | | | | | | | | | 30 00 | | | 30 00 |
| Queenstown..... | | | | | | | | | | | | |
| Ridgeway..... | | | | | | | | | 198 00 | | | 198 00 |
| Stamford..... | | | | | | | | | 3,512 00 | | | 3,512 00 |
| Thorold..... | | | | | | | | | 733 50 | | | 733 50 |
| Welland..... | 50 00 | | | | 84 00 | | | *277 80 | 621 20 | | | 1,033 00 |
| Coderich..... | 50 00 | 152 59 | | | | | | | 987 50 | | | 1,190 18 |
| Listowel..... | 100 00 | | | 2,338 50 | | 1,556 80 | | 1,685 10 | 1,536 53 | | | 7,216 93 |
| Palmerston..... | | | | | | | | | | | | |
| St. Marys..... | 50 00 | | | | | | | 41 15 | 1,149 85 | | | 1,241 00 |

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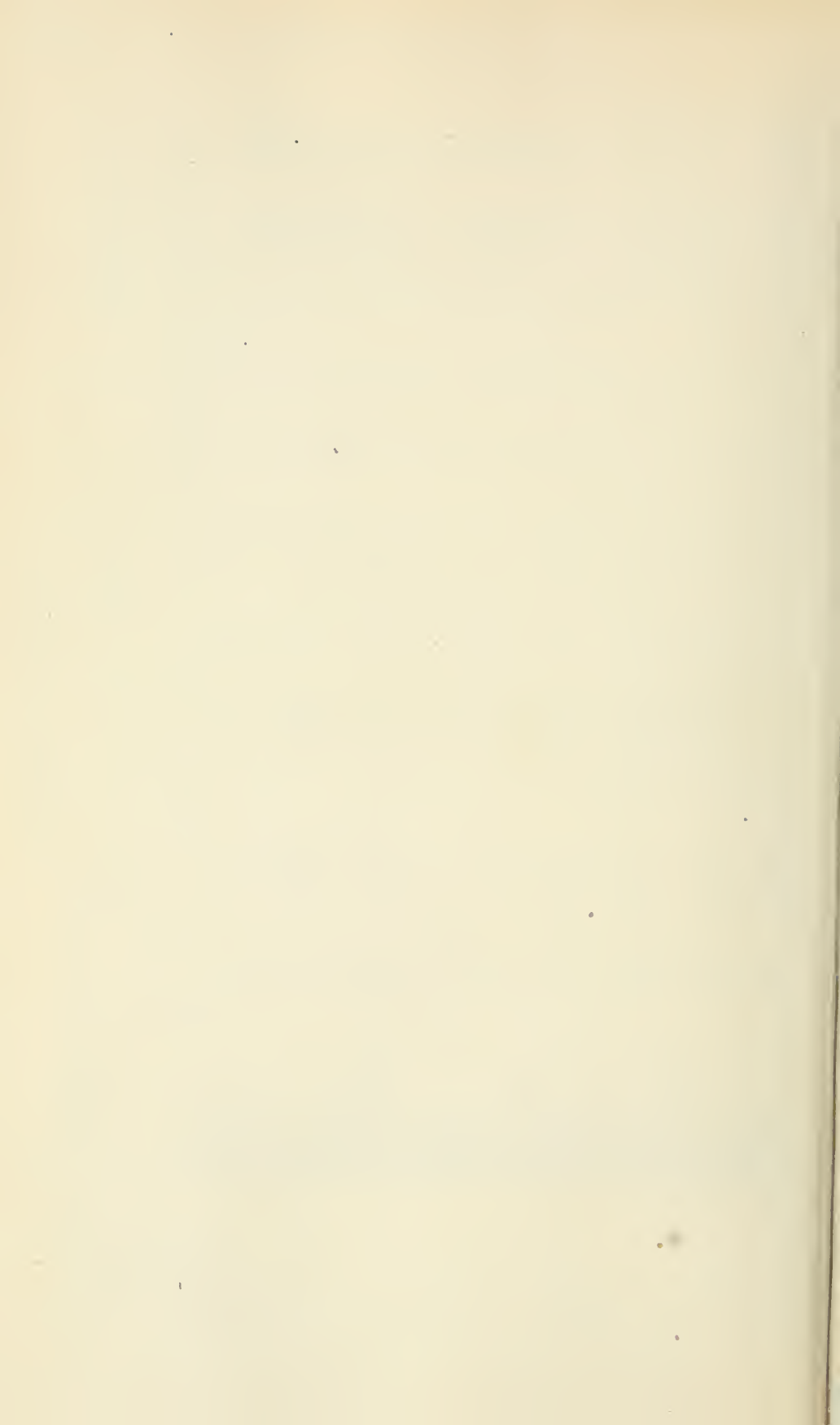
| | | | | | | | |
|---------------------------------|--------|-----------|------------|-----------|----------|----------|------------|
| Gaspe..... | 100 00 | 4,230 71 | 12,372 50 | 13,192 86 | 2 60 | 604 11 | 30,502 78 |
| Levis..... | | | | | | | |
| Roberval..... | | | | | | | |
| Farnham..... | | | | | | | |
| L'Ange Gardien..... | | | | | | | |
| St. John..... | 200 00 | 13,960 31 | 562 80 | 153 18 | | 721 40 | 15,597 69 |
| St. Ours..... | | | | | | | |
| Sorel..... | 50 00 | | 204 54 | 203 58 | | 1,344 99 | 1,803 11 |
| Victoriaville..... | 100 00 | 36,486 10 | 14 00 | 55 89 | 432 78 | 344 13 | 37,432 90 |
| Granby..... | 250 00 | | 551,570 77 | 9,289 20 | 1,529 08 | | 562,639 05 |
| Grand' Mere..... | | | | | | | |
| La Tuque..... | | | | | | | |
| Louiseville..... | 50 00 | | 9,350 00 | | | | 9,400 00 |
| St. Boniface..... | | | | | | | 368 00 |
| St. Tite..... | 50 00 | | | 318 00 | | | |
| Shawinigan Falls..... | | | | | | | |
| Notre Dame de Charrette..... | 50 00 | | 205 80 | | | | 255 80 |
| Andover..... | | | | | | | |
| Bathurst..... | | | | | | | |
| Campbellton..... | | | | | | | |
| Campobello..... | | | | | | | |
| Chatham..... | | | | | | | |
| Clair..... | | | | | | | |
| Dalhousie..... | | | | | | | 2,118 96 |
| Edmundston..... | 50 00 | 2,068 96 | | | | | |
| Fredericton..... | | | | | | | |
| Grand Falls..... | | | | | | | |
| Moncton..... | | | | | | | |
| New Castle..... | | | | | | | |
| Shediac..... | | | | | | | |
| Sackville..... | | | | | | | |
| St. Stephens..... | 50 00 | 86 19 | | | 71 96 | | 208 15 |
| St. Andrews..... | | | | | | | |
| Sussex..... | | | | | | | |
| Woodstock..... | | | | | | | |
| Amherst..... | | | | | 258 63 | | 1,889 63 |
| Launenburg..... | | | | | | 93 30 | 93 30 |
| Parisborough..... | | | | | | 199 62 | 199 62 |
| Truro..... | 50 00 | | 4,111 60 | | | 1,371 60 | 5,533 20 |
| Weymouth..... | | | | | | 246 25 | 246 25 |
| Windsor..... | | | | | | 547 56 | 547 56 |
| Yarmouth..... | 50 00 | | 130 48 | 338 40 | | 379 31 | 898 19 |
| Antigonish..... | | | | | | 316 50 | 316 50 |
| New Glasgow..... | | | | | | 1,995 15 | 1,995 15 |
| North Sydney..... | 50 00 | 37,249 67 | | | | 653 40 | 37,953 07 |
| Sydney..... | 200 00 | 29,960 46 | 206 50 | | | | |
| Georgetown..... | | | | | | 1,315 85 | 31,682 81 |

SESSIONAL PAPER No. 12

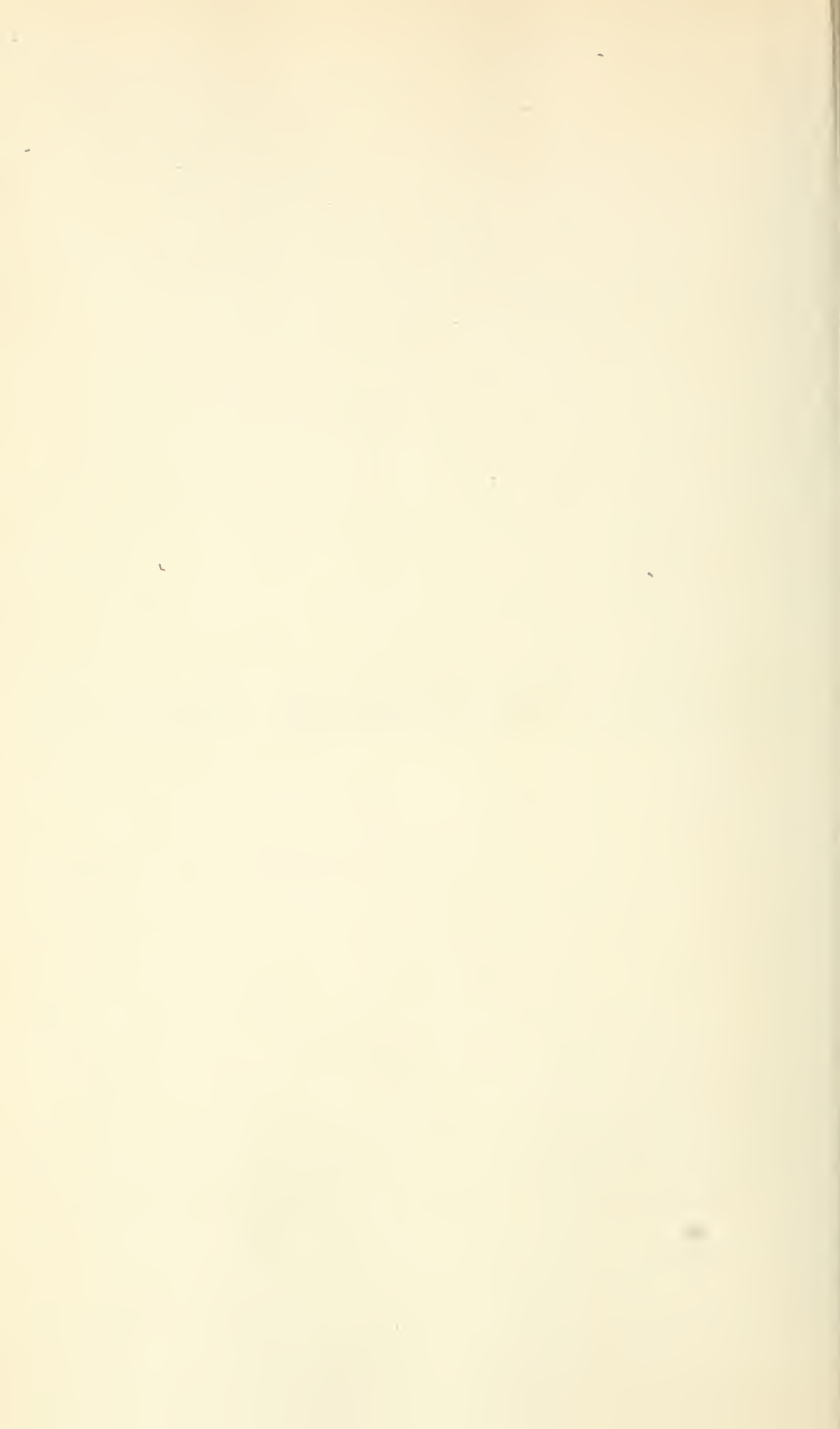
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|-----------------------|-----------|--------------|----------|------------|------------|-----------|-----------|------------|--|--------------|
| Vermilion..... | 50 00 | 885 62 | | | | | | | | 935 62 |
| Wetaskwin..... | 50 00 | 5,281 56 | | | | | | | | 5,331 56 |
| Estevan..... | | | | | | | | | | |
| Gull Lake..... | 25 00 | 5,227 45 | | | | | | | | 226 70 |
| Maple Creek..... | | | | | | | | | | |
| Melville..... | | | | | | | | | | |
| North Battleford..... | 50 00 | | | | | | | | | |
| Prince Albert..... | 301 00 | 339,648 95 | | | 80 02 | | | | | 3,070 32 |
| Regina..... | 150 00 | 23,264 01 | 228 75 | 10,815 00 | 157 08 | | 144 69 | | | 13,901 54 |
| Rosthern..... | | | | | | | | | | |
| Saskatoon..... | | | | | | | | | | |
| Swift Current..... | | | | | | | | | | |
| Weyburn..... | | | | | | | | | | |
| Winnipeg..... | | | | | | | | | | |
| Yanville..... | | | | | | | | | | |
| Yukon..... | | | | | | | | | | |
| Total | 12,629 00 | 1,318,519 49 | 2,284 20 | 384,279 18 | 639,712 52 | 65,537 40 | 14,425 57 | 107,192 15 | | 114,430 55 |
| | | | | | | | | | | 2,659,510 06 |

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July, 2, 1917.



FINANCIAL STATEMENTS, 1916-1917



SESSIONAL PAPER No. 12

DR. No. 1.—GENERAL REVENUES ACCOUNT FOR THE YEAR ENDED MARCH 31, 1917. CR.

| Memo. of Refunds deducted below. | Amounts deposited to the Credit of the Receiver General. | | Balances due March 31, 1917. | | Totals. | | Services. | | Revenues of previous year not collected April 1, 1916. | | Revenues accrued 1916-1917. | | Totals. | |
|----------------------------------|--|------|------------------------------|------|------------|------|--|--------|--|------------|-----------------------------|------------|------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| 286,998 02 | 24,523,695 | 46 | 21,497 | 24 | 24,545,192 | 70 | Excise and Seizures, per Statement No. 3. | 19,831 | 10 | 24,525,361 | 60 | 24,545,192 | 70 | |
| 11 90 | 131,625 | 60 | 252 | 12 | 131,877 | 72 | Weights and Measures, per Statement No. 18A and 18B. | 133 | 52 | 131,744 | 20 | 131,877 | 72 | |
| | 54,157 | 35 | | | 54,157 | 35 | Gas Inspection, per Statement No. 20. | | | 54,157 | 35 | 54,157 | 35 | |
| | 71,467 | 18 | | | 71,467 | 18 | Electric Light Inspection, per Statement No. 22. | | | 71,467 | 18 | 71,467 | 18 | |
| | 9,910 | 10 | | | 9,910 | 10 | Law Stamps, per Statement No. 8. | | | 9,910 | 10 | 9,910 | 10 | |
| | | | 45 | 04 | | | Bill Stamps, per Statement No. 7. | | 45 | | | | 45 | 04 |
| 338 50 | 8,138 | 44 | | | 8,138 | 44 | Sundry Minor Revenues, per Statement No. 9. | | | 8,138 | 44 | 8,138 | 44 | |
| 6,973 80 | 2,072,441 | 42 | | | 2,072,441 | 42 | War Tax Revenue, per Statement No. 3A. | | | 2,072,441 | 42 | 2,072,441 | 42 | |
| | 183,708 | 28 | | | 183,708 | 28 | Methylated Spirits, per Statement No. 25. | | | 183,708 | 28 | 183,708 | 28 | |
| | 974 | 00 | 1,848 | 62 | 2,822 | 62 | Ferry Licenses Revenue, per Statement No. 11. | | 1,833 | 62 | 989 | 00 | 2,822 | 62 |
| 294,322 22 | 27,056,117 | 83 | 23,643 | 02 | 27,079,760 | 85 | Less—Refunds per Statement No. 15. | | 21,843 | 28 | 27,057,917 | 37 | 27,079,760 | 85 |
| | 294,322 | 22 | | | 294,322 | 22 | | | | | 294,322 | 22 | 294,322 | 22 |
| | 26,761,795 | 61 | | | 26,785,438 | 63 | Totals | | | | 26,763,595 | 35 | 26,785,438 | 63 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR.

No. 2.—GENERAL EXPENDITURES FOR

| Balances due to Collectors, etc. April 1, 1916. | Expenditures Authorized by the Department. | | | Balances due by Collectors, etc. March 31, 1917. | Totals. | Services. |
|---|--|----------------|-----------|--|--------------|---|
| | Salaries. | Contingencies. | Seizures. | | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | |
| 49 08 | 492,591 20 | 190,886 34 | 615 28 | 343 98 | 684,485 88 | Excise and Seizures per Statement No. 4. |
| ..... | ..... | ..... | 7,571 00 | ..... | 7,571 00 | Excise seizures, distributed per Appendix B. Stat. No. 2. |
| ..... | 84,999 59 | 11,754 92 | ..... | ..... | 96,754 51 | Preventive service per Statement No. 5. |
| ..... | 3,532 87 | 37,990 20 | ..... | ..... | 41,523 07 | Adulteration of Food per Statement No. 6 and Appendix B. No. 4. |
| ..... | ..... | 1,272 93 | ..... | ..... | 1,272 93 | Sundry Minor Expenditures per Statement No. 10. |
| ..... | 135,431 97 | 19,327 55 | ..... | 16 66 | 154,776 18 | Department Expenditures per Statement No. 16. |
| ..... | 109,951 11 | 78,135 49 | ..... | 3 70 | 188,090 30 | Weights and Measures per Statement No. 19A. |
| ..... | 47,426 58 | 14,309 54 | ..... | 212 88 | 61,949 00 | Gas Inspection per Statement No. 21. |
| 2 70 | 19,542 54 | 26,940 30 | ..... | ..... | 46,485 54 | Electric Light Inspection per Statement No. 23. |
| ..... | ..... | 154,788 74 | ..... | ..... | 154,788 74 | Methylated Spirits per Statement No. 25. |
| ..... | ..... | 43,095 25 | ..... | ..... | 43,095 25 | War Tax per Statement No. 4A. |
| 51 78 | 893,475 86 | 578,501 26 | 8,186 28 | 577 22 | 1,480,792 40 | Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

THE YEAR ENDED MARCH 31, 1917.

Cr.

| Balances due by Collectors, etc. April 1, 1916. | Amount disbursed by Rec. General on requisition of the Department. | | Deductions from Salaries. | | | | Annuities. | Balances due to Collectors, etc., March 31, 1917. | Totals. |
|---|--|----------|---------------------------|------------|-------------|------------|------------|---|---------|
| | | | Superannuation. | Insurance. | Retirement. | Guarantee. | | | |
| \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | |
| 343 98 | 660,001 43 | 3,226 78 | 3,932 85 | 15,470 35 | 1,321 01 | 140 40 | 49 08 | 684,485 88 | |
| ..... | 7,571 00 | ..... | ..... | ..... | ..... | ..... | ..... | 7,571 00 | |
| ..... | 96,675 20 | ..... | ..... | ..... | 79 31 | ..... | ..... | 96,754 51 | |
| ..... | 41,494 73 | 13 92 | ..... | ..... | 14 42 | ..... | ..... | 41,523 07 | |
| ..... | 1,272 93 | ..... | ..... | ..... | ..... | ..... | ..... | 1,272 93 | |
| 16 66 | 148,216 66 | 494 86 | 1,214 07 | 4,833 93 | ..... | ..... | ..... | 154,776 18 | |
| 3 70 | 187,447 34 | 155 28 | 243 16 | ..... | 240 82 | ..... | ..... | 188,090 30 | |
| 212 88 | 61,524 53 | 13 80 | ..... | 90 00 | 107 79 | ..... | ..... | 61,949 00 | |
| ..... | 46,418 71 | 1 92 | 9 96 | ..... | 52 25 | ..... | 2 70 | 46,485 54 | |
| ..... | 154,788 74 | ..... | ..... | ..... | ..... | ..... | ..... | 154,788 74 | |
| ..... | 43,095 25 | ..... | ..... | ..... | ..... | ..... | ..... | 43,095 25 | |
| 577 22 | 1,448,506 52 | 3,906 56 | 5,400 04 | 20,394 28 | 1,815 60 | 140 40 | 51 78 | 1,480,792 40 | |

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

EXCISE

No. 3.—COLLECTION DIVISIONS

| Balances due April 1, 1916. | Amount accrued during Year, including License Fees. | | | | | | | |
|-----------------------------|---|--------------|------------|--------------|------------|--------------|----------------------|-----------|
| | Spirits. | Malt Liquor. | Malt. | Tobacco. | Cigars. | Acetic Acid. | Bonded Manufactures. | Seizures. |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 0 50 | 146,137 75 | 50 00 | 99,674 40 | 370 38 | 311 00 | | | |
| 112 61 | 30,999 47 | 50 00 | 7,692 12 | 6,704 60 | 6,378 85 | | 2,618 37 | 3 50 |
| | 262,596 82 | 454 95 | 131,578 63 | 2,184 00 | 3,715 16 | | 50 00 | 5 00 |
| | 270,115 48 | 100 00 | 71,004 86 | 754,402 06 | 47,345 89 | 50 00 | 6,900 22 | |
| | 41,550 88 | 100 00 | 5,625 93 | 10,638 74 | 7,464 87 | | 3,667 77 | |
| | 20,160 94 | 200 00 | 64,869 49 | 166,488 96 | 90,488 35 | | | |
| | 372,791 47 | 100 00 | 24,711 90 | 23 60 | | | | 760 00 |
| | | 200 00 | 10,190 94 | 5,551 72 | 2,666 15 | | 3,228 54 | 25 00 |
| | 137,244 40 | 50 00 | 34,200 00 | | 222 36 | | 600 00 | 304 00 |
| | 2,446 67 | 50 00 | 7,890 00 | 380 24 | 355 98 | | | |
| | 158,997 77 | 150 00 | 20,516 94 | | | | | |
| | 145,635 73 | 100 00 | 48,214 35 | 753 36 | 1,111 60 | | 300 00 | 245 00 |
| | 8,834 51 | 100 00 | 26,749 50 | 1,688 12 | 3,352 15 | | | |
| | 27,528 36 | 100 00 | 3,999 99 | 5,252 57 | 2,724 44 | | 50 00 | 10 00 |
| | 1,113,586 61 | 400 00 | 303,121 15 | 109,636 69 | 51,610 48 | | 43,829 54 | 50 00 |
| | 509,799 39 | 100 00 | 60,800 00 | 30,284 13 | 20,955 54 | | 9,245 70 | |
| 522 89 | | | | | | | | |
| 636 00 | 3,248,426 25 | 2,304 95 | 920,840 20 | 1,094,359 17 | 238,702 82 | 50 00 | 70,490 14 | 1,402 50 |
| 1,036 08 | 28,315 67 | | | 13,013 35 | 22,380 43 | | | 48 70 |
| 739 98 | 3,213,246 45 | 28,438 95 | 842,451 52 | 8,820,066 86 | 364,002 16 | 7,999 39 | 9,887 69 | 4,223 56 |
| | 690,464 99 | 150 00 | 57,781 59 | 532,863 60 | 16,035 11 | | 5,383 04 | 945 00 |
| | 190,809 09 | 50 00 | 16,910 25 | 569,485 89 | 21,897 00 | | 300 00 | 50 00 |
| | 172,265 16 | | 5,256 00 | 46,139 87 | 20,863 56 | | 300 00 | 661 90 |
| 54 27 | 1,700 27 | 50 00 | 3,040 80 | 11,095 16 | 2,182 53 | | | 100 00 |
| 3,295 57 | | | | | | | | |
| 5,125 90 | 4,296,801 63 | 28,688 95 | 925,440 16 | 9,992,664 73 | 447,360 79 | 7,999 39 | 15,870 73 | 6,029 16 |
| 1,442 62 | 287,037 62 | 100 00 | 27,693 48 | 2,029 04 | 5,533 60 | | 1,679 08 | 200 00 |
| 1,442 62 | 287,037 62 | 100 00 | 27,693 48 | 2,029 04 | 5,533 60 | | 1,679 08 | 200 00 |
| | 30,016 35 | 150 00 | 59,373 00 | 6,529 50 | 2,446 54 | | | 50 00 |
| 5,860 50 | 67,210 13 | | | 957 73 | 512 45 | | | 120 00 |
| 5,860 50 | 97,226 48 | 150 00 | 59,373 00 | 7,487 23 | 2,958 99 | | | 170 00 |
| | | | | 24,734 32 | | | | |
| | 876,909 36 | 4,254 10 | 100,489 38 | 5,443 00 | 7,322 68 | | 14,685 04 | 200 00 |
| 5,563 99 | 78,382 34 | 350 00 | 104,162 21 | 32,604 50 | 14,450 07 | | 7,169 01 | |
| | 368,140 41 | 428 75 | 23,527 83 | 157 08 | 133 01 | | | |

SESSIONAL PAPER No. 12

1916-17

IN ACCOUNT WITH REVENUES.

| Sundries. | | Total Duties Accrued. | Total Debits. | Divisions. | Deposited to the Credit of Receiver General. | Balances due March 31, 1917. | Total Credits. | |
|-----------|------|-----------------------|---------------|------------|--|------------------------------|----------------|------|
| \$ | cts. | \$ | cts. | | \$ | cts. | \$ | cts. |
| 2,163 | 27 | 248,706 | 80 | 248,707 | 30 | | 248,707 | 30 |
| 704 | 21 | 55,151 | 12 | 55,263 | 73 | | 55,263 | 73 |
| 6,779 | 06 | 407,363 | 62 | 407,363 | 62 | | 407,363 | 62 |
| 3,223 | 26 | 1,153,141 | 77 | 1,153,141 | 77 | | 1,153,141 | 77 |
| 916 | 62 | 69,964 | 81 | 69,964 | 81 | | 69,964 | 81 |
| 508 | 40 | 342,716 | 14 | 342,716 | 14 | | 342,716 | 14 |
| 498 | 50 | 398,885 | 47 | 398,885 | 47 | | 398,885 | 47 |
| 652 | 00 | 22,514 | 35 | 22,514 | 35 | | 22,514 | 35 |
| 2,273 | 46 | 174,894 | 22 | 174,894 | 22 | | 174,894 | 22 |
| 138 | 60 | 11,261 | 49 | 11,261 | 49 | | 11,261 | 49 |
| 550 | 00 | 180,214 | 71 | 180,214 | 71 | | 180,214 | 71 |
| 1,963 | 00 | 198,323 | 04 | 198,323 | 04 | | 198,323 | 04 |
| 108 | 10 | 40,832 | 38 | 40,832 | 38 | | 40,832 | 38 |
| 121 | 05 | 39,786 | 41 | 39,786 | 41 | | 39,786 | 41 |
| 33,003 | 56 | 1,655,238 | 03 | 1,655,238 | 03 | | 1,655,238 | 03 |
| 18,024 | 30 | 649,209 | 06 | 649,209 | 06 | | 649,209 | 06 |
| | | | | 522 | 89 | | 522 | 89 |
| 71,627 | 39 | 5,648,203 | 42 | 5,648,839 | 42 | | 5,648,839 | 42 |
| 19,300 | 30 | 83,058 | 45 | 84,094 | 53 | | 84,094 | 53 |
| 6,997 | 78 | 13,297,314 | 36 | 13,298,054 | 34 | | 13,298,054 | 34 |
| 1,917 | 90 | 1,305,541 | 23 | 1,305,541 | 23 | | 1,305,541 | 23 |
| 402 | 00 | 799,904 | 23 | 799,904 | 23 | | 799,904 | 23 |
| 2,101 | 45 | 2,475,87 | 94 | 247,587 | 94 | | 247,587 | 94 |
| | | 18,168 | 76 | 18,223 | 03 | | 18,223 | 03 |
| | | | | 3,295 | 57 | | 3,295 | 57 |
| 30,719 | 43 | 15,751,574 | 97 | 15,756,700 | 87 | | 15,756,700 | 87 |
| 977 | 30 | 325,250 | 12 | 325,250 | 12 | | 325,250 | 12 |
| | | | | 1,442 | 62 | | 1,442 | 62 |
| 977 | 30 | 325,250 | 12 | 326,692 | 74 | | 326,692 | 74 |
| 329 | 00 | 98,894 | 39 | 98,894 | 39 | | 98,894 | 39 |
| 275 | 00 | 69,075 | 31 | 69,075 | 31 | | 69,075 | 31 |
| | | | | 5,860 | 50 | | 5,860 | 50 |
| 604 | 00 | 167,969 | 70 | 173,830 | 20 | | 173,830 | 20 |
| | | 24,734 | 32 | 24,734 | 32 | | 24,734 | 32 |
| 4,067 | 88 | 1,013,371 | 44 | 1,013,371 | 44 | | 1,013,371 | 44 |
| 2,259 | 80 | 239,377 | 93 | 244,941 | 92 | | 244,941 | 92 |
| 493 | 70 | 392,880 | 78 | 392,880 | 78 | | 392,880 | 78 |

8 GEORGE V, A. 1918

EXCISE

No. 3—COLLECTION DIVISIONS

| Balances due April 1, 1916. | Amount accrued during Year, including License Fees. | | | | | | | |
|--------------------------------------|---|-----------------|--------------|---------------|------------|-----------------|------------------------------|-----------|
| | Spirits. | Malt Liquor. | Malt. | Tobacco. | Cigars. | Acetic Acid. | Bonded Manu- factures. | Seizures. |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1,202 09 | 508,125 27 | 67,338 15 | 142,277 61 | 25,373 38 | 11,310 20 | ..... | 514 79 | 351 00 |
| ..... | 112,828 19 | 5,550 45 | 62,400 00 | 12,250 07 | 2,443 10 | ..... | ..... | ..... |
| 1,202 09 | 620,953 46 | 72,888 60 | 204,677 61 | 37,623 45 | 13,753 30 | ..... | 514 79 | 351 00 |
| ..... | 6,639 00 | 50 00 | 1,698 51 | ..... | ..... | ..... | ..... | ..... |
| 19,831 10 | 9,880,566 55 | 109,215 35 | 2,367,902 38 | 11,197,102 52 | 730,215 26 | 8,019 39 | 110,408 79 | 8,352 66 |
| ..... | 33,111 44 | ..... | 249,057 86 | 2,505 55 | 115 71 | ..... | 100 00 | 295 00 |
| ..... | 9,847,455 11 | 109,215 35 | 2,118,844 52 | 11,194,596 97 | 730,099 55 | 4,019 39 | 110,308 79 | 8,057 66 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSICNAL PAPER No. 12

1916-17.

IN ACCOUNT WITH REVENUES—*Concluded.*

| Sundries. | Total Duties Accrued. | | Total Debits. | | Divisions. | Deposited to the Credit of Receiver General. | | Balances due March 31, 1917. | | Total Credits. | |
|------------|-----------------------|------|---------------|------|---------------------------------------|--|------|------------------------------|------|----------------|------|
| | \$ | cts. | \$ | cts. | | \$ | cts. | \$ | cts. | \$ | cts. |
| 2,321 70 | 757,612 | 10 | 758,814 | 19 | Vancouver..... | 757,612 | 10 | 1,202 | 09 | 758,814 | 19 |
| 377 50 | 195,849 | 31 | 195,849 | 31 | Victoria..... | 195,849 | 31 | | | 195,849 | 31 |
| 2,699 20 | 953,461 | 41 | 954,663 | 50 | British Columbia.... | 953,461 | 41 | 1,202 | 09 | 954,663 | 50 |
| 100 00 | 8,537 | 51 | 8,537 | 51 | Yukon..... | 8,537 | 51 | | | 8,537 | 51 |
| 113,548 70 | 24,525,361 | 60 | 24,545,192 | 70 | Totals..... | 24,523,695 | 46 | 21,497 | 24 | 24,545,192 | 70 |
| 1,812 46 | 286,998 | 02 | | | Less Refunds as per Statement No. 15. | | | | | | |
| 111,736 24 | 24,238,363 | 58 | | | NET REVENUE. | | | | | | |

J. U. VINCENT,
Deputy Minister.

WAR TAX REVENUE, 1916-17.

No. 3 A.—Stamps, Embossing Cheques, Transportation Tickets, Telegrams, etc.

| Divisions. | Amount of stamps sold by Collectors. | | Transportation Tickets, Telegrams, Embossing Cheques, etc. | | Fines. | | Total Deposited to the credit of Receiver General. | |
|-----------------------|--------------------------------------|------|--|------|--------|------|--|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| Belleville..... | 4,970 | 81 | | | | | | |
| Brantford..... | 17,748 | 71 | | | | | | |
| Guelph..... | 15,463 | 41 | | | | | | |
| Hamilton..... | 34,186 | 92 | | | | | | |
| Kingston..... | 5,107 | 95 | | | | | | |
| London..... | 26,172 | 79 | | | | | | |
| Ottawa..... | 28,456 | 94 | | | | | | |
| Owen Sound..... | 4,129 | 61 | | | | | | |
| Perth..... | 11,965 | 73 | | | | | | |
| Peterborough..... | 12,450 | 26 | | | | | | |
| Port Arthur..... | 8,096 | 03 | | | | | | |
| Prescott..... | 4,811 | 83 | | | | | | |
| St. Catharines..... | 28,599 | 30 | | | | | | |
| Stratford..... | 7,980 | 22 | | | | | | |
| Toronto..... | 195,490 | 84 | | | | | | |
| Windsor..... | 31,686 | 41 | | | | | | |
| Ontario..... | 437,517 | 76 | 152,322 | 52 | 2,308 | 50 | 592,148 | 78 |
| Joliette..... | 1,199 | 34 | | | | | | |
| Montreal..... | 109,653 | 50 | | | | | | |
| Quebec..... | 20,841 | 76 | | | | | | |
| St. Hyacinthe..... | 9,290 | 83 | | | | | | |
| Sherbrooke..... | 4,559 | 10 | | | | | | |
| Three Rivers..... | 1,714 | 00 | | | | | | |
| Quebec..... | 147,258 | 53 | 772,161 | 73 | 2,626 | 00 | 922,046 | 26 |
| St. John..... | 25,446 | 81 | 56,128 | 13 | | | 81,574 | 94 |
| Halifax..... | 19,973 | 17 | | | | | | |
| Pictou..... | 6,706 | 94 | | | | | | |
| Nova Scotia..... | 26,680 | 11 | 10,118 | 57 | 50 | 00 | 36,848 | 68 |
| Charlottetown..... | 3,386 | 10 | 116 | 25 | | | 3,502 | 35 |
| Winnipeg..... | 91,838 | 20 | 10,642 | 89 | 150 | 00 | 102,631 | 09 |
| Calgary..... | 48,347 | 78 | 775 | 89 | 189 | 85 | 49,313 | 52 |
| Moose Jaw..... | 47,583 | 01 | 47 | 00 | 509 | 46 | 48,139 | 47 |
| Vancouver..... | 51,778 | 24 | | | | | | |
| Victoria..... | 19,337 | 19 | | | | | | |
| British Columbia..... | 71,115 | 43 | 15,787 | 54 | 50 | 00 | 86,952 | 97 |

SESSIONAL PAPER No. 12

WAR TAX REVENUE, 1916-17.

No. 3 A.—Stamps, Embossing Cheques, Transportation Tickets, Telegrams, etc.—*Concluded.*

| Divisions. | Amount of stamps sold by Collectors. | Transportation Tickets, Telegrams, Embossing Cheques, etc. | Fines. | Total Deposited to the credit of Receiver General. |
|---|--------------------------------------|--|----------|--|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Dawson..... Yukon..... | 944 28 | 140 50 | ..... | 1,084 78 |
| General, U.S.A., etc..... | ..... | 148,198 58 | ..... | 148,198 58 |
| Less refunds as per statement No. 15... | 900,118 01 | 1,166,439 60 | 5,883 81 | 2,072,441 42 6,973 80 |
| Net War Tax Revenue..... | ..... | ..... | ..... | 2,065,467 62 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

EXCISE

No. 4—COLLECTION DIVISIONS

| Balances due by Collectors, April 1, 1916, | Amounts received from Department to meet Expenditures. | Deductions from Salaries for | | | | | Balances due to Collectors, March 31, 1917. | Totals. | Divisions. |
|--|--|------------------------------|------------|-----------------|------------------|-----------------|---|------------|----------------------|
| | | Super-annuation. | Insurance. | Ann- uities. | Retire- ment. | Guar- antee. | | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | |
| 43,98 | 15,200 48 | 76 92 | 419 22 | | 594 17 | 25 08 | | 16,359 85 | Belleville..... |
| | 8,009 03 | 92 40 | | | 244 71 | 19 92 | | 8,366 06 | Brantford..... |
| | 23,030 25 | 212 28 | | | 398 00 | 48 72 | | 23,689 25 | Guelph..... |
| | 24,652 01 | 146 31 | 357 90 | | 836 21 | 71 28 | | 26,063 71 | Hamilton..... |
| | 7,686 22 | 59 88 | | | 158 91 | 22 80 | | 7,927 81 | Kingston..... |
| | 21,738 22 | 96 49 | 82 00 | | 741 58 | 54 00 | | 22,712 20 | London..... |
| | 8,614 62 | 24 00 | | | 362 63 | 24 05 | | 9,025 30 | Ottawa..... |
| | 7,286 82 | 55 92 | | | 120 00 | 15 84 | | 7,478 58 | Owen Sound..... |
| | 13,479 69 | 15 96 | 162 36 | | 599 41 | 41 10 | | 14,298 52 | Perth..... |
| | 3,292 79 | 18 96 | | | 117 39 | 11 76 | | 3,440 90 | Peterborough..... |
| | 4,965 34 | | | | 218 52 | 10 80 | | 5,194 66 | Port Arthur..... |
| | 13,789 60 | 37 92 | 378 72 | 140 40 | 569 34 | 38 04 | | 14,954 02 | Prescott..... |
| | 6,568 61 | | 318 84 | | 242 33 | 24 96 | | 7,154 74 | Stratford..... |
| | 6,810 65 | 75 60 | | | 129 96 | 15 12 | | 7,031 33 | St. Catharines..... |
| | 53,010 70 | 300 12 | 453 64 | | 1,687 82 | 136 56 | | 55,588 84 | Toronto..... |
| | 34,661 50 | 157 80 | 246 66 | | 972 72 | 96 84 | 49 08 | 36,184 60 | Windsor..... |
| | 3,446 42 | 57 96 | | | | 9 00 | | 3,513 38 | Kingston District... |
| | 3,327 31 | | | | | 9 00 | | 3,336 31 | Toronto District... |
| | 3,709 14 | | | | | 9 00 | | 3,718 14 | Windsor District... |
| 43,98 | 263,279 49 | 1,428 43 | 2,419 34 | 140 49 | 7,993 70 | 683 87 | 49 08 | 276,038 20 | Ontario..... |
| | 11,977 71 | 44 43 | 265 50 | | 458 71 | 34 20 | | 12,780 55 | Joliette..... |
| | 62,297 00 | 498 87 | 337 88 | | 1,997 27 | 168 03 | | 65,299 05 | Montreal..... |
| | 23,418 62 | 147 51 | 81 69 | | 794 61 | 58 32 | | 24,500 75 | Quebec..... |
| | 9,477 73 | 77 88 | | | 252 24 | 22 08 | | 9,829 93 | Sherbrooke..... |
| | 12,316 10 | 43 92 | 82 08 | | 449 45 | 29 52 | | 12,921 07 | St. Hyacinthe..... |
| | 2,199 97 | 31 92 | | | | 3 60 | | 2,235 49 | Three Rivers..... |
| | 2,571 25 | | | | 126 18 | 9 00 | | 2,706 43 | Montreal District... |
| | 2,968 63 | | | | 144 96 | 9 00 | | 3,122 59 | Quebec District... |
| | 127,227 01 | 844 53 | 767 15 | | 4,223 42 | 333 75 | | 133,395 86 | Quebec..... |
| | 13,511 57 | 131 88 | | | 357 83 | 37 20 | | 14,038 48 | St. John..... |
| | 2,811 78 | | | | 113 70 | 9 00 | | 2,934 45 | Maritime District... |
| | 16,323 35 | 131 88 | | | 471 53 | 46 20 | | 16,972 96 | New Brunswick..... |
| | 12,112 75 | 149 37 | | | 79 26 | 33 84 | | 12,375 22 | Halifax..... |
| | 3,778 67 | 27 96 | | | 94 92 | 9 36 | | 3,910 91 | Pictou..... |
| | 15,891 42 | 177 33 | | | 174 18 | 43 20 | | 16,286 13 | Nova Scotia..... |
| 100 00 | 2,567 14 | | | | 88 56 | 4 98 | | 2,760 68 | Charlottetown..... |
| 100 00 | 2,567 14 | | | | 88 56 | 4 98 | | 2,760 68 | Prince Edward Island |
| 200 00 | 21,875 69 | 128 52 | 239 22 | | 759 84 | 51 96 | | 23,255 23 | Winnipeg..... |
| | 3,341 77 | 49 92 | | | | 9 00 | | 3,400 69 | Manitoba District... |
| 200 00 | 25,217 46 | 178 44 | 239 22 | | 759 84 | 60 96 | | 26,655 92 | Manitoba..... |
| | 8,749 44 | | 61 44 | | 329 84 | 17 52 | | 9,358 24 | Calgary..... |
| | 4,229 98 | 55 44 | | | | 9 00 | | 4,294 42 | Calgary District... |

SESSIONAL PAPER No. 12

1916-17.

IN ACCOUNT WITH EXPENDITURES.

| Balances due to Collectors, April 1, 1916. | Expenditures authorized by the Department. | | | | | Balances due by Collectors, March 31, 1917. | Totals. | |
|--|--|-------------------|---------------------|---------|----------------------|---|---------|------------|
| | Salaries. | Seizure Expenses. | Special Assistance. | Rent. | Travelling Expenses. | | | |
| \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | |
| | 12,784 93 | | 75 00 | | 3,219 44 | 236 50 | 43 98 | 16,359 85 |
| | 7,324 73 | | | | 793 10 | 248 23 | | 8,366 06 |
| | 22,554 99 | | 540 96 | | 253 85 | 339 45 | | 23,639 25 |
| | 25,427 88 | | 200 04 | | 145 99 | 289 80 | | 26,063 71 |
| | 7,847 64 | | | | 9 80 | 70 37 | | 7,927 81 |
| | 21,316 07 | | 783 98 | | 297 95 | 314 20 | | 22,712 20 |
| | 8,458 14 | | 390 36 | 8 75 | 53 20 | 114 85 | | 9,025 30 |
| | 6,969 02 | | 124 98 | | 250 41 | 134 17 | | 7,478 58 |
| | 12,797 25 | | 500 66 | 400 00 | 239 36 | 361 25 | | 14,298 52 |
| | 3,299 75 | | 43 34 | | 28 05 | 69 76 | | 3,440 90 |
| | 4,374 84 | | 49 98 | | 427 15 | 342,69 | | 5,194 66 |
| | 14,293 28 | 15 | 406 98 | | 32 90 | 220 71 | | 14,954 02 |
| | 6,851 81 | | 60 00 | | 117 45 | 125 45 | | 7,154 74 |
| | 6,699 72 | | 60 00 | 60 00 | 65 35 | 146 26 | | 7,031 33 |
| | 52,529 72 | | 1,250 90 | | 474 43 | 1,333 79 | | 55,588 84 |
| 49 08 | 35,318 24 | | 37 70 | 60 00 | 371 26 | 348 32 | | 36,184 60 |
| | 2,899 92 | | 47 97 | 200 00 | 300 09 | 65 40 | | 3,513 38 |
| | 2,924 94 | | | | 399 70 | 11 67 | | 3,336 31 |
| | 3,000 00 | | | | 659 35 | 58 79 | | 3,718 14 |
| 49 08 | 257,672 87 | 15 | 4,572 85 | 728,75 | 8,138 83 | 4,831 69 | 43 98 | 276,038 20 |
| | 11,407 90 | 70 | 426 32 | | 535 70 | 409 93 | | 12,780 55 |
| | 60,225 46 | 211 65 | 1,389 06 | | 1,617 31 | 1,855 57 | | 65,299 05 |
| | 21,445 23 | 86 35 | 1,651 89 | | 659 40 | 657 88 | | 24,500 75 |
| | 8,949 60 | | 138 66 | | 454 05 | 287 62 | | 9,829 93 |
| | 11,191 50 | 104 00 | 305 97 | 396 00 | 547 65 | 375 95 | | 12,921 07 |
| | 1,599 96 | | 466 64 | | 19 00 | 149 89 | | 2,235 49 |
| | 2,524 95 | | | | 157 85 | 23 63 | | 2,706 43 |
| | 2,899 92 | | | | 163 96 | 58 71 | | 3,122 59 |
| | 120,244 52 | 402 70 | 4,378 54 | 396 00 | 4,154 92 | 3,819 18 | | 133,395 86 |
| | 13,764 11 | 9 80 | 40 00 | | 88 65 | 135 92 | | 14,038 48 |
| | 2,274 93 | | | | 556 70 | 102 85 | | 2,934 48 |
| | 16,039 04 | 9 80 | 40 00 | | 645 35 | 238 77 | | 16,972 96 |
| | 11,962 23 | | 24 99 | | 185 80 | 202 20 | | 12,375 22 |
| | 3,299 88 | 190 28 | 90 00 | | 165 15 | 165 60 | | 3,910 91 |
| | 15,262 11 | 190 28 | 114 99 | | 350 95 | 367 80 | | 16,286 13 |
| | 1,772 83 | 7 85 | 60 00 | | 451 30 | 368 70 | 100 00 | 2,760 68 |
| | 1,772 83 | 7 85 | 60 00 | | 451 30 | 368 70 | 100 00 | 2,760 68 |
| | 21,686 60 | | 225 00 | | 562 58 | 581 05 | 200 00 | 23,255 23 |
| | 2,499 96 | | | | 796 88 | 103 85 | | 3,400 69 |
| | 24,186 56 | | 225 00 | | 1,359 46 | 684 90 | 200 00 | 26,655 92 |
| | 6,599 80 | | 460 06 | | 1,313 95 | 984 43 | | 9,358 24 |
| | 2,774 97 | | | | 1,479 45 | 40 00 | | 4,294 42 |

DR.

No. 4—COLLECTION DIVISION

| Balances due by Collectors, April 1, 1916. | Amounts received from Department to meet Expenditures. | Deductions from Salaries for | | | | | Balances due to Collectors, March 31, 1917. | Totals. | Divisions. |
|--|--|------------------------------|-------------|-------------|--------------|-------------|---|------------|--|
| | | Super-annuation. | Insur-ance. | Annu-ities. | Retire-ment. | Guar-antee. | | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | |
| ..... | 13,179 42 | 55 44 | 61 44 | ..... | 329 84 | 26 52 | ..... | 13,652 66 | .. Alberta..... |
| ..... | 7,854 47 | ..... | ..... | ..... | 323 14 | 20 13 | ..... | 8,197 74 | .. Moosejaw, Saskatchewan..... |
| ..... | 21,425 58 | 46 47 | 301 00 | ..... | 834 99 | 61 68 | ..... | 22,669 72 | .. Vancouver..... |
| ..... | 9,946 88 | 144 84 | 144 70 | ..... | 221 23 | 23 52 | ..... | 10,481 17 | .. Victoria..... |
| ..... | 4,558 37 | 60 00 | ..... | ..... | ..... | 9 00 | ..... | 4,627 37 | .. British Columbia District..... |
| ..... | 35,930 83 | 251 31 | 445 70 | ..... | 1,056 22 | 94 20 | ..... | 37,778 26 | .. British Columbia.... |
| ..... | 961 94 | ..... | ..... | ..... | 49 92 | 7 20 | ..... | 1,019 06 | .. Yukon..... |
| ..... | 4,193 37 | 62 46 | ..... | ..... | ..... | ..... | ..... | 4,255 83 | .. Inspector of Domin- ion..... |
| ..... | 4,753 59 | ..... | ..... | ..... | ..... | ..... | ..... | 4,753 59 | .. Inspector of Malt Houses and Breweries..... |
| ..... | 3,831 91 | 96 96 | ..... | ..... | ..... | ..... | ..... | 3,928 87 | .. Inspector of Distil- leries..... |
| ..... | 413 40 | ..... | ..... | ..... | ..... | ..... | ..... | 413 40 | .. Inspector of Bonded Factories..... |
| 343 98 | 521,624 71 | 3,226 78 | 3,932 85 | 140 40 | 15,470 35 | 1,321 01 | 49 08 | 546,109 16 | |
| ..... | 8,553 16 | ..... | ..... | ..... | ..... | ..... | ..... | 8,553 16 | .. General Expendi- tures..... |
| ..... | 1,964 33 | ..... | ..... | ..... | ..... | ..... | ..... | 1,964 33 | |
| ..... | 14,491 94 | ..... | ..... | ..... | ..... | ..... | ..... | 14,491 94 | .. Legal Expenses..... |
| ..... | 3,224 88 | ..... | ..... | ..... | ..... | ..... | ..... | 3,224 88 | .. Printing..... |
| ..... | 3,145 71 | ..... | ..... | ..... | ..... | ..... | ..... | 3,145 71 | .. Stationery..... |
| ..... | 14,580 35 | ..... | ..... | ..... | ..... | ..... | ..... | 14,580 35 | .. Commission to Cust- oms Officers..... |
| ..... | 9,526 85 | ..... | ..... | ..... | ..... | ..... | ..... | 9,526 85 | .. Duty-pay to Officers in charge of most important estab- lishments..... |
| ..... | 82,889 50 | ..... | ..... | ..... | ..... | ..... | ..... | 82,889 50 | .. Provisional Allow- ance..... |
| ..... | 82,889 50 | ..... | ..... | ..... | ..... | ..... | ..... | 82,889 50 | .. Printing Tobacco Stamps..... |
| 343 98 | 660,001 43 | 3,226 78 | 3,932 85 | 140 40 | 15,470 35 | 1,321 01 | 49 08 | 684,485 88 | .. Grand Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

1916-1917.

IN ACCOUNT WITH EXPENDITURES.

CR.

| Balances due to Collectors, April 1, 1916. | Expenditures authorized by the Department. | | | | | | Balances due by Collectors, March 31, 1917. | Totals. |
|--|--|-------------------|---------------------|----------|----------------------|------------|---|------------|
| | Salaries. | Seizure Expenses. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | 9,374 77 | | 460 06 | | 2,793 40 | 1,024 43 | | 13,652 66 |
| | 6,467 27 | | 269 00 | 195 00 | 742 55 | 523 92 | | 8,197 74 |
| | 19,039 53 | 4 50 | 948 56 | 156 00 | 1,517 60 | 1,003 53 | | 22,669 72 |
| | 9,431 93 | | 540 43 | | 134 25 | 374 56 | | 10,481 17 |
| | 3,000 00 | | | | 1,545 60 | 81 77 | | 4,627 37 |
| | 31,471 46 | 4 50 | 1,488 99 | 156 00 | 3,197 45 | 1,459 86 | | 37,778 26 |
| | 999 96 | | | | | 19 10 | | 1,019 06 |
| | 3,124 92 | | | | 1,122 60 | 8 31 | | 4,255 83 |
| | 3,199 92 | | | | 1,487 25 | 66 42 | | 4,753 59 |
| | 2,774 97 | | | | 1,149 96 | 3 94 | | 3,928 87 |
| | | | | | 409 00 | 4 40 | | 413 40 |
| 49 08 | 492,591 20 | 615 28 | 11,609 43 | 1,475 75 | 26,003 02 | 13,421 42 | 343 98 | 546,109 16 |
| | | | | | | 8,553 16 | | 8,553 16 |
| | | | | | | 1,964 33 | | 1,964 33 |
| | | | | | | 14,491 94 | | 14,491 94 |
| | | | | | | 3,224 88 | | 3,224 88 |
| | | | | | | 3,145 71 | | 3,145 71 |
| | | | | | | 14,580 35 | | 14,580 35 |
| | | | | | | 9,526 85 | | 9,526 85 |
| | | | | | | 82,889 50 | | 82,889 50 |
| 49 08 | 492,591 20 | 615 28 | 11,609 43 | 1,475 75 | 26,003 02 | 151,798 14 | 343 98 | 684,485 88 |

J. U. VINCENT,
Deputy Minister.

No. 4 A.—IN ACCOUNT WITH EXPENDITURES.

INLAND REVENUES

8 GEORGE V, A. 1918

| Amount received from Department to meet Expenditures. | Totals. | | Districts. | | | | Expenditures authorized by the Department. | | | | Totals. |
|---|---------|------|------------|--|--------------|--|--|----------------------|-----------|--------|-----------|
| | \$ | cts. | | | | | Special Assistance. | Travelling Expenses. | Sundries. | \$ |  | cts. |
| 552 23 | 552 | 23 | | | | | 533 23 | | | 18 95 | 552 23 |
| 210 13 | 210 | 13 | | | | | | 93 10 | | 117 03 | 210 13 |
| 24 23 | 24 | 23 | | | | | 22 23 | | | 2 00 | 24 23 |
| 419 21 | 419 | 21 | | | | | 399 96 | 8 60 | | 10 65 | 419 21 |
| 6 83 | 6 | 83 | | | | | | | | 6 83 | 6 83 |
| 685 33 | 685 | 33 | | | | | 599 94 | 11 45 | | 73 94 | 685 33 |
| 2,054 95 | 2,054 | 95 | | | | | 1,711 07 | 288 14 | | 55 74 | 2,054 95 |
| 424 69 | 424 | 69 | | | | | 395 98 | | | 28 71 | 424 69 |
| 1,901 49 | 1,901 | 49 | | | | | 1,666 58 | 177 30 | | 57 61 | 1,901 49 |
| 161 38 | 161 | 38 | | | | | 83 30 | 2 75 | | 75 33 | 161 38 |
| 173 83 | 173 | 83 | | | | | 149 94 | | | 23 89 | 173 83 |
| 613 81 | 613 | 81 | | | | | 399 94 | 5 00 | | 13 87 | 613 81 |
| 32 65 | 32 | 65 | | | | | | | | 27 65 | 32 65 |
| 2,150 20 | 2,150 | 20 | | | | | 2,147 24 | | | 2 96 | 2,150 20 |
| 388 92 | 388 | 92 | | | | | 379 14 | | | 9 78 | 388 92 |
| 9,799 88 | 9,799 | 88 | | | Ontario..... | | 8,688 60 | 586 34 | | 524 94 | 9,799 88 |
| 1,116 15 | 1,116 | 15 | | | | | 1,084 90 | | | 31 25 | 1,116 15 |
| 3,326 96 | 3,326 | 96 | | | | | 3,186 34 | 21 40 | | 119 22 | 3,326 96 |
| 4,482 42 | 4,482 | 42 | | | | | 4,049 67 | 320 15 | | 112 60 | 4,482 42 |
| 82 50 | 82 | 50 | | | | | | 31 70 | | 50 80 | 82 50 |
| 979 41 | 979 | 41 | | | | | 974 91 | | | 4 50 | 979 41 |
| 816 63 | 816 | 63 | | | | | 816 63 | | | | 816 63 |
| 10,804 07 | 10,804 | 07 | | | Quebec..... | | 10,112 45 | 373 25 | | 318 37 | 10,804 07 |
| 316 88 | 316 | 88 | | | | | | 107 75 | | 209 13 | 316 88 |

SESSIONAL PAPER No. 12

| 217 08 | 217 08 | 217 08 | 74 97 | 25 00 | 117 11 | 217 08 |
|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| 74 89 | 74 89 | 74 97 | 4 45 | 70 44 | 74 89 | 74 89 |
| 291 97 | 291 97 | 74 97 | 29 45 | 187 55 | 291 97 | 291 97 |
| 18 56 | 18 56 | | | 18 56 | 18 56 | 18 56 |
| 1,052 51 | 1,052 51 | 951 58 | 42 00 | 58 93 | 1,052 51 | 1,052 51 |
| 3,613 34 | 3,613 34 | 3,583 14 | | 30 20 | 3,613 34 | 3,613 34 |
| 312 10 | 312 10 | 289 54 | | 22 56 | 312 10 | 312 10 |
| 1,790 86 | 1,790 86 | 1,724 73 | 18 55 | 47 58 | 1,790 86 | 1,790 86 |
| 2,076 00 | 2,076 00 | 1,976 00 | 100 00 | | 2,076 00 | 2,076 00 |
| 3,866 86 | 3,866 86 | 3,700 73 | 118 55 | 47 58 | 3,866 86 | 3,866 86 |
| 30,076 17 | 30,076 17 | 27,401 01 | 1,257 34 | 1,417 82 | 30,076 17 | 30,076 17 |
| 11,955 33 | 11,955 33 | | | 11,955 33 | 11,955 33 | 11,955 33 |
| 281 25 | 281 25 | | | 281 25 | 281 25 | 281 25 |
| 782 50 | 782 50 | | | 782 50 | 782 50 | 782 50 |
| 43,095 25 | 43,095 25 | 27,401 01 | 1,257 34 | 14,436 90 | 43,095 25 | 43,095 25 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

EXCISE PREVENTIVE SERVICE—1916-17.
No. 5—IN ACCOUNT WITH EXPENDITURES.

CR.

DR.

| Amount received from Department to meet Expenditures. | Deductions from salaries for guarantee. | | Totals. | | Districts. | | | | Expenditures authorized by the Department. | | | | Totals. | | | |
|---|---|------|---------|------|---------------------------|-----------|------|---------------------|--|----------------------|------|-----------|---------|--------|--------|----|
| | \$ | cts. | \$ | cts. | | Salaries. | | Special Assistance. | | Travelling Expenses. | | Sundries. | | | | |
| | | | | | | \$ | cts. | \$ | cts. | \$ | cts. | \$ | | cts. | | |
| 899 19 | 0 | 81 | 900 | 00 | Brantford..... | 900 | 00 | | | | | | | 900 | 00 | |
| 1,551 21 | 1 | 53 | 1,552 | 74 | Hamilton..... | 1,552 | 74 | | | | | | | 1,552 | 74 | |
| 1,801 28 | 1 | 62 | 1,802 | 90 | London..... | 1,800 | 00 | | 2 | 00 | | | 0 | 90 | | |
| 8,614 76 | 9 | 45 | 8,624 | 21 | Ottawa..... | 8,065 | 39 | 101 | 18 | 361 | 95 | | 65 | 69 | 8,624 | 21 |
| 1,198 02 | 1 | 98 | 1,200 | 00 | Toronto..... | 1,200 | 00 | | | | | | | 1,200 | 00 | |
| 1,549 18 | 1 | 62 | 1,550 | 80 | Windsor..... | 1,550 | 80 | | | | | | | 1,550 | 80 | |
| 15,613 64 | 17 | 01 | 15,630 | 65 | Ontario..... | 15,088 | 93 | 101 | 18 | 363 | 95 | | 66 | 59 | 15,630 | 65 |
| 3,371 27 | 3 | 69 | 3,374 | 96 | Joliette..... | 2,975 | 00 | 399 | 96 | | | | | 3,374 | 96 | |
| 24,769 40 | 22 | 17 | 24,791 | 57 | Montreal..... | 23,449 | 50 | 1,153 | 47 | 159 | 10 | | 29 | 50 | 24,791 | 57 |
| 11,125 47 | 7 | 83 | 11,133 | 30 | Quebec..... | 8,445 | 11 | 2,591 | 04 | | | | | 11,133 | 30 | |
| 1,123 46 | 0 | 81 | 1,124 | 27 | Sherbrooke..... | 900 | 00 | 199 | 92 | | | | | 1,124 | 27 | |
| 6,361 40 | 4 | 92 | 6,366 | 32 | St. Hyacinthe..... | 5,850 | 00 | | | 511 | 07 | | 5 | 25 | 6,366 | 32 |
| 2,701 89 | 1 | 86 | 2,703 | 75 | Three Rivers..... | 2,700 | 00 | | | | | | 3 | 75 | 2,703 | 75 |
| 49,452 89 | 41 | 28 | 49,494 | 17 | Quebec..... | 44,319 | 61 | 4,344 | 39 | 791 | 67 | | 38 | 50 | 49,494 | 17 |
| 1,981 63 | 1 | 26 | 1,982 | 89 | St. John, N.B..... | 989 | 96 | 799 | 92 | 182 | 01 | | 1 | 00 | 1,982 | 89 |
| 1,411 59 | 0 | 81 | 1,412 | 40 | Halifax..... | 990 | 00 | 512 | 40 | | | | | 1,412 | 40 | |
| 1,008 49 | | | 1,008 | 49 | Pictou..... | | | 900 | 00 | 102 | 85 | | 5 | 64 | 1,008 | 49 |
| 2,420 08 | 0 | 81 | 2,420 | 89 | Nova Scotia..... | 900 | 00 | 1,412 | 40 | 102 | 85 | | 5 | 64 | 2,420 | 89 |
| 702 74 | 0 | 81 | 703 | 55 | Charlottetown, P.E.I..... | 352 | 65 | 300 | 00 | 49 | 90 | | 1 | 00 | 703 | 55 |
| 3,722 34 | 2 | 58 | 3,724 | 92 | Winnipeg, Man..... | 2,925 | 00 | 799 | 92 | | | | | 3,724 | 92 | |
| 2,697 57 | 2 | 43 | 2,700 | 00 | Calgary..... | 2,700 | 00 | | | | | | | 2,700 | 00 | |

SESSIONAL PAPER No. 12

| | | | | | | |
|-----------|-------|-----------|-----------|----------|----------|-----------|
| 132 72 | 08 | 132 80 | 32 25 | 85 55 | 15 00 | 132 80 |
| 3,776 15 | 43 | 3,778 58 | 2,700 00 | 3 50 | | 3,778 58 |
| 80,499 76 | 68 69 | 80,568 45 | 70,028 40 | 1,579 43 | 127 73 | 80,568 45 |
| 1,214 87 | | 1,214 87 | | | 1,214 87 | 1,214 87 |
| 81,714 63 | 68 69 | 81,783 32 | 70,028 40 | 1,579 43 | 1,342 60 | 81,783 32 |

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

8 GEORGE V, A. 1918

WEIGHTS AND MEASURES PREVENTIVE SERVICE—1916-17.

Dr. No. 5A.—IN ACCOUNT WITH EXPENDITURES.

CR.

| Amount received from Department to meet Expenditures. | | Deductions from Salaries for Guarantee. | | Totals. | Districts. | Expenditures authorized by the Department | Totals. |
|---|------|---|------|---------|---------------------------|---|---------|
| \$ | cts. | \$ | cts. | \$ | | \$ | cts. |
| 899 | 46 | 0 | 54 | 900 | Kingston..... | 900 | 00 |
| 3,312 | 17 | 2 | 34 | 3,314 | Ottawa..... | 3,314 | 51 |
| 4,211 | 63 | 2 | 88 | 4,214 | Ontario..... | 4,214 | 51 |
| 982 | 04 | 1 | 26 | 983 | Montreal..... | 983 | 30 |
| 1,798 | 92 | 1 | 08 | 1,800 | St. Hyacinthe..... | 1,800 | 00 |
| 2,780 | 96 | 2 | 34 | 2,783 | Quebec..... | 2,783 | 30 |
| 899 | 46 | 0 | 54 | 900 | Halifax, N.S..... | 900 | 00 |
| 899 | 46 | 0 | 54 | 900 | Charlottetown, P.E.I..... | 900 | 00 |
| 669 | 62 | 0 | 54 | 670 | Winnipeg, Man..... | 670 | 16 |
| 374 | 46 | 0 | 54 | 375 | Calgary..... | 375 | 00 |
| 1,552 | 14 | 1 | 08 | 1,553 | Edmonton..... | 1,553 | 22 |
| 1,926 | 60 | 1 | 62 | 1,928 | Alberta..... | 1,928 | 22 |
| 2,673 | 38 | 1 | 62 | 2,675 | Regina..... | 2,675 | 00 |
| 899 | 46 | 0 | 54 | 900 | Saskatoon..... | 900 | 00 |
| 3,572 | 84 | 2 | 16 | 3,575 | Saskatchewan..... | 3,575 | 00 |
| 14,960 | 57 | 10 | 62 | 14,971 | Grand Totals..... | 14,971 | 19 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

FOOD INSPECTION, 1916-17.
No. 6—IN ACCOUNT WITH EXPENDITURES.

CR.

DR.

| Amount received from Department to meet Expenditures. | Superannuation. | Guarantee. | Totals. | Districts. | Expenditures authorized by the Department. | | | | | | Totals. | | | |
|---|-----------------|------------|----------|-------------------------|--|---------------------|--------|----------------------|-----------|----|---------|------|----------|------|
| | | | | | Salaries. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | \$ | | cts. | | |
| \$ | \$ | \$ | \$ | | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | cts. | cts. |
| 341 70 | 1 08 | | 342 78 | Kingston | 199 92 | | | 69 75 | 73 11 | | | | 342 78 | |
| 574 44 | 1 08 | | 575 52 | London | 199 92 | | | 287 90 | 87 70 | | | | 575 52 | |
| 78 99 | 0 42 | | 79 41 | Ottawa | 79 41 | | | | | | | | 79 41 | |
| 379 27 | 1 08 | | 380 35 | Toronto | 199 92 | | | 72 79 | 107 64 | | | | 380 35 | |
| 1,374 40 | 3 66 | | 1,378 06 | Ontario | 679 17 | | | 430 44 | 268 45 | | | | 1,378 06 | |
| 1,201 65 | 1 08 | 9 96 | 1,212 69 | Montreal | 499 92 | 27 50 | | 519 20 | 166 07 | | | | 1,212 69 | |
| 642 62 | 1 08 | | 643 70 | " | 399 96 | | | 110 00 | 133 74 | | | | 643 70 | |
| 671 52 | 1 08 | | 672 60 | Quebec | 300 00 | | 120 00 | 114 00 | 138 60 | | | | 672 60 | |
| 204 32 | 1 08 | | 205 40 | St. Hyacinthe | 199 92 | | | | 5 48 | | | | 205 40 | |
| 2,720 11 | 9 96 | 4 32 | 2,734 39 | Quebec | 1,399 80 | 27 50 | 120 00 | 743 20 | 443 89 | | | | 2,734 39 | |
| 566 66 | 3 96 | 1 08 | 571 70 | St. John, N.B. | 199 92 | | | 227 70 | 144 08 | | | | 571 70 | |
| 605 32 | 1 08 | | 606 40 | Halifax | 349 92 | | | 173 70 | 82 78 | | | | 606 40 | |
| 198 84 | 1 08 | | 199 92 | Sydney | 199 92 | | | | | | | | 199 92 | |
| 804 16 | 2 16 | | 806 32 | Nova Scotia | 549 84 | | | 173 70 | 82 78 | | | | 806 32 | |
| 214 46 | 0 47 | | 214 93 | Charlottetown, P.E.I. | 88 13 | | | 66 05 | 60 75 | | | | 214 93 | |
| 455 09 | | | 455 09 | Winnipeg, Man. | | | | 302 00 | 153 09 | | | | 455 09 | |
| 595 05 | 1 08 | | 596 13 | Calgary, Alta. | 300 00 | | | 164 70 | 131 43 | | | | 596 13 | |
| 16 10 | 0 03 | | 16 13 | North Battleford, Sask. | 16 13 | | | | | | | | 16 13 | |
| 405 94 | 1 08 | | 407 02 | Nelson | 199 92 | | | 60 80 | 146 30 | | | | 407 02 | |
| 139 66 | 0 36 | | 140 02 | Vancouver | 66 64 | | | 8 10 | 65 28 | | | | 140 02 | |
| 57 69 | 0 18 | | 57 87 | Victoria | 33 32 | | | 11 05 | 13 50 | | | | 57 87 | |

DR. CR.

FOOD INSPECTION, 1916-17.

No. 6—IN ACCOUNT WITH EXPENDITURES—Concluded.

| Amount received from Department to meet Expenditures. | Superannuation. | Guarantee. | Totals. | Districts. | Expenditures authorized by the Department. | | | | | | | | |
|---|-----------------|------------|-----------|----------------------|--|---------------------|----------|----------------------|-----------|-----------|------|------|-----------|
| | | | | | Salaries. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | \$ | cts. | \$ | cts. |
| \$ 603 29 | cts. | \$ 1 62 | \$ 604 91 | British Columbia | \$ 299 88 | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ 604 91 |
| 3,312 21 | | | 3,312 21 | Chief Analyst | | 1,298 30 | | | | 2,013 91 | | | 3,312 21 |
| 418 48 | | | 418 48 | Hamilton | | | | | | 116 03 | | | 418 48 |
| 99 15 | | | 99 15 | Ottawa | | | | | | 302 45 | | | 99 15 |
| 223 26 | | | 223 26 | Armagh | | | | | | 1 00 | | | 223 26 |
| 124 81 | | | 124 81 | Montreal | | 99 96 | | | | 41 30 | | | 124 81 |
| 276 38 | | | 276 38 | Montmagny | | 99 96 | | | | 13 30 | | | 276 38 |
| 891 07 | | | 891 07 | Pierreville | | 799 92 | | | | 45 42 | | | 891 07 |
| 166 64 | | | 166 64 | Quebec | | 166 64 | | | | 36 05 | | | 166 64 |
| 200 00 | | | 200 00 | Quebec | | 200 00 | | | | | | | 200 00 |
| 31 23 | | | 31 23 | Quebec | | 31 23 | | | | | | | 31 23 |
| 448 71 | | | 448 71 | St. Anselme | | 183 26 | | | | 25 80 | | | 448 71 |
| 218 26 | | | 218 26 | St. Fabien | | 150 00 | | | | 19 41 | | | 218 26 |
| 750 82 | | | 750 82 | St. Felix de Valois | | 399 96 | | | | 123 31 | | | 750 82 |
| 290 19 | | | 290 19 | St. Jerome | | 199 92 | | | | 49 57 | | | 290 19 |
| 157 55 | | | 157 55 | St. Octave | | 150 00 | | | | 6 55 | | | 157 55 |
| 537 48 | | | 537 48 | St. Perpetue | | 300 00 | | | | 193 25 | | | 537 48 |
| 100 00 | | | 100 00 | St. Philippe de Neri | | 100 00 | | | | | | | 100 00 |
| 193 72 | | | 193 72 | Tracadie | | 99 96 | | | | 58 15 | | | 193 72 |
| 640 48 | | | 640 48 | Moose Jaw | | 241 62 | | | | 110 01 | | | 640 48 |
| 974 17 | | | 974 17 | Vancouver | | 793 91 | | | | 140 81 | | | 974 17 |
| 1,723 54 | | | 1,723 54 | Halifax Laboratory | | 240 00 | | | | 31 06 | | | 1,723 54 |
| 292 93 | | | 292 93 | Winnipeg | | | | | | 292 03 | | | 292 93 |
| 531 95 | | | 531 95 | Vancouver " | | | | | | 127 82 | | | 531 95 |
| 19,952 35 | 13 92 | 14 42 | 19,980 69 | Totals | 3,532 87 | 5,677 90 | 1,220 00 | 4,071 37 | 5,478 55 | 19,980 69 | | | |
| 9,971 29 | | | 9,971 29 | General | | | | | | 9,971 29 | | | 9,971 29 |
| 10,575 77 | | | 10,575 77 | Printing | | | | | | 10,575 77 | | | 10,575 77 |
| 995 32 | | | 995 32 | Stationery | | | | | | 995 32 | | | 995 32 |
| 41,494 73 | 13 92 | 14 42 | 41,523 07 | Grand Totals | 3,532 87 | 5,677 90 | 1,220 00 | 4,071 37 | 27,020 93 | 41,523 07 | | | |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

DR. No. 9—SUNDRY MINOR REVENUES—1916-17. CR.

| Accrued during the year ended March 31, 1917. | Totals. | | Deposited to the Credit of the Receiver General. | Totals. |
|---|----------|--|--|----------|
| \$ cts. | \$ cts. | | \$ cts. | \$ cts. |
| 804 00 | 804 00 | Registration of Agricultural fertilizers fees, \$323.00— | | |
| 4,793 15 | 4,793 15 | Licenses, \$375—Fines, \$106..... | 804 00 | 804 00 |
| 572 29 | 572 29 | Adulteration of food fees, \$922.25—Penalties, \$3,870.90..... | 4,793 15 | 4,793 15 |
| 1,444 00 | 1,444 00 | Casual revenue..... | 572 29 | 572 29 |
| 525 00 | 525 00 | Patent Medicines registration fees, \$1,418.00—Fines, \$26.00..... | 1,444 00 | 1,444 00 |
| | | Commercial feeding stuffs fees, \$415—Licenses, \$110. | 525 00 | 525 00 |
| 8,138 44 | 8,138 44 | | 8,138 44 | 8,138 44 |
| 338 50 | 338 50 | Less refund per statement No. 15. | 338 50 | 338 50 |
| 7,799 94 | 7,799 94 | | 7,799 94 | 7,799 94 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

DR. No. 10—SUNDRY MINOR EXPENDITURES—1916-17. CR.

| Amounts received from the Department to meet Expenditures. | Total. | | Printing and Stationery. | Contingencies. | Totals. |
|--|----------|---------------------------------|--------------------------|----------------|----------|
| \$ cts. | \$ cts. | | \$ cts. | \$ cts. | \$ cts. |
| 131 00 | 131 00 | Sundry, minor Expenditures..... | | 131 00 | 131 00 |
| 291 93 | 291 93 | Special translation..... | | 291 93 | 291 93 |
| 850 00 | 850 00 | Patent Medicines Act..... | | 850 00 | 850 00 |
| 1,272 93 | 1,272 93 | Totals..... | | 1,272 93 | 1,272 93 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

No. 11—FERRY LICENSES REVENUE FOR 1916-17.

DR.

CR.

| Balances due April 1, 1916. | Accrued during the year ended March 31, 1917. | Totals. | | Deposited to the credit of the Receiver General. | Balances due March 31, 1917. | Totals. |
|-----------------------------|---|----------|---|--|------------------------------|----------|
| \$ cts. | \$ cts. | \$ cts. | <i>Ferries.</i> | \$ cts. | \$ cts. | \$ cts. |
| 15 00 | 15 00 | 15 00 | Buckingham and Cumberland | | 15 00 | 15 00 |
| 1 00 | 1 00 | 1 00 | Brookville and Morristown | 1 00 | | 1 00 |
| 50 00 | 50 00 | 50 00 | Buffalo and Point Abino | 50 00 | | 50 00 |
| 45 83 | | 45 83 | Clair Station and Kent | | 45 83 | 45 83 |
| 10 00 | 10 00 | 10 00 | Courtwright and St. Clair | 10 00 | | 10 00 |
| 10 00 | 10 00 | 10 00 | Cross Point and Campbellton | 10 00 | | 10 00 |
| 1 00 | 1 00 | 1 00 | Detroit and Windsor | 1 00 | | 1 00 |
| 20 00 | | 20 00 | Edmundston and Maine | | 20 00 | 20 00 |
| 10 00 | 10 00 | 10 00 | Fasset and St. Thomas d'Alfred | 10 00 | | 10 00 |
| 5 00 | 5 00 | 5 00 | Fitzroy and Onslow | 5 00 | | 5 00 |
| 50 00 | 50 00 | 50 00 | Fort Erie and Buffalo Co. | 50 00 | | 50 00 |
| 25 00 | 25 00 | 25 00 | Fort Frances | 25 00 | | 25 00 |
| 1,736 79 | | 1,736 79 | Hull (old lease) | | 1,736 79 | 1,736 79 |
| 30 00 | 30 00 | 30 00 | Niagara and Youngstown | 30 00 | | 30 00 |
| 1 00 | | 1 00 | Pembroke and Allumette Island | | 1 00 | 1 00 |
| 130 00 | 130 00 | 130 00 | Pembroke and Allumette Island (old lease) | 130 00 | | 130 00 |
| 1 00 | 1 00 | 1 00 | Prescott and Ogdensburg | 1 00 | | 1 00 |
| 10 00 | 10 00 | 10 00 | Queenston and Lewiston | 10 00 | | 10 00 |
| 25 00 | 25 00 | 25 00 | Rainey River | 25 00 | | 25 00 |
| 510 00 | 510 00 | 510 00 | Rockcliffe and Gatineau | 510 00 | | 510 00 |
| 5 00 | 5 00 | 5 00 | Sand Point and Norway Bay | 5 00 | | 5 00 |
| 100 00 | 100 00 | 100 00 | Sault Ste. Marie | 100 00 | | 100 00 |
| 1 00 | 1 00 | 1 00 | St. Leonard and Van Buren | 1 00 | | 1 00 |
| | | | Walkerville and Detroit | | 30 00 | 30 00 |
| 1,833 62 | 989 00 | 2,822 62 | Totals | 974 00 | 1,848 62 | 8,222 62 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

No. 12—STATEMENT showing the quantities of the several articles, subject to 1915, 1916, 1917 and

| Articles subject to Excise Duty. | 1915. | | | Duty. | |
|---|----------------------|----------------------|---------------------|------------|-----------------|
| | Quantities. | | | | |
| | Ex-manu- factory. | Ex-ware- house. | Totals. | \$ | cts. |
| | Galls. | Galls. | Galls. | | |
| Spirits..... | 6,407 | 4,021,090 44,690* | 4,027,497 44,690 | 8,689,574 | 33 13,407 03 |
| Totals..... | 6,407 | 4,065,780 | 4,072,187 | 8,702,931 | 42 |
| Malt liquor, the duty being paid on malt..... | 47,955,947 | 7,278 | 47,963,225 | 137,003 | 23 |
| | Lbs. | Lbs. | Lbs. | | |
| Malt..... | | 111,037,743 | 111,037,743 | 2,610,887 | 82 |
| | No. | No. | No. | | |
| Cigars from foreign leaf..... | | 12,300 | 12,300 | 84 | 10 |
| Cigars..... | 138,170,411 | 98,683,831 | 236,854,242 | 613,021 | 07 |
| Totals..... | 138,170,411 | 98,696,131 | 236,866,542 | 613,105 | 17 |
| Cigarettes..... | 1,062,143,295 | 27,982,640 | 1,090,125,935 | 3,004,822 | 14 |
| | Lbs. | Lbs. | Lbs. | | |
| Tobacco from foreign leaf..... | | | | | |
| Canada twist..... | | 6,855 | 6,855 | 637 | 50 |
| Tobacco..... | 13,579,224 | 7,085,181 | 20,664,405 | 1,643,641 | 55 |
| Snuff..... | 509,597 | | 509,597 | 40,226 | 75 |
| Totals..... | 14,088,821 | 7,092,036 | 21,180,857 | 4,689,327 | 94 |
| Raw leaf tobacco, foreign..... | | 15,723,329 | 15,723,329 | 4,474,253 | 52 |
| Other materials..... | | 1,280,589 | 1,280,589 | 204,894 | 24 |
| Total duties on tobacco and cigarettes..... | | | | 9,348,505 | 70 |
| Vinagar..... | | | | 90,953 | 65 |
| Acetic acid..... | | | | 7,155 | 48 |
| Licenses, spirits..... | | | | 3,500 | 00 |
| “ Malt liquor..... | | | | 5,900 | 00 |
| “ Malt..... | | | | 5,400 | 00 |
| “ Cigars..... | | | | 12,800 | 00 |
| “ Tobacco..... | | | | 4,375 | 00 |
| “ Bonded manufactures..... | | | | 3,950 | 00 |
| “ Acetic acid..... | | | | 100 | 00 |
| Grand total duty..... | | | | 21,546,617 | 48 |

*Spirits imported for use in the manufacture of crude fulminate, on which duty, at the rate of 30 cents.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

Excise Duty, taken for consumption, during the fiscal years ended March 31, the duty accrued thereon.

| 1916. | | | 1917. | | | | |
|----------------------|--------------------|---------------|---------------|----------------------|--------------------|---------------|---------------|
| Quantities. | | | Duty. | Quantities. | | | Duty. |
| Ex-manu- factory. | Ex-ware- house. | Totals. | | Ex-manu- factory. | Ex-ware- house. | Totals. | |
| Galls. | Galls. | Galls. | \$ cts. | Galls. | Galls. | Galls. | \$ cts. |
| 4,066 | 3,629,324 | 3,633,390 | 8,671,538 55 | 3,080 | 4,118,147 | 4,121,227 | 9,838,649 65 |
| | 85,954* | 85,954 | 25,786 13 | | *125,140 | 125,140 | 37,541 90 |
| 4,066 | 3,715,278 | 3,719,344 | 8,697,324 68 | 3,080 | 4,243,287 | 4,246,367 | 9,876,191 55 |
| 39,488,374 | 150,503 | 39,638,877 | 92,079 45 | 34,687,356 | 139,928 | 34,827,284 | 103,865,35 |
| Lbs. | Lbs. | Lbs. | | Lbs. | Lbs. | Lbs. | |
| 2,946 | 89,473,644 | 89,476,590 | 2,684,699 63 | 225 | 78,815,521 | 78,815,746 | 2,364,752 38 |
| No. | No. | No. | | No. | No. | No. | |
| | 3,800 | 3,800 | 26 60 | | | | |
| 134,992,358 | 72,651,650 | 207,644,008 | 623,081 23 | 166,647,097 | 73,105,155 | 239,752,252 | 719,390 26 |
| 134,992,358 | 72,655,450 | 207,647,808 | 623,107 83 | 166,647,097 | 73,105,155 | 239,752,252 | 719,390 26 |
| 1,061,670,760 | 20,653,950 | 1,082,324,710 | 3,252,797 58 | 1,277,629,790 | 29,646,960 | 1,307,276,750 | 3,929,130 15 |
| Lbs. | Lbs. | Lbs. | | Lbs. | Lbs. | Lbs. | |
| | 175 | 175 | 43 75 | | | | |
| | 7,430 | 7,430 | 743 00 | | 5,685 | 5,685 | 568 50 |
| 12,996,915 | 7,149,484 | 20,146,399 | 2,015,414 76 | 12,915,722½ | 7,206,331½ | 20,122,054 | 2,012,205 40 |
| 544,237 | | 544,237 | 54,423 70 | 607,341 | | 607,341 | 60,734 10 |
| 13,541 152 | 7,157,089 | 20,698,241 | 5,323,422 79 | 13,523,063½ | 7,212,016½ | 20,735,080 | 6,002,638 15 |
| | 16,571,311 | 16,571,311 | 4,676,757 99 | | 17,470,422 | 17,470,422 | 4,942,516 93 |
| | 1,365,175 | 1,365,175 | 218,428 00 | | 1,548,809 | 1,548,809 | 247,809 44 |
| | | | 10,218,608 78 | | | | 11,192,964 52 |
| | | | 100,112 24 | | | | 104,333 79 |
| | | | 8,150 14 | | | | 7,949 39 |
| | | | 3,750 00 | | | | 4,375 00 |
| | | | 5,700 00 | | | | 5,350 00 |
| | | | 4,600 00 | | | | 3,150 00 |
| | | | 12,050 00 | | | | 10,825 00 |
| | | | 4,175 00 | | | | 4,138 00 |
| | | | 5,700 00 | | | | 6,075 00 |
| | | | 100 00 | | | | 100 00 |
| | | | 22,460,157 75 | | | | 24,403,460 24 |

per gallon, was collected and afterwards refunded, on the exportation of the fulminate.

J. U. VINCENT,
Deputy Minister.

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General,

| | General. | Ontario. | Quebec. | New Brunswick. |
|---|-----------|------------|--------------|----------------|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| <i>April—</i> | | | | |
| Excise..... | | 471,987 42 | 982,999 65 | 20,655 84 |
| “ Seizures..... | | 70 00 | 1,194 37 | |
| Ferries..... | | 130 00 | | |
| Weights and Measures Inspection..... | | 851 90 | 616 45 | |
| “ “ Seizures..... | | | | |
| Gas Inspection..... | | 184 95 | 47 50 | |
| Gas Seizures..... | | 60 00 | | |
| Electric Light Inspection..... | | 567 60 | 129 45 | |
| Law Stamps (Supreme Court)..... | | | | |
| “ (Exchequer Court)..... | | | | |
| “ (Yukon Territorial Court)..... | | | | |
| Patent Medicines Fees..... | | 79 00 | 38 00 | 4 00 |
| “ “ Fines..... | | | | |
| Fertilizers Fees..... | | 6 00 | 5 00 | |
| “ Fines..... | | 25 00 | | |
| Methylated Spirits..... | | 6,417 34 | 4,141 57 | 113 27 |
| Commercial Feeding Stuffs..... | | 80 00 | | |
| Adulteration of Food Fees..... | | 75 00 | 188 65 | |
| Electrical Standard of Laboratory..... | | | | |
| Electric Light Export Licenses..... | | | | |
| Testing Milk Glasses..... | | | | |
| War Tax Revenue Stamps..... | | 27,640 18 | 9,574 97 | 1,209 71 |
| War Tax Revenue, Transportation, etc..... | 11,173 90 | 737 58 | 4,838 05 | 36 25 |
| War Tax Fine..... | | | | |
| Casual Revenue..... | | | | |
| Totals..... | 11,173 90 | 508,911 97 | 1,003,773 66 | 22,019 07 |
| <i>May—</i> | | | | |
| Excise..... | | 587,912 35 | 1,184,225 91 | 25,287 70 |
| “ Seizures..... | | 100 00 | 619 52 | |
| Ferries..... | | 27 00 | | |
| Weights and Measures Inspection..... | | 3,240 70 | 1,908 05 | 214 05 |
| “ “ Seizures..... | | | | |
| Gas Inspection..... | | 2,967 75 | 1,467 55 | 38 40 |
| Gas Seizures..... | | | | |
| Electric Light Inspection..... | | 2,639 40 | 1,990 15 | 168 15 |
| Law Stamps (Supreme Court)..... | | 367 40 | | |
| “ (Exchequer Court)..... | | 447 00 | | |
| “ (Yukon Territorial Court)..... | | | | |
| Patent Medicines Fees..... | | 56 00 | 16 00 | 3 00 |
| “ Fines..... | | | | |
| Fertilizers Fees..... | | 11 00 | | |
| “ Fines..... | | | | |
| Methylated Spirits..... | | 6,915 40 | 3,421 93 | 75 24 |
| Commercial Feeding Stuffs..... | | | | |
| Adulteration of Food Fees..... | | 50 25 | 17 25 | |
| Electrical Standard of Laboratory..... | | | | |
| Electric Light Export Licenses..... | | | | |
| Testing Milk Glasses..... | 380 90 | | | |
| War Tax Revenue Stamps..... | | 35,903 92 | 10,674 41 | 2,240 75 |
| War Tax Revenue, Transportation, etc..... | 11,487 66 | 16,771 97 | 132,835 66 | 193 90 |
| War Tax Fine..... | | 52 10 | | |
| Casual Revenue..... | | 14 00 | | |
| Totals..... | 11,868 56 | 657,476 24 | 1,337,176 43 | 28,221 19 |
| <i>June—</i> | | | | |
| Excise..... | | 571,838 93 | 1,141,529 15 | 24,564 71 |
| “ Seizures..... | | 209 00 | 206 85 | |
| Ferries..... | | 50 00 | | |
| Weights and Measures Inspection..... | | 3,709 03 | 2,887 55 | 341 70 |
| Gas Inspection..... | | 2,502 55 | 2,014 15 | 54 00 |
| Gas Seizures..... | | | | |
| Electric Light Inspection..... | | 2,226 30 | 2,614 95 | 119 40 |
| Law Stamps (Supreme Court)..... | | 234 40 | | |

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General,

| | General. | | Ontario. | | Quebec. | | New Brunswick. | |
|---|----------|------|----------|------|-----------|--------|----------------|----------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>June—Con.</i> | | | | | | | | |
| Law Stamps (Exchequer Court)..... | | | 408 | 00 | | | | |
| (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | | | 36 | 00 | 18 | 00 | | 1 00 |
| " " Fines..... | | | | | | | | |
| Fertilizers Fees..... | | | 2 | 00 | | 1 00 | | |
| " " Fines..... | | | 8 | 00 | | 20 00 | | |
| Methylated Spirits..... | | | 9,553 | 88 | 4,549 | 66 | | |
| Commercial Feeding Stuffs..... | | | 8 | 00 | | | | |
| Adulteration of Food Fees..... | | | 145 | 00 | 85 | 00 | | 5 00 |
| Electrical Standard of Laboratory..... | | | 25 | 93 | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | 36s | 50 | | | | | | |
| War Tax Revenue Stamps..... | | | 34,918 | 28 | 12,501 | 61 | | 1,982 91 |
| War Tax Revenue, Transportation, etc..... | 6,132 | 23 | 16,695 | 87 | | 122 00 | | |
| War Tax Fine..... | | | | | | 750 00 | | |
| Casual Revenue..... | 1 | 40 | 7 | 00 | | 65 94 | | |
| Totals..... | 6,502 | 13 | 649,578 | 17 | 1,167,365 | 86 | 27,068 | 72 |
| <i>July—</i> | | | | | | | | |
| Excise..... | | | 544,214 | 13 | 1,221,299 | 57 | 23,754 | 90 |
| " Seizures..... | | | 100 | 00 | 240 | 20 | 150 | 00 |
| Ferries..... | | | 110 | 00 | | | | |
| Weights and Measures Inspection..... | | | 6,718 | 62 | 3,916 | 50 | 585 | 20 |
| " " Seizures..... | | | | | | | | |
| Gas Inspection..... | | | 2,788 | 95 | 975 | 90 | 38 | 40 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 2,279 | 25 | 1,973 | 55 | 124 | 80 |
| Law Stamps (Supreme Court)..... | | | | | | | | |
| " (Exchequer Court)..... | | | 490 | 00 | | | | |
| " (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | | | 26 | 00 | 19 | 00 | 1 | 00 |
| Fertilizers Fees..... | | | 2 | 00 | 3 | 00 | | |
| " " Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 9,101 | 77 | 5,205 | 04 | 101 | 09 |
| Commercial Feeding Stuffs..... | | | 2 | 00 | 16 | 00 | | |
| " " Fines..... | | | | | | | | |
| Adulteration of Food Fees..... | | | 309 | 40 | 111 | 00 | | |
| Electrical Standard of Laboratory..... | | | 16 | 00 | | | | |
| Electric Light Export Licenses..... | | | 100 | 00 | 25 | 00 | 25 | 00 |
| Testing Milk Glasses..... | | | | | | | | |
| War Tax Revenue Stamps..... | | | 33,672 | 92 | 10,576 | 09 | 2,265 | 54 |
| War Tax Revenue, Transportation, etc..... | 14,702 | 98 | 873 | 95 | 5,586 | 11 | 146 | 65 |
| War Tax Fine..... | | | 100 | 00 | 101 | 00 | | |
| Casual Revenue..... | | | 0 | 50 | | | | |
| Totals..... | 14,702 | 98 | 600,905 | 49 | 1,250,047 | 96 | 27,192 | 58 |
| <i>August—</i> | | | | | | | | |
| Excise..... | | | 625,251 | 14 | 1,331,287 | 22 | 23,203 | 62 |
| " Seizures..... | | | 50 | 00 | 75 | 00 | | |
| Ferries..... | | | 156 | 00 | | | | |
| Weights and Measures Inspection..... | | | 4,334 | 65 | 3,869 | 00 | 737 | 20 |
| " " Seizures..... | | | | | | | | |
| Gas Inspection..... | | | 2,684 | 65 | 868 | 75 | 48 | 60 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 2,699 | 45 | 1,470 | 15 | 118 | 50 |
| Law Stamps (Supreme Court)..... | | | | | | | | |
| " (Exchequer Court)..... | | | 645 | 90 | | | | |
| " (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | | | 24 | 00 | 11 | 00 | | |
| " " Fines..... | | | | | | 1 00 | | |
| Fertilizers Fees..... | | | 4 | 00 | | | | |
| " " Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 9,514 | 25 | 3,658 | 72 | 71 | 68 |
| Commercial Feeding Stuffs..... | | | 2 | 00 | | | | |

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on account of Inland Revenues, during the year ended March 31, 1917.—*Con.*

| Nova Scotia. | Prince Edward Island. | Manitoba. | Alberta. | Saskatchewan. | British Columbia | Yukon. | Totals. |
|--------------|-----------------------|-----------|-----------|---------------|------------------|----------|----------------------------------|
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | | | | | | 150 75 | 150 75 |
| 2 00 | | 3 00 | | | 1 00 | | 61 00 |
| 83 35 | | 37 50 | | | 82 85 | | 3 00 28 00 14,307 24 |
| 2 00 | | | 5 00 | 8 00 | 68 00 | | 8 00 318 00 |
| 2,323 01 | 244 59 | 7,532 68 | 4,326 33 | 3,099 82 | 5,893 74 | 74 75 | 28 43 368 50 72,897 72 |
| 99 60 | | | 49 85 | 3 00 | 6 00 | | 23,058 70 |
| | | | 25 00 | 50 00 | | | 849 85 99 34 |
| 19,418 89 | 2,429 11 | 78,636 98 | 47,202 55 | 33,792 16 | 68,243 15 | 900 03 | 2,094,137 75 |
| 11,587 01 | 1,862 64 | 41,518 00 | 19,829 36 | 31,048 60 | 73,815 56 | 1,217 97 | 1,970,147 74 490 20 110 00 |
| 437 45 | 33 00 | 863 45 | 363 45 | 2,823 00 | 273 05 | 1 55 | 16,015 27 10 00 |
| 68 80 | 8 25 | 214 30 | 120 60 | | 282 55 | | 12 00 4,497 75 |
| 114 30 | 63 45 | 197 85 | 79 20 | 223 20 | 1,269 45 | | 6,325 05 |
| 3 00 | | | 1 00 | 1 00 | | 264 30 | 490 00 264 30 51 00 |
| | | | | | 7 00 | | 12 00 |
| 153 31 | | 80 09 | | | 238 68 | | 14,879 98 18 00 |
| 2 00 | | | 50 00 | | 50 00 | | 422 40 16 00 250 00 |
| 1,978 57 | 194 93 | 7,700 59 | 3,925 68 | 3,853 53 | 5,206 79 | 102 42 | 69,477 06 |
| 226 94 | | 2,508 54 | 658 24 | | 4,045 90 | | 28,749 31 286 00 23 45 |
| | | 22 95 | 85 00 | | | | |
| 14,571 38 | 2,162 27 | 53,105 77 | 25,122 53 | 37,949 33 | 85,188 98 | 1,586 24 | 2,112,535 51 |
| 11,016 00 | 2,056 28 | 40,429 65 | 18,233 52 | 41,671 00 | 71,169 64 | 837 81 | 2,165,155 88 125 00 156 00 |
| 742 50 | 55 40 | 857 00 | 977 55 | 2,713 15 | 262 65 | 114 60 | 14,663 70 |
| 41 30 | 5 50 | 242 25 | 76 60 | | 257 70 | | 4,225 35 |
| 221 10 | 19 80 | 183 45 | 211 35 | 24 75 | 694 60 | | 5,643 15 |
| | | | | | | 337 35 | 645 90 337 35 38 00 |
| | | 1 00 | 1 00 | 1 00 | | | 1 00 4 00 |
| | | 39 89 | | | 201 49 | | 13,486 03 2 00 |

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General, on

| | General. | Ontario. | Quebec. | New Brunswick. |
|---|-----------|------------|--------------|----------------|
| | \$ ets. | \$ ets. | \$ ets. | \$ ets. |
| <i>August—</i> Con. | | | | |
| Commererial Feeding Stuffs Fines..... | | | | |
| Adulteration of Food Fees..... | | 215 25 | 24 00 | |
| Electrical Standard of Laboratory..... | | | | |
| Electric Light Export Licenses..... | | | | |
| Testing Milk Glasses..... | | | | |
| War Tax Revenue Stamps..... | | 30,989 36 | 9,892 49 | 1,979 54 |
| War Tax Revenue, Transportation, etc..... | 15,157 98 | 11,911 16 | 162,990 78 | 247 15 |
| War Tax Fine..... | | 50 00 | | |
| Casual Revenue..... | 101 47 | | | |
| Totals..... | 15,259 45 | 688,531 81 | 1,514,148 11 | 26,406 29 |
| <i>September—</i> | | | | |
| Excise..... | | 646,409 96 | 1,308,502 86 | 27,067 83 |
| “ Seizures..... | | | 443 58 | |
| Ferries..... | | 180 00 | | |
| Weights and Measures Inspection..... | | 3,883 38 | 3,553 55 | 576 29 |
| “ “ Seizures..... | | | | |
| Gas Inspection..... | | 2,460 95 | 951 30 | 50 40 |
| Gas Seizures..... | | | | |
| Electric Light Inspection..... | | 2,014 00 | 1,004 35 | 46 20 |
| Law Stamps (Supreme Court)..... | | | | |
| “ (Exchequer Court)..... | | 41 10 | | |
| “ (Yukon Territorial Court)..... | | | | |
| Patent Medicines Fees..... | 7 00 | 12 00 | 4 00 | |
| “ “ Fines..... | | | | |
| Fertilizers Fees..... | 4 6 00 | 2 00 | 2 00 | 24 00 |
| “ Fines..... | | | | |
| Methylated Spirits..... | | 9,561 88 | 3,424 11 | 76 16 |
| Commercial Feeding Stuffs..... | 5 00 | 2 00 | 5 00 | |
| “ Fines..... | | | | |
| Adulteration of Food Fees..... | | 117 10 | 205 00 | |
| Electrical Standard of Laboratory..... | | | | |
| Electric Light Export Licenses..... | | | | |
| Testing Milk Glasses..... | 172 35 | | | |
| War Tax Revenue Stamps..... | | 36,118 48 | 12,473 02 | 2,186 46 |
| War Tax Revenue, Transportation, etc..... | 4,942 00 | 760 50 | 5 00 | 187 30 |
| War Tax Fine..... | | | | |
| Casual Revenue..... | | 1 56 | | |
| Totals..... | 5,172 35 | 701,564 91 | 1,330,573 77 | 30,214 64 |
| <i>October—</i> | | | | |
| Excise..... | | 339,164 24 | 1,390,688 04 | 27,527 82 |
| “ Seizures..... | | 150 00 | 311 21 | 50 00 |
| Ferries..... | | 150 00 | | |
| Weights and Measures Inspection..... | | 5,013 67 | 2,828 05 | 340 11 |
| “ “ Seizures..... | | | | |
| Gas Inspection..... | | 2,663 70 | 940 50 | 52 60 |
| Gas Seizures..... | | | | |
| Electric Light Inspection..... | | 2,268 90 | 1,187 08 | 168 90 |
| Law Stamps (Supreme Court)..... | | 927 75 | | |
| “ (Exchequer Court)..... | | 223 50 | | |
| “ (Yukon Territorial Court)..... | | | | |
| Patent Medicines Fees..... | 3 00 | 5 00 | 8 00 | |
| “ “ Fines..... | | | | |
| Fertilizers Fees..... | 24 00 | | | |
| “ Fines..... | | | | |
| Methylated Spirits..... | | 8,947 94 | 3,728 83 | 78 29 |
| Commererial Feedings Stuffs..... | 11 00 | 4 00 | | |
| Adulteration of Food Fees..... | | 173 00 | 161 00 | |
| Electrical Standard of Laboratory..... | | | | |
| Electric Light Export Licenses..... | | | | |
| Testing Milk Glasses..... | | | | |
| War Tax Revenue Stamps..... | | 33,960 73 | 11,556 89 | 2,109 56 |
| War Tax Revenue, Transportation, etc..... | 9,472 36 | 1,326 20 | 7,103 00 | |

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account of Inland Revenues, during the year ended March 31, 1917—Continued.

| Nova Scotia. | Prince Edward Island. | Manitoba. | Alberta. | Saskatchewan. | British Columbia. | Yukon. | Totals. |
|--------------|-----------------------|-----------|-----------|---------------|-------------------|----------|--------------|
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | | 25 00 | | 60 00 | | | 324 25 |
| | | | | | 3 75 | | 3 75 |
| 2,547 81 | 226 16 | 6,373 14 | 3,620 22 | 3,690 80 | 6,261 56 | 119 63 | 65,700 71 |
| 1,742 86 | 24 50 | 756 30 | | 149 56 | 1,444 00 | 51 35 | 194,326 08 |
| | | | | | | | 199 56 |
| | | | | | | | 101 47 |
| 16,311 57 | 2,387 64 | 48,907 68 | 23,120 24 | 48,310 26 | 80 295 39 | 1,460 74 | 2,465,139 18 |
| 11,975 02 | 1,968 06 | 56,802 99 | 16,023 01 | 39,680 56 | 77,758 38 | 889 63 | 2,187,078 30 |
| | | | | | 50 00 | | 493 58 |
| 227 10 | 79 95 | 1,469 45 | 1,435 85 | 2,996 50 | 250 45 | | 180 00 |
| 46 90 | | 233 90 | 156 85 | | 253 50 | | 14,472 52 |
| 98 85 | | 185 05 | 312 60 | 90 00 | 676 70 | | 4,153 80 |
| | | | | | | | 4,427 75 |
| | | | | | | | 41 10 |
| | | | | 1 00 | | 365 25 | 365 25 |
| 2 00 | | | | | | | 24 00 |
| | | | | | | | 76 00 |
| | | | | | 116 13 | | 13 178 28 |
| | | | 5 00 | | | | 17 00 |
| 78 00 | 10 00 | 100 00 | | 2 00 | | | 512 10 |
| | | | | | | | |
| 2,124 99 | 189 22 | 5,186 80 | 3,847 33 | 3,461 94 | 4,656 60 | 91 33 | 172 35 |
| | | 34 30 | | 59 90 | | 41 05 | 70,336 17 |
| | | | | | | | 5,970 15 |
| | | | | | | | 59 90 |
| | | | | | | | 1 56 |
| 14,552 86 | 2,247 23 | 64,012 49 | 21,780 64 | 46,291 90 | 83,761 76 | 1,387 26 | 2,301,559 81 |
| 12,237 41 | 2,253 70 | 76,953 62 | 12,540 51 | 51,761 08 | 89,495 92 | 1,208 63 | 2,003,830 97 |
| | | | | | | | 511 21 |
| 553 30 | 88 30 | 2,115 20 | 1,098 45 | 2,304 70 | 400 30 | | 150 00 |
| 37 65 | 5 50 | 231 40 | 89 05 | | 230 35 | | 14,742 08 |
| 247 50 | 7 20 | 229 35 | 347 10 | 255 60 | 686 70 | | 4,250 75 |
| | | | | | | | 5,398 33 |
| | | | | | | | 927 75 |
| | | | | | | | 223 50 |
| | | 4 00 | | | 3 00 | 303 25 | 303 25 |
| | | 4 00 | | | | | 23 00 |
| 155 82 | | 114 36 | | | | | 28 00 |
| | | | | | | | 13,025 24 |
| | | 35 00 | 50 00 | | | | 15 00 |
| | | | | | | | 419 00 |
| 1,891 39 | 206 52 | 7,521 90 | 3,513 35 | 3,954 19 | 5,082 62 | 81 00 | 69,878 15 |
| 267 25 | | 5,072 40 | | 3 00 | 2,878 65 | | 26,122 86 |

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General, on

| | General. | | Ontario. | | Quebec. | | New Brunswick. | |
|---|----------|------|----------|------|-----------|------|----------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>October—Con.</i> | | | | | | | | |
| War Tax Fine..... | | | 770 | 00 | 800 | 00 | | |
| Casual Revenue..... | | | | | 10 | 94 | | |
| Totals..... | 9,510 | 36 | 395,748 | 63 | 1,419,323 | 54 | 30,327 | 28 |
| <i>November—</i> | | | | | | | | |
| Excise..... | | | 357,185 | 21 | 1,525,122 | 62 | 29,891 | 45 |
| “ Seizures..... | | | 195 | 00 | 180 | 80 | | |
| Ferries..... | | | | | | | | |
| Weights and Measures Inspection..... | | | 3,448 | 93 | 1,976 | 90 | 279 | 95 |
| “ “ Seizures..... | | | | | | | | |
| Gas Inspection..... | | | 2,397 | 95 | 1,052 | 40 | 71 | 20 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 2,765 | 70 | 1,757 | 80 | 121 | 65 |
| Law Stamps (Supreme Court)..... | | | 209 | 50 | | | | |
| “ (Exchequer Court)..... | | | 747 | 00 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | 6 | 00 | 14 | 00 | 1 | 00 | | |
| “ “ Fines..... | | | | | | | | |
| Fertilizers Fees..... | 26 | 00 | 19 | 00 | | | 4 | 00 |
| “ “ Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 10,836 | 95 | 4,767 | 61 | 110 | 83 |
| Commercial Feedings Stuffs..... | 10 | 00 | 84 | 00 | 20 | 00 | | |
| Adulteration of Food Fees..... | | | 349 | 50 | 276 | 00 | | |
| Electrical Standard of Laboratory..... | | | 9 | 25 | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | | | | | | | | |
| War Tax Revenue Stamps..... | | | 37,572 | 73 | 13,276 | 26 | 2,176 | 23 |
| War Tax Revenue, Transportation, etc..... | 21,544 | 22 | 34,294 | 87 | 238,092 | 14 | 38,258 | 08 |
| War Tax Fine..... | | | 150 | 00 | 400 | 00 | | |
| Casual Revenue..... | | | 3 | 10 | 2 | 00 | | |
| Totals..... | 21,586 | 22 | 450,282 | 19 | 1,786,955 | 53 | 70,913 | 39 |
| <i>December—</i> | | | | | | | | |
| Excise..... | | | 391,563 | 26 | 1,549,251 | 76 | 33,972 | 95 |
| “ Seizures..... | | | 225 | 00 | 476 | 70 | | |
| Ferries..... | | | 11 | 00 | | | | |
| Weights and Measures Inspection..... | | | 4,136 | 90 | 1,413 | 10 | 167 | 90 |
| “ “ Seizures..... | | | | | 5 | 00 | | |
| Gas Inspection..... | | | 2,673 | 15 | 1,125 | 95 | 84 | 80 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 2,971 | 50 | 1,716 | 25 | 132 | 75 |
| Law Stamps (Supreme Court)..... | | | 63 | 70 | | | | |
| “ (Exchequer Court)..... | | | 303 | 00 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | 1 | 00 | 2 | 00 | 1 | 00 | 1 | 00 |
| “ “ Fines..... | | | 25 | 00 | | | | |
| Fertilizers Fees..... | 59 | 00 | 70 | 00 | 17 | 00 | 17 | 00 |
| “ “ Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 8,558 | 25 | 4,293 | 28 | 101 | 79 |
| Commercial Feeding Stuffs..... | 34 | 00 | 40 | 00 | 10 | 00 | | |
| Adulteration of Food Fees..... | | | 98 | 75 | | | | |
| Electrical Standard of Laboratory..... | | | | | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | | | | | | | | |
| War Tax Revenue Stamps..... | | | 40,193 | 28 | 16,840 | 71 | 2,305 | 25 |
| War Tax Revenue, Transportation, etc..... | 7,686 | 90 | 29,315 | 30 | | | 213 | 30 |
| War Tax Fine..... | | | 52 | 00 | | | | |
| Casual Revenue..... | | | 2 | 60 | | | | |
| Totals..... | 7,780 | 90 | 480,304 | 49 | 1,575,150 | 75 | 36,996 | 74 |
| <i>January—</i> | | | | | | | | |
| Excise..... | | | 378,710 | 05 | 1,441,834 | 05 | 27,946 | 56 |
| “ Seizures..... | | | 170 | 00 | 520 | 10 | | |

SESSIONAL PAPER No. 12

account of Inland Revenues, during the year ended March 31, 1917—Continued.

| Nova Scotia. | Prince Edward Island. | Manitoba. | Alberta. | Saskatchewan. | British Columbia. | Yukon. | Totals. |
|--------------|-----------------------|------------|-----------|---------------|-------------------|----------|------------------------|
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | | | | 100 00 | | | 1,670 00 10 94 |
| 15,390 32 | 2,561 22 | 92,281 23 | 17,638 46 | 58,378 57 | 98,777 54 | 1,592 88 | 2,141,530 03 |
| 13,038 93 | 2,336 50 | 93,428 25 | 9,295 03 | 56,309 12 | 87,400 37 | 676 04 | 2,174,683 52 375 80 |
| 232 75 | 81 30 | 1,836 05 | 777 55 | 2,615 55 | 380 75 | 10 80 | 11,640 53 |
| 26 30 | 5 50 | 281 05 | 63 70 | | 269 90 | | 4,198 00 |
| 10 00 | | | | | | | 10 00 |
| 242 10 | 10 80 | 190 35 | 187 50 | 119 40 | 433 80 | | 5,829 10 |
| | | | | | | | 209 50 |
| | | | | | | | 747 00 |
| | | | | | 1 00 | | 22 00 |
| | | | 5 00 | | 5 00 | | 59 00 |
| 5 00 | | | | | | | 5 00 |
| 83 75 | | 39 89 | | | 118 06 | | 15,957 09 |
| | | 5 00 | 12 00 | 5 00 | 12 00 | | 148 00 |
| 48 00 | | 29 00 | 25 00 | | 5 00 | | 732 50 |
| | | | | | 4 50 | | 13 75 |
| | | | | | | | |
| 1,981 45 | 453 63 | 8,429 12 | 4,035 88 | 4,821 53 | 7,001 65 | 160 55 | 79,909 03 |
| 4,102 76 | 39 75 | 59 70 | 15 00 | | 1,133 96 | | 337,539 98 |
| | | | | 100 00 | | | 650 00 |
| | | | | | | | 5 10 |
| 19,771 04 | 2,927 48 | 104,298 41 | 14,416 66 | 63,970 60 | 96,765 99 | 847 39 | 2,632,734 90 |
| 20,088 91 | 2,248 72 | 132,750 29 | 13,382 06 | 59,643 71 | 97,800 33 | 190 47 | 2,300,892 46 |
| 50 00 | | | | | | | 751 70 |
| | | | | | | | 11 00 |
| 147 10 | 159 10 | 973 05 | 794 05 | 1,553 20 | 533 10 | | 9,877 50 |
| | | | | | | | 5 00 |
| 40 50 | 2 75 | 202 00 | 64 60 | | 231 60 | | 4,425 35 |
| | | | | | | | |
| 167 70 | 14 85 | 232 80 | 287 80 | 230 55 | 584 70 | | 6,338 90 |
| | | | | | | | 63 70 |
| | | | | | | | 303 00 |
| 2 00 | | | 1 00 | 1 00 | | 203 55 | 203 55 |
| | | | | | | | 9 00 |
| 20 00 | | | 5 00 | | 22 00 | | 25 00 |
| | | | | | | | 210 00 |
| 71 79 | | | | | | | |
| | | 5 00 | 10 00 | | 177 91 | | 13,203 02 |
| 20 00 | | 7 00 | 75 00 | | 15 00 | | 114 00 |
| | | | | | 5 00 | | 205 75 |
| | | | | | 1 25 | | 1 25 |
| | | | | | | | |
| 2,615 96 | 413 15 | 9,620 33 | 4,877 99 | 6,336 67 | 6,585 18 | 66 50 | 89,855 02 |
| 365 49 | | 4 30 | 35 65 | 15 00 | 1,422 45 | 48 10 | 39,106 49 |
| | | 150 00 | | 50 00 | | | 252 00 |
| | | | | | | | 2 60 |
| 23,589 45 | 2,838 57 | 143,944 77 | 19,533 15 | 67,830 13 | 107,378 52 | 508 62 | 2,465,856 29 |
| 13,918 24 | 1,726 24 | 113,154 90 | 10,047 83 | 15,917 39 | 102,326 57 | 225 91 | 2,105,807 74 |
| 120 00 | | | | | 250 00 | | 1,060 10 |

8 GEORGE V, A. 1918

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General, on

| | General. | | Ontario. | | Quebec. | | New Brunswick | |
|---|----------|------|----------|------|-----------|------|---------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>January—Con.</i> | | | | | | | | |
| Ferries..... | | | 110 | 00 | | | | |
| Weights and Measures Inspection..... | | | 4,981 | 07 | 1,329 | 05 | 78 | 85 |
| “ “ Seizures..... | | | | | | | | |
| Gas Inspection..... | | | 2,315 | 20 | 1,261 | 75 | 55 | 20 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 2,361 | 90 | 1,127 | 85 | 174 | 90 |
| “ “ Penalties..... | | | | | | | | |
| Law Stamps (Supreme Court)..... | | | 44 | 10 | | | | |
| “ (Exchequer Court)..... | | | 202 | 00 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | 25 | 00 | 31 | 00 | 15 | 00 | 1 | 00 |
| “ “ Fines..... | | | | | | | | |
| Fertilizers Fees..... | 83 | 00 | 35 | 00 | 5 | 00 | | |
| “ “ Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 8,120 | 17 | 6,949 | 51 | 39 | 55 |
| Commercial Feeding “ Stuffs..... | 12 | 00 | 49 | 00 | 4 | 00 | | |
| “ “ Fines..... | | | | | | | | |
| Adulteration of Food Fees..... | | | 70 | 00 | | | 6 | 00 |
| Electrical Standard of Laboratory..... | | | | | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | 109 | 95 | | | | | | |
| War Tax Revenue Stamps..... | | | 40,061 | 33 | 13,265 | 35 | 2,103 | 91 |
| War Tax Revenue, Transportation, etc..... | 18,937 | 72 | 974 | 22 | 6,343 | 93 | 49 | 10 |
| War Tax Fine..... | | | 206 | 00 | 100 | 00 | | |
| Casual Revenue..... | | | 1 | 07 | | | | |
| Totals..... | 19,167 | 67 | 438,442 | 11 | 1,472,755 | 59 | 30,455 | 07 |
| <i>February—</i> | | | | | | | | |
| Excise..... | | | 324,078 | 69 | 1,255,632 | 84 | 26,177 | 90 |
| “ Seizures..... | | | | | 1,445 | 04 | | |
| Ferries..... | | | 50 | 00 | | | | |
| Weights and Measures Inspection..... | | | 3,547 | 15 | 1,214 | 05 | 56 | 40 |
| “ “ Seizures..... | | | 20 | 00 | | | | |
| Gas Inspection..... | | | 2,557 | 20 | 1,106 | 50 | 61 | 40 |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 3,036 | 35 | 878 | 82 | 125 | 10 |
| “ “ Penalties..... | | | | | | | | |
| Law Stamps (Supreme Court)..... | | | 315 | 00 | | | | |
| “ (Exchequer Court)..... | | | 304 | 50 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | 55 | 00 | 117 | 00 | 54 | 00 | 4 | 00 |
| “ “ Fines..... | | | | | | | | |
| Fertilizers Fees..... | | | 9 | 00 | 2 | 00 | | |
| “ “ Fines..... | | | | | 3 | 00 | | |
| Methylated Spirits..... | | | 14,407 | 87 | 7,573 | 03 | 42 | 81 |
| Commercial Feedings Stuffs..... | 11 | 00 | 7 | 00 | | | | |
| “ “ Fines..... | | | | | | | | |
| Adulteration of Food Fees..... | 86 | 00 | 221 | 00 | | | | |
| Electrical Standard of Laboratory..... | | | | | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | | | | | | | | |
| War Tax Revenue Stamps..... | | | 36,820 | 73 | 10,732 | 86 | 1,918 | 44 |
| War Tax Revenue, Transportation, etc..... | 16,957 | 34 | 30,902 | 17 | 198,846 | 74 | 16,747 | 65 |
| War Tax Fine..... | | | 135 | 70 | 50 | 00 | | |
| Casual Revenue..... | 291 | 93 | | | | | 17 | 78 |
| Totals..... | 17,401 | 27 | 416,308 | 36 | 1,477,759 | 88 | 45,151 | 48 |
| <i>March—</i> | | | | | | | | |
| Excise..... | | | 408,486 | 04 | 1,411,505 | 50 | 34,998 | 84 |
| “ Seizures..... | | | 133 | 50 | 315 | 79 | | |
| Ferries..... | | | | | | | | |
| Weights and Measures Inspection..... | | | 7,205 | 50 | 2,033 | 45 | 114 | 75 |
| “ “ Seizures..... | | | | | | | | |
| Gas Inspection..... | | | 5,326 | 05 | 2,495 | 65 | 90 | 60 |

SESSIONAL PAPER No. 12

account of Inland Revenues, during the year ended March 31, 1917—Continued.

| Nova Scotia. | Prince Edward Island. | Manitoba. | Alberta. | Saskatchewan. | British Columbia. | Yukon. | Totals. |
|--------------|-----------------------|------------|-----------|---------------|-------------------|----------|--------------|
| \$ cts. | cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | | | | | | | 110 00 |
| 188 30 | 16 25 | 277 35 | 740 30 | 508 00 | 132 95 | | 8,252 12 |
| 37 50 | | 279 85 | 66 90 | | 302 25 | | 4,318 65 |
| 20 00 | | | | | | | 20 00 |
| 170 55 | 10 50 | 407 70 | 166 05 | 221 70 | 531 00 | | 5,172 15 |
| | | | | | | | 44 10 |
| | | | | | | | 202 00 |
| | | | | | | 236 75 | 236 75 |
| | | | | | 1 00 | | 75 00 |
| 2 00 | | | | | | | |
| 55 00 | 5 00 | 5 00 | | | 6 00 | | 194 00 |
| | | 38 75 | | | 39 16 | | 15,187 14 |
| | | | 10 00 | 5 00 | | | 80 00 |
| 2 00 | | 2 00 | | | 65 00 | | 145 00 |
| | | | | | 4 75 | | 4 75 |
| 2,388 38 | 314 67 | 8,008 74 | 4,669 31 | 4,341 06 | 7,658 83 | 60 30 | 109 95 |
| 94 76 | | 1,127 35 | | | 2,150 15 | | 82,871 88 |
| 50 00 | | | | | | | 29,677 23 |
| | | | | | | | 356 00 |
| | | | | | | | 1 07 |
| 17,046 73 | 2,072 66 | 123,301 64 | 15,700 39 | 20,993 15 | 113,467 66 | 522 96 | 2,253,925 63 |
| 7,371 72 | 1,866 28 | 95,491 91 | 5,708 28 | 9,091 72 | 74,459 83 | 565 58 | 1,800,444 75 |
| | | | | | | | 1,445 04 |
| 158 05 | 16 95 | 728 05 | 1,037 05 | 652 45 | 261 50 | | 50 00 |
| 31 90 | | 230 60 | 63 70 | | 289 60 | | 7,671 65 |
| 249 75 | 6 60 | 347 70 | 156 75 | 106 40 | 707 40 | | 20 00 |
| | | | | | | | 4,340 90 |
| | | | | | | | 5,614 87 |
| | | | | | | | 315 00 |
| | | | | | | | 304 50 |
| | | | | | | 193 75 | 193 75 |
| 7 00 | 1 00 | 4 00 | 3 00 | 3 00 | 13 00 | | 261 00 |
| | | | | | | | 20 00 |
| | | | | | | | 18 00 |
| 37 01 | | 177 84 | | | 120 38 | | 22,358 94 |
| | | | | | | | 18 00 |
| | 200 00 | | | 83 00 | 110 00 | | 700 00 |
| | | | | | 20 50 | | 20 50 |
| 2,036 83 | 404 98 | 6,975 60 | 3,289 31 | 3,565 93 | 5,416 13 | 64 00 | 71,224 81 |
| 2,079 85 | 52 00 | | 41 00 | 17 00 | 1,002 85 | | 266,646 60 |
| | | | | | | | 185 70 |
| | | | | | | | 309 71 |
| 11,972 11 | 2,547 81 | 103,955 70 | 10,299 09 | 13,519 50 | 82,425 19 | 823 33 | 2,182,163 72 |
| 9,829 75 | 2,403 28 | 116,011 28 | 11,135 18 | 14,812 04 | 111,231 84 | 1,086 77 | 2,121,500 52 |
| | | 200 00 | | | | | 649 29 |
| 90 10 | 51 35 | 1,318 85 | 697 65 | 520 10 | 371 65 | | 12,403 40 |
| 78 00 | | 458 35 | 156 30 | | 489 55 | | 9,094 50 |

No. 13.—AMOUNTS deposited monthly to the credit of the Receiver General, on

| | General. | | Ontario. | | Quebec. | | New Brunswick. | |
|---|----------|------|----------|------|-----------|------|----------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>March—Con.</i> | | | | | | | | |
| Gas Seizures..... | | | | | | | | |
| Electric Light Inspection..... | | | 5,879 | 00 | 3,006 | 70 | 547 | 80 |
| “ Penalties..... | | | | | | | | |
| Law Stamps (Supreme Court)..... | | | 275 | 00 | | | | |
| “ (Exchequer Court)..... | | | 1,393 | 00 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | | |
| Patent Medicines Fees..... | 189 | 00 | 275 | 00 | 98 | 00 | 9 | 00 |
| “ Fines..... | | | | | | | | |
| Fertilizers Fees..... | 20 | 00 | 24 | 00 | 2 | 00 | | |
| “ Fines..... | | | | | | | | |
| Methylated Spirits..... | | | 14,938 | 79 | 10,621 | 94 | 198 | 36 |
| Commercial Feeding Stuffs..... | 5 | 00 | 10 | 00 | 10 | 00 | | |
| “ Fines..... | | | | | | | | |
| Adulteration of Food Fees..... | 67 | 00 | 262 | 00 | 287 | 00 | | |
| Electrical Standard of Laboratory..... | | | 5 | 50 | | | | |
| Electric Light Export Licenses..... | | | | | | | | |
| Testing Milk Glasses..... | 363 | 05 | | | | | | |
| War Tax Revenue Stamps..... | | | 49,665 | 82 | 15,893 | 87 | 2,993 | 31 |
| War Tax Revenue, Transportation, etc..... | 10,003 | 29 | 7,759 | 23 | 15,398 | 32 | 48 | 75 |
| War Tax Fine..... | | | 792 | 70 | 425 | 00 | | |
| Casual Revenue..... | | | 0 | 50 | | | | |
| Totals..... | 10,647 | 34 | 502,431 | 13 | 1,462,093 | 22 | 39,001 | 41 |

RECAPITULATION of Statement No. 13 showing

| | | | | | | | |
|---|---------|-----------|-----------|------------|------------|---------|---------|
| Excise..... | | 5,646,801 | 42 | 15,743,879 | 17 | 325,050 | 12 |
| “ Seizures..... | | 1,402 | 50 | 6,029 | 16 | 200 | 00 |
| Ferries..... | | | 974 | 00 | | | |
| Weights and Measures Inspection..... | | 51,071 | 50 | 27,545 | 70 | 3,492 | 40 |
| “ Seizures..... | | | 20 | 00 | 5 | 00 | |
| Gas Inspection..... | | 31,523 | 05 | 14,337 | 90 | 645 | 60 |
| Gas Seizures..... | | | 60 | 00 | | | |
| Electric Light Inspection..... | | 31,709 | 35 | 18,857 | 10 | 1,848 | 15 |
| “ Penalties..... | | | | | | | |
| Law Stamps (Supreme Court)..... | | 2,439 | 85 | | | | |
| “ (Exchequer Court)..... | | 5,205 | 00 | | | | |
| “ (Yukon Territorial Court)..... | | | | | | | |
| Patent Medicines Fees..... | 286 | 00 | 677 | 00 | 283 | 00 | 24 |
| “ Fines..... | | | 25 | 00 | 1 | 00 | |
| Fertilizers Fees..... | 258 | 00 | 184 | 00 | 37 | 00 | 45 |
| “ Fines..... | | | 33 | 00 | 23 | 00 | |
| Methylated Spirits..... | | 116,874 | 49 | 62,335 | 23 | 1,009 | 07 |
| Commercial Feeding Stuffs..... | 88 | 00 | 288 | 00 | 65 | 00 | |
| “ Fines..... | | | | | | | |
| Adulteration of Food Fees..... | 153 | 00 | 2,086 | 25 | 1,354 | 90 | 11 |
| Electrical Standard of Laboratory..... | | | 56 | 68 | | | |
| Electric Light Export Licenses..... | | | 100 | 00 | 25 | 00 | 25 |
| Testing Milk Glasses..... | 1,394 | 75 | | | | | |
| War Tax Revenue Stamps..... | | 437,517 | 76 | 147,258 | 53 | 25,471 | 61 |
| War Tax Revenue, Transportation, etc..... | 148,198 | 58 | 152,322 | 52 | 772,161 | 73 | 56,128 |
| War Tax Fine..... | | 2,308 | 50 | 2,626 | 00 | | |
| Casual Revenue..... | 394 | 80 | 30 | 33 | 78 | 88 | 17 |
| Totals..... | 150,773 | 13 | 6,483,707 | 20 | 16,796,903 | 30 | 413,967 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

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account of Inland Revenues, during the year ended March 31, 1917—*Concluded.*

| Nova Scotia. | Prince Edward Island. | Manitoba. | Alberta. | Saskatchewan. | British Columbia. | Yukon. | Totals. |
|--------------|-----------------------|------------|-----------|---------------|-------------------|----------|--------------|
| cts. | cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 395 85 | 53 10 | 528 60 | 674 55 | 538 20 | 1,137 55 | | 12,761 35 |
| | | | | | | | 275 00 |
| | | | | | | | 1,393 00 |
| 13 00 | | 15 00 | 5 00 | 7 00 | 13 00 | 98 20 | 98 20 |
| 5 00 | | | | | 14 00 | | 624 00 |
| | | 1,039 61 | | | 122 10 | | 65 00 |
| 7 00 | | | | | 25 00 | | 26,920 80 |
| | | | 7 65 | | | | 25 00 |
| | | | | | | | 648 00 |
| 3,575 91 | 480 57 | 10,350 45 | 5,781 49 | 4,237 52 | 8,488 69 | 84 80 | 13 15 |
| | | | 3 00 | | 23 63 | | 363 05 |
| | | | 50 00 | | | | 101,552 43 |
| | | | | | | | 33,236 22 |
| | | | | | | | 1,267 70 |
| | | | | | | | 0 50 |
| 13,994 61 | 2,988 30 | 129,922 14 | 18,510 82 | 20,114 86 | 121,917 01 | 1,269 77 | 2,322,891 11 |

the Total Revenues for the Year ended March 31, 1917.

| | | | | | | | |
|------------|-----------|--------------|------------|------------|--------------|-----------|---------------|
| 167,799 70 | 24,734 32 | 1,013,171 44 | 239,377 93 | 392,880 78 | 953,110 41 | 8,537 51 | 24,515,342 80 |
| 170 00 | | 200 00 | | | 351 00 | | 8,352 66 |
| 3,294 90 | 621 30 | 12,229 05 | 8,507 25 | 19,865 40 | 3,425 35 | 143 00 | 974 00 |
| | | | 10 00 | | | | 130,195 85 |
| 513 60 | 39 50 | 2,780 55 | 997 90 | | 3,229 25 | | 35 00 |
| 30 00 | | | | | | | 54,067 35 |
| 2,053 65 | 198 00 | 2,887 90 | 2,812 60 | 2,019 80 | 8,729 05 | | 90 00 |
| | | | | | | | 71,115 60 |
| | | | | | | | 2,436 85 |
| | | | | | | | 5,205 00 |
| 31 00 | 3 00 | 36 00 | 15 00 | 21 00 | 42 00 | 2,268 25 | 2,268 25 |
| | | | | | | | 1,418 00 |
| 86 00 | 5 00 | 9 00 | 10 00 | | 64 00 | | 26 00 |
| 5 00 | | | | | 45 00 | | 698 00 |
| 704 80 | | 1,567 93 | | | 1,216 76 | | 106 00 |
| | | 10 00 | 37 00 | 10 00 | 27 00 | | 183,708 28 |
| | | | | | | | 525 00 |
| 159 00 | 210 00 | 198 00 | 155 00 | 153 00 | 313 00 | | 4,793 15 |
| | | | 7 65 | | 37 25 | | 101 58 |
| | | | 50 00 | | 50 00 | | 250 00 |
| | | | | | | | 1,394 75 |
| 26,579 13 | 3,462 28 | 91,838 20 | 48,694 92 | 47,235 87 | 71,115 43 | 944 28 | 900,118 01 |
| 10,118 57 | 116 25 | 10,642 89 | 775 89 | 47 00 | 15,787 54 | 140 50 | 1,166,439 60 |
| 50 00 | | 150 00 | 189 85 | 509 46 | 50 00 | | 5,883 81 |
| | | 22 95 | 25 00 | | 2 55 | | 572 29 |
| 211,595 35 | 29,389 65 | 1,135,743 91 | 301,665 99 | 462,742 31 | 1,057,595 59 | 12,033 54 | 27,056,117 83 |

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

EXCISE

No. 14.—COMPARATIVE Statement

| — | | April. | May. | June. | July. | August. |
|---------------------------|---------------|--------------|--------------|--------------|--------------|--------------|
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Spirits..... | {1915-16 | 535,048 79 | 564,066 96 | 561,672 59 | 523,961 29 | 588,209 50 |
| | {1916-17 | 773,720 59 | 839,806 95 | 720,277 47 | 632,892 89 | 819,063 65 |
| | Increase..... | 238,671 80 | 275,739 99 | 158,604 88 | 108,931 60 | 230,854 15 |
| | Decrease..... | | | | | |
| Malt Liquor..... | {1915-16 | 13,545 95 | 9,252 70 | 9,338 90 | 7,427 15 | 10,639 80 |
| | {1916-17 | 9,745 15 | 8,901 40 | 9,977 25 | 10,319 35 | 11,430 65 |
| | Increase..... | | | 638 35 | 2,892 20 | 790 85 |
| | Decrease..... | 3,800 80 | 351 30 | | | |
| Malt..... | {1915-16 | 276,846 38 | 270,832 14 | 276,498 72 | 218,242 79 | 227,187 03 |
| | {1916-17 | 221,535 78 | 272,515 29 | 258,381 60 | 245,147 80 | 290,597 43 |
| | Increase..... | | 1,683 15 | | 26,905 01 | 63,410 40 |
| | Decrease..... | 55,310 60 | | 18,117 12 | | |
| Tobacco..... | {1915-16 | 739,502 08 | 866,222 37 | 901,712 73 | 914,467 30 | 873,903 94 |
| | {1916-17 | 860,613 58 | 885,428 86 | 901,503 69 | 964,182 24 | 1,061,603 92 |
| | Increase..... | 121,111 50 | 19,206 49 | | 49,714 94 | 187,699 98 |
| | Decrease..... | | | 209 04 | | |
| Cigars..... | {1915-16 | 49,537 05 | 48,300 62 | 51,967 67 | 54,693 72 | 55,341 18 |
| | {1916-17 | 54,678 52 | 57,062 95 | 62,253 62 | 60,752 30 | 66,803 98 |
| | Increase..... | 5,141 47 | 8,762 33 | 10,285 95 | 6,058 58 | 11,462 80 |
| | Decrease..... | | | | | |
| Manufactures in Bond..... | {1915-16 | 10,749 16 | 6,781 38 | 7,229 36 | 9,391 15 | 11,779 09 |
| | {1916-17 | 11,133 55 | 11,429 06 | 11,225 42 | 7,966 78 | 13,308 04 |
| | Increase..... | 384 39 | 4,647 68 | 3,996 06 | | 1,528 95 |
| | Decrease..... | | | | 1,424 37 | |
| Acetic Acid..... | {1915-16 | 281 24 | 386 58 | 453 04 | 1,013 59 | 969 61 |
| | {1916-17 | 846 78 | 1,315 55 | | 1,316 41 | 1,095 35 |
| | Increase..... | 565 54 | 928 97 | | 302 82 | 125 74 |
| | Decrease..... | | | 453 04 | | |
| Seizures..... | {1915-16 | 296 92 | 475 00 | 506 50 | 737 70 | 790 06 |
| | {1916-17 | 1,371 87 | 716 02 | 440 10 | 382 95 | 205 00 |
| | Increase..... | 1,074 95 | 241 02 | | | |
| | Decrease..... | | | 66 40 | 354 75 | 535 06 |
| Other Receipts..... | {1915-16 | 17,026 45 | 4,475 87 | 6,407 24 | 5,601 00 | 2,561 86 |
| | {1916-17 | 18,700 72 | 6,392 31 | 6,220 72 | 3,391 98 | 11,242 55 |
| | Increase..... | 1,674 27 | 1,916 44 | | | 8,680 69 |
| | Decrease..... | | | 186 52 | 2,209 02 | |
| Total Revenue..... | {1915-16 | 1,642,834 02 | 1,770,793 62 | 1,815,786 75 | 1,735,535 69 | 1,771,382 07 |
| | {1916-17 | 1,952,346 54 | 2,083,568 39 | 1,970,279 87 | 1,926,352 70 | 2,275,350 57 |
| Total Increase..... | | 309,512 52 | 312,774 77 | 154,493 12 | 190,817 01 | 503,968 50 |
| “ Decrease..... | | | | | | |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

REVENUES.

of Receipts for 1915-16 and 1916-17.

| September. | October. | November. | December. | January. | February. | March. | April. |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 684,848 63 | 732,593 24 | 906,863 89 | 1,139,217 67 | 745,409 07 | 793,896 43 | 925,286 62 | 8,701,074 63 |
| 848,287 62 | 822,347 00 | 920,603 93 | 1,161,752 39 | 947,304 73 | 695,981 40 | 698,527 73 | 9,880,566 55 |
| 163,438 99 | 89,753 76 | 13,740 04 | 22,534 92 | 201,895 66 | | | 1,179,491 87 |
| | | | | | 97,915 03 | 226,758 89 | |
| 8,503 80 | 10,725 15 | 6,608 25 | 6,731 60 | 4,316 85 | 4,640 70 | 6,048 60 | 97,779 45 |
| 11,641 35 | 12,587 55 | 7,426 05 | 7,822 20 | 4,040 55 | 5,280 30 | 10,043 55 | 109,215 35 |
| 3,137 55 | 1,862 40 | 817 80 | 1,090 60 | | 639 60 | 3,994 95 | 11,435 90 |
| | | | | 276 30 | | | |
| 220,619 66 | 177,784 38 | 193,004 67 | 185,989 06 | 206,073 39 | 203,606 76 | 232,614 65 | 2,689,299 63 |
| 197,782 08 | 154,767 69 | 152,112 21 | 136,112 07 | 147,689 34 | 133,735 68 | 157,525 41 | 2,367,902 38 |
| 22,837 58 | 23,016 69 | 40,892 46 | 49,876 99 | 58,384 05 | 69,871 08 | 75,089 24 | 321,397 25 |
| 868,028 46 | 822,744 37 | 929,411 97 | 863,877 97 | 734,615 64 | 816,494 49 | 891,802 46 | 10,222,783 78 |
| 982,648 53 | 943,276 44 | 1,026,293 46 | 878,911 34 | 906,303 13 | 916,398 87 | 869,938 46 | 11,197,102 52 |
| 114,620 07 | 120,532 07 | 96,881 49 | 15,033 37 | 171,687 49 | 99,904 38 | | 974,318 74 |
| | | | | | | 21,864 00 | |
| 57,867 52 | 57,080 45 | 63,220 29 | 58,251 86 | 42,706 33 | 46,627 37 | 49,563 77 | 635,157 83 |
| 62,461 36 | 66,626 62 | 71,332 35 | 62,857 15 | 48,836 55 | 53,434 50 | 63,115 36 | 730,215 26 |
| 4,593 84 | 9,546 17 | 8,112 06 | 4,605 29 | 6,130 22 | 6,807 13 | 13,551 59 | 95,057 43 |
| 14,764 04 | 12,001 83 | 9,723 45 | 4,241 29 | 6,748 21 | 5,621 10 | 6,782 18 | 105,812 24 |
| 15,642 83 | 11,718 04 | 7,418 86 | 4,917 93 | 2,065 54 | 5,292 78 | 8,289 96 | 110,403 79 |
| 878 79 | | | 676 64 | | | 1,507 78 | 4,596 55 |
| | 283 79 | 2,304 59 | | 4,682 67 | 328 32 | | |
| 1,254 41 | 1,153 83 | 721 47 | 921 22 | | 352 07 | 743 08 | 8,250 14 |
| 741 27 | 515 11 | 1,127 85 | 354 25 | 184 47 | | 552 35 | 8,049 39 |
| | | 406 38 | | 184 47 | | | |
| 513 14 | 638 72 | | 566 97 | | 352 07 | 190 73 | 200 75 |
| 1,272 14 | 550 00 | 1,439 70 | 1,130 20 | 1,061 15 | 1,093 17 | 996 85 | 10,349 39 |
| 468 58 | 646 21 | 365 80 | 971 80 | 704 20 | 1,570 84 | 509 29 | 8,352 66 |
| | 96 21 | | | | 477 67 | | |
| 803 56 | | 1,073 90 | 158 40 | 356 95 | | 487 56 | 1,996 73 |
| 2,944 05 | 4,186 11 | 5,616 39 | 6,353 42 | 5,814 73 | 10,317 47 | 8,944 35 | 80,248 94 |
| 4,338 38 | 11,168 22 | 7,402 92 | 13,729 71 | 6,206 14 | 14,131 14 | 10,632 91 | 113,548 70 |
| 1,394 33 | 6,982 11 | 1,786 53 | 7,367 29 | 391 41 | 3,813 67 | 1,688 56 | 33,299 76 |
| 1,860,102 71 | 1,818,819 36 | 2,116,610 08 | 2,266,714 29 | 1,746,745 37 | 1,882,649 56 | 2,122,782 56 | 22,550,756 08 |
| 2,124,012 00 | 2,023,652 88 | 2,194,083 43 | 2,267,420 04 | 2,063,334 65 | 1,825,825 51 | 1,819,135 02 | 24,525,361 60 |
| 263,909 29 | 204,833 52 | 77,473 35 | 705 75 | 316,589 28 | | | 2,335,077 11 |
| | | | | | 56,824 05 | 303,647 54 | 360,471 59 |

J. U. VINCENT,
Deputy Minister.

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917.

EXCISE.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|--|----------|---------------------|--------------------------------|-----------|---------|
| | | | | \$ cts. | \$ cts. |
| <i>Spirits.</i> | | | | | |
| Can. Bank of Commerce for | 1916. | | | | |
| A. L. Howard..... | May 27 | Sherbrooke..... | R.S., Cap. 51, Sec. 254.. | 18,033 01 | |
| N. C. Polson & Co..... | June 13 | Kingston..... | " 51 " 254.. | 68 47 | |
| Parke, Davis & Co..... | " 13 | Windsor..... | " 51 " 254.. | 256 25 | |
| N. C. Polson & Co..... | " 29 | Kingston..... | " 51 " 254.. | 124 59 | |
| "..... | July 27 | "..... | " 51 " 254.. | 166 75 | |
| Parke, Davis & Co..... | " 27 | Windsor..... | " 51 " 254.. | 97 49 | |
| "..... | Aug. 21 | "..... | " 51 " 254.. | 541 39 | |
| N. C. Polson..... | Sept. 23 | Kingston..... | " 51 " 254.. | 52 05 | |
| Parke, Davis & Co..... | Oct. 5 | Walkerville..... | " 51 " 254.. | 201 49 | |
| J. S. Hamilton & Co..... | " 13 | Brantford..... | " 51 " 254.. | 144 00 | |
| J. J. Heney..... | " 17 | Prescott..... | " 51 " 254.. | 9,874 31 | |
| Parke, Davis & Co..... | Nov. 2 | Walkerville..... | " 51 " 254.. | 649 01 | |
| N. C. Polson & Co..... | " 15 | Kingston..... | " 51 " 254.. | 154 30 | |
| "..... | Dec. 20 | "..... | " 51 " 254.. | 60 00 | |
| Parke, Davis & Co..... | " 27 | Walkerville..... | " 51 " 254.. | 76 56 | |
| 1917. | | | | | |
| J. S. Hamilton Co..... | Jan. 18 | Brantford..... | " 51 " 254.. | 76 80 | |
| N. C. Polson & Co..... | " 25 | Kingston..... | " 51 " 254.. | 200 08 | |
| Parke, Davis & Co..... | " 25 | Walkerville..... | " 51 " 254.. | 1,170 32 | |
| J. S. Hamilton & Co..... | Mar. 3 | Brantford..... | " 51 " 254.. | 46 80 | |
| N. C. Polson & Co..... | " 20 | Kingston..... | " 51 " 254.. | 212 44 | |
| Parke, Davis & Co..... | " 20 | Walkerville..... | " 51 " 254.. | 302 06 | |
| N. C. Polson & Co..... | May 4 | Kingston..... | " 51 " 254.. | 221 06 | |
| Hiram Walker & Son, Ltd..... | " 5 | Walkerville..... | " 51 " 254.. | 80 98 | |
| N. C. Polson & Co..... | " 22 | Kingston..... | " 51 " 254.. | 94 81 | |
| Parke, Davis & Co..... | " 22 | Walkerville..... | " 51 " 254.. | 206 42 | |
| 33,111 44 | | | | | |
| <i>Malt.</i> | | | | | |
| Thos. F. White..... | May 20 | St. Catharines..... | R.S., Cap. 51, Sec. 254.. | 691 40 | |
| Taylor & Bate..... | " 20 | "..... | " 51 " 254.. | 1,314 00 | |
| Crambrook Brewing Co..... | " 20 | Vancouver..... | " 51 " 254.. | 37 50 | |
| Fernie Foot Steele Brewing Co..... | " 20 | "..... | " 51 " 254.. | 787 25 | |
| Frank Hartinger..... | " 20 | "..... | " 51 " 254.. | 9 00 | |
| The Imperial Brewing Co..... | " 20 | "..... | " 51 " 254.. | 135 14 | |
| The Elk Valley Brewing Co..... | " 20 | "..... | " 51 " 254.. | 287 25 | |
| The Nelson Brewing Co..... | " 20 | "..... | " 51 " 254.. | 249 00 | |
| Nels Nelson..... | " 20 | "..... | " 51 " 254.. | 435 00 | |
| The Phoenix Brewing Co..... | " 20 | "..... | " 51 " 254.. | 180 22 | |
| The Nelson Brewing Co..... | " 20 | "..... | " 51 " 254.. | 42 00 | |
| The Enterprise Brewing Co..... | " 20 | "..... | " 51 " 254.. | 113 26 | |
| The Le Roe Brewing Co., Ltd..... | " 20 | "..... | " 51 " 254.. | 176 17 | |
| August Mueller..... | " 20 | "..... | " 51 " 254.. | 300 00 | |
| The Canada B. & W. Co., Ltd..... | " 20 | "..... | " 51 " 254.. | 2,886 31 | |
| The Union Brewing Co., Ltd..... | " 20 | Victoria..... | " 51 " 254.. | 435 00 | |
| Silver Spring Brewing, Ltd..... | " 20 | "..... | " 51 " 254.. | 1,020 00 | |
| Victoria Phoenix Brewing Co., Ltd..... | " 20 | "..... | " 51 " 254.. | 1,500 00 | |
| Blairmore B. M. Co..... | " 22 | Calgary..... | " 51 " 254.. | 18 37 | |
| National Breweries Co., Reg. No. 7..... | " 23 | Montreal..... | " 51 " 254.. | 351 00 | |
| Hoeschen Wentzler Brewing Co., Reg. No. 3..... | " 23 | Moosejaw..... | " 51 " 254.. | 54 00 | |
| Canada B. & M., Co., Ltd..... | " 23 | Vancouver..... | " 51 " 254.. | 168 00 | |
| H. Corby Distilleries Co., Ltd..... | June 9 | Montreal..... | " 51 " 254.. | 9,020 11 | |
| E. L. Drewry, Ltd..... | " 9 | Winnipeg..... | " 51 " 254.. | 216 00 | |
| Westminster Brewery, Ltd..... | " 15 | Vancouver..... | " 51 " 254.. | 105 78 | |
| Canada B. & M. Co., Ltd..... | " 15 | "..... | " 51 " 254.. | 1,176 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 27 | Montreal..... | " 51 " 254.. | 351 00 | |
| H. Corby Distillery Co., Ltd..... | " 27 | "..... | " 51 " 254.. | 6,714 46 | |

SESSIONAL PAPER No. 12

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|---|----------|----------------------|--------------------------------|-----------|---------|
| | | | | \$ cts. | \$ cts. |
| <i>Malt—Continued.</i> | | | | | |
| | 1916. | | | | |
| The National Breweries, Ltd., Reg. No. 3..... | July 21 | Montreal..... | R.S., Cap. 51, Sec. 254.. | 360 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 21 | "..... | " 51 " 254.. | 468 00 | |
| Westminster Brewery, Ltd..... | " 21 | Vancouver..... | " 51 " 254.. | 108 00 | |
| Canada B. & M. Co., Ltd..... | " 21 | "..... | " 51 " 254.. | 1,512 00 | |
| The Victoria Phoenix Brewing Co., Ltd..... | " 21 | Victoria..... | " 51 " 254.. | 324 00 | |
| Veronica Schwan..... | " 25 | "..... | " 51 " 254.. | 124 50 | |
| Heisz & Fiede..... | " 25 | "..... | " 51 " 254.. | 234 00 | |
| J. C. Huether..... | " 25 | Owen Sound..... | " 51 " 254.. | 293 64 | |
| Estate late C. Eaton..... | " 25 | "..... | " 51 " 254.. | 102 65 | |
| John Arscott..... | " 25 | "..... | " 51 " 254.. | 102 60 | |
| Bowie & Co's Brewery, Ltd..... | " 25 | Prescott..... | " 51 " 254.. | 180 00 | |
| H. Corby Distillery Co., Ltd. National Breweries, Ltd., Reg. No. 7..... | " 27 | "..... | " 51 " 254.. | 6,676 95 | |
| Frontenac Breweries, Ltd., Reg. No. 10..... | Aug. 5 | Montreal..... | " 51 " 254.. | 61 98 | |
| Vancouver, Pickle & Co..... | " 8 | "..... | " 51 " 254.. | 804 00 | |
| Westminster Brewery, Ltd..... | " 15 | Vancouver..... | " 51 " 254.. | 18 00 | |
| H. Corby Distillery Co., Ltd. Canadian B. & M. Co., Ltd..... | " 17 | New Westminster..... | " 51 " 254.. | 108 00 | |
| J. P. Wisser & Sons, Ltd..... | " 17 | Thurlow..... | " 51 " 254.. | 12,567 93 | |
| National Breweries, Ltd..... | " 21 | Vancouver..... | " 51 " 254.. | 1,767 42 | |
| D. Keith & Son..... | " 21 | Prescott..... | " 51 " 254.. | 6,754 11 | |
| Wilson, Lytle, Badgeron Co., Ltd..... | " 21 | Montreal..... | " 51 " 254.. | 468 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 24 | Halifax..... | " 51 " 254.. | 436 86 | |
| Westminster Brewery, Ltd..... | Sept. 22 | Toronto..... | " 51 " 254.. | 1,392 84 | |
| The Canadian B. & M. Co., Ltd..... | " 22 | Montreal..... | " 51 " 254.. | 585 00 | |
| H. Corby Distillery Co., Ltd. Joseph Hamilton..... | " 22 | New Westminster..... | " 51 " 254.. | 108 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 22 | Vancouver..... | " 51 " 254.. | 1,699 41 | |
| H. Corby Distillery Co., Ltd. The Empire Brewing Co., Ltd. Frontenac Breweries, Ltd., Reg. No. 10..... | Oct. 5 | Thurlow..... | " 51 " 254.. | 4,973 25 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 6 | London..... | " 51 " 254.. | 26 33 | |
| E. L. Drewry, Ltd..... | " 6 | Toronto..... | " 51 " 254.. | 5 40 | |
| B. C. Breweries, Ltd..... | " 12 | Montreal..... | " 51 " 254.. | 174 57 | |
| Vancouver Pickle Co..... | " 12 | Thurlow..... | " 51 " 254.. | 3,979 34 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 12 | "..... | " 51 " 254.. | 9 36 | |
| Frontenac Breweries..... | " 13 | Brandon..... | " 51 " 254.. | 90 00 | |
| National Breweries, Ltd., Reg. No. 7..... | Oct. 17 | Montreal..... | " 51 " 254.. | 402 00 | |
| E. L. Drewry, Ltd..... | " 17 | "..... | " 51 " 254.. | 468 00 | |
| B. C. Breweries, Ltd..... | " 17 | Winnipeg..... | " 51 " 254.. | 387 00 | |
| Vancouver Pickle Co..... | " 17 | Vancouver..... | " 51 " 254.. | 1,776 72 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 18 | "..... | " 51 " 254.. | 169 50 | |
| Frontenac Breweries..... | Nov. 19 | Montreal..... | " 51 " 254.. | 540 00 | |
| National Breweries, Ltd., Reg. No. 7..... | " 2 | "..... | " 51 " 254.. | 22 98 | |
| E. L. Drewry..... | " 11 | Winnipeg..... | " 51 " 254.. | 122 25 | |
| Westminster Brewery, Ltd..... | " 11 | New Westminster..... | " 51 " 254.. | 213 00 | |
| The Victoria Phoenix Brewing Co., Ltd..... | " 11 | Victoria..... | " 51 " 254.. | 108 00 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 11 | "..... | " 51 " 254.. | 432 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 14 | Montreal..... | " 51 " 254.. | 90 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 14 | "..... | " 51 " 254.. | 468 00 | |

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|---|----------|----------------------|--------------------------------|-----------|---------|
| | | | | \$ cts. | \$ cts. |
| <i>Malt—Continued.</i> | | | | | |
| | 1916. | | | | |
| British Columbia Breweries, Ltd. | Nov. 14 | Vancouver..... | R.S., Cap. 51, Sec. 254. | 2,100 00 | |
| A. Keith & Son..... | " 15 | Halifax..... | " 51 " 254. | 282 45 | |
| Geo. Cloos..... | " 17 | St. Thomas..... | " 51 " 254. | 207 69 | |
| A. Keith & Son..... | " 27 | Halifax..... | " 51 " 254. | 1,911 30 | |
| Wilson, Lytle, Badgeron Co., Ltd. | Dec. 18 | Toronto..... | " 51 " 254. | 1,430 40 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 20 | Montreal..... | " 51 " 254. | 351 00 | |
| The Frontenac Breweries, Ltd., Reg. No. 10..... | " 20 | "..... | " 51 " 254. | 402 00 | |
| Westminster Brewery, Ltd..... | " 20 | New Westminster..... | " 51 " 254. | 54 00 | |
| Canadian B. & M. Co., Ltd..... | " 20 | Vancouver..... | " 51 " 254. | 1,354 44 | |
| T. H. Carling..... | " 20 | London..... | " 51 " 254. | 51 33 | |
| | 1917. | | | | |
| H. Corby Distillery Co., Ltd. | Jan. 15 | Thurlow..... | " 51 " 254. | 10,915 24 | |
| W. R. Holliday..... | " 18 | Guelph..... | " 51 " 254. | 2 05 | |
| Wilson, Lytle, Badgeron Co., Ltd. | " 18 | Toronto..... | " 51 " 254. | 1,572 84 | |
| The National Breweries, Ltd. (Dawes)..... | " 18 | Montreal..... | " 51 " 254. | 74 28 | |
| Frontenac Breweries, Ltd..... | " 18 | "..... | " 51 " 254. | 16 80 | |
| Canadian B. & M. Co., Ltd..... | " 18 | Vancouver..... | " 51 " 254. | 107 45 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 19 | Montreal..... | " 51 " 254. | 85 50 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 19 | "..... | " 51 " 254. | 222 30 | |
| Westminster Brewery, Ltd..... | " 19 | New Westminster..... | " 51 " 254. | 102 60 | |
| Canadian B. & M. Co., Ltd..... | " 19 | Vancouver..... | " 51 " 254. | 1,457 23 | |
| The Victoria Phoenix Brewing Co., Ltd..... | " 19 | Victoria..... | " 51 " 254. | 410 40 | |
| H. Corby Distillery Co., Ltd. | Feb. 5 | Thurlow..... | " 51 " 254. | 8,506 85 | |
| Bowie & Co's Brewery, Ltd., The National Breweries, Ltd., Reg. No. 3..... | " 13 | Brookville..... | " 51 " 254. | 60 00 | |
| The National Breweries, Ltd., Reg. No. 7..... | " 19 | Montreal..... | " 51 " 254. | 85 50 | |
| Westminster Brewery, Ltd..... | " 19 | "..... | " 51 " 254. | 222 30 | |
| Canadian B. & M. Co., Ltd..... | " 20 | New Westminster..... | " 51 " 254. | 102 60 | |
| A. Keith & Son..... | " 22 | Vancouver..... | " 51 " 254. | 602 77 | |
| M. J. Calcutt..... | " 22 | Halifax..... | " 51 " 254. | 1,670 31 | |
| Canadian B. & M. Co., Ltd..... | Mar. 12 | Peterboro..... | " 51 " 254. | 394 50 | |
| H. Corby Distillery Co., Ltd. | " 22 | Vancouver..... | " 51 " 254. | 1,059 32 | |
| Wilson, Lytle, Badgeron Co., Ltd. | April 5 | Thurlow..... | " 51 " 254. | 7,676 73 | |
| James A. Roy..... | " 19 | Toronto..... | " 51 " 254. | 1,791 16 | |
| H. Corby Distillery Co., Ltd. | " 24 | Belleville..... | " 51 " 254. | 95 55 | |
| Arthur Bixel..... | " 24 | "..... | " 51 " 254. | 4,887 90 | |
| The Canada Malting Co., Ltd. | " 24 | Brantford..... | " 51 " 254. | 384 60 | |
| Grant's Spring Brewery Co., Ltd. | April 24 | Dundas..... | " 51 " 254. | 827 33 | |
| The Hamilton Brewing Association, Ltd..... | " 24 | Hamilton..... | " 51 " 254. | 1,244 23 | |
| Estate late Robert Stevenson. | " 24 | "..... | " 51 " 254. | 1,461 00 | |
| John Fisher..... | " 24 | Kingston..... | " 51 " 254. | 176 77 | |
| T. H. Carling..... | " 24 | Portsmouth..... | " 51 " 254. | 104 53 | |
| John S. Labatt..... | " 24 | London..... | " 51 " 254. | 1,579 82 | |
| Brading Breweries, Ltd..... | " 24 | "..... | " 51 " 254. | 1,409 62 | |
| The Capital Brewing Co., Ltd. | " 24 | Ottawa..... | " 51 " 254. | 49 87 | |
| Blake & Dunne..... | " 24 | "..... | " 51 " 254. | 1,053 00 | |
| Heisz & Tiede..... | " 24 | "..... | " 51 " 254. | 102 60 | |
| | " 25 | Formosa..... | " 51 " 254. | 213 60 | |

SESSIONAL PAPER No. 12

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|---|----------|--------------------|--------------------------------|-----------|---------|
| | 1917. | | | \$ cts. | \$ cts. |
| <i>Malt—Continued.</i> | | | | | |
| Jacob C. Huether..... | April 25 | Neustadt..... | R.S., Cap. 51, Sec. 254 | 136 80 | |
| Veronica Schwan..... | " 25 | Carlsruhe..... | " 51 " 254 | 85 50 | |
| John Arscott..... | " 25 | Walkerton..... | " 51 " 254 | 73 64 | |
| Sudbury B. & M. Co., Ltd.... | " 25 | Sudbury..... | " 51 " 254 | 1,710 00 | |
| The Kakabeka Falls Brewing Co., Ltd..... | " 25 | Fort William..... | " 51 " 254 | 600 00 | |
| Lakewood Brewing Co..... | " 25 | Kenora..... | " 51 " 254 | 80 85 | |
| Diamond Brewery Co., Ltd.... | " 25 | Port Arthur..... | " 51 " 254 | 345 00 | |
| John Watson..... | " 25 | Listowel..... | " 51 " 254 | 116 92 | |
| Felix Devlin..... | " 25 | Stratford..... | " 51 " 254 | 83 07 | |
| The Walkerville Brewing Co., Ltd..... | " 25 | Walkerville..... | " 51 " 254 | 967 50 | |
| Hiram Walker & Sons, Ltd.... | " 25 | "..... | " 51 " 254 | 1,132 50 | |
| A. L. Irim..... | " 25 | Windsor..... | " 51 " 254 | 930 00 | |
| National Breweries, Ltd.(Win. Dow)..... | " 25 | Montreal..... | " 51 " 254 | 0 82 | |
| Royal Brewery..... | " 25 | Valleyfield..... | " 51 " 254 | 75 00 | |
| Frontenac Breweries, Ltd..... | " 25 | Montreal..... | " 51 " 254 | 2,327 40 | |
| Herbert Molson..... | " 25 | "..... | " 51 " 254 | 9,720 00 | |
| The Canada Malting Co., Ltd. | " 25 | "..... | " 51 " 254 | 29,511 10 | |
| La Brasserie Champlain, Ltd. | " 25 | Quebec..... | " 51 " 254 | 2,889 08 | |
| Silver Spring Brewery, Ltd.... | " 25 | Sherbrooke..... | " 51 " 254 | 845 51 | |
| St. Hyacinthe Distillery Co., Ltd..... | " 25 | St. Hyacinthe..... | " 51 " 254 | 262 80 | |
| Simcoe Jones, Ltd..... | " 25 | St. John..... | " 51 " 254 | 300 00 | |
| Ready's Breweries, Ltd..... | " 25 | "..... | " 51 " 254 | 1,080 00 | |
| Halifax Breweries, Ltd..... | " 25 | Halifax..... | " 51 " 254 | 783 00 | |
| A. Keith & Sons..... | " 25 | "..... | " 51 " 254 | 1,701 00 | |
| Oland & Son, Ltd..... | " 25 | "..... | " 51 " 254 | 482 10 | |
| The Brandon Brewing Co., Ltd..... | " 25 | Brandon..... | " 51 " 254 | 142 05 | |
| The Empire Brewing Co., Ltd. | " 25 | "..... | " 51 " 254 | 277 08 | |
| The Lakewood Brewing Co., Ltd..... | " 25 | Kenora..... | " 51 " 254 | 5 49 | |
| The Canada Malting Co., Ltd. | " 25 | Winnipeg..... | " 51 " 254 | 4,452 33 | |
| Golden Lion Brewing Co..... | " 25 | Prince Albert..... | " 51 " 254 | 148 04 | |
| Regina Brewing Co., Ltd..... | " 25 | Regina..... | " 51 " 254 | 154 31 | |
| Moose Jaw B. & M. Co., Ltd.. | " 25 | Moosejaw..... | " 51 " 254 | 329 40 | |
| Hoeschen Wentzler Brewing Co..... | " 25 | Saskatoon..... | " 51 " 254 | 540 00 | |
| The Union Brewing Co., Ltd.. | " 25 | Nanaimo..... | " 51 " 254 | 600 00 | |
| The Silver Spring Brewery Co. Ltd..... | " 25 | Victoria..... | " 51 " 254 | 1,020 00 | |
| The Victoria Phoenix Brewing Co., Ltd..... | " 25 | "..... | " 51 " 254 | 1,500 00 | |
| Halifax Breweries, Ltd..... | " 25 | Halifax..... | " 51 " 254 | 152 70 | |
| A. Keith & Son..... | " 25 | "..... | " 51 " 254 | 1,433 37 | |
| Ready's Breweries, Ltd..... | " 26 | St. John..... | " 51 " 254 | 133 36 | |
| T. H. Carling..... | " 27 | London..... | " 51 " 254 | 63 87 | |
| Frontenac Breweries, Ltd..... | May 1 | Montreal..... | " 51 " 254 | 381 90 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 1 | "..... | " 51 " 254 | 171 00 | |
| The National Breweries, Ltd., Reg. No. 3..... | " 1 | "..... | " 51 " 254 | 111 15 | |
| E. L. Drewry, Ltd..... | " 1 | Winnipeg..... | " 51 " 254 | 208 05 | |
| Canadian B. & M. Co., Ltd.. | " 1 | Vancouver..... | " 51 " 254 | 1,597 68 | |
| H. Corby Distillery Co., Ltd. | " 3 | Thurlow..... | " 51 " 254 | 2,639 98 | |
| La Brasserie Champlain, Ltd. | " 3 | Quebec..... | " 51 " 254 | 3 18 | |
| J. P. Wiser & Sons, Ltd..... | " 8 | Prescott..... | " 51 " 254 | 467 08 | |
| St. Lawrence Brewery, Ltd.... | " 8 | Cornwall..... | " 51 " 254 | 1,883 64 | |

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|--|----------|------------------|--------------------------------|----------|------------|
| | | | | \$ cts. | \$ cts. |
| <i>Malt—Concluded.</i> | | | | | |
| | 1917. | | | | |
| The Cosgrove Brewery Co., Ltd. | May 8 | Toronto | R.S., Cap. 51, Sec. 254 | 203 10 | |
| Soo Falls Brewing Co., Ltd. | " 8 | Sault Ste. Marie | " 51 " 254 | 615 00 | |
| L. Reinhardt | " 8 | Toronto | " 51 " 254 | 1,000 80 | |
| Copland Brewing Co., Ltd. | " 8 | " | " 51 " 254 | 1,905 60 | |
| The Dominion Brewery Co., Ltd. | " 8 | " | " 51 " 254 | 2,705 10 | |
| The Cosgrove Brewery Co., Ltd. | " 8 | " | " 51 " 254 | 3,086 23 | |
| The O'Keefe Brewery Co., Ltd. | " 8 | " | " 51 " 254 | 5,098 20 | |
| Grand Forks Brewing Co. | " 8 | Grand Forks | " 51 " 254 | 29 10 | |
| Nelson Brewing Co. | " 8 | Princeton | " 51 " 254 | 54 00 | |
| Cranbrooke Brewing Co. | " 8 | Cranbrooke | " 51 " 254 | 60 00 | |
| The Enterprise Brewing Co. | " 8 | Revelstoke | " 51 " 254 | 118 60 | |
| Imperial Brewing Co., Ltd. | " 8 | Kamloops | " 51 " 254 | 142 70 | |
| Le Roi Brewing Co. | " 8 | Rossland | " 51 " 254 | 159 45 | |
| Phoenix Brewing Co., Ltd. | " 8 | Phoenix | " 51 " 254 | 182 51 | |
| The Elk Valley Brewing Co. | " 8 | Natal | " 51 " 254 | 278 25 | |
| The Nelson Brewing Co., Ltd. | " 8 | Nelson | " 51 " 254 | 336 00 | |
| Agnes Mueller | " 8 | Trail | " 51 " 254 | 360 00 | |
| Westminster Brewery, Ltd. | " 8 | New Westminster | " 51 " 254 | 450 00 | |
| Fernie, Fort Steel Brewing Co. | " 8 | Fernie | " 51 " 254 | 793 98 | |
| Canadian B. & M. Co., Ltd. | " 8 | Vancouver | " 51 " 254 | 3,822 00 | |
| Geo. Sleeman | " 11 | Guelph | " 51 " 254 | 65 10 | |
| Wm. H. Lutz | " 11 | Galt | " 51 " 254 | 129 41 | |
| Mary Race | " 11 | New Hamburg | " 51 " 254 | 154 46 | |
| N. P. Reinhardt | " 11 | Preston | " 51 " 254 | 175 95 | |
| Wm. R. Halliday | " 11 | Guelph | " 51 " 254 | 382 03 | |
| The Berlin Lion Brewery, Ltd. | " 11 | Kitchener | " 51 " 254 | 1,053 15 | |
| Aloyes Banner | " 11 | Waterloo | " 51 " 254 | 4,516 34 | |
| Thos. F. Whyte | " 11 | Port Colborne | " 51 " 254 | 570 00 | |
| The Medicine Hat Brewing Co. | " 11 | Medicine Hat | " 51 " 254 | 199 00 | |
| Strathcona B. & M. Co., Ltd. | " 11 | Edmonton | " 51 " 254 | 300 00 | |
| Edmonton B. & M. Co., Ltd. | " 11 | " | " 51 " 254 | 456 83 | |
| The Lethbridge B. & M. Co., Ltd. | " 11 | Lethbridge | " 51 " 254 | 465 00 | |
| The Canada Malting Co., Ltd. | " 11 | Calgary | " 51 " 254 | 574 74 | |
| The Mountain Spring Brewing Co., Ltd. | " 11 | " | " 51 " 254 | 806 98 | |
| Calgary B. & M. Co., Ltd. | " 11 | " | " 51 " 254 | 2,333 63 | |
| Taylor & Bate | " 11 | St. Catharines | " 51 " 254 | 767 47 | |
| Canadian B. & M. Co., Ltd. | " 22 | Vancouver | " 51 " 254 | 484 13 | |
| The Victoria Phoenix Brewing Co., Ltd. | " 23 | Victoria | " 51 " 254 | 205 20 | |
| | | | | | 249,057 86 |
| <i>Tobacco.</i> | | | | | |
| The Empire Tobacco Co. | May 4 | Sherbrooke | R.S., Cap. 51, Sec. 254 | 366 94 | |
| " " | " 16 | " | " 51 " 254 | 156 24 | |
| Imperial Tob. Co. of Canada, Ltd. | June 13 | Montreal | " 51 " 254 | 31 50 | |
| Wm. Goldstein & Co. | " 27 | Ottawa | " 51 " 254 | 15 00 | |
| Imperial Tob. Co. of Canada, Ltd. | July 24 | Montreal | " 51 " 254 | 127 50 | |
| M. Melachrino & Co., Ltd. | " 27 | " | " 51 " 254 | 39 58 | |
| Imperial Tobacco Co. | Aug. 24 | Sherbrooke | " 51 " 254 | 143 50 | |
| Imperial Tob. Co. of Canada, Ltd. | Sept. 22 | Montreal | " 51 " 254 | 179 76 | |
| Imperial Tob. Co. of Canada, Ltd. | Oct. 6 | " | " 51 " 254 | 179 76 | |

SESSIONAL PAPER No. 12

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—*Continued.*

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|--|-----------|--------------|--------------------------------|----------|----------|
| | | | | \$ cts. | \$ cts. |
| <i>Tobacco—Concluded.</i> | | | | | |
| Tobacco Products Corporation, Ltd. | 1916. " 6 | " | R.S., Cap. 51, Sec. 254. | 42 09 | |
| The Empire Tob. Co., Branch of Imperial Tob. Co. | Nov. 2 | Granby | " 51 " 254. | 103 60 | |
| Imperial Tob. Co., Ltd. (Cigar Dept.) | Dec. 20 | Montreal | " 51 " 254. | 119 94 | |
| The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd. | " 20 | Granby | " 51 " 254. | 258 23 | |
| 1917. | | | | | |
| The Tuckett Tobacco Co., Ltd. | Jan. 16 | Hamilton | " 51 " 254. | 15 50 | |
| The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd. | " 25 | Granby | " 51 " 254. | 30 22 | |
| Forest, Ltd. | Mar. 3 | Montreal | " 51 " 254. | 28 28 | |
| Philip Morris & Co., Ltd. | " 3 | " | " 51 " 254. | 7 50 | |
| Imperial Tobacco Co. of Canada, Ltd. | " 12 | " | " 51 " 254. | 338 13 | |
| Imperial Tobacco Co. of Canada, Ltd. | April 17 | " | " 51 " 254. | 28 13 | |
| The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd. | " 25 | Granby | " 51 " 254. | 102 62 | |
| The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd. | " 27 | " | " 51 " 254. | 2 10 | |
| Tobacco Products Corporation Ltd. | May 1 | Montreal | " 51 " 254. | 19 90 | |
| The Dominion Tobacco Co. | " 11 | " | " 51 " 254. | 3 46 | |
| " | " 11 | " | " 51 " 254. | 71 07 | |
| Wm. Goldstein & Co. | " 11 | Ottawa | " 51 " 254. | 45 00 | |
| | | | | | 2,505 55 |
| <i>Cigars.</i> | | | | | |
| 1916. | | | | | |
| Imperial Tob. Co. of Canada, Ltd. | June 13 | Montreal | R.S., Cap. 51, Sec. 254. | 6 75 | |
| Theodore Rodriguez | " 27 | London | " 51 " 254. | 45 83 | |
| Imperial Tob. Co. of Canada, Ltd. | July 24 | Montreal | " 51 " 254. | 8 85 | |
| The Strathcona Cigar Factory | " 28 | Calgary | " 51 " 254. | 37 50 | |
| Imperial Tob. Co. Ltd. (Cigar Dept.) | Dec. 20 | Montreal | " 51 " 254. | 11 25 | |
| Peterborough Havana Cigar Co. | May 28 | Peterborough | " 51 " 254. | 5 53 | |
| | | | | | 115 71 |
| <i>Officers' Salary.</i> | | | | | |
| S. Allen | April 26 | Norwich | R.S., Cap. 51, Sec. 254. | 300 00 | |
| Dominion Vinegar Works Co. | May 5 | Hamilton | " 51 " 254. | 300 00 | |
| The B.C. Distillery Co., Ltd. | " 11 | Vancouver | " 51 " 254. | 300 00 | |
| T. McCready & Son, Ltd. | " 28 | St. John | " 51 " 254. | 300 00 | |
| | | | | | 1,200 00 |
| <i>Sundries.</i> | | | | | |
| Wm. Bishop | June 27 | Port Arthur | R.S., Cap. 51, Sec. 254. | 45 83 | |
| Thos. Jordan | July 28 | Winnipeg | " 51 " 254. | 41 66 | |
| Buckwold & Corman | " 28 | " | " 51 " 254. | 41 66 | |
| Jos. E. Scagram | Sept. 22 | " | " 51 " 254. | 33 33 | |
| Thos. Griffiths & Co., Ltd. | " 22 | " | " 51 " 254. | 37 50 | |
| The Western Commercial Co., Ltd. | Oct. 13 | Edmonton | " 51 " 254. | 37 50 | |
| The Hudson Bay Co. | " 17 | " | " 51 " 254. | 37 50 | |
| Wetaskiwin Wine & Spirits Co. | " 17 | Wetaskiwin | " 51 " 254. | 33 33 | |
| Great West Liquor Co., Ltd. | " 17 | Calgary | " 51 " 254. | 37 50 | |

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|-------------------------------------|----------|-----------------------|--------------------------------|----------|----------|
| | | | | \$ cts. | \$ cts. |
| <i>Sundries—Concluded.</i> | | | | | |
| The Western Commercial Co., Ltd. | Oct. 17 | Calgary | R.S., Cap. 51, Sec. 254 | 37 50 | |
| Beverages, Ltd. | " 17 | " | " 51 " 254 | 37 50 | |
| Chevalier, Pouliot & Cie. | " 26 | Joliette | " 51 " 254 | 25 00 | |
| James McPharland | Nov. 25 | Kingston | " 51 " 254 | 29 16 | |
| Alphonse Millette | Dec. 18 | St. Guillaume d'Upton | " 51 " 254 | 25 00 | |
| Mrs. E. A. Smith | " 18 | Prescott | " 51 " 254 | 50 00 | |
| <i>1917.</i> | | | | | |
| The Metropole Wine & Spirits | Jan. 18 | Edmonton | " 51 " 254 | 37 50 | |
| J. S. Hamilton & Co. | " 25 | Brantford | " 51 " 254 | 25 00 | |
| J. H. Aubé | " 25 | Crysler | " 51 " 254 | 20 00 | |
| Ekers Brewery | Mar. 3 | Montreal | " 51 " 254 | 75 00 | |
| Formosa Spring Brewery | " 3 | " | " 51 " 254 | 25 00 | |
| John Fisher | " 16 | Portsmouth | " 51 " 254 | 20 83 | |
| R. A. Gillespie | " 16 | Winnipeg | " 51 " 254 | 100 00 | |
| Howard McMoltz | April 5 | St. Catharines | " 51 " 254 | 25 00 | |
| Chas. Cantin | " 16 | Quebec | " 51 " 254 | 100 00 | |
| The Hudson's Bay Co. | " 25 | Lethbridge | " 51 " 254 | 29 16 | |
| | | | | | 1,007 46 |
| <i>War Tax.</i> | | | | | |
| Cyrias Gauthier | May 16 | Montreal | " 51 " 254 | 6 00 | |
| J. N. Chartrand | " 16 | " | " 51 " 254 | 6 20 | |
| C. Vidricaire | " 16 | " | " 51 " 254 | 3 20 | |
| Theoret & Senecal | " 16 | " | " 51 " 254 | 3 80 | |
| Adanac Cafe, Ltd. | " 16 | " | " 51 " 254 | 5 30 | |
| La Cie Restaurant Nationale | " 16 | " | " 51 " 254 | 3 90 | |
| R. Berger | " 16 | Moosejaw | " 51 " 254 | 4 70 | |
| H. J. Glass | " 16 | " | " 51 " 254 | 7 30 | |
| L. Bennett | " 16 | " | " 51 " 254 | 9 60 | |
| Masons Hotel Co., Ltd. | " 16 | " | " 51 " 254 | 4 80 | |
| A. J. Purdy | " 16 | " | " 51 " 254 | 2 65 | |
| D. Arcand | June 27 | Quebec | " 51 " 254 | 150 00 | |
| International Mercantile Marine Co. | " 27 | Winnipeg | " 51 " 254 | 2 00 | |
| Cyrille Labelle & Co. | July 27 | St. Hyacinthe | " 51 " 254 | 20 65 | |
| P. Richard | Aug. 2 | Montreal | " 51 " 254 | 53 50 | |
| H. R. Frankland | " 4 | Toronto | " 51 " 254 | 25 00 | |
| C. P. Mainville | " 4 | Joliette | " 51 " 254 | 25 00 | |
| John D. Fox | " 4 | Montreal | " 51 " 254 | 25 00 | |
| R. W. Fletcher | " 4 | Calgary | " 51 " 254 | 25 00 | |
| " | " 4 | " | " 51 " 254 | 37 50 | |
| White Star Line | " 15 | Montreal | " 51 " 254 | 11 00 | |
| American Line | " 15 | " | " 51 " 254 | 11 00 | |
| " | " 15 | " | " 51 " 254 | 4 00 | |
| Stovel Bros., Ltd. | " 21 | Winnipeg | " 51 " 254 | 40 00 | |
| Chas. Dunn and H. R. Marion | Sept. 22 | Chatham | " 51 " 254 | 2 65 | |
| Geo. and Ed. Couture | " 22 | Quebec | " 51 " 254 | 44 80 | |
| Hotel Quebec, Ltd. | " 22 | Montreal | " 51 " 254 | 0 60 | |
| Grand & Co., Ltd. | " 22 | Toronto | " 51 " 254 | 19 88 | |
| Benson Stabeck Co., Ltd. | " 22 | Winnipeg | " 51 " 254 | 40 00 | |
| White Star Dominion Line | " 22 | Montreal | " 51 " 254 | 5 00 | |
| James Serra | Oct. 17 | Banff | " 51 " 254 | 10 00 | |
| Great West Liquor Co., Ltd. | " 17 | Calgary | " 51 " 254 | 3 75 | |
| The Western Commercial Co., Ltd. | " 17 | " | " 51 " 254 | 13 00 | |
| J. A. Loranger | " 19 | Montreal | " 51 " 254 | 262 50 | |
| G. B. Laffleur | " 17 | " | " 51 " 254 | 175 00 | |
| E. Desroches | " 17 | " | " 51 " 254 | 0 50 | |
| W. J. Radigan | " 26 | Guelph | " 51 " 254 | 0 80 | |

SESSIONAL PAPER No. 12

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Continued.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|----------------------------------|---------|---------------------|--------------------------------|----------|---------|
| | | | | \$ cts. | \$ cts. |
| <i>War Tax—Continued.</i> | | | | | |
| | 1917. | | | | |
| L. R. Haskell..... | Oct. 26 | Guelph..... | R.S., Cap. 51, Sec. 254.. | 8 20 | |
| The Hillrust Wine Co., Ltd. | " 26 | St. Catharines..... | " 51 " 254.. | 14 52 | |
| W. H. Littlefield..... | Nov. 4 | Brantford..... | " 51 " 254.. | 14 55 | |
| Rolph & Clark, Ltd..... | " 4 | Toronto..... | " 51 " 254.. | 75 98 | |
| Estate Dr. A. Freeland..... | " 4 | Ottawa..... | " 51 " 254.. | 25 00 | |
| Frederick Green..... | " 7 | Sherbrooke..... | " 51 " 254.. | 400 00 | |
| G. B. Laflour..... | " 13 | Montreal..... | " 51 " 254.. | 25 00 | |
| J. A. Loranger..... | " 13 | "..... | " 51 " 254.. | 12 50 | |
| J. A. D. Houde..... | " 13 | "..... | " 51 " 254.. | 75 00 | |
| L. H. Hall..... | " 13 | Moosejaw..... | " 51 " 254.. | 25 00 | |
| A. J. Courtemanche..... | " 13 | Timmins..... | " 51 " 254.. | 25 00 | |
| J. E. Harley..... | " 13 | Horizon..... | " 51 " 254.. | 25 00 | |
| Dominico Priore..... | " 14 | Trail..... | " 51 " 254.. | 56 20 | |
| The T. Eaton Co., Ltd..... | " 15 | Toronto..... | " 51 " 254.. | 27 74 | |
| H. J. Dager..... | " 15 | "..... | " 51 " 254.. | 275 00 | |
| W. J. Anderson..... | Nov. 15 | Assiniboia..... | " 51 " 254.. | 74 78 | |
| G. H. Normandin..... | " 23 | Berthierville..... | " 51 " 254.. | 25 00 | |
| W. J. Wade..... | " 23 | Lethbridge..... | " 51 " 254.. | 2 50 | |
| R. W. Swaisland..... | " 25 | Kitchener..... | " 51 " 254.. | 25 00 | |
| H. J. Dager..... | " 25 | Toronto..... | " 51 " 254.. | 100 00 | |
| J. O. Hiscott..... | " 25 | Hamilton..... | " 51 " 254.. | 25 00 | |
| F. Green..... | " 25 | Sherbrooke..... | " 51 " 254.. | 50 00 | |
| Leon Hardy..... | " 25 | Quebec..... | " 51 " 254.. | 125 00 | |
| F. W. Forde..... | " 25 | Ottawa..... | " 51 " 254.. | 25 00 | |
| Meyer Chertkoff..... | Dec. 18 | Hamilton..... | " 51 " 254.. | 50 00 | |
| A. Larue..... | " 21 | Quebec..... | " 51 " 254.. | 150 00 | |
| Hovey & Son..... | " 23 | Colbourg..... | " 51 " 254.. | 21 20 | |
| J. S. Hart..... | " 23 | Windsor..... | " 51 " 254.. | 54 40 | |
| J. Butler..... | " 23 | Castor..... | " 51 " 254.. | 5 00 | |
| H. J. Dager..... | " 23 | Toronto..... | " 51 " 254.. | 25 00 | |
| G. B. Laflour..... | " 23 | Montreal..... | " 51 " 254.. | 37 50 | |
| G. A. Loranger..... | " 23 | "..... | " 51 " 254.. | 37 50 | |
| | 1917. | | | | |
| A. F. Webster & Son..... | Jan. 18 | Toronto..... | " 51 " 254.. | 3 00 | |
| A. J. Hammond..... | " 27 | Maple Creek..... | " 51 " 254.. | 25 00 | |
| A. F. Simpson..... | Feb. 5 | Sherbrooke..... | " 51 " 254.. | 25 00 | |
| B. Iler..... | " 6 | Guelph..... | " 51 " 254.. | 25 00 | |
| J. R. Hanlon..... | " 6 | "..... | " 51 " 254.. | 25 00 | |
| T. H. Verner..... | " 6 | Winnipeg..... | " 51 " 254.. | 75 00 | |
| J. W. Sparling..... | " 6 | "..... | " 51 " 254.. | 75 00 | |
| W. J. Ivey..... | " 6 | "..... | " 51 " 254.. | 125 00 | |
| F. A. Nicholl..... | " 6 | "..... | " 51 " 254.. | 50 00 | |
| P. J. Fegan..... | " 6 | "..... | " 51 " 254.. | 25 00 | |
| W. Eddie..... | " 6 | "..... | " 51 " 254.. | 25 00 | |
| A. S. Band..... | " 13 | Regina..... | " 51 " 254.. | 25 00 | |
| J. J. Wilson..... | " 13 | Maple Creek..... | " 51 " 254.. | 25 00 | |
| L. H. Hall..... | " 13 | Regina..... | " 51 " 254.. | 50 00 | |
| J. Slavin..... | " 13 | Kendall..... | " 51 " 254.. | 25 00 | |
| J. W. Sparling..... | " 13 | Moosejaw..... | " 51 " 254.. | 25 00 | |
| M. J. O'Donohue..... | " 22 | Brantford..... | " 51 " 254.. | 25 00 | |
| J. F. Carson..... | " 22 | "..... | " 51 " 254.. | 25 00 | |
| H. J. Dager..... | " 22 | Toronto..... | " 51 " 254.. | 100 00 | |
| T. Green..... | " 22 | Sherbrooke..... | " 51 " 254.. | 50 00 | |
| J. A. Cadotte..... | " 22 | St. Hyacinthe..... | " 51 " 254.. | 50 00 | |
| A. Francoeur..... | " 22 | "..... | " 51 " 254.. | 50 00 | |
| S. J. Waddell..... | " 22 | Halifax..... | " 51 " 254.. | 25 00 | |
| Mrs. M. E. Twohey..... | " 22 | Vancouver..... | " 51 " 254.. | 25 00 | |
| J. Thorburn..... | " 22 | "..... | " 51 " 254.. | 25 00 | |
| F. W. Ford..... | " 27 | Ottawa..... | " 51 " 254.. | 25 00 | |
| A. Goulet..... | " 27 | "..... | " 51 " 254.. | 50 00 | |
| Bank of Montreal..... | Mar. 2 | "..... | " 51 " 254.. | 48 75 | |

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Continued.

EXCISE—Concluded.

| Articles and to whom paid. | Date. | Divisions. | Under what Authority Refunded. | Amounts. | Totals. |
|---|---------------|------------|--------------------------------|----------|------------|
| | | | | \$ cts. | \$ cts. |
| <i>War Tax—Concluded.</i> | | | | | |
| Dominion Printing & Loose Leaf Co., Ltd. | Mar. 5 | Ottawa | R.S., Cap. 51, Sec. 254 | 20 00 | |
| The Canada Box Board Co., Ltd. | " 5 | Montreal | " 51 " 254 | 50 00 | |
| The Alexander & Cable Lithographing Co., Ltd. | " 5 | Toronto | " 51 " 254 | 6 72 | |
| The Mortimer Co., Ltd. | " 5 | Ottawa | " 51 " 254 | 40 00 | |
| Canadian Pacific Ry. Co. | " 5 | Montreal | " 51 " 254 | 1,443 24 | |
| Wardell & Co. | " 5 | Huntsville | " 51 " 254 | 25 00 | |
| A. R. Farr. | " 5 | " | " 51 " 254 | 25 00 | |
| C. R. Caotts. | " 5 | Ashcroft | " 51 " 254 | 11 50 | |
| Geo. S. Harding. | " 5 | Guelph | " 51 " 254 | 1 00 | |
| R. C. Sturgeon. | " 5 | Windsor | " 51 " 254 | 3 60 | |
| L. Hardy. | " 10 | Quebec | " 51 " 254 | 25 00 | |
| H. J. Dager. | " 10 | Toronto | " 51 " 254 | 25 00 | |
| J. E. Seagram & Sons, Ltd. | " 16 | Waterloo | " 51 " 254 | 46 10 | |
| American Line. | " 16 | Montreal | " 51 " 254 | 3 00 | |
| H. J. Dager. | " 22 | Toronto | " 51 " 254 | 200 00 | |
| J. Thorburn. | " 26 | Vancouver | " 51 " 254 | 37 50 | |
| J. V. Gibson. | " 26 | " | " 51 " 254 | 37 50 | |
| A. Goulet. | " 27 | Ottawa | " 51 " 254 | 75 00 | |
| A. Laverdure. | " 27 | " | " 51 " 254 | 75 00 | |
| The Mortimer Co., Ltd. | April 5 | " | " 51 " 254 | 159 94 | |
| F. W. Ford. | " 13 | " | " 51 " 254 | 12 50 | |
| E. Laverdure. | " 13 | " | " 51 " 254 | 25 00 | |
| A. Goulet. | " 13 | " | " 51 " 254 | 12 50 | |
| L. Hardy. | " 13 | Quebec | " 51 " 254 | 25 00 | |
| H. J. Dager. | " 13 | Toronto | " 51 " 254 | 75 00 | |
| J. M. Cavanagh. | " 17 | Montreal | " 51 " 254 | 50 00 | |
| John M. Cox. | " 20 | Toronto | " 51 " 254 | 50 00 | |
| J. A. Houde. | " 27 | Montreal | " 51 " 254 | 87 50 | |
| G. A. Loranger. | " 27 | " | " 51 " 254 | 87 50 | |
| Estate late G. A. Lafleur. | " 27 | " | " 51 " 254 | 62 50 | |
| Harry Shepherd. | May 4 | North Bay | " 51 " 254 | 16 30 | |
| A. F. Larose. | " 28 | Montreal | " 51 " 254 | 50 00 | |
| <i>Weights and Measures.</i> | | | | | 8,973 80 |
| Curtiss & Harvey (Canada), Ltd. | Nov. 30 1917. | Montreal | R.S., Cap. 51, Sec. 254 | 0 90 | |
| H. Spicer. | Mar. 5 1917. | Winnipeg | " 51 " 254 | 11 00 | 11 90 |
| <i>Adulteration of Food.</i> | | | | | |
| John McClonnie. | June 27 1917. | Vernon | R.S., Cap. 51, Sec. 254 | 5 00 | |
| James Taylor. | July 6 1917. | Nanaimo | " 51 " 254 | 10 00 | |
| Francis Walker. | Aug. 2 1917. | Arronsmith | " 51 " 254 | 45 00 | |
| E. Parent. | May 4 1917. | Montreal | " 51 " 254 | 202 50 | |
| J. J. Costigan. | " 22 1917. | " | " 51 " 254 | 75 00 | |
| <i>Patent Medicines.</i> | | | | | 337 50 |
| W. E. Foxwell. | Jan. 18 1917. | Victoria | R.S., Cap. 51, Sec. 254 | 1 00 | 1 00 |
| Grand total | | | | | 294,322 22 |

SESSIONAL PAPER No. 12

No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—
Concluded.

RECAPITULATION.

EXCISE REFUNDS.

| | |
|---------------------------|---------------|
| Spirits..... | \$ 33,111 44 |
| Malts..... | 249,057 86 |
| Tobacco..... | 2,505 55 |
| Cigars..... | 115 71 |
| Officers' salary..... | 1,200 00 |
| Sundries..... | 1,007 46 |
| | <hr/> |
| | \$ 286,998 02 |
| War Tax..... | 6,973 80 |
| Weights and Measures..... | 11 90 |
| Food..... | 337 50 |
| Patent Medicines..... | 1 00 |
| | <hr/> |
| Grand Total..... | \$ 294,322 22 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

No. 16.—DEPARTMENTAL EXPENDITURES FOR 1916-17.

Dr.

Cr.

| Due By Sundry Persons, April 1, 1916. | Disbursed by the Receiver General. | | Deductions for | | | Totals. | Salaries. | Conti- genecies. | Due by Sundry Persons, March 31, 1917. | Totals. | |
|---|---|--------|----------------------|------------|------|------------|------------|---------------------|--|------------|-------------|
| | \$ | cts. | Super- annuation. | Insurance. | | | | | | | Retirement. |
| | | | | \$ | cts. |  |  |  |  |  |  | $ | cts. |
| 7,000 00 | 7,000 00 | | | | | 7,000 00 | 7,000 00 | | 7,000 00 | | |
| 121,889 11 | 121,889 11 | 404 86 | 1,214 07 | 4,833 93 | | 128,431 97 | 128,431 97 | | 128,431 97 | | |
| 5,550 83 | 5,550 83 | | | | | 550 83 | 550 83 | | 550 83 | | |
| 5,587 61 | 5,587 61 | | | | | 5,587 61 | 5,587 61 | | 5,587 61 | | |
| 515 11 | 515 11 | | | | | 515 11 | 515 11 | | 515 11 | | |
| 384 60 | 384 60 | | | | | 384 60 | 384 60 | | 384 60 | | |
| 4,255 60 | 4,255 60 | | | | | 4,255 60 | 4,255 60 | | 4,255 60 | | |
| 2,645 32 | 2,645 32 | | | | | 2,645 32 | 2,645 32 | | 2,645 32 | | |
| 5,388 48 | 5,388 48 | | | | | 5,388 48 | 5,388 48 | | 5,388 48 | | |
| 16 66 | 16 66 | | | | | 16 66 | 16 66 | | 16 66 | | |
| 16 66 | 148,216 66 | 494 86 | 1,214 07 | 4,833 93 | | 154,776 18 | 135,431 97 | 19,327 55 | 16 66 | 154,776 18 | |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, GAS, ELECTRIC LIGHT AND LAW STAMPS.

No. 17—STATEMENT showing amount of Revenue accrued during the year ended March 31, 1917.

DR.

| | Weights and Measures Stamps. | Gas Stamps. | Electric Light Stamps. | Law Stamps. | | | Totals. |
|---|------------------------------|-------------|------------------------|----------------|------------------|--------------------|------------|
| | | | | Supreme Court. | Exchequer Court. | Territorial Court. | |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| The amount of stamps in the hands of distributors, April 1, 1916..... | 153,739 05 | 72,824 65 | 110,394 35 | 149 05 | 105 00 | 6,472 80 | 343,694 90 |
| To stamps issued by the Inland Revenue Department during the year ended March 31, 1917..... | 138,045 00 | 47,535 00 | 70,360 00 | 2,800 00 | 5,189 00 | 4,000 00 | 267,929 00 |
| Totals..... | 291,784 05 | 120,369 65 | 180,754 35 | 2,949 05 | 5,294 00 | 10,472 80 | 611,623 90 |

CR.

| | | | | | | | |
|---|------------|------------|------------|----------|----------|-----------|------------|
| By amount of stamps destroyed and returned by distributors..... | 113 05 | 620 00 | | | | | 733 05 |
| By amount of stamps remaining in the hands of distributors, March 31, 1917..... | 161,380 80 | 65,652 30 | 109,638 75 | 512 20 | 89 00 | 8,204 55 | 345,507 60 |
| By balance being the revenue during the year ended March 31, 1917..... | 130,290 20 | 54,067 35 | 71,115 60 | 2,436 85 | 5,205 00 | 2,268 25 | 265,383 25 |
| Totals..... | 291,784 05 | 120,369 65 | 180,754 35 | 2,949 05 | 5,294 00 | 10,472 80 | 611,623 90 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.
No. 18 (A)—INSPECTION DIVISIONS in Account with Revenue.

Cr.

Dr.

| BALANCES DUE BY INSPECTORS, APRIL 1, 1916. | | Stamps issued to Inspectors. | | Other Receipts. | | Seizures and Penalties. | | Totals. | | Divisions. | | Returned Damaged Stamps. | | Deposited to Credit of Receiver-General. | | BALANCES DUE BY INSPECTORS, MARCH 31, 1917. | | Totals. | |
|--|---------------|------------------------------|------|-----------------|------|-------------------------|------|-----------|------|------------|--|--------------------------|-------|--|-----------|---|---------------|-----------|------|
| Stamps on hand. | Cash on hand. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | | | \$ | cts. | \$ | cts. | Stamps on hand. | Cash on hand. | \$ | cts. |
| 7,799 25 | 0 80 | 7,799 25 | 0 80 | 15 00 | | | | 11,755 05 | | | | | | 2,492 80 | 9,261 75 | 0 50 | | 11,755 05 | |
| 6,393 20 | | 12,095 00 | | 2 50 | | | | 18,488 20 | | | | | | 12,919 10 | 5,588 05 | 11 05 | | 18,488 20 | |
| 414 60 | | 1,480 00 | | | | | | 1,897 10 | | | | | | 1,104 05 | 793 05 | | | 1,897 10 | |
| 8,479 30 | | 11,710 00 | | | | | | 20,189 30 | | | | | | 10,974 90 | 9,213 05 | 1 35 | | 20,189 30 | |
| 6,930 85 | | 10,135 00 | | | | | | 17,065 85 | | | | | | 8,865 45 | 8,188 35 | 8 55 | | 17,065 85 | |
| 5,437 15 | | 14,075 00 | | | | 20 00 | | 19,552 15 | | | | | 3 50 | 14,735 20 | 4,816 20 | 0 75 | | 19,552 15 | |
| 35,474 35 | 0 80 | 53,435 00 | | 17 50 | | 20 00 | | 88,947 65 | | | | | 3 50 | 51,091 50 | 37,830 45 | 22 20 | | 88,947 65 | |
| 57,506 15 | 1 00 | 2,250 00 | | | | | | 59,757 15 | | | | | | 11,932 50 | 47,819 40 | 5 25 | | 59,757 15 | |
| 4,220 90 | | 4,965 00 | | | | 5 00 | | 9,190 90 | | | | | 1 00 | 5,947 60 | 3,242 30 | | | 9,190 90 | |
| 6,742 20 | | 4,650 00 | | | | | | 11,392 20 | | | | | | 6,158 85 | 5,233 35 | | | 11,392 20 | |
| 2,834 30 | | 6,525 00 | | | | | | 9,359 30 | | | | | 7 60 | 2,526 70 | 6,825 00 | | | 9,359 30 | |
| 2,338 25 | | 805 00 | | | | | | 3,143 25 | | | | | 55 50 | 985 05 | 2,122 70 | | | 3,143 25 | |
| 73,661 80 | 1 00 | 19,195 00 | | | | 5 00 | | 92,862 80 | | | | | 64 10 | 27,550 70 | 65,242 75 | 5 25 | | 92,862 80 | |
| 594 55 | | 3,780 00 | | 4 00 | | | | 4,378 55 | | | | | | 3,492 40 | 886 15 | | | 4,378 55 | |
| 2,603 35 | 36 00 | 2,110 00 | | 1 50 | | | | 4,750 85 | | | | | | 1,335 70 | 3,415 15 | | | 4,750 85 | |
| 2,707 85 | 0 50 | 3,115 00 | | | | | | 5,823 35 | | | | | | 1,459 20 | 3,860 00 | 4 15 | | 5,823 35 | |
| 5,311 20 | 36 50 | 5,225 00 | | 1 50 | | | | 10,574 20 | | | | | | 3,294 90 | 7,275 15 | 4 15 | | 10,574 20 | |
| 902 50 | 2 50 | 415 00 | | | | | | 1,320 00 | | | | | | 621 30 | 698 70 | | | 1,320 00 | |
| 6,330 70 | | 17,395 00 | | | | | | 23,725 70 | | | | | 5 00 | 12,229 05 | 11,440 75 | 50 90 | | 23,725 70 | |

WEIGHTS AND MEASURES, 1916-17.

No. 18 (A)—INSPECTION DIVISIONS in Account with Revenue—Concluded.

CR.

| BALANCES DUE BY INSPECTORS APRIL 1, 1916. | | Stamps issued to Inspectors. | | Other Receipts. | | Seizures and Penalties. | | Totals. | | Divisions. | | Returned Damaged Stamps. | | Deposited to Credit of Receiver General. | | BALANCES DUE BY INSPECTORS, MARCH 31, 1917. | | Totals. | |
|---|---------------|------------------------------|-----------|-----------------|------|-------------------------|------|------------|-----------|--------------------------------------|--|--------------------------|----------|--|--------|---|---------------|------------|-----------|
| Stamps on hand. | Cash on hand. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | | | \$ | cts. | \$ | cts. | Stamps on hand. | Cash on hand. | \$ | cts. |
| 7,094 45 | 7,744 65 | 13,735 00 | 10,225 00 | | | | | 20,829 45 | 17,969 65 | Regina | | 10,458 40 | 9,407 00 | 10,316 25 | 54 80 | | | 20,829 45 | 17,969 65 |
| 14,839 10 | | 23,960 00 | | | | | | 38,799 10 | | Saskatchewan | | 19,865 40 | | 18,838 45 | 54 80 | | | 38,799 10 | |
| 7,454 30 | | 6,650 00 | 5,600 00 | 1 25 | | 10 00 | | 14,125 55 | 5,600 00 | Calgary | | 4,292 65 | | 9,827 35 | 5 55 | | | 14,125 55 | 5,600 00 |
| 7,454 30 | | 12,260 00 | | | 1 25 | 10 00 | | 19,725 55 | | Edmonton | | 4,224 60 | | 1,367 75 | 7 65 | | | 19,725 55 | |
| | | | | | | | | | | Alberta | | 8,517 25 | | 11,195 10 | 13 20 | | | 19,725 55 | |
| 2,697 40 | 4,652 95 | 380 00 | 2,000 00 | | | | | 3,077 40 | 6,652 95 | Nelson | | 1,227 45 | | 1,841 05 | 8 90 | | | 3,077 40 | 6,652 95 |
| 7,350 35 | | 2,380 00 | | | | | | 9,730 35 | | Vancouver | | 2,294 05 | | 4,358 90 | | | | 9,730 35 | |
| | | | | | | | | | | British Columbia | | 3,521 50 | | 6,199 95 | 8 90 | | | 9,730 35 | |
| 1,820 20 | | | | | | | | 1,820 20 | | Dawson, Yukon | | 46 85 | | 1,773 35 | | | | 1,820 20 | |
| 153,739 05 | 40 80 | 138,045 00 | | 24 25 | | 35 00 | | 291,884 10 | | Totals | | 113 05 | | 161,380 80 | 159 40 | | | 291,884 10 | |
| | | | | | | | | 1,394 75 | | Milk test glassware | | | | | | | | 1,394 75 | |
| | | | | | | | | 293,278 85 | | Less Refunds as per Statement No. 15 | | | | | | | | 293,278 85 | |
| | | | | | | | | 11 90 | | | | | | | | | | 11 90 | |
| 153,739 05 | 40 80 | 138,045 00 | | 24 25 | | 35 00 | | 293,266 95 | | Grand totals | | 113 05 | | 161,380 80 | 159 40 | | | 293,266 95 | |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

WEIGHTS AND MEASURES, 1916-17.

No. 18 (B).—DEPUTY INSPECTORS of Old Divisions in Account with Revenue.

DR.

CR.

| Balances due April 1, 1917. Cash on hand. | Totals. | Divisions. | Balances due March 31, 1917 Cash on hand. | Totals. |
|---|---------|-----------------|---|---------|
| \$ cts. | \$ cts. | | \$ cts. | \$ cts. |
| 87 10 | 87 10 | Essex, Ont..... | 87 10 | 87 10 |
| 5 62 | 5 62 | Hull, Que..... | 5 62 | 5 62 |
| 92 72 | 92 72 | | 92 72 | 92 72 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.

No. 19 (B).—OLD INSPECTION DIVISIONS in Account with Expenditures.

DR.

CR.

| Balances due by sundry persons, April 1, 1917. | Totals. | Divisions. | Balances due by sundry persons, March 31, 1917. | Totals. |
|--|---------|---------------------------------|---|---------|
| \$ cts. | \$ cts. | | \$ cts. | \$ cts. |
| 39 56 | 39 56 | Essex..... | 39 56 | 39 56 |
| 33 53 | 33 53 | Waterloo..... | 33 53 | 33 53 |
| 73 09 | 73 09 | Ontario..... | 73 09 | 73 09 |
| 0 33 | 0 33 | Drummond..... | 0 33 | 0 33 |
| 41 45 | 41 45 | Laval..... | 41 45 | 41 45 |
| 26 88 | 26 88 | Montmorency..... | 26 88 | 26 88 |
| 27 51 | 27 51 | Richelieu..... | 27 51 | 27 51 |
| 96 17 | 96 17 | Quebec..... | 96 17 | 96 17 |
| 24 00 | 24 00 | Lunenburg..... Nova Scotia..... | 24 00 | 24 00 |
| 193 26 | 193 26 | Totals..... | 193 26 | 193 26 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

DR.

No. 19 (A).—INSPECTION Divisions in Account with Expenditures.

CR.

| Balances due by Inspectors, April 1, 1916. | Amounts received from Department Expenditures. | | Deductions from Salaries for | | Totals. | | Expenditures authorized by the Department. | | | | | | Balances due by Inspectors, March 31, 1917. | Totals. | | | | |
|--|--|------|------------------------------|-------------|------------|------|--|-----------|---------------------|-------|----------------------|-----------|---|---------|--------|------|--------|----|
| | \$ | cts. | Superannuation. | Insur-ance. | Guarantee. | \$ | cts. | Salaries. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | | | \$ | cts. | | |
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | | |
| | 5,724 | 49 | | | 9 | 00 | 5,733 | 49 | 3,624 | 78 | 75 | 00 | 772 | 00 | 985 | 76 | 5,733 | 49 |
| | 11,241 | 37 | | | 16 | 20 | 11,257 | 57 | 8,182 | 92 | | | | | 2,953 | 44 | 11,257 | 57 |
| | 3,085 | 87 | | | 6 | 90 | 3,092 | 77 | 2,741 | 58 | | | | | 306 | 09 | 3,092 | 77 |
| | 8,718 | 05 | | | 11 | 85 | 8,729 | 90 | 5,646 | 22 | 120 | 00 | 2,775 | 86 | 187 | 82 | 8,729 | 90 |
| | 15,036 | 34 | | | 21 | 90 | 15,091 | 24 | 10,816 | 20 | 1,823 | 65 | 2,331 | 35 | 120 | 04 | 15,091 | 24 |
| | 10,793 | 46 | | | 16 | 20 | 10,833 | 66 | 8,741 | 46 | | | 1,983 | 29 | 108 | 91 | 10,833 | 66 |
| | 54,599 | 58 | | | 82 | 05 | 54,738 | 63 | 39,753 | 16 | 2,018 | 65 | 772 | 00 | 11,335 | 79 | 54,738 | 63 |
| | | | | | | | | | | | | | | | | | | |
| | 19,358 | 67 | | | 23 | 77 | 19,382 | 44 | 13,235 | 63 | 1,422 | 42 | 1,624 | 98 | 2,727 | 60 | 13,235 | 63 |
| | 16,608 | 72 | | | 23 | 40 | 16,758 | 12 | 9,399 | 72 | 3,971 | 08 | 300 | 00 | 2,865 | 22 | 16,758 | 12 |
| | 5,092 | 10 | | | 7 | 70 | 5,176 | 70 | 2,983 | 20 | 582 | 14 | 625 | 00 | 881 | 45 | 5,176 | 70 |
| | 3,978 | 60 | | | 5 | 40 | 3,984 | 00 | 2,199 | 96 | 565 | 71 | | | 1,140 | 80 | 3,984 | 00 |
| | 4,838 | 84 | | | 8 | 85 | 4,869 | 69 | 3,466 | 50 | 904 | 32 | | | 410 | 11 | 4,869 | 69 |
| | 49,876 | 93 | | | 68 | 62 | 50,170 | 95 | 31,285 | 07 | 7,445 | 67 | 2,549 | 98 | 8,025 | 18 | 50,170 | 95 |
| | | | | | | | | | | | | | | | | | | |
| | 5,978 | 22 | | | 10 | 80 | 5,989 | 02 | 4,916 | 54 | 16 | 00 | | | 905 | 24 | 5,989 | 02 |
| | 4,150 | 45 | | | 5 | 40 | 4,155 | 85 | 1,883 | 23 | 859 | 92 | 507 | 36 | 669 | 09 | 4,155 | 85 |
| | 4,024 | 31 | | | 7 | 20 | 4,059 | 47 | 3,241 | 50 | 48 | 00 | | | 695 | 10 | 4,059 | 47 |
| | 8,174 | 76 | | | 12 | 60 | 8,215 | 32 | 5,124 | 73 | 907 | 92 | 507 | 36 | 1,364 | 19 | 8,215 | 32 |
| | 1,425 | 42 | | | 3 | 60 | 1,429 | 02 | 1,099 | 92 | 60 | 00 | | | 246 | 54 | 1,429 | 02 |
| | 14,256 | 47 | | | 18 | 00 | 14,274 | 47 | 7,824 | 78 | | | 1,408 | 29 | 4,824 | 52 | 14,274 | 47 |
| | 7,639 | 02 | | | 8 | 70 | 7,679 | 64 | 4,775 | 07 | 590 | 34 | | | 2,105 | 52 | 7,679 | 64 |
| | 3,785 | 78 | | | 3 | 45 | 3,789 | 23 | 1,200 | 00 | | | 540 | 00 | 1,757 | 15 | 3,789 | 23 |

WEIGHTS AND MEASURES, 1916-17.
No. 19 (A).—INSPECTION DIVISIONS in Account with Expenditures—Concluded.

DR.

CR.

| Balances due by Inspectors, April 1, 1916. | Amounts received from Department Expenditures. | | Deductions from Salaries for | | Totals. | Divisions. | Expenditures authorized by the Department. | | | | Balances due by Inspectors, March 31, 1917. | Totals. | | | | |
|--|--|--------|------------------------------|-------------|----------|---|--|-----------|---------------------|-----------|---|------------|----------------------|------------|-----------|------------|
| | \$ | cts. | Superannuation. | Insur-ance. | | | Guaran-tee. | Salaries. | Special Assistance. | Rent. | | | Travelling expenses. | Sundries. | \$ | cts. |
| 3 70 | 11,424 80 | 31 92 | 12 15 | 11,468 87 | 12 15 | Alberta..... | 5,975 07 | 590 34 | 540 00 | 3,862 67 | 500 79 | 21,468 87 | 3 70 | 10,263 22 | 282 64 | 10,263 22 |
| 3 70 | 12,061 34 | 40 35 | 7 20 | 12,073 39 | 40 35 | Regina..... | 2,899 92 | 1,390 93 | 180 00 | 5,689 73 | 231 29 | 12,073 39 | 3 70 | 12,075 39 | 231 29 | 12,075 39 |
| 3 70 | 22,317 36 | 17 55 | 17 55 | 22,338 61 | 17 55 | Saskatchewan..... | 8,291 40 | 2,410 92 | 180 00 | 10,938 66 | 513 63 | 22,338 61 | 3 70 | 22,338 61 | 513 63 | 22,338 61 |
| | 4,240 64 | 56 16 | 4 65 | 4,245 29 | 4 65 | Nelson..... | 1,716 54 | 363 30 | 180 00 | 1,881 20 | 104 25 | 7,245 29 | | 7,245 29 | 104 25 | 7,245 29 |
| | 3,025 37 | 56 16 | 7 20 | 3,088 73 | 7 20 | Vancouver..... | 2,420 73 | 48 00 | 176 35 | 176 35 | 443 65 | 3,088 73 | | 3,088 73 | 443 65 | 3,088 73 |
| | 7,266 01 | 56 16 | 11 85 | 7,334 02 | 11 85 | British Columbia..... | 4,137 27 | 411 30 | 180 00 | 2,057 55 | 547 90 | 7,334 02 | | 7,334 02 | 547 90 | 7,334 02 |
| | 1,010 36 | | 3 60 | 1,013 96 | 3 60 | Dawson-Yukon..... | 999 96 | | | | 14 00 | 1,013 96 | | 1,013 96 | | 1,013 96 |
| | 220 02 | | | 220 02 | 220 02 | Chief Inspector..... | | | | 45 68 | 220 02 | 220 02 | | 220 02 | | 220 02 |
| | 344 31 | | | 344 31 | 344 31 | A. A. Rowen—Inspector of Elevator..... | 298 63 | | | | 344 31 | 344 31 | | 344 31 | | 344 31 |
| | 244 58 | | | 244 58 | 244 58 | J. G. White—Inspector of Elevator..... | 244 58 | | | | | 244 58 | | 244 58 | | 244 58 |
| 3 70 | 177,138 82 | 155 28 | 240 82 | 177,781 78 | 240 82 | General Contingencies..... | 109,951 11 | 13,860 80 | 6,137 63 | 43,606 02 | 4,222 62 | 177,781 78 | 3 70 | 177,781 78 | 4,222 62 | 177,781 78 |
| | 1,409 26 | | | 1,409 26 | 1,409 26 | Printing..... | | | | | 1,409 26 | 1,409 26 | | 1,409 26 | | 1,409 26 |
| | 3,339 73 | | | 3,339 73 | 3,339 73 | Stationery..... | | | | | 653 15 | 3,339 73 | | 3,339 73 | | 3,339 73 |
| | 653 15 | | | 653 15 | 653 15 | Provisional Allowance..... | | | | | 653 15 | 653 15 | | 653 15 | | 653 15 |
| | 4,690 23 | | | 4,690 23 | 4,690 23 | International Bureau of Weights and Measures..... | | | | | 216 15 | 4,690 23 | | 4,690 23 | | 4,690 23 |
| | 216 15 | | | 216 15 | 216 15 | Grand Totals..... | 109,951 11 | 13,860 80 | 6,137 63 | 43,606 02 | 216 15 | 188,090 30 | 3 70 | 188,090 30 | 14,531 04 | 188,090 30 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

GAS INSPECTION, 1916-17.

No. 20.—INSPECTION DISTRICTS in Account with Revenue.

DR.

CR.

| Balances due by Inspectors, April 1, 1916. — Stamps on Hand. | Stamps issued to Inspectors | Seizure and Penalties. | Totals. | Districts. | Returned Damaged Stamps. | Deposited to Credit of Receiver General. | Balances due by Inspectors, Mar. 31, 1917. | Totals. |
|--|-----------------------------|------------------------|------------|------------------------|--------------------------|--|--|------------|
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 2,209 65 | 1,125 00 | | 3,334 65 | Belleville..... | | 2,026 20 | 1,308 45 | 3,334 65 |
| 2,922 25 | 6,800 00 | | 9,722 25 | Hamilton..... | | 5,978 05 | 3,744 20 | 9,722 25 |
| 3,786 35 | 6,430 00 | 60 00 | 10,276 35 | London..... | | 6,281 10 | 3,995 25 | 10,276 35 |
| 4,701 70 | | | 4,701 70 | Ottawa..... | | 2,649 80 | 2,051 90 | 4,701 70 |
| 7,287 60 | 10,975 00 | | 18,262 60 | Toronto..... | | 14,647 90 | 3,614 70 | 18,262 60 |
| 20,907 55 | 25,330 00 | 60 00 | 46,297 55 | Ontario..... | | 31,583 05 | 14,714 50 | 46,297 55 |
| 1,851 55 | 14,525 00 | | 16,376 55 | Montreal..... | | 13,009 30 | 3,367 25 | 16,376 55 |
| 1,344 10 | 900 00 | | 2,244 10 | Quebec..... | 620 00 | 1,006 20 | 617 90 | 2,244 10 |
| 610 70 | 600 00 | | 1,210 70 | Sherbrooke..... | | 236 00 | 974 70 | 1,210 70 |
| 418 85 | | | 418 85 | St. Hyacinthe..... | | 86 40 | 332 45 | 418 85 |
| 4,225 20 | 16,025 00 | | 20,250 20 | ..... | 620 00 | 14,337 90 | 5,292 30 | 20,250 20 |
| 1,483 90 | 1,120 00 | | 2,603 90 | St. John, N.B..... | | 645 60 | 1,958 30 | 2,603 90 |
| 328 85 | 1,275 00 | 30 00 | 1,633 85 | Halifax, N.S..... | | 543 60 | 1,090 25 | 1,633 85 |
| 1,218 05 | | | 1,218 05 | Charlottetown, P.E.I.. | | 39 50 | 1,178 55 | 1,218 05 |
| 32,852 10 | | | 32,852 10 | Winnipeg, Man..... | | 2,780 55 | 30,071 55 | 32,852 10 |
| 7,025 85 | 2,100 00 | | 9,125 85 | Calgary, Alta..... | | 997 90 | 8,127 95 | 9,125 85 |
| 3,693 65 | 400 00 | | 4,093 65 | Vancouver..... | | 2,412 65 | 1,681 00 | 4,093 65 |
| 1,099 50 | 1,285 00 | | 2,384 50 | Victoria..... | | 816 60 | 1,567 90 | 2,384 50 |
| 4,793 15 | 1,685 00 | | 6,478 15 | British Columbia..... | | 3,229 25 | 3,248 90 | 6,478 15 |
| 72,834 65 | 47,535 00 | 90 00 | 120,459 65 | Grand Totals..... | 620 00 | 54,157 35 | 65,682 30 | 120,459 65 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR.

No. 21.—INSPECTION DISTRICTS IN

| Balances due by Inspectors, April 1, 1916. | Amounts received from Department to meet Expendi- tures. | Deductions from Salaries for | | | Totals. | Districts. |
|--|--|------------------------------|-------------|------------|-----------|-----------------------------|
| | | Super- annuation. | Retirement. | Guarantee. | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | |
| | 1,268 46 | | | | 1,268 46 | Belleville..... |
| | 5,745 31 | | | 9 75 | 5,755 06 | Hamilton..... |
| | 6,187 80 | | | 10 65 | 6,198 45 | London..... |
| | 7,305 59 | | | 7 98 | 7,313 57 | Ottawa..... |
| | 11,556 52 | 7 92 | 90 00 | 23 40 | 11,677 84 | Toronto..... |
| | 32,063 68 | 7 92 | 90 00 | 51 78 | 32,213 38 | Ontario..... |
| | 8,857 76 | | | 14 91 | 8,872 67 | Montreal..... |
| | 762 38 | | | 4 20 | 766 58 | Quebec..... |
| | 492 06 | 3 96 | | 3 90 | 499 92 | Sherbrooke..... |
| | 10,112 20 | 3 96 | | 23 01 | 10,139 17 | Quebec..... |
| | 98 16 | | | 1 80 | 99 96 | Fredericton..... |
| | 2,717 13 | | | 5 40 | 2,722 53 | St. John..... |
| | 2,815 29 | | | 7 20 | 2,822 49 | New Brunswick..... |
| | 2,935 37 | 1 92 | | 7 20 | 2,944 49 | Halifax..... |
| 12 88 | | | | | 12 88 | Pictou..... |
| 12 88 | 2,935 37 | 1 92 | | 7 20 | 2,957 37 | Nova Scotia..... |
| | 496 32 | | | 3 60 | 499 92 | Charlottetown, P.E.I. |
| | 6,740 28 | | | 9 60 | 6,749 88 | Winnipeg, Man..... |
| | 656 16 | | | | 656 16 | Calgary, Alberta..... |
| | 4 10 | | | | 4 10 | Vancouver..... |
| | 1,532 79 | | | 5 40 | 1,538 19 | Victoria..... |
| | 1,536 89 | | | 5 40 | 1,542 29 | British Columbia..... |
| | 17 37 | | | | 17 37 | Insp. of Eastern Dom. |
| | 337 56 | | | | 337 56 | Western " |
| 12 88 | 57 711 12 | 13 80 | 90 00 | 107 79 | 57,935 59 | Totals..... |
| 200 00 | 316 12 | | | | 516 12 | General Contingencies... |
| | 1,725 18 | | | | 1,725 18 | Printing..... |
| | 1,772 11 | | | | 1,772 11 | Stationery..... |
| 212 88 | 61,524 53 | 13 80 | 90 00 | 107 79 | 61,949 00 | Grand Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12
 TION, 1916-17.

ACCOUNT WITH EXPENDITURES.

Cr.

| Expenditures authorized by the Department. | | | | | Balances due by Inspectors, March 31, 1917. | Totals. |
|--|------------------------|----------|-------------------------|-----------|--|-----------|
| Salaries. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | | |
| \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | 692 82 | 200 00 | 272 95 | 102 69 | | 1,268 46 |
| 4,216 57 | 632 00 | 65 00 | 596 85 | 244 64 | | 5,755 06 |
| 4,920 05 | 429 57 | | 655 20 | 193 63 | | 6,198 45 |
| 4,374 74 | 2,464 42 | 429 90 | 2 00 | 42 51 | | 7,313 57 |
| 10,899 48 | 180 00 | 180 00 | 217 30 | 201 06 | | 11,677 84 |
| 24,410 84 | 4,398 81 | 874 90 | 1,744 30 | 784 53 | | 32,213 38 |
| 8,099 84 | 66 00 | 432 00 | 123 05 | 151 78 | | 8,872 67 |
| 766 58 | | | | | | 766 58 |
| 499 92 | | | | | | 499 92 |
| 9,366 34 | 66 00 | 432 00 | 123 05 | 151 78 | | 10,139 17 |
| 99 96 | | | | | | 99 96 |
| 2,399 88 | 4 00 | | 287 15 | 31 50 | | 2,722 53 |
| 2,499 84 | 4 00 | | 287 15 | 31 50 | | 2,822 49 |
| 2,399 88 | | 507 36 | 18 65 | 18 60 | | 2,944 49 |
| | | | | | 12 88 | 12 88 |
| 2,399 88 | | 507 36 | 18 65 | 18 60 | 12 88 | 2,957 37 |
| 499 92 | | | | | | 499 92 |
| 6,749 88 | | | | | | 6,749 88 |
| | 515 02 | | 91 30 | 49 84 | | 656 16 |
| | | | 35 | 3 75 | | 4 10 |
| 1,499 88 | 4 00 | | 6 20 | 28 11 | | 1,538 19 |
| 1,499 88 | 4 00 | | 6 55 | 31 86 | | 1,542 29 |
| | | | | 17 37 | | 17 37 |
| | | | 231 90 | 105 66 | | 337 56 |
| 47,426 58 | 4,987 83 | 1,814 26 | 2,502 90 | 1,191 14 | 12 88 | 57,935 59 |
| | | | | 316,12 | 200,00 | 516 12 |
| | | | | 1,725 18 | | 1,725 18 |
| | | | | 1,772 11 | | 1,772 11 |
| 47,426 58 | 4,987 83 | 1,814 26 | 2,502 90 | 5,004 55 | 212 88 | 61,949 00 |

J. U. VINCENT,
Deputy Minister.

ELECTRIC LIGHT INSPECTION, 1916-17.

No. 22.—INSPECTION DISTRICTS in Account with Revenue.

DR.

CR.

| Balances due by Inspectors, April 1, 1916. — Stamps on Hand. | | Stamps issued to Inspectors. | | Totals. | | Districts. | Returned Damaged Stamps. | Deposited to Credit of Receiver General. | | Balances due by Inspectors, March 31, 1917. — Stamps on Hand. | | Totals. | |
|--|------|------------------------------|------|---------|------|--|--------------------------|--|------|---|------|---------|------|
| \$ | cts. | \$ | cts. | \$ | cts. | | | \$ | cts. | \$ | cts. | \$ | cts. |
| 5,632 | 05 | | | 5,632 | 05 | Belleville..... | | 2,216 | 40 | 3,415 | 65 | 5,632 | 05 |
| 1,552 | 35 | 1,500 | 00 | 3,052 | 35 | Fort William..... | | 979 | 50 | 2,072 | 85 | 3,052 | 35 |
| 1,659 | 10 | 6,500 | 00 | 8,159 | 10 | Hamilton..... | | 4,499 | 70 | 3,659 | 40 | 8,159 | 10 |
| 3,989 | 35 | 7,050 | 00 | 11,039 | 35 | London..... | | 6,523 | 95 | 4,515 | 40 | 11,039 | 35 |
| 4,060 | 35 | 3,600 | 00 | 7,660 | 35 | Ottawa..... | | 4,568 | 20 | 3,092 | 15 | 7,660 | 35 |
| 2,714 | 05 | | | 2,714 | 05 | Sudbury..... | | 1,558 | 20 | 1,155 | 85 | 2,714 | 05 |
| 3,546 | 50 | 16,325 | 00 | 19,871 | 50 | Toronto..... | | 11,363 | 40 | 8,508 | 10 | 19,871 | 50 |
| 23,153 | 75 | 34,975 | 00 | 58,128 | 75 | Ontario..... | | 31,709 | 35 | 26,419 | 40 | 58,128 | 75 |
| 8,098 | 20 | 10,750 | 00 | 18,848 | 20 | Montreal..... | | 13,675 | 15 | 5,173 | 05 | 18,848 | 20 |
| 1,142 | 80 | 2,300 | 00 | 3,442 | 80 | Quebec..... | | 2,489 | 05 | 953 | 75 | 3,442 | 80 |
| 736 | 45 | 2,300 | 00 | 3,036 | 45 | Sherbrooke..... | | 903 | 35 | 2,133 | 10 | 3,036 | 45 |
| 1,066 | 55 | 740 | 00 | 1,806 | 55 | St. Hyacinthe..... | | 927 | 40 | 879 | 15 | 1,806 | 55 |
| 795 | 70 | 1,060 | 00 | 1,855 | 70 | Three Rivers..... | | 862 | 15 | 993 | 55 | 1,855 | 70 |
| 11,839 | 70 | 17,150 | 00 | 28,989 | 70 | Quebec..... | | 18,857 | 10 | 10,132 | 60 | 28,989 | 70 |
| 1,118 | 05 | 3,175 | 00 | 4,293 | 05 | St. John, N.B..... | | 1,848 | 15 | 2,444 | 90 | 4,293 | 05 |
| 1,636 | 65 | 2,100 | 00 | 3,736 | 65 | Halifax, N.S..... | | 2,053 | 65 | 1,683 | 00 | 3,736 | 65 |
| 1,731 | 75 | | | 1,731 | 75 | Charlottetown, P.E.I..... | | 198 | 00 | 1,533 | 75 | 1,731 | 75 |
| 45,916 | 90 | | | 45,916 | 90 | Winnipeg, Man..... | | 2,887 | 90 | 43,029 | 00 | 45,916 | 90 |
| 4,612 | 05 | | | 4,612 | 05 | Regina, Sask..... | | 2,019 | 80 | 2,592 | 25 | 4,612 | 05 |
| 7,360 | 80 | 4,500 | 00 | 11,860 | 80 | Calgary..... | | 1,926 | 70 | 9,934 | 10 | 11,860 | 80 |
| 5,080 | 50 | | | 5,080 | 50 | Edmonton..... | | 885 | 90 | 4,194 | 60 | 5,080 | 50 |
| 12,441 | 30 | 4,500 | 00 | 16,941 | 30 | Alberta..... | | 2,812 | 60 | 14,128 | 70 | 16,941 | 30 |
| 3,749 | 25 | 7,200 | 00 | 10,949 | 25 | Vancouver..... | | 6,793 | 15 | 4,156 | 10 | 10,949 | 25 |
| 2,844 | 95 | 1,260 | 00 | 4,104 | 95 | Victoria..... | | 1,935 | 90 | 2,169 | 05 | 4,104 | 95 |
| 6,534 | 20 | 8,460 | 00 | 15,054 | 20 | British Columbia..... | | 8,729 | 05 | 6,325 | 15 | 15,054 | 20 |
| 1,350 | 00 | | | 1,350 | 00 | Dawson, Yukon..... | | | | 1,350 | 00 | 1,350 | 00 |
| 110,394 | 35 | 70,360 | 00 | 180,754 | 35 | Export of Electric Power Licenses..... | | 71,115 | 60 | 109,638 | 75 | 180,754 | 35 |
| | | | | 250 | 00 | Electrical Standard— Laboratory Fees..... | | 250 | 00 | | | 250 | 00 |
| | | | | 101 | 58 | | | 101 | 58 | | | 101 | 58 |
| 110,394 | 35 | 70,360 | 00 | 181,105 | 93 | Grand Totals..... | | 71,467 | 18 | 109,638 | 75 | 181,105 | 93 |

ELECTRIC LIGHT INSPECTION, 1916-17.

CR.

No. 23.—INSPECTION DISTRICTS in Account with Expenditures.

DR.

| Amounts received from Department to meet Expenditures. | Deduction from salaries for | | | Totals. | Districts. | Expenditures authorized by the Department. | | | | | Balances due by Inspectors, March 31, 1917. | Totals. | | |
|--|-----------------------------|-------------|------------|----------|-----------------------|--|---------------------|-------|----------------------|-----------|---|---------|----------|------|
| | Superannuation. | Retirement. | Guarantee. | | | Salaries. | Special Assistance. | Rent. | Travelling Expenses. | Sundries. | | | \$ | cts. |
| \$ | \$ | \$ | \$ | \$ | | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | cts. |
| 2,860 43 | 1 92 | | 10 80 | 2,873 15 | Bellefleur | 1,499 88 | 1,035 96 | | 287 90 | | 49 41 | | 2,873 15 | |
| 1,752 85 | 3 60 | | 3 60 | 1,756 45 | Fort William | 1,399 92 | 30 00 | | 220 60 | | 105 93 | | 1,756 45 | |
| 462 00 | | | | 462 00 | Hamilton | | | | 462 00 | | | | 462 00 | |
| 829 02 | | | | 829 02 | London | | 249 99 | | 533 55 | | 45 48 | | 829 02 | |
| 224 00 | | | 41 | 224 00 | Ottawa | 115 58 | 497 29 | | 1,098 11 | | 54 18 | | 224 00 | |
| 1,764 75 | | | | 1,764 75 | Studbury | | | | 741 80 | | 42 10 | | 1,764 75 | |
| 783 90 | | | 90 | 783 90 | Toronto | 750 00 | | | | | | | 783 90 | |
| 749 10 | | | | 749 10 | E. A. Kinsma | | | | | | | | 749 10 | |
| 0,426 05 | 1 92 | | 15 71 | 9,443 68 | Ontario | 3,765 38 | 1,813 24 | | 3,567 96 | | 297 10 | | 9,443 68 | |
| 2,675 98 | | | | 2,675 98 | Montreal | | 2,273 79 | | 337 40 | | 64 79 | | 2,675 98 | |
| 3,399 30 | | | | 3,399 30 | Quebec | | 2,154 94 | | 449 65 | 611 25 | | | 3,399 30 | |
| 227 85 | | | | 227 85 | Sherbrooke | | | | 182 65 | | 45 80 | | 227 85 | |
| 974 97 | | | 3 60 | 978 57 | St. Hyacinthe | 499 92 | | | | 180 00 | | | 978 57 | |
| | | | | | Three Rivers | | | | | | | | | |
| 7,278 10 | | | 3 60 | 7,281 70 | Quebec | 499 92 | 4,428 73 | | 1,254 90 | 791 25 | 306 90 | | 7,281 70 | |
| 355 01 | | | | 355 01 | St. John, N.B. | | 12 00 | | 298 68 | | 44 33 | | 355 01 | |
| 1,330 17 | | | | 1,330 17 | Halifax, N.S. | | 60 00 | | 997 20 | | 272 97 | | 1,330 17 | |
| 147 76 | | | | 147 76 | Charlottetown, P.E.I. | | 60 00 | | 70 30 | | 17 46 | | 147 76 | |
| 841 30 | | | | 841 30 | Winnipeg, Man. | | | | | 533 10 | 123 10 | | 841 30 | |
| 2,399 68 | | | 3 60 | 2,403 28 | Calgary | 1,500 00 | 514 98 | | 277 60 | | 110 70 | | 2,403 28 | |
| 1,696 61 | | | 3 60 | 1,700 21 | Edmonton | 1,299 96 | | | 282 45 | | 117 80 | | 1,700 21 | |
| 4,096 29 | | | 7 20 | 4,103 49 | Alberta | 2,799 96 | 514 98 | | 560 05 | | 228 50 | | 4,103 49 | |

ELECTRIC LIGHT INSPECTION, 1916-17.

Dr. No. 23.—INSPECTION DISTRICTS in Account with Expenditures—Concluded. Cr.

| Amounts received from Department to meet Expenditures. | Deduction from salaries for | | | Totals. | Districts. | Expenditures authorized by the Department. | | | | | Balances due by Inspectors, March 31, 1917. | Totals. |
|--|-----------------------------|-------------|------------|-----------|---|--|----------|----------|----------|----------|---|-----------|
| | Superannuation. | Retirement. | Guarantee. | | | \$ | cts. | \$ | cts. | \$ | | |
| 3,614 38 | | | 3 78 | 3,618 16 | Regina, Sask. | 2,390 03 | | | 1,143 70 | 171 40 | | 3,618 16 |
| 8,528 18 | | 9 96 | 14 76 | 8,552 90 | Vancouver. | 7,077 38 | 900 00 | | 369 90 | 295 62 | | 8,552 90 |
| 305 69 | | | | 305 69 | Victoria. | 44 00 | | | 150 10 | 111 59 | | 305 69 |
| 8,833 87 | | 9 96 | 14 76 | 8,858 59 | British Columbia. | 7,077 38 | 944 00 | | 520 00 | 317 21 | | 8,858 59 |
| 496 32 | | | 3 60 | 499 92 | Dawson, Yukon. | 499 92 | | | | | | 499 92 |
| 574 60 | | | | 574 60 | Chief Electrical Engineer. | | | | 224 45 | 350 15 | | 574 60 |
| 3,198 34 | | | 3 60 | 3,231 94 | Inspector of Eastern Division. | | | | | 2 70 | | 2 70 |
| | | | | | Inspector of Western Division. | 2,599 92 | | | 359 85 | 242 17 | | 3,201 94 |
| 40,192 19 | 1 92 | 9 96 | 52 25 | 40,259 02 | Total for Districts, etc. | 19,542 54 | 7,832 95 | 1,324 35 | 9,185 19 | 2,371 29 | 2 70 | 40,259 02 |
| 3,657 72 | | | | 3,657 72 | General Contingencies. | | | | | 3,657 72 | | 3,657 72 |
| 236 56 | | | | 236 56 | Printing. | | | | | 236 56 | | 236 56 |
| 45 80 | | | | 45 80 | Stationery. | | | | | 45 80 | | 45 80 |
| | | | | | International Electro-Technical Commission. | | | | | | | |
| 2,286 44 | | | | 2,286 44 | Provisional Allowance. | | | | | 2,286 44 | | 2,286 44 |
| | | | | | Export of Electric Power. | | | | | | | |
| 46,418 71 | 1 92 | 9 96 | 52 25 | 46,485 54 | Grand Total. | 19,542 54 | 7,832 95 | 1,324 35 | 9,185 19 | 8,597 81 | 2 70 | 46,485 54 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

No. 24.—STATEMENT showing the Amounts voted and the Expenditures for each Service for the Year ended March 31, 1917.

| Service. | Grants. | | Expenditures. | | Over Expended. | | Under Expended. | |
|---|-----------|------|---------------|------|----------------|------|-----------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| Minister's salary..... | 7,000 | 00 | 7,000 | 00 | | | | |
| Departmental salaries..... | 173,250 | 00 | 128,431 | 97 | | | 44,818 | 03 |
| “ contingencies..... | 20,000 | 00 | 19,327 | 55 | | | 672 | 45 |
| Excise salaries..... | 575,876 | 25 | 492,591 | 20 | | | 83,285 | 05 |
| “ contingencies..... | 90,000 | 00 | 80,743 | 93 | | | 9,256 | 07 |
| War tax contingencies..... | 125,000 | 00 | 42,312 | 65 | | | 82,687 | 35 |
| Special War Act..... | 782 | 50 | 782 | 50 | | | | |
| Duty pay at large distilleries and other factories..... | 16,000 | 00 | 13,365 | 30 | | | 2,634 | 70 |
| Duty pay other than special survey..... | 2,000 | 00 | 1,215 | 05 | | | 784 | 95 |
| Preventive service salaries..... | 101,000 | 00 | 84,999 | 59 | | | 16,000 | 41 |
| “ contingencies..... | 15,000 | 00 | 11,754 | 92 | | | 3,245 | 08 |
| Tobacco stamps..... | 130,000 | 00 | 82,889 | 50 | | | 47,110 | 50 |
| Excise commission to custom officers..... | 5,000 | 00 | 3,145 | 71 | | | 1,854 | 29 |
| Tobacco stamps Commission..... | | | | | | | | |
| Provisional Allowance, Excise..... | 11,000 | 00 | 9,526 | 85 | | | 1,473 | 15 |
| Provisional Allowance, Weights and Measures..... | 4,500 | 00 | 4,690 | 23 | 190 | 23 | | |
| Provisional Allowance, Gas and Electric Light..... | 4,000 | 00 | 2,286 | 44 | | | 1,713 | 56 |
| Methylated Spirits contingencies..... | 155,000 | 00 | 154,788 | 74 | | | 211 | 26 |
| Minor Expenditures..... | 500 | 00 | 131 | 00 | | | 369 | 00 |
| Weights and Measures salaries..... | 145,250 | 00 | 109,951 | 11 | | | 35,298 | 89 |
| Weights and Measures contingencies..... | 85,000 | 00 | 73,229 | 11 | | | 11,770 | 89 |
| Gas and Electric Light salaries..... | 88,500 | 00 | 66,969 | 12 | | | 21,530 | 88 |
| Gas and Electric Light contingencies..... | 59,000 | 00 | 38,963 | 40 | | | 20,036 | 60 |
| Adulteration of Food salaries and contingencies..... | 45,000 | 00 | 41,523 | 06 | | | 3,476 | 94 |
| Export of Electric Power..... | 1,000 | 00 | | | | | 1,000 | 00 |
| International Bureau of Weights and Measures..... | 800 | 00 | 216 | 15 | | | 583 | 85 |
| International Electro Technical Commission..... | 400 | 00 | | | | | 400 | 00 |
| Proprietary or Patent Medicines..... | 2,000 | 00 | 850 | 00 | | | 1,150 | 00 |
| Special Translation..... | 291 | 93 | 291 | 93 | | | | |
| Totals..... | 1,863,150 | 68 | 1,471,977 | 01 | 190 | 23 | 391,363 | 90 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

Dr. No. 25.—STATEMENT showing the transactions in connection with the manufacture of Methylated Spirits for the year ended March 31, 1917. Cr.

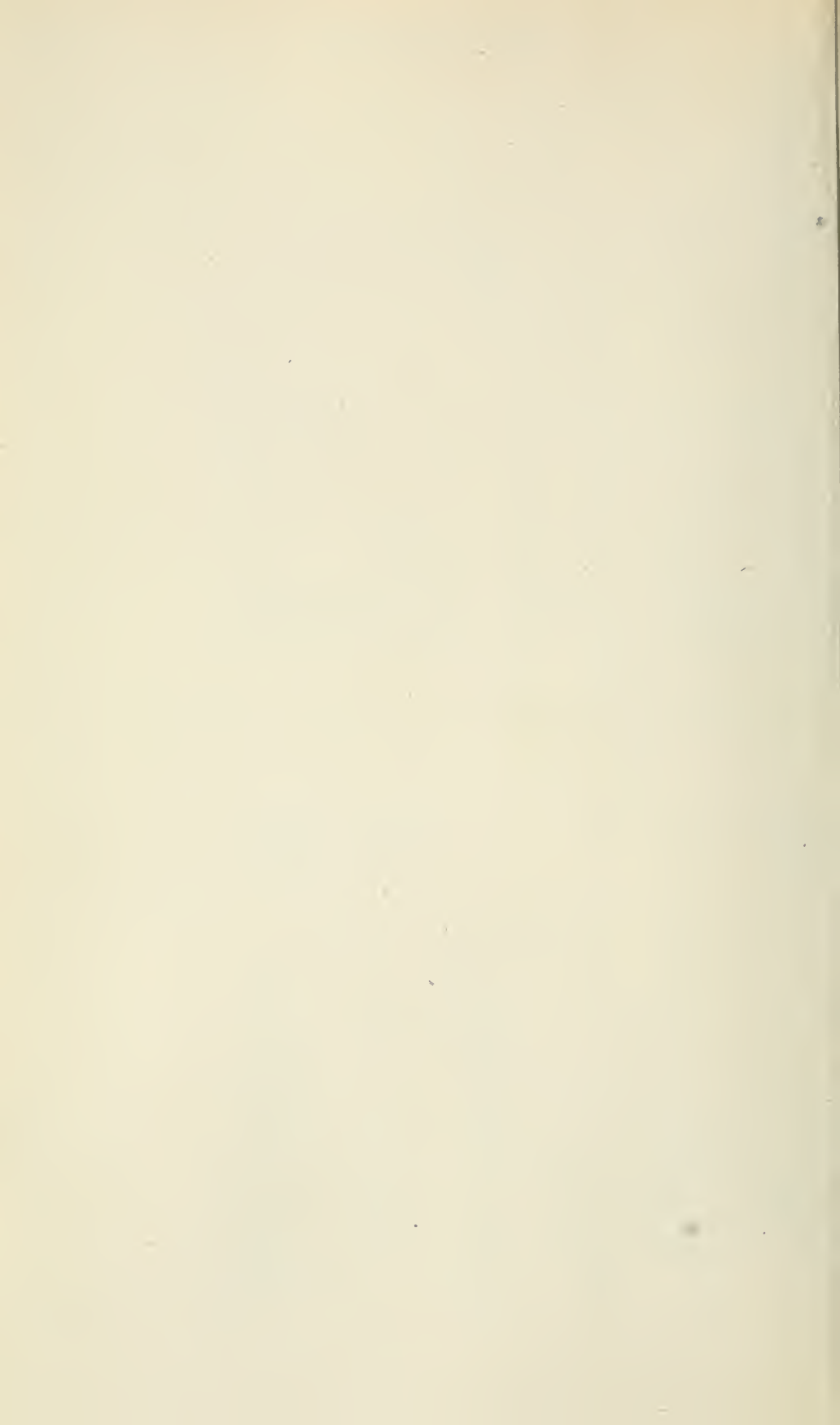
| | Amounts. | | Totals. | | | Amounts. | | Totals. | |
|--|----------|------|---------|------------|--|----------|------|---------|------|
| | \$ | cts. | \$ | cts. | | \$ | cts. | \$ | cts. |
| To Stock on hand March 31, 1916. | | | | | | | | | |
| Grain Alcohol, 6,740.26 Proof gal. at 40c. | 2,696 | 10 | | | | | | | |
| Wood Naphtha, 1,213.31 Standard gal. at 87½c. | 1,061 | 65 | | | | | | | |
| Methylated Spirits, 212.34 Standard gal. at 50c. | 106 | 17 | | | | | | | |
| “ “ 622.99 Standard gal. at 85c. | 563 | 54 | | | | | | | |
| Barrels, 144 at \$4; Drums, 2 at \$10. | 596 | 00 | | 5,023 46 | | | | | |
| To Methylated Spirits sold and unpaid on Mar. 31, 1916:— | | | | | | | | | |
| 1,072.76 Standard gallons at 83c. | 890 | 39 | | | | | | | |
| 3,402.74 “ “ 85c. | 2,892 | 33 | | | | | | | |
| 82.73 “ “ 73c. | 60 | 39 | | | | | | | |
| Barrels, 168 at \$4; Drums, 11 at \$10. | 782 | 00 | | 4,625 11 | | | | | |
| To Disbursements for purchase of materials and as per Statement No. 2:— | | | | | | | | | |
| Alcohol, 5,339.15 Proof gal. at 40c, \$ 2,143 66 | | | | | | | | | |
| “ 200,670.06 Proof gal. at 45c. 90,301 83 | | | | | | | | | |
| “ 8,362.37 Proof gal. at 55c. 4,599 31 | | | | | | | | | |
| Barrels, 3,308 at \$4. 13,232 00 | | | | | | | | | |
| Drums, 326 at \$6. 1,956 00 | | | | | | | | | |
| Wood Naphtha, 23,442.44 Standard gal. at 87½c. 20,512 13 | | | | | | | | | |
| Gasolene, 184.9 at 32½c., 45.7 at 33½c., 46.6 at 34½c., 182.5 at 35c., 47 at 35½c., 94.8 at 36½c., 96.6 at 37c., 47.9 at 37½c., 45.7 at 38½c. 277 26 | | | | | | | | | |
| Less empties. 2 10 | | | | | | | | | |
| To barrels, 2,689 at \$4; Drums, 420 at \$10. 14,956 00 | | | | | | | | | |
| Less cartage and freight. 388 53 | | | | | | | | | |
| | | | | 147,502 56 | | | | | |
| By cash received on account of Methylated Spirits sold during the year ended March 31, 1917, as per details:— | | | | | | | | | |
| 3,188.62 Standard gallons at 50c. | 1,594 | 20 | | | | | | | |
| 41,788.55 “ “ 83c. | 34,688 | 97 | | | | | | | |
| 81,813.64 “ “ 85c. | 69,540 | 78 | | | | | | | |
| 205.85 “ “ 93c. | 191 | 45 | | | | | | | |
| 43,329.34 “ “ 95c. | 41,162 | 77 | | | | | | | |
| 246.38 “ “ \$1.08. | 266 | 08 | | | | | | | |
| 9,607.94 “ “ 1.10. | 10,568 | 72 | | | | | | | |
| Barrels, 6,506 at \$4. | 26,024 | 00 | | | | | | | |
| Drums, 396 at \$10. | 3,960 | 00 | | | | | | | |
| Drums, 10 at \$15. | 150 | 00 | | | | | | | |
| Drums, 326 at \$6. | 1,956 | 00 | | | | | | | |
| Cans, 3 at 50c. | 1 | 50 | | | | | | | |
| Cans, 6 at 90c. | 5 | 40 | | | | | | | |
| | 190,109 | 87 | | | | | | | |
| Add amount sold in 1915-16 and not paid:— | | | | | | | | | |
| 1,072.76 Standard gallons at 83c. \$ 890 39 | | | | | | | | | |
| 3,402.74 “ “ 85c. 2,892 33 | | | | | | | | | |
| 82.73 “ “ 73c. 60 39 | | | | | | | | | |
| Barrels, 168 at \$4; Drums, 11 at \$10. 782 00 | | | | | | | | | |
| | 4,625 | 11 | | | | | | | |
| | 194,734 | 98 | | | | | | | |
| Deduct amount sold in 1916-17 and not paid:— | | | | | | | | | |
| 43.45 Standard gallons at 83c. \$ 36 06 | | | | | | | | | |
| 162.76 “ “ 85c. 138 35 | | | | | | | | | |
| 40.88 “ “ 93c. 38 02 | | | | | | | | | |
| 4,003.19 “ “ 95c. 3,803 03 | | | | | | | | | |
| 206.85 “ “ \$1.08. 223 39 | | | | | | | | | |
| 4,696.72 “ “ 1.10. 5,166 38 | | | | | | | | | |
| Barrels, 377 at \$4; Drums, 10 at \$15. 1,658 00 | | | | | | | | | |
| | 11,063 | 23 | | | | | | | |
| | 183,671 | 75 | | | | | | | |

SESSIONAL PAPER No. 12

| | | | | | |
|--|----------|------------|--|----------|------------|
| To Special assistance..... | 1,258 84 | | | | |
| Freight..... | 4,692 04 | | | | |
| Sundries..... | 1,111 51 | | | | |
| Printing..... | 121 31 | | | | |
| Stationery..... | 12 48 | | | | |
| To other expenses, as follows:— | | | | | |
| Salaries (paid from Civil Government Salaries.....) | 6,250 00 | | | | |
| Salaries (paid from Civil Government Contingencies)..... | 600 00 | | | | |
| Profit..... | | | | | |
| Methylated Spirits manufactured during the year— | | | | | |
| 296,929-31 Proof galls. | | 6,850 00 | | | |
| | | 15,763 15 | | | |
| Total..... | | 187,050 46 | | | |
| Add alcohol sold..... | | | | 36 48 | |
| Over remitted on Order No. 25883..... | | | | 0 05 | |
| Deposited to credit Receiver General..... | | 7,196 18 | | | 183,708 23 |
| Stock on hand March 31, 1917:— | | | | | |
| Alcohol, 4,928-92 at 45c..... | | | | 2,218 01 | |
| Wood Naphtha, 864-2 at 87½c..... | | | | 756 17 | |
| 92 barrels at \$4..... | | | | 368 00 | |
| Alcohol used in manufacture, 232,546-71 Proof galls. | | | | | |
| Wood Naphtha used in manufacture, 46,528-70 Proof galls. | | | | | |
| Total..... | | | | | 187,050 46 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.



APPENDIX A.

STATISTICS

No. 1.—RETURN of Manufactures for

| Divisions. | Licenses. | | MATERIALS TAKEN FOR USE. | | | | |
|----------------------|-----------|-------|--------------------------|--------------|------------|---------|--------|
| | | | Grain. | | | | |
| | No. | Fees. | Malt. | Indian Corn. | Rye. | Oats. | Wheat. |
| | | \$ | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. |
| Belleville, Ont..... | 1 | 250 | 3,158,466 | 46,451,428 | 2,877,226 | | |
| Guelph "..... | 1 | 250 | | | | | |
| Hamilton "..... | 1 | 250 | | | | | |
| Perth "..... | 4 | 875 | | | | | |
| Prescott "..... | 1 | 250 | 290,130 | 5,980,600 | 885,922 | 29,780 | 27,782 |
| Toronto "..... | 2 | 500 | | | | | |
| Windsor "..... | 2 | 500 | 851,360 | 12,216,000 | 2,890,440 | 101,800 | |
| Totals..... | 12 | 2,875 | 4,299,956 | 64,648,028 | 6,653,588 | 131,580 | 27,782 |
| Joliette, Que..... | 1 | 250 | 3,516,592 | 3,249,624 | 3,584,394 | | |
| Montreal "..... | 2 | 500 | | | | | |
| St. Hyacinthe "..... | 2 | 500 | 152,805 | 1,549,835 | 192,835 | | |
| Totals..... | 5 | 1,250 | 3,669,397 | 4,799,459 | 3,777,229 | | |
| Vancouver, B.C..... | 1 | 250 | | | | | |
| Grand Totals..... | 18 | 4,375 | 7,969,353 | 69,447,487 | 10,430,817 | 131,580 | 27,782 |

No. 2.—COMPARATIVE Statement of Manufactures for

| 1916. | | | | | | | |
|-----------------------|----|-------|-----------|------------|------------|---------|--------|
| Ontario..... | 10 | 2,375 | 1,866,095 | 29,360,143 | 3,664,731 | 169,130 | |
| Quebec..... | 5 | 1,125 | 2,997,760 | 3,645,948 | 3,268,152 | | |
| British Columbia..... | 1 | 250 | | | | | |
| Totals..... | 16 | 3,750 | 4,863,855 | 33,006,091 | 6,932,883 | 169,130 | |
| 1917. | | | | | | | |
| Ontario..... | 12 | 2,875 | 4,299,956 | 64,648,028 | 6,653,588 | 131,580 | 27,782 |
| Quebec..... | 5 | 1,250 | 3,669,397 | 4,799,459 | 3,777,229 | | |
| British Columbia..... | 1 | 250 | | | | | |
| Totals..... | 18 | 4,375 | 7,969,353 | 69,447,487 | 10,430,817 | 131,580 | 27,782 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

SPIRITS.

the Fiscal Year ended March 31, 1917.

| Total Grain. | Molasses. | USED IN SPIRITS MANUFACTURED. | | Proof Spirits Manufactured. | Duty Collected ex-manufactory, on Deficiencies and Assessments. | | Total Duty Collected ex-manufactory, including License Fees. |
|--------------|------------|-------------------------------|------------|-----------------------------|---|----------|--|
| | | Grain. | Molasses. | | Galls. | \$ cts. | |
| Lbs. | Lbs. | Lbs. | Lbs. | Galls. | Galls. | \$ cts. | \$ cts. |
| 52,487,120 | 4,072,840 | 52,709,058 | 4,072,840 | 3,300,140-00 | | | 250 00 |
| | | | | 23 11 | 47-23 | 113 35 | 363 35 |
| | | | | | 25-94 | 62 26 | 312 26 |
| | | | | | 19-50 | 47 20 | 922 20 |
| 7,214,214 | | 7,208,614 | | 436,167-31 | | | 250 00 |
| | | | | | 885-38 | 2,124 91 | 2,624 91 |
| 16,059,600 | | 15,624,600 | | 931,443-08 | 2,068-12 | 4,975 54 | 5,475 54 |
| 75,760,934 | 7,072,840 | 75,542,272 | 4,072,840 | 4,667,773-50 | 3,046-17 | 7,323 26 | 10,198 26 |
| 10,350,610 | | 10,315,615 | | 511,912-89 | | | 250 00 |
| | 23,343,876 | | 23,343,876 | 1,116,769-67 | | | 500 00 |
| 1,895,475 | | 1,882,665 | | 103,612-88 | | | 500 00 |
| 12,246,085 | 23,343,876 | 12,198,280 | 23,343,876 | 1,732,295-44 | | | 1,250 00 |
| | | | | 50-20 | 33-83 | 81 19 | 331 19 |
| 88,007,019 | 27,416,716 | 87,740,552 | 27,416,716 | 6,400,119-14 | 3,080-00 | 7,404,45 | 11,779 45 |

the Fiscal Years ended March 31, 1916 and 1917.

| | | | | | | | |
|------------|------------|------------|------------|--------------|----------|----------|-----------|
| 35,060,099 | 3,334,166 | 35,854,099 | 3,334,166 | 2,401,258-24 | 3,334-63 | 8,004 19 | 10,379 19 |
| 9,911,860 | 11,550,294 | 9,959,490 | 11,550,294 | 1,048,753-31 | | | 1,125 00 |
| | | | | | 731-12 | 1,754 69 | 2,004 69 |
| 44,971,959 | 14,884,460 | 45,813,589 | 14,884,460 | 3,450,011-55 | 4,065-75 | 9,758 88 | 13,508 88 |
| 75,760,934 | 4,072,840 | 75,542,272 | 4,072,840 | 4,667,773-50 | 3,046 17 | 7,323 26 | 10,198 26 |
| 12,246,085 | 23,343,876 | 12,198,280 | 23,343,876 | 1,732,295-44 | | | 1,250 00 |
| | | | | 50-20 | 33-83 | 81 19 | 331 19 |
| 88,007,019 | 27,416,716 | 87,740,552 | 27,416,716 | 6,400,119-14 | 3,080-00 | 7,404,45 | 11,779 45 |

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

APPENDIX A.—

No. 3.—STATEMENT showing transactions in the Distilleries in the

| Divisions. | In Process, including Deficiencies brought forward. | Manufactured including Surpluses. | Returned to Distillery for Redistillation. In Bond. |
|-------------------------|---|---|---|
| | Galls. | Galls. | Galls. |
| Belleville, Ont..... | 187,364.26 | 3,300,140.00 | 9,141.54 |
| Guelph "..... | 2,449.12 | 23.11 | 270.51 |
| Hamilton "..... | 656.98 | | |
| Perth "..... | 121.10 | | |
| Prescott "..... | 57,599.98 | 436,167.31 | 1,235.54 |
| Toronto "..... | 25,929.74 | | 87,578.22 |
| Windsor "..... | 19,901.57 | 931,443.08 | 133,798.87 |
| Totals..... | 294,022.75 | 4,667,773.50 | 232,024.68 |
| Joliette, Que..... | 9,841.79 | 511,912.89 | 11,886.66 |
| Montreal "..... | 57,115.41 | 1,116,769.67 | 19,760.99 |
| St. Hyacinthe, Que..... | 19,289.48 | 103,612.88 | 1,366.49 |
| Totals..... | 86,246.68 | 1,732,295.44 | 33,014.14 |
| Vancouver, B.C..... | 2,461.84 | 50.20 | 117.37 |
| Grand Totals..... | 382,731.27 | 6,400,119.14 | 265,156.19 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

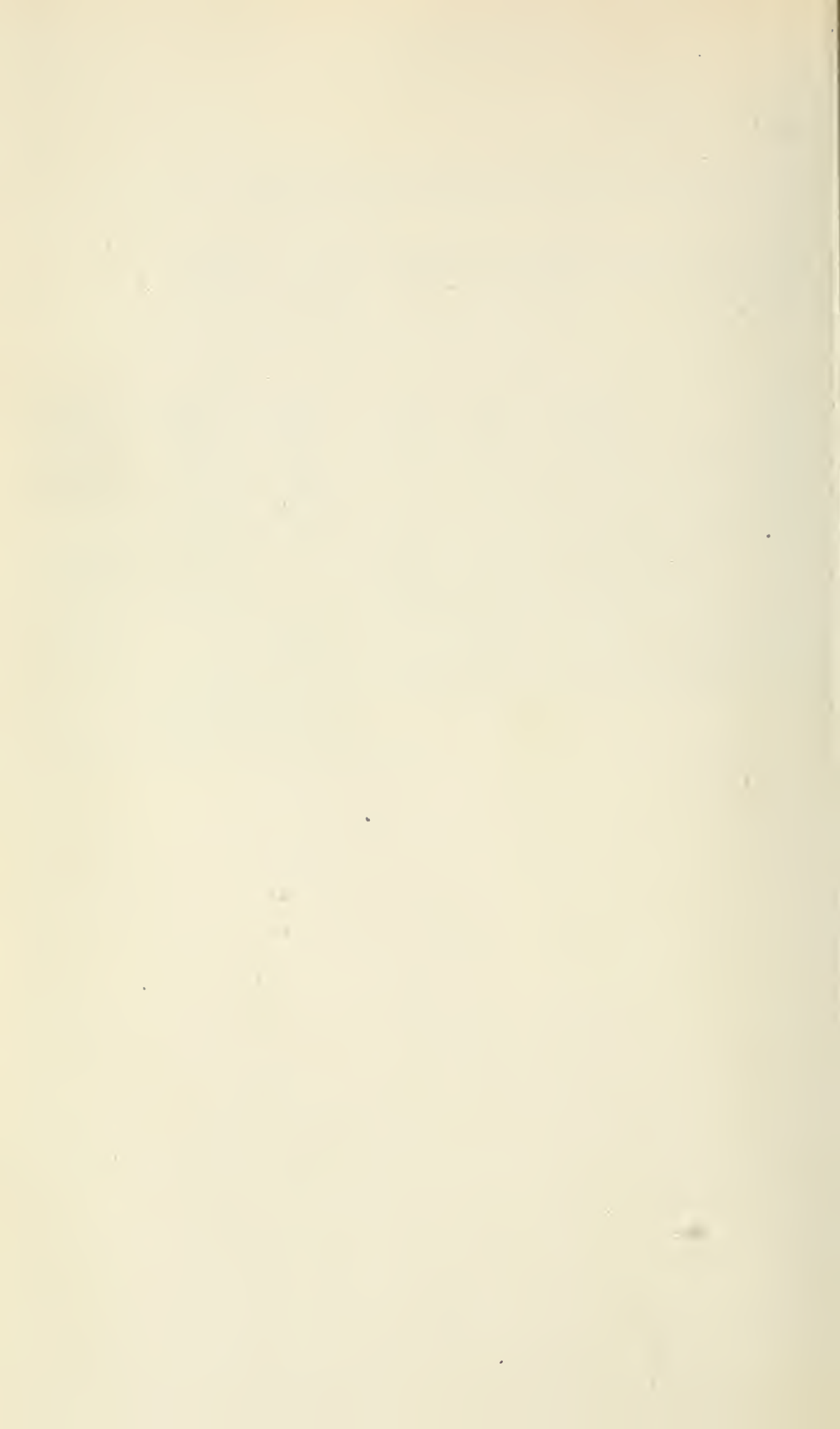
SESSIONAL PAPER No. 12

SPIRITS—Continued.

Dominion of Canada, during the Fiscal Year ended March 31, 1917.

| RECEIVED FROM OTHER SOURCES. | | Totals. | Warehoused. | Fusel Oil Written off. | Deficiencies on which Duty was Collected. | In Process, including Deficiencies carried forward. | Totals. |
|------------------------------|---------|--------------|--------------|------------------------|---|---|--------------|
| Duty Paid. | In Bond | | | | | | |
| Galls. | Galls. | Galls. | Galls. | Galls. | Galls. | Galls. | Galls. |
| 36.70 | | 3,496,682.50 | 3,415,163.83 | 5,621.43 | | 75,897.24 | 3,496,682.50 |
| 1,613.13 | | 4,355.87 | 1,514.04 | 313.74 | 47.23 | 2,480.86 | 4,355.87 |
| 1,959.13 | | 2,616.11 | 1,974.90 | 222.07 | 25.94 | 393.20 | 2,616.11 |
| | | 121.10 | 73.93 | | 19.50 | 27.67 | 121.10 |
| 507.44 | 569.61 | 496,079.88 | 474,109.71 | 1,347.72 | | 20,622.45 | 496,079.88 |
| 1,722.09 | | 115,230.05 | 100,258.54 | 1,720.42 | 885.38 | 12,365.71 | 115,230.05 |
| 882.90 | | 1,086,026.42 | 1,023,649.19 | | 2,068.12 | 60,309.11 | 1,086,026.42 |
| 6,721.39 | 569.61 | 5,201,111.93 | 5,016,744.14 | 9,225.38 | 3,046.17 | 172,096.24 | 5,201,111.93 |
| | | 533,641.34 | 516,319.80 | | | 17,321.54 | 533,641.34 |
| | | 1,193,646.07 | 1,134,179.31 | 3,716.91 | | 55,749.85 | 1,193,646.07 |
| 97.74 | | 124,366.59 | 108,568.88 | 39.34 | | 15,758.37 | 124,366.59 |
| 97.74 | | 1,851,654.00 | 1,759,067.99 | 3,756.25 | | 88,829.76 | 1,851,654.00 |
| 6.94 | | 2,636.35 | 2,602.52 | | 33.83 | | 2,636.35 |
| 6,826.07 | 569.61 | 7,055,402.28 | 6,778,414.65 | 12,981.63 | 3,080.00 | 260,926.00 | 7,055,402.28 |

J. U. VINCENT,
Deputy Minister.



APPENDIX A.—SPIRITS—*Concluded.*

—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal years ended 1

| Received from other Divisions. | | Totals. | Entered for Consumption. | | Removed to other Divisions. | |
|--------------------------------|-----------------------|---------------|--------------------------|--------------|---|-------------|
| Removed during year. | In Transit last year. | | Quantity. | Duty. | Warchoused in Divisions to which removed. | In Transit. |
| Gallons. | Gallons. | Gallons. | Gallons. | \$ cts. | Gallons. | Gallons. |
| 1,418,445·48 | 7,439·67 | 23,556,971·96 | 1,439,365·49 | 3,441,182 81 | 2,642,989·31 | 146,559·83 |
| 1,386,668·90 | 11,868·78 | 5,174,250·01 | 1,339,778·75 | 3,207,638 81 | 949,188 29 | 22,255·66 |
| 89,622·22 | 1,763·38 | 111,232·80 | 76,698·78 | 184,230 75 | | |
| 34,724·08 | 275·71 | 40,603·83 | 34,671·85 | 83,238 61 | 183·42 | |
| | | | | 37 31 | | |
| 370,532·11 | 16,819·48 | 448,623·84 | 332,483 68 | 795,650 38 | 12,516·57 | 464 33 |
| 108,872·12 | 343·59 | 128,093·99 | 119,778·19 | 287,641 21 | 1,038·01 | |
| 134,791·94 | 3,517·16 | 183,016·65 | 136,484·79 | 327,718 02 | 2,172·97 | |
| 73,412·02 | 2,674·11 | 494,642·74 | 147,492·12 | 354,058 13 | 13,082·10 | 34·68 |
| 2,576 80 | | 3,913·60 | 2,570·75 | 6,169 77 | | |
| | | 8,612·54 | | | | |
| 3,621,175·67 | 44,701·88 | 30,149,961·96 | 3,629,324·40 | 8,687,565 80 | 3,621,175·67 | 169,313 90 |
| 2,280,898·53 | 67,653·78 | 25,144,924·95 | 1,350,960·13 | 3,238,227 99 | 5,324,973·37 | 196,540·41 |
| 3,387,333·74 | 50,579·22 | 7,756,621·19 | 1,792,791·37 | 4,295,551 63 | 1,232,096·87 | 14,696·13 |
| 101,699·27 | 10,186·74 | 134,736·86 | 119,492 07 | 287,037 62 | 536 53 | |
| 33,716·92 | 6,010·20 | 45,154·54 | 40,506·14 | 97,226 48 | 2,914·14 | |
| 487,227·74 | 14,341·53 | 553,439·69 | 367,152·60 | 876,909 36 | 22,055·52 | 1,546·47 |
| 153,468·67 | 5,031·21 | 165,777·67 | 153,304·18 | 368,140 41 | 4,960·70 | 3,089 20 |
| 32,427·32 | 8,189·09 | 66,044·51 | 32,635·37 | 78,382 34 | 2,263·55 | |
| 128,600·40 | 7,322·13 | 448,120·27 | 258,518·51 | 620,622 27 | 18,124·92 | 560·51 |
| 2,553 01 | | 3,895·86 | 2,787·01 | 6,689 00 | | |
| | | 8,612·54 | | | | |
| 6,607,925·60 | 169,313·90 | 34,327,328·08 | 4,118,147·38 | 9,868,787 10 | 6,607,925·60 | 216,432·78 |

In the manufacture of Methylated Spirits at Government Warehouse, Ottawa. 1
 Total duty collected ex-manufactory and ex-warehouse..... \$8,6
 License fees
\$3,70

APPENDIX A.—SPIRITS—Continued.

No. 4—WAREHOUSE RETURN for the Fiscal year ended March 31, 1917.

Dr.

Cr.

| Divisions. | Remaining in Warehouse from last year. | Warehoused | Imported. | Received from other Divisions. | | | Entered for consumption. | | Removed to other Divisions. | | Taken for Redistillation. | Free. | | Used in Bonded Factories. | Remaining in Warehouse. | Totals. |
|------------------------|--|--------------|------------|--------------------------------|-----------------------|---------------|--------------------------|--------------|---|-------------|---------------------------|------------------|-----------|---------------------------|-------------------------|---------------|
| | | | | Removed during year. | In Transit last year. | Totals. | Quantity. | Duty. | Warehoused in Divisions to which removed. | In Transit. | | Legal Allowance. | Other. |  |  |  | Exported. |
| | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | \$ | cts. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. |
| Belleveille, Ont. | 1,245,016-29 | 3,415,163-83 | | 56,056-17 | 196-09 | 4,716,432-38 | 60,759-60 | 145,887-75 | 2,855,503-20 | 120,241-73 | 9,141-54 | 21,806-38 | | 191,149-82 | 1,457,830-11 | 4,716,432-38 |
| Brantford " | 9,991-85 | | | 13,755-52 | | 28,777-37 | 12,914-10 | 30,999-47 | 134-46 | | | | 14-22 | 9,832-99 | 881-60 | 23,777-37 |
| Guelph " | 1,643,410-63 | 1,514-04 | | 20,496-24 | 1,373-62 | 1,666,794-53 | 104,569-08 | 262,233-47 | 116,443-27 | 6,508-80 | 270-51 | 49,830-67 | 1,744-13 | 40,776-28 | 1,346,651-79 | 1,666,794-53 |
| Hamilton " | 633,472-09 | 1,974-90 | | 159,115-83 | 2,146-41 | 857,639-25 | 112,406-14 | 369,803-22 | 62,420-18 | 2,984-07 | | 23,552-13 | 2,011-54 | 127,455-19 | 501,815-14 | 857,639-25 |
| Kingston " | 13,008-12 | | | 27,101-03 | 51-36 | 40,220-51 | 17,310-65 | 41,553-88 | | | | | | 73-16 | 13,093-99 | 40,220-51 |
| London " | 791-72 | | | 8,243-36 | 413-82 | 9,443-00 | 8,400-02 | 20,160-94 | | | | | | | 308-00 | 9,443-00 |
| Ottawa " | 20,907-37 | | | 156,990-37 | 3,188-30 | 181,086-57 | 155,119-70 | 372,791-47 | | | | | | 319-20 | 23,308-94 | 181,086-57 |
| Government Warehouse. | 6,740-26 | | | 245,448-39 | 5,359-15 | 237,547-80 | | | | | | | | 72-17 | 252,546-71 | 4,928-92 |
| Department Laboratory. | | | | 38-53 | | 38-53 | | | | | | | | 38-53 | | 38-53 |
| Owen Sound, Ont. | 1,693-66 | | | 19,109-32 | 20,774-98 | 60,142-91 | | | | | | | | 15,140-36 | 5,634-59 | 20,774-98 |
| Perth " | 97,031-67 | 73-93 | 592,397-02 | 871,661-60 | 16,854-95 | 1,578,019-17 | 60,142-91 | 136,322-20 | 19,077-25 | 4,247-91 | | 1,260-68 | | 751-98 | 1,489,884-20 | 1,578,019-17 |
| Peterborough " | 128-09 | | | 2,872-21 | 27-99 | 3,028-20 | 1,019-45 | 2,446-67 | | | | | | | 1,963-50 | 3,028-20 |
| Port Arthur " | 8,690-37 | | | 80,433-76 | 50-37 | 89,180-50 | 66,229-47 | 158,997-77 | 13,886-72 | | | | | | 9,094-31 | 89,180-50 |
| Prescott " | 938,613-25 | 474,109-71 | 65,029-04 | 2,318-99 | 14-18 | 1,480,087-77 | 52,448-23 | 145,385-78 | 774,998-68 | 209-67 | 1,235-54 | 13,760-27 | 421-80 | 114,616-00 | 65,029-04 | 457,765-54 |
| St. Catharines " | 387-40 | | | 3,293-67 | | 3,681-07 | | 8,854-51 | | | | | | | 3,681-07 | 3,681-07 |
| St. Charles " | 1,119-41 | | | 9,043-82 | 1,576-07 | 11,739-30 | 11,607-96 | 27,528-36 | | | | | | | 11,739-30 | 11,739-30 |
| Sturford " | 4,945,674-96 | 100,258-54 | 62,000-21 | 482,997-27 | 36,095-56 | 5,627,026-50 | 472,114-04 | 1,110,961-70 | 842,743-09 | 17,156-00 | 131-31 | 87,578-22 | 26,445-55 | 2,400-80 | 14,703-08 | 3,684,878-00 |
| Toronto " | 7,473,518-75 | 73-74 | | 81,802-14 | | 8,579,063-82 | 212,237-68 | 504,323-85 | 636,162-06 | 45,060-92 | 133,798-87 | 184,647-57 | 888-19 | 797,365-86 | 37,219-57 | 8,579,063-82 |
| Windsor " | 1,023,649-19 | | | | | | | | | | | | | | | |
| Totals | 17,060,167-89 | 5,016,744-14 | 719,426-87 | 2,280,898-53 | 67,633-78 | 25,144,924-95 | 1,350,960-13 | 3,238,227-99 | 5,324,973-37 | 196,540-41 | 232,024-68 | 325,363-25 | 9,859-86 | 1,286,905-92 | 14,051,607-46 | 25,144,924-95 |
| Joliette, Que | 981,318-59 | 19-06 | | 5,774-78 | | 1,503,422-23 | 11,615-00 | 28,065-67 | 420,655-14 | 2,994-81 | 11,886-66 | 1,078-31 | | | 1,055,192-31 | 1,503,422-23 |
| Montreal " | 1,065,293-96 | 21,557-35 | 143-76 | 1,150,784-48 | 43,630-48 | 3,456,158-75 | 1,349,884-03 | 3,212,746-45 | 690,433-87 | 10,5-63 | 19,760-99 | 5,448-27 | | 343-42 | 156,830-48 | 3,456,158-75 |
| Quebec " | 43,815-31 | | | 307,191-13 | 6,286-66 | 357,293-10 | 287,434-00 | 690,464-99 | | | | | | | 23,330-13 | 357,293-10 |
| St. Hyacinthe " | 333,762-81 | 108,968-88 | | 1,890,333-62 | 168-11 | 2,291,835-32 | 71,241-34 | 171,765-16 | 121,006-16 | | 1,174-73 | 1,366-49 | 4,461-75 | 73-60 | 282,812-11 | 2,291,835-32 |
| Shertbrooke " | 11,031-38 | | 60,110-04 | 72,835-11 | 173-82 | 144,135-35 | 71,909-13 | 190,809-09 | | | | | | | 12,136-18 | 144,135-35 |
| Three Rivers " | 28-37 | | | 392-72 | 319-15 | 736-44 | | 707-87 | | | | | | | 28-57 | 736-44 |
| Totals | 2,437,250-62 | 21,557-35 | 143-76 | 3,387,333-74 | 50,879-22 | 7,756,621-19 | 1,792,791-37 | 4,295,551-63 | 1,232,096-87 | 14,696-13 | 33,014-14 | 10,588-33 | 73-60 | 492-45 | 2,619,969-54 | 7,756,621-19 |
| St. John, N.B. | 22,850-85 | | | 101,699-27 | 10,186-74 | 134,736-86 | 119,492-07 | 287,037-62 | 536-53 | | | | | 13-33 | 6,827-66 | 134,736-86 |
| Halifax, N.S. | 4,839-31 | | | 7,754-96 | 2,933-75 | 15,528-06 | 15,528-06 | 30,016-35 | 2,914-14 | | | | | 110-24 | | 15,528-06 |
| Pictou " | 588-11 | | | 25,961-96 | 3,976-43 | 29,636-52 | 28,062-50 | 67,210-13 | | | | | | | 1,624-02 | 29,636-52 |
| Totals | 5,427-42 | | | 33,716-92 | 6,010-20 | 45,154-54 | 40,506-14 | 97,226-48 | 2,914-14 | | | | | 110-24 | 1,624-02 | 45,154-54 |
| Winnipeg, Man. | 51,870-42 | | | 487,227-74 | 14,341-53 | 553,439-65 | 367,152-60 | 876,909-36 | 22,055-52 | 1,546-47 | | | | 16-75 | 72,607-98 | 553,439-69 |
| Moosejaw, Sask. | 7,277-79 | | | 153,468-67 | 5,031-21 | 165,777-67 | 153,304-18 | 368,140-41 | 4,960-70 | 5,089-26 | | | | | 4,423-53 | 165,777-67 |
| Calgary, Alta. | 25,428-10 | | | 32,427-32 | 8,189-09 | 66,044-51 | 32,635-37 | 78,382-34 | 2,263-55 | | | | | | 24,762-22 | 66,044-51 |
| Vancouver, B.C. | 299,599-53 | 2,602-52 | | 80,536-50 | 3,468-96 | 386,202-51 | 211,536-31 | 507,794-08 | 13,756-92 | 419-10 | 117-37 | 3,986-99 | 227-26 | 1,461-96 | 2,382-57 | 386,202-51 |
| Victoria " | 9,976-46 | | 19-23 | 48,063-94 | 3,858-17 | 61,917-76 | 46,982-20 | 112,828-19 | 4,368-00 | 141-41 | | | 71-61 | 116-76 | 10,237-78 | 61,917-76 |
| Totals | 306,575-99 | 2,602-52 | 19-23 | 128,600-40 | 7,322-13 | 448,120-27 | 258,518-51 | 620,622-27 | 18,124-92 | 560-51 | 117-37 | 3,986-99 | 298-87 | 1,578-72 | 162,551-81 | 448,120-27 |
| Dawson, Y.T. | 1,342-85 | | | 2,533-01 | 3,855-86 | 2,787-01 | 6,689-00 | | | | | | | | 1,108-85 | 3,895-86 |
| Sundries | 8,612-54 | | | | | 8,612-54 | | | | | | | | | | 8,612-54 |
| Grand Totals | 19,929,804-47 | 21,561-09 | 143-75 | 6,007,925-60 | 169,313-90 | 34,327,328-08 | 4,118,147-38 | 9,868,787-10 | 6,607,925-60 | 216,432-78 | 265,156-19 | 340,278-57 | 10,232-33 | 1,289-117-41 | 16,953,808-74 | 34,327,328-08 |

† Surplus in Bottling Room. † Used in the manufacture of Me hydrated Spirits at Government Warehouse, Ottawa.
 © Seizure. * Re-Warehoused.

APPENDIX A.—SPIRITS—Concluded.

No. 5.—COMPARATIVE STATEMENT OF Warehouse Returns for the Fiscal years ended March 31, 1916 and 1917.

Dr.

Cr.

| Provinces. | Remaining in Warehouse from last Year. | Warehoused. | Imported. | Received from other Divisions. | | Totals. | Entered for Consumption. | | Removed to other Divisions. | | Taken for Redistillation. | Free. | | Exported. | Used in Bonded Factories. | Remaining in Warehouse. | Totals |
|----------------------|--|--|--|--------------------------------|-----------------------|--------------------------|--------------------------|-------------------------|--|-----------------------|---------------------------|-----------------------|----------------------|-------------------------|---|--------------------------|--------------------------|
| | | | | Removed during year. | In Transit last year. | | Quantity. | Duty. | Warehouse in Divisions to which removed. | In Transit. | | Legal Allowance. | Other. | | | | |
| | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | \$ cts. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. |
| 1916. | | | | | | | | | | | | | | | | | |
| Ontario | 19,229,647 ²⁸ | 2,819,812 ³³ | 81,627 ²⁰ | 1,418,445 ⁴⁸ | 7,489 ⁶⁷ | 23,556,971 ⁹⁶ | 1,439,365 ⁴⁹ | 3,441,182 ⁸¹ | 2,642,989 ³¹ | 146,559 ⁸³ | 342,243 ¹⁶ | 203,935 ²³ | 6,031 ³⁹ | 807,350 ⁶⁸ | *161,044 ¹¹ | 17,060,167 ⁸⁹ | 23,556,971 ⁹⁶ |
| Quebec | 2,655,948 ⁹² | 1,113,044 ⁸³ | †1,426 ²⁷ | 1,386,668 ⁹⁰ | 11,808 ⁷⁸ | 5,174,250 ⁰¹ | 1,339,778 ⁷⁵ | 3,207,638 ⁸¹ | 949,188 ²⁹ | 22,255 ⁶⁶ | 92,511 ¹⁵ | 7,914 ¹² | 1,968 ⁸⁸ | 294 ⁸⁵ | 333,063 ⁷⁹ | 2,437,250 ⁶² | 5,174,250 ⁰¹ |
| New Brunswick | 19,847 ²⁰ | 5,604 ⁰⁴ | | 89,622 ²² | 1,763 ³⁸ | 111,222 ⁸⁰ | 76,698 ⁷⁸ | 184,230 ⁷⁵ | 188 ⁴² | | | | 71 ⁴⁴ | 316 ¹⁴ | 11,611 ⁷³ | 22,850 ⁸⁵ | 111,222 ⁸⁰ |
| Nova Scotia | | | | 34,724 ⁰⁸ | 279 ⁷¹ | 40,608 ⁸³ | 31,671 ⁸⁵ | 83,288 ⁶¹ | | 87 ³¹ | | | | | 5,427 ⁴² | 40,608 ⁸³ | |
| Prince Edward Island | | | | | | | | | | | | | | | | | |
| Manitoba | 61,272 ²⁵ | | | 370,532 ¹¹ | 16,819 ⁴⁸ | 448,623 ⁸⁴ | 332,483 ⁶⁸ | 795,660 ³⁸ | 12,516 ⁵⁷ | 464 ³³ | | | 88 ⁶¹ | | 51,200 ²³ | 51,870 ⁴² | 448,623 ⁸⁴ |
| Saskatchewan | 19,378 ²⁸ | | | 108,372 ¹² | 343 ⁵⁹ | 128,093 ⁹⁹ | 119,778 ¹⁹ | 287,641 ²¹ | 1,038 ⁰¹ | | | | | | 7,277 ⁷⁹ | 128,093 ⁹⁹ | |
| Alberta | 44,707 ⁵⁵ | | | 134,791 ⁹⁴ | 3,517 ¹⁶ | 183,016 ⁶⁵ | 136,484 ⁷⁹ | 327,718 ⁰² | 2,172 ⁹⁷ | | | | | | 18,930 ⁷⁹ | 25,428 ¹⁰ | 183,016 ⁶⁵ |
| British Columbia | 408,273 ³⁰ | 8,247 ⁶³ | | 75,442 ⁰² | 2,474 ¹¹ | 494,642 ⁷⁴ | 147,492 ¹² | 354,088 ¹³ | 13,082 ¹⁰ | 34 ⁶⁸ | 8,936 ⁰⁰ | 5,210 ⁴⁶ | 1,969 ⁹⁸ | 172 ⁸⁹ | 8,268 ⁵² | 369,573 ⁹⁹ | 494,642 ⁷⁴ |
| Yukon Territory | 1,838 ⁸⁰ | | | 2,576 ⁸⁰ | | 3,913 ⁶⁰ | 2,570 ⁷⁵ | 6,169 ⁷⁷ | | | | | | | 1,842 ⁸³ | 3,913 ⁶⁰ | |
| Sundries | 8,612 ⁵⁴ | | | | | 8,612 ⁵⁴ | | | | | | | | | | 8,612 ⁵⁴ | 8,612 ⁵⁴ |
| Totals | 22,544,633 ⁸⁴ | *13 ⁹⁸ 3,941,104 ⁷⁹ | †1,426 ²⁷ 86,905 ⁵³ | 3,621,175 ⁶⁷ | 44,701 ⁸⁸ | 30,149,961 ⁹⁶ | 3,629,324 ⁴⁰ | 8,687,565 ⁸⁰ | 3,621,175 ⁶⁷ | 169,313 ⁹⁰ | 443,690 ³¹ | 217,059 ⁸¹ | 10,054 ⁸⁰ | 808,134 ⁵⁷ | *161,044 ¹¹ 1,160,359 ⁶² | 19,929,504 ⁴⁷ | 30,149,961 ⁹⁶ |
| 1917. | | | | | | | | | | | | | | | | | |
| Ontario | 17,060,167 ⁸⁹ | †33 ⁷⁴ 5,016,744 ¹⁴ | 719,426 ⁸⁷ | 2,280,898 ⁵³ | 67,653 ⁷⁸ | 25,144,924 ⁹⁵ | 1,350,960 ¹³ | 3,238,227 ⁹⁹ | 5,324,973 ³⁷ | 196,540 ⁴¹ | 232,024 ⁶⁸ | 325,303 ²⁵ | 9,859 ⁸⁶ | 1,286,905 ⁹² | *252,546 ⁷¹ 2,114,203 ¹⁶ | 14,051,607 ⁴⁶ | 25,144,924 ⁹⁵ |
| Quebec | 2,437,250 ⁶² | †121,537 ³⁵ 1,750,067 ⁹⁹ | 143 ⁷⁵ 100,679 ⁴⁶ | 3,387,383 ⁷⁴ | 50,879 ²² | 7,756,621 ¹⁹ | 1,792,791 ³⁷ | 4,295,551 ⁶³ | 1,232,096 ⁸⁷ | 14,696 ¹³ | 33,014 ¹⁴ | 10,988 ³³ | 73 ⁶⁰ | 492 ⁴⁵ | 2,052,898 ⁷⁶ | 2,619,669 ⁵⁴ | 7,756,621 ¹⁹ |
| New Brunswick | 22,830 ⁸⁸ | | | 101,699 ²⁷ | 10,186 ⁷⁴ | 134,736 ⁸⁶ | 119,492 ⁰⁷ | 287,037 ⁶² | 536 ⁵³ | | | | | 13 ³³ | 6,827 ⁶⁸ | 7,867 ²³ | 134,736 ⁸⁶ |
| Nova Scotia | 5,427 ⁴² | | | 33,716 ⁹² | 6,010 ²⁰ | 45,154 ⁵⁴ | 40,506 ¹⁴ | 97,226 ⁴³ | 2,914 ¹⁴ | | | | | 110 ²⁴ | 1,624 ⁰² | 45,154 ⁵⁴ | |
| Manitoba | 51,870 ⁴² | | | 487,227 ⁷⁴ | 14,841 ⁵³ | 553,489 ⁶⁹ | 367,152 ⁶⁰ | 876,909 ³⁶ | 22,055 ⁵² | 1,544 ⁴⁷ | | | 16 ⁷⁵ | | 73,607 ⁹⁸ | 90,060 ⁸⁷ | 553,489 ⁶⁹ |
| Saskatchewan | 7,277 ⁷⁹ | | | 163,468 ⁶⁷ | 5,031 ²¹ | 163,777 ⁶⁷ | 153,304 ¹⁸ | 368,140 ⁴¹ | 4,960 ⁷⁰ | 3,089 ²⁸ | | | | | 4,423 ⁵⁸ | 165,777 ⁶⁷ | |
| Alberta | 25,428 ¹⁰ | | | 32,427 ³² | 8,189 ⁰⁹ | 66,044 ⁵¹ | 32,635 ³⁷ | 78,382 ³⁴ | 2,263 ⁵⁵ | | | | | | 24,762 ²² | 6,383 ³⁷ | 66,044 ⁵¹ |
| British Columbia | 309,578 ⁹⁹ | 2,602 ⁵² | 19 ²³ | 128,600 ⁴⁰ | 7,322 ¹³ | 448,120 ²⁷ | 258,518 ⁵¹ | 620,622 ²⁷ | 18,124 ⁹² | 560 ⁵¹ | 117 ³⁷ | 3,986 ⁹⁹ | 298 ⁸⁷ | 1,578 ⁷² | 2,382 ⁵⁷ | 448,120 ²⁷ | |
| Yukon Territory | 1,942 ⁸⁹ | | | 2,536 ⁰¹ | | 3,395 ⁸⁶ | 2,787 ⁰¹ | 6,689 ⁰⁰ | | | | | | | 1,108 ⁸³ | 3,636 ⁸⁶ | |
| Sundries | 8,612 ⁵⁴ | | | | | 8,612 ⁵⁴ | | | | | | | | | | 8,612 ⁵⁴ | 8,612 ⁵⁴ |
| Totals | 19,929,804 ⁴⁷ | *9 ⁰⁶ †21,561 ⁰⁹ 6,778,414 ⁶⁵ | †143 ⁷⁵ 820,125 ⁵⁶ | 6,607,925 ⁶⁰ | 169,313 ⁹⁰ | 34,327,328 ⁰⁸ | 4,118,147 ³⁸ | 9,868,787 ¹⁰ | 6,607,925 ⁶⁰ | 216,432 ⁷⁸ | 265,156 ¹⁹ | 340,278 ⁵⁷ | 10,232 ³³ | 1,289,117 ⁴¹ | *252,546 ⁷¹ 4,273,682 ³⁷ | 16,953,808 ⁷⁴ | 34,327,328 ⁰⁸ |

* Surplus in Bottling Room.
† Re-Warehoused.

† Seizure.

* Used in the manufacture of Methylated Spirits at Government Warehouse, Ottawa.

Total duty collected ex-manufactory and ex-warehouse.
License fees

| | |
|----------------|----------------|
| 1916. | 1917. |
| \$8,637,324 68 | \$9,876,191 55 |
| 3,750 00 | 4,375 00 |
| \$8,701,074 68 | \$9,880,566 55 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

March 31, 1916 and 1917.

CR.

| Taken for Redistillation. | Free. | | Exported. | Used in Bonded Factories. | Remaining in Warehouse. | Totals. |
|---------------------------|------------------|-----------|--------------|-----------------------------|-------------------------|---------------|
| | Legal Allowance. | Other. | | | | |
| Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. |
| 342,243·16 | 203,935·23 | 6,031·39 | 807,350·69 | *161,044·11 747,284·86 | 17,060,167·89 | 23,556,971·96 |
| 92,511·15 | 7,914·12 | 1,993·38 | 294·85 | 323,663·79 | 2,437,250·62 | 5,174,250·01 |
| ..... | ..... | 71·44 | ..... | 11,611·73 | 22,850·85 | 111,232·80 |
| ..... | ..... | ..... | 316·14 | ..... | 5,427·42 | 40,603·83 |
| ..... | ..... | 88·61 | ..... | 51,200·23 | 51,870·42 | 448,623·84 |
| ..... | ..... | ..... | ..... | ..... | 7,277·79 | 128,093·99 |
| ..... | ..... | ..... | ..... | 18,930·79 | 25,428·10 | 183,016·65 |
| 8,936·00 | 5,210·46 | 1,869·98 | 172·89 | 8,268·52 | 309,575·99 | 494,642·74 |
| ..... | ..... | ..... | ..... | ..... | 1,342·85 | 3,913·60 |
| ..... | ..... | ..... | ..... | ..... | 8,612·54 | 8,612·54 |
| 443,690·31 | 217,059·81 | 10,054·80 | 808,134·57 | *161,044·11 1,160,359·62 | 19,929,804·47 | 30,149,961·96 |
| 232,024·68 | 325,303·25 | 9,859·86 | 1,286,905·92 | *252,546·71 2,114,203·16 | 14,051,607·46 | 25,144,924·95 |
| 33,914·14 | 10,988·33 | 73·60 | 492·45 | 2,052,898·76 | 2,619,569·54 | 7,756,621·19 |
| ..... | ..... | ..... | 13·33 | 6,827·68 | 7,867·25 | 134,736·86 |
| ..... | ..... | ..... | 110·24 | ..... | 1,624·02 | 45,154·54 |
| ..... | ..... | ..... | 16·75 | 72,607·98 | 90,060·37 | 553,439·69 |
| ..... | ..... | ..... | ..... | ..... | 4,423·53 | 165,777·67 |
| ..... | ..... | ..... | ..... | 24,762·22 | 6,383·37 | 66,044·51 |
| 117·37 | 3,986·99 | 298·87 | 1,578·72 | 2,382·57 | 162,551·81 | 448,120·27 |
| ..... | ..... | ..... | ..... | ..... | 1,108·85 | 3,895·86 |
| ..... | ..... | ..... | ..... | ..... | 8,612·54 | 8,612·54 |
| 265,156·19 | 340,278·57 | 10,232·33 | 1,289,117·41 | *252,546·71 4,273,682·37 | 16,953,808·74 | 34,327,328·08 |

| | |
|------------|----------------|
| 916. | 1917. |
| \$7,324 68 | \$9,876,191 55 |
| 3,750 00 | 4,375 00 |
| 1,074 68 | \$9,880,566 55 |

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—MALT.

No. 6.—Return of Manufactures for the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSESES. | | Grain Steeped. | Grain used in Malt Manufactured. | MALT. | | | Total Duty Collected ex-manufactory, including License Fees. |
|--------------------|-------------|-------|----------------|----------------------------------|---------------|------------|-------------|--|
| | No. | Fees. | | | Manufactured. | Paid Duty. | Warehoused. | |
| | | \$ | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | \$ cts. |
| Guelph, Ont.. | 4 | 550 | 4,092,713 | 4,282,890 | 3,447,128 | 225 | 3,446,903 | 556 75 |
| Hamilton " .. | 2 | 350 | 1,014,755 | 980,935 | 792,780 | ..... | 792,780 | 350 00 |
| London " .. | 2 | 400 | 1,309,615 | 1,304,215 | 1,050,640 | ..... | 1,050,640 | 400 00 |
| Toronto " .. | 3 | 600 | 1,949,280 | 2,322,720 | 1,782,450 | ..... | 1,782,450 | 600 00 |
| Windsor " .. | 1 | 200 | 1,108,500 | 1,108,500 | 899,150 | ..... | 899,150 | 200 00 |
| Totals..... | 12 | 2,100 | 9,474,863 | 9,999,260 | 7,972,148 | 225 | 7,971,923 | 2,106 75 |
| Montreal, Que..... | 2 | 400 | 32,567,040 | 32,820,740 | 25,793,220 | ..... | 25,793,220 | 400 00 |
| Winnipeg, Man..... | 3 | 450 | 29,352,000 | 29,642,400 | 23,648,220 | ..... | 23,648,220 | 450 00 |
| Calgary, Alta..... | 1 | 200 | 26,251,900 | 26,059,900 | 21,357,800 | ..... | 21,357,800 | 200 00 |
| Grand Totals... | 18 | 3,150 | 97,645,803 | 98,522,300 | 78,771,388 | 225 | 78,771,163 | 3,156 75. |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—MALT—Continued.

No. 7.—COMPARATIVE STATEMENT of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

| Provinces. | LICENSESES. | | Grain Steeped. | Grain used in Malt Manufactured. | MALT. | | | Total Duty Collected ex-manufactory, including License Fees. |
|-----------------------|-------------|-------|----------------|----------------------------------|---------------|------------|-------------|--|
| | No. | Fees. | | | Manufactured. | Paid Duty. | Warehoused. | |
| | | \$ | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | \$ cts. |
| 1916. | | | | | | | | |
| Ontario..... | 18 | 2,500 | 24,472,385 | 24,965,413 | 19,483,487 | 1,047 | 19,482,440 | 2,531 41 |
| Quebec..... | 5 | 950 | 36,333,820 | 36,906,441 | 29,191,867 | ..... | 29,191,867 | 950 00 |
| Manitoba..... | 3 | 550 | 19,631,675 | 19,701,275 | 15,999,787 | 1,899 | 15,997,888 | 606 97 |
| Alberta..... | 3 | 500 | 12,721,800 | 11,542,000 | 9,378,070 | ..... | 9,378,070 | 500 00 |
| British Columbia..... | 1 | 100 | ..... | ..... | ..... | ..... | ..... | 100 00 |
| Totals..... | 30 | 4,600 | 93,159,680 | 93,115,129 | 74,053,211 | 2,946 | 74,050,265 | 4,688 38 |
| 1917. | | | | | | | | |
| Ontario..... | 12 | 2,100 | 9,474,863 | 9,999,260 | 7,972,148 | 225 | 7,971,923 | 2,106 75 |
| Quebec..... | 2 | 400 | 32,567,040 | 32,820,740 | 25,793,220 | ..... | 25,793,220 | 400 00 |
| Manitoba..... | 3 | 450 | 29,352,000 | 29,642,400 | 23,648,220 | ..... | 23,648,220 | 450 00 |
| Alberta..... | 1 | 200 | 26,251,900 | 26,059,900 | 21,357,800 | ..... | 21,357,800 | 200 00 |
| Totals..... | 18 | 3,150 | 97,645,803 | 98,522,300 | 78,771,388 | 225 | 78,771,163 | 3,156 75 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR.

No. 8.—WAREHOUSE RETURN for

| Remaining in Warehouse from last year. | Ware- housed. | In- creases. | RECEIVED FROM OTHER DIVISIONS. | | Imported. | Totals. | Divisions. |
|--|------------------|-----------------|-----------------------------------|--------------------------|-----------|-------------|------------------------|
| | | | Removed during year. | In Transit last year. | | | |
| Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | |
| 116,855 | | | 3,204,600 | 54,000 | 180 | 3,375,635 | Belleville, Ont.... |
| 164,682 | | 2,722 | 126,400 | | | 293,804 | Brantford ".... |
| 2,451,444 | 3,446,903 | 28,308 | 1,445,784 | 40,000 | | 7,412,439 | Guelph ".... |
| 783,281 | 792,780 | 11,759 | 2,174,118 | | | 3,761,938 | Hamilton, ".... |
| 28,180 | | 651 | 158,700 | | | 187,531 | Kingston, ".... |
| 2,101,011 | 1,050,640 | 12,167 | 120,000 | | | 3,283,818 | London, ".... |
| | | | 803,650 | | 20,080 | 823,730 | Ottawa, ".... |
| 12,800 | | | 317,298 | 10,800 | | 340,898 | Owen Sound, ".... |
| | | | 1,140,000 | | | 1,140,000 | Perth, ".... |
| 97,998 | | 7,252 | 191,000 | | | 296,250 | Peterborough, ".... |
| 17,560 | | | 660,000 | 40,000 | | 717,560 | Port Arthur, ".... |
| | a1,760 | | 1,605,385 | | | 1,607,145 | Prescott, ".... |
| 90,000 | | | 835,180 | 40,000 | | 965,180 | St. Catharines, ".... |
| 35,783 | | | 97,550 | | | 133,333 | Stratford, ".... |
| 5,637,352 | 1,782,450 | 31,424 | 4,481,600 | 148,000 | 54,800 | 12,135,626 | Toronto, ".... |
| 588,690 | 899,150 | 2,580 | 1,585,000 | 80,000 | 2,000 | 3,157,420 | Windsor, ".... |
| 12,125,636 | 7,973,683 | 96,863 | 18,946,265 | 412,800 | 78,060 | 39,632,307 | Totals..... |
| 72,052 | | 10,797 | 3,560,000 | 40,000 | | 3,682,849 | Joliette, Que.... |
| 4,462,075 | 25,793,220 | 132,141 | 19,698,238 | 1,376,000 | 310,976 | 51,772,650 | Montreal, ".... |
| | | | 1,866,053 | 60,000 | | 1,926,053 | Quebec, ".... |
| 20,000 | | | 155,200 | | | 175,200 | St. Hyacinthe, ".... |
| 29,100 | | | 560,000 | | | 589,100 | Sherbrooke, ".... |
| | | | 100,880 | | 480 | 101,360 | Three Rivers, ".... |
| 4,583,227 | 25,793,220 | 142,938 | 25,950,371 | 1,476,000 | 311,456 | 58,247,212 | Totals..... |
| | | | 880,000 | 40,000 | 3,116 | 923,116 | St. John, N.B..... |
| 700 | | | 1,778,000 | 256,000 | 1,700 | 2,036,400 | Halifax, N.S..... |
| 6,777,146 | 23,648,220 | 19,938 | 3,662 | | 51,112 | 30,500,078 | Winnipeg, Man..... |
| 32,800 | | 466 | 760,000 | 80,000 | 500 | 873,766 | Moosajaw, Sask..... |
| 3,666,386 | 21,357,800 | 34,323 | 650,200 | 70,000 | 30,840 | 25,809,549 | Calgary, Alta..... |
| 174,053 | | | 4,407,400 | 130,000 | 204,735 | 4,916,188 | Vancouver, B.C..... |
| | | | 2,000,000 | 80,000 | | 2,080,000 | Victoria, B.C..... |
| 174,053 | | | 6,407,400 | 210,000 | 204,735 | 6,996,188 | Totals..... |
| 4,873 | | 1,346 | | | 85,150 | 91,369 | Dawson, Y.T..... |
| 27,364,821 | 78,772,923 | 295,874 | 55,365,898 | 2,544,800 | 766,669 | 165,109,985 | Grand Totals..... |

(a) Burnt Barley.

SESSIONAL PAPER No. 12

MALT—Continued.

the Fiscal Year ended March 31, 1917.

Cr.

| ENTERED FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS. | | Exported. | Free. | Written off. | Remain- ing in Ware- house. | Totals. |
|--------------------------|--------------|---|-------------|-----------|-----------|--------------|-----------------------------|-------------|
| Quantity. | Duty. | Warehoused in Divisions to which Removed. | In Transit. | | | | | |
| Lbs. | \$ cts. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. |
| 3,322,380 | 99,674 40 | | | | | | 53,155 | 3,375,635 |
| 256,404 | 7,692 12 | | | | | | 37,400 | 293,804 |
| 4,367,396 | 131,021 88 | 756,930 | | | 303,316 | | 1,981,797 | 7,412,439 |
| 2,355,162 | 70,654 86 | 1,162,516 | 34,410 | | | 11,860 | 197,990 | 3,761,938 |
| 187,531 | 5,625 93 | | | | | | | 187,531 |
| 2,148,983 | 64,469 49 | 57,600 | | | | | 1,077,235 | 3,283,818 |
| 823,730 | 24,711 90 | | | | | | | 823,730 |
| 339,698 | 10,190 94 | | | | | | 1,200 | 340,898 |
| 1,140,000 | 34,200 00 | | | | | | | 1,140,000 |
| 263,000 | 7,890 00 | 33,250 | | | | | | 296,250 |
| 683,898 | 20,516 94 | 3,662 | | | | | 30,000 | 717,560 |
| 1,607,145 | 48,214 35 | | | | | | | 1,607,145 |
| 891,650 | 26,749 50 | | | | | | 73,530 | 965,180 |
| 133,333 | 3,999 99 | | | | | | | 133,333 |
| 10,074,705 | 302,521 15 | 205,606 | | | 191,653 | | 1,663,662 | 12,135,626 |
| 2,020,000 | 60,600 00 | | | | 585,690 | | 551,730 | 3,157,420 |
| 30,615,115 | 918,733 45 | 2,219,564 | 34,410 | | 1,080,659 | 11,860 | 5,667,699 | 39,632,307 |
| | | | | | 3,516,592 | | 166,257 | 3,682,849 |
| 28,068,384 | 842,051 52 | 16,977,018 | 174,000 | 1,837,192 | | 92,055 | 4,678,000 | 51,772,650 |
| 1,926,053 | 57,781 59 | | | | | | | 1,926,053 |
| 175,200 | 5,256 00 | | | | | | | 175,200 |
| 563,675 | 16,910 25 | | | | | | 25,425 | 589,100 |
| 101,360 | 3,040 80 | | | | | | | 101,360 |
| 30,834,672 | 925,040 16 | 16,977,018 | 174,000 | 1,837,192 | 3,516,592 | 92,055 | 4,869,683 | 58,247,212 |
| 923,116 | 27,693 48 | | | | | | | 923,116 |
| 1,979,100 | 59,373 00 | | | 18,000 | | | 39,300 | 2,036,400 |
| 3,334,646 | 100,039 38 | 18,780,000 | 658,000 | 1,585,160 | | 163,778 | 5,924,494 | 30,500,078 |
| 784,261 | 23,527 83 | | | | | | 89,505 | 873,766 |
| 3,565,407 | 103,962 21 | 17,357,116 | 1,572,000 | 448,000 | | | 2,967,026 | 25,809,549 |
| 4,742,587 | 142,277 61 | 32,200 | | | | | 141,401 | 4,916,188 |
| 2,080,000 | 62,400 00 | | | | | | | 2,080,000 |
| 6,822,587 | 204,677 61 | 32,200 | | | | | 141,401 | 6,996,188 |
| 56,617 | 1,698 51 | | | | | 208 | 34,544 | 91,369 |
| 78,815,521 | 2,364,745 63 | 55,365,898 | 2,438,410 | 3,888,352 | 4,597,251 | 267,901 | 19,733,652 | 165,109,985 |

J. U. VINCENT,
Deputy Minister.

DR. No. 9—COMPARATIVE STATEMENT of Warehouse Returns

| Remaining in Warehouse from last year. | Ware- housed. | In- creases. | RECEIVED FROM OTHER DIVISIONS. | | Imported. | Totals. | Provinces. |
|--|------------------|-----------------|-----------------------------------|--------------------------|-----------|-------------|---------------------|
| | | | Removed during year. | In Transit last year. | | | |
| Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | 1916. |
| 15,856,534 | 19,482,440 | 320,106 | 20,261,840 | 695,000 | 568,085 | 57,184,005 | Ontario..... |
| 13,220,456 | 29,191,867 | 267,872 | 8,895,600 | 185,000 | 266,001 | 52,026,796 | Quebec..... |
| 63,500 | | | 1,080,000 | 100,000 | 2,469 | 1,182,469 | New Brunswick.... |
| 12,458,303 | 15,997,888 | 177,723 | 3,084,089 | 54,000 | 3,550 | 3,205,139 | Nova Scotia..... |
| 63,840 | | | 1,479 | 40,000 | 17,440 | 28,652,833 | Manitoba..... |
| 6,231,566 | 9,378,070 | 60,748 | 620,000 | 60,000 | 7,600 | 723,840 | Saskatchewan..... |
| 231,793 | | | 660,000 | 60,000 | 452,875 | 16,397,924 | Alberta..... |
| 2,495 | | 2,999 | 5,586,000 | 164,213 | 61,470 | 6,434,881 | British Columbia... |
| | | | | | | 66,964 | Yukon Territory.... |
| 48,128,427 | 74,050,265 | 829,448 | 40,189,008 | 1,298,213 | 1,379,490 | 165,874,851 | Totals..... |
| | | | | | | | 1917. |
| 12,125,636 | 7,973,683 | 96,863 | 18,946,265 | 412,800 | 78,060 | 39,632,307 | Ontario..... |
| 4,583,227 | 25,793,220 | 142,938 | 25,950,371 | 1,476,000 | 311,456 | 58,247,212 | Quebec..... |
| 700 | | | 880,000 | 40,000 | 3,116 | 923,116 | New Brunswick.... |
| 6,777,146 | 23,648,220 | 19,938 | 1,778,000 | 256,000 | 1,700 | 2,036,400 | Nova Scotia..... |
| 32,800 | | | 3,662 | | 51,112 | 30,500,078 | Manitoba..... |
| 3,666,386 | 21,357,800 | 34,323 | 760,000 | 80,000 | 500 | 873,766 | Saskatchewan..... |
| 174,053 | | | 650,200 | 70,000 | 30,840 | 25,809,549 | Alberta..... |
| 4,873 | | 1,346 | 6,407,400 | 210,000 | 204,735 | 6,996,188 | British Columbia... |
| | | | | | 85,150 | 91,369 | Yukon Territory.... |
| 27,364,821 | 78,772,923 | 295,874 | 55,365,898 | 2,544,800 | 766,669 | 165,109,985 | Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MALT—*Concluded.*

for the Fiscal Years ended March 31, 1916 and 1917.

CR.

| ENTERED FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS. | | Exported. | Free. | Written off. | Remain- ing in Ware- house. | Totals. |
|--------------------------|--------------|---|-------------|-----------|-----------|--------------|-----------------------------|-------------|
| Quantity. | Duty. | Warehoused in Divisions to which Removed. | In Transit. | | | | | |
| Lbs. | \$ cts. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. |
| 38,639,576 | 1,159,576 21 | 5,474,835 | 90,800 | ..... | 847,147 | 6,011 | 12,125,636 | 57,184,005 |
| 27,536,789 | 826,103 67 | 14,101,600 | 290,000 | 2,466,890 | 2,920,800 | 27,490 | 4,583,227 | 52,026,796 |
| 1,182,469 | 35,474 07 | ..... | ..... | ..... | ..... | ..... | ..... | 1,182,469 |
| 3,172,399 | 95,171 37 | ..... | ..... | 32,040 | ..... | ..... | 700 | 3,205,139 |
| 6,186,659 | 185,599 37 | 14,765,028 | 924,000 | ..... | ..... | ..... | 6,777,146 | 28,652,833 |
| 691,040 | 20,731 20 | ..... | ..... | ..... | ..... | ..... | 32,800 | 723,840 |
| 5,831,793 | 174,953 79 | 5,757,545 | 1,140,000 | 2,200 | ..... | ..... | 3,666,386 | 16,397,924 |
| 6,170,828 | 185,064 84 | 90,000 | ..... | ..... | ..... | ..... | 174,053 | 6,434,881 |
| 62,091 | 1,862 73 | ..... | ..... | ..... | ..... | ..... | 4,873 | 66,964 |
| 89,473,644 | 2,684,611 25 | 40,189,008 | 2,544,800 | 2,501,130 | 3,767,947 | 33,501 | 27,364,821 | 165,874,851 |
| 30,615,115 | 918,733 45 | 2,219,564 | 34,410 | ..... | 1,080,659 | 11,860 | 5,667,699 | 39,632,307 |
| 30,834,672 | 925,040 16 | 16,977,018 | 174,000 | 1,837,192 | 3,516,592 | 92,055 | 4,869,683 | 58,247,212 |
| 923,116 | 27,693 48 | ..... | ..... | ..... | ..... | ..... | ..... | 923,116 |
| 1,979,100 | 59,373 00 | ..... | ..... | 18,000 | ..... | ..... | 39,300 | 2,036,400 |
| 3,334,646 | 100,059 38 | 18,780,000 | 658,000 | 1,585,160 | ..... | 163,778 | 5,024,494 | 30,500,078 |
| 784,261 | 23,527 83 | ..... | ..... | ..... | ..... | ..... | 89,505 | 873,766 |
| 3,465,407 | 103,962 21 | 17,357,116 | 1,572,000 | 448,000 | ..... | ..... | 2,967,026 | 25,809,549 |
| 6,822,587 | 204,677 61 | 32,200 | ..... | ..... | ..... | ..... | 141,401 | 6,996,188 |
| 56,617 | 1,698 51 | ..... | ..... | ..... | ..... | 208 | 34,544 | 91,369 |
| 78,815,521 | 2,364,745 63 | 55,365,898 | 2,438,410 | 3,888,352 | 4,597,251 | 267,901 | 19,733,652 | 165,109,985 |

| | | |
|---|-----------------|-----------------|
| | 1916. | 1917. |
| Total duty collected ex-manufactory and ex-warehouse. | \$ 2,684,699 63 | \$ 2,364,752 38 |
| License fees..... | 4,600 00 | 3,150 00 |
| | \$ 2,689,299 63 | \$ 2,367,902 38 |

J. U. VINCENT,
Deputy Minister

APPENDIX A—MALT LIQUOR.

No. 10.—RETURN of Manufacturers for the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSES. | | Malt used. | Other Commodities used. | Malt Liquor manufactured. | Malt Liquor Exported. | Total Duty collected ex-manufactory, including License Fees. | |
|----------------------|-----------|-------|------------|-------------------------|---------------------------|-----------------------|--|------|
| | No. | Fees. | | | | | \$ | ets. |
| | | \$ | Lbs. | Lbs. | Galls. | Galls. | \$ | ets. |
| Belleville, Ont..... | 1 | 50 | 65,256 | ..... | 37,164 | ..... | 50 | 00 |
| Brantford "..... | 1 | 50 | 256,368 | ..... | 127,840 | ..... | 50 | 00 |
| Guelph "..... | 6 | 300 | 4,265,399 | 244 | 2,401,373 | ..... | 454 | 95 |
| Hamilton "..... | 2 | 100 | 2,336,724 | ..... | 1,274,376 | 3,000 | 100 | 00 |
| Kingston "..... | 2 | 100 | 212,505 | ..... | 89,175 | ..... | 100 | 00 |
| London "..... | 4 | 200 | 2,066,235 | ..... | 950,777 | 1,727 | 200 | 00 |
| Ottawa "..... | 2 | 100 | 1,282,785 | ..... | 675,300 | ..... | 100 | 00 |
| Owen Sound "..... | 4 | 200 | 351,998 | ..... | 160,530 | ..... | 200 | 00 |
| Perth "..... | 1 | 50 | 1,173,150 | ..... | 646,544 | ..... | 50 | 00 |
| Peterborough "..... | 1 | 50 | 263,000 | ..... | 106,315 | ..... | 50 | 00 |
| Port Arthur "..... | 3 | 150 | 683,206 | ..... | 369,609 | ..... | 150 | 00 |
| Prescott "..... | 2 | 100 | 1,299,670 | ..... | 754,775 | ..... | 100 | 00 |
| St.Catharines "..... | 2 | 100 | 887,020 | ..... | 483,040 | ..... | 100 | 00 |
| Stratford "..... | 2 | 100 | 144,209 | ..... | 83,750 | ..... | 100 | 00 |
| Toronto "..... | 8 | 400 | 9,785,216 | ..... | 4,692,060 | ..... | 400 | 00 |
| Windsor "..... | 2 | 100 | 1,278,400 | ..... | 646,728 | ..... | 100 | 00 |
| Totals..... | 43 | 2,150 | 26,351,141 | 244 | 13,499,356 | 4,727 | 2,304 | 95 |
| Montreal, Que..... | 9 | 450 | 24,189,275 | 114,880 | 10,975,888 | 7,137 | 28,438 | 95 |
| Quebec "..... | 3 | 150 | 4,307,488 | ..... | 1,790,275 | 87 | 150 | 00 |
| Sherbrooke "..... | 1 | 50 | 563,025 | ..... | 322,847 | ..... | 50 | 00 |
| Three Rivers "..... | 1 | 50 | 96,609 | ..... | 46,000 | ..... | 50 | 00 |
| Totals..... | 14 | 700 | 29,156,397 | 114,880 | 13,135,010 | 7,224 | 28,688 | 95 |
| St. John, N.B..... | 2 | 100 | 1,021,907 | ..... | 398,536 | 3,412 | 100 | 00 |
| Halifax, N.S..... | 3 | 150 | 1,948,999 | ..... | 713,650 | 81,929 $\frac{3}{4}$ | 150 | 00 |
| Winnipeg, Man..... | 8 | 400 | 2,843,629 | 17,200 | 1,666,090 | ..... | 4,254 | 10 |
| Moosejaw, Sask..... | 4 | 200 | 744,172 | ..... | 380,549 | ..... | 428 | 75 |
| Calgary, Alta..... | 7 | 350 | 3,074,433 | ..... | 1,820,109 | ..... | 350 | 00 |
| Vancouver, B.C..... | 18 | 900 | 4,662,982 | 456,400 | 2,460,719 | 14,001 $\frac{1}{2}$ | 46,348 | 95 |
| Victoria "..... | 7 | 350 | 2,095,682 | 27,725 | 852,939 | 6,020 | 5,550 | 45 |
| Totals..... | 25 | 1,250 | 6,758,664 | 484,125 | 3,313,658 | 20,021 $\frac{1}{2}$ | 51,899 | 40 |
| Dawson, Y.T..... | 1 | 50 | 56,707 | ..... | 22,725 | ..... | 50 | 00 |
| Grand Totals..... | 107 | 5,350 | 71,956,049 | 616,369 | 34,949,683 | 117,313 $\frac{1}{2}$ | 88,226 | 15 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—MALT LIQUOR—Continued.

No. 11.—COMPARATIVE STATEMENT of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

| Provinces. | LICENSES. | | Malt used. | Other Commodities used. | Malt Liquor manufactured. | Malt Liquor exported. | Total Duty collected, ex-manufactory, including License Fees. |
|-----------------------|-----------|-------|------------|-------------------------|---------------------------|-----------------------|---|
| | No. | Fees. | | | | | |
| | | \$ | Lbs. | Lbs. | Galls. | Galls. | \$ cts. |
| 1916. | | | | | | | |
| Ontario..... | 48 | 2,400 | 37,390,980 | | 17,595,839 | 1,252 | 2,400 00 |
| Quebec..... | 14 | 700 | 26,058,166 | 117,710 | 11,803,736 | 4,411½ | 27,749 95 |
| New Brunswick..... | 2 | 100 | 1,097,208 | | 427,816 | | 100 00 |
| Nova Scotia..... | 3 | 150 | 3,167,115 | | 1,091,450 | 7,946 | 150 00 |
| Manitoba..... | 8 | 400 | 5,600,558 | 41,800 | 2,658,488 | | 9,347 05 |
| Saskatchewan..... | 4 | 200 | 745,486 | 11,000 | 376,625 | | 2,956 25 |
| Alberta..... | 7 | 350 | 5,105,285 | 18,000 | 2,534,350 | | 5,797 10 |
| British Columbia..... | 27 | 1,350 | 6,266,458 | 297,325 | 3,083,631 | 78 | 26,653 65 |
| Yukon Territory..... | 1 | 50 | 70,591 | | 31,145 | | 50 00 |
| Totals..... | 114 | 5,700 | 85,501,847 | 485,835 | 39,603,080 | 13,687½ | 75,204 00 |
| 1917. | | | | | | | |
| Ontario..... | 43 | 2,150 | 26,351,141 | 244 | 13,499,356 | 4,727 | 2,304 95 |
| Quebec..... | 14 | 700 | 29,156,397 | 114,880 | 13,135,010 | 7,224 | 28,688 95 |
| New Brunswick..... | 2 | 100 | 1,021,907 | | 398,536 | 3,412 | 100 00 |
| Nova Scotia..... | 3 | 150 | 1,948,999 | | 713,650 | 81,929¾ | 150 00 |
| Manitoba..... | 8 | 400 | 2,843,629 | 17,200 | 1,666,090 | | 4,254 10 |
| Saskatchewan..... | 4 | 200 | 744,172 | | 380,549 | | 428 75 |
| Alberta..... | 7 | 350 | 3,074,433 | | 1,820,109 | | 350 00 |
| British Columbia..... | 25 | 1,250 | 6,758,664 | 484,125 | 3,313,658 | 20,021½ | 51,899 40 |
| Yukon Territory..... | 1 | 50 | 56,707 | | 22,725 | | 50 00 |
| Totals..... | 107 | 5,350 | 71,956,049 | 616,369 | 34,949,683 | 117,313¾ | 88,226 15 |

| | | |
|--|---------|----------|
| | 1916. | 1917. |
| Exported..... | Galls. | Galls. |
| H.M. Army and Navy, and Ships, Stores..... | 3,050 | 103,228½ |
| | 10,637½ | 14,085¾ |
| | 13,687½ | 117,313¾ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

APPENDIX A.—MALT LIQUOR—*Continued.*

No. 12.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917.

| Remaining in Warehouse from Last Year. | Ware- housed. | Total. | Division. | ENTERED FOR CONSUMPTION. | | Ex- ported. | Remaining in Warehouse. | Total. |
|--|------------------|---------|-------------------|-----------------------------|-----------|----------------|-------------------------------|---------|
| | | | | Quantity. | Duty. | | | |
| Galls. | Galls. | Galls. | | Galls. | \$ cts. | Galls. | Galls. | Galls. |
| 10,842 | 159,016 | 169,858 | Vancouver, B.C... | 139,928 | 20,989 20 | 14,002 | 15,928 | 169,858 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—MALT LIQUOR—*Concluded.*

No. 13.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917.

| Remaining in Warehouse from Last Year. | Warehoused. | Totals. | Province. | ENTERED FOR CONSUMPTION. | | Ex-ported. | Remaining in Warehouse. | Totals. |
|--|-------------|---------|-------------------|--------------------------|-----------|------------|-------------------------|---------|
| | | | | Quantity. | Duty. | | | |
| Galls. | Galls. | Galls. | 1916. | Galls. | \$ cts. | Galls. | Galls. | Galls. |
| 50,594 | 114,706 | 165,300 | British Columbia | 150,503 | 22,575 45 | 3,955 | 10,842 | 165,300 |
| | | | 1917. | | | | | |
| 10,842 | 159,016 | 169,858 | British Columbia. | 139,928 | 20,989 20 | 14,002 | 15,928 | 169,858 |

| | | |
|---|--------------|---------------|
| | 1916. | 1917. |
| Total duty collected ex-manufactory and ex-warehouse..... | \$ 92,079 45 | \$ 103,865 35 |
| License fees..... | 5,700 00 | 5,350 00 |
| | \$ 97,779 45 | \$ 109,215 35 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

APPENDIX A.—

No. 14.—RETURN of Manufactures for

| Divisions. | LICENSESES. | | Total Weight of Raw Leaf Tobacco and other Materials actually used. | TOBACCO AT 10C. PER LB. | | |
|---------------------------|-------------|----------|---|-------------------------|---------------|------------------|
| | No. | Fees. | | Manu- factured. | Paid Duty. | Ware- housed. |
| | | \$ cts. | Lbs. | Lbs. | Lbs. | Lbs. |
| Hamilton, Ont..... | 1 | 50 00 | 1,564,786 | 1,485,277 | 578,044 | 907,233 |
| Toronto, "..... | 3 | 150 00 | 140,205½ | 142,924 | 58,759 | 84,165 |
| Windsor, "..... | 5 | 250 00 | 37,536 | 43,326½ | 43,326½ | ..... |
| Totals..... | 9 | 450 00 | 1,742,527½ | 1,671,527½ | 680,129½ | 991,398 |
| Joliette, Que..... | 6 | 275 00 | 74,147 | 74,896 | 74,896 | ..... |
| Montreal, "..... | 43 | 2,075,00 | 14,214,684½ | 10,488,006½ | 4,188,213 | 6,299,793½ |
| Quebec, "..... | 5 | 250 00 | 3,626,308 | 3,687,431 | 3,661,474 | 25,957 |
| St. Hyacinthe, "..... | 5 | 250 00 | 10,192½ | 10,651 | 10,651 | ..... |
| Sherbrooke, "..... | 1 | 50 00 | 3,843,439½ | 3,981,672½ | 3,945,803½ | 35,869 |
| Three Rivers, "..... | 3 | 150 00 | 106,682 | 103,972 | 103,972 | ..... |
| Totals..... | 63 | 3,050 00 | 21,875,453½ | 18,346,629½ | 11,985,009½ | 6,361,619½ |
| Pictou, N. S..... | 2 | 100 00 | 1,452 | 1,549½ | 1,549½ | ..... |
| Charlottetown, P.E.I..... | 6 | 300 00 | 209,849 | 237,323 | 235,414 | 1,909 |
| Winnipeg, Man..... | 2 | 100 00 | 1,173 | 1,107 | 1,107 | ..... |
| Calgary, Alta..... | 1 | 50 00 | 12,513 | 12,513 | 12,513 | ..... |
| Vancouver, B.C..... | 1 | 50 00 | 102 | ..... | ..... | ..... |
| Grand Totals..... | 84 | 4,100 00 | 23,843,069½ | 20,270,649½ | 512,915,722½ | 7,354,926½ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

TOBACCO.

the Fiscal Year ended March 31, 1917.

| CIGARETTES AT \$3 PER M. | | | CIGARETTES AT \$8 PER M. | | | SNUFF AT 10c. PER LB. | | | Total Duty Collected ex-Manufact- ory, including License Fees. |
|-----------------------------|--------------------------|------------------------|-----------------------------|---------------|------------------|--------------------------|-------------------|------------------|--|
| Manu- factured. | Paid Duty. | Ware- housed. | Manu- factured. | Paid Duty. | Ware- housed. | Manu- factured. | Paid Duty. | Ware- housed. | |
| No. | No. | No. | No. | No. | No. | Lbs. | Lbs. | No. | \$ cts. |
| 45,018,000 3,600 | 27,270,250 3,600 | 17,747,750 | | | | | | | 139,665 15 6,036 70 4,582 65 |
| 45,021,600 | 27,273,850 | 17,747,750 | | | | | | | 150,284 50 |
| 1,650,711,620 1,286,900 | 1,248,166,720 728,100 | 402,544,900 558,800 | 1,724,260 | 1,417,120 | 307,140 | 582,066 31,280 | 576,061 31,280 | 6,005 | 7,764 60 4,234,339 52 371,709 70 1,315 10 394,630 35 10,547 20 |
| 1,651,998,520 | 1,248,894,820 | 403,103,700 | 1,724,260 | 1,417,120 | 307,140 | 613,346 | 607,341 | 6,005 | 5,020,306 47 |
| | | | | | | | | | 254 95 |
| | | | | | | | | | 23,841 40 |
| 33,000 | 33,000 | | | | | | | | 309 70 |
| | | | | | | | | | 1,301 30 |
| 38,000 | 11,000 | 27,000 | | | | | | | 83 00 |
| 1,697,091,120 | 1,276,212,670 | 420,878,450 | 1,724,260 | 1,417,120 | 307,140 | 613,346 | 607,341 | 6,005 | 5,196,381 32 |

J. U. VINCENT,
Deputy Minister.

No. 15.—COMPARATIVE STATEMENT of Manufactures for

| Provinces. | LICENSES. | | Total Weight of Raw Leaf Tobacco and other Materials actually used. | TOBACCO at 10c. PER LB. | | |
|---------------------------|-----------|----------|---|--|--|---------------------------------------|
| | No. | Fees. | | Manu- factured. | Paid Duty. | Ware- housed. |
| 1916. | | \$ cts. | Lbs. | Lbs. | Lbs. | Lbs. |
| Ontario..... | 7 | 350 00 | 2,032,142 ³ / ₄ | 1,936,854 | 768,854 | 1,168,000 |
| Quebec..... | 64 | 3,200 00 | 20,793,017 ³ / ₄ | 18,587,927 ¹ / ₂ | 11,978,815 | 6,609,112 ¹ / ₂ |
| Nova Scotia..... | 1 | 50 00 | 4,769 ¹ / ₂ | 5,963 ¹ / ₂ | 5,963 ¹ / ₂ | ..... |
| Prince Edward Island..... | 4 | 200 00 | 197,926 | 232,276 | 231,497 | 779 |
| Manitoba..... | 2 | 75 00 | 462 ¹ / ₂ | 348 | 348 | ..... |
| Alberta..... | 3 | 150 00 | 9,395 | 9,395 | 9,395 | ..... |
| British Columbia..... | 2 | 100 00 | 5,923 | 2,382 ¹ / ₂ | 2,042 | 340 ¹ / ₂ |
| Totals..... | 83 | 4,125 00 | 23,043,636 ¹ / ₂ | 20,775,146 ¹ / ₂ | 12,996,914 ¹ / ₂ | 7,778,232 |
| 1917. | | | | | | |
| Ontario..... | 9 | 450 00 | 1,742,527 ¹ / ₄ | 1,671,527 ¹ / ₂ | 680,129 ¹ / ₂ | 991,398 |
| Quebec..... | 63 | 3,050 00 | 21,875,453 ¹ / ₂ | 18,346,629 ¹ / ₅ | 11,985,009 ¹ / ₂ | 6,361,619 ¹ / ₂ |
| Nova Scotia..... | 2 | 100 00 | 1,452 | 1,549 ¹ / ₂ | 1,549 ¹ / ₂ | ..... |
| Prince Edward Island..... | 6 | 300 00 | 209,849 | 237,323 | 235,414 | 1,909 |
| Manitoba..... | 2 | 100 00 | 1,173 | 1,107 | 1,107 | ..... |
| Alberta..... | 1 | 50 00 | 12,513 | 12,513 | 12,513 | ..... |
| British Columbia..... | 1 | 50 00 | 102 | ..... | ..... | ..... |
| Totals..... | 84 | 4,100 00 | 23,843,069 ³ / ₄ | 20,270,649 ¹ / ₅ | 2,915,722 ¹ / ₂ | 7,354,926 ¹ / ₂ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

TOBACCO—Continued.

the Fiscal Years ended March 31, 1916 and 1917.

| CIGARETTES AT \$3 PER M. | | | CIGARETTES AT \$8 PER M. | | | SNUFF AT 10C. PER LB. | | | Total Duty Collected ex-Manufac- tory, including License Fees. | |
|-----------------------------|---------------|------------------|-----------------------------|---------------|------------------|--------------------------|---------------|------------------|--|------|
| Manu- factured. | Paid Duty. | Ware- housed. | Manu- factured. | Paid Duty. | Ware- housed. | Manu- factured | Paid duty. | Ware- housed. | | |
| No. | No. | No. | No. | No. | No. | Lbs. | Lbs. | No. | \$ | cts. |
| 59,560,420 | 36,034,950 | 23,525,470 | | | | | | | 185,340 | 25 |
| 1,294,634,705 | 1,023,408,250 | 271,226,455 | 1,215,660 | 1,162,760 | 52,900 | 544,987 | 544,237 | 750 | 4,335,032 | 03 |
| | | | | | | | | | 646 | 35 |
| 62,200 | 62,200 | | | | | | | | 23,349 | 70 |
| | | | | | | | | | 296 | 40 |
| 1,372,450 | 1,001,950 | 370,500 | 650 | 650 | | | | | 1,089 | 50 |
| 1,355,629,775 | 1,060,507,350 | 295,122,425 | 1,216,310 | 1,163,410 | 52,900 | 544,987 | 544,237 | 750 | 3,315 | 28 |
| | | | | | | | | | 4,549,069 | 51 |
| | | | | | | | | | | |
| 45,021,600 | 27,273,850 | 17,747,750 | | | | | | | 150,284 | 50 |
| 1,651,998,520 | 1,248,894,820 | 403,103,700 | 1,724,260 | 1,417,120 | 307,140 | 613,346 | 607,341 | 6,005 | 5,020,306 | 47 |
| | | | | | | | | | 254 | 95 |
| | | | | | | | | | 23,841 | 40 |
| 33,000 | 33,000 | | | | | | | | 309 | 70 |
| | | | | | | | | | 1,301 | 30 |
| 38,000 | 11,000 | 27,000 | | | | | | | 83 | 00 |
| 1,697,091,120 | 1,276,212,670 | 420,878,450 | 1,724,260 | 1,417,120 | 307,140 | 613,346 | 607,341 | 6,005 | 5,196,381 | 32 |

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

APPENDIX A.—TOBACCO—*Continued*—MANUFACTURED BEFORE JUNE 1, 1908.

No. 16.—WAREHOUSE RETURN for the Fiscal Year ended
 Dr. March 31, 1917. Cr.

| Remaining in Warehouse from last year. | Totals. | Divisions. | Ship Stores. | Remaining in Warehouse. | Totals. |
|--|---------|--------------------|--------------|-------------------------|---------|
| Lbs. | Lbs. | | Lbs. | Lbs. | Lbs. |
| 461 | 461 | St. John, N.B..... | | 461 | 461 |
| 3,372 | 3,372 | Victoria, B.C..... | 35 | 3,337 | 3,372 |
| 19,719½ | 19,719½ | Sundries..... | | 19,719½ | 19,719½ |
| 23,552½ | 23,552½ | Totals..... | 35 | 23,517½ | 23,552½ |

INLAND REVENUE DEPARTMENT,
 OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—TOBACCO—*Continued*—MANUFACTURED BEFORE JUNE 1, 1908.

No. 17.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years
 Dr. ended March 31, 1916 and 1917. Cr.

| Remaining in Warehouse from last year. | Totals. | Provinces. | ENTERED FOR CONSUMPTION. | | Ship Stores. | Remaining in Warehouse. | Totals. |
|--|---------|-----------------------|--------------------------|-------|--------------|-------------------------|---------|
| | | | Quantity. | Duty. | | | |
| Lbs. | Lbs. | 1916. | \$ cts. | Lbs. | Lbs. | Lbs. | Lbs. |
| 461 | 461 | New Brunswick..... | | | | 461 | 461 |
| 3,919½ | 3,919½ | British Columbia..... | 175 | 43 75 | 372½ | 3,372 | 3,919½ |
| 19,719½ | 19,719½ | Sundries..... | | | | 19,719½ | 19,719½ |
| 24,100 | 24,100 | Totals..... | 175 | 43 75 | 372½ | 23,552½ | 24,100 |
| | | 1917. | | | | | |
| 461 | 461 | New Brunswick..... | | | | 461 | 461 |
| 3,372 | 3,372 | British Columbia..... | | | 35 | 3,337 | 3,372 |
| 19,719½ | 19,719½ | Sundries..... | | | | 19,719½ | 19,719½ |
| 23,552½ | 23,552½ | Totals..... | | | 35 | 23,517½ | 23,552½ |

INLAND REVENUE DEPARTMENT,
 OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

| Exported. | | | Army, Navy and Ship-Stores. | | | | Free and written off. | | Taken for R | |
|------------------------------------|-------------|------------------------|--------------------------------------|-------------|------------------------|--------|-----------------------|-------------|-------------|-------------|
| Tobacco. | Cigarettes. | Overweight Cigarettes. | Tobacco. | Cigarettes. | Overweight Cigarettes. | Snuff. | Tobacco | Cigarettes. | Tobacco. | Cigarettes. |
| Lbs. | No. | No. | Lbs. | No. | No. | Lbs. | Lbs | No. | Lbs. | No. |
| 8,781½ | 16,221,370 | ... | 17,482 | 15,838,050 | 500 | ... | ... | ... | 13,820 | ... |
| 5,120½ | 137,94,050 | ... | 51,079½ | 51,342,195 | 48,400 | 50 | 15 | 50 | 8,461¼ | 70, |
| ..... | 15,000 | ..... | 3,621 | 3,437,500 | 1,000 | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 779 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 10,035½ | 9,062,100 | ..... | 490 | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | 25,500 | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 12,366 | 7,231,200 | ..... | ..... | ..... | ..... | 312 | ..... |
| | | | | | | | | | | |
| 9,902 | 154,210,420 | ..... | 95,363 | 86,936,545 | 49,900 | 540 | 15 | 500 | 22,593¼ | 70, |
| | | | | | | | | | | |
| 5,486 | 10,479,280 | ..... | 64,709 | 43,033,180 | 39,200 | ..... | ..... | 2,500 | 2,039 | ..... |
| 9,575 ⁹ / ₁₀ | 248,415,400 | 1,000 | 58,920½ | 55,535,810 | 138,070 | 665 | ..... | 6,800 | 9,439½ | 53, |
| ..... | ..... | ..... | 13,505 | 9,481,000 | ..... | ..... | ..... | ..... | ..... | ..... |
| 284 | ..... | ..... | 1,625 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 37,359 | 27,482,250 | 44,300 | 4,020 | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 6,351½ | 4,808,100 | 9,000 | 610 | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 15,651 | 11,018,350 | 10,700 | ..... | ..... | ..... | ..... | ..... |
| | | | | | | | | | | |
| 5,345 ⁹ / ₁₀ | 258,894,680 | 1,000 | 198,121 ⁹ / ₁₀ | 151,358,690 | 241,270 | 5,295 | ... | 9,300 | 11,478½ | 53, |

| Working. | | Remaining in Warehouse. | | | | | Totals. | | | | |
|---------------------------------|-----|-------------------------|------------|-------------|------------|------------------------|-------------|-------------|---------|--------|-----|
| Dr. | | | | | | | | | | | |
| Remain in Warehouse from last y | | Overweight Cigarettes. | | Cigarettes. | | Overweight Cigarettes. | | Cigarettes. | | | |
| Lbs | No. | Lbs | No. | Lbs | No. | Lbs | No. | Lbs | No. | Lbs | No. |
| 4 | | | | | | | | | | | |
| 3,5 | | | | | | | | | | | |
| 19,7 | | | | | | | | | | | |
| 23,5 | | | | | | | | | | | |
| 000 | | 200,202 | 4,473,300 | 500 | | 1,436,482½ | 39,118,220 | 1,000 | | | |
| | | 555,580 | 24,215,610 | | | 6,953,483½ | 280,869,805 | 52,900 | 750 | | |
| | | 1,056 | 652,000 | | | 46,738 | 4,199,500 | 1,600 | | | |
| | | | | | | 779 | | | | | |
| INLAN | | 6,200½ | 3,237,900 | | 110 | 16,235 | 12,350,000 | | 600 | | |
| | | | | | | | 25,500 | | | | |
| | | 5,459½ | 694,800 | | | 130,005½ | 8,923,500 | | | | |
| | | | | | | 975 | | | | | |
| 000 | | 768,498 | 33,293,610 | 500 | 110 | 8,584,699½ | 345,486,525 | 54,900 | 1,350 | | |
| | | | | | | | | | | | |
| APPE | | 247,198½ | 3,227,120 | 5,300 | | 1,319,927½ | 66,671,970 | 46,500 | | | |
| 500 | 500 | 920 | 313,583 | 8,956,720 | 11,210 | 6,944,729½ | 446,144,190 | 309,140 | 6,635 | | |
| | | | 2,796 | 505,000 | | 220 | | | | | |
| | | | | | | 75,997 | 10,026,000 | | | | |
| No. 1 | | | | | | 1,909 | | | | | |
| | | 807 | 876,950 | 12,700 | | 48,014 | 38,656,400 | 57,000 | 4,560 | | |
| Dr. | | 569 | 525,900 | | | 7,682½ | 5,504,000 | 9,000 | 700 | | |
| | | 5,335 | 1,214,750 | 3,300 | | 138,328½ | 13,630,300 | 1,000 | | | |
| | | | | | | | | | | | |
| Rema in Wareh from last y | 500 | 500 | 920 | 570,288½ | 15,306,440 | 32,510 | 8,536,808 | 580,632,860 | 435,640 | 11,895 | |

Lb

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J. U. VINCENT,
Deputy Minister.

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19

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INLAN

APPENDIX A.—RAW LEAF TOBACCO, INCLUDING

DR.

No. 20.—WAREHOUSE RETURN for the

| Divisions. | Remaining in Warehouse from last year. | Imported. | Warehoused ex-Factory. | RECEIVED FROM OTHER DIVISIONS. | | Totals. |
|-----------------------|--|-------------|---------------------------|-----------------------------------|--------------------------------|-------------|
| | | | | Removed during year. | In Transit last year. | |
| | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. |
| Belleville, Ont. | 634 | 507 | | 441 | | 1,582 |
| Brantford | 8,797 | 28,610 | 460 | 1,974 | | 39,841 |
| Guelph | 6,496 | 4,042 | | 974 | | 11,512 |
| Hamilton | 2,370,073½ | 2,074,695 | 179,896 | 2,168 | 1,225 | 4,628,057½ |
| Kingston | 30,716 | 23,767 | 5,876 | 4,770 | | 65,129 |
| London | 213,726 | 619,032 | 79,591 | 13,615 | 796 | 926,760 |
| Ottawa | 249 | | | | | 249 |
| Owen Sound | 2,348 | 7,300 | | 345 | 1,506½ | 11,499½ |
| Peterborough | 791 | 862 | | 158 | | 1,811 |
| Prescott | 1,001 | 1,371 | | 379 | | 2,751 |
| St. Catharines | 5,809 | 3,577 | | 383 | | 9,769 |
| Stratford | 9,519 | 6,065½ | | | | 15,584½ |
| Toronto | 418,827½ | 281,997½ | 18,800 | 3,296 | 358½ | 723,279½ |
| Windsor | 18,556 | 48,465 | | 33,762 | | 100,783 |
| Totals..... | 3,087,543 | 3,100,290¾ | 284,623 | 62,265 | 3,886 | 6,538,607¾ |
| Joliette, Que. | 12,652½ | 4,243 | | 16,318½ | 1,238 | 34,452¾ |
| Montreal | 10,642,670 | 11,388,769½ | 328,535 | 132,194½ | 555 | 22,492,724 |
| Quebec | 103,058½ | 589,928 | 6,982 | 22,546 | | 722,514½ |
| St. Hyacinthe | 65,711 ⁸ / ₁₀ | 120,523 | 52,459 | 53,799½ | 3,207 | 297,699½ |
| Sherbrooke | 261,808 | 649,090 | 363,219 | 37,085 | 377 | 1,311,579 |
| Three Rivers | 1,482 | 1,039 | | 1,155 | | 3,676 |
| Totals..... | 11,087,382¾ | 12,753,592½ | 751,195 | 265,098½ | 5,377 | 24,862,645¾ |
| St. John, N.B. | 10,574 | 5,336 | | | | 15,910 |
| Halifax, N.S. | 1,266 | 2,517 | | | | 3,783 |
| Pictou | 3,447 | 1,149 | | | | 4,596 |
| Totals..... | 4,713 | 3,666 | | | | 8,379 |
| Charlottetown, P.E.I. | 19,853 | 1,767 | | 601 | | 22,221 |
| Winnipeg, Man. | 14,074 | 12,139 | | 432 | | 26,645 |
| Moosejaw, Sask. | 680 | | | 260 | | 940 |
| Calgary, Alta. | 15,078 | 107,233 | | 729 | | 123,040 |
| Vancouver, B.C. | 23,647 | 83,890 | 5,899 | 2,431 | | 115,867 |
| Victoria | 7,090 | 8,549 | | 148 | | 15,787 |
| Totals..... | 30,737 | 92,439 | 5,899 | 2,579 | | 131,654 |
| Grand Totals.. | 14,270,634¾ | 16,076,463¼ | 1,041,717 | 331,964½ | 9,263 | 31,730,042¾ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

STEMS, SCRAPS, AND CUTTINGS.

Fiscal Year ended March 31, 1917.

Cr.

| ENTERED FOR CONSUMPTION. | | REMOVED IN BOND TO OTHER DIVISIONS. | | Ex-ported. | Writ-ten off. | Des-tryed. | Entered for Manu-facture, free. | Remain-ing in Ware-house. | Totals. |
|--------------------------|--------------|--|-------------|------------|---------------|------------|---------------------------------|---------------------------|-------------|
| Quantity. | Duty. | Ware-housed in Divisions to which removed. | In Transit. | | | | | | |
| Std. lbs. | \$ ets. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lb. | Std. lb. | Std. lbs. | Std. lbs. | Std. lbs. |
| 946 | 261 88 | 627 | | | | 9 | | | 1,582 |
| 23,945 | 6,704 60 | 358 | | 460 | | | | 15,078 | 39,841 |
| 7,404 | 2,184 00 | 807 | 153 | | | | | 3,148 | 11,512 |
| 1,874,536 | 525,286 86 | 1,173 | | 300,604 | | 591 | 29,164 | 2,421,989½ | 4,628,057½ |
| 37,878 | 10,638 74 | 667 | 311 | 5,876 | | | | 20,397 | 65,129 |
| 569,026 | 166,286 66 | 47,135 | 5,261 | 88,289 | | 25 | | 217,024 | 926,760 |
| 45 | 12 60 | 204 | | | | | | | 249 |
| 7,891 | 2,862 72 | | | | | | | 3,698½ | 11,499½ |
| 1,358 | 380 24 | | | | | | | 453 | 1,811 |
| 2,387 | 668 36 | | | | | | | 364 | 2,751 |
| 5,974 | 1,688 12 | 432 | | | | 25 | | 3,338 | 9,769 |
| 8,520½ | 2,385 67 | 1,618 | | 119 | | | | 5,327 | 15,584½ |
| 314,946¾ | 92,826 27 | 108,416½ | 22,770 | 42,427 | 598 | 147 | | 233,975 | 723,279½ |
| 73,078 | 25,701 48 | 14,742 | 299 | 3,257 | | | | 9,407 | 100,783 |
| 2,927,934½ | 837,891 50 | 176,179½ | 28,794 | 441,032 | 598 | 797 | 29,164 | 2,934,109 | 6,538,607¾ |
| 17,453¾ | 5,246 75 | 4,806 | | | | 14 | | 12,179 | 34,452¾ |
| 12,937,992¾ | 3,652,612 23 | 122,884½ | 2,822 | 370,021 | 55 | 6,995 | 598,579 | 8,453,374¾ | 22,492,724 |
| 572,490¾ | 160,325 20 | 5,511 | | 9,117 | | 139 | | 135,257 | 722,514¾ |
| 153,710 | 44,824 77 | 18,240½ | | 4,836¾ | | | | 63,454 | 297,699¾ |
| 623,813 | 174,667 64 | 1,085 | | 273 | | 764 | | 322,425 | 1,311,579 |
| 1,957 | 547 96 | | | | | | | 1,719 | 3,676 |
| 14,312,416½ | 4,038,224 55 | 152,527 | 7,931¾ | 794,816 | 55 | 7,912 | 598,579 | 8,988,408¾ | 24,862,647¾ |
| 7,168 | 2,007 04 | | | | | | | 8,742 | 15,910 |
| 2,880 | 806 40 | | | | | | | 903 | 3,783 |
| 1,353 | 378 84 | 601 | | | | | | 2,612 | 4,566 |
| 4,233 | 1,185 24 | 601 | | | | | | 3,545 | 8,379 |
| 3,189 | 892 92 | | | | | | | 19,032 | 22,221 |
| 18,195 | 5,110 00 | | | | | | | 8,450 | 26,645 |
| 561 | 157 08 | | | | | 166 | | 213 | 940 |
| 108,949 | 31,241 70 | 2,558 | 4,791 | | | | | 6,742 | 123,040 |
| 75,386 | 21,961 38 | 99 | | 5,395 | | 99 | 1,286 | 33,602 | 115,867 |
| 12,390 | 3,845 52 | | | | | 18 | | 3,379 | 15,787 |
| 87,776 | 25,806 90 | 99 | | 5,395 | | 117 | 1,286 | 36,981 | 131,654 |
| 17,470,422¾ | 4,942,516 93 | 331,964½ | 41,516¾ | 1,241,243 | 819 | 8,826 | 629,029 | 12,006,222¾ | 31,730,042¾ |

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—RAW LEAF TOBACCO, INCLUDING

DR. No. 21.—COMPARATIVE STATEMENT of Warehouse Returns

| Provinces. | Remaining in Warehouse from last year. | Imported. | Warehoused ex-Factory. | RECEIVED FROM OTHER DIVISIONS. | | Totals. |
|---------------------------|--|-------------|------------------------|--------------------------------|-----------------------|-------------|
| | | | | Removed during the year. | In Transit last year. | |
| 1916. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. | Std. lbs. |
| Ontario..... | 3,296,731½ | 3,177,753½ | 244,525 | 29,039½ | 1,152½ | 6,749,202½ |
| Quebec..... | 8,302,834½ | 16,923,760½ | 159,384½ | 127,400½ | 12,823 | 25,526,203½ |
| New Brunswick..... | 12,528 | 5,705 | ..... | ..... | ..... | 18,233 |
| Nova Scotia..... | 7,283 | 5,514 | ..... | 937 | ..... | 13,734 |
| Prince Edward Island..... | 21,254 | 2,290 | ..... | ..... | ..... | 23,544 |
| Manitoba..... | 14,369 | 20,406 | 3,312 | 133 | ..... | 38,220 |
| Saskatchewan..... | 2,362 | 1,057 | ..... | ..... | ..... | 3,419 |
| Alberta..... | 22,012 | 78,676 | 67 | 672 | ..... | 101,427 |
| British Columbia..... | 51,081 | 40,770 | 7,126 | 2,585 | ..... | 101,562 |
| Totals..... | 11,730,455½ | 20,255,932½ | 414,414½ | 160,767½ | 13,975½ | 32,575,545½ |
| 1917. | | | | | | |
| Ontario..... | 3,087,543 | 3,100,290½ | 284,623 | 62,265 | 3,886 | 6,538,607½ |
| Quebec..... | 11,087,382½ | 12,753,592½ | 751,195 | 265,098½ | 5,377 | 24,862,645½ |
| New Brunswick..... | 10,574 | 5,336 | ..... | ..... | ..... | 15,910 |
| Nova Scotia..... | 4,713 | 3,666 | ..... | ..... | ..... | 8,379 |
| Prince Edward Island..... | 19,853 | 1,767 | ..... | 601 | ..... | 22,221 |
| Manitoba..... | 14,074 | 12,139 | ..... | 432 | ..... | 26,645 |
| Saskatchewan..... | 680 | ..... | ..... | 260 | ..... | 940 |
| Alberta..... | 15,078 | 107,233 | ..... | 729 | ..... | 123,040 |
| British Columbia..... | 30,737 | 92,439 | 5,899 | 2,579 | ..... | 131,654 |
| Totals..... | 14,270,634½ | 16,076,463½ | 1,041,717 | 331,964½ | 9,263 | 31,730,042½ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

SYSTEMS, SCRAPS, AND CUTTINGS—*Concluded.*

for the Fiscal Years ended March 31, 1916 and 1917.

Cr.

| ENTERED FOR CONSUMPTION | | REMOVED IN BOND TO OTHER DIVISIONS. | | Ex-ported. | Writ-ten-off. | De-stroy-ed. | Entered for Manu-facture, free. | Remain-ing in Ware-house. | Totals. |
|--------------------------|--------------|--|----------------------|------------|---------------|---------------------|---------------------------------|---------------------------|--------------------------|
| Quantity. | Duty. | Ware-housed in Divisions to which removed. | In Transit | | | | | | |
| Std. lbs. | \$ cts. | Std. lbs. | Std. lbs. | Std. lbs. | Std' lbs. | Std. lbs. | Std. lb. | Std. lbs. | Std. lbs. |
| 2,928,494 $\frac{1}{2}$ | 833,660 21 | 78,236 $\frac{1}{2}$ | 5,591 | 485,079 | ..... | 3,194 | 161,065 | 3,087,543 | 6,749,202 $\frac{3}{8}$ |
| 13,457,041 $\frac{3}{8}$ | 3,789,595 10 | 80,066 $\frac{2}{5}$ | 3,543 | 322,892 | ..... | 5,225 $\frac{3}{4}$ | 570,052 | 11,087,382 $\frac{3}{8}$ | 25,526,205 $\frac{7}{8}$ |
| 7,659 | 2,159 92 | ..... | ..... | ..... | ..... | ..... | 10,574 | 10,574 | 18,233 |
| 8,782 | 2,503 06 | 110 | 129 | ..... | ..... | ..... | 4,713 | 4,713 | 13,734 |
| 3,691 | 1,033 48 | ..... | ..... | ..... | ..... | ..... | 19,853 | 19,853 | 23,544 |
| 20,614 | 5,914 16 | ..... | ..... | 3,454 | ..... | 78 | ..... | 14,074 | 38,220 |
| 2,306 | 648 48 | 398 | ..... | ..... | ..... | 35 | ..... | 680 | 3,419 |
| 83,455 | 23,588 74 | ..... | ..... | 2,653 | ..... | 211 | ..... | 15,078 | 101,427 |
| 59,238 | 17,654 84 | 1,957 | ..... | 9,539 | ..... | 921 | ..... | 30,737 | 101,562 |
| 16,571,311 $\frac{3}{8}$ | 4,676,757 99 | 160,767 $\frac{3}{8}$ | 9,263 | 823,617 | ..... | 8,834 $\frac{3}{4}$ | 731,117 | 14,270,634 $\frac{3}{8}$ | 32,575,545 $\frac{3}{8}$ |
| 2,927,934 $\frac{1}{2}$ | 837,891 50 | 176,179 $\frac{1}{2}$ | 28,794 | 441,032 | 598 | 797 | 29,164 | 2,934,109 | 6,538,607 $\frac{3}{4}$ |
| 14,312,416 $\frac{7}{8}$ | 4,038,224 55 | 152,527 | 7,931 $\frac{3}{8}$ | 794,816 | 55 | 7,912 | 598,579 | 8,988,408 $\frac{3}{8}$ | 24,862,645 $\frac{3}{8}$ |
| 7,163 | 2,007 04 | ..... | ..... | ..... | ..... | ..... | 8,742 | 8,742 | 15,910 |
| 4,233 | 1,185 24 | 601 | ..... | ..... | ..... | ..... | 3,545 | 3,545 | 8,379 |
| 3,189 | 892 92 | ..... | ..... | ..... | ..... | ..... | 19,032 | 19,032 | 22,221 |
| 18,195 | 5,110 00 | ..... | ..... | ..... | ..... | ..... | 8,450 | 8,450 | 26,645 |
| 561 | 157 08 | ..... | ..... | ..... | 166 | ..... | 213 | 213 | 940 |
| 108,949 | 31,241 70 | 2,558 | 4,791 | ..... | ..... | ..... | 6,742 | 6,742 | 123,040 |
| 87,776 | 25,806 90 | 99 | ..... | 5,395 | ..... | 117 | 1,286 | 36,981 | 131,654 |
| 17,470,422 $\frac{3}{8}$ | 4,942,516 93 | 331,964 $\frac{1}{2}$ | 41,516 $\frac{3}{8}$ | 1,241,243 | 819 | 8,826 | 629,029 | 12,006,222 $\frac{3}{8}$ | 31,730,042 $\frac{1}{2}$ |

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—OTHER MATERIALS.

No. 22.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917.

DR.

CR.

| Remaining in Ware- house from last year. | Warehoused | Totals. | Divisions. | ENTERED FOR CONSUMPTION. | | Remaining in Warehouse. | Totals. |
|---|------------|-----------|------------------|--------------------------|------------|-------------------------------|-----------|
| | | | | Quantity. | Duty. | | |
| Lbs. | Lbs. | Lbs. | | Lbs. | \$ cts. | Lbs. | Lbs. |
| 916,748 | 2,181,019 | 3,097,767 | Montreal, Que... | 1,548,075 | 247,692 00 | 1,549,692 | 3,097,767 |
| | 734 | 734 | Pictou, N.S..... | 734 | 117 44 | ..... | 734 |
| 916,748 | 2,181,753 | 3,098,501 | Grand Totals. | 1,548,809 | 247,809 44 | 1,549,692 | 3,098,501 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
*Deputy Minister.*APPENDIX A.—OTHER MATERIALS—*Concluded.*No. 23.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years
ended March 31, 1916 and 1917.

DR.

CR.

| Remaining in Ware- house from last year. | Warehoused | Totals. | Provinces. | ENTERED FOR CONSUMPTION. | | Remaining in Warehouse. | Totals. |
|---|------------|-----------|----------------|--------------------------|------------|-------------------------------|-----------|
| | | | | Quantity. | Duty. | | |
| Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | \$ cts. | Lbs. | Lbs. |
| 99,319 | 2,182,604 | 2,281,923 | Quebec..... | 1,365,175 | 218,423 00 | 916,748 | 2,281,923 |
| | | | 1917. | | | | |
| 916,748 | 2,181,019 | 3,097,767 | Quebec..... | 1,548,075 | 247,692 00 | 1,549,692 | 3,097,767 |
| ..... | 734 | 734 | Nova Scotia... | 734 | 117 44 | ..... | 734 |
| 916,748 | 2,181,753 | 3,098,501 | Totals..... | 1,548,809 | 247,809 44 | 1,549,692 | 3,098,501 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—CANADA TWIST TOBACCO.

No. 24.—STATEMENT of Revenue collected from Canada Twist Tobacco for the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSES. | | Canada Twist, at 10 cts. per lb. | Total Duty Collected, including License Fees. |
|--------------------|-----------|-------|-------------------------------------|--|
| | No. | Fees. | | |
| | | \$ | Lbs. | \$ cts. |
| Ottawa, Ont..... | 3 | 6 | 50 | 11 00 |
| Prescott, "..... | 1 | 2 | 830 | 85 00 |
| Totals..... | 4 | 8 | 880 | 96 00 |
| Montreal, Que..... | 15 | 30 | 4,805 | 510 50 |
| Grand Totals..... | 19 | 38 | 5,685 | 606 50 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CANADA TWIST TOBACCO—*Concluded.*

No. 25.—COMPARATIVE STATEMENT for the Fiscal Years ended March 31, 1916 and 1917.

| Provinces. | LICENSES. | | Canada Twist, at 10 cts. per lb. | Total Duty Collected, including License Fees. |
|--------------|-----------|-------|-------------------------------------|--|
| | No. | Fees. | | |
| 1916. | | \$ | Lbs. | \$ cts. |
| Ontario..... | 6 | 12 | 1,470 | 159 00 |
| Quebec..... | 19 | 38 | 5,960 | 634 00 |
| Totals..... | 25 | 50 | 7,430 | 793 00 |
| 1917. | | | | |
| Ontario..... | 4 | 8 | 880 | 96 00 |
| Quebec..... | 15 | 30 | 4,805 | 510 50 |
| Totals..... | 19 | 38 | 5,685 | 606 50 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS.

No. 26.—RETURN of Manufactures for the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSESES. | | Total Raw Leaf Tobacco and other materials actually used. | DEFICIENCIES PAYING DUTY. | | CIGARS AT \$4.00 PER THOUSAND. | | | | CIGARS AT \$3.00 PER THOUSAND. | | | | Total Duty collected ex- manufac- tory, including License Fees. | | | |
|----------------|-------------|------------------|---|---------------------------------|---------------------------|--------------------------------|-------------------------|---------------------------|-------------------|--------------------------------|---------------------------|-------------------|-------------------------|---|--|--|--|
| | No. | Fees. \$ cts. | | Cigars. No. | Manufac- tured. No. | Paid Duty. No. | Ware- housed. No. | Manufac- tured. No. | Paid Duty. No. | Ware- housed. No. | Manufac- tured. No. | Paid Duty. No. | Ware- housed. No. | | | | |
| | | | | | | | | | | | | | | | | | |
| Belleville, | 1 | 50 00 | 913 | | | | | | | | | | | | | | |
| Brantford | 4 | 200 00 | 31,606 | 4,495 | 1,200 | | 48,550 | 98,250 | 20,300 | 1,666,735 | 891,185 | 891,185 | 2,344 94 | | | | |
| Guelph | 9 | 400 00 | 19,738 | | | | 1,036,830 | 775,550 | 891,185 | 638,150 | 398,700 | 398,700 | 1,314 46 | | | | |
| Hamilton | 9 | 450 00 | 296,014 | 207,743 | 15,350 | 15,350 | 13,590,065 | 5,247,915 | 8,342,150 | 2,501,515 | 1,489,790 | 1,489,790 | 16,817 09 | | | | |
| Kingston | 3 | 150 00 | 50,023 | | | | 2,501,515 | 1,489,790 | 1,011,725 | 29,333,970 | 23,159,005 | 6,224,965 | 4,619 37 | | | | |
| London | 31 | 1,525 00 | 584,555 | 134,291 | | | 828,000 | 426,800 | 401,200 | | | | 71,405 33 | | | | |
| Owen Sound | 1 | 50 00 | 17,228 | | | | | | | | | | 1,330 40 | | | | |
| Perth | | | | 1,818 | | | | | | | | | 5 46 | | | | |
| Peterborough | 2 | 100 00 | 1,858 | | | | 86,325 | 85,325 | 1,000 | | | | 355 98 | | | | |
| Prescott | 6 | 400 00 | 6,532 | | | | 340,700 | 337,200 | 3,500 | | | | 1,111 60 | | | | |
| St. Catharines | 8 | 400 00 | 17,679 | | | | 1,000,050 | 960,000 | 40,050 | | | | 3,280 00 | | | | |
| Stratford | 4 | 200 00 | 16,689 | 1,743 | | | 827,630 | 553,530 | 274,100 | | | | 1,865 84 | | | | |
| Toronto | 20 | 1,000 00 | 334,306 | 16,285 | | | 17,000,760 | 12,851,140 | 4,149,620 | | | | 39,602 57 | | | | |
| Windsor | 7 | 350 00 | 161,201 | | 1,200 | 1,200 | 6,852,415 | 6,725,390 | 127,025 | | | | 20,581 04 | | | | |
| Totals..... | 101 | 4,975 00 | 1,538,342 | 366,375 | 17,750 | 2,400 | 75,163,565 | 53,278,045 | 21,885,520 | | | | 165,918 83 | | | | |
| Joliette, | 9 | 375 00 | 117,341 | 1,515 | | | 7,103,125 | 5,186,545 | 1,916,580 | | | | 15,939 20 | | | | |
| Quebec | 39 | 1,925 00 | 2,177,373 | 204,455 | | | 119,142,945 | 83,792,780 | 35,350,165 | | | | 253,980 56 | | | | |
| Montreal | 2 | 100 00 | 86,646 | | 18,899 | 15,899 | 5,200,545 | 2,452,010 | 2,748,555 | | | | 7,456 06 | | | | |
| St. Hyacinthe | 9 | 450 00 | 185,097 | 150 | 88,950 | 88,950 | 10,265,470 | 5,387,820 | 4,877,690 | | | | 16,969 71 | | | | |
| Sherbrooke | 7 | 350 00 | 127,364 | | 300 | 300 | 6,425,510 | 3,868,195 | 2,557,315 | | | | 11,954 61 | | | | |
| Three Rivers | 4 | 200 00 | 9,404 | 15,944 | | | 589,050 | 472,400 | 116,650 | | | | 1,665 03 | | | | |
| Totals..... | 70 | 3,400 00 | 2,703,225 | 222,061 | 108,149 | 104,849 | 148,726,645 | 101,159,750 | 47,566,895 | | | | 307,965 17 | | | | |

SESSIONAL PAPER No. 12

| | | | | | | | | | | | | | |
|------------------|-----|-----------|------------|---------|---------|---------|--------|--|--|-------------|-------------|------------|------------|
| St. John, N.B. | 2 | 100 00 | 30,328 | | | | | | | 1,803,050 | 178,500 | 1,024,550 | 635 50 |
| Halifax, N.S. | 3 | 150 00 | 12,781 | | | | | | | 681,785 | 507,115 | 174,670 | 1,671 34 |
| Pictou " | 1 | 50 00 | 3,136 | | | | | | | 154,150 | 154,150 | | 512 45 |
| Totals | 4 | 200 00 | 15,917 | | | | | | | 835,935 | 661,265 | 174,670 | 2,183 79 |
| Winnipeg, Man. | 10 | 475 00 | 46,315 | 23,000 | 3,825 | 3,825 | | | | 2,186,475 | 1,824,650 | 361,825 | 6,033 27 |
| Moose Jaw, Sask. | 1 | 50 00 | 658 | 997 | | | | | | 26,675 | 26,675 | | 133 01 |
| Calgary, Alta. | 9 | 425 00 | 101,701 | 37,135 | 8,400 | 8,400 | | | | 4,634,190 | 4,626,690 | 7,500 | 14,450 07 |
| Vancouver, B.C. | 15 | 750 00 | 67,982 | 8,126 | 900 | 900 | | | | 3,469,085 | 3,449,085 | 20,000 | 11,125 26 |
| Victoria | 9 | 450 00 | 12,819 | 1,241 | | | | | | 663,125 | 663,125 | | 2,443 10 |
| Totals | 24 | 1,200 00 | 80,801 | 9,367 | 900 | 900 | | | | 4,182,210 | 4,112,210 | 20,000 | 13,568 36 |
| Grand Totals | 221 | 10,825 00 | 4,517,287½ | 658,938 | 139,024 | 120,374 | 18,650 | | | 237,508,745 | 165,867,785 | 71,640,960 | 510,888 00 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS—Continued.
 No. 27.—COMPARATIVE STATEMENT of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

| Divisions. | LICENCES: | | Total Raw Leaf Tobacco materials actually used. | DEFICIENCIES PAYING DUTY. | | CIGARS AT \$4.00 PER THOUSAND. | | | | CIGARS AT \$3.00 PER THOUSAND. | | | | Total Duty collected ex- manufac- tory, including License Fees. | |
|-----------------------|-----------|-----------|--|---------------------------------|---------|--------------------------------|--------------------|-------------|------------------|--------------------------------|------------|------------------|-----|---|-----|
| | No. | \$ cts. | | Cigars. | No. | No. | Manufac- tured. | Paid Duty. | Ware- housed. | Manufac- tured. | Paid Duty. | Ware- housed. | No. | | No. |
| 1916. | | | | | | | | | | | | | | | |
| Ontario..... | 114 | 5,550 00 | 1,434,758½ | 116,467 | 18,105 | 17,055 | 1,050 | 71,457,745 | 47,036,395½ | 24,420,800 | 147,079 08 | | | | |
| Quebec..... | 75 | 3,625 00 | 2,258,858½ | 41,710 | 84,381 | 78,081 | 6,300 | 126,338,850 | 78,424,040 | 47,914,810 | 239,335 34 | | | | |
| New Brunswick..... | 2 | 100 00 | 35,545 | | | | | 2,004,100 | 163,000 | 1,841,100 | 589 00 | | | | |
| Nova Scotia..... | 4 | 200 00 | 17,606 | | | | | 934,470 | 707,560 | 226,910 | 2,322 68 | | | | |
| Manitoba..... | 12 | 600 00 | 41,773 | 20,880 | | | | 2,058,465 | 1,642,715 | 415,750 | 5,590 83 | | | | |
| Saskatchewan..... | 4 | 200 00 | 3,003 | 14,009 | | | | 121,500 | 121,500 | | 606 53 | | | | |
| Alberta..... | 8 | 400 00 | 77,758 | 6,692 | 3,600 | 3,600 | | 3,768,485 | 3,751,485 | 17,000 | 11,688 92 | | | | |
| British Columbia..... | 28 | 1,375 00 | 55,360 | 7,914 | 2,100 | 2,100 | | 2,837,155 | 2,837,155 | | 9,918 62 | | | | |
| Totals..... | 247 | 12,050 00 | 3,924,632½ | 207,672 | 108,186 | 100,836 | 7,350 | 209,520,770 | 134,683,850½ | 74,836,370 | 417,131 00 | | | | |

APPENDIX A.—CIGARS—Continued.

No. 28.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917.

DR.

CR.

| Remaining in Warehouse from last year. | RECEIVED FROM OTHER DIVISIONS. | | Totals. | Divisions. | ENTERED FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS. | | Exported. | Re-worked. | Remaining in Warehouse. | Totals. |
|--|--------------------------------|-----------|------------|---------------------|--------------------------|------------|-----------------------------|---------|-----------|------------|-------------------------|------------|
| | No. | No. | | | No. | No. | Quantity. | Duty. |  |  |  |  | Ware-housed in Divisions to which Removed | In Transit |
| 42,450 | 20,300 | | 62,750 | Belleville, Ont. | 58,750 | 176 25 | | | | | | 62,750 |
| 1,256,285 | 891,185 | | 2,147,470 | Branford, " " | 1,277,970 | 3,833 91 | | 4,000 | | | 859,500 | 2,147,470 |
| 180,250 | 398,700 | | 578,950 | Guelpit, " " | 466,900 | 1,400 70 | | 10,000 | | | 112,050 | 578,950 |
| 1,240,000 | 8,357,900 | 2,191,375 | 11,788,875 | Hamilton, " " | 10,175,600 | 30,528 80 | 400,000 | 262,700 | 19,475 | 6,200 | 924,900 | 11,788,875 |
| 425,025 | 1,011,725 | | 1,436,750 | Kingston, " " | 948,500 | 2,845 50 | | 130,075 | | | 357,575 | 1,436,750 |
| 2,188,045 | 6,224,965 | 75,000 | 8,488,010 | London, " " | 6,361,000 | 19,083 02 | 368,500 | 258,320 | | | 1,500,190 | 8,488,010 |
| 112,275 | 401,200 | | 513,475 | Owen Sound, " " | 445,250 | 1,335 75 | | | | | 68,225 | 513,475 |
| 72,300 | | | 72,300 | Perth, " " | 72,300 | 216 90 | | | | | | 72,300 |
| | 1,000 | | 1,000 | Peterborough, " " | | | | 1,000 | | | | 1,000 |
| | 2,500 | | 2,500 | Prescott, " " | | | | 2,500 | | | | 2,500 |
| 15,000 | 40,050 | | 55,050 | St. Catharines, " " | 24,050 | 72 15 | | 8,000 | | | 23,000 | 55,050 |
| 47,650 | 274,100 | | 321,750 | Stratford, " " | 286,200 | 858 60 | | | | | 35,550 | 321,750 |
| 1,165,430 | 4,149,020 | 121,550 | 5,449,100 | Toronto, " " | 4,002,025 | 12,007 91 | 34,500 | 7,300 | | | 935,825 | 5,449,100 |
| 259,400 | 127,025 | | 386,425 | Windsor, " " | 141,500 | 424 50 | | | | | 244,925 | 386,425 |
| 7,004,110 | 21,899,870 | 2,387,925 | 31,304,405 | Totals..... | 24,260,645 | 72,753 99 | 803,000 | 7,300 | 146,045 | 19,475 | 5,061,740 | 31,304,405 |
| 897,295 | 1,916,580 | | 2,813,875 | Joliette, Que. | 2,147,065 | 6,441 23 | 205,150 | | | | 461,660 | 2,813,875 |
| 8,080,925 | 35,353,165 | | 43,434,090 | Montreal, " " | 36,672,855 | 110,021 60 | 2,487,000 | 46,500 | | | 8,548,935 | 43,434,090 |
| 923,550 | 2,748,535 | 4,620,550 | 8,292,635 | Quebec, " " | 2,859,685 | 8,579 05 | | 21,250 | | | 791,150 | 3,672,085 |
| 886,800 | 4,577,050 | | 5,463,850 | St. Hyacinthe, " " | 1,295,850 | 3,883 85 | 4,164,400 | 294,200 | | | 5,764,450 | 5,463,850 |
| 1,891,110 | 2,557,615 | | 4,448,725 | Sherbrooke, " " | 3,314,010 | 9,942 39 | | 13,000 | | | 1,118,715 | 4,448,725 |
| 76,450 | 116,650 | | 193,100 | Three Rivers, " " | 172,500 | 517 50 | | | | | 20,600 | 193,100 |
| 12,756,130 | 47,570,195 | 4,620,550 | 65,006,875 | Totals..... | 46,461,965 | 139,395 62 | 8,556,550 | 340,700 | 470,750 | 2,500 | 10,941,060 | 65,006,875 |
| 704,050 | 1,624,550 | | 2,328,600 | St. John, N.B..... | 1,632,700 | 4,898 10 | | | | | 691,900 | 2,328,600 |

SESSIONAL PAPER No. 12

| | | | | | | | | |
|------------|------------|-----------|-----------------|------------|------------|---------|------------|-------------|
| 133,155 | 174,670 | 307,825 | Halifax, N.S. | 258,400 | 775 20 | 10,000 | 39,425 | 307,825 |
| 71,300 | 361,825 | 8,500 | Winnipeg, Man. | 429,800 | 1,289 41 | 331,525 | 136,875 | 1,011,625 |
| | 7,500 | 110,500 | Calgary, Alta. | | | 94,400 | 16,100 | 110,500 |
| 23,800 | 20,000 | 86,300 | Vancouver, B.C. | 61,645 | 184 94 | 56,075 | 17,380 | 140,100 |
| 4,600 | 12,500 | 17,100 | Victoria, B.C. | | | 8,400 | 6,400 | 17,100 |
| 28,400 | 20,000 | 98,800 | Totals | 61,645 | 184 94 | 64,475 | 23,780 | 137,200 |
| 20,637,145 | 71,658,610 | 7,780,275 | Grand Totals | 73,105,153 | 219,327 26 | 348,000 | 16,910,880 | 100,293,680 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS—*Continued.*

DR. No. 29.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917. Cr.

| Remaining in Warehouse from last year. | RECEIVED FROM OTHER DIVISIONS. | | Totals. | DIVISIONS. | | FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS. | | Army, Navy, and Ship-Stores. | Exported. | Re-worked. | Remaining in Warehouse. | Totals. |
|--|--------------------------------|--------------------------|-------------|-----------------------|------------|------------------|-----------|-----------------------------|---|------------------------------|------------|------------|-------------------------|---------|
| | Warehoused. | Removed during the year. | | In Transit last year. | 1916. | 1917. | Quantity. | Duty. | Warehoused in Divisions to which removed. | | | | | |
| No. | No. | No. | No. | 1916. | | No. | \$ cts. | No. | No. | No. | No. | No. | No. | No. |
| 7,886,850 | 24,421,850 | 1,508,000 | 33,816,700 | Ontario..... | 26,398,390 | 79,210 48 | 84,000 | 6,000 | 313,075 | 11,125 | 7,004 | 110 | 35,816,700 | |
| 9,979,055 | 47,921,110 | 2,833,300 | 60,843,265 | Quebec..... | 43,345,235 | 130,080 87 | 4,392,300 | 151,650 | 197,950 | 4,000 | 12,756 | 130 | 60,843,265 | |
| 865,350 | 1,841,100 | ..... | 2,706,450 | New Brunswick..... | 1,998,400 | 5,995 20 | ..... | ..... | 4,000 | ..... | 704,050 | ..... | 2,706,450 | |
| 166,345 | 226,910 | ..... | 393,255 | Nova Scotia..... | 259,300 | 777 90 | ..... | ..... | 800 | ..... | 133,135 | ..... | 393,255 | |
| 208,525 | 415,750 | 70,000 | 694,275 | Manitoba..... | 562,125 | 1,686 38 | ..... | ..... | 60,850 | ..... | 71,300 | ..... | 694,275 | |
| 86,100 | 17,000 | 75,000 | 17,000 | Alberta..... | 17,000 | 51 00 | 8,000 | ..... | 47,700 | ..... | 28,400 | ..... | 17,000 | |
| 19,192,225 | 74,843,720 | 4,484,300 | 98,630,045 | British Columbia..... | 75,000 | 225 00 | ..... | ..... | ..... | ..... | ..... | ..... | 159,100 | |
| | | | Totals..... | | 72,655,450 | 218,026 83 | 4,484,300 | 157,650 | 624,375 | 11,125 | 20,697,145 | ..... | 98,630,045 | |
| | | | 1917. | | | | | | | | | | | |
| 7,004,110 | 21,899,870 | 2,387,925 | 12,500,310 | Ontario..... | 24,260,645 | 72,783 99 | 803,000 | 7,300 | 146,045 | 19,475 | 5,061,740 | 6,200 | 31,304,405 | |
| 12,756,130 | 47,570,195 | 4,620,550 | 126,650,653 | Quebec..... | 46,461,965 | 139,395 62 | 6,856,550 | 340,700 | 470,750 | 2,500 | 10,941,060 | ..... | 65,073,525 | |
| 704,050 | 1,624,550 | ..... | 2,328,600 | New Brunswick..... | 1,632,700 | 4,898 10 | ..... | ..... | 4,000 | ..... | 691,900 | ..... | 2,328,600 | |
| 133,155 | 174,670 | ..... | 307,825 | Nova Scotia..... | 258,400 | 775 20 | ..... | ..... | 10,000 | ..... | 39,425 | ..... | 307,825 | |
| 71,800 | 361,825 | 570,000 | 1,011,625 | Manitoba..... | 429,800 | 1,289 41 | 113,425 | ..... | 331,825 | ..... | 136,875 | ..... | 1,011,625 | |
| 28,400 | 20,000 | 103,000 | 17,000 | Alberta..... | 61,615 | 184 94 | 7,300 | ..... | 94,400 | ..... | 16,100 | ..... | 110,800 | |
| | | | Totals..... | | 73,105,155 | 219,327 26 | 7,780,275 | 348,000 | 2,121,195 | 21,975 | 16,910,880 | 6,200 | 100,293,680 | |

| | | |
|--|---------------|---------------|
| Total duty collected, ex-manufactory and ex-warehouse..... | 1916. | 1917. |
| Licenses fees..... | \$ 623,107 83 | \$ 719,390 26 |
| | 12,050 00 | 10,825 00 |
| Totals..... | \$ 635,157 83 | \$ 730,215 26 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—INSPECTION OF PETROLEUM.

No. 30.—RETURN of Inspected Petroleum and Naphtha shipped from Refineries during the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSESES. | | Petroleum. | Naphtha. | Totals. |
|---------------------|-------------|-------|---------------|---------------|---------------|
| | No. | Fees. | | | |
| | | \$ | Galls. | Galls. | Galls. |
| London, Ont..... | 3 | 3 | 27,679,747·15 | 24,569,570·99 | 52,249,318·14 |
| Toronto "..... | 2 | 2 | 2,272,670·00 | 2,697,022·00 | 4,969,692·00 |
| Totals..... | 5 | 5 | 29,952,417·15 | 27,266,592·99 | 57,219,010·14 |
| Moosejaw, Sask..... | 1 | 1 | 1,911,064·50 | 2,395,926·20 | 4,306,990·70 |
| Calgary, Alta..... | 3 | 3 | 2,447·00 | 42,715·25 | 45,162·25 |
| Vancouver, B.C..... | 1 | 1 | 3,970,409·70 | 11,277,035·50 | 15,247,445·20 |
| Grand Totals..... | 10 | 10 | 35,836,338·55 | 40,982,269·94 | 76,818,608·29 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—INSPECTION OF PETROLEUM—*Concluded.*

No. 31.—COMPARATIVE STATEMENT of Inspected Petroleum and Naphtha shipped from Refineries during the Fiscal Years ended March 31, 1916 and 1917.

| Provinces. | LICENSESES. | | Petroleum. | Naphtha. | Totals |
|-----------------------|-------------|-------|---------------|---------------|---|
| | No. | Fees. | | | |
| | | \$ | Galls. | Galls. | Galls. |
| 1916. | | | | | |
| Ontario..... | 5 | 5 | 33,133,893·11 | 24,570,547·88 | 57,704,440·99 |
| British Columbia..... | 1 | 1 | 1,641,661·70 | 4,668,296·10 | 6,309,957·80 |
| Totals..... | 6 | 6 | 34,775,554·81 | 29,238,843·98 | 64,014,398·79 |
| 1917. | | | | | |
| Ontario..... | 5 | 5 | 29,952,417·15 | 27,266,592·99 | 57,219,010· |
| Saskatchewan..... | 1 | 1 | 1,911,064·50 | 2,395,926·20 | 4,306,990·14 |
| Alberta..... | 3 | 3 | 2,447·00 | 42,715·25 | 45,162·70 |
| British Columbia..... | 1 | 1 | 3,970,409·70 | 11,277,035·50 | 15,247,445·25 |
| Totals..... | 10 | 10 | 35,836,338·35 | 40,982,269·94 | 76,818,608· ²⁰ ₂₉ |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

No. 32.—RETURN of Manufactures

| Divisions. | LICENSESES. | | MATERIALS USED. | | | |
|----------------------|-------------|----------|-----------------|--------------------------------|----------------|----------|
| | No. | Fees. | Spirits. | Beer, Wine, etc. | Nitric Acid. | Mercury. |
| | | \$ cts. | Galls. | Galls. | Lbs. | Lbs. |
| Brantford, Ont..... | 1 | 50 00 | 9,832.99 | 141.60 | * | |
| Guelph "..... | 1 | 50 00 | | | | |
| Hamilton "..... | 3 | 400 00 | 24,394.66 | 250.40 | | |
| Kingston "..... | 2 | 100 00 | 13,693.94 | 140.48 | | |
| Owen Sound "..... | 1 | 50 00 | 15,140.39 | 128.50 | | |
| Perth "..... | 5 | 600 00 | 1,489,329.30 | | | |
| Prescott "..... | 1 | 300 00 | 65,029.64 | | 319,969 | 34,847 |
| Stratford "..... | 1 | 50 00 | | | | |
| Toronto "..... | 17 | 1,075 00 | 479,007.77 | 2,882.70 | | |
| Windsor "..... | 1 | 550 00 | 39,219.57 | 259.46 | | |
| Totals..... | 43 | 3,225 00 | 2,135,648.26 | 3,661.54 141.60 | * 319,969 | 34,847 |
| Montreal, Que..... | 19 | 1,400 00 | 156,830.48 | 770.83 340.50 | † | |
| Quebec "..... | 3 | 150 00 | 23,390.13 | 959.40 | † | |
| St. Hyacinthe "..... | 1 | 300 00 | 1,812,568.11 | 512.00 | | |
| Sherbrooke "..... | 1 | 300 00 | 60,110.04 | | 280,717 | 36,900 |
| Totals..... | 24 | 2,150 00 | 2,052,898.76 | 1,430.23 852.50 | † 280,717 | 36,900 |
| St. John, N.B..... | 1 | 50 00 | 6,827.68 | 19.20 | | |
| Winnipeg, Man..... | 10 | 500 00 | 72,607.98 | 812.81 20.90 | † | |
| Calgary, Alta..... | 2 | 100 00 | 24,762.22 | 542.40 | | |
| Vancouver, B.C..... | 1 | 50 00 | 2,382.57 | 30.00 | | |
| Grand Totals..... | 81 | 6,075 00 | 4,295,127.47 | 2,543.04 5,126.54 141.60 | † 600,686 * | 71,747 |

*Malt extract. †Vinegar.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND.

for the Fiscal Year ended March 31, 1917.

| MANUFACTURED. | | PAID DUTY EX-MANUFACTORY. | | WAREHOUSED. | | Total Duty Collected ex-Manufactory, including License Fees. |
|---------------|------------------|---------------------------|-----------|--------------|------------------|--|
| Vinegar. | Crude Fulminate. | Vinegar. | Duty. | Vinegar. | Crude Fulminate. | |
| Galls. | Lbs. | Galls. | \$ cts. | Galls. | Lbs. | |
| 56,612·10 | | 56,612·10 | 2,264 55 | | | 2,314 55 |
| | | | | | | 50 00 |
| 156,198·80 | | 92,184·54 | 3,687 38 | 64,014·26 | | 4,087 38 |
| 85,841·94 | | 18,339·09 | 733 55 | 67,502·85 | | 833 55 |
| 79,774·57 | | 74,866·75 | 2,994 69 | 4,907·82 | | 3,044 69 |
| | 61,290 | | | | 61,290 | 600 00 |
| | | | | | | 300 00 |
| 1,233,925·98 | | 122,652·38 | 4,905 31 | 1,111,293·60 | | 5,980 31 |
| 212,277·15 | | 121,637·43 | 4,865 51 | 90,639·72 | | 5,415 51 |
| 1,824,630·54 | 61,290 | 486,272·29 | 19,450 99 | 1,338,358·25 | 61,290 | 22,675 99 |
| 185,495·41 | | 159,331·21 | 6,373 25 | 26,164·20 | | 7,773 25 |
| 144,327 08 | | 103,536 65 | 4,141 47 | 40,790 43 | | 4,291 47 |
| | 43,178·10 | | | | 43,178·10 | 300 00 |
| | | | | | | 300 00 |
| 329,822·49 | 43,178·10 | 262,867·86 | 10,514 72 | 66,954·63 | 43,178·10 | 12,664 72 |
| 40,726·65 | | 40,726·65 | 1,629 08 | | | 1,679 08 |
| 413,471·84 | | 319,676·55 | 12,787 06 | 33,795 29 | | 13,287 06 |
| 117,649·99 | | 94,684·73 | 6,503 79 | 22,965·26 | | 6,603 79 |
| 11,619·72 | | 11,619·72 | 464 79 | | | 514 79 |
| 2,737,921·23 | 104,468·10 | 1,215,847·80 | 51,350 43 | 1,522,073·43 | 104,468·10 | 57,425 43 |

J. U. VINCENT,
Deputy Minister.

No. 33.—COMPARATIVE STATEMENT of Manufactures for

| Provinces. | LICENSES. | | MATERIALS USED. | | | |
|-----------------------|-----------|----------|-----------------|--|--------------|----------|
| | No. | Fees. | Spirits. | Beer, Wines, etc. | Nitric Acid. | Mercury. |
| 1916. | | \$ cts. | Galls. | Galls. | Lbs. | Lbs. |
| Ontario..... | 43 | 3,025 00 | 747,284·86 | 144·00 * 2,647·84 } 255·91 † | 402,342 | 43,397 |
| Quebec..... | 22 | 1,950 00 | 323,063·79 | 771·50 | 301,275 | 40,125 |
| New Brunswick..... | 2 | 100 00 | 11,611·73 | 164·61 } † 50·10 } | | |
| Manitoba..... | 9 | 450 00 | 51,200·23 | 925·71 } † 26·90 } | | |
| Alberta..... | 3 | 125 00 | 18,930·79 | 704·95 } † 371·30 } | | |
| British Columbia..... | 1 | 50 00 | 8,268·52 | 78·00 | | |
| Totals..... | 80 | 5,700 00 | 1,160,359·92 | 144·00 * 2,051·18 } † 3,945·64 } | 703,617 | 83,522 |
| 1917. | | | | | | |
| Ontario..... | 43 | 3,225 00 | 2,135,648·26 | 141·60 * 3,661·54 } 1,730·23 † | 319,969 | 34,847 |
| Quebec..... | 24 | 2,150 00 | 2,052,898·76 | 852·50 | 280,717 | 36,900 |
| New Brunswick..... | 1 | 50 00 | 6,827·68 | 19·20 | | |
| Manitoba..... | 10 | 500 00 | 72,607·98 | 812·81 } † 20·90 } | | |
| Alberta..... | 2 | 100 00 | 24,762·22 | 542·40 | | |
| British Columbia..... | 1 | 50 00 | 2,382·57 | 30·00 | | |
| Totals..... | 81 | 6,075 00 | 4,295,127·47 | 141·60 * 2,543·04 } † 5,126·54 } | 600,686 | 71,747 |

*Malt extract. †Vinegar.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND—Continued.

the Fiscal Years ended March 31, 1916 and 1917.

| MANUFACTURED. | | PAID DUTY EX-MANUFACTORY. | | WAREHOUSED. | | Total Duty Collected Manufactory, including License Fees. |
|---------------|------------------|---------------------------|-----------|--------------|------------------|---|
| Vinegar. | Crude Fulminate. | Vinegar. | Duty. | Vinegar. | Crude Fulminate. | |
| Galls. | Lbs. | Galls. | \$ cts. | Galls. | Lbs. | \$ cts. |
| 1,498,178·23 | 77,847 | 455,001·57 | 19,091 09 | 1,043,176·66 | 77,847 | 22,116 09 |
| 328,553·24 | 46,452 | 258,193·91 | 10,327 76 | 70,359·33 | 46,452 | 12,277 76 |
| 54,069·26 | | 54,069·26 | 2,162 78 | | | 2,262 78 |
| 317,096·39 | | 260,561·87 | 12,872 91 | 56,534·52 | | 15,322 91 |
| 84,473·92 | | 77,531·30 | 3,101 22 | 6,942·62 | | 3,226 22 |
| 42,036·58 | | 42,036·58 | 1,681 45 | | | 1,731 45 |
| 2,324,407·62 | 124,299 | 1,147,394·49 | 49,237 21 | 1,177,013·13 | 124,299 | 54,937 21 |
| 1,824,630·54 | 61,290 | 486,272·29 | 19,450 99 | 1,338,358·25 | 61,290 | 22,675 99 |
| 329,822·49 | 43,178·10 | 262,867·86 | 10,514 72 | 66,954·63 | 43,178·10 | 12,664 72 |
| 40,726·65 | | 40,726·65 | 1,629 08 | | | 1,679 08 |
| 413,471·84 | | 319,676·55 | 12,787 06 | 93,795·29 | | 13,287 06 |
| 117,649·99 | | 94,684·73 | 6,503 79 | 22,965·26 | | 6,603 79 |
| 11,619·72 | | 11,619·72 | 464 79 | | | 514 79 |
| 2,737,921·23 | 104,468·10 | 1,215,847·80 | 51,350 43 | 1,522,073·43 | 104,468·10 | 57,425 43 |

J. U. VINCENT,
Deputy Ministre.

DR.

No. 34.—WAREHOUSE RETURN for the

| REMAINING IN WAREHOUSE FROM LAST YEAR. | WAREHOUSED. | | RECEIVED FROM OTHER DIVISIONS | TOTALS. | | Divisions. |
|--|--------------|-----------------------|-------------------------------------|--------------|----------------------|-------------------------|
| | Vinegar. | Crude Ful- minate. | Vinegar. | Vinegar. | Crude Ful- minate | |
| Galls. | Galls. | Lbs. | Removed during the year. | Galls. | Lbs. | |
| | | | 7,595·46 | 7,595·46 | | Brantford, Ont..... |
| 28,945·56 | 64,014·26 | | 305·74 | 93,265·56 | | Hamilton, "..... |
| 15,043·99 | 67,502·85 | | | 82,546·84 | | Kingston, "..... |
| 4,671·55 | 4,907·82 | | | 9,579·37 | | Owen Sound, "..... |
| | | 61,290 | | | 61,290 | Prescott, "..... |
| 110,671·07 | 1,111,293·60 | | | 1,221,964·67 | | Toronto, "..... |
| 84,010·84 | 90,639·72 | | | 174,650·56 | | Windsor, "..... |
| 243,343·01 | 1,338,358·25 | 61,290 | 7,901·20 | 1,589,602·46 | 61,290 | Totals..... |
| 42,033·15 | 26,164·20 | | | 68,257·35 | | Montreal, Que..... |
| 18,903·92 | 40,790·43 | | | 59,694·35 | | Quebec, "..... |
| | | 43,178·10 | | | 43,178·10 | Sherbrooke, "..... |
| 60,997·07 | 66,954·63 | 43,178·10 | | 127,951·70 | 43,178·10 | Totals..... |
| 27,303·70 | 93,795·29 | | 7,645·74 | 128,744·73 | | Winnipeg, Man..... |
| 6,442·62 | 22,965·26 | | | 29,407·88 | | Calgary, Alta..... |
| 338,086·40 | 1,522,073·43 | 104,468·10 | 15,546·94 | 1,875,706·77 | 104,468·10 | Grand Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND—Continued.

Fiscal Year ended March 31, 1917.

C.R.

| ENTERED FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS | EXPORTED. | REMAINING IN WAREHOUSE | TOTALS. | |
|--------------------------|-----------|---|------------------|------------------------|--------------|------------------|
| | | VINEGAR. | | | Vinegar. | Vinegar. | Crude Fulminate. |
| Vinegar. | Duty. | Warehoused in Divisions to which removed. | Crude Fulminate. | Vinegar. | Vinegar. | Crude Fulminate. |
| Galls. | \$ cts. | Galls. | Galls. | Galls. | Galls. | Lbs. |
| 7,595.46 | 303 82 | | | | 7,595 46 | |
| 70,321.01 | 2,812 84 | 3,556.99 | | 19,387 56 | 93,265.56 | |
| 70,856.08 | 2,834.22 | | | 11,690.76 | 82,546.84 | |
| 4,596.25 | 183 85 | | | 4,983.12 | 9,579.37 | |
| | | | 61,290 | | | 61,290 |
| 946,230.93 | 37,849 23 | 11,989.95 | | 263,743.79 | 1,221,964.67 | |
| 95,755.27 | 3,830 19 | | | 78,895.29 | 174,650.56 | |
| 1,195,355 00 | 47,814 15 | 15,546.94 | 61,290 | 378,700.52 | 1,589,602.46 | 61,290 |
| 52,860.87 | 2,114 44 | | | 15,396.48 | 68,257.35 | |
| 27,290.12 | 1,091 57 | | | 32,404.23 | 59,694.35 | |
| | | | 43,178.10 | | | 43,178.10 |
| 80,150.99 | 3,206 01 | | 43,178.10 | 47,800.71 | 127,351.70 | 43,178.10 |
| 34,949.44 | 1,397 98 | | | 93,795 29 | 128,744.73 | |
| 14,130.61 | 565 22 | | | 15,277.27 | 29,407.88 | |
| 1,324,586.04 | 52,983 36 | 15,546.94 | 104,468.10 | 535,573.79 | 1,875,706.77 | 104,468.10 |

J. U. VINCENT,
Deputy Minister.

DR. No. 35.—COMPARATIVE STATEMENT of Warehouse Returns

| REMAINING IN WAREHOUSE FROM LAST YEAR. | WAREHOUSED. | | RECEIVED FROM OTHER DIVISIONS. | TOTALS. | | Provinces. |
|--|--------------|---------------------|--------------------------------------|--------------|---------------------|-------------------|
| | Vinegar. | Crude Fulminate. | VINEGAR. | Vinegar. | Crude Fulminate. | |
| Galls. | Galls. | Lbs. | Removed during the year. | Galls. | Lbs. | 1916. |
| 289,898·08 | 1,043,176·66 | 77,847 | 10,757·63 | 1,343,832·37 | 77,847 | Ontario..... |
| 63,244·36 | 70,359·33 | 46·452 | ..... | 133,603·69 | 46,452 | Quebec..... |
| 83,507·76 | 56,534·52 | ..... | 7,495·17 | 147,537·45 | ..... | Manitoba..... |
| ..... | 6,942·62 | ..... | ..... | 6,942·62 | ..... | Alberta..... |
| 436,650·20 | 1,177,013·13 | 124,299 | 18,252·80 | 1,631,916·13 | 124,299 | Totals..... |
| | | | | | | 1917. |
| 243,343·01 | 1,338,358·25 | 61,290 | 7,901·20 | 1,589,602·46 | 61,290 | Ontario..... |
| 60,997·07 | 66,954·63 | 43,178·10 | ..... | 127,951·70 | 43,178·10 | Quebec..... |
| 27,303·70 | 93,795·29 | ..... | 7,645·74 | 128,744·73 | ..... | Manitoba..... |
| 6,442·62 | 22,965·26 | ..... | ..... | 29,407·88 | ..... | Alberta..... |
| 338,086·40 | 1,522,073·43 | 104,468·10 | 15,546·94 | 1,875,706·77 | 104,468·10 | Totals..... |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

MANUFACTURES IN BOND—*Concluded.*

for the Fiscal Years ended March 31, 1916 and 1917.

CR.

| ENTERED FOR CONSUMPTION. | | REMOVED TO OTHER DIVISIONS. | VINEGAR. | EXPORTED. | REMAINING IN WAREHOUSE | TOTALS. | |
|--------------------------|-----------|---|----------|------------------|------------------------|--------------|------------------|
| | | VINEGAR. | | | | | |
| Vinegar. | Duty. | Warehoused in Divisions to which removed. | Free. | Crude Fulminate. | Vinegar. | Vinegar. | Crude Fulminate. |
| Galls. | \$ cts. | Galls. | Galls. | Lbs. | Galls. | Galls. | Lbs. |
| 1,082,236·56 | 43,289·51 | 18,252·80 | | 77,847 | 243,343·01 | 1,343,832·37 | 77,847 |
| 72,606·62 | 2,904·29 | | | 46,452 | 60,997·07 | 133,603·69 | 46,452 |
| 116,530·89 | 4,661·23 | | 3,702·86 | | 27,303·70 | 147,537·45 | |
| 500·00 | 20·00 | | | | 6,442·62 | 6,942·62 | |
| 1,271,874·07 | 50,875·03 | 18,252·80 | 3,702·86 | 124,299 | 338,086·40 | 1,631,916·13 | 124,229 |
| 1,195,355·00 | 47,814·15 | 15,546·94 | | 61,290·00 | 378,700·52 | 1,589,602·46 | 61,290 |
| 80,150·99 | 3,206·01 | | | 43,178·10 | 47,800·71 | 127,951·70 | 43,178·10 |
| 34,949·44 | 1,397·98 | | | | 93,795·29 | 128,744·73 | |
| 14,130·61 | 565·22 | | | | 15,277·27 | 29,407·88 | |
| 1,324,586·04 | 52,983·36 | 1,546·94 | | 104,468·10 | 535,573·79 | 1,875,706·77 | 104,468·10 |

| | | |
|--|---------------|---------------|
| | 1916. | 1917. |
| Total duty collected, ex-manufactory and ex-warehouse..... | \$ 100,112 24 | \$ 104,333 79 |
| License fees..... | 5,700 00 | 6,075 00 |
| Totals..... | \$ 105,812 24 | \$ 110,408 79 |

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID.

No. 36.—RETURN of Manufactures for the Fiscal Year ended March 31, 1917.

| Divisions. | LICENSES. | | MANUFACTURED. | PAID DUTY EX-MANUFACTORY. | | WAREHOUSED. | Total Duty Collected ex-Manufactory, including License Fees. |
|--------------------|-----------|--------|---------------|---------------------------|----------|--------------|--|
| | No. | Fees. | Acetic Acid. | Acetic Acid. | Duty. | Acetic Acid. | |
| | | \$ | Galls. | Galls. | \$ cts. | Galls. | \$ cts. |
| Hamilton, Ont..... | 1 | 50 00 | 112,873·82 | | | 112,873·82 | 50 00 |
| Montreal, Que..... | 1 | 50 00 | 243,485·33 | 198,734·89 | 7,949 39 | 44,750·44 | 7,999 39 |
| Totals..... | 2 | 100 00 | 356,359·15 | 198,734·89 | 7,949 39 | 157,624·26 | 8,049 39 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID—Continued.

No. 37.—COMPARATIVE STATEMENT of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

| Provinces. | LICENSES. | | MANUFACTURED. | PAID DUTY EX-MANUFACTORY. | | WAREHOUSED. | Total Duty Collected ex-Manufactory, including License Fees. |
|--------------|-----------|---------|---------------|---------------------------|----------|--------------|--|
| | No. | Fees. | Acetic Acid. | Acetic Acid. | Duty. | Acetic Acid. | |
| | | \$ cts. | Galls. | Galls. | \$ cts. | Galls. | \$ cts. |
| 1916. | | | | | | | |
| Ontario..... | 1 | 50 00 | 306,267·42 | | | 306,267·42 | 50 00 |
| Quebec..... | 1 | 50 00 | 203,753·12 | 203,753·12 | 8,150 14 | | 8,200 14 |
| Totals..... | 2 | 100 00 | 510,020·54 | 203,753·12 | 8,150 14 | 306,267·42 | 8,250 14 |
| 1917. | | | | | | | |
| Ontario..... | 1 | 50 00 | 112,873 82 | | | 112,873·82 | 50 00 |
| Quebec..... | 1 | 50 00 | 243,485·33 | 198,734·89 | 7,949 39 | 44,750·44 | 7,999 39 |
| Totals..... | 2 | 100 00 | 356,359·15 | 198,734·89 | 7,949 39 | 157,624·26 | 8,049 39 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister

SESSIONAL PAPER No. 12

APPENDIX A.—ACETIC ACID—*Continued.*

No. 38.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917.
 DR. CR.

| WAREHOUSED. | TOTAL. | Divisions. | EXPORTED. | TOTAL. |
|--------------|--------------|--------------------|--------------|--------------|
| Acetic Acid. | Acetic Acid. | | Acetic Acid. | Acetic Acid. |
| Galls. | Galls. | | Galls. | Galls. |
| 112,873·82 | 112,873·82 | Hamilton, Ont..... | 112,873·82 | 112,873·82 |
| 44,750·44 | 44,750·44 | Montreal, Que..... | 44,750·44 | 44,750·44 |
| 157,624·26 | 157,524·26 | Totals..... | 157,624·26 | 157,624·26 |

INLAND REVENUE DEPARTMENT,
 OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID—*Concluded.*

No. 39.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years
 DR CR.
 ended March 31, 1916 and 1917.

| WAREHOUSED. | TOTAL. | Provinces. | EXPORTED. | TOTAL. |
|---|--------------|--------------|--------------|--------------|
| Acetic Acid. | Acetic Acid. | | Acetic Acid. | Acetic Acid. |
| Galls. | Galls. | 1916. | Galls. | Galls. |
| 306,267·42 | 306,267·42 | Ontario..... | 306,267·42 | 306,267·42 |
| | | 1917. | | |
| 112,873·82 | 112,873·82 | Ontario..... | 112,873·82 | 112,873·82 |
| 44,750·44 | 44,750·44 | Quebec..... | 44,750·44 | 44,750·44 |
| 157,624·26 | 157,624·26 | Totals..... | 157,624·26 | 157,624·26 |
| | | | 1916. | 1917. |
| | | | \$ cts. | \$ cts. |
| Total duty collected on ex-manufactory..... | | | 8,150 14 | 7,949 39 |
| License fees..... | | | 100 00 | 100 00 |
| | | | 8,250 14 | 8,047 39 |

INLAND REVENUE DEPARTMENT,
 OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

(A)
METHYLATED SPIRITS.

No. 40.—STATEMENT showing the quantity of Raw Materials on hand on April 1, 1916, and March 31, 1917, and brought in during the year ended March 31, 1917.

DR.

CR.

| Names of Articles. | Stock on hand, April 1, 1916. | Brought in during the year. | Total to be Accounted for. | Used in Manufacture of Methylated Spirits. | Sold. | Stock on hand, March 31, 1917. | Total Accounted for. |
|--------------------|-------------------------------|-----------------------------|----------------------------|--|-------------|--------------------------------|----------------------|
| | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. |
| Alcohol..... | 6,740.26 | 250,807.54 | 257,547.80 | 252,546.71 | 72.17 | 4,928.92 | 257,547.80 |
| Wood Naphtha.. | 2,038.36 | 45,942.19 | 47,980.55 | 46,528.70 | ..... | 1,451.85 | 47,980.55 |
| Gasoline..... | ..... | Imp. Galls. 793.3 | Imp. galls. 790.3 | ..... | ..... | ..... | Imp. galls. 790.3 |

(B)

STATEMENT showing the quantity of Raw Materials used, and Methylated Spirits produced therefrom.

DR.

CR.

| Alcohol used. Statement (A) above. | Wood Naphtha used. Statement (A) above. | Gasoline used. Statement (A) above. | Total to be Accounted for. | Methylated Spirits produced. | Lost in Manufacture. | | Total Accounted for. |
|------------------------------------|---|-------------------------------------|----------------------------|------------------------------|----------------------|------|----------------------|
| Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | p.c. | Pr'f galls. |
| 252,546.71 | 46,528.70 | ..... | 299,075.41 | 296,929.31 | 2,146.10 | 0.72 | 299,075.41 |

(C)

STATEMENT showing the quantity of Methylated Spirits on hand April 1, 1916, and March 31, 1917, quantity manufactured, sold and otherwise accounted for during the year ended March 31, 1917.

DR.

CR.

| Stock on hand, April 1, 1916. | Manufactured as per Statement (B) above. | Brought in during the year. | Total to be Accounted for. | Sold. | Re-used in manufacture. | Stock on hand, March 31, 1917. | Total Accounted for. |
|-------------------------------|--|-----------------------------|----------------------------|-------------|-------------------------|--------------------------------|----------------------|
| Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. | Pr'f galls. |
| 1,449.44 | 296,929.31 | ..... | 298,378.75 | 298,378.75 | ..... | ..... | 298,378.75 |

APPENDIX B.

EXPENDITURES, Etc.

APPENDIX B.
No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. | |
|------------------|---|-----------------|-------------|------------|---------------|---------------------|------|
| | | Superannuation. | Retirement. | Guarantee. | | | |
| | | \$ | cts. | \$ | cts. | \$ | cts. |
| | <i>Bellefleur.</i> | | | | | | |
| McFee, A. C. | Salary as Collector for the year. | 72 | 92 | 103 | 95* | 1 | 20 |
| Cook, W. J. | Deputy Collector for the year. | | | 99 | 68 | | 60 |
| McArthur, G. H. | 1st Class Excise-man for the year. | | | 94 | 92 | 4 | 32 |
| Brown, W. J. | Special Class Excise-man for the year. | | | 103 | 68 | | 72 |
| Wilson, H. R. | | | | 75 | 00 | | 48 |
| Sprague, F. W. | 1st Class Excise-man for the year. | | | 101 | 49 | | 288 |
| Lally, J. E. | 2nd Class Excise-man, from April 1st to June 30th and 1st Class from July 1st 1916 to March 31st, 1917. | | | 99 | 27 | | 2 88 |
| Treverton, C. B. | 3rd Class Excise-man for the year. | | | 51 | 06 | | 2 88 |
| Allen, B. K. | 3rd Class Excise-man, from April 1st to Sept. 15, 1916. Dead. | | | 66 | 78 | | 48 |
| Hardy, W. A. G. | 3rd Class Excise-man, from April 1st to 30th June and 2nd from July 1st 1916 to March 31st, 1917. | | | 130 | 13 | | 2 88 |
| Cole, W. L. | 3rd Class Excise-man for the year. | | | 35 | 81 | | 2 88 |
| Blaylock, E. G. | 3rd Class Excise-man, from August 1st, 1916 to March 31st, 1917. | | | 25 | 81 | | 1 44 |
| Rogers, H. A. | 3rd Class Excise-man | | | 25 | 81 | | 1 44 |
| | Contingencies. | 76 | 92 | 1,013 | 39 | 25 | 08 |
| | | | | | | 11,669 | 54 |
| | | | | | | 3,530 | 94 |
| | | | | | | 15,200 | 48 |
| | <i>Brantford.</i> | | | | | | |
| O'Donohue, M. J. | Salary as Collector for the year. | 36 | 96 | | | 7 | 20 |
| Sloan, W. | Deputy Collector for the Year. | | | 75 | 00 | 3 | 60 |
| Orr, H. N. | Deputy Collector for the year. | 52 | 44 | | | | 48 |
| Newsome, I. | 1st Class Excise-man from April 1st to June 31st and promoted 1st class from July 1st 1916 to March 31st, 1917. | | | 65 | 26 | | 2 88 |
| Schuler, F. C. | 2nd Class Excise-man for the year. | | | 62 | 40 | | 2 88 |
| Fairley, W. | 2nd | | | 42 | 05 | | 2 88 |
| | Contingencies. | 92 | 40 | 244 | 71 | 19 | 92 |
| | | | | | | 6,967 | 70 |
| | | | | | | 1,041 | 53 |
| | | | | | | 8,009 | 03 |

APPENDIX B.—No. 1.—DETAILS OF Excise Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. | |
|-------------------|---|-----------------|-------------|------------|---------------|---------------------|------|
| | | Superannuation. | Retirement. | Guarantee. | | | |
| | | \$ | cts. | \$ | cts. | \$ | cts. |
| Montgomery, W. H. | Kingston—Con. | 59 88 | 158 91 | 22 80 | 7,606 05 | 7,686 22 | |
| O'Donnell, J. | Salary as 2nd Class Excise-man from April 1st to June 30th and promoted to 1st Class July 1st, 1916 to March 31st 1917. | | | | 1,238 03 | | |
| Fahey, E. | Messenger for the year. | 19 92 | 65 26 | | 2 88 | 977 16 | |
| Hogan, J. | 3rd Class Excise-man, Died May 14th, 1916. | | | | 2 88 | 166 18 | |
| Fitzell, W. J. | 3rd Class Excise-man for the year. | | 49 92 | | 2 88 | 947 16 | |
| | 3rd " " " | | 43 73 | | 2 88 | 828 36 | |
| | Contingencies. | | | | | | |
| | London. | | | | | | |
| Davis, T. G. | Salary as Collector for the year. | | | | 7 20 | 2,392 80 | |
| Thrasher, W. A. | Deputy Collector for the year. | | 177 48 | | 3 60 | 1,818 84 | |
| Webbey, C. E. A. | 1st Class Excise-man for the year. | 33 48 | | | 3 60 | 1,637 88 | |
| Robinson, J. T. | 2nd " " " | | 70 42 | | 4 32 | 1,243 97 | |
| Foster, H. | 1st " " " | 34 96 | | | 1 92 | 963 12 | |
| Whitehead, J. P. | Deputy Collector for the year. | | 55 81 | | 2 88 | 1,059 90 | |
| Pleasance, W. | 2nd Class Excise-man, Died August 6th, 1916. | | 22 70 | | 1 20 | 430 25 | |
| Talbot, J. | 3rd " " " | | 49 92 | | 2 88 | 947 16 | |
| Farmworth, F. H. | 3rd " " " | | 47 46 | | 2 88 | 899 64 | |
| Pingel, H. H. | 3rd " " " from April 1st to June 30th and promoted to 2nd class from July 1st 1916 to March 31st, 1917. | | 42 46 | | 2 88 | 804 64 | |
| Granger, F. V. | 3rd " " " for the year. | | 41 18 | | 48 | 783 30 | |
| Dean, J. C. | 3rd " " " from April 1st to June 30th promoted to 2nd class from July 1st to March 31st, 1917. | | 42 46 | | 2 88 | 804 64 | |
| Lindsay, W. A. C. | 3rd " " " for the year. | | 37 90 | | 2 88 | 717 54 | |
| Thomas, W. R. | 3rd " " " confirmed as such from July 1st, 1916 to March 31st, 1917. | | 38 74 | | 2 88 | 733 36 | |
| Hicks, W. H. | Deputy Collector for the year. | 27 96 | | | 2 88 | 1,369 08 | |
| Cousins, T. | " " " | | 60 00 | | 2 88 | 1,137 12 | |
| Fiddes, J. | " " " | | 42 05 | | 2 88 | 796 69 | |
| Luton, A. A. | " " " | | 60 00 | | 2 88 | 1,137 12 | |
| Tytler, J. M. | Stenographer & Typewriter for the year. | | 34 92 | | | 665 04 | |
| | Contingencies. | 96, 40 | 823 58 | 54 00 | 20,342 09 | 21,738 22 | |

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for | | | | Amounts paid. | Total amounts paid. |
|----------------------|---|-----------------|-------------|------------|------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | | |
| | | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>Peterborough.</i> | | | | | | | |
| Buller, W. H. | Salary as Collector for the year. | | 68 70 | | 3 60 | 1,302 63 | |
| Bieble, J. W. | Deputy Collector for the year. | 18 96 | | | 3 88 | 928 08 | |
| Parker, W. R. | " | | 42 05 | | 3 60 | 795 97 | |
| Grandy, R. | " 3rd Class Exciseeman from August 1st 1916 to March 31st, 1917. | | 6 64 | | 1 68 | 124 96 | |
| | Contingencies. | 18 96 | 117 39 | 11 76 | | 3,151 64 | |
| | | | | | | 141 15 | |
| <i>Port Arthur.</i> | | | | | | | |
| Bridgeman, M. W. | Salary as Collector for the year. | | 90 00 | | 3 60 | 1,706 40 | |
| Smith, B. H. | 2nd Class Exciseeman for the year. | | 62 40 | | 2 88 | 1,184 64 | |
| Barnes, Geo. | Deputy Collector Class B, transferred to Winnipeg Oct. 1st, 1916. | | 16 20 | | 1 44 | 307 32 | |
| Wink, J. C. | 3rd Class Exciseeman for the year. | | 49 92 | | 2 88 | 947 16 | |
| | Contingencies. | | 218 52 | 10 80 | | 4,145 52 | |
| | | | | | | 819 82 | |
| <i>Prescott.</i> | | | | | | | |
| Melville, T. R. | Salary as Collector for the year. | | 135 00 | | 7 20 | 2,557 80 | |
| White, J. B. | Deputy Collector for the year. | | 305 16 | | 3 60 | 1,691 16 | |
| Murray, D. | Special Class Exciseeman for the year. | 37 92 | | | 4 32 | 1,857 72 | |
| McPherson, E. A. | 1st Class Exciseeman for the year. | | 307 14 | | 4 32 | 1,238 52 | |
| Granton, C. | 3rd " | | 55 89 | | 2 88 | 1,059 90 | |
| McNally, E. | 3rd " from April 1st to October 30th and promoted to special Class from Nov. 1st, 1916 to March 31st, 1917. | | 143 35 | | 3 48 | 1,036 44 | |
| Byrnes, W. P. | " " for the year. | | 49 92 | | 2 88 | 947 16 | |
| Wood, C. E. | " " from April 1st to June 30th and promoted to 1st from July 1st, 1916 to March 31st, 1917. | | 49 95 | | 2 88 | 947 11 | |
| Wood, J. A. | Deputy Collector for the year. | | 42 05 | | 3 60 | 997 08 | |
| Dunkin, W. H. | " | | | | | 795 97 | |
| | Contingencies. | 37 92 | 1,088 46 | 38 04 | | 13,128 86 | |
| | | | | | | 660 74 | |
| | | | | | | 4,965 34 | |
| | | | | | | 3,292 79 | |
| | | | | | | 13,789 60 | |

| <i>St. Catharines.</i> | | | | | | | | | |
|------------------------|--|-------|--------|-------|----------|--|--|--|--|
| Salary as | Collector for the year | 31 92 | 54 96 | 3 60 | 1,564 44 | | | | |
| " | Deputy Collector for the year | | | 2 88 | 1,042 08 | | | | |
| " | 2nd Class Excise-man for the year | 43 68 | | 2 88 | 1,247 04 | | | | |
| " | 2nd " | | 75 00 | 2 88 | 1,203 36 | | | | |
| " | 1st " | | | 2 88 | 1,422 12 | | | | |
| | Contingencies | 75 60 | 129 96 | 15 12 | 6,479 04 | | | | |
| | | | | | 331 61 | | | | |
| <i>Stratford.</i> | | | | | | | | | |
| Salary as | Collector for the year | | 279 94 | 7 20 | 1,992 72 | | | | |
| " | Deputy Collector for the year | | | 3 60 | 1,216 46 | | | | |
| " | Accountant transferred from Accountant to 1st Class January 1st to March, 31, 1917 | | 179 75 | 3 96 | 1,135 00 | | | | |
| " | Deputy Collector from April 1st, 1916 to February 1st, 1917 | | 41 60 | 3 00 | 788 70 | | | | |
| " | Billing, W. | | 9 96 | 3 60 | 186 36 | | | | |
| " | Bainford, V. C. F. | | 49 92 | 3 60 | 946 44 | | | | |
| | Contingencies | | 561 17 | 24 96 | 6,265 68 | | | | |
| | | | | | 302 93 | | | | |
| <i>Toronto.</i> | | | | | | | | | |
| Salary as | Collector for the year | | 252 96 | 14 40 | 2,532 60 | | | | |
| " | Special Class Excise-man for the year | | 99 96 | 3 60 | 1,896 36 | | | | |
| " | Accountant for the year | | | 4 32 | 1,795 68 | | | | |
| " | Deputy Collector for the year | | 75 00 | 7 20 | 1,417 80 | | | | |
| " | Special Class Excise-man for the year | 42 00 | | 4 32 | 2,195 64 | | | | |
| " | Gerald, Chas. | | | 4 32 | 2,053 68 | | | | |
| " | Jamieson, R. C. | 39 96 | 27 00 | 4 32 | 1,528 68 | | | | |
| " | Graham, W. S. | 31 92 | | 4 32 | 1,563 72 | | | | |
| " | Doyle, B. J. | | | 4 32 | 1,563 72 | | | | |
| " | Hurst, L. B. | 31 92 | | 4 32 | 1,563 72 | | | | |
| " | Graham, A. L. | | 89 24 | 4 32 | 1,566 40 | | | | |
| " | Burns, R. J. | | 79 92 | 4 32 | 1,315 72 | | | | |
| " | Dunbar, G. E. | | 73 68 | 4 32 | 1,396 92 | | | | |
| " | Johnston, E. J. A. | | 67 47 | 4 32 | 1,278 15 | | | | |
| " | Conlter, Alex. | | | 2 88 | 1,444 68 | | | | |
| " | Accountant for the year | 52 44 | | 2 88 | 1,407 12 | | | | |
| " | 1st Class Excise-man for the year | 30 00 | | 2 88 | 1,422 12 | | | | |
| " | Ist " | | 75 00 | 2 88 | 1,344 68 | | | | |
| " | Falconer, R. H. | | 152 44 | 2 88 | 1,347 96 | | | | |
| " | Gillies, A. L. | | 149 16 | 2 88 | 1,422 12 | | | | |
| " | Young, R. E. | | 75 00 | 2 88 | 1,467 12 | | | | |
| " | Walsh, W. H. | | | 2 88 | 1,223 70 | | | | |
| " | Spence, F. H. | 30 00 | | 2 88 | 1,191 83 | | | | |
| " | Oliver, J. T. | | 117 09 | 2 88 | 1,247 04 | | | | |
| " | Abbott, H. F. | | 73 96 | 2 88 | 1,247 04 | | | | |
| " | Barber, J. S. | | | 2 88 | 1,184 64 | | | | |
| " | Sykes, W. J. | | 62 40 | 2 88 | | | | | |

6,810 65

6,568 61

| | | | | | | |
|----------------------|--|---|--|--------|-------|------------|
| Falconer, J. | " | " | " | 19 92 | 2 88 | 997 08 |
| Cahill, J. W. | " | " | " | | 2 88 | 977 16 |
| Adams, A. K. | " | " | " | | | |
| Bergeron, R. J. | 3rd | " | from April 1st to June 30th, and promoted to 1st class from July 1st, 1916 to March 31st, 1917. | 138 65 | 2 88 | 933 40 |
| Cumamiford, F. D. | 3rd | " | from April 1st to June 30th and promoted to 1st class from July 1st, 1916 to March 31st, 1917. | 103 61 | 2 88 | 968 44 |
| Niven, T. D. | 3rd | " | for the year. | 106 08 | 2 88 | 891 00 |
| Bezaire, T. M. | 3rd | " | from April 1st to June 30th, and promoted to 1st class from July 1st, 1916, to March 31st, 1917. | 53 69 | 2 88 | 1, 018 36 |
| Fry, J. | 3rd | " | for the year. | 53 69 | 2 88 | 1, 018 36 |
| Dunlop, C. | Deputy Collector | " | Superannuated from Oct. 1st, 1916. | 48 69 | 2 88 | 923 40 |
| Keogh, P. | " | " | for the year. | 1 80 | 3 60 | 748 20 |
| Leggatt, A. E. | Stenographer and Typewriter | " | for the year. | 34 92 | 3 60 | 1, 196 40 |
| Lamarsh, R. H. | 3rd class Excise man | " | from August 1st, 1916 to March 31st, 1917. | 25 81 | 1 44 | 665 04 |
| | Contingencies. | | | 157 80 | 96 84 | 33, 844 22 |
| | | | | | | 817 28 |
| | | | | | | 34, 661 50 |
| <i>Joliette.</i> | | | | | | |
| Mainville, C. P. | Salary as Collector for the year. | | | 44 43 | 5 40 | 2, 175 12 |
| Gamaeche, G. N. | Deputy Collector for the year. | | | 120 00 | 3 60 | 1, 576 32 |
| Normandin, J. G. H. | 1st. Class Excise man | " | | 167 88 | 4 32 | 1, 377 76 |
| Garipey, L. N. | 2nd | " | | 62 40 | 2 88 | 1, 184 64 |
| Olivier, L. H. | 3rd | " | | 103 68 | 2 88 | 893 40 |
| Olivier, J. A. | 3rd | " | from April 1st to June 30th, and promoted to 1st class from July 1st, 1916, to March 31st, 1917. | 52 46 | 2 88 | 994 60 |
| Barrette, J. E. | 3rd | " | for the year. | 46 23 | 2 88 | 875 88 |
| Langevin, H. H. | 3rd | " | | 136 64 | 2 88 | 668 78 |
| Parizeau, J. | 3rd | " | | 15 00 | 2 88 | 282 12 |
| Richard, J. B. T. | Deputy Collector for the year. | | | 19 92 | 3 60 | 376 44 |
| | Contingencies. | | | 44 43 | 34 20 | 1, 0605 06 |
| | | | | | | 1, 372 65 |
| | | | | | | 11, 977 71 |
| <i>Montreal.</i> | | | | | | |
| Fox, J. D. | Salary as Collector for the year. | | | 44 43 | 14 40 | 2, 166 12 |
| Hudon, M. L. E. | Deputy Collector for the year. | | | 69 96 | 1 20 | 1, 928 76 |
| Renaud, A. H. | " | | | 63 18 | 7 20 | 1, 735 83 |
| Longtin, H. | Accountant for the year. | | | 79 65 | 4 32 | 1, 509 78 |
| Forest, E. R. | " | | | 32 50 | 7 20 | 1, 885 30 |
| Walsh, D. J. | Special Class Excise man for the year. | | | 43 92 | 4 32 | 2, 151 72 |
| Kearney, D. J. | " | | | 79 92 | 4 32 | 1, 467 12 |
| Scullion, W. O. | 1st Class Excise man for the year. | | | 30 00 | 2 88 | 1, 422 12 |
| Dessalnier, J. E. A. | 1st | " | | 75 00 | 2 88 | 1, 459 23 |
| Bousquet, J. O. | Special Class Excise man for the year. | | | 136 41 | 4 32 | 1, 379 64 |
| Harwood, J. O. H. | 1st Class Excise man for the year. | | | 117 48 | 2 88 | 1, 379 64 |
| McGuire, L. J. | 1st | " | | 75 00 | 2 88 | 1, 422 12 |

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for | | | | Amounts paid. | Total amounts paid. |
|----------------------|--|-----------------|-------------|------------|----------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | \$ cts. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | |
| | <i>Montreal—Con.</i> | | | | | | |
| David, T. | Salary as 1st Class Exciseman for the year | | 75 00 | | 1,422 12 | | |
| Milot, J. E. | " " " " | | 75 00 | | 1,422 12 | | |
| Lamoureux, J. A. | " 1st " " " | | 67 17 | | 1,273 62 | | |
| Lesperance, J. A. | " " " " | | 49 99 | | 947 31 | | |
| Dumouchel, L. | " 2nd " " " | 24 96 | | | 1,222 08 | | |
| Andrews, A. A. | " 2nd " " " | | 43 08 | | 1,203 36 | | |
| Laurier, J. L. | " 2nd " " " | | 145 92 | | 1,101 12 | | |
| Brabant, J. B. G. N. | " 2nd " " " Died February 17, 1917 for the year | 22 88 | | | 1,120 24 | | |
| Comte, L. A. | " 2nd " " " | | 43 68 | | 1,203 36 | | |
| Lambert, J. A. | " 3rd " " " | 19 92 | | | 1,184 61 | | |
| Miller, E. | " 3rd " " " | 19 92 | | | 977 16 | | |
| Panneton, G. E. | " 3rd " " " | 19 92 | | | 977 16 | | |
| Costigan, J. J. | " 3rd " " " | 19 92 | | | 977 16 | | |
| Belair, A. P. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Marin, S. H. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Crevier, J. H. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Thurbar, O. L. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Graveline, D. P. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Gervais, J. A. | " 3rd " " " from April 1st to June 30th, promoted to 2nd class from July 1st 1916 to March 31st, 1917. | | 86 45 | | 978 13 | | |
| Robillard, G. A. | " 3rd " " " for the year | | 49 92 | | 947 16 | | |
| Mantha, J. A. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Foucher, A. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Joubert, P. E. C. | " 3rd " " " | | 49 92 | | 947 16 | | |
| Prevost, J. O. | " 3rd " " " from April 1st to June 30th, promoted to 1st class from July 1st, 1916 to March 31st, 1917. | | 52 47 | | 994 60 | | |
| Prevost, Jos. | " 3rd " " " for the year | | 46 23 | | 875 88 | | |
| Roux, G. | " 3rd " " " from April 1st to June 30th, promoted to 1st class from April 1st to June 30th, promoted to 1st class from July 1st, 1916 to March 31st, 1917. | | 46 11 | | 873 51 | | |
| Beaulieu, R. | " 3rd " " " for the year | | 109 83 | | 800 79 | | |
| Beliveau, L. C. | " 3rd " " " | | 43 73 | | 828 36 | | |
| Benoit, L. V. | " 3rd " " " | | 158 52 | | 1,837 80 | | |
| Chaumon, C. P. | " Deputy Collector for the year | | 60 00 | | 1,132 80 | | |
| Lefebvre, A. | " " " " | | 38 56 | | 729 49 | | |
| Patterson, C. B. A. | " " " " | | 47 40 | | 898 92 | | |
| St. Michel, F. X. | " " " " | | 24 96 | | 471 36 | | |

| | | | | | |
|----------------------|--|--------|-------|----------|-----------|
| Bousquet, A. | Stenographer and Typewriter for the year. | 498 87 | \$ c. | 33 12 | 629 31 |
| O'Donnell, M. J. | Messenger for the year. | | | 39 96 | 2 88 |
| Snowden, J. W. | Special class Excise-man transferred from Perth, October 1st, 1916. | | | 54 96 | 1,042 86 |
| Aucott, A. L. | 3rd class Excise-man from August 1st, 1916 to August 31st, promoted to 2nd class from September 1st, 1916 to March 31st, 1917. | | | 28 74 | 1 44 |
| Brisette, O. E. | 3rd Class Excise-man from August 1st to March 31st, 1917. | | | 25 81 | 1 44 |
| | Contingencies. | 498 87 | | 2,335 15 | 168 03 |
| | | | \$ c. | | 57,223 41 |
| | | | | | 5,073 59 |
| | | | | | 62,297 00 |
| | <i>Quebec.</i> | | | | |
| Arcand, D. | Salary as Collector for the year. | | | 139 92 | 7 20 |
| Timmons, R. | Deputy Collector for the year. | | | 92 13 | 5 40 |
| Lemoine, J. | " | 31 83 | | | 1,746 18 |
| Bergeron, E. L. | Accountant for the year. | 30 00 | | 118 86 | 1,556 52 |
| Coleman, J. J. | 1st Class Excise-man for the year. | | | 103 41 | 4 32 |
| Martineau, O. E., J. | 1st " | | | 67 17 | 2 88 |
| Poirtras, W. | 2nd " | | | 55 89 | 1,273 62 |
| Filteau, J. R. | 3rd " | 34 92 | | | 1,059 90 |
| Beaulieu, J. B. | Un-classified for the year. | | | 49 92 | 2 88 |
| Mercier, C. A. | Deputy Collector for the year. | 50 76 | | 60 00 | 947 16 |
| Larue, A. | 1st Class Excise-man for the year. | | | 50 76 | 3 60 |
| Roulcau, C. E. | Deputy Collector for the year. | | | 50 76 | 1,137 12 |
| Gelly, A. | " | | | 52 43 | 2 88 |
| Frenette, J. B. E. | 3rd Class Excise-man for the year. | | | 60 00 | 962 27 |
| Hardy, Leon. | " | | | 25 81 | 4 32 |
| Vézina, C. | 3rd " | | | 25 81 | 1,137 12 |
| | Contingencies. | 147 51 | | 876 30 | 2 88 |
| | | | | | 1 44 |
| | | | | | 20,363 10 |
| | | | | | 3,055 52 |
| | | | | | 23,418 62 |
| | <i>Sherbrooke.</i> | | | | |
| Simpson, A. F. | Salary as Collector for the year. | 45 96 | | 84 96 | 7 20 |
| Charlier, E. | Deputy Collector for the year. | | | 31 92 | 3 60 |
| Quinn, I. D. | Special Class Excise-man for the year. | | | 62 40 | 1,611 36 |
| de Grosbois, C. B. | 2nd Class Excise-man for the year. | | | 49 92 | 4 32 |
| Bowen, F. C. | 3rd " | | | 54 96 | 1,563 72 |
| Rousseau, E. H. | Deputy Collector for the year. | | | 77 88 | 1,184 64 |
| | Contingencies. | | | 252 24 | 48 |
| | | | | | 1,041 36 |
| | | | | | 8,597 40 |
| | | | | | 880 33 |
| | | | | | 9,477 73 |
| | <i>St. Hyacinthe.</i> | | | | |
| Cartier, A. P. | Salary as Collector for the year. | | | 87 48 | 7 20 |
| Langlois, F. | Deputy Collector for the year. | | | 75 00 | 3 60 |
| Macdonald, A. B. | Special Class Excise-man for the year. | 43 92 | | 157 08 | 4 32 |
| Roulcau, J. C. | 1st Class Excise-man for the year. | | | 75 00 | 2 88 |
| Gauvin, E. | " | | | | 1,340 04 |
| | | | | | 1,422 12 |

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for | | | | Amounts paid. | Total amounts paid. |
|---------------------------|---|-----------------|-------------|------------|-----------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | | |
| | | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>St. Hyacinthe—Con.</i> | | | | | | | |
| Archambault, F. X. | Salary as Deputy Collector for the year. | | 45 00 | 2 88 | 852 12 | | |
| Franceur, A. | " | | 49 92 | 2 88 | 947 16 | | |
| De Billy, F. X. | " | | 42 05 | 2 88 | 796 69 | | |
| | Contingencies. | 43 92 | 531 53 | 29 52 | 10,586 53 | 1,729 57 | 12,316 10 |
| <i>Three Rivers.</i> | | | | | | | |
| Duplessis, C. Z. | Salary as Collector for the year. | 31 92 | | | 1,564 44 | | |
| | Contingencies. | | | | 635 53 | | 2,199 97 |
| <i>St. John.</i> | | | | | | | |
| Belyea, T. H. | Salary as Collector for the year. | 39 96 | | | 1,952 76 | | |
| Law, A. L. | Deputy Collector for the year. | | 70 23 | | 1,332 42 | | |
| Geldart, A. O. | Special Class Excise-man for the year. | 31 92 | | | 1,563 72 | | |
| Fitpatrick, W. J. | 1st Class Excise-man for the year. | 30 00 | | | 1,467 12 | | |
| Ferguson, J. C. | 1st " " | 30 00 | | | 1,467 12 | | |
| McGowan, J. | 1st " " | | 75 00 | | 1,422 12 | | |
| Casey, F. J. | 2nd " " from April 1st to July 31st, 1916 and promoted to 1st Class from August 1st, 1916 to March 31st, 1917, transferred to Charlottetown from Sept. 1st 1916 | | | | | | |
| Farmer, R. C. | 2nd " " " | | 26 63 | 1 20 | 505 47 | | |
| Murphy, J. W. | 3rd " " " | | 62 40 | 2 88 | 1,184 64 | | |
| Dwyer, D. L. | Deputy Collector for the year. | | 51 21 | 2 88 | 970 83 | | |
| Ward, C. | Stenographer and Typewriter for the year. | | 9 96 | 3 60 | 186 36 | | |
| Weeks, W. A. | Deputy Collector Class B, transferred from Charlottetown Oct. 1st, 1916 to March 31st, 1917. | | 34 92 | | 665 04 | | |
| | Contingencies. | 131 88 | 357 83 | 27 48 | 519 60 | | |
| | | | | | 13,237 20 | | 13,511 57 |
| | | | | | 274 37 | | |

| | | Haitiaz. | | | | | | | |
|-----------------------|--|----------|--------|-----------|--|--|--|--|-----------|
| James, T. C. | Salary as Collector for the year. | 39 45 | 7 20 | 1,928 28 | | | | | |
| King, R. W. | Deputy Collector for the year. | | 3 60 | 1,696 32 | | | | | |
| Waterfield, C. W. | Accountant for the year. | | 56 82 | 1,076 28 | | | | | |
| Blethen, C. W. | 1st Class Excise-man for the year. | 30 00 | | 1,407 12 | | | | | |
| Hubley, H. H. | " " | 30 00 | | 1,467 12 | | | | | |
| Gorman, A. M. | 1st " " | 30 00 | | 1,467 12 | | | | | |
| Tompkins, P. | Deputy Collector for the year. | | 3 60 | 1,196 40 | | | | | |
| Munro, H. D. | 3rd Class Excise-man for the year. | 19 92 | 2 88 | 977 16 | | | | | |
| Waddell, S. J. | Deputy Class for the year. | | 22 44 | 423 96 | | | | | |
| Contingencies..... | | 149 37 | 79 26 | 11,699 76 | | | | | 12,112 75 |
| <i>Pictou.</i> | | | | | | | | | |
| Fraser, P. | Salary as Collector for the year. | 27 96 | 3 60 | 1,363 36 | | | | | |
| Carroll, F. P. | 3rd Class Excise-man for the year. | | 49 92 | 947 16 | | | | | |
| Mackeen, E. T. | Deputy Collector for the year. | | 45 00 | 852 12 | | | | | |
| Contingencies..... | | 27 96 | 94 92 | 3,167 64 | | | | | 3,778 67 |
| <i>Charlottetown.</i> | | | | | | | | | |
| Doyle, S. F. | Salary as 3rd Class Excise-man for the year. | | 49 92 | 947 16 | | | | | |
| Casby, F. J. | 1st " " from April 1st to August 31st, and collector from September 1st, 1916 to March 31st, 1917. | | 36 84 | 732 13 | | | | | |
| Contingencies..... | | | 88 56 | 1,679 29 | | | | | 2,567 14 |
| <i>Winnipeg.</i> | | | | | | | | | |
| Gosnell, T. S. | Salary as Collector for the year. | 65 52 | 7 20 | 2,792 76 | | | | | |
| Vernor, T. H. | Deputy Collector for the year. | | 4 32 | 1,068 54 | | | | | |
| Long, W. H. A. | Accountant for the year. | | 4 32 | 1,705 68 | | | | | |
| Larivière, A. C. | " " | 63 00 | | 1,732 68 | | | | | |
| Hammond, F. W. | 1st Class Excise-man for the year. | | 67 17 | 1,273 62 | | | | | |
| Forsyth, D. | 1st " " | | 70 89 | 1,344 90 | | | | | |
| Currie, W. W. | 1st " " | | 63 36 | 1,202 43 | | | | | |
| Greig, W. G. | 1st " " | | 163 96 | 1,099 83 | | | | | |
| Fegan, P. J. | 2nd " " | | 51 06 | 968 52 | | | | | |
| Morris, T. H. | 3rd " " | | 49 92 | 947 16 | | | | | |
| Nicholl, F. A. | 3rd " " | | 31 03 | 589 85 | | | | | |
| Ivey, W. J. | 3rd " " | | 49 92 | 947 16 | | | | | |
| Earl, R. W. | Deputy Collector for the year. | | 75 00 | 1,422 12 | | | | | |
| Sparling, J. W. | " " | | 54 90 | 1,042 08 | | | | | |
| Barrett, J. P. | " " | | 33 29 | 634 51 | | | | | |
| McNiven, J. D. | " " | | 19 92 | 377 16 | | | | | |

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Concluded.*

| To whom paid. | Service. | Deductions for | | | | Amounts paid. | Total amounts paid. |
|-------------------|--|-----------------|-------------|-------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | | Guarantee. | | |
| | | | \$ | cts. | | | |
| | <i>Winnipeg—Con.</i> | | | | | | |
| Miller, J. C. | Salary as 3rd Class Exciseman from August 1st, 1916 to March 31st, 1917. | | 34 56 | 1 44 | 655 62 | | |
| Barnes, G. | Deputy Collector Class B from April 1st to December 1st, 1916. | | 5 40 | 0 48 | 102 44 | | |
| | Contingencies. | 128 52 | 999 06 | 51 96 | 20,507 06 | 1,368 63 | 21,875 69 |
| | <i>Calgary.</i> | | | | | | |
| Fletcher, R. W. | Salary as Collector for the year. | | 99 96 | 3 60 | 1,896 36 | | |
| Richardson, W. | Deputy Collector for the year. | | 65 04 | 2 88 | 1,232 04 | | |
| Wood, C. T. | " | | 60 00 | 3 60 | 1,136 40 | | |
| Fidler, H. | 3rd Class Exciseman for the year. | | 111 36 | 2 88 | 885 72 | | |
| Markley, A. W. R. | Deputy Collector for the year. | | 49 92 | 3 60 | 946 44 | | |
| Barnard, A. H. | " | | 5 00 | 0 96 | 94 04 | | |
| | Contingencies. | | 391 28 | 17 52 | 6,191 00 | 2,758 44 | 8,949 44 |
| | <i>Moosjauw.</i> | | | | | | |
| Conklin, W. M. | Salary as Collector for the year. | | 90 00 | 3 60 | 1,706 40 | | |
| Goudie, D. A. | Deputy Collector for the year. | | 51 24 | 3 60 | 970 08 | | |
| Campbell, T. N. | " from April 1st, 1916 to February 1st, 1917. | | 33 30 | 2 40 | 630 90 | | |
| Scott, J. O. | " for the year. | | 49 92 | 3 60 | 946 44 | | |
| Anderson, J. H. | " | | 42 05 | 3 60 | 795 97 | | |
| Hall, J. H. | 3rd Class Exciseman for the year. | | 40 78 | 2 88 | 772 99 | | |
| Bell, W. H. | " from August 1st 1916 to March 31st, 1917. | | 15 85 | 45 | 235 00 | | |
| | Contingencies. | | 323 14 | 20 13 | 6,124 00 | 1,730 47 | 7,854 47 |
| | <i>Vancouver.</i> | | | | | | |
| Parkinson, E. B. | Salary as Collector from April 1st to June 1st, 1916. Died May 16th, 1916. | | 21 66 | 1 20 | 410 46 | | |
| Thorburn, J. | Deputy Collector for the year. | | 144 57 | 5 40 | 1,618 74 | | |
| Deely, F. | Accountant for the year. | | 155 37 | 4 32 | 1,429 02 | | |

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| | | | | | |
|-----------------------|--|--------|----------|-------|-----------|
| Allen, G. A..... | Special Class Excise man from April 1st to Oct. 31st, 1916, and promoted to Collector from Nov. 1st, 1916 to March 31st, 1917. | 46 47 | 93 72 | 5 52 | 2,272 97 |
| Chilver, F. W..... | 1st Class Excise man for the year. | | 118 53 | 2 88 | 1,403 40 |
| Simpson, G..... | 1st " " " " | | 113 27 | 4 32 | 1,222 26 |
| Morgan, E. J..... | 1st " " " " | | 108 00 | 2 88 | 1,232 35 |
| Macdonald, G..... | 1st " " " " from April 1st to June 1st, 1916, transferred to Victoria. | | 18 72 | 0 48 | 1,157 79 |
| Sutherland, W. M..... | 3rd " " " " for the year. | | 15 95 | 0 48 | 189 12 |
| McSpadden, M..... | Deputy Collector for the year. | | 64 92 | 3 60 | 303 94 |
| Scanlan, T. J..... | " " " " " " | | 54 96 | 3 60 | 1,231 44 |
| Woffenden, W. M..... | " " " " " " | | 49 92 | 2 88 | 1,041 36 |
| Gray, R. S..... | " " " " " " Died June 19th, 1916. | | 15 00 | 0 60 | 947 16 |
| Carson, K. C..... | " " " " " " for the year. | | 49 92 | 3 60 | 284 40 |
| Grigor, R. W..... | " " " " " " Died September 27th, 1916. | | 19 98 | 1 44 | 946 44 |
| McLachlan, P..... | " " " " " " from April 1st, 1916 to February 1st, 1917. | | 29 10 | 3 00 | 378 54 |
| McCuchison, H..... | " " " " " " for the year. | | 27 48 | 3 60 | 551 20 |
| Howell, Thos..... | " " " " " " " " | | 12 48 | 3 60 | 518 88 |
| Hambly, S. E..... | " " " " " " " " | | 12 48 | 1 80 | 235 88 |
| Gilpin, R. R..... | " " " " " " " " | | 9 96 | 3 60 | 186 36 |
| Campbell, A. E..... | " " " " " " " " | | | | |
| | Contingencies..... | 46 47 | 1,135 99 | 61 68 | 17,795 39 |
| | | | | | 3,630 19 |
| | | | | | 21,425 58 |
| | | | | | |
| | | 39 96 | | 7 20 | 1,952 76 |
| Jones, R..... | Salary as Collector for the year. | 52 44 | | 3 60 | 1,443 96 |
| O'Sullivan, D..... | Deputy Collector for the year. | 52 44 | | 2 88 | 1,444 68 |
| Ridgman, A. H..... | 1st Class Excise man for the year. | | 120 00 | 0 48 | 1,129 44 |
| Huggitt, A. P..... | 1st " " " " " " | | 32 40 | 3 60 | 613 92 |
| Shaw, J..... | Deputy Collector for the year. | | 77 79 | 0 48 | 568 59 |
| Clements, R. S..... | 3rd Class Excise man for the year. | | 41 18 | 2 88 | 780 90 |
| Schreiber, N. E..... | 2nd " " " " " " | | 94 56 | 2 40 | 963 39 |
| Sutherland, W.M..... | 1st Class Excise man; transferred from Vancouver June 1st, 1916 to March 31st, 1917. | | 365 93 | 23 52 | 8,897 64 |
| | Contingencies..... | 144 84 | | | 1,049 24 |
| | | | | | 9,946 88 |
| | | | | | |
| | | | 49 92 | 7 20 | 942 84 |
| Stingle, Jos. W..... | Salary as Collector for the year. | | | | 19 10 |
| | Contingencies..... | | | | 961 94 |

Victoria.

Yukon.

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. |
|--------------------|--|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | DISTRICT INSPECTORS. | | | | | |
| | <i>Calgary.</i> | | | | | |
| Saucier, X..... | Salary for the year..... | 55 44 | | 9 00 | 2,710 53 | |
| | Contingencies..... | | | | 1,519 45 | 4,229 98 |
| | <i>British Columbia.</i> | | | | | |
| Miller, J. E..... | Salary for the year..... | 60 00 | | 9 00 | 2,931 00 | |
| | Contingencies..... | | | | 1,627 37 | 4,558 37 |
| | <i>Dom. Dist. Malt Houses (Breweries).</i> | | | | | |
| Barrett, J. K..... | Salary for the year..... | | | | 3,199 92 | |
| | Contingencies..... | | | | 1,553 67 | 4,753 59 |
| | <i>Bonded Factories.</i> | | | | | |
| J. E. Gow..... | Contingencies..... | | | | 413 40 | |
| | Annuities..... | 3,226 78 | 15,470 35 | 1,321 01 | | |
| | Insurance..... | | 140 40 | | | |
| | | | 3,932 85 | | | |

RECAPITULATION.

| | |
|----------------------|---------------|
| Excise salaries..... | \$ 468,499 81 |
| Contingencies..... | 53,124 90 |
| Total..... | \$ 521,624 71 |

See Financial Statement No. 4.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended
March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---------------------------------|--|---------------|---------------------|
| | <i>General Excise Contingencies.</i> | \$ cts. | \$ cts. |
| British American Bank Note Co. | To pay for bottling labels supplied..... | 5,945 50 | |
| Hughes, P. A. | “ petty cash charges..... | 56 77 | |
| Charlotte Seales..... | “ vaults and store room cleaning..... | 313 00 | |
| Baird, A. Tallock Ltd..... | “ iron locks and brass labels..... | 10 18 | |
| Oertling, L..... | “ “..... | 14 12 | |
| Pritchard & Andrews Co., Ltd. | “ tobacco rollers, stamps and daters..... | 341 15 | |
| Bank of Montreal..... | “ draft, favor of Baird & Tallock, Ltd..... | 42 73 | |
| Bank of Montreal..... | “ “ L. Oertling..... | 85 46 | |
| Lyman Ltd..... | “ for pipettes..... | 8 89 | |
| Thornton & Truman..... | “ repairs to locks, etc..... | 66 50 | |
| Registrar Exchequer Court..... | “ writ of assistance..... | 11 60 | |
| Powell, J. B., Windsor..... | “ travelling expenses..... | 205 25 | |
| Webbe, C. E. A., London..... | “ “..... | 4 80 | |
| Robinson, J. T., London..... | “ “..... | 4 80 | |
| Johnson, J. J., Owen Sound..... | “ “..... | 9 72 | |
| Walsh, Wm. H., Toronto..... | “ “..... | 2 00 | |
| Dominion Warehousing Co..... | “ Canadian Express charges..... | 3 03 | |
| Therien, O., Ville-Marie..... | “ professional service..... | 20 00 | |
| Landry & Landry, Edmonton | “ “..... | 61 72 | |
| Burroughs Adding Machine Co. | “ adding machine..... | 776 16 | |
| | <i>Excise Examinations.</i> | | |
| Gow, John E..... | To pay expenses re promotion examinations..... | 203 89 | |
| Caven, W..... | “ “ “..... | 57 40 | |
| Bernier, J. A..... | “ “ “..... | 134 70 | |
| Brain, A. F..... | “ “ “..... | 172 74 | |
| | | | 8,553 16 |
| | <i>Law Costs.</i> | | |
| Armstrong, A. H..... | To pay Law costs Rex vs. F. Galla..... | 20 00 | |
| “ “ “ | “ D. Rubin..... | 20 00 | |
| Fauteux & Fauteux..... | “ Bartallacci..... | 14 00 | |
| “ “ “ | “ Leclair..... | 14 00 | |
| “ “ “ | “ L. Charbonneau..... | 14 80 | |
| “ “ “ | “ D. Cardinal..... | 14 00 | |
| “ “ “ | “ P. Geoffrion..... | 14 00 | |
| “ “ “ | “ Dubois, E..... | 14 00 | |
| “ “ “ | “ J. McDonald..... | 14 00 | |
| “ “ “ | “ J. Duranceau..... | 14 00 | |
| “ “ “ | “ J. Burns..... | 14 00 | |
| “ “ “ | “ N. Lachapelle..... | 24 00 | |
| Grant, T. H..... | “ E. A. Fraser..... | 10 00 | |
| “ “ “ | “ C. E. Bell..... | 10 00 | |
| Gagnon, Os..... | “ A. Boissonnault..... | 20 00 | |
| “ “ “ | “ Meunier..... | 20 00 | |
| “ “ “ | “ F. Lallemant..... | 20 00 | |
| “ “ “ | “ J. Gibouleau..... | 64 90 | |
| “ “ “ | “ F. Miller..... | 40 60 | |
| “ “ “ | “ J. H. Boyer..... | 27 00 | |
| “ “ “ | “ O. Boyer..... | 24 00 | |
| “ “ “ | “ J. N. Boyer..... | 20 00 | |
| “ “ “ | “ M. Ladasky..... | 14 00 | |
| “ “ “ | “ B. Lipson..... | 43 80 | |
| “ “ “ | “ D. Jodoin..... | 68 50 | |
| “ “ “ | “ Tourangeau..... | 20 85 | |
| “ “ “ | “ N. Beeson..... | 45 00 | |
| “ “ “ | “ J. T. Derome..... | 10 00 | |
| “ “ “ | “ O. Boyer..... | 12 50 | |
| “ “ “ | “ S. Currie..... | 12 50 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | | Total amounts paid. | |
|-------------------------------|--|---------------|------|---------------------|------|
| | | \$ | cts. | \$ | cts. |
| | To pay Law costs Rex vs. J. Gauthier..... | 12 | 50 | | |
| | “ “ “ D. Languedoc..... | 12 | 50 | | |
| | “ “ “ P. Giguere..... | 45 | 00 | | |
| | “ “ “ J. T. Derome..... | 29 | 00 | | |
| | “ “ “ J. B. Baillargeon..... | 29 | 00 | | |
| Baird, W. J..... | “ “ “ How..... | 20 | 00 | | |
| | “ “ “ F. Fernandez..... | 10 | 00 | | |
| | “ “ “ A. H. Joe..... | 21 | 00 | | |
| | “ “ “ Hin Kee..... | 19 | 00 | | |
| | “ “ “ Lee Sing..... | 19 | 20 | | |
| | “ “ “ Young Gee..... | 10 | 00 | | |
| Cavan, J. E..... | “ “ “ S. Dunham..... | 33 | 60 | | |
| Champagne, N..... | “ “ “ J. Grant..... | 20 | 00 | | |
| | “ “ “ E. D. Pelletier..... | 64 | 00 | | |
| Cowan, J. E..... | “ “ “ Mullin & Knapp..... | 15 | 00 | | |
| Lussier, Flynn & Gendron..... | “ “ “ Patenaude..... | 10 | 00 | | |
| Bérubé, L..... | “ “ “ W. Rirouca..... | 17 | 76 | | |
| O'Bready & Panneton..... | “ “ “ H. Renaud..... | 24 | 80 | | |
| Moraud, L..... | “ “ “ R. Emond..... | 24 | 50 | | |
| | “ “ “ J. Allard..... | 24 | 50 | | |
| | “ “ “ J. A. Vezina..... | 20 | 51 | | |
| | “ “ “ J. P. Vezina..... | 10 | 00 | | |
| | “ “ “ “..... | 20 | 00 | | |
| | “ “ “ W. F. A. Robitaille..... | 19 | 50 | | |
| | “ “ “ A. Dore..... | 20 | 00 | | |
| Leblanc, A..... | “ “ “ H. Raymond..... | 53 | 00 | | |
| Desilets, Frs..... | “ “ “ Theo Duff..... | 56 | 90 | | |
| Lawson, W..... | “ “ “ J. Hazelton & B. Harrington..... | 20 | 00 | | |
| Laliberte..... | “ “ “ A. Leblanc..... | 28 | 30 | | |
| | “ “ “ Jos. Masse..... | 28 | 60 | | |
| Beaubien, A. J. C..... | “ “ “ <i>re</i> illicit still, S. Caron..... | 7 | 10 | | |
| Desilets, A..... | “ “ “ M. Lefebvre..... | 77 | 85 | | |
| Jackson, J. A..... | “ “ “ G. A. Hudon..... | 4 | 00 | | |
| Aikman, J. A..... | “ “ “ A. L. McDermott..... | 38 | 00 | | |
| Hanson, E. B..... | “ “ “ H. Cady & H. B. Spragg..... | 67 | 46 | | |
| Brabant, G. N..... | “ “ “ Heroux..... | 2 | 00 | | |
| | “ “ “ H. Major..... | 1 | 00 | | |
| Loranger, L. J..... | “ “ “ A. Depatie..... | 14 | 00 | | |
| Duchemin, A. P..... | “ “ “ P. Cameron..... | 49 | 20 | | |
| Cousineau & Dauphinais..... | “ “ “ legal expenses Rex vs O. Lalancette..... | 7 | 50 | | |
| Lefebvre, F..... | “ “ “ law costs, Rex vs O. Lalancette..... | 8 | 00 | | |
| Gurd & Spuril..... | “ “ “ A. L. McDernot..... | 46 | 50 | | |
| Cousineau, L..... | “ “ “ J. B. Gauvreau..... | 10 | 00 | | |
| | “ “ “ G. Patterson..... | 10 | 00 | | |
| Piette, J. A..... | “ “ “ F. X. Lamarche..... | 154 | 10 | | |
| Graydon & Graydon..... | “ “ “ H. H. Pringle..... | 5 | 00 | | |
| Emard, C..... | “ “ “ I. Gougeon..... | 60 | 00 | | |
| | | | | 1,964 | 33 |
| American Bank Note Co..... | To pay for stamps and labels supplied..... | | | 10,517 | 49 |
| | | | | 82,889 | 50 |
| | Total..... | | | \$ 93,406 | 99 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 1.—Details of Excise Provisional Allowance for the Year ended March 31, 1917.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|------------------------------|--------------------------------------|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| | <i>Excise Provisional Allowance.</i> | | |
| Gosnell, T. S. Winnipeg. | To pay Code, A. | 99 96 | |
| | Verner, T. H. | 99 96 | |
| | Long, W. H. A. | 99 96 | |
| | Lariviere, A. C. | 99 96 | |
| | Hammond, T. W. | 124 92 | |
| | Forsyth, D. | 124 92 | |
| | Sparling, J. W. | 124 92 | |
| | Greig, W. G. | 124 92 | |
| | Morris, L. H. | 124 92 | |
| | Nicholl, F. A. | 124 92 | |
| | Fegan, P. J. | 124 92 | |
| | Ivey, W. J. | 124 92 | |
| | Earl, R. W. | 124 92 | |
| | Currie, W. W. | 124 92 | |
| | Barrett, J. P. | 124 92 | |
| | McNiven, J. D. | 49 92 | |
| | Ashton, H. | 150 00 | |
| | Davis, T. J. | 150 00 | |
| | Belanger, A. | 150 00 | |
| | Miller, J. C. | 139 55 | |
| | Joheson, J. D. | 150 00 | |
| | Cosgrove, J. B. | 150 00 | |
| | MacGillivray, E. F. | 51 66 | |
| | | | 2,765 09 |
| Fletcher, R. W. Calgary. | Gray W. B. | 50 00 | |
| | Barnard, A. H. | 25 00 | |
| | Fletcher, R. W. | 100 00 | |
| | Markley, A. W. R. | 125 00 | |
| | Wood, C. T. | 125 00 | |
| | Richardson, W. | 125 00 | |
| | Davis, W. E. | 150 00 | |
| | Dalgetty, Jas. | 150 00 | |
| | Joughin, W. J. C. | 150 00 | |
| | Pierce, A. H. | 87 50 | |
| | Richards, D. H. | 150 00 | |
| | Fidler, E. | 150 00 | |
| | Farrell, W. G. | 37 50 | |
| | McKibbon, W. S. | 87 50 | |
| | Prince, A. | 75 00 | |
| | Fidler, H. | 150 00 | |
| | Green, W. | 71 77 | |
| | Venn, C. J. | 26 21 | |
| | | | 1,835 48 |
| Conklin, W. M. Moose-jaw. | Hall, L. H. | 150 00 | |
| | Bell, W. H. | 150 00 | |
| | Anderson, J. H. | 150 00 | |
| | Campbell, T. N. | 125 00 | |
| | Goudie, D. A. | 125 00 | |
| | Scott, J. O. | 125 00 | |
| | Wylie, M. | 57 08 | |
| | Conklin, W. M. | 99 99 | |
| | | | 982 07 |
| A'len, G. A. Vancouver. | McLachlan, P. | 75 00 | |
| | Glenday, D. | 37 50 | |
| | McSpadden, M. | 150 00 | |
| | Quinn, T. | 150 00 | |
| | Gibson, J. N. | 150 00 | |
| | Grantham, J. A. | 150 00 | |
| | Brown, R. H. | 150 00 | |
| | Carmichael, D. | 124 92 | |
| | Morgan, E. J. | 124 92 | |
| | MacDonald, G. | 124 92 | |
| | Simpson, G. | 124 92 | |
| | Sutherland, W. | 20 82 | |
| | Gray, R. S. | 124 92 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Provisional Allowance for the Year ended March 31, 1917—*Continued.*

| To whom paid. | Service. | Amounts paid. | | Total amounts paid. | |
|--|-----------------------------------|---------------|------|---------------------|-------|
| | | \$ | cts. | \$ | cts. |
| <i>Excise Provisional Allowance—Con.</i> | | | | | |
| Allen, G. A. Vancouver— <i>Con.</i> | “ Wolfenden, Wm..... | 124 | 92 | | |
| | “ Scanlan, T. | 124 | 92 | | |
| | “ Corsan, R. C. | 31 | 23 | | |
| | “ Thorburn, Jas. | 99 | 96 | | |
| | “ Allen, G. A. | 99 | 96 | | |
| | “ Chilver, F. W. | 99 | 96 | | |
| | “ Deeley, F. | 99 | 96 | | |
| | “ Grigor, R. W. | 75 | 00 | | |
| | “ Howell, T. | 75 | 00 | | |
| | “ Atkins, B. R. | 75 | 00 | | |
| | “ Leishman, A. | 50 | 04 | | |
| | “ Delahay, Wm. | 50 | 04 | | |
| | “ Hambley, S. E. | 50 | 04 | | |
| | | | | | 2,563 | 95 |
| Jones, R. Victoria. | “ Clements, R. S. | 150 | 00 | | |
| | “ Robinson, W. | 150 | 00 | | |
| | “ Johnson, Geo. | 150 | 00 | | |
| | “ Huggett, A. P. | 125 | 00 | | |
| | “ Shaw, J. | 125 | 00 | | |
| | “ Ridgman, A. H. | 100 | 00 | | |
| | “ O’Sullivan, D. | 100 | 00 | | |
| | “ Jones, R. | 100 | 00 | | |
| | “ Schreiber, C. B. | 150 | 00 | | |
| | “ Mara, J. L. | 29 | 93 | | |
| | “ Sutherland, W. | 104 | 20 | | |
| “ Mason, Thos. | 96 | 13 | | | |
| | | | | 1,380 | 26 |
| | Total provisional allowances..... | | | 9,526 | 85 |

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

| To whom paid. | Place of Residence. | Service. | Amounts paid. | | Total Amounts paid. |
|---|---------------------|---|---------------|------|---------------------|
| | | | \$ | cts. | \$ cts. |
| | | <i>Commissions to Customs Officers.</i> | | | |
| Grubb, W. B. | Taber | From Dec. 21, 1915, to March 31, 1916 | 9 | 24 | |
| Polley, W. H. | Trenton | " April 1, 1915 " 1916 | 246 | 40 | |
| McPherson, J. | North-Sydney | " " " " " " | 346 | 40 | |
| Polley, W. H. | Trenton | " April 1, 1916, to March 31, 1917 | 131 | 56 | |
| Porter, N. | Simcoe | " " " " " " | 346 | 40 | |
| Thomson, J. M. | Napance | " " " " " " | 16 | 05 | |
| Clarke, Thos. | Pembroke | " Dec. 1, 1916, " " " | 98 | 83 | |
| Hastey, J. W. | Fort Francis | " April 1, 1916, " " " | 52 | 78 | |
| Jackson, H. B. | Rainy River | " " " " " " | 246 | 40 | |
| Kavanagh, A. J. | Gaspe | " " " " " " | 98 | 79 | |
| Dayton, G. F. | Edmundston | " " " " " " | 102 | 35 | |
| Ratchford, C. E. | Amherst | " " " " " " | 9 | 33 | |
| McPherson, J. | North Sydney | " " " " " " | 446 | 40 | |
| Ball, J. A. | Dauphin | " " " " " " | 148 | 20 | |
| Campbell, T. N. | Prince Albert | " Feb. 1, 1916, to March 31, 1917 | 6 | 30 | |
| Roche, W. G. P. | Maple Creek | " Dec. 12, 1916, " " " | 248 | 80 | |
| Sanborn, J. B. | Vermilion | " April 1, 1916, " " " | 43 | 18 | |
| McLeod, J. H. | Prince Rupert | " Sept. 27, 1916, " " " | 150 | 00 | |
| Marshall, Wm. C. | Cranbrook | " Nov. 17, 1916, " " " | 348 | 66 | |
| The Employers Liabilities Ass. Corp., Ltd. | Montreal | " April 1, 1916, " " " | 16 | 04 | |
| Railway Passengers' Ass. Co. | Toronto | " " " " " " | 8 | 40 | |
| Dom. of Can. Guar. & Acc. Ins. Corp. | " | " " " " " " | 10 | 80 | |
| The London Guar. & Acc. Corp. Ltd. | " | " " " " " " | 10 | 80 | |
| Imperial Guar. & Acc. Ins. Co. of Canada | " | " " " " " " | 3 | 60 | |
| | | Total | | | \$ 3,145 71 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | | Total amounts paid. | |
|-------------------|---|---------------|------|---------------------|------|
| | <i>Duty-pay.</i> | \$ | cts. | \$ | cts. |
| Abbott, H. F. | From April 1, 1916 to March 31, 1917 | 150 | 00 | | |
| Adam, A. R. | " " " | 150 | 00 | | |
| Allen, G. A. | " April 1 to Sept. 30, 1916 and Oct. 1 to Oct. 31, 1916 | 175 | 00 | | |
| Amor, Wm. | " April 1, 1916 to March 31, 1917 | 100 | 00 | | |
| Barrette, J. E. | " Nov. 1, 1916 to Jan. 23, 1917 | 16 | 73 | | |
| Bayard, G. A. | " April 1, 1916 to March 31, 1917 | 150 | 00 | | |
| Bergeron, R. J. | " " " | 150 | 00 | | |
| Berry, H. L. | " " " | 200 | 00 | | |
| Bousquet, J. O. | " " " | 225 | 00 | | |
| Bouteiller, Geo. | " " " | 300 | 00 | | |
| Blyth, A. | " May 8 to Aug. 20, and Sept. 11 to 22, 1916 | 47 | 74 | | |
| Boyd, J. F. S. | " April 1, 1916 to March 31, 1917 | 200 | 00 | | |
| Brennan, J. | " " " | 150 | 00 | | |
| Byrne, W. P. | " " " | 150 | 00 | | |
| Cahill, J. W. | " " " | 150 | 00 | | |
| Chaput, N. J. | " " " | 150 | 00 | | |
| Champagne, A. | " April 1 to Sept. 30, 1916, and Oct. 1 to Nov. 15, 1916 | 93 | 75 | | |
| Champagne, O. | " April 1, 1916 to March 31, 1917 | 120 | 83 | | |
| Cheseldine, J. H. | " " " | 200 | 00 | | |
| Chilver, F. W. | " " " | 210 | 42 | | |
| Chilvers, W. | " Dec. 23, 1916 to March 31, 1917 | 27 | 42 | | |
| Cole, W. I. | " April 1, 1916 to March 31, 1917 | 148 | 33 | | |
| Coleman, J. J. | " " " | 300 | 00 | | |
| Corriveau, O. | " " " | 100 | 00 | | |
| Cummiford, F. D. | " " " | 150 | 00 | | |
| Dalgetty, J. | " " " | 100 | 00 | | |
| Davis, T. J. | " " to May 25, 1916 | 15 | 05 | | |
| Denis, J. L. | " " to March 31, 1917 | 150 | 00 | | |
| Doyle, B. J. | " " " | 150 | 00 | | |
| Eakins, G. G. | " " " | 150 | 00 | | |
| Egener, A. | " " to Sept. 30, 1916 | 50 | 00 | | |
| Elliott, W. J. | " " to March 31, 1917 | 150 | 00 | | |
| Fairley, Wm. | " " " | 100 | 00 | | |
| Falconer, J. E. | " " " | 150 | 00 | | |
| Feik, L. | " " " | 150 | 00 | | |
| Gariepy, L. N. | " " " | 150 | 00 | | |
| Gauthier, W. | " Aug. 7 to Aug. 27, 1916 | 5 | 64 | | |
| Gauvin, L. E. | " Dec. 18, 1916 to Feb. 20, 1917, and 4 days | 56 | 31 | | |
| Gauvin, S. E. | " April 1, 1916 to March 31, 1917 | 161 | 75 | | |
| Gerald, W. H. | " " " | 300 | 00 | | |
| Gerald, Chas. | " " " | 300 | 00 | | |
| Gray, R. S. | " " " | 150 | 00 | | |
| Granton, Chas. | " " " | 150 | 00 | | |
| Halley, W. J. | " " " | 150 | 00 | | |
| Hardy, W. A. G. | " " " | 150 | 00 | | |
| Harwood, J. O. A. | " Sept. 1 to Sept. 30, 1916, and 2 mos. to 30-11-16 | 50 | 00 | | |
| Helliwell, H. N. | " April 1, 1916 to March 31, 1917 | 150 | 00 | | |
| Hughes, M. | " " " | 162 | 50 | | |
| Hurst, L. B. | " " " | 200 | 00 | | |
| Jamieson, R. C. | " " " | 300 | 00 | | |
| Jones, A. | " " " | 150 | 00 | | |
| Keogh, P. M. | " " " | 150 | 00 | | |
| Lally, J. E. | " " " | 150 | 00 | | |
| Lane, T. M. | " " " | 212 | 50 | | |
| Lamoureux, J. A. | " April 1 to Aug. 31, 1916, and 4 mos. 31-3-17 | 150 | 00 | | |
| Langevin, H. H. | " April 1, 1916 to March 31, 1917 | 150 | 00 | | |
| Lapointe, Z. | " " to Sept. 30, 1916 | 50 | 00 | | |
| Lefebvre, S. | " Dec. 14, 1916 to 31-3-17 | 29 | 84 | | |
| Lyons, E. | " April 1, 1916 to March 31, 1917 | 162 | 50 | | |
| McArthur, G. H. | " " " | 300 | 00 | | |
| McLenaghan, F. H. | " " " | 150 | 00 | | |
| McMartin, A. G. | " " " | 150 | 00 | | |
| McNally, E. | " " " | 150 | 00 | | |
| McPherson, E. A. | " April 1 to June 30, and Aug. 1 to Sept. 30, 1916, and 1st to 31st of July | 183 | 33 | 16 | 67 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---------------------------------------|------------------------------------|---------------|---------------------|
| <i>General War Tax Contingencies.</i> | | \$ cts. | \$ cts. |
| American Bank Note Co..... | Stamps supplied..... | 7,828 00 | |
| The Plaunt Hardware Co..... | Hardware supplied..... | 14 10 | |
| Desrivieres, J. A..... | Cartage..... | 28 00 | |
| Brown, Miss J..... | Salary as stenographer..... | 57 60 | |
| Lectere, Miss E..... | " "..... | 45 54 | |
| Rousseau, Miss M..... | " "..... | 56 26 | |
| | | | 8,029 50 |
| <i>Law Costs.</i> | | | |
| Gagnon, O..... | Rex vs. J. E. H. Quippe..... | 20 00 | |
| | " Richard, Loranger & St. Cyr..... | 68 55 | |
| | " A. Shner..... | 20 00 | |
| | " A. Cofsky..... | 20 00 | |
| | " R. Brender..... | 20 00 | |
| | " L. A. Roy..... | 20 00 | |
| | " M. Illman..... | 28 90 | |
| | " L. Millette..... | 23 90 | |
| | " J. J. Leduc..... | 14 00 | |
| | " E. Ethier..... | 20 00 | |
| | " Pharmacie Outremont..... | 10 00 | |
| | " A. Tourangeau..... | 14 00 | |
| | " E. Ethier..... | 83 50 | |
| | " W. Paquin..... | 10 00 | |
| | " A. Dugal..... | 10 00 | |
| | " A. P. Fortier..... | 14 00 | |
| Moraud, L..... | " Mrs. M. Boyce & Son..... | 20 00 | |
| | " A. A. Cantin..... | 20 00 | |
| | " Syndicate of Quebec..... | 20 00 | |
| | " F. C. De Lachevrotiere..... | 20 00 | |
| | " A. Théberge..... | 20 00 | |
| | " N. Abouissify..... | 45 94 | |
| | " I. Begin..... | 23 75 | |
| | " A. Marchessault..... | 23 75 | |
| | " A. Aubin..... | 50 94 | |
| | " P. Langlois..... | 50 94 | |
| | " L. Roy..... | 51 44 | |
| | " D. E. Landry..... | 51 84 | |
| | " J. Gagnon..... | 24 50 | |
| | " P. Turgeon..... | 24 50 | |
| | " A. E. Francoeur..... | 24 50 | |
| | " J. A. Lapointe & Co..... | 24 50 | |
| | " J. Paquet..... | 24 50 | |
| | " Lepine Frere..... | 24 50 | |
| | " E. A. Delisle..... | 24 50 | |
| | " Emond..... | 24 50 | |
| | " J. Allard..... | 24 50 | |
| | " J. P. Vezina..... | 10 00 | |
| Bernier, H..... | " W. B. Rogers..... | 20 00 | |
| | " E. Brunet..... | 44 50 | |
| | " E. Dubé..... | 44 50 | |
| | " La Cie Paquet, Ltd..... | 52 20 | |
| | " Fraserville Drug Store..... | 30 05 | |
| | " J. Viel..... | 30 05 | |
| | " M. Gas Co..... | 30 05 | |
| | " A. E. Thivierge..... | 30 05 | |
| | " Irene Lord..... | 7 30 | |
| | " Myrand & Pouliot..... | 24 50 | |
| | " V. Giroux..... | 49 00 | |
| | " Mrs. Laroche & Co..... | 24 50 | |
| Baird, W. J..... | " Tai Sing Co..... | 48 50 | |
| | " Vancouver Drug Co..... | 10 00 | |
| | " J. M. White..... | 15 00 | |
| | " R. E. Forest..... | 25 40 | |
| Landry & Landry..... | " McDonald Hotel..... | 25 00 | |
| Robertson, Wm. C..... | " Mrs. Saucier & Fletcher..... | 25 00 | |

APPENDIX B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|-----------------------------|------------------------------------|---------------|---------------------|
| | <i>Law Costs—Con.</i> | \$ cts. | \$ cts. |
| Fauteux & Fauteux..... | Rex vs. Ladies Surprise Store..... | 10 00 | |
| | “ Neven & Fils, Ltd..... | 10 00 | |
| | “ E. Bourdon..... | 10 00 | |
| Williams, W. H..... | “ R. G. Cooke..... | 20 00 | |
| Shurtleff, W. L..... | “ J. Audet..... | 10 00 | |
| | “ E. Ferris..... | 10 00 | |
| | “ A. Barter..... | 10 00 | |
| Mahaffy, Geo..... | “ Wadell, Boyd & Son..... | 20 30 | |
| | “ A. R. Farr..... | 20 98 | |
| | “ W. B. Strabam..... | 40 98 | |
| Smith, H. D..... | “ T. J. Hill Co..... | 10 00 | |
| | “ W. D. McKellar..... | 10 00 | |
| | “ J. H. McKin..... | 10 00 | |
| | “ Johnson & Co..... | 20 00 | |
| | “ C. Sield..... | 20 00 | |
| | “ Tinsley & Co..... | 20 00 | |
| | “ J. Courney..... | 20 00 | |
| Ross, Wm. L..... | “ R. C. Porter..... | 10 00 | |
| Desroches, F..... | “ H. Lazarovitch..... | 20 00 | |
| Campbell, A. F..... | “ G. W. Pollock..... | 10 00 | |
| McHugh, G..... | “ Parke, Davis Co..... | 16 05 | |
| | “ Chas. Hawkins..... | 40 00 | |
| | “ G. Hallet..... | 20 00 | |
| | “ G. H. Marie..... | 20 00 | |
| Panneton, D..... | “ J. A. Beaudoin..... | 10 00 | |
| | “ H. H. Cooper..... | 10 00 | |
| | “ J. A. Planche..... | 10 00 | |
| | “ G. E. Denault..... | 10 00 | |
| | “ J. H. Vallandre & Cie..... | 10 00 | |
| | “ H. Whitcomb..... | 10 00 | |
| | “ Dominion Lime Co..... | 10 00 | |
| | “ H. H. Hunt..... | 10 00 | |
| | “ J. Black..... | 10 00 | |
| | “ E. St. Onge..... | 10 00 | |
| | “ A. S. Kendall..... | 32 60 | |
| | “ A. Couture..... | 31 85 | |
| | “ A. Provencher..... | 10 00 | |
| | “ J. E. Michel..... | 10 00 | |
| | “ Jas. Roy..... | 10 00 | |
| | “ A. Cote..... | 10 00 | |
| | “ J. Pouliot..... | 10 00 | |
| | “ M. Bouret..... | 10 00 | |
| | “ J. D. Lafond..... | 10 00 | |
| | “ J. B. Lebond..... | 10 00 | |
| | “ A. W. Gibson..... | 14 15 | |
| | “ J. E. Hebert..... | 20 00 | |
| | “ L. David..... | 20 00 | |
| McPherson, G. G..... | “ J. Mear..... | 20 00 | |
| | “ A. C. Scarth..... | 20 00 | |
| | “ J. Brenner..... | 20 60 | |
| Lefebvre, F..... | “ H. Ruthenberg..... | 8 00 | |
| | “ Jno. Zakaib..... | 8 00 | |
| | “ E. Chevalier..... | 11 00 | |
| Armstrong, A. H..... | “ W. Cornell..... | 20 00 | |
| Smith, A. L..... | “ Benneth & Messcar..... | 10 00 | |
| Benneth, A. W..... | “ R. W. Dunkan..... | 20 00 | |
| Blewett, T. R..... | “ J. Dykes..... | 10 00 | |
| Willoughly, Craig & Co..... | “ Dr. G. Longault..... | 20 00 | |
| | “ Limerick Supply..... | 25 15 | |
| | “ Surdia & George..... | 15 15 | |
| | “ J. D. McMillan..... | 15 15 | |
| | “ Dr. G. Longault..... | 25 00 | |
| Bowlby, D. S..... | “ L. Bardon..... | 12 00 | |
| Turnbull & McCausland..... | “ Backhaltar Bros..... | 87 80 | |
| | “ W. H. Inkster..... | 24 65 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917—*Concluded.*

| To whom paid. | Service. | Amounts paid. | | Total amounts paid. | |
|----------------------------|------------------------------|---------------|------|---------------------|-----------|
| | | \$ | cts. | \$ | cts. |
| <i>Law Costs—Con.</i> | | | | | |
| Bray, G..... | Rex vs. O. Clark..... | 10 | 00 | | |
| Leblane, A..... | " A. Clement..... | 48 | 00 | | |
| Burnett, A..... | " P. Meyers..... | 24 | 52 | | |
| | " C. B. Kolstod..... | 8 | 03 | | |
| Wells, Thos..... | " Mrs. L. Burtis..... | 40 | 00 | | |
| | " W. Bone..... | 40 | 00 | | |
| Milton, Pike J..... | " J. A. Maekners..... | 10 | 00 | | |
| | " Brewesters, Ltd..... | 10 | 00 | | |
| | " King Edward Grocery..... | 10 | 00 | | |
| | " W. J. Mindorf..... | 10 | 00 | | |
| | " Smith's Grocery..... | 10 | 00 | | |
| | " W. A. Sample..... | 20 | 00 | | |
| | " Burnie & Co..... | 20 | 00 | | |
| Neff, Garnet C..... | " A. Jelbert..... | 20 | 00 | | |
| Carrothers & Williams..... | " P. Carroll..... | 3 | 00 | | |
| Thurston & Co..... | " J. Wilson..... | 20 | 00 | | |
| | " L. Enbinder..... | 20 | 00 | | |
| | " J. M. Cox..... | 30 | 00 | | |
| Lamarre, J. S..... | " L. J. Lafontaine..... | 10 | 00 | | |
| | " Dominion Wine Vault..... | 24 | 00 | | |
| Levinson, E. R..... | " H. Ross..... | 10 | 00 | | |
| | " G. Dewart..... | 10 | 00 | | |
| | " W. S. Dunlop..... | 10 | 00 | | |
| | " H. Finesilver..... | 10 | 00 | | |
| | " N. Sixtet..... | 20 | 00 | | |
| Morphy, W. S..... | " H. Wright..... | 20 | 00 | | |
| | " C. H. Falconer..... | 22 | 50 | | |
| Braden, J. E. A..... | " Syer Grocery Co..... | 15 | 00 | | |
| | " J. T. Brown..... | 15 | 00 | | |
| Graham J. W..... | " Geo. Smith..... | 13 | 75 | | |
| | " L. H. Reesor..... | 13 | 75 | | |
| Champagne, N..... | " Darwin's..... | 20 | 00 | | |
| | " J. Davis..... | 10 | 00 | | |
| | " M. Moser..... | 20 | 00 | | |
| | " Joynt's Variety Store..... | 20 | 00 | | |
| | " H. Finkelstein..... | 10 | 00 | | |
| | " L. Fine..... | 10 | 00 | | |
| | " M. Finkelstein..... | 10 | 00 | | |
| Graydon & Graydon..... | " G. Lamb..... | | | | |
| | " W. H. Thornton..... | | | 188 | 92 |
| | " F. E. Jones..... | | | | |
| | " C. G. Lewis..... | | | | |
| Lefebvre, L. J..... | " L. S. Desautels..... | 31 | 00 | | |
| | " J. M. Cavanagh..... | 24 | 00 | | |
| Emard, C..... | " A. Larose..... | 24 | 00 | | |
| | " Lecours & Lanetot..... | 20 | 00 | | |
| Beament & Armstrong..... | " M. Levin..... | 20 | 00 | | |
| | " A. F. Amber..... | 20 | 00 | | |
| Marquis, A. W..... | " L. Hattey & Co..... | 20 | 00 | | |
| Robb, G..... | " Jas. Wise..... | 20 | 00 | | |
| | " Jas. Bryce..... | 20 | 00 | | |
| | " T. A. Temple..... | 20 | 00 | | |
| Rondeau & Plante..... | " J. A. D. Godbout..... | 20 | 00 | | |
| Desilets, F..... | " O. Prince..... | 10 | 00 | | |
| | " E. Morse..... | 10 | 00 | | |
| | " R. O. Dumont..... | 10 | 00 | | |
| | " Genest & Cloutier..... | 10 | 00 | | |
| | " E. Deshais..... | 10 | 00 | | |
| | " A. Belliveau..... | 20 | 00 | | |
| | " Pharmacie Pelletier..... | 20 | 00 | | |
| | " Pharmacie Williams..... | 20 | 00 | | |
| | " C. Kleimer..... | 20 | 00 | | |
| | " M. Missif..... | 20 | 00 | | |
| | " P. Dufresne..... | 20 | 00 | | |
| | " E. Briere..... | 20 | 00 | | |
| | " A. Boisseau..... | 20 | 00 | | |
| | | | | | 3,925 33 |
| | | | | | 11,955 33 |

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917.

| Division. | To whom paid. | Service. | Amounts paid. | | Total amounts paid. |
|---------------|--------------------|--|---------------|------|---------------------|
| | | | \$ | cts. | \$ cts. |
| Montreal | Fox, J. D. | To pay informer $\frac{1}{2}$ penalty No. 1375 | 50 | 00 | |
| Toronto | Frankland, H. R. | " " " 430 | 25 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 124 | 12 | 50 | |
| " | " | " " " 125 | 12 | 50 | |
| Montreal | Fox, J. D. | " " " 1371 | 50 | 00 | |
| " | " | " " " 1366 | 200 | 00 | |
| " | " | " " " 1368 | 5 | 00 | |
| " | " | " " " 1355 | 25 | 00 | |
| " | " | " " " 1372 | 5 | 00 | |
| " | " | " " " 1352 | 50 | 00 | |
| " | " | " " " 1374 | 2 | 50 | |
| Joliette | Mainville, C. P. | " " " 148 | 12 | 50 | |
| Vancouver | Thorburn, Jas. | " " " 74 | 25 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 119 | 12 | 50 | |
| " | " | " " " 126 | 12 | 50 | |
| Montreal | Fox, J. D. | " " " 1347 | 50 | 00 | |
| Vancouver | Thorburn, Jas. | " " " 73 | 25 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 113 | 12 | 50 | |
| " | " | " " " 123 | 50 | 00 | |
| " | " | " " " 127 | 12 | 50 | |
| " | " | " " " 128 | 12 | 50 | |
| " | " | " " " 129 | 12 | 50 | |
| " | " | " " " 130 | 12 | 50 | |
| " | " | " " " 5663 | 12 | 50 | |
| Quebec | Arcand, D. | " " " 659 | 25 | 00 | |
| St. John | Belyea, T. H. | " " " 207 | 25 | 00 | |
| " | " | " " " 208 | 50 | 00 | |
| Montreal | Fox, J. D. | " " " 1347 | 100 | 00 | |
| Joliette | Mainville, C. P. | " " " 146 | 50 | 00 | |
| Montreal | Fox, J. D. | " " " 1365 | 25 | 00 | |
| Quebec | Arcand, D. | " " " 660 | 25 | 00 | |
| Montreal | Fox, J. D. | " " " 5681 | 85 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 135 | 2 | 50 | |
| " | " | " " " 134 | 50 | 00 | |
| Vancouver | Thorburn, Jas. | " " " 75 | 25 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 136 | 12 | 50 | |
| " | " | " " " 137 | 12 | 50 | |
| Montreal | Fox, J. D. | " " " 1389 | 5 | 00 | |
| St. Hyacinthe | Cartier, A. P. | " " " 139 | 50 | 00 | |
| Ottawa | Goulet, A. | For his share in Seizure No. 238 | 25 | 00 | |
| " | " | " " " 243 | 15 | 00 | |
| " | " | " " " 245 | 15 | 00 | |
| " | " | " " " 246 | 25 | 00 | |
| " | " | " " " 247 | 25 | 00 | |
| " | " | " " " 248 | 10 | 00 | |
| " | " | " " " 252 | 15 | 00 | |
| Perth | " | " " " 16 | 52 | 00 | |
| " | " | " " " 17 | 52 | 00 | |
| Prescott | " | " " " 45 | 23 | 75 | |
| Ottawa | Ford, F. W. | " " " 237 | 20 | 00 | |
| " | " | " " " 238 | 25 | 00 | |
| " | " | " " " 239 | 50 | 00 | |
| Prescott | " | " " " 45 | 23 | 75 | |
| Toronto | Johnston, E. J. A. | " " " 430 | 12 | 38 | |
| " | Halley, W. J. | " " " 430 | 12 | 37 | |
| Joliette | Mainville, C. P. | " " " 147 | 14 | 72 | |
| " | Kearney, D. J. | " " " 147 | 14 | 72 | |
| " | Brabant, G. N. | " " " 147 | 14 | 71 | |
| " | Roy, M. A. | " " " 148 | 6 | 95 | |
| " | Barrette, J. E. | " " " 148 | 6 | 95 | |
| Montreal | Kearney, D. J. | " " " 1262 | 12 | 55 | |
| " | " | " " " 1265 | 0 | 25 | |
| " | " | " " " 1291 | 0 | 46 | |
| " | " | " " " 3 | 2 | 33 | |
| " | " | " " " 4 | 1 | 75 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—Continued.

| Division. | To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|-----------|----------------|--------------------------------|---------------|---------------------|
| | | | \$ cts. | \$ cts. |
| Montreal | Kearney, D. J. | For his share in Seizure No. 5 | 1 75 | |
| " | " | " " " 6 | 0 25 | |
| " | " | " " " 9 | 1 50 | |
| " | " | " " " 1309 | 24 84 | |
| " | " | " " " 1310 | 1 41 | |
| " | " | " " " 1 | 5 75 | |
| " | " | " " " 2 | 4 00 | |
| " | " | " " " 3 | 1 00 | |
| " | " | " " " 5 | 0 75 | |
| " | " | " " " 6 | 2 50 | |
| " | " | " " " 1327 | 9 12 | |
| " | " | " " " 1332 | 62 25 | |
| " | " | " " " 5 | 2 11 | |
| " | " | " " " 6 | 5 00 | |
| " | " | " " " 8 | 1 75 | |
| " | " | " " " 9 | 4 59 | |
| " | " | " " " 1342 | 17 29 | |
| " | " | " " " 3 | 17 62 | |
| " | " | " " " 7 | 124 88 | |
| " | " | " " " 8 | 1 50 | |
| " | " | " " " 1351 | 32 31 | |
| " | " | " " " 2 | 48 82 | |
| " | " | " " " 4 | 89 52 | |
| " | " | " " " 5 | 26 64 | |
| " | " | " " " 8 | 12 00 | |
| " | " | " " " 1360 | 13 12 | |
| " | " | " " " 2 | 89 86 | |
| " | " | " " " 3 | 25 60 | |
| " | " | " " " 5 | 11 90 | |
| " | " | " " " 6 | 115 87 | |
| " | " | " " " 7 | 10 72 | |
| " | " | " " " 8 | 2 77 | |
| " | " | " " " 9 | 5 05 | |
| " | " | " " " 1370 | 6 30 | |
| " | " | " " " 1371 | 31 50 | |
| " | " | " " " 2 | 1 78 | |
| " | " | " " " 4 | 0 63 | |
| " | " | " " " 5 | 16 00 | |
| " | " | " " " 5681 | 85 00 | |
| " | Brabant, G. N. | " " " 1254 | 2 50 | |
| " | " | " " " 1260 | 5 10 | |
| " | " | " " " 2 | 12 55 | |
| " | " | " " " 5 | 0 25 | |
| " | " | " " " 1291 | 0 47 | |
| " | " | " " " 3 | 2 33 | |
| " | " | " " " 4 | 1 75 | |
| " | " | " " " 5 | 1 75 | |
| " | " | " " " 6 | 0 25 | |
| " | " | " " " 9 | 1 50 | |
| " | " | " " " 1309 | 24 84 | |
| " | " | " " " 1310 | 1 42 | |
| " | " | " " " 1 | 5 75 | |
| " | " | " " " 2 | 4 00 | |
| " | " | " " " 3 | 1 00 | |
| " | " | " " " 5 | 0 75 | |
| " | " | " " " 6 | 2 50 | |
| " | " | " " " 1327 | 9 13 | |
| " | " | " " " 1332 | 62 25 | |
| " | " | " " " 5 | 2 12 | |
| " | " | " " " 6 | 5 00 | |
| " | " | " " " 8 | 1 75 | |
| " | " | " " " 9 | 4 59 | |
| " | " | " " " 1342 | 17 29 | |
| " | " | " " " 3 | 17 62 | |
| " | " | " " " 1347 | 124 88 | |

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended
March 31, 1917—Continued.

| Division. | To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|----------------|-----------------|---|---------------|---------------------|
| | | | \$ cts. | \$ cts. |
| Montreal. | Brabant, G. N. | For his share in Seizure No. 1348 | 1 50 | |
| " | " | " " " 1351 | 32 31 | |
| " | " | " " " 2 | 48 83 | |
| " | " | " " " 4 | 89 52 | |
| " | " | " " " 5 | 26 64 | |
| " | " | " " " 8 | 12 00 | |
| " | " | " " " 1360 | 13 13 | |
| " | " | " " " 2 | 89 87 | |
| " | " | " " " 3 | 25 61 | |
| " | " | " " " 5 | 11 90 | |
| " | " | " " " 6 | 115 87 | |
| " | " | " " " 7 | 10 73 | |
| " | " | " " " 8 | 2 78 | |
| " | " | " " " 9 | 5 05 | |
| " | " | " " " 1370 | 6 30 | |
| " | " | " " " 1 | 31 50 | |
| " | " | " " " 2 | 1 77 | |
| " | " | " " " 1374 | 0 62 | |
| " | " | " " " 1375 | 16 00 | |
| " | Fox, J. D. | " " " 1291 | 0 47 | |
| " | " | " " " 1293 | 2 34 | |
| " | " | " " " 1294 | 1 75 | |
| " | " | " " " 1310 | 1 42 | |
| " | " | " " " 1313 | 1 00 | |
| " | " | " " " 1366 | 115 86 | |
| " | " | " " " 1375 | 16 00 | |
| " | Costigan, J. J. | " " " 1351 | 32 32 | |
| " | Provost, J. | " " " 1344 | 31 08 | |
| " | Pageau, G. | " " " 1344 | 31 07 | |
| " | Lefebvre, A. | " " " 1370 | 6 30 | |
| St. Hyacinthe. | Cadotte, J. A. | " " " 101 | 9 10 | |
| " | " | " " " 2 | 9 10 | |
| " | " | " " " 3 | 21 60 | |
| " | " | " " " 4 | 14 10 | |
| " | " | " " " 5 | 14 10 | |
| " | " | " " " 7 | 13 01 | |
| " | " | " " " 8 | 8 01 | |
| " | " | " " " 9 | 23 52 | |
| " | " | " " " 110 | 14 23 | |
| " | " | " " " 1 | 19 33 | |
| " | " | " " " 2 | 9 23 | |
| " | " | " " " 3 | 9 23 | |
| " | " | " " " 4 | 10 23 | |
| " | " | " " " 5 | 11 50 | |
| " | " | " " " 8 | 4 50 | |
| " | " | " " " 9 | 4 47 | |
| " | " | " " " 120 | 2 32 | |
| " | " | " " " 1 | 2 32 | |
| " | " | " " " 3 | 45 12 | |
| " | " | " " " 4 | 4 30 | |
| " | " | " " " 6 | 8 30 | |
| " | Raymond, J. C. | " " " 118 | 4 50 | |
| " | " | " " " 119 | 4 48 | |
| " | Galipeau, P. A. | " " " 122 | 13 75 | |
| Quebec. | Hardy, L. | " " " 652 | 18 65 | |
| " | " | " " " 4 | 3 48 | |
| " | " | " " " 5615 | 6 25 | |
| " | Côté, R. | " " " 654 | 3 47 | |
| " | " | " " " 5615 | 6 25 | |
| Winnipeg. | Verner, T. H. | " " " 71 | 75 00 | |
| " | Fegan, P. J. | " " " 71 | 75 00 | |
| Vancouver. | Thorburn, J. | " " " 74 | 26 00 | |
| St. John. | Kelly, J. T. | To pay informer $\frac{1}{2}$ penalty No. 209 | 25 00 | |
| St. Hyacinthe. | Cartier, A. P. | " " " 140 | 12 50 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2—Distribution of Seizures for the Year ended March 31, 1917—Continued.

| Division. | To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---------------|------------------|-------------------------------------|---------------|---------------------|
| | | | \$ ets. | \$ ets. |
| Montreal. | Fox, J. D. | To pay informer ½ penalty No. 1384. | 50 00 | |
| " | " | " " " 1385. | 25 00 | |
| Quebec. | Areand, D. | " " " 5680. | 12 50 | |
| " | " | " " " 5708. | 50 00 | |
| " | " | " " " 665. | 12 50 | |
| Montreal. | Fox, J. D. | " " " 1352. | 50 00 | |
| Halifax. | James, T. C. | " " " 191. | 25 00 | |
| Quebec. | Areand, D. | " " " 666. | 12 50 | |
| " | " | " " " 665. | 50 00 | |
| Montreal. | Fox, J. D. | " " " 1332. | 125 00 | |
| Quebec. | Areand, D. | " " " 667. | 50 00 | |
| Vancouver. | Thorburn, Jas. | " " " 79. | 12 50 | |
| " | " | " " " 79. | 12 50 | |
| " | " | " " " 76. | 12 50 | |
| " | " | " " " 76. | 12 50 | |
| " | " | " " " 77. | 12 50 | |
| " | " | " " " 77. | 12 50 | |
| " | " | " " " 78. | 12 50 | |
| " | " | " " " 78. | 12 50 | |
| Montreal. | Fox, J. D. | " " " 1359. | 25 00 | |
| Three Rivers. | Duplessis, C. Z. | " " " 119. | 50 00 | |
| Winnipeg. | Verner, T. H. | " " " 72. | 100 00 | |
| Montreal. | Fox, J. D. | " " " 1359. | 200 00 | |
| " | " | " " " 1390. | 200 00 | |
| Quebec. | Areand, D. | " " " 662. | 50 00 | |
| " | " | " " " 667. | 25 00 | |
| Ottawa. | Forde, F. W. | For his share in Seizure No. 235. | 100 00 | |
| " | " | " " " 240. | 50 00 | |
| " | " | " " " 249. | 15 00 | |
| " | " | " " " 256. | 15 00 | |
| " | " | " " " 257. | 14 25 | |
| " | " | " " " 258. | 14 25 | |
| " | " | " " " 259. | 9 25 | |
| " | " | " " " 260. | 14 25 | |
| " | " | " " " 261. | 14 25 | |
| " | " | " " " 263. | 14 25 | |
| " | " | " " " 266. | 14 25 | |
| " | " | " " " 268. | 5 00 | |
| " | " | " " " 269. | 5 00 | |
| Perth. | " | " " " 18. | 49 75 | |
| " | " | " " " 19. | 49 75 | |
| " | " | " " " 20. | 22 90 | |
| " | " | " " " 21. | 19 00 | |
| " | " | " " " 24. | 24 25 | |
| " | " | " " " 25. | 24 25 | |
| " | " | " " " 26. | 9 25 | |
| Prescott. | " | " " " 45. | 2 12 | |
| " | " | " " " 48. | 24 43 | |
| " | " | " " " 49. | 24 50 | |
| " | " | " " " 50. | 12 00 | |
| " | " | " " " 51. | 24 50 | |
| " | " | " " " 52. | 4 30 | |
| Ottawa. | Goulet, A. | " " " 241. | 5 00 | |
| " | " | " " " 242. | 5 00 | |
| " | " | " " " 253. | 25 00 | |
| " | " | " " " 267. | 7 50 | |
| Prescott. | " | " " " 45. | 2 13 | |
| " | " | " " " 46. | 22 75 | |
| " | " | " " " 47. | 23 00 | |
| " | " | " " " 48. | 24 42 | |
| " | " | " " " 49. | 24 50 | |
| " | " | " " " 50. | 12 00 | |
| " | " | " " " 51. | 24 50 | |
| Ottawa. | Laverdure, E. | " " " 241. | 5 00 | |

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended
March 31, 1917—Continued.

| Division. | To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---------------|-----------------|------------------------------|---------------|---------------------|
| | | | \$ cts. | \$ cts. |
| Ottawa | Laverdure, E. | For his share in Seizure No. | 267 | 7 50 |
| " | " | " | 268 | 5 00 |
| " | " | " | 269 | 5 00 |
| Stratford | Tobin, T. | " | 5715 | 10 00 |
| Montreal | Kearney, D. J. | " | 1274 | 0 63 |
| " | " | " | 1284 | 0 70 |
| " | " | " | 1298 | 1 66 |
| " | " | " | 1309 | 5 50 |
| " | " | " | 1311 | 10 50 |
| " | " | " | 1312 | 0 87 |
| " | " | " | 1328 | 0 33 |
| " | " | " | 1343 | 150 00 |
| " | " | " | 1347 | 0 80 |
| " | " | " | 1348 | 0 50 |
| " | " | " | 1351 | 0 33 |
| " | " | " | 1352 | 50 50 |
| " | " | " | 1374 | 0 12 |
| " | " | " | 1377 | 6 62 |
| " | " | " | 1378 | 8 50 |
| " | " | " | 1380 | 3 50 |
| " | " | " | 1384 | 23 00 |
| " | " | " | 1385 | 8 33 |
| " | Brabant, G. N. | " | 1274 | 0 62 |
| " | " | " | 1284 | 0 70 |
| " | " | " | 1298 | 1 67 |
| " | " | " | 1309 | 5 50 |
| " | " | " | 1311 | 10 50 |
| " | " | " | 1312 | 0 88 |
| " | " | " | 1328 | 0 33 |
| " | " | " | 1343 | 150 00 |
| " | " | " | 1347 | 0 80 |
| Montreal | Brabant, G. N. | " | 1348 | 0 50 |
| " | " | " | 1351 | 0 33 |
| " | " | " | 1352 | 50 50 |
| " | " | " | 1374 | 0 13 |
| " | " | " | 1377 | 6 63 |
| " | " | " | 1378 | 8 50 |
| " | " | " | 1380 | 3 50 |
| " | " | " | 1384 | 23 00 |
| " | " | " | 1385 | 8 33 |
| " | Navert, E. | " | 1298 | 1 67 |
| " | Lambert, J. A. | " | 1328 | 0 34 |
| " | Costigan, J. J. | " | 1351 | 0 34 |
| " | Fox, J. D. | " | 1385 | 8 34 |
| Quebec | Hardy, L. | " | 656 | 10 1 |
| " | " | " | 657 | 85 16 |
| " | " | " | 658 | 3 26 |
| " | " | " | 659 | 5 65 |
| " | " | " | 660 | 20 75 |
| " | " | " | 665 | 24 68 |
| " | " | " | 666 | 0 65 |
| " | " | " | 5708 | 50 00 |
| " | " | " | 5680 | 12 50 |
| " | Côté, P. | " | 657 | 85 16 |
| " | " | " | 658 | 3 27 |
| " | " | " | 665 | 24 67 |
| " | " | " | 666 | 0 65 |
| St. Hyacinthe | Cadotte, J. A. | " | 127 | 5 00 |
| " | " | " | 128 | 4 75 |
| " | " | " | 129 | 3 37 |
| " | " | " | 130 | 3 25 |
| " | " | " | 132 | 3 75 |
| " | " | " | 134 | 21 74 |
| " | " | " | 135 | 1 00 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—*Concluded.*

| Division. | To whom paid. | Service. | Amounts paid. | | Total amounts paid. |
|--------------------|--------------------|--|---------------|------|---------------------|
| | | | \$ | cts. | \$ cts. |
| St. Hyacinthe..... | Cadotte, J. A..... | For his share in Seizure No. 136..... | 6 | 12 | |
| "..... | "..... | " " " 137..... | 5 | 63 | |
| "..... | "..... | " " " 139..... | 25 | 00 | |
| "..... | "..... | " " " 140..... | 6 | 25 | |
| "..... | "..... | " " " 5663..... | 12 | 50 | |
| "..... | Raymond, J. C..... | " " " 127..... | 5 | 00 | |
| "..... | "..... | " " " 128..... | 4 | 75 | |
| "..... | "..... | " " " 129..... | 3 | 38 | |
| "..... | "..... | " " " 130..... | 3 | 25 | |
| "..... | "..... | " " " 132..... | 3 | 75 | |
| "..... | "..... | " " " 134..... | 21 | 74 | |
| "..... | "..... | " " " 135..... | 1 | 00 | |
| "..... | "..... | " " " 136..... | 6 | 13 | |
| "..... | "..... | " " " 137..... | 5 | 62 | |
| "..... | "..... | " " " 139..... | 25 | 00 | |
| "..... | "..... | " " " 140..... | 6 | 25 | |
| "..... | Rouleau, J. C..... | " " " 134..... | 21 | 75 | |
| Three-Rivers..... | Trudel, A..... | " " " 119..... | 50 | 00 | |
| St. John..... | Kelly, J. T..... | " " " 207..... | 25 | 00 | |
| "..... | "..... | " " " 208..... | 45 | 45 | |
| "..... | "..... | " " " 209..... | 19 | 75 | |
| Halifax..... | Blethen, G..... | " " " 191..... | 12 | 50 | |
| "..... | Hubley, H. H..... | " " " 191..... | 12 | 50 | |
| Vancouver..... | Thorburn, Jas..... | " " " 75..... | 22 | 50 | |
| Quebec..... | D. Arcand..... | To pay informer $\frac{1}{2}$ penalty collected No. 669..... | 12 | 50 | |
| Sherbrooke..... | Belisle, J. C..... | " " " 221..... | 25 | 00 | |
| Quebec..... | Arcand, D..... | " " " 221..... | 75 | 00 | |
| Total..... | | | | | 7,646 00 |

RECAPITULATION.

| | |
|-----------------------|-------------|
| Ontario..... | \$ 1,210 30 |
| Quebec..... | 5,722 00 |
| New Brunswick..... | 190 20 |
| Nova Scotia..... | 50 00 |
| Manitoba..... | 250 00 |
| British Columbia..... | 223 50 |
| | <hr/> |
| | \$ 7,646 00 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917.

| To whom paid. | Service. | Deductions for guarantee. | Amounts paid. | Total amounts paid. |
|------------------------------------|--|---------------------------------|------------------|---------------------------|
| | | \$ cts. | \$ cts. | \$ cts. |
| EXCISE PREVENTIVE OFFICERS. | | | | |
| <i>Brantford.</i> | | | | |
| Carson, J. F..... | Salary as Preventive Officer for the year..... | 0 81 | 899 19 | 899 19 |
| <i>Hamilton.</i> | | | | |
| Hanham, J. H..... | Salary as Preventive Officer from June 1, 1916 to March 31, 1917..... | 0 81 | 749 19 | |
| Smith, J. F..... | " " from June 12, 1916 to March 31, 1917..... | 0 72 | 802 02 | |
| | | 1 53 | 1,551 21 | 1,551 21 |
| <i>London.</i> | | | | |
| Miller, C. W..... | Salary as Preventive Officer for the year..... | 0 81 | 899 19 | |
| McCort, Jas..... | " " " "..... | 0 81 | 899 19 | |
| | | 1 62 | 1,798 38 | |
| | Contingencies..... | | 2 90 | 1,801 28 |
| <i>Ottawa.</i> | | | | |
| Baron, J. H..... | Salary as Preventive Officer for the year..... | 1 53 | 949 18 | |
| Denninson, F..... | " " " "..... | 0 90 | 899 10 | |
| Cryne, J..... | " " " "..... | 0 90 | 883 80 | |
| Harty, M. J..... | " " " "..... | 0 90 | 899 10 | |
| Goulet, A..... | " " " "..... | 0 90 | 899 10 | |
| Laverdure, E..... | " " " "..... | 0 90 | 899 10 | |
| Labelle, V..... | " " " "..... | 0 90 | 899 10 | |
| Boudreault, J. H. L..... | " " " "..... | 0 90 | 899 10 | |
| Roy, E..... | " " from June 22, 1916 to March 31, 1917..... | 0 90 | 696 60 | |
| Corbeil, A..... | " " from January 1, 1917 to March 31, 1917..... | 0 72 | 161 76 | |
| | | 9 45 | 8,085 94 | |
| | Contingencies..... | | 528 82 | 8,614 76 |
| <i>Toronto.</i> | | | | |
| Floody, E..... | Salary as Preventive Officer for the year..... | 1 98 | 1,198 02 | 1,198 02 |
| <i>Windsor.</i> | | | | |
| Wickens, A..... | Salary as Preventive Officer for the year..... | 0 81 | 899 19 | |
| Lamont, S..... | " " from July 11, 1916 to March 31, 1917..... | 0 81 | 649 99 | |
| | | 1 62 | 1,549 18 | 1,549 18 |
| <i>Joliette.</i> | | | | |
| Roy, A..... | Salary as Preventive Officer from April 1, to March 31, 1917..... | 0 81 | 899 19 | |
| Coutu, E. C..... | " " for the year..... | 0 81 | 899 19 | |
| Champagne, J. O..... | " " " "..... | 0 81 | 899 19 | |
| Pauzé, C. E..... | " " from April 1, to March 31, 1917..... | 1 26 | 273 74 | |
| | | 3 69 | 2,971 31 | |
| | Contingencies..... | | 399 96 | 3,371 27 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for guarantee. | Amounts paid. | Total amounts paid. |
|----------------------|---|---------------------------|---------------|---------------------|
| | EXCISE PREVENTIVE OFFICERS— <i>Con.</i> | \$ cts. | \$ cts. | \$ cts. |
| | <i>Montreal.</i> | | | |
| Ledoux, H. | Salary as Preventive Officer for the year. | 0 90 | 1,199 10 | |
| Rainville, J. E. | " " " " | 0 90 | 1,199 10 | |
| Cousineau, H. | " " " " | 0 90 | 999 06 | |
| Hughes, M. | " " " " | 0 90 | 999 06 | |
| Lafleur, G. B. | " " died March 23, 1917. | 0 90 | 999 06 | |
| Loranger, G. A. | " " for the year. | 0 90 | 999 06 | |
| Houde, J. A. D. | " " " " | 0 90 | 999 06 | |
| Deschambault, E. | " " " " | 0 90 | 899 10 | |
| Coté, B. | " " " " | 0 90 | 899 10 | |
| Guilbault, A. | " " " " | 0 90 | 899 10 | |
| Smith, D. J. | " " " " | | 300 00 | |
| Gauthier, W. | " " " " | 0 90 | 899 10 | |
| Ouimet, A. L. | " " " " | 0 90 | 899 10 | |
| Thérien, E. E. C. | " " " " | 0 90 | 899 10 | |
| Navert, C. | " " " " | 0 90 | 899 10 | |
| Labelle, J. D. | " " " " | 0 90 | 899 10 | |
| Lawrence, E. | " " " " | 0 90 | 899 10 | |
| Ross, W. L. | " " " " | 0 90 | 899 10 | |
| Lefebvre, S. | " " " " | 0 90 | 882 16 | |
| Poirier, W. | " " from October 1, 1916 to March 31, 1917. | 0 99 | 599 01 | |
| Brabant, J. B. G. N. | " " from Nov. 1, 1916, died, Feb. 17, 1917 | 0 66 | 165 98 | |
| Pageau, J. G. | " " for the year. | 0 72 | 899 28 | |
| Warren, G. S. | " " " " | 0 72 | 899 28 | |
| Brossard, W. | " " from Oct. 1, to Mar. 31, 1917. | 0 72 | 599 28 | |
| Dansereau, G. A. | " " for the year. | 0 72 | 899 28 | |
| Barnes, F. | " " " " | 0 72 | 899 28 | |
| Bessette, H. | " " " " | 0 72 | 899 28 | |
| | | 22 17 | 23,427 33 | |
| | Contingencies..... | | 1,342 07 | 24,769 40 |
| | <i>Quebec.</i> | | | |
| Coté, F. X. | Salary as Preventive Officer for the year. | 0 81 | 899 19 | |
| Fortin, J. | " " " " | 0 81 | 899 19 | |
| Duggan, E. | " " " " | 0 81 | 899 19 | |
| Robitaille, L. P. | " " " " | 0 81 | 899 19 | |
| Bolduc, I. P. | " " " " | 0 81 | 584 27 | |
| Paquet, L. | " " from Oct. 2, 1916 to Mar. 31, 1917. | 0 81 | 446 77 | |
| Fiset, A. | " " for the year. | 0 81 | 896 77 | |
| Bouchard, J. M. A. | " " " " | 0 72 | 899 28 | |
| Traversy, F. X. | " " " " | 0 72 | 899 28 | |
| Gagnon, J. D. | " " " " | 0 72 | 899 28 | |
| Poirier, J. B. E. | " " from Feb. 19 to Mar. 31, 1917. | | 101 78 | |
| Belleau, St. F. | " " from Feb. 19 to Mar. 31, 1917. | | 113 09 | |
| | | 7 83 | 8,437 28 | |
| | Contingencies..... | | 2,688 19 | 11,125 47 |
| | <i>Sherbrooke.</i> | | | |
| Somers, T. S. | Salary as Preventive Officer for the year. | 0 81 | 899 19 | |
| | Contingencies..... | | 224 27 | 1,123 46 |

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—Continued.

| To whom paid. | Service. | Deductions for guarantee. | | Amounts paid. | | Total amounts paid. |
|--|---|---------------------------|------|---------------|------|---------------------|
| | | \$ | cts. | \$ | cts. | \$ cts. |
| EXCISE PREVENTIVE OFFICERS—Con. | | | | | | |
| <i>St. Hyacinthe.</i> | | | | | | |
| Cadotte, J. A..... | Salary as Preventive Officer for the year..... | 0 | 81 | 899 | 19 | |
| Raymond, J. C..... | " " " "..... | 0 | 81 | 899 | 19 | |
| Surprenant, J..... | " " " "..... | 0 | 81 | 899 | 19 | |
| Labonte, F. X..... | " " " "..... | 0 | 81 | 1,199 | 19 | |
| Chaput, N. J..... | " " " "..... | 0 | 72 | 899 | 28 | |
| Lamoureux, H..... | " " " "..... | 0 | 72 | 899 | 28 | |
| Richard, Jos..... | " " " from Feb. 1 to Mar. 31, 1917..... | 0 | 24 | 149 | 76 | |
| | | 4 92 | | 5,845 08 | | |
| Contingencies..... | | | | 516 32 | | 6,361 40 |
| <i>Three Rivers.</i> | | | | | | |
| Quesnel, G. A..... | Salary as Preventive Officer for the year..... | 0 | 81 | 899 | 19 | |
| Trudel, A..... | " " " "..... | 0 | 81 | 899 | 19 | |
| Thivierge, P..... | " " " "..... | 0 | 24 | 899 | 76 | |
| | | 1 86 | | 2,698 14 | | |
| Contingencies..... | | | | 3 75 | | 2,701 89 |
| <i>St. John.</i> | | | | | | |
| Kelly, J. T..... | Salary as Preventive Officer for the year..... | 1 | 26 | 998 | 70 | |
| Contingencies..... | | | | 982 93 | | 1,981 63 |
| <i>Halifax.</i> | | | | | | |
| Healey, T. J..... | Salary as Preventive Officer for the year..... | 0 | 81 | 899 | 19 | |
| Contingencies..... | | | | 512 40 | | 1,411 59 |
| <i>Pictou.</i> | | | | | | |
| Contingencies..... | | | | | | 1,008 49 |
| <i>Charlottetown.</i> | | | | | | |
| Arsenault, J. F..... | Salary as Preventive Officer from Oct. 23, 1916 to Mar. 31, 1917..... | 0 | 81 | 351 | 84 | |
| Contingencies..... | | | | 350 90 | | 702 74 |
| <i>Winnipeg.</i> | | | | | | |
| Cosgrove, J. B..... | Salary as Preventive Officer for the year..... | 0 | 81 | 899 | 19 | |
| Belanger, A..... | " " " "..... | 0 | 81 | 899 | 19 | |
| Ashton, H..... | " " " "..... | 0 | 72 | 899 | 28 | |
| Davis, T. J..... | " " " from Jan. 1 to March 31, 1917..... | 0 | 24 | 224 | 76 | |
| | | 2 58 | | 2,922 42 | | |
| Contingencies..... | | | | 799 92 | | 3,722 34 |
| <i>Moosejaw.</i> | | | | | | |
| Danis, J. M..... | Salary as Preventive Officer from March 22 to Mar. 31, 1917..... | 0 | 08 | 32 | 17 | |
| Contingencies..... | | | | 100 55 | | 132 72 |
| <i>Calgary.</i> | | | | | | |
| Fidler, E..... | Salary as Preventive Officer for the year..... | 0 | 81 | 899 | 19 | |
| Joughin, W. J. C..... | " " " "..... | 0 | 81 | 899 | 19 | |
| Richards, D. H..... | " " " "..... | 0 | 81 | 899 | 19 | |
| | | 2 43 | | 2,697 57 | | 2,697 57 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—*Concluded.*

| To whom paid. | Service. | Deductions for guarantee. | Amounts paid. | Total amounts paid. |
|---------------------|--|---------------------------|---------------|---------------------|
| | EXCISE PREVENTIVE OFFICERS— <i>Con.</i> | \$ cts. | \$ cts. | \$ cts. |
| | <i>Vancouver.</i> | | | |
| Grantham, J. A..... | Salary as Preventive Officer for the year..... | 0 81 | 899 19 | |
| Brown, R. H..... | “ “ “ “ | 0 81 | 899 19 | |
| Quinn, Thos..... | “ “ “ “ | 0 81 | 899 19 | |
| | | 2 43 | 2,697 57 | |
| | Contingencies..... | | 1,078 58 | 3,776 15 |
| | Totals..... | 68 69 | | 80,499 76 |

RECAPITULATION.

| | |
|---------------------------------|---------------------|
| Excise Preventive salaries..... | \$ 69,959 71 |
| “ Contingencies..... | 10,540 05 |
| | <u>\$ 80,499 76</u> |

See Statement No. 5.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 2 (B).—Details of Weights and Measures Preventive Expenditures for the Year ending March 31, 1917.

| To whom paid. | Service. | Guarantee. | Amounts paid. | Total amounts paid. |
|------------------------|--|------------|---------------|---------------------|
| | WEIGHTS AND MEASURES PREVENTIVE. | \$ cts. | \$ cts. | \$ cts. |
| | <i>Kingston.</i> | | | |
| Duffy, W..... | Salary as Preventive officer for the year... | 54 | 899 46 | 899 46 |
| | <i>Ottawa.</i> | | | |
| Barbeau, C..... | Salary as Preventive Officer for the year... | 63 | 899 37 | |
| Charbonneau, J. A..... | “ “ “ “ “ “ | 63 | 899 37 | |
| Dugal, G. A..... | “ “ “ “ “ “ | 63 | 899 37 | |
| Ruel, A..... | “ “ “ “ from July 26, 1916 to March 31, 1917..... | 45 | 614 06 | |
| | <i>Montreal.</i> | 2 34 | 3,312 17 | 3,312 17 |
| Lanthier, E..... | Salary as Preventive Officer for the year... | 63 | 899 37 | |
| Baudet, E..... | “ “ “ “ from Nov. 1st, 1916 to March 31, 1917..... | 63 | 82 67 | |
| | <i>St. Hyacinthe.</i> | 1 26 | 982 04 | 982 04 |
| Landry, Wm..... | Salary as Preventive Officer for the year... | 54 | 899 46 | |
| Desilets, J. A..... | “ “ “ “ “ “ | 54 | 899 46 | |
| | <i>Halifax.</i> | 1 08 | 1,798 92 | 1,798 92 |
| Bowles, H. W..... | Salary as Preventive Officer for the year... | 54 | 899 46 | 899 46 |
| | <i>Charlottetown.</i> | | | |
| Walker, M. W. W..... | Salary as Preventive Officer for the year..... | | 899 46 | 899 46 |
| | <i>Winnipeg.</i> | | | |
| Sparling, E. J..... | Salary as Preventive Officer from July 3, 1916 to March 31, 1917..... | 54 | 669 62 | 669 62 |
| | <i>Calgary.</i> | | | |
| Green, Wm..... | Salary as Preventive Officer from Novem- ber 1st, 1916 to March 31, 1917..... | 54 | 374 46 | 374 46 |
| | <i>Edmonton.</i> | | | |
| Farrell, W. G..... | Salary as Preventive Officer for the year... | 54 | 899 46 | |
| McLeod, John..... | “ “ “ “ from July 10, 1916 to March 31, 1917..... | 54 | 652 68 | |
| | <i>Regina.</i> | 1 08 | 1,552 14 | 1,552 14 |
| McDonagh, J. A..... | Salary as Preventive Officer from April 11 to March 31, 1917..... | 54 | 871 46 | |
| Shaw, A. I..... | “ “ “ “ for the year... | 54 | 899 46 | |
| Eadie, J..... | “ “ “ “ “ “ | 54 | 899 46 | |
| | <i>Saskatoon.</i> | 1 62 | 2,673 38 | 2,673 38 |
| Greig, J. T..... | Salary as Preventive Officer for the year... | 54 | 899 46 | 899 46 |
| | Total..... | 10 62 | 14,960 57 | 14,960 57 |

APPENDIX B.

No. 3.—DETAILS of Sundry Minor Expenditures for the Year ended March 31, 1917.

| To whom paid. | Place of residence. | Service. | Amounts paid. | Total amounts paid. |
|----------------------|---------------------|--|---------------|---------------------|
| | | <i>Proprietary or Patent Medicine Act.</i> | \$ cts. | \$ cts. |
| Blackader, Dr. A. D. | Montreal..... | For consultation as expert..... | 400 00 | |
| Rudolf, Dr. R. D.... | Toronto..... | “ | 400 00 | |
| Blewett, F. R..... | Stratford..... | Law costs Rex vs. John Dykes..... | 10 00 | |
| Gagnon, O..... | Montreal..... | “ “ Johnson, Richardson, Co., Ltd..... | 20 00 | |
| Foxwall, W. E..... | Victoria..... | Refund of Registration fee..... | 1 00 | |
| Thurston & Co..... | Toronto..... | Law costs Rex vs. Kern Co., Ltd..... | 20 00 | |
| | | | | 851 00 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—Continued.

No. 4.—DETAILS of Adulteration of Food Expenditures for the Year ended March 31, 1917.

| To whom paid. | Service. | Deductions for | | Amounts paid. | Total amounts paid. |
|-------------------------|--|-----------------|------------|---------------|---------------------|
| | | Superannuation. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Hogan, J..... | Kingston. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 198 84 | 341 70 |
| Contingencies..... | | | | 142 86 | |
| Talbot, J..... | London. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 198 84 | 574 44 |
| Contingencies..... | | | | 375 60 | |
| Forde, F. W..... | Ottawa. | | | | |
| | Salary as Inspector from November 8, 1916 to March 31, 1917..... | | 42 | 78 99 | 78 99 |
| Dager, H. J..... | Toronto. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 198 84 | 379 27 |
| Contingencies..... | | | | 180 43 | |
| Kearney, D. J..... | Montreal. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 398 88 | 1,844 27 |
| Costigan, J. J..... | Contingencies..... | 9 96 | 1 08 | 488 88 | |
| | | | | 956 51 | |
| Beland, F. X. W. E..... | Quebec. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 298 92 | 671 52 |
| Contingencies..... | | | | 372 60 | |
| Rouleau, J. C..... | St. Hyacinthe. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 198 84 | 204 32 |
| Contingencies..... | | | | 5 48 | |
| Ferguson, J. C..... | St. John, N.B. | | | | |
| | Salary as Inspector for the year..... | 3 96 | 1 08 | 194 88 | 566 06 |
| Contingencies..... | | | 371 78 | | |
| Waugh, R. J..... | Halifax. | | | | |
| | Salary as Inspector for the year..... | | | 348 84 | 605 32 |
| Contingencies..... | | | 256 48 | | |
| Mackeen, E. T..... | Cape Breton, "Sydney" | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 198 84 | 198 84 |
| Arsencault, J. F..... | Charlottetown. | | | | |
| | Salary as Inspector from October 23, 1916 to March 31, 1917..... | | 0 47 | 87 66 | 214 46 |
| Contingencies..... | | | 126 80 | | |
| Cosgrove, J. B..... | Winnipeg. | | | | |
| | Contingencies..... | | | | 455 09 |
| Markley, A. W. R..... | Calgary. | | | | |
| | Salary as Inspector for the year..... | | 1 08 | 298 92 | 595 05 |
| Contingencies..... | | | 296 13 | | |

SESSIONAL PAPER No. 12

No. 4.—DETAILS of Adulteration of Food Expenditures for the Year ended March 31, 1917—*Continued.*

| To whom paid. | Service. | Deductions for | | Amounts paid. | Total amounts paid. |
|---------------------|---|-----------------|------------|---------------|---------------------|
| | | Superannuation. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | <i>Saskatchewan.</i> | | | | |
| Danis, J. M. | Salary as Inspector from 22 to 31 March, 1917..... | | 0 03 | 16 10 | 16 10 |
| | <i>Nelson.</i> | | | | |
| Parker, T. | Salary as Inspector for the year..... | | 1 08 | 198 84 | 405 94 |
| | Contingencies..... | | | 207 10 | |
| | <i>Vancouver.</i> | | | | |
| Morgan, E. J. | Salary as Inspector for the year..... | | 0 36 | 66 28 | 139 66 |
| | Contingencies..... | | | 73 38 | |
| | <i>Victoria.</i> | | | | |
| O'Sullivan, D. | Salary as Inspector from April 1 to June 1, 1916..... | | 0 18 | 33 14 | 57 69 |
| | | | | 24 55 | |
| | | 13 92 | 14 42 | | 7,349 32 |

APPENDIX B—Continued.

No. 4.—DETAILS of Adulteration of Food Expenditures for the Year ended March 31, 1917.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---|---|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| ADULTERATION OF FOOD. | | | |
| <i>Contingencies.</i> | | | |
| McGill, A., Ottawa Laboratory.. | Special Assistance..... | 1,298 30 | |
| | Sundries..... | 2,013 91 | |
| Forward, Halifax Laboratory.... | Special assistance..... | 240 00 | 3,312 21 |
| | Sundries..... | 1,483 54 | |
| Forster, Winnipeg Laboratory.... | " | 292 93 | 1,723 54 |
| Dawson, Vancouver Laboratory.. | " | 531 95 | 292 93 |
| Dager, H. J., Hamilton..... | Travelling expenses and purchases of samples..... | | 531 95 |
| Rickey, J. A., Ottawa..... | " | | 418 48 |
| Broehu, O., Armagh..... | " | | 99 15 |
| Parent, A., Montreal..... | " | | 233 26 |
| Gendreau, T., Montmagny..... | " | | 124 81 |
| Blondin, E., Pierreville..... | " | | 276 38 |
| LaRue, J. B., Quebec..... | " | | 891 07 |
| Robitaille, L. P., Quebec..... | " | | 166 64 |
| Lortie, J. A., Quebec..... | " | | 200 00 |
| Audet, J. E., St. Anselme..... | " | | 31 23 |
| Rioux, J. H., St. Fabien..... | " | | 448 71 |
| Lavallee, V. P., St. Felix de Valois..... | " | | 218 26 |
| Cadieux, N., St. Jerome..... | " | | 750 82 |
| Deschenes, E., St. Octave..... | " | | 290 19 |
| Pelletier, A., Ste. Perpetue..... | " | | 157 55 |
| Roy, F. X., St. Philippe de Neri..... | " | | 537 48 |
| Petipas, W. A., Tracadie..... | " | | 100 00 |
| Hall, L. H., Moosejaw..... | " | | 193 72 |
| Armytage, G. G., Vancouver..... | " | | 640 48 |
| | | | 974 17 |
| <i>General Contingencies.</i> | | | |
| Dessaint, Mrs., Ottawa..... | For cleaning Laboratory..... | 480 00 | |
| Guimond, Mrs., Ottawa..... | " | 313 00 | |
| Turpin, Mrs., Ottawa..... | " | 313 00 | |
| Lafleur, Mrs., Ottawa..... | " | 313 00 | |
| Paulin, Mrs., Ottawa..... | " | 235 00 | |
| Farmer, Mrs., Ottawa..... | " | 85 00 | |
| Pratt, Mrs., Ottawa..... | " | 222 00 | |
| | | | 1,961 00 |
| Morisset, M., Ottawa..... | Special translation..... | 201 15 | |
| Fissiault, J. A., Ottawa..... | " | 221 40 | |
| | | | 422 55 |
| Ellis, Dr. W. H., Toronto..... | Retaining fees as member of Advisory Board of Food standards..... | 400 00 | |
| Donald, Dr. J. T., Montreal..... | " | 400 00 | |
| | | | 800 00 |
| Girdwood, Dr. G. P., Montreal.. | Travelling expenses <i>re</i> Board of Examiners..... | 75 00 | |
| Choquette, Rev. C. P., St. Hyacinthe..... | " | 80 75 | |
| | | | 155 75 |
| The Ontario Hughes Owens Co., Ottawa..... | Apparatus for Ottawa Laboratory..... | 261 02 | |
| Bank of Montreal, Ottawa..... | Draft purchase to pay for apparatus from Eimer & Amend..... | 134 17 | |
| The B.C. Assays Chemical Supply Co., Ltd..... | Apparatus for Laboratory..... | 618 90 | |
| The Topley Co., Ottawa..... | Chemical supplies for Laboratory..... | 2,807 56 | |
| The Pritchard & Andrews Co., Ltd..... | To repairs of stamps..... | 8 70 | |

SESSIONAL PAPER No. 12

No. 4.—DETAILS of Adulteration of Food Expenditures for the year ended March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---|---------------------------------------|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| ADULTERATION OF FOOD—Con. | | | |
| <i>General Contingencies—Con.</i> | | | |
| Lyman, Ltd., Montreal..... | Chemical supplies for Laboratory..... | 99 87 | |
| Collector of Customs, Ottawa.... | Duty paid on goods..... | 35 32 | |
| Gooderham & Worts, Ltd., Toronto..... | Goods for Ottawa Laboratory..... | 38 10 | |
| R. H. Pringle & Co., Ottawa..... | American express..... | 0 90 | |
| General Supply Co. of Canada, Ltd., Ottawa..... | 1 propeller for fan..... | 4 75 | |
| <i>Law Costs.</i> | | | |
| MacKinnon, J. L., Halifax..... | Law costs Rex vs. A. J. Keddy..... | 40 00 | 4,009 29 |
| | " " H. E. Walker..... | 40 00 | |
| Leblanc, A., Montreal..... | " " Leblanc..... | 53 20 | |
| Tweedie, McGillivray, Burrow & Oldham, Calgary..... | " " W. McLean..... | 10 00 | |
| | " " John Irwin Co..... | 10 00 | |
| Wells, T., Ingersoll..... | " " W. Stone Sons, Ltd..... | 20 00 | |
| Murray & MacKinnon, Halifax.... | " " Melvin..... | 10 00 | |
| | " " Corkum & Ratcey, Ltd..... | 10 00 | |
| | " " Wm. Moore..... | 20 00 | |
| | " " J. R. Rawley..... | 10 00 | |
| | " " Bauld Bros..... | 10 00 | |
| | " " A. L. Melvin..... | 20 00 | |
| Graham, J. W., St. Mary's..... | " " Dickson's, Ltd..... | 10 65 | |
| Thompson, T. H., Mitchell..... | " " W. R. Cole..... | 10 00 | |
| Sangster, H. W., Windsor..... | " " T. H. Curry..... | 10 00 | |
| | " " New England Fertilizer..... | 10 00 | |
| Gagnon, O., Montreal..... | " " Dupuy & Ferguson..... | 60 00 | |
| | " " Mount La Salle Grocery..... | 23 50 | |
| | " " Canada Maple Exchange..... | 22 40 | |
| | " " J. Culos..... | 14 00 | |
| | " " I. Getz..... | 20 00 | |
| | " " W. J. Pilon..... | 20 00 | |
| | " " Dr. V. Rheame..... | 20 00 | |
| Baird, W. J., Vancouver..... | " " Brown Bros. Co..... | 10 10 | |
| | " " Jack Lew..... | 10 00 | |
| | " " Vancouver Drug Co..... | 19 58 | |
| | " " Red Rose Grocery..... | 5 00 | |
| | " " S. T. Wallace..... | 22 00 | |
| | " " J. W. Bryan..... | 37 50 | |
| | " " W. Cowling..... | 21 65 | |
| | " " W. H. Edgett & Co..... | 30 00 | |
| Aikman, J. A., Victoria..... | " " Sylvester Bros..... | 10 00 | |
| Piette, J. A., Joliette..... | " " A. Chaussé..... | 10 00 | |
| | " " A. Goulet..... | 10 00 | |
| | " " Gravel & Brady..... | 10 00 | |
| | " " Besure & Chasls..... | 6 50 | |
| Plante, A., Valleyfield..... | " " U. Brooks..... | 20 00 | |
| | " " Besure & Chasls..... | 22 00 | |
| | " " J. St. Louis..... | 10 00 | |
| Graydon & Graydon, London.... | " " A. M. Hamilton & Son..... | 25 00 | |
| | " " H. English <i>et al.</i> | 80 00 | |
| Blewett, F. R., Stratford..... | " " Nectar Mfg. Co..... | 54 80 | |
| Bowbley, D. S., Berlin..... | " " E. G. Lang..... | 79 06 | |
| Abbott, A., Trenton..... | " " D. A. Parkes..... | 5 00 | |
| Mulcaster, R., Prince Albert..... | " " W. H. Rowe..... | 10 25 | |
| | " " J. A. Stewart..... | 10 25 | |
| Jermyn, J. W., Saskatoon..... | " " P. H. Coad..... | 11 59 | |
| Carnew, W., Belleville..... | " " F. O. Diamond..... | 10 00 | |
| Andrews, Andrews, Coale, & c., Winnipeg..... | " " L. Keplan..... | 20 00 | |
| | " " B. Gimouski..... | 10 00 | |
| | " " Freedman & Goldsmith..... | 20 00 | |

No. 4.—DETAILS of Adulteration of Food Expenditures for the Year ended
March 31, 1917—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|--|------------------------------------|---------------|---------------------|
| | ADULTERATION OF FOOD—Con. | \$ cts. | \$ cts. |
| | Law Costs—Con. | | |
| | Law costs Rex 25. L. Rosman..... | 10 00 | |
| | " Paskorsky..... | 20 00 | |
| | " Hudson's Bay Co..... | 10 00 | |
| | " Charles Bros..... | 10 00 | |
| Stewart, H. A., Brockville..... | " Daoust & Belanger..... | 20 00 | |
| Armstrong, A. H., Ottawa..... | " A. Langdon..... | 20 00 | |
| Macdonald, A. H., Guelph..... | " J. C. Hadden..... | 15 00 | |
| Laughlin, J. B., Cartwright..... | " J. W. Carson..... | 15 00 | |
| | " P. D. Evans..... | 15 00 | |
| McCullough & Britton, Uxbridge..... | " G. S. Vernon..... | 10 00 | |
| McGarry & Costello, Renfrew..... | " N. Meeken..... | 59 50 | |
| Fauteux & Fauteux, Montreal..... | " H. Pepin..... | 10 00 | |
| | " M. L. Archambault..... | 14 00 | |
| Fortier, G., St. John..... | " J. Chartier..... | 20 00 | |
| Thurston & Co., Toronto..... | " Ontario Fertilizer Co..... | 10 00 | |
| | " R. Simpson Co., Ltd..... | 20 00 | |
| | " Leblanc Bros..... | 20 00 | |
| | " Fleming Bros..... | 20 00 | |
| | " Liggett's, Limited..... | 10 00 | |
| | " T. Arnold..... | 40 00 | |
| | " C. N. Cunningham..... | 20 00 | |
| Rigney, T. J., Kingston..... | " C. R. McLeod..... | 20 00 | |
| | " F. H. Baker & Co..... | 12 25 | |
| Ross, W. L., Hamilton..... | " McLees, Ltd..... | 20 00 | |
| | " D. S. Lyne..... | 54 75 | |
| | " Hamilton Importing Co., Ltd..... | 12 37 | |
| Evans, T. W. W., Beedford..... | " J. D. Wisdom & Co..... | 41 46 | |
| MacKenzie, C. Y., Boissevain..... | " W. F. Woodhall..... | 30 00 | |
| Morand, L., Quebec..... | " W. Tremblay..... | 10 00 | |
| | " A. Larue..... | 10 00 | |
| | " N. Gagnon..... | 7 80 | |
| | " A. Leclerc..... | 14 50 | |
| | " W. B. Rogers..... | 10 00 | |
| | " G. E. Dussault..... | 13 50 | |
| E. Bailey Fisher, Winnipeg..... | " G. A. Hunter..... | 15 00 | |
| | " J. J. Mooney..... | 15 00 | |
| Morand, J. B. L., Quebec..... | " L. P. Renaud..... | 10 00 | |
| | " J. Andy..... | 10 00 | |
| | " J. Vezina..... | 20 00 | |
| | " S. Vachon..... | 54 60 | |
| Cloutier, R., Waterloo..... | " L. M. Marcaurale..... | 4 00 | |
| | " H. Cyr..... | 4 00 | |
| Doull, J., New Glasgow..... | " J. B. Strickland..... | 20 00 | |
| Perkins, W. J., Estevan..... | " D. L. Irvine..... | 12 52 | |
| Moore, W. H., Peterborough..... | " C. A. Curran..... | 20 00 | |
| | " E. Oliver..... | 20 00 | |
| | " F. Darling..... | 20 00 | |
| | " Dawson Bros..... | 20 00 | |
| | " S. Mitchell..... | 20 00 | |
| | " Canada Maple Exchange..... | 20 00 | |
| Kidd, W. J., Ottawa..... | " W. J. Hart..... | 10 00 | |
| Munro, H. H., Stettler..... | " T. F. Ball..... | 10 00 | |
| Wilkins, E. D. H., Wetaskiwin..... | " W. J. Duffin..... | 10 00 | |
| Elliott, H. B., London..... | | | |
| Tweedie, McGillivray & Barron, Calgary..... | " Jenkins Co..... | 20 00 | |
| | " Langston..... | 15 00 | |
| Shurtleff, W. L., Coaticook..... | " E. C. Drolet..... | 10 00 | |
| | " L. C. Washburn..... | 10 00 | |
| | " B. M. Robinson..... | 10 00 | |
| | " B. J. Smith..... | 10 00 | |
| | " S. C. Smith..... | 10 00 | |
| Langlois, J. C., Buckingham..... | " F. W. Warwick..... | 10 00 | |

SESSIONAL PAPER No. 12

No. 4.—DETAILS of Adulteration of Food Expenditures for the Year ended March 31, 1917—*Concluded.*

| To whom paid. | Service. | Amounts paid. | | Total amounts paid. | |
|--|-------------------------------------|---------------|------|---------------------|------|
| ADULTERATION OF FOOD— <i>Con.</i> | | \$ | cts. | \$ | cts. |
| <i>Law Costs—Con.</i> | | | | | |
| Marquis, A. W., St. Catharines... | Law costs Rex vs. C. W. Gibson..... | 10 | 00 | | |
| | " Theal Bros..... | 20 | 00 | | |
| Pitblade, Norkin Co., Winnipeg.. | " G. Blackwall..... | 47 | 60 | | |
| Bernier, Blackwood & Bernier, Winnipeg..... | " Collin..... | 20 | 52 | | |
| Levinson, E. R., Winnipeg..... | " Hardy & Buchanan Co..... | 20 | 00 | | |
| Lawlor, W. A., Chatham..... | " C. P. Hickey..... | 12 | 00 | | |
| Duchemin, H. P., Sydney..... | " H. C. Ballen & Co..... | 10 | 00 | | |
| Jermyn & Sibbald, Saskatoon.... | " R. S. Flemev..... | 87 | 11 | | |
| Berube, L., Fraserville..... | " J. M. Damien & Cie..... | 42 | 13 | | |
| Macdonald, A., Charlottetown.... | " J. G. Passmore..... | 20 | 00 | | |
| | " E. Tombs..... | 12 | 00 | | |
| | " A. Peters..... | 12 | 00 | | |
| | " Jenkins & Son..... | 24 | 00 | | |
| | " Beer & Goff..... | 12 | 00 | | |
| | " Carvell Bros..... | 42 | 81 | | |
| Crepeau & Cote, Arthabaska..... | " N. A. Kirouac & Ewing & Sons | 91 | 25 | | |
| Hanna, LeSueur & McKinley, Sarnia..... | " W. H. Tincher..... | 20 | 00 | | |
| | | | | 2,622 | 70 |
| | Printing..... | | | 10,575 | 77 |
| | Stationery..... | | | 995 | 32 |
| | Total..... | | | 41,494 | 73 |

RECAPITULATION.

| | |
|----------------------------|-------------|
| Food Salaries..... | \$ 3,532 87 |
| Contingencies..... | 16,419 48 |
| General Contingencies..... | 9,971 29 |
| Printing..... | 10,575 77 |
| Stationery..... | 995 32 |

\$41,494 73

See Statement No. 6.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917.

| Names. | RANK. | | Salary. | Period. | DEDUCTIONS FOR | | | Amounts paid. | Total amounts paid. | |
|-----------------------|----------------|------------------------|---------|------------------------------------|---------------------------|------------------|-----------------|---------------|---------------------|------|
| | Divi- sion. | Sub- Divi- sion. | | | Super- annua- tion. | Retire- ment. | Insur- ance. | | | |
| | | | \$ | | \$ | cts. | \$ | cts. | \$ | cts. |
| Patenaude, Hon. E. L. | | | 7,000 | From Ap. 1, 1916 to Jan. 8, 1917 | | | 5,381 69 | | 5,381 69 | |
| Sévigny, Hon. A. | | | 7,000 | From Jan. 8 to Mar. 31, 1917 | | | 1,618 31 | | 1,618 31 | |
| Vincent, J. U. | | | 5,000 | For the year | | 250 00 | 4,750 00 | | 5,000 00 | |
| Taylor, G. W. | 1 | A | 3,500 | | | 86 50 | 3,252 50 | 81 00 | 3,450 00 | |
| Valin, J. E. | 1 | A | 3,200 | From April 1, 1916 to Feb. 1, 1917 | | | | | | |
| | | | 3,000 | For the year | | | 2,591 63 | | 2,591 63 | |
| Shaw, J. F. | 1 | A | 3,000 | | | | 3,000 00 | | 3,000 00 | |
| Magnan, Dr. J. A. | | | 3,300 | From April 1 to Oct. 31, 1916. | | 96 25 | 1,828 75 | | 1,925 00 | |
| Catellier, C. L. | 1 | A | 2,800 | For the year | | 140 00 | 2,660 00 | | 2,800 00 | |
| Doyon, J. A. | 1 | B | 2,800 | " | | | 2,800 00 | | 2,800 00 | |
| Westman, T. | 1 | B | 2,700 | " | | 61 98 | 2,608 02 | 29 34 | 2,700 00 | |
| Quain, R. | 1 | B | 2,500 | From April 1 to Nov. 1, 1916. | | | 1,427 35 | 30 96 | 1,458 31 | |
| Fowler, Geo. | 1 | B | 2,500 | For the year | | | 2,500 00 | | 2,500 00 | |
| Gallagher, M. F. | 1 | B | 2,200 | From April 1, 1916 to Jan. 7, 1917 | | 87 92 | 1,670 41 | | 1,758 33 | |
| " | | | 600 | From April 1, 1916 to Jan. 7, 1917 | | | | | | |
| Danis, J. M. | 1 | B | 2,100 | From Jan. 8 to March 21, 1917. | | 24 27 | 404 58 | | 428 85 | |
| Chassé, Noel. | 1 | B | 2,100 | " | | | 1,225 58 | | 1,225 58 | |
| " | | | 600 | From March 22 to March 31, 1917 | | 2 82 | 53 63 | | 56 45 | |
| Lemay, A. | 1 | B | 2,100 | From March 22 to March 31, 1917 | | | 16 13 | | 16 13 | |
| Roy, L. G. | 1 | B | 2,100 | For the year | | 94 79 | 1,729 28 | 71 76 | 1,801 04 | |
| Brodreux, P. E. S. | 2 | A | 1,900 | " | | 65 63 | 1,809 37 | | 1,895 83 | |
| Hughes, P. A. | 2 | A | 1,850 | " | | | 1,653 45 | 154 55 | 1,808 00 | |
| McCullough, A. | 2 | A | 1,850 | " | | 64 75 | 1,729 33 | 55 92 | 1,850 00 | |
| Halliday, W. A. | 2 | A | 1,850 | " | | 37 00 | 1,823 00 | | 1,850 00 | |
| Smyth, P. L. | 2 | A | 1,800 | " | | 63 00 | 1,737 00 | | 1,800 00 | |
| Morisset, M. | 2 | A | 1,600 | From May 9, 1916 to March 31, 1917 | | 80 00 | 1,520 00 | | 1,600 00 | |
| Teevens, L. P. | 2 | A | 1,600 | For the year | | 71 62 | 1,360 61 | 47 28 | 1,408 89 | |
| Gervais, J. H. | 2 | B | 1,600 | " | | 65 00 | 1,187 72 | | 1,300 60 | |
| Allen, A. T. | 2 | B | 1,200 | " | | 80 00 | 1,520 00 | | 1,600 00 | |
| | | | | | | 80 00 | 1,140 00 | | 1,200 00 | |

SESSIONAL PAPER No. 12

| | | | | | | |
|----------------------|---|-------|-------|----------|----------|----------|
| Furlong, C. J. | A | 1,200 | 60 00 | 111 60 | 1,028 40 | 1,200 00 |
| Lawless, E. M. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Hagerty, B. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Doyle, E. F. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Goodhue, M. L. E. B. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Trumppour, G. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Evans, C. J. | A | 1,200 | 60 00 | 41 04 | 1,098 96 | 1,200 00 |
| Beard, M. H. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Lewis, H. B. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Lyon, A. V. | A | 1,200 | 60 00 | 1,140 00 | 1,200 00 | 1,200 00 |
| Yetts, R. P. | A | 1,200 | 60 00 | 42 00 | 1,158 00 | 1,200 00 |
| Robert, A. | A | 1,150 | 57 50 | 1,092 50 | 1,150 00 | 1,150 00 |
| Cantin, J. W. Z. | A | 1,150 | 57 50 | 53 04 | 1,039 46 | 1,150 00 |
| McKell, M. E. E. | A | 1,075 | 48 75 | 926 25 | 1,075 00 | 1,075 00 |
| Lallicr, M. A. D. | B | 800 | 40 00 | 760 00 | 800 00 | 800 00 |
| O'Connor, M. E. | B | 750 | 37 50 | 712 50 | 750 00 | 750 00 |
| Tremblay, J. | B | 650 | 32 50 | 617 50 | 650 00 | 650 00 |
| Rooney, E. A. | B | 800 | 32 33 | 614 33 | 646 66 | 646 66 |
| Ste. Marie, A. J. I. | B | 500 | 4 17 | 79 16 | 83 33 | 83 33 |
| Bourgeois, E. | B | 800 | 40 00 | 760 00 | 800 00 | 800 00 |
| Roy, L. | B | 800 | 40 00 | 760 00 | 800 00 | 800 00 |
| Desroches, L. | B | 775 | 38 75 | 736 25 | 775 00 | 775 00 |

LABORATORY BRANCH.

| | | | | | | | |
|---------------------|----------------|---|-------|---------------------------------------|----------|----------|----------|
| McGill, A. | Chief Analyst. | A | 3,700 | 74 00 | 113 75 | 3,626 00 | 3,700 00 |
| Lemoinc, A. | Analyst. | B | 2,275 | 113 75 | 2,161 25 | 2,275 00 | 2,275 00 |
| Valin, J. G. A. | " | B | 2,275 | 113 75 | 2,065 25 | 2,275 00 | 2,275 00 |
| Forster, E. L. C. | " | B | 2,275 | 113 75 | 2,103 85 | 2,275 00 | 2,275 00 |
| Forward, C. C. | " | B | 2,275 | 113 75 | 2,161 25 | 2,275 00 | 2,275 00 |
| Dawson, J. A. MacD. | " | B | 2,275 | 113 75 | 2,106 35 | 2,275 00 | 2,275 00 |
| Kitto, W. V. | " | A | 1,787 | 89 33 | 1,698 12 | 1,787 50 | 1,787 50 |
| Kirwan, P. T. | " | B | 1,300 | Resigned off. from 1st June, 1916. | 11 26 | 202 94 | 225 00 |
| Landry, A. J. | " | A | 1,600 | For the year. | 73 34 | 1,466 33 | 1,466 67 |
| Collier, F. C. | " | A | 1,600 | " | 80 00 | 1,520 00 | 1,600 00 |
| Cook, S. J. | " | A | 1,600 | " | 80 00 | 1,520 00 | 1,600 00 |
| Davidson, W. A. | " | A | 1,600 | " | 80 00 | 1,520 00 | 1,600 00 |
| Westman, L. E. | " | A | 1,600 | " | 46 69 | 856 62 | 933 31 |
| Brot, Dr. M. | Asst. Analyst. | B | 1,300 | From Sept. 1, 1916 to March 31, 1917. | 435 32 | 433 32 | 433 32 |
| Rowat, R. M. | " | B | 1,300 | From Dec. 1, 1916 to March 31, 1917. | 21 67 | 411 66 | 433 33 |
| Rickey, J. A. | Clerk. | A | 1,200 | For the year. | 60 00 | 1,064 61 | 1,200 00 |
| Wright, S. E. | " | A | 1,200 | " | 60 00 | 1,140 00 | 1,200 00 |
| Ladouceur, J. | " | A | 1,200 | " | 40 00 | 1,064 88 | 1,200 00 |
| Leckie, T. F. | " | B | 800 | " | 40 00 | 760 00 | 800 00 |

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—Continued.
METHYLATED SPIRITS BRANCH.

| Names. | RANK. | | Salary. | Period. | DEDUCTIONS FOR | | | Amounts paid. | Total amounts paid. |
|---------------|-----------|---------------|---------|---------------|------------------|-------------|------------|---------------|---------------------|
| | Division. | Sub-Division. | | | Super-annuation. | Retirement. | Insurance. | | |
| | | | \$ | | \$ | cts. | \$ | cts. | |
| Armstrong, W. | 1 | B | 2,400 | For the year. | 120 00 | ..... | 2,280 00 | 2,400 00 | |
| Parent, F. | 3 | A | 1,200 | " | 60 00 | ..... | 1,140 00 | 1,200 00 | |
| Rioual, Y. | L. | G | 700 | " | 35 00 | ..... | 665 00 | 700 00 | |
| Cloutier, E. | C | C | 700 | " | 35 00 | ..... | 665 00 | 700 00 | |
| Dunn, J. F. | L. | C | 600 | " | 30 00 | ..... | 570 00 | 600 00 | |

ELECTRICAL BRANCH.

| | | | | | | | | |
|-------------------|---|---|-------|-------------------------------------|--------|-------|----------|----------|
| Hirman, O. | 1 | A | 3,500 | For the year. | 175 00 | ..... | 3,325 00 | 3,500 00 |
| Lambe, A. B. | 1 | B | 2,700 | " | 135 00 | 70 20 | 2,494 80 | 2,700 00 |
| Dupré, H. A. | 1 | B | 2,375 | " | 118 75 | 97 80 | 2,158 45 | 2,375 00 |
| Rubledge, P. R. | 2 | A | 1,650 | " | 82 50 | ..... | 1,567 50 | 1,650 00 |
| Kinsman, E. A. | 2 | B | 1,500 | From Oct. 1, 1916 to March 1, 1917. | 31 25 | ..... | 593 75 | 625 00 |
| Cole, N. R. | 3 | A | 1,200 | For the year. | 60 00 | ..... | 1,140 00 | 1,200 00 |
| Mathews, E. D. K. | 3 | A | 1,100 | For the year less military pay | 29 29 | ..... | 556 43 | 1,100 00 |
| Griffith, M. L. | 3 | A | 1,200 | For the year. | 60 00 | ..... | 1,140 00 | 1,200 00 |

WEIGHTS AND MEASURES BRANCH.

| | | | | | | | | |
|----------------|----|---|-------|---------------|--------|----------|----------|------------|
| Way, E. O. | 1 | A | 3,000 | For the year. | 150 00 | ..... | 2,850 00 | 3,000 00 |
| Ostigny, L. R. | 3 | B | 1,800 | " | 80 00 | ..... | 1,520 00 | 1,800 00 |
| Watson, V. M. | 3 | A | 1,200 | " | 60 00 | ..... | 1,140 00 | 1,200 00 |
| Barbeau, L. | 3 | B | 800 | " | 40 00 | ..... | 760 00 | 800 00 |
| Burgess, T. H. | L. | C | 1,000 | " | 50 00 | ..... | 950 00 | 1,000 00 |
| Chenier, E. | L. | G | 700 | " | 34 38 | ..... | 653 12 | 687 50 |
| | | | | | 494 86 | 4,833 93 | 1,214 07 | 128,889 11 |
| | | | | | | | | 135,431 97 |

APPENDIX B—Continued.

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917.

| Names. | Services. | Amounts paid. | Total amounts paid. |
|---|--|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| H. Cyr..... | Salary as extra clerk for the year..... | 650 00 | |
| J. R. Seguin..... | "..... | 500 00 | |
| J. P. Ethier..... | " from April 1st to Sept. 30th, 1916..... | 250 00 | |
| A. L. DeGuire..... | " " " " 1916..... | 400 00 | |
| P. A. Beaudet..... | " " " to July 31st, 1916..... | 166 64 | |
| E. Rooney..... | " " " to Aug. 31st, 1916..... | 153 32 | |
| R. Choquette..... | " " June 2nd to Dec. 1st., inc., 1916..... | 250 00 | |
| M. V. Brot..... | " " " 1st to Dec. 31st, 1916..... | 325 01 | |
| G. F. Brother..... | " " May 25th to Sept. 14th, 1916..... | 396 39 | |
| R. M. Rowat..... | " " Aug. 8th to Jan. 31st, 1917..... | 408 85 | |
| R. Brunet..... | " " " 23rd to Mar. 31st, 1917..... | 485 97 | |
| A. J. I. Ste. Marie..... | " " Oct. 2nd to Jan. 31st, 1917..... | 165 29 | |
| J. A. Gunton..... | " " Jan. 13th to Mar. 31st, 1917..... | 283 05 | |
| W. H. Hill..... | " " " to "..... | 283 05 | |
| G. E. Grattan..... | " " Jan. 15th to "..... | 276 06 | |
| O. G. Lye..... | " " Feb. 10th to "..... | 181 83 | |
| S. Mirsky..... | " " Jan. 8th to "..... | 161 82 | |
| L. Baulne..... | " " Sept. 26th to Jan. 7th, 1917..... | 226 14 | |
| M. V. Gordon..... | " " Feb. 15th to Mar. 31st, 1917..... | 24 19 | |
| C. R. G. for King's Printer..... | Printing..... | 2,645 32 | 5,587 61 |
| " " Cont. of Stationery..... | Parliamentary publications..... | 384 60 | |
| | Stationery and books..... | 4,255 60 | 7,285 52 |
| C. P. R. Telegraph Co..... | Telegrams..... | 393 83 | |
| G. N. W. Telegraph Co..... | "..... | 121 28 | 515 11 |
| Patenaude, Hon. E. L..... | Travelling expenses..... | 632 70 | |
| Sevigny, Hon. A..... | "..... | 300 00 | |
| Vincent, J. U..... | "..... | 129 99 | |
| Catellier, C. L..... | "..... | 772 90 | |
| Taylor, G. W..... | "..... | 55 25 | |
| McGill, A..... | "..... | 270 21 | |
| Way, E. O..... | "..... | 319 98 | |
| Gallagher, M. F..... | "..... | 300 00 | |
| Higman, O..... | "..... | 80 25 | |
| Valin, A..... | "..... | 13 70 | |
| Lambe, A. B..... | "..... | 212 58 | |
| Danis, J. M..... | "..... | 293 11 | |
| Rutledge, P. R..... | "..... | 74 20 | |
| Rickey, J. A..... | "..... | 343 85 | 3,798 72 |
| The Bell Telephone Co. of Canada..... | Messages..... | 591 55 | 591 55 |
| Canadian Express Co..... | Cartage..... | 3 10 | |
| The Postmaster, Ottawa..... | Postage..... | 230 00 | |
| Bryson-Graham, Ltd..... | Goods, etc..... | 54 77 | |
| The Ottawa Electric Ry. Co..... | Car tickets..... | 72 00 | |
| The Gazette Printing Co., Ltd..... | Newspapers..... | 1 48 | |
| R. Robert..... | Washing towels..... | 98 45 | |
| O. Clairoux..... | Cartage..... | 276 00 | |
| Government Printing Bureau of Washington..... | Documents..... | 0 77 | |
| The Pritchard-Andrews Co., Ltd..... | Repairs to Stamps, etc..... | 32 20 | |
| The Ottawa Wine Vault Co..... | Distilled water..... | 118 30 | |
| The Ontario Hughes-Owens Co. Ltd..... | Furniture and apparatus..... | 0 40 | |
| Central Liberal Information Office..... | Documents..... | 0 20 | |
| The Ottawa Transfer Co..... | Cartage..... | 0 50 | |
| R. H. Pringle & Co..... | Brokerage..... | 14 00 | |
| Collector of Inland Revenue, Ottawa..... | War tax stamps..... | 12 00 | |
| The Ottawa Electric Co..... | Electric supplies..... | 7 50 | |
| G. H. Popham..... | Office supply..... | 0 75 | |
| Thornton & Truman..... | Repairs to locks and keys..... | 15 60 | |

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Continued.*

| Names. | Service. | Amounts paid. | Total amounts paid. |
|--|------------------------|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| W. J. Graham..... | War tax stamps..... | 7 10 | |
| Dominion Express Co..... | Express cartage..... | 8 05 | |
| Toronto Daily Star..... | Newspapers..... | 0 25 | |
| Hugh Carson Co..... | Repairs to kit..... | 0 50 | |
| The Plaunt Hardware Co..... | Hardware..... | 1 35 | |
| McIntosh & Watt..... | Glassware..... | 1 00 | |
| Le Droit..... | Newspapers..... | 0 40 | |
| Thos. Birkett & Son Co., Ltd..... | Hardware..... | 0 55 | |
| W. R. Law..... | Sundries..... | 0 60 | |
| The G.N.W. Telegraph Co. Mess. boys..... | Messages..... | 6 50 | |
| The C.P.R. Telegraph Co. mess. boys..... | "..... | 7 50 | |
| M. Landreville..... | Cartage..... | 0 75 | |
| The Tally-Ho-Pure Water Co., Ltd. | Distilled water..... | 21 40 | |
| The Evening Journal..... | Newspapers..... | 0 24 | |
| T. J. Moore & Co..... | 1 Signature stamp..... | | 998 21 |
| The Mercantile Agency, Toronto..... | Subscription..... | 75 00 | |
| The Times, Peterborough..... | "..... | 6 46 | |
| The Gazette, Montreal..... | "..... | 3 00 | |
| The Evening Citizen, Ottawa..... | "..... | 3 35 | |
| The Ottawa Free Press, Ottawa..... | "..... | 1 80 | |
| The Journal Printing Co. Ltd, Ottawa..... | "..... | 1 85 | |
| R. Lafontaine, Ottawa..... | "..... | 58 26 | |
| Le Canadien, Chatham, Ont..... | "..... | 3 00 | |
| Central Liberal Information Office, Ottawa..... | "..... | 0 45 | |
| The Daily Journal, Calgary..... | "..... | 3 00 | |
| The Citizen, Vancouver..... | "..... | 1 00 | |
| The Vancouver Daily Province, Vancouver..... | "..... | 3 00 | |
| The Colonist, Vancouver..... | "..... | 5 00 | |
| The Week, Victoria..... | "..... | 2 00 | |
| Le Manitoba, St. Boniface..... | "..... | 1 00 | |
| The North West Review, Winnipeg. | "..... | 1 00 | |
| The Telegram, Winnipeg..... | "..... | 3 00 | |
| Les Cloches de St. Boniface, St. Boniface..... | "..... | 1 00 | |
| The World, Chatham, N.B..... | "..... | 2 00 | |
| L'Evangeline, Moncton, N.B..... | "..... | 1 00 | |
| The Globe, St. John, N.B..... | "..... | 5 00 | |
| Le Moniteur Acadien, Shediac, N.B. | "..... | 1 00 | |
| The Bridgewater Bulletin, Bridge- water, N.S..... | "..... | 1 00 | |
| The Herald, Halifax, N.S..... | "..... | 7 50 | |
| The Windsor Tribune, Windsor, N.S. | "..... | 1 00 | |
| The Intelligencer, Belleville, Ont..... | "..... | 3 00 | |
| The Planet, Chatham, Ont..... | "..... | 4 00 | |
| The Guelph Herald, Guelph, Ont..... | "..... | 4 00 | |
| The Herald, Hamilton, Ont..... | "..... | 3 60 | |
| The Daily Spectator, Hamilton, Ont..... | "..... | 3 00 | |
| The Labour News, Hamilton, Ont..... | "..... | 1 00 | |
| The Farmers Advocate, London..... | "..... | 1 50 | |
| The Free Press, London..... | "..... | 3 00 | |
| The Evening Journal, Ottawa..... | "..... | 14 40 | |
| The United Canada, Ottawa..... | "..... | 1 50 | |
| The Standard, St. Catharine..... | "..... | 3 00 | |
| Saturday Night, Toronto..... | "..... | 9 00 | |
| The Toronto Daily Star, Toronto..... | "..... | 5 00 | |
| Globe Printing, Toronto..... | "..... | 9 00 | |
| Mail and Empire, Toronto..... | "..... | 3 00 | |
| The News, Toronto..... | "..... | 7 50 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—Continued.

| Names. | Service. | Amounts paid. | Total amounts paid. |
|--|--------------|---------------|---------------------|
| | | \$ cts. | \$ cts. |
| The Canada Mining Journal, Toronto | Subscription | 4 00 | |
| The Daily World, Toronto | " | 11 00 | |
| The Catholic Register and Canadian Extension, Toronto | " | 1 50 | |
| The Evening Telegram, Toronto | " | 3 00 | |
| The Free Mason, Toronto | " | 1 00 | |
| Financial Post, Toronto | " | 6 00 | |
| The Express, Woodstock | " | 1 00 | |
| The Charlottetown Examiner, Charlottetown, P.E.I. | " | 2 50 | |
| Bulletin des Recherches Historiques, Beauceville, Que. | " | 2 00 | |
| Le Progrès du Saguenay, Chicoutimi | " | 1 00 | |
| L'Action Canadienne, Fraserville | " | 1 00 | |
| La Semaine, Grande Mere | " | 1 00 | |
| L'Etoile du Nord, Joliette | " | 0 75 | |
| La Presse, Montreal | " | 14 25 | |
| The Gazette, Montreal | " | 27 00 | |
| La Patrie, Montreal | " | 7 75 | |
| Herald Publishing Co., Montreal | " | 6 00 | |
| The Montreal Star, Montreal | " | 6 00 | |
| Le Devoir, Montreal | " | 15 00 | |
| Revue trimestrielle Canadienne, Montreal | " | 4 00 | |
| Le Pays, Montreal | " | 3 00 | |
| Le Nationaliste | " | 4 00 | |
| L'Action, Montreal | " | 4 00 | |
| Le Moniteur du Commerce, Montreal | " | 2 00 | |
| La Revue Canadienne, Montreal | " | 6 00 | |
| Le Peuple, Montmagny | " | 1 00 | |
| Printing Chronicle, Quebec | " | 3 00 | |
| Le Verite, Quebec | " | 2 00 | |
| L'Evenement, Quebec | " | 3 00 | |
| L'Action Sociale, Quebec | " | 6 00 | |
| La Nouvelle France, Quebec | " | 3 00 | |
| La Semaine Commerciale, Quebec | " | 2 00 | |
| La Societe de Geographie, Quebec | " | 2 00 | |
| Le Progres du Golfe, Rimouski | " | 1 00 | |
| L'Eveil, Sorel | " | 1 00 | |
| Le Sorelois, Sorel | " | 1 00 | |
| La Tribune, St. Hyacinthe | " | 1 00 | |
| Le Courrier de St. Hyacinthe, St. Hyacinthe | " | 1 00 | |
| Le Canada Français, St. John, Que. | " | 2 00 | |
| Le Bien Public, Three Rivers | " | 1 00 | |
| Le Journal de Waterloo, Waterloo | " | 1 00 | |
| Le Patriote, Prince Albert, Sask. | " | 1 00 | |
| Canada News Paper London, Eng. | " | 7 00 | |
| Journal of Gas Lighting & Co., London, Eng. | " | 6 69 | |
| La Banque Nationale, Paris, France | " | 4,00 | |
| American Food Journal, Chicago, U.S.A. | " | 2 50 | |
| Scientific American, New York, U.S.A. | " | 9 25 | |
| Tobacco World Publishing Co., Philadelphia, U.S.A. | " | 2 00 | |
| Le Droit, Ottawa, Ont. | " | 6 00 | |
| Le Canadien, Thetford Mines | " | 1 00 | |
| Le Canada, Montreal | " | 5 50 | |
| The Evening News, Montreal | " | 1 00 | |
| The Montreal Daily Mail, Montreal | " | 3 00 | |
| Le Reveil, Montreal | " | 3 50 | |

8 GEORGE V, A. 1918

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Concluded.*

| Names. | Service. | Amounts paid. | | Total amounts paid. | |
|-----------------------------------|-------------------|---------------|------|---------------------|-----------|
| | | \$ | cts. | \$ | cts. |
| Le Naturaliste Canadien, Quebec.. | Subscription..... | 3 | 00 | | |
| The Standard, Montreal..... | "..... | 2 | 35 | | |
| The Sun, Vancouver..... | "..... | 6 | 00 | | |
| The Journal Press, Ottawa..... | "..... | 30 | 00 | | |
| Jones-Yarrell, London, Eng..... | "..... | 18 | 12 | | |
| | | | | | 550 83 |
| | Total..... | | | | 19,327 55 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. | |
|--------------------|--|-----------------|-------------|------------|---------------|---------------------|------|
| | | Superannuation. | Retirement. | Guarantee. | | | |
| | | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>Belleville.</i> | | | | | | | |
| Diamond, F. D. | Salary as Inspector for the year | | | 3 60 | 1,096 32 | | |
| Kylie, R. | " Asst. Inspector for the year | | | 1 80 | 839 82 | | |
| Howson, G. H. | " " " | | | 1 80 | 839 82 | | |
| Worrell, Jas. | " " " | | | 1 80 | 839 82 | | |
| | Salaries | | | 9 00 | 3,615 78 | | |
| | Contingencies | | | | 2,108 71 | 5,724 49 | |
| <i>Hamilton.</i> | | | | | | | |
| Sealey, J. C. | Salary as Inspector for the year | | | 3 60 | 1,396 32 | | |
| Fitzgerald, E. W. | " Asst. Inspector for the year | | | 1 80 | 998 16 | | |
| Wheatley, A. E. | " " " | | | 1 80 | 1,098 12 | | |
| Laidman, R. H. | " " " | | | 1 80 | 1,098 12 | | |
| Clegg, J. | " " " | | | 1 80 | 898 20 | | |
| Brick, J. H. | " " " | | | 1 80 | 898 16 | | |
| Von Newbronn, A. | " " " | | | 1 80 | 839 82 | | |
| Pryke, J. | " " " | | | 1 80 | 839 82 | | |
| | Salaries | | | 16 20 | 8,166 72 | | |
| | Contingencies | | | | 3,074 65 | 11,241 37 | |
| <i>Kingston.</i> | | | | | | | |
| Gallagher, F. | Salary as Inspector for the year | | | 3 60 | 1,196 40 | | |
| MacLean, C. E. | " Asst. Inspector for the year | | | 1 50 | 840 12 | | |
| Davis, J. M. | " " " | | | 1 80 | 698 16 | | |
| | Salaries | | | 6 90 | 2,734 68 | | |
| | Contingencies | | | | 351 19 | 3,085 87 | |
| <i>London.</i> | | | | | | | |
| Hughes, R. A. | Salary as Inspector for the year | | | 3 30 | 1,279 96 | | |
| Thomas, J. S. | " Asst. Inspector for the year | | | 1 80 | 998 16 | | |
| Liddle, D. | " " " | | | 1 80 | 998 16 | | |
| Cada, T. A. | " " " | | | 1 80 | 839 82 | | |
| Webbe, S. A. | " " " | | | 1 80 | 839 82 | | |
| Porter, A. | " Asst. Inspector, resigned from May 21, 1916. | | | | | | |
| Marshall, F. | " " " from Aug. 10, 1916 to Mar. 31, 1917. | | | 0 30 | 107 27 | | |
| | Salaries | | | 11 85 | 5,634 37 | | |
| | Contingencies | | | | 3,083 68 | 8,718 05 | |
| <i>Ottawa.</i> | | | | | | | |
| Hinehey, E. H. | Salary as Inspector for the year | 33 00 | | 3 60 | 1,613 40 | | |
| Breen, J. | " Asst. Inspector for the year | | | 1 80 | 1,098 12 | | |
| Hodgins, G. C. | " " " | | | 1 80 | 839 82 | | |
| Church, G. C. | " " " | | | 1 80 | 731 46 | | |
| Trumpour, F. T. T. | " " " | | | 1 80 | 839 82 | | |
| Mattice, A. E. | " " " | | | 1 80 | 839 82 | | |
| Chenier, T. | " " " | | | 1 80 | 498 12 | | |
| Rovat, W. | " " " | | | 1 80 | 839 82 | | |
| McKay, E. | " Asst. Inspector, from Sept. 1 1916 to Mar. 31, 1917. | | | 1 05 | 465 57 | | |
| Montreuil, Z. A. | " " " from Sept. 1, 1916 to Mar. 31, 1917. | | | 1 05 | 523 95 | | |

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917—*Continued.*

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. |
|--------------------|--|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Quarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Ethier, J. P. | Salary as Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917 | | | 1 05 | 523 95 | |
| Couillard, J. E. | " Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917 | | | 1 05 | 523 95 | |
| Blair, O. T. | " Asst. Inspector, from Sept. 1, 1917 to Mar. 31, 1917 | | | 1 05 | 523 95 | |
| Sehppard, C. F. | " Asst. Inspector for the year | | | 0 45 | 899 55 | |
| | | 33 00 | | 21 90 | 10,761 30 | 15,036 34 |
| | Contingencies | | | | 4,275 04 | |
| <i>Toronto.</i> | | | | | | |
| McConvey, J. J. | Salary as Inspector for the year | | | 3 60 | 1,596 36 | |
| Wright, R. J. | " Asst. Inspector for the year | | | 1 80 | 1,174 20 | |
| Smith, J. C. | " " " | | | 1 80 | 1,198 20 | |
| Cruikshank, E. | " " " | | | 1 80 | 898 20 | |
| Fallowdown, W. A. | " " " | | | 1 80 | 998 16 | |
| McEachern, C. A. | " " " | | | 1 80 | 998 16 | |
| Scarfe, W. S. | " " " | | | 1 80 | 839 82 | |
| Howe, F. E. | " " " | | | 1 80 | 998 16 | |
| | Salaries | | | 16 20 | 8,701 26 | |
| | Contingencies | | | | 2,092 20 | 10,793 46 |
| <i>Montreal.</i> | | | | | | |
| Archambault, J. E. | Salary as Inspector died Dec. 22, 1916 | | | 2 70 | 1,347 30 | |
| Daoust, J. A. | " Asst. Inspector for the year | | | 1 80 | 1,398 12 | |
| Hebert, J. A. | " " " | | | 1 80 | 1,398 12 | |
| Boudet, E. | " " " | | | 1 80 | 1,098 12 | |
| Galipeau, J. B. N. | " " " | | | 1 80 | 998 16 | |
| Wilson, J. C. | " " " | | | 1 80 | 998 16 | |
| Belanger, S. F. | " " " | | | 1 80 | 1,198 20 | |
| Chapleau, J. R. | " " " | | | 1 80 | 839 82 | |
| Poitras, D. | " " " | | | 1 80 | 798 12 | |
| Boyd, W. R. | " " " | | | 1 80 | 839 82 | |
| Grignon, E. S. | " " " | | | 1 80 | 839 82 | |
| Gibault, A. | " " " | | | 1 80 | 839 82 | |
| Dostaler, A. | " Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917 | | | 1 05 | 507 25 | |
| Bernard, A. A. | " Inspector from 9th to Mar. 31, 1917 | | | 0 22 | 111 07 | |
| | Salaries | | | 23 77 | 13,211 92 | |
| | Contingencies | | | | 6,146 75 | 19,358 67 |
| <i>Quebec.</i> | | | | | | |
| Roy, C. E. | Salary as Inspector for the year | | | 3 60 | 1,596 36 | |
| LeBel, J. A. | " Asst. Inspector for the year | 38 40 | | 1 80 | 1,059 72 | |
| Knowles, C. | " " " | | | 1 80 | 998 16 | |
| Bourget, L. J. | " " " | | | 1 80 | 998 16 | |
| Bcauchamp, L. E. | " " " | | | 1 80 | 598 20 | |
| Bernatchez, A. | " " " | | | 1 80 | 598 20 | |
| Duchesne, N. | " " " | | | 1 80 | 598 20 | |
| Couture, C. H. | " " " | | 87 60 | 1 80 | 510 60 | |
| Lortie, J. A. | " " " | | | 1 80 | 748 20 | |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Deductions for. | | | Amounts paid. | Total amounts paid. |
|------------------------|---|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| <i>Quebec—Con.</i> | | | | | | |
| Dagneau, J. T..... | Salary as Asst. Inspector for the year..... | | | 1 80 | 448 20 | |
| Hudon, P. E..... | “ “ “..... | | | 1 80 | 298 20 | |
| Prefontaine, F. H..... | “ “ “..... | | | 1 80 | 798 12 | |
| | Salaries..... | 38 40 | 87 60 | 23 40 | 9,250 32 | |
| | Contingencies..... | | | | 7,358 40 | 16,608 72 |
| <i>Sherbrooke.</i> | | | | | | |
| Delorme, O. C..... | Salary as Inspector for the year..... | | | 3 60 | 1,296 36 | |
| Lamy, C..... | “ Asst. Inspector for the year..... | | | 1 80 | 839 82 | |
| Lemire, J. N..... | “ “ “..... | | 77 40 | 1 80 | 762 42 | |
| | Salaries..... | | 77 40 | 7 20 | 2,898 60 | |
| | Contingencies..... | | | | 2,193 50 | 5,092 10 |
| <i>St. Hyacinthe.</i> | | | | | | |
| Morin, J. P..... | Salary as Inspector for the year..... | | | 3 60 | 1,296 36 | |
| Champagne, J. A..... | “ Asst. Inspector for the year..... | | | 1 80 | 898 20 | |
| | Salaries..... | | | 5 40 | 2,194 56 | |
| | Contingencies..... | | | | 1,784 04 | 3,978 60 |
| <i>Three Rivers.</i> | | | | | | |
| Lessard, A..... | Salary as Inspector for the year..... | | | 3 60 | 996 36 | |
| Bolduc, E..... | “ Asst. Inspector, from April 1, 1916 to July 31, 1917..... | | | 0 60 | 260 72 | |
| Carette, E..... | “ Asst. Inspector for the year..... | | | 1 80 | 839 82 | |
| Dubord, E..... | “ “ “..... | | | 1 80 | 839 82 | |
| Massicotte, A. N..... | “ Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917..... | | | 1 05 | 498 93 | |
| | Salaries..... | | | 8 85 | 3,435 65 | |
| | Contingencies..... | | | | 1,403 19 | 4,838 84 |
| <i>St. John.</i> | | | | | | |
| Barry, Jas..... | Salary as Inspector for the year..... | | | 3 60 | 1,496 40 | |
| Bernier, J. A..... | “ Asst. Inspector for the year..... | | | 1 80 | 898 20 | |
| White, H. E..... | “ “ “..... | | | 1 80 | 948 12 | |
| Leblanc, J. D..... | “ “ “..... | | | 1 80 | 839 82 | |
| Limerick, A. K..... | “ “ “..... | | | 1 80 | 723 20 | |
| | Salaries..... | | | 10 80 | 4,905 74 | |
| | Contingencies..... | | | | 1,072 48 | 5,978 22 |
| <i>Halifax.</i> | | | | | | |
| O'Brien, W..... | Salary as Inspector for the year..... | | | 3 60 | 1,096 32 | |
| Waugh, R. J..... | “ Asst. Inspector for the year..... | | | 1 80 | 781 51 | |
| | Salaries..... | | | 5 40 | 1,877 83 | |
| | Contingencies..... | | | | 2,272 62 | 4,150 45 |

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Deductions for. | | | Amounts paid. | Total amounts paid. |
|-----------------------|---|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| <i>Pictou.</i> | | | | | | |
| Dustan, Wm..... | Salary as Inspector for the year..... | | | 3 60 | 1,368 36 | |
| Chisholm, J. J..... | " Asst. Inspector for the year..... | | | 1 80 | 998 16 | |
| Campbell, D. A..... | " " " "..... | | | 1 80 | 939 82 | |
| | Salaries..... | | | 7 20 | 3,206 34 | |
| | Contingencies..... | | | | 817 97 | 4,024 31 |
| <i>Charlottetown.</i> | | | | | | |
| Davy, Edmond..... | Salary as Inspector for the year..... | | | 3 60 | 1,096 32 | |
| | Contingencies..... | | | | 329 10 | 1,425 42 |
| <i>Winnipeg.</i> | | | | | | |
| McKay, R..... | Salary as Inspector for the year..... | | | 3 60 | 1,196 40 | |
| Gilby, W. F..... | " Asst. Inspector for the year..... | | | 1 80 | 898 20 | |
| Spicer, H..... | " " " "..... | | | 1 80 | 898 20 | |
| Grant, C. D..... | " " " "..... | | | 1 80 | 898 20 | |
| Field, W. J..... | " " " "..... | | | 1 80 | 839 82 | |
| McKay, J..... | " " " "..... | | | 1 80 | 839 82 | |
| Attridge, J. B..... | " " " "..... | | | 1 80 | 839 82 | |
| Harper, Sam..... | " " " "..... | | | 3 60 | 1,396 32 | |
| | Salaries..... | | | 18 00 | 7,806 78 | |
| | Contingencies..... | | | | 6,449 69 | 14,256 47 |
| <i>Calgary.</i> | | | | | | |
| Costello, W..... | Salary as Inspector for the year..... | 31 92 | | 3 60 | 1,564 44 | |
| Gibson, C..... | " Asst. Inspector for the year..... | | | 0 30 | 899 70 | |
| Fyfe, G. D..... | " " " "..... | | | 3 60 | 1,796 40 | |
| Kirkham, T. E..... | " Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917..... | | | 1 05 | 473 91 | |
| | Salaries..... | 31 92 | | 8 55 | 4,734 45 | |
| | Contingencies..... | | | | 2,904 57 | 7,639 02 |
| <i>Saskatoon.</i> | | | | | | |
| Johnston, C. W..... | Salary as Inspector for the year..... | | | 3 60 | 1,596 36 | |
| Welsh, W. R..... | " Asst. Inspector for the year..... | | | 0 30 | 999 66 | |
| Wallace, R..... | " " " "..... | | | 1 80 | 898 20 | |
| Courtenay, W. N..... | " " " "..... | | | 3 60 | 1,396 32 | |
| Fleming, T. H..... | " Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917..... | | | 1 05 | 490 59 | |
| | Salaries..... | | | 10 35 | 5,381 13 | |
| | Contingencies..... | | | | 6,680 21 | 12,061 34 |
| <i>Edmonton.</i> | | | | | | |
| McDougall, J. C..... | Salary as Inspector for the year..... | | | 3 45 | 1,196 55 | |
| | Contingencies..... | | | | 2,589 23 | 3,785 78 |

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures
for the Year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---------------------------------|--|---------------|---------------------|
| | <i>Weights and measures Provisional Allowance.</i> | \$ cts. | \$ cts. |
| McKay, R., Winnipeg..... | To pay McKay, R..... | 135 33 | |
| "..... | " Gilby, W. F..... | 162 50 | |
| "..... | " Spicer, H..... | 162 50 | |
| "..... | " Grant, C. D..... | 162 50 | |
| "..... | " Attridge, J. B..... | 162 50 | |
| "..... | " Field, W. J..... | 162 50 | |
| "..... | " McKay, J..... | 162 50 | |
| "..... | " Harper, S..... | 135 33 | |
| "..... | " Sparling, E. J..... | 111 60 | |
| | | | 1,357 26 |
| Costello J. W., Calgary..... | " Kirkham, T. E..... | 150 00 | |
| "..... | " Fyfe, G. D..... | 100 00 | |
| "..... | " Gibson, C. L..... | 150 00 | |
| "..... | " Costello, J. W..... | 100 00 | |
| "..... | " Green, W..... | 62 50 | |
| "..... | " Tozer, D. H. A..... | 11 18 | |
| "..... | " Furnston, S. C..... | 30 64 | |
| | | | 604 32 |
| McDougall, J. C., Edmonton..... | " McDougall, J. C..... | 125 00 | |
| "..... | " Farrell, W. G..... | 112 50 | |
| "..... | " McLeod, J..... | 108 87 | |
| | | | 346 37 |
| McLean, D. J., Regina..... | " McLean, D. J..... | 99 96 | |
| "..... | " Shaw, A. I..... | 150 00 | |
| "..... | " Suttie, T. C..... | 124 92 | |
| "..... | " Eadie, Jas..... | 150 00 | |
| "..... | " Goth, J. A..... | 70 83 | |
| "..... | " McDonagh, J. A..... | 145 83 | |
| "..... | " Armstrong, G..... | 71 37 | |
| "..... | " Milligan, J. A..... | 71 37 | |
| "..... | " Lorimer, E. B..... | 15 62 | |
| | | | 899 90 |
| Johnston, C. W., Saskatoon..... | " Welch, W. R..... | 150 00 | |
| "..... | " Wallace, R..... | 150 00 | |
| "..... | " Greig, J. T..... | 150 00 | |
| "..... | " Fleming, T. H..... | 150 00 | |
| "..... | " Courtenay, W. N..... | 124 92 | |
| "..... | " Johnston, C. W..... | 99 96 | |
| "..... | " Jobb, Wm..... | 58 87 | |
| "..... | " Croucher, R. A..... | 48 79 | |
| | | | 932 54 |
| Parker, Thos., Nelson..... | " Parker, Thos..... | 124 92 | |
| "..... | " Williamson, C. F..... | 150 00 | |
| | | | 274 92 |
| Dutton, A. H., Vancouver..... | " Dutton, A. H..... | 124 92 | |
| "..... | " Harris, W. H..... | 150 00 | |
| | | | 274 92 |
| | Total Provisional Allowance..... | | 4,690 23 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the year ended March 31, 1917.—*Concluded.*

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|---|--|---------------|---------------------|
| | <i>General Weights and Measures Contingencies.</i> | \$ cts. | \$ cts. |
| Hughes, P. A. | Petty expenses..... | 20 04 | |
| Dufresne, Mrs. A. | Salary as charwomen..... | 313 00 | |
| The Pritchard- Andrews Co.. | Rubber stamps repaired..... | 153 86 | |
| The Ottawa Electric Co. | Electric current..... | 75 00 | |
| Thos. Birkett & Son Co., Ltd. | Hardware supplies..... | 53 43 | |
| Collector of Customs..... | Duty on goods..... | 26 28 | |
| The Canadian-Fairbanks- Morse Co. | Steele portable kits..... | 620 00 | |
| Bryson-Graham, Ltd. | Goods supplies..... | 15 00 | |
| The Plaunt Hardware Co. | 24 dry batteries..... | 7 20 | |
| Modern Machine..... | Casters for aluminium kit box..... | 33 20 | |
| Bank of Montreal..... | To purchase draft favor H. J. Astle..... | 8 15 | |
| | <i>Law Costs.</i> | | |
| Mortley, L. Bell..... | Rex vs. Cypress Lumber..... | 40 00 | |
| Munro, H. H. | “ Wilson Pyper..... | 15 00 | |
| Baird, W. J. | “ T. W. Griffin..... | 9 10 | |
| Thurston & Co. | “ D. McKinley..... | 20 00 | |
| | | | 1,409 26 |

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. |
|--------------------|---|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | <i>Belleville.</i> | | | | | |
| Fraser, H..... | Contingencies..... | | | | 1,268 46 | 1,268 46 |
| | <i>Hamilton.</i> | | | | | |
| Lutz, H..... | Salary as Inspector for the year..... | | | 3 60 | 1,496 40 | |
| Lovell, E..... | " Asst. Inspector for the year..... | | | 1 80 | 998 16 | |
| Smith, W. A..... | " " " "..... | | | 1 80 | 998 16 | |
| Powell, J. B..... | " " " "..... | | | 1 80 | 298 20 | |
| Mutchmor, R. W. | " " " " , from Nov. 1, 1916 to Mar. 31, 1917..... | | | 0 75 | 415 90 | |
| | Contingencies..... | | | 9 75 | 4,206 82 | |
| | | | | | 1,538 49 | 5,745 31 |
| | <i>London.</i> | | | | | |
| Nash, A. F..... | Salary as Inspector for the year..... | | | 3 60 | 1,796 40 | |
| Elliot, G. F..... | " Asst. Inspector for the year..... | | | 0 30 | 999 66 | |
| Willis, J..... | " " " "..... | | | 1 80 | 931 52 | |
| Trasher, W. A..... | " " " "..... | | | 1 80 | 198 12 | |
| Rennie, Geo..... | " " " "..... | | | 1 80 | 198 12 | |
| Orr, H. N..... | " " " "..... | | | 0 30 | 199 62 | |
| Skelton, A. R..... | " " " "..... | | | 0 30 | 170 06 | |
| Gray, F. W..... | " " " " , from Nov. 1, 1916 to Mar. 31, 1917..... | | | 0 75 | 415 90 | |
| | Contingencies..... | | | 10 65 | 4,909 40 | |
| | | | | | 1,278 40 | 6,187 80 |
| | <i>Ottawa.</i> | | | | | |
| Chevrier, R. J.... | Salary as Asst. Inspector for the year..... | | | 1 80 | 998 16 | |
| Roche, W. J..... | " " " "..... | | | 0 30 | 1,099 62 | |
| Bond, M. B..... | " " " "..... | | | 2 88 | 1,097 04 | |
| Morrison, A. C.... | " Inspector, from April 1 to Dec. 31, 1916..... | | | 2 70 | 1,047 24 | |
| Kinsman, E. A.... | " " " " Mar. 1 to Mar. 31, 1917..... | | | 0 30 | 124 70 | |
| | Contingencies..... | | | 7 98 | 4,366 76 | |
| | | | | | 2,938 83 | 7,305 59 |
| | <i>Toronto.</i> | | | | | |
| Stiver, J. L..... | Salary as Inspector for the year..... | | 90 00 | 3 60 | 1,706 40 | |
| Pape, J..... | " Asst. Inspector for the year..... | | | 1 80 | 1,448 16 | |
| Reesor, M. W..... | " " " "..... | | | 1 80 | 1,298 16 | |
| Renahan, M. J.... | " " " "..... | | | 1 80 | 998 16 | |
| Ogden, G. J..... | " " " "..... | | | 1 80 | 948 12 | |
| Clark, H. M..... | " " " "..... | | | 1 80 | 998 16 | |
| Johnstone, S. G.. | " " " "..... | | | 1 80 | 998 16 | |
| Wilson, H. H..... | " " " "..... | | | 1 80 | 998 16 | |
| Hacker, A. H..... | " " " "..... | | | 1 80 | 798 12 | |
| Shanacy, M..... | " " " "..... | | 1 92 | 1 80 | 96 24 | |
| Broadfoot, S..... | " " " "..... | | 6 00 | 1 80 | 292 20 | |
| Graham, W. J.... | " " " "..... | | | 1 80 | 198 12 | |
| | Contingencies..... | 7 92 | 90 00 | 23 40 | 10,778 16 | |
| | | | | | 778 36 | 11,556 52 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. |
|-------------------------|---|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Quarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| <i>Montreal.</i> | | | | | | |
| Aubin, A..... | Salary as Inspector for the year..... | | | 3 60 | 1,996 32 | |
| O'Flaherty, M. J.. | " Asst. Inspector for the year..... | | | 1 80 | 1,198 20 | |
| Aubin, C..... | " " "..... | | | 2 88 | 1,297 08 | |
| Mann, Wm..... | " " "..... | | | 2 88 | 1,197 12 | |
| Blandford, E. B.. | " " "..... | | | 1 80 | 1,198 20 | |
| Clayton, J. W..... | " " "..... | | | 1 80 | 998 16 | |
| Brunet, J..... | " " , from Feb. 1 to Mar. 31, 1917..... | | | 0 15 | 199 85 | |
| | | | | 14 91 | 8,084 93 | |
| | Contingencies..... | | | | 772 83 | 8,857 76 |
| <i>Quebec.</i> | | | | | | |
| Beland, F. X. W. E..... | Salary as Inspector for the year..... | | | 3 60 | 496 32 | |
| Cantin, J. A..... | " , from Feb. 1, to Mar. 31, 1917..... | | | 0 60 | 266 06 | |
| | | | | 4 20 | 762 38 | 762 38 |
| <i>Sherbrooke.</i> | | | | | | |
| Simpson, A. F..... | Salary as Inspector for the year..... | 3 96 | | 3 60 | 192 36 | |
| Bowen, F. C..... | " Asst. Inspector for the year..... | | | 0 30 | 299 70 | |
| | | 3 96 | | 3 90 | 492 06 | 492 06 |
| <i>Fredericton.</i> | | | | | | |
| Wilson, J. E..... | Salary as Inspector for the year..... | | | 1 80 | 98 16 | 98 16 |
| <i>St. John.</i> | | | | | | |
| Wilson, J. E..... | Salary as Inspector for the year..... | | | 3 60 | 1,396 32 | |
| Ganter, E. L..... | " Asst. Inspector for the year..... | | | 1 80 | 998 16 | |
| | | | | 5 40 | 2,394 48 | |
| | Contingencies..... | | | | 322 65 | 2,717 13 |
| <i>Halifax.</i> | | | | | | |
| Toale, J..... | Salary as Inspector for the year..... | | | 3 60 | 1,296 36 | |
| Withers, S. W..... | " Ass. Inspector for the year..... | | | 1 80 | 998 16 | |
| Munro, H. D..... | " " "..... | 1 92 | | 1 80 | 96 24 | |
| | | 1 92 | | 7 20 | 2,390 76 | |
| | Contingencies..... | | | | 544 61 | 2,935 37 |
| <i>Charlottetown.</i> | | | | | | |
| Bell, J. H..... | Salary as Inspector for the year..... | | | 3 60 | 496 32 | 496 32 |
| <i>Winnipeg.</i> | | | | | | |
| Hamilton, R..... | Salary as Inspector for the year..... | | | 3 60 | 1,646 40 | |
| Babington, F. C.. | " Asst. Inspector for the year..... | | | 1 80 | 1,198 20 | |
| Ross, W. A..... | " " "..... | | | 1 80 | 898 20 | |
| Weber, L..... | " " "..... | | | 0 30 | 1,099 62 | |
| Pankhurst, G. T. | " " "..... | | | 1 80 | 998 16 | |
| Hood, H..... | " " "..... | | | 0 30 | 899 70 | |
| | | | | 9 60 | 6,740 28 | 6,740 28 |

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Deductions for | | | Amounts paid. | Total amounts paid. |
|-------------------|---|-----------------|-------------|------------|-------------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | <i>Calgary.</i> | | | | | |
| H I, W. P..... | Contingencies..... | | | | 656 16 | 656 16 |
| | <i>Vancouver.</i> | | | | | |
| Stott, J..... | Contingencies..... | | | | 4 10 | 4 10 |
| | <i>Victoria.</i> | | | | | |
| Dresser, T..... | Salary as Inspector for the year..... | | | 3 60 | 1,396 32 | |
| Shaw, J..... | Salary as Asst. Inspector for the year..... | | | 1 80 | 98 16 | |
| | Contingencies..... | | | 5 40 | 1,494 48 38 31 | 1,532 79 |
| | <i>Chief Inspector.</i> | | | | | |
| Higman, O..... | Contingencies..... | | | | 17 37 | 17 37 |
| | <i>Inspector of Western Dominion.</i> | | | | | |
| Higman, jr., O... | Contingencies..... | | | | 337 56 | 337 56 |
| | | | | | | 57,711 12 |

RECAPITULATION.

| | |
|--------------------|---------------------|
| Salaries..... | \$ 47,426 58 |
| Contingencies..... | 10,284 54 |
| | <u>\$ 57,711 12</u> |

See Statement No. 21.

SESSIONAL PAPER No. 12

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the year ended March 31, 1917.—*Concluded.*

| To whom paid. | Service. | Amounts paid | Total amounts paid |
|--------------------------------------|---|--------------|--------------------|
| <i>General Gas Contingencies.</i> | | \$ cts. | \$ cts. |
| The Pritchard-Andrews Co... | Stamps repaired..... | 39 18 | |
| Collector of Customs..... | Duty paid on goods..... | 11 25 | |
| Pringle, R. H. Co..... | Express charges..... | 1 20 | |
| Canadian Consolidated Rubber Co..... | Rubber supplies..... | 140 39 | |
| Bank of Montreal..... | To purchase draft..... | 30 10 | |
| Clements, E. N..... | Law costs Rex vs. Yarmouth Fuel Gas Co..... | 10 00 | |
| Sawers, C. W..... | " " Vancouver Gas Co..... | 66 50 | |
| Clements, E. U..... | " Violation..... | 17 50 | |
| | | | 316 12 |
| | Printing..... | 1,725 18 | |
| | Stationery..... | 1,772 11 | |
| | | | 3,497 29 |
| | | | 3,813 41 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 8.—Details of Gas and Electric Light Expenditures
for the Year ended March 31, 1917.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|------------------------------|--|---------------|---------------------|
| | <i>Gas and Electric Light Provisional Allowance.</i> | \$ cts. | \$ cts. |
| Hamilton, R., Winnipeg..... | To pay Hamilton, R..... | 99 96 | |
| "..... | " Babington, F. C..... | 124 92 | |
| "..... | " Pankhurst, G. T..... | 124 92 | |
| "..... | " Ross, W. A..... | 150 00 | |
| "..... | " Hood, H..... | 150 00 | |
| "..... | " Weber, L..... | 124 92 | 774 72 |
| Kyle, W. P., Calgary..... | " Kyle, W. P..... | 100 00 | |
| "..... | " Jackson, R. C..... | 150 00 | 250 00 |
| Cantin, A. J., Edmonton..... | " Cantin, A. J..... | 125 00 | 125 00 |
| Hunter, W. M., Regina..... | " Hunter, W. M..... | 62 40 | |
| "..... | " Hart, S. N..... | 124 80 | 187 20 |
| Stott, Jas., Vancouver..... | " Stott, J..... | 99 96 | |
| "..... | " Templeton, W. A..... | 124 92 | |
| "..... | " Power, O. S..... | 124 92 | |
| "..... | " Scouler, G. T..... | 124 92 | |
| "..... | " McNiven, J. J..... | 124 92 | |
| "..... | " de la Mare, E..... | 124 92 | |
| "..... | " Costello, E. R..... | 99 96 | 824 52 |
| Dresser, F., Victoria..... | " Dresser, F..... | 125 00 | 125 00 |
| | Total Provisional Allowance..... | | 2,286 44 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 8.—Details of General Electric Light Expenditures for the year ended March 31, 1917.—Continued.

| To whom paid. | Service. | Amounts paid. | Total amounts paid. |
|--|-------------------------------------|---------------|---------------------|
| <i>General Electric Light Contingencies.</i> | | \$ cts. | \$ cts. |
| The Ottawa Electric Co..... | Electric current..... | 187 50 | |
| Smith, Miss Irene..... | Salary as charwoman..... | 313 00 | |
| Rankin, W..... | Supplies for Ottawa Laboratory..... | 17 50 | |
| Pringle, R. H..... | Electrical apparatus..... | 13 05 | |
| Standard Underground Cable | | | |
| Co..... | Testing meters for Laboratory..... | 33 86 | |
| Thornton & Truman..... | Supplies for boxes..... | 6 00 | |
| Canadian Westinghouse Co... | Testing meters for Laboratory..... | 722 92 | |
| Collector of Customs..... | Duty on goods..... | 464 13 | |
| Bank of Montreal..... | To purchase draft..... | 1,899 76 | 3,657 72 |
| | Printing..... | 236 56 | |
| | Stationery..... | 45 80 | 282 36 |
| | | | 3,940 08 |

SESSIONAL PAPER No. 12

APPENDIX B.—No. 8.—Details of Electric Light Inspection Expenditures for the Year ended March 31, 1917.—*Concluded.*

| To whom paid. | Service. | DEDUCTIONS FOR | | | Amounts paid. | Total amounts paid. |
|----------------------|---|-----------------|-------------|------------|---------------|---------------------|
| | | Superannuation. | Retirement. | Guarantee. | | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Hamilton, R..... | <i>Winnipeg.</i> | | | | | |
| | Contingencies..... | | | | 841 30 | 841 30 |
| | <i>Calgary.</i> | | | | | |
| Kyle, W. P..... | Salary as Inspector for the year..... | | | 3 60 | 1,496 40 | 2,399 68 |
| | Contingencies..... | | | | 903 28 | |
| | <i>Edmonton.</i> | | | | | |
| Cantin, A. J..... | Salary as Inspector for the year..... | | | 3 60 | 1,296 36 | 1,696 61 |
| | Contingencies..... | | | | 400 25 | |
| | <i>Regina.</i> | | | | | |
| Hunter, W. M..... | Salary as Inspector for the year..... | | | 1 98 | 1,098 08 | 3,614 38 |
| Hart, S. N..... | Asst. Inspector for the year..... | | | 1 80 | 1,198 20 | |
| | Salaries..... | | | 3 78 | 2,296 28 | |
| | Contingencies..... | | | | 1,318 10 | |
| | <i>Vancouver.</i> | | | | | |
| Stott, Jas..... | Salary as Inspector for the year..... | | | 3 60 | 1,796 40 | 8,528 18 |
| Templeton, W. A..... | Asst. Inspector for the year..... | | | 3 60 | 1,246 32 | |
| Power, O. S..... | " " " "..... | | | 0 36 | 627 26 | |
| Scouler, G. T..... | " " " "..... | | | 1 80 | 1,198 20 | |
| McNiven, J. J..... | " " " "..... | | | 1 80 | 998 16 | |
| Wolfenden, WM..... | " " " "..... | | 9 96 | 1 80 | 188 16 | |
| de la Mara, E..... | " " " "..... | | | 1 80 | 998 16 | |
| | Salaries..... | | 9 96 | 14 76 | 7,052 66 | |
| | Contingencies..... | | | | 1,475 52 | |
| | <i>Victoria.</i> | | | | | |
| Dresser, F..... | Contingencies..... | | | | 305 69 | 305 69 |
| | <i>Yukon.</i> | | | | | |
| Stingle, J. W..... | Salary as Inspector for the year..... | | | 3 60 | 496 32 | 496 32 |
| Kinsman, E. A..... | Salary as Inspector from April 1 to Oct. 1, 1917..... | | | 0 90 | 749 10 | 749 10 |
| | <i>Chief Electrical Engineer.</i> | | | | | |
| Higman, sr. O..... | Contingencies..... | | | | 574 60 | 574 60 |
| | <i>Inspector of Western Dominion.</i> | | | | | |
| Higman, Jr., O..... | Salary as Inspector for the year..... | | | 3 60 | 2,596 32 | 3,198 34 |
| | Contingencies..... | | | | 602 02 | |
| | | | | | | 40,192 19 |

RECAPITULATION.

| | |
|--------------------|-------------|
| Salaries..... | \$19,542 54 |
| Contingencies..... | 20,649 65 |

\$40,192 19

8 GEORGE V, A. 1918

APPENDIX B.—No. 9—Showing the Amount paid during the Year 1916–17 to different Companies for guaranteeing Outside Officers of the Inland Revenue Department.

| | Amounts paid. | |
|--|---------------|------|
| | \$ | cts. |
| Railway Passenger Assurance Co..... | 198 | 21 |
| The Imperial Guarantee and Accident Insurance Co. of Canada..... | 543 | 04 |
| The Dominion of Canada Guarantee and Accident Insurance Co..... | 392 | 77 |
| The Guarantee Co. of North America..... | 517 | 21 |
| London Guarantee and Accident Co..... | 165 | 49 |
| The Employers Liability Assurance Corporation, Ltd..... | 435 | 09 |
| Total..... | 2,251 | 81 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B—Continued.

No. 10.—Statement showing the number of parties under Licenses for the Year 1916-17.

| Divisions. | Distillers. | Brewers and Malsters. | Maltsters. | Tobacco Manufacturers. | Cigar Manufacturers. | Bonded Warehouses. | Manufacturers in Bond (Vinegar). | Chemical Stills. | Manufacturers of Stills. | Acetic Acid Manufacturers. | Mfrs. of Pharmaceutical Prep's. | Manufacturers of Perfumes. | Petroleum Refiners. | Wood Alcohol Manufacturers. | Manufacturers in Bond (Sundries). | Malt Vinegar Brewers. | Manufacturers in Bond (Explosives). | Rectifiers. | Mfrs. in Bond (Vinegar) Distillers. | |
|---|-------------|-----------------------|------------|------------------------|----------------------|--------------------|----------------------------------|------------------|--------------------------|----------------------------|---------------------------------|----------------------------|---------------------|-----------------------------|-----------------------------------|-----------------------|-------------------------------------|-------------|-------------------------------------|----------|
| Belleville (H. Corby Distillery Co., Ltd.) | 1 | 1 | | | 1 | 2 | | | | | | | | | | | | | | |
| Brantford | | 1 | | | 4 | 2 | 1 | | | | | | | | | | | | | |
| Guelph (Jos. E. Seagram) | 1 | 2 | 4 | 2 | 9 | 1 | | | | | | | | | 1 | | | | | |
| Hamilton (Hamilton Distillery Co., Ltd.) | 1 | 1 | 1 | 1 | 1 | 9 | 6 | 2 | 4 | 1 | | | | | 1 | | | | | |
| Kingston | | 2 | 2 | | | 3 | 1 | 1 | | | 1 | | | | | | | | | |
| London | | 2 | 2 | | | 31 | 8 | | 4 | | | | | 3 | | | | | | |
| Ottawa | | 2 | 2 | | | | 7 | | 3 | | | | | 1 | | | | | | |
| Owen Sound | | 4 | | | 1 | 1 | 1 | | | | | | | 1 | | | | | | |
| Perth (Spalding & Stewart, John A. McClaren Estate, British Chemical Co., Ltd.) | 3 | 1 | | | | 10 | | 3 | | 1 | 1 | | | | 2 | | 1 | | | |
| Peterborough | | 1 | | | 2 | 3 | | 1 | | | | | | 1 | | | | | | |
| Port Arthur | | 3 | | | | 10 | | 1 | | | | | | | | | | | | |
| Prescott (J. P. Wiser & Son, Ltd.) | 1 | 2 | 2 | | 2 | 1 | | | | | | | | | 1 | | | | | |
| St. Catharines | | 2 | | | 8 | 1 | | 2 | | | | | | | | | | | | |
| Stratford | | 2 | | | 4 | 2 | | | | | 1 | | | | | | | | | |
| Toronto (Gooderham & Worts, Ltd., General Distilling Co., Ltd.) | 2 | 4 | | 3 | 20 | 12 | 2 | 29 | 3 | | 5 | 5 | 2 | 4 | 4 | 1 | 1 | 1 | 1 | |
| Windsor (Hiram Walker & Sons, Ltd.) | 1 | 2 | 1 | 5 | 7 | 4 | 1 | 4 | | | 3 | 4 | | | 1 | | | | 1 | |
| Ontario | 10 | 8 | 34 | 4 | 9 | 101 | 71 | 8 | 53 | 3 | 1 | 10 | 11 | 5 | 7 | 10 | 1 | 2 | 1 | 1 |
| Joliette (The Melchers Gin & Spirits Distillery Co., Ltd.) | 1 | | | 6 | 8 | 1 | | | | | | | | | | | | | | |
| Montreal (The Montreal Products Co., Ltd., & Canadian Explosives, Ltd.) | 2 | 1 | 5 | 1 | 41 | 39 | 25 | 2 | 18 | | 1 | 3 | 8 | | 2 | 3 | | 1 | | |
| Quebec | | 2 | | 5 | 2 | 13 | 2 | | | | 1 | | | | | | | | | |
| St. Hyacinthe (The St. Hyacinthe Distillery Co., Ltd.) | 1 | | | 5 | 9 | 6 | | | | | | | | | | | | 1 | 1 | |
| Sherbrooke | | 1 | | 1 | 7 | 5 | | | | | | | | 2 | 1 | | | | | |
| Three Rivers | | 1 | | 3 | 4 | | | | | | | | | | | | | | | |
| Quebec | 4 | 1 | 9 | 1 | 61 | 69 | 50 | 4 | 18 | 1 | 3 | 9 | 4 | 4 | 4 | 2 | 1 | 2 | 1 | |
| St. John, New Brunswick | | 2 | | | 2 | 7 | 1 | 1 | | | | | | | | | | | | |
| Halifax | | | 3 | | 3 | 6 | | 1 | | | | | | | | | | | | |
| Pictou | | | 2 | | 1 | 5 | | 1 | | | | | | | | | | | | |
| Nova Scotia | 3 | 2 | 4 | 11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Charlottetown, Prince Edward Island | | | 6 | | | | | | | | | | | | | | | | | |
| Winnipeg, Manitoba | 1 | 7 | 2 | 2 | 10 | 32 | 2 | 12 | | 2 | 2 | | | | 3 | | | | | |
| Moose Jaw, Saskatchewan | | 4 | | | 1 | 7 | | 3 | | | | | 1 | | | | | | | |
| Calgary, Alberta | | 7 | 1 | 1 | 9 | 15 | 2 | 11 | | | | | 3 | | | | | | | |
| Vancouver | 1 | 18 | | 1 | 15 | 27 | 1 | 13 | | | | | 1 | | | 1 | | | | |
| Victoria | | 6 | | | 9 | 6 | | 3 | | | | | | | | | | | | |
| British Columbia | 1 | 24 | 1 | 24 | 33 | 1 | 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Dawson, Yukon | | 1 | | | 2 | | | | | | | | | | | | | | | |
| Grand Total | 15 | 10 | 91 | 8 | 82 | 220 | 228 | 18 | 116 | 3 | 2 | 15 | 22 | 10 | 11 | 17 | 2 | 4 | 2 | 1 |

8 GEORGE V, A. 1918

APPENDIX B.—No. 11—Summary Statement showing the number of permanent officers employed in the different services of the Inland Revenue Department during the year ended March 31, 1917.

DEPARTMENT OF OTTAWA.

| | Dead. | Super-annuated. | Part of year. | Full year. | Number of Officers employed. |
|---------------------|-------|-----------------|---------------|------------|------------------------------|
| Inside Service..... | 2 | ..... | 8 | 74 | 84 |

EXCISE (Outside Service).

| Districts. | Provinces. | Dead. | Super-annuated. | Part of year. | Full year. | Number of Officers employed. |
|---------------------|---------------------------|-------|-----------------|---------------|------------|------------------------------|
| Belleville..... | Ontario..... | 1 | ..... | 2 | 10 | 13 |
| Brantford..... | “..... | ..... | ..... | ..... | 6 | 6 |
| Guelph..... | “..... | ..... | 2 | ..... | 13 | 15 |
| Hamilton..... | “..... | ..... | 1 | 1 | 17 | 19 |
| Kingston..... | “..... | 1 | ..... | ..... | 6 | 7 |
| London..... | “..... | 1 | ..... | ..... | 18 | 19 |
| Ottawa..... | “..... | ..... | ..... | 1 | 8 | 9 |
| Owen Sound..... | “..... | ..... | ..... | ..... | 5 | 5 |
| Perth..... | “..... | ..... | ..... | 1 | 13 | 14 |
| Peterborough..... | “..... | ..... | ..... | 1 | 3 | 4 |
| Port Arthur..... | “..... | ..... | ..... | ..... | 3 | 3 |
| Prescott..... | “..... | ..... | ..... | ..... | 10 | 10 |
| St. Catharines..... | “..... | ..... | ..... | ..... | 5 | 5 |
| Stratford..... | “..... | ..... | ..... | ..... | 6 | 6 |
| Toronto..... | “..... | 1 | ..... | ..... | 37 | 38 |
| Windsor..... | “..... | ..... | 1 | 1 | 24 | 26 |
| Joliette..... | Quebec..... | ..... | ..... | ..... | 10 | 10 |
| Montreal..... | “..... | 1 | ..... | 2 | 47 | 50 |
| Quebec..... | “..... | ..... | ..... | ..... | 16 | 16 |
| St. Hyacinthe..... | “..... | ..... | ..... | ..... | 6 | 6 |
| Sherbrooke..... | “..... | ..... | ..... | ..... | 8 | 8 |
| Three Rivers..... | “..... | ..... | ..... | ..... | 1 | 1 |
| St. John..... | New Brunswick..... | ..... | ..... | ..... | 11 | 11 |
| Halifax..... | Nova Scotia..... | ..... | ..... | ..... | 9 | 9 |
| Pictou..... | “..... | ..... | ..... | ..... | 3 | 3 |
| Charlottetown..... | Prince Edward Island..... | ..... | ..... | ..... | 2 | 2 |
| Winnipeg..... | Manitoba..... | ..... | ..... | 2 | 16 | 18 |
| Calgary..... | Alberta..... | ..... | ..... | ..... | 6 | 6 |
| Moose Jaw..... | Saskatchewan..... | ..... | ..... | 2 | 5 | 7 |
| Vancouver..... | British Columbia..... | 3 | ..... | 1 | 16 | 20 |
| Victoria..... | “..... | ..... | ..... | ..... | 8 | 8 |
| Dawson..... | Yukon Territory..... | ..... | ..... | ..... | 1 | 1 |

District Inspectors.

| | | | | | | |
|--|-----------------------|---|---|----|-----|-----|
| Dominion Inspector of Inland Revenue Department and Dominion Preventive officer..... | | | | | 1 | 1 |
| District Inspector and Inspector of Bonded Factories..... | Ontario..... | | | | 1 | 1 |
| District Inspectors..... | “..... | | | | 2 | 2 |
| “ “..... | Quebec..... | | | | 2 | 2 |
| “ “..... | New Brunswick..... | | | | 1 | 1 |
| “ “..... | Manitoba..... | | | | 1 | 1 |
| “ “..... | Alberta..... | | | | 1 | 1 |
| “ “..... | British Columbia..... | | | | 1 | 1 |
| Inspector of Distilleries..... | Dominion..... | | | | 1 | 1 |
| Dominion Inspector of Malt Houses and Breweries..... | “..... | | | | 1 | 1 |
| Grand total for Excise..... | | 9 | 3 | 14 | 361 | 387 |

APPENDIX B—Continued.

No. 11.—SUMMARY statement showing the number of permanent officers—*Con.*

EXCISE PREVENTIVE (Outside Service).

| Divisions. | Provinces. | Dead. | Part of year. | Full year. | Number of Officers employed. |
|---|---|-------|---------------|------------|------------------------------|
| Brantford..... | Ontario..... | | | 1 | 1 |
| Hamilton..... | "..... | | 2 | | 2 |
| London..... | "..... | | | 2 | 2 |
| Ottawa..... | "..... | | 2 | 8 | 10 |
| Toronto..... | "..... | | | 1 | 1 |
| Windsor..... | "..... | | 1 | 1 | 2 |
| Joliette..... | Quebec..... | | 1 | 3 | 4 |
| Montreal..... | "..... | 1 | 3 | 23 | 27 |
| Quebec..... | "..... | | 3 | 9 | 12 |
| Sherbrooke..... | "..... | | | 1 | 1 |
| St. Hyacinthe..... | "..... | | 1 | 6 | 7 |
| Three Rivers..... | "..... | | | 3 | 3 |
| St. John..... | New Brunswick..... | | | 1 | 1 |
| Halifax..... | Nova Scotia..... | | | 1 | 1 |
| Charlottetown..... | Prince Edward Island..... | | 1 | | 1 |
| Winnipeg..... | Manitoba..... | | 1 | 3 | 4 |
| Moose Jaw..... | Saskatchewan..... | | 1 | | 1 |
| Calgary..... | Alberta..... | | | 3 | 3 |
| Vancouver..... | British Columbia..... | | | 3 | 3 |
| WEIGHTS AND MEASURES PREVENTIVE (Outside Service). | | | | | |
| Kingston..... | Ontario..... | | | 1 | 1 |
| Ottawa..... | "..... | | 1 | 3 | 4 |
| Montreal..... | Quebec..... | | 1 | 1 | 2 |
| St. Hyacinthe..... | "..... | | | 2 | 2 |
| Halifax..... | Nova Scotia..... | | | 1 | 1 |
| Charlottetown..... | Prince Edward Island..... | | | 1 | 1 |
| Winnipeg..... | Manitoba..... | | 1 | | 1 |
| Calgary..... | Alberta..... | | 1 | | 1 |
| Edmonton..... | "..... | | 1 | 1 | 2 |
| Regina..... | Saskatchewan..... | | | 3 | 3 |
| Saskatoon..... | "..... | | | 1 | 1 |
| | Grand total for Preventive Service..... | 1 | 21 | 83 | 105 |

APPENDIX B—Continued.

No. 11.—SUMMARY statement showing the number of permanent officers—Con.

ADULTERATION OF FOOD (Outside Service).

| Divisions. | Provinces. | Dead. | Part of year. | Full year. | Number of Officers employed. |
|-----------------------|---|-------|---------------|------------|------------------------------|
| Kingston..... | Ontario..... | | | 1 | 1 |
| London..... | “..... | | | 1 | 1 |
| Ottawa..... | “..... | | 1 | | 1 |
| Toronto..... | “..... | | | 1 | 1 |
| Montreal..... | Quebec..... | | | 2 | 2 |
| Quebec..... | “..... | | | 1 | 1 |
| St. Hyacinthe..... | “..... | | | 1 | 1 |
| St. John..... | New Brunswick..... | | | 1 | 1 |
| Halifax..... | Nova Scotia..... | | | 1 | 1 |
| Cape Breton..... | “..... | | | 1 | 1 |
| Charlottetown..... | Prince Edward Island..... | | 1 | | 1 |
| Calgary..... | Alberta..... | | | 1 | 1 |
| North Battleford..... | Saskatchewan..... | | 1 | | 1 |
| Nelson..... | British Columbia..... | | | 1 | 1 |
| Vancouver..... | “..... | | | 1 | 1 |
| Victoria..... | “..... | | 1 | | 1 |
| | Grand total for Adulteration of Food..... | | 4 | 13 | 17 |

WEIGHTS AND MEASURES (Outside Service).

| Districts. | Provinces. | Dead. | Super-annuated. | Part of year. | Full year. | Number of Officers employed. |
|-------------------------|---|-------|-----------------|---------------|------------|------------------------------|
| Belleville..... | Ontario..... | | | | 4 | 4 |
| Hamilton..... | “..... | | | | 8 | 8 |
| Kingston..... | “..... | | | | 3 | 3 |
| London..... | “..... | 1 | | 1 | 5 | 7 |
| Ottawa..... | “..... | | | 5 | 9 | 14 |
| Toronto..... | “..... | | | | 8 | 8 |
| Montreal..... | Quebec..... | 1 | | 2 | 11 | 14 |
| Quebec..... | “..... | | | | 12 | 11 |
| Sherbrooke..... | “..... | | | | 3 | 3 |
| St. Hyacinthe..... | “..... | | | | 2 | 2 |
| Three Rivers..... | “..... | | | 2 | 3 | 5 |
| St. John..... | New Brunswick..... | | | | 5 | 5 |
| Halifax..... | Nova Scotia..... | | | | 2 | 2 |
| Pictou..... | “..... | | | | 3 | 3 |
| Charlottetown..... | Prince Edward Island..... | | | | 1 | 1 |
| Winnipeg..... | Manitoba..... | | | | 8 | 8 |
| Calgary..... | Alberta..... | | | 1 | 3 | 4 |
| Saskatoon..... | Saskatchewan..... | | | 1 | 4 | 5 |
| Edmonton..... | “..... | | | | 1 | 1 |
| Regina..... | “..... | | | | 2 | 2 |
| Western Inspectors..... | Western Divisions..... | | | 2 | | 2 |
| Dawson..... | Yukon Territory..... | | | | 1 | 1 |
| Nelson..... | British Columbia..... | | | 1 | 1 | 2 |
| Vancouver..... | “..... | | | | 3 | 3 |
| | Grand total for Weights and Measures..... | 1 | 1 | 15 | 102 | 119 |

SESSIONAL PAPER No. 12

APPENDIX B—*Concluded.*

No. 11.—SUMMARY statement showing the number of permanent officers—*Con.*

GAS (Outside Service).

| Districts. | Provinces. | Dead. | Super-annuated. | Part of year. | Full year. | Number of Officers employed. |
|--------------------|---------------------------|-------|-----------------|---------------|------------|------------------------------|
| Hamilton..... | Ontario..... | | | 1 | 4 | 5 |
| London..... | "..... | | | 1 | 7 | 8 |
| Ottawa..... | "..... | | | 2 | 3 | 5 |
| Toronto..... | "..... | | | | 12 | 12 |
| Montreal..... | Quebec..... | | | 1 | 6 | 7 |
| Quebec..... | "..... | | | 1 | 1 | 2 |
| Sherbrooke..... | "..... | | | | 2 | 2 |
| Fredericton..... | New Brunswick..... | | | | 1 | 1 |
| St. John..... | "..... | | | | 2 | 2 |
| Halifax..... | Nova Scotia..... | | | | 3 | 3 |
| Charlottetown..... | Prince Edward Island..... | | | | 1 | 1 |
| Winnipeg..... | Manitoba..... | | | | 6 | 6 |
| Victoria..... | British Columbia..... | | | | 2 | 2 |
| | Grand total for Gas..... | | | 6 | 50 | 56 |

ELECTRIC LIGHT (Outside Service).

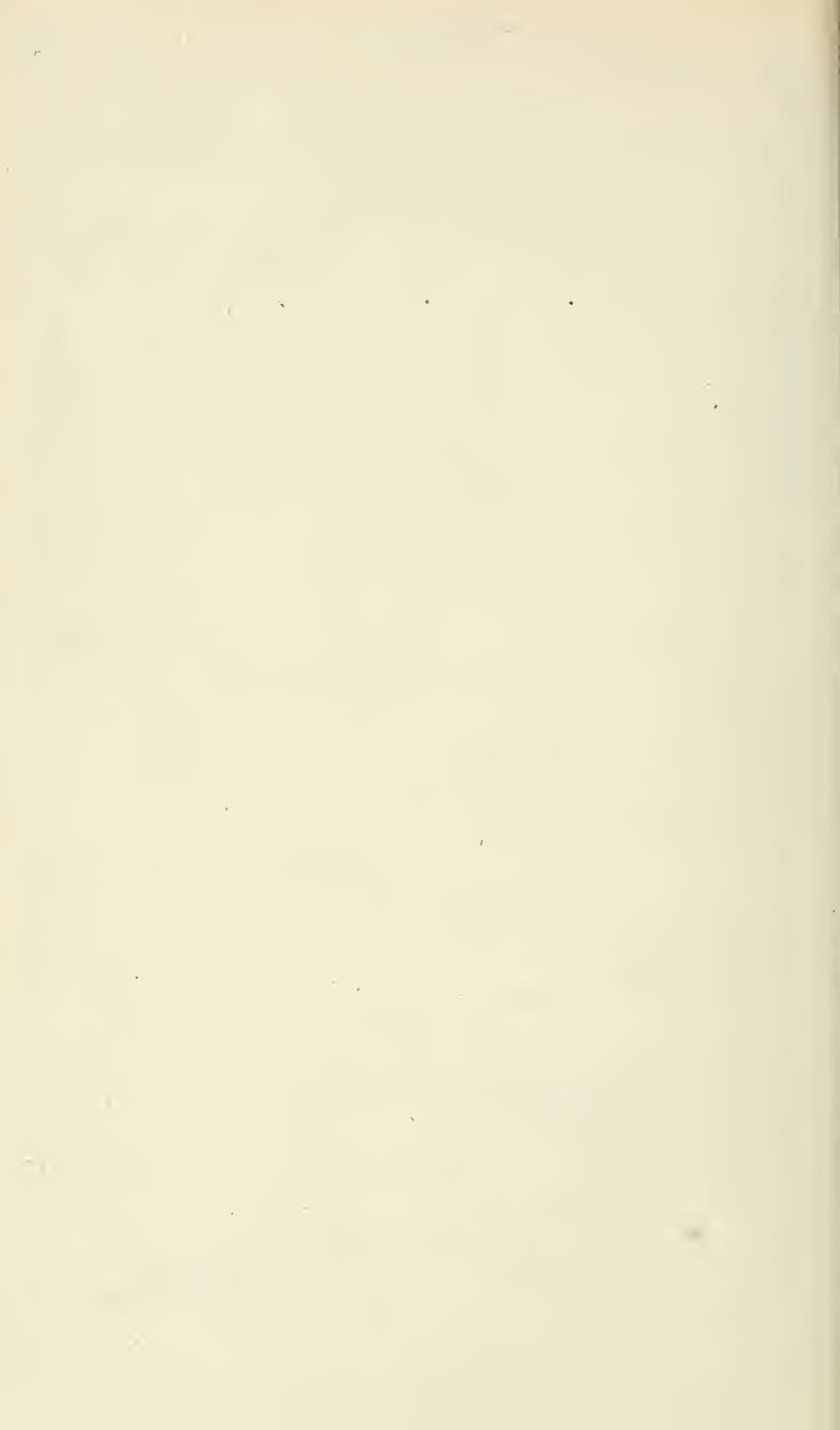
| Divisions. | Provinces. | Part of year. | Full year. | Number of Officers employed. |
|------------------------------------|----------------------------------|---------------|------------|------------------------------|
| Belleville..... | Ontario..... | | 3 | 3 |
| Fort William..... | "..... | | 1 | 1 |
| Sudbury..... | "..... | 1 | | 1 |
| Three Rivers..... | Quebec..... | | 1 | 1 |
| Calgary..... | Alberta..... | | 1 | 1 |
| Edmonton..... | Saskatchewan..... | | 1 | 1 |
| Regina..... | "..... | | 2 | 2 |
| Vancouver..... | British Columbia..... | | 7 | 7 |
| Yukon..... | Yukon Territory..... | | 1 | 1 |
| Inspector of Western Dominion..... | | | 1 | 1 |
| | Grand total for Electricity..... | 1 | 18 | 19 |

RECAPITULATION.

| | |
|---|-----|
| Departmental Staff, Ottawa..... | 84 |
| Excise..... | 362 |
| Weights and Measures..... | 114 |
| Preventive, Excise..... | 78 |
| Preventive, Weights and Measures..... | 24 |
| Gas..... | 44 |
| Electric Light..... | 14 |
| Excise and Gas..... | 9 |
| Excise and Electric Light..... | 2 |
| Excise and Food..... | 12 |
| Excise, Weights and Measures, Electric Light..... | 1 |
| Weights and Measures and Electric Light..... | 1 |
| Weights and Measures and Food..... | 2 |
| Weights and Measures and Gas..... | 1 |
| Food and Preventive Excise..... | 2 |
| Gas and Electric Light..... | 1 |
| Gas and Food..... | 1 |
| Excise and Preventive Excise..... | 1 |
| Grand total of employees..... | 753 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.



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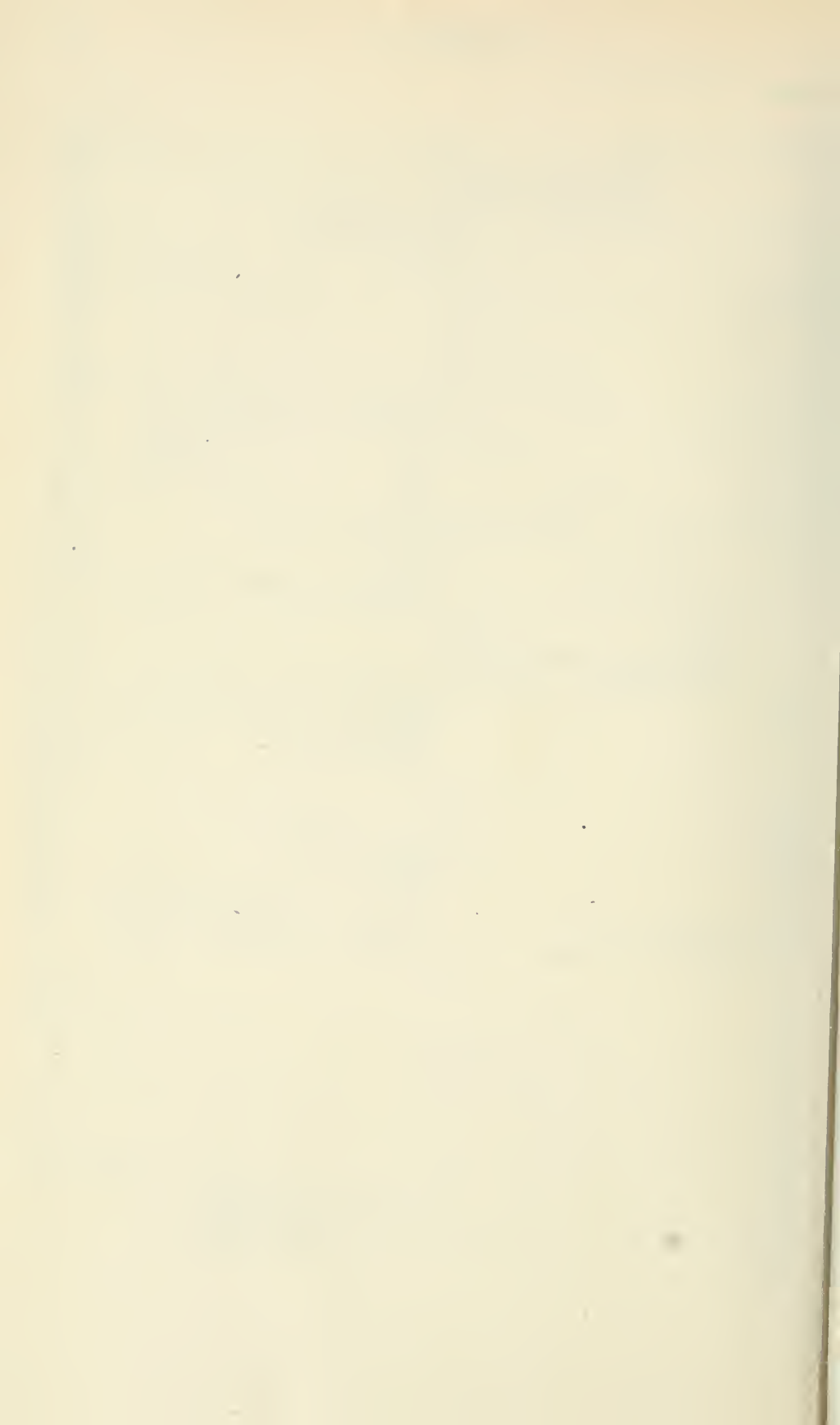
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REPORTS, RETURNS, AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART II

WEIGHTS AND MEASURES, GAS AND ELECTRICITY

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

J. DE LABROQUERIE TACHÉ

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1917

[No. 13—1918.]



REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE

OF THE

INSPECTION OF WEIGHTS AND MEASURES, GAS AND ELECTRICITY.

To the Honourable
The Minister of Inland Revenue.

SIR,—I have the honour to submit the annual report on the inspection of weights and measures, gas and electricity, with the usual statements in connection therewith for the fiscal year ended March 31, 1917.

J. U. VINCENT,
Deputy Minister.

Inland Revenue Department,
Ottawa, July 2, 1917.

WEIGHTS AND MEASURES ANNUAL REPORT.

DEPARTMENT OF INLAND REVENUE,
WEIGHTS AND MEASURES STANDARDS BRANCH,

OTTAWA, July 6, 1917.

J. U. VINCENT, K.C., B.A., L.Ph.,
Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit the annual report on the Weights and Measures Inspection Service of the Dominion for the fiscal year ended March 31, 1917.

First.—The total revenue collected during the year for the inspection of weights and measures was \$131,625.60 as against \$112,136.81 collected during the twelve months ended March 31, 1916, showing an increase of \$19,488.79 in favour of the year just closed.

Second.—The total expenditure was \$188,086.60 as against \$181,113.86 expended during the year ended March 31, 1916.

Third.—Appendix A gives a summary statement of the receipts and expenditures of each inspection division.

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Fourth.—The revenue collected represents 69·9 per cent of the total expenditures as against 61·9 per cent last year. As an inspection and protective service, Weights and Measures is necessarily unremunerative, and is so accepted as an administrative obligation in all countries.

Conditions naturally vary immensely in such a vast and varied country as Canada. Some divisions, including large towns or scale factories, show collections equalling or exceeding expenditure, whilst in other divisions, including immense but sparsely settled districts such as the Rocky mountains, both shores of the St. Lawrence gulf, Labrador, and Gaspé, the cost of itinerary inspections necessarily exceeds inspection fees collected, yet the public must be given protection in such parts.

As giving some idea of the ground covered in the course of inspection work, it might be remarked that in Manitoba, five officers working out of Winnipeg travelled on itineraries 9,393 miles during the months of September, October, and November, whilst for the same months four officers of Saskatoon travelled 9,956 miles. Similar conditions apply to the divisions at Regina, Calgary, and Edmonton.

Fifth.—As the West develops, travelling mileage increases year by year. As the land is put to cultivation, so elevators, requiring exacting annual inspection, increase in numbers. The following table gives an idea of the rate of this increase:—

| | Stations. | Elevators. | Capacity. |
|--------------|-----------|------------|-------------|
| | No. | No. | Bushels. |
| 1910-11..... | 863 | 1,909 | 105,462,700 |
| 1911-12..... | 937 | 2,037 | 108,649,900 |
| 1912-13..... | 1,048 | 2,319 | 127,224,550 |
| 1913-14..... | 1,217 | 2,607 | 154,765,000 |
| 1914-15..... | 1,247 | 2,813 | 168,624,000 |
| 1915-16..... | 1,334 | 3,059 | 180,988,000 |
| 1916-17..... | 1,400 | 3,360 | 193,844,000 |

From the table it will be seen that both the number of stations and country elevators has nearly doubled since 1910.

Sixth.—Owing to the war, railway facilities are most inadequate; on some western branch lines there are only one or two mixed trains a week. Officers therefore have to hire teams or auto cars, charges for which are exceedingly high. Yet the importance of inspection work and accuracy in weights and measures increases in direct ratio to the increased cost of commodities and must be carried on.

Seventh.—In my last report I made mention of the fact that two new divisions had been established in the West, one at Regina, comprising the southern half of Saskatchewan, and the other at Edmonton, comprising the northern half of Alberta. That this step was justified is proved by results, as shown in the following table of collections:—

| | 1915-16. | | 1916-17. | |
|----------------|----------|------|----------|------|
| | \$ | cts. | \$ | cts. |
| Saskatoon..... | 9,543 | 85 | 9,407 | 00 |
| Regina..... | | | 10,458 | 40 |
| Calgary..... | 5,875 | 00 | 4,292 | 65 |
| Edmonton..... | | | 4,224 | 60 |

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More important than the doubled collections for the two provinces is the fact that double the inspection work has been done, which it must be assumed was previously undone. Considerable credit is due Inspector D. J. McLean, of Regina, and his staff, for the excellent work done in the first year of this new division.

Eighth.—During the year, 28,375 pieces of Babcock milk and cream test glassware have been tested by the Weights and Measures Standards Branch, of which 27,876 have been verified and stamped, producing a revenue of \$1,394.75.

Ninth.—In appendices B and C will be found detailed statements of the various weights and measures, etc., presented for verification, verified, and rejected during the year, of which the following is a summary:—

| — | Presented. | Verified. | Rejected. | Percentage of Rejections. |
|----------------------------------|------------|-----------|-----------|---------------------------------|
| Weights..... | 79,327 | 78,767 | 560 | 0.7 |
| Measures of capacity..... | 185,611 | 185,112 | 499 | 0.25 |
| “ length..... | 7,443 | 1,390 | 53 | 0.71 |
| Balances, equal arm..... | 13,606 | 13,226 | 380 | 2.8 |
| “ steelyards..... | 12,002 | 11,897 | 105 | 0.87 |
| “ platform..... | 62,389 | 59,563 | 2,826 | 4.5 |
| “ computing, automatic, etc..... | 19,199 | 18,383 | 816 | 4.2 |
| Pumps, measuring..... | 6,741 | 6,576 | 165 | 2.4 |

The percentage of rejections is low, and does not represent actual conditions, because officers adjust or assist in adjusting incorrect weights, weighing and measuring machines whenever possible, and when adjustment does not involve expert mechanical training. Were this not done the figures for rejections would be very much higher.

Tenth.—This is the first year statistics have been compiled under the new classification, the results being very satisfactory. The articles heretofore shown under the miscellaneous column, 18,091 last year, are now classified under various headings, and are seen to represent this year, *inter alia*, 19,190 modern price computing scales, 6,576 gasoline measuring pumps, whilst the number of weights and measures of the metric system inspected, are shown for the first time.

During the year, seventy-two seizures were made, in the main of incorrect and worn-out weights and measures found in use for trade. Three were made for refusal to pay inspection fee, the machines being released upon subsequent payment under threat of prosecution.

Five prosecutions were instituted, two for the wilful falsification of a weighing machine, one for refusal to pay fees, and one for obstructing an officer.

THE METRIC SYSTEM.

Due consideration must be given to the continued campaign for the compulsory introduction of this system both in England and the United States. Advantage is taken of the fact that co-operation with allied metric countries has led to considerable increase in the use of metric units, but such increase is confined in the main to the manufacture of munitions and artillery, and does not apply to general trade.

For a generation nearly, the metric system has been legal for trade and export in England, Canada, and the United States, yet its use and increase has been practically nil. Were it essential for foreign trade with metric countries, its adoption and

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increase should be natural and automatic, but such evidence is lacking. For domestic trade and industry it is unnecessary. The issue involved, then, is whether the latter, including agriculture, where the bushel, the acre, and the dollar constitute the trinity of the farmers' business, shall be disorganized by the compulsory substitution of the hectolitre and the hectare, and the metric system generally, in the interests and furtherance of the limited export trade to metric countries, in a great part of which the units of measure or weight do not enter at all.

The metric weights and measures inspected during the last fiscal year, as shown for the first time in the statistical tables, are given below, in comparison with those of Dominion denomination:—

| | Metric. | Dominion |
|---------------------------|---------|----------|
| Measures of capacity..... | 1,444 | 184,167 |
| " length..... | 0 | 7,443 |
| Weighing machines..... | 268 | 109,609 |
| Weights..... | 727 | 78,600 |

Such figures of course do not give the total weights and measures in use, as those in science and manufacture are not subject to inspection, and therefore do not appear.

The war is still suspending the reproduction of the copies of the Dominion primary standards destroyed in the Parliament fire, and also the purchase from France of copies of the international metre and kilogram, as the primary metric standards of the Dominion.

I remain, sir,

Your obedient servant,

E. O. WAY,
Chief Inspector.

GAS AND ELECTRICITY ANNUAL REPORT.

DEPARTMENT OF INLAND REVENUE,
ELECTRICAL STANDARDS LABORATORY,

OTTAWA, July 12, 1917.

J. U. VINCENT, Esq., K.C., B.A., L.Ph.,
Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit the annual report on the inspection of gas and electricity throughout Canada during the year ended March 31, 1917.

The combined services have recovered somewhat from the depression experienced during the fiscal year 1915-16, when a deficit in the revenue of \$8,012.40 was shown. At the close of the last fiscal year the revenue for the combined services shows a surplus of \$17,405.57.

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INSPECTION OF GAS.

The total revenue collected during the fiscal year ended March 31, 1917, for the inspection of gas and gas meters was \$54,157.35 as compared with \$46,034.80 for the previous year. The total expenditure was \$61,736.12 as compared with \$66,255.58 for the year which ended March 31, 1916.

A return of gas companies distributing manufactured gas and the calorimetric tests connected therewith will be found in Appendix E; also a list of the natural gas companies registered, and the number of meters in use.

A statement showing the number of gas meters presented for verification during the fiscal year will be found in Appendix F.

ELECTRICITY INSPECTION.

The total revenue collected for meter inspection, etc., during the year ended March 31, 1917, was \$71,467.18 as compared with \$70,051.75 collected in the previous year. The total expenditure, including cost of inspection and maintenance of equipment, was \$46,482.84 as against \$57,843.37 for the fiscal year which ended on March 31, 1916.

The combined services of electricity and gas, the duties connected with which are performed by one set of officers, show the following financial results:—

| | |
|------------------|---------------|
| Revenue..... | \$ 125,624 53 |
| Expenditure..... | 108,218 96 |
| Surplus..... | \$ 17,405 57 |

A comparative statement of revenue and expenditure for the combined services during the past ten years is as follows:—

| Years. | GAS AND ELECTRICITY. | | | |
|--------------|----------------------|------|--------------|------|
| | Revenue. | | Expenditure. | |
| | \$ | cts. | \$ | cts. |
| 1907-08..... | 86,552 | 20 | 48,831 | 75 |
| 1908-09..... | 92,450 | 21 | 54,018 | 71 |
| 1909-10..... | 100,647 | 20 | 55,514 | 14 |
| 1910-11..... | 112,150 | 25 | 63,385 | 03 |
| 1911-12..... | 117,917 | 45 | 80,537 | 87 |
| 1912-13..... | 138,090 | 95 | 93,000 | 83 |
| 1913-14..... | 143,386 | 40 | 113,014 | 76 |
| 1914-15..... | 139,403 | 25 | 124,233 | 49 |
| 1915-16..... | 116,086 | 55 | 124,098 | 95 |
| 1916-17..... | 125,624 | 53 | 108,218 | 96 |

showing on the ten years' operations an excess of revenue over expenditure of \$307,455.50.

A statement showing the quantities of electrical energy exported from Canada under authority of the Electricity Exportation Act by certain hydro-electric companies will be found in Appendix I.

A list of electric light and power companies registered under the provisions of the Electricity Inspection Act, with certain statistics connected with their operation, will be found in Appendix J.

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It may be stated, in conclusion, that the work of inspection is returning to its normal proportions, and it becomes a question as to how long the reduced staff will be able to satisfactorily meet the requirements of the service. As you are well aware, one or more men have enlisted for the front from nearly every inspection district in the country, and should the work continue to increase it may be found necessary to employ temporary assistance until the regular officers return from the war.

I remain, sir,

Your obedient servant,

ORMOND HIGMAN,
Chief Engineer.

APPENDIX A.

STATEMENT of Weights and Measures Expenditures and Revenues during the fiscal year ended March 31, 1917.

| Inspection Division. | Inspectors. | EXPENDITURES. | | | | | | Revenues. |
|---|------------------------------------|---------------|--------------------------|----------|-----------------------------|-----------|------------|------------|
| | | Salaries. | Special Assist- ance. | Rent. | Travel- ling Expenscs | Sundries. | Total. | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |  | $ cts. |
| Belleville..... | Diamond, F. D. | 3,624 78 | 75 00 | 772 00 | 985 76 | 275 95 | 5,733 49 | 2,492 80 |
| Hamilton..... | Scaly, J. C. | 8,182 92 | | | 2,953 44 | 121 21 | 11,257 57 | 12,919 10 |
| Kingston..... | Gallagher, T. | 2,741 58 | | | 306 09 | 45 10 | 3,092 77 | 1,104 05 |
| London..... | Hughes, R. A. | 5,646 22 | 120 00 | | 2,775 86 | 187 82 | 8,729 90 | 10,974 90 |
| Ottawa..... | Hinchev, E. H. | 10,816 20 | 1,823 65 | | 2,331 35 | 120 04 | 15,091 24 | 8,865 45 |
| Toronto..... | McConvey, J. J. | 8,741 46 | | | 1,983 29 | 108 91 | 10,833 66 | 14,735 20 |
| | <i>Ontario</i> | 39,753 16 | 2,018 65 | 772 00 | 11,335 79 | 859 03 | 54,738 63 | 51,091 50 |
| Montreal..... | Hébert, J. A., Actg. | 13,235 69 | 1,422 42 | 1,624 98 | 2,727 60 | 371 75 | 19,382 44 | 11,932 50 |
| Quebec..... | Roy, C. E. | 9,399 72 | 3,971 08 | 300 00 | 2,865 22 | 222 10 | 16,758 12 | 5,947 60 |
| Sherbrooke..... | Delorme, O. C. | 2,983 20 | 582 14 | 625 00 | 881 45 | 104 91 | 5,176 70 | 6,158 85 |
| St. Hyacinthe..... | Morin, J. P. | 2,199 96 | 565 71 | | 1,140 80 | 77 53 | 3,984 00 | 2,526 70 |
| Three Rivers..... | Lessard, A. | 3,466 50 | 904 32 | | 410 11 | 88 76 | 4,869 69 | 985 05 |
| | <i>Quebec</i> | 31,285 07 | 7,445 67 | 2,549 98 | 8,025 18 | 865 05 | 50,170 95 | 27,550 70 |
| St. John, N.B..... | Barry, James..... | 4,916 54 | 16 00 | | 905 24 | 151 24 | 5,989 02 | 3,492 40 |
| Halifax..... | O'Brien, W..... | 1,883 23 | 859 92 | 507 36 | 669 09 | 236 25 | 4,155 85 | 1,335 70 |
| Pictou..... | Dustan, W. M..... | 3,241 50 | 48 00 | | 695 10 | 74 87 | 4,059 47 | 1,959 20 |
| | <i>Nova Scotia</i> | 5,124 73 | 907 92 | 507 36 | 1,364 19 | 311 12 | 8,212 32 | 3,294 90 |
| Charlottetown, P.E.I..... | Davy, E..... | 1,099 92 | 60 00 | | 246 54 | 22 56 | 1,429 02 | 621 30 |
| Winnipeg, Man..... | McKay, R..... | 7,824 78 | | 1,408 29 | 4,824 52 | 216 88 | 14,274 47 | 12,229 05 |
| Regina..... | McLean, D. J..... | 2,899 92 | 1,390 93 | | 5,689 73 | 282 64 | 10,263 22 | 10,458 40 |
| Saskatoon..... | Johnston, Chs. W..... | 5,391 48 | 1,019 99 | 180 00 | 5,248 93 | 231 29 | 12,071 69 | 9,407 00 |
| | <i>Saskatchewan</i> | 8,291 40 | 2,410 92 | 180 00 | 10,938 66 | 513 93 | 22,334 91 | 19,865 40 |
| Calgary..... | Costello, J. W..... | 4,775 07 | 590 34 | | 2,105 52 | 208 71 | 7,679 64 | 4,292 65 |
| Edmonton..... | McDougall, J. C..... | 1,200 00 | | 540 00 | 1,757 15 | 292 08 | 3,789 23 | 4,224 60 |
| | <i>Alberta</i> | 5,975 07 | 590 34 | 540 00 | 3,862 67 | 500 79 | 11,468 87 | 8,517 25 |
| Nelson..... | Parker, Thos..... | 1,716 54 | 363 30 | 180 00 | 1,881 20 | 104 25 | 4,245 29 | 1,227 45 |
| Vancouver..... | Dutton, A. H..... | 2,420 73 | 48 00 | | 176 35 | 443 65 | 3,088 73 | 2,294 05 |
| | <i>British Columbia</i> | 4,137 27 | 411 30 | 180 00 | 2,057 55 | 547 90 | 7,334 02 | 3,521 50 |
| Dawson, Yukon..... | Stingle, J. W..... | 999 96 | | | | 14 00 | 1,013 96 | 46 85 |
| Chief Inspector..... | | | | | | 220 02 | 220 02 | |
| A. A. Bowen..... | Inspectors of (Elevator Scales) | 298 63 | | | 45 68 | | 344 31 | |
| J. G. White..... | | 244 58 | | | | | 244 58 | |
| Total for Divisions..... | | 109,951 11 | 13,860 80 | 6,137 63 | 43,606 02 | 4,222 52 | 177,778 08 | |
| Milk Test Glassware..... | | | | | | | | 1,394 75 |
| General Contingencies..... | | | | | | 1,400 26 | 1,400 26 | |
| Printing..... | | | | | | 3,339 73 | 3,339 73 | |
| Stationery..... | | | | | | 653 15 | 653 15 | |
| Provisional Allowance..... | | | | | | 4,690 23 | 4,690 23 | |
| International Bureau of Weights and Measures..... | | | | | | 216 15 | 216 15 | |
| Grand Totals..... | | 109,951 11 | 13,860 80 | 6,137 63 | 43,606 02 | 14,531 04 | 188,086 60 | 131,625 60 |

APPENDIX B.

RETURN showing the Number of Weights, Measures, and Weighing Machines verified in each Inspection Division, during the Fiscal Year ended March 31, 1917.

| Inspection Divisions. | WEIGHING MACHINES. | | | | | | | | | | | | WEIGHTS. | | | | | | |
|-----------------------|--------------------|-----------|----------|----------------|--------|--------|-------------------|-----------------|---------|-------------------|-----------------|-------------|--------------------|-------|------------|------------|----------|--------------------|----------------------------|
| | WEIGHING MACHINES. | | | | | | | | | | | | Metric. | Troy. | Metric. | Tolerated. | Tobacco. | | |
| | Platform Scales. | | | Spring Scales. | | | Computing Scales. | | | Automatic Scales. | | | | | | | | Suspension Scales. | Combined Avdp. and Metric. | Avoirdupois. |
| Equal Arms. | Steelyard. | Ordinary. | Pitless. | Dial. | Track. | Trade. | Ice and Dairy. | Automatic Slot. | Spring. | All Others. | Grain Elevator. | All Others. | Suspension Scales. | | | | | | |
| Belleville..... | 113 | 24 | 877 | 29 | 17 | 8 | 1 | 9 | 94 | 70 | 2 | 2 | 6 | 54 | 547 | 134 | | | |
| Hamilton..... | 2,335 | 4,936 | 7,852 | 5 | 13 | 16 | 24 | 11 | 86 | 800 | 4 | 2 | 6 | 5 | 12,548 | 64 | | | |
| Kingston..... | 80 | 4 | 352 | 9 | 1 | 7 | 12 | 145 | 145 | 3 | 1 | 1 | 2 | 1 | 438 | 17 | | | |
| London..... | 594 | 98 | 3,435 | 91 | 266 | 26 | 3 | 49 | 35 | 3,165 | 6 | 1 | 7 | 2 | 2,971 | | | | |
| Ottawa..... | 1,338 | 30 | 6,082 | 6 | 1 | 26 | 37 | 15 | 316 | 677 | 7 | 1 | 2 | 7 | 652 | | | | |
| Toronto..... | 1,062 | 1,754 | 7,636 | 7 | 3 | 27 | 135 | 5 | 1,372 | 973 | 5 | 6 | 6 | 1 | 4,944 | 16 | 24 | | |
| Ontario..... | 5,522 | 6,846 | 26,232 | 147 | 283 | 117 | 206 | 102 | 51 | 2,048 | 5,685 | 22 | 6 | 21 | 61 | 29,100 | 97 | 178 | |
| Montreal..... | 1,822 | 627 | 4,931 | 26 | 36 | 266 | 63 | 85 | 349 | 1,003 | 35 | 42 | 9 | 19 | 10,304 | 33 | 453 | 3 | 37 |
| Quebec..... | 1,223 | 463 | 2,466 | 2 | 6 | 11 | 66 | 5 | 144 | 328 | 46 | 9 | 7 | 78 | 8,265 | 19 | 37 | 6 | 425 |
| Sherbrooke..... | 752 | 2,504 | 4,836 | 117 | 7 | 17 | 9 | 20 | 70 | 2,959 | 4 | | | 5 | 6,677 | | | | |
| St. Hyacinthe..... | 449 | 62 | 1,402 | 2 | 2 | 29 | 1 | 1 | 13 | 86 | | | | 1 | 2,181 | | | | |
| Three Rivers..... | 139 | 21 | 415 | 1 | 1 | 8 | 7 | | 27 | 66 | | | | 5 | 780 | | | | |
| Quebec..... | 4,385 | 3,677 | 14,005 | 148 | 6 | 386 | 79 | 91 | 603 | 4,442 | 85 | 51 | 16 | 7 | 103,28,207 | 52 | 490 | 468 | 462 |
| St. John, N.B..... | 647 | 61 | 1,779 | | 13 | 105 | | 1 | 85 | 288 | | | | | 2,828 | | | | |
| Halifax..... | 239 | 18 | 695 | | 7 | 70 | 6 | | 32 | 184 | | | | 1 | 697 | | | | 11 |
| Pictou..... | 305 | 31 | 724 | 2 | 1 | 30 | | | 154 | 300 | | | 8 | | 1,298 | | | | |
| Nova Scotia..... | 544 | 49 | 1,419 | 2 | 1 | 7 | 100 | 6 | 186 | 484 | | | 9 | 3 | 1,995 | | | | 11 |

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| | 132 | 22 | 347 | 1 | 5 | 16 | 2 | 19 | 49 | 6 | 3 | 687 | | | | | | | |
|-----------------------|--------|--------|--------|-----|-----|-------|-----|-------|--------|-----|----|-----|------------|-------|-----|-----|-----|--|--|
| Charlottetown, P.E.I. | 618 | 162 | 3,892 | 78 | 38 | 105 | 12 | 561 | 674 | 30 | 6 | 86 | 5,636 | 59 | | | | | |
| Winnipeg, Man. | 302 | 274 | 3,438 | 118 | 5 | 25 | | 237 | 606 | 15 | 6 | | 1,702 | | | | | | |
| Regina. | 542 | 495 | 3,411 | 83 | 1 | 11 | | 354 | 431 | 16 | 3 | | 3,041 | | | | | | |
| Saskatoon. | 844 | 769 | 6,849 | 201 | 1 | 36 | | 591 | 1,037 | 31 | 3 | | 4,743 | | | | | | |
| Saskatchewan. | 84 | 92 | 637 | 22 | | | | 46 | 210 | 32 | 1 | | 1,273 | | | | | | |
| Calgary. | 112 | 99 | 1,285 | 87 | 2 | 32 | | 139 | 320 | 37 | | | 16 | 922 | | | | | |
| Edmonton. | 196 | 191 | 1,972 | 109 | 2 | 41 | | 185 | 530 | 69 | 1 | | 17 | 2,195 | | | | | |
| Alberta. | 196 | 191 | 1,972 | 109 | 2 | 41 | | 185 | 530 | 69 | 1 | | 17 | 2,195 | | | | | |
| Nelson. | 196 | 48 | 545 | 19 | | 24 | 1 | 153 | 133 | | | | 805 | | | | | | |
| Vancouver. | 139 | 71 | 1,110 | | 1 | 251 | 12 | 287 | 343 | 5 | 5 | | 631 | | | | | | |
| British Columbia. | 335 | 119 | 1,655 | 19 | 1 | 38 | 13 | 440 | 476 | 5 | 5 | | 1,436 | | | | | | |
| Dawson, Yukon. | 3 | 1 | 22 | | | | | | | | | | 88 | 35 | | | | | |
| Totals. | 13,226 | 11,897 | 58,217 | 705 | 332 | 1,271 | 214 | 4,718 | 13,665 | 242 | 72 | 65 | 267,76,915 | 184 | 727 | 479 | 462 | | |

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

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| | | | | | | | | | | | | | | | | | | | |
|-----------------------|-----|-----|-------|----|---|----|----|-----|-----|---|---|---|-----|----|--|--|--|--|----|
| Charlottetown, P.E.I. | 19 | 4 | 208 | 8 | 2 | 2 | 2 | 66 | 42 | 1 | 2 | 1 | 6 | | | | | | |
| Winnipeg, Man. | | | | | | | | | | | | | | | | | | | |
| Regina | 9 | | 331 | 25 | | 3 | 8 | 8 | 19 | | | | | 11 | | | | | |
| Saskatoon | 6 | 6 | 292 | 10 | | | | 19 | 16 | 1 | | | | 28 | | | | | |
| Saskatchewan | 15 | 6 | 623 | 35 | | 3 | 8 | 27 | 35 | 1 | | | | 39 | | | | | |
| Calgary | 10 | 8 | 140 | 12 | | 15 | 10 | 14 | 24 | | | | | 13 | | | | | |
| Edmonton | 3 | 2 | 73 | 11 | | 1 | 2 | 10 | 6 | 1 | | | | | | | | | |
| Alberta | 13 | 10 | 213 | 23 | | 1 | 17 | 24 | 30 | 1 | | | | 13 | | | | | |
| Nelson | | | | | | | | | | | | | | | | | | | |
| Vancouver | | | 30 | | | | 1 | 2 | 2 | | | | | | | | | | |
| British Columbia | | | 30 | | | | 1 | 2 | 2 | | | | | | | | | | |
| Dawson, Yukon | | | | | | | | | | | | | | | | | | | |
| Totals | 380 | 107 | 2,692 | 76 | 8 | 50 | 74 | 271 | 545 | 5 | 5 | 7 | 484 | 47 | | | | | 25 |

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

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| | | | | | | | | | | | | | | | | | | | | |
|-------------------------|--------|--------|--------|-----|-----|-----|-----|-----|-------|--------|-----|--------|----|----|-----|--------|-----|-----|-----|-----|
| Charlottetown, P. E. I. | 132 | 22 | 347 | 1 | 5 | 16 | 2 | 19 | 49 | 3 | 687 | | | | | | | | | |
| Winnipeg, Man. | 637 | 166 | 4,100 | 86 | 40 | 107 | 12 | 627 | 716 | 3 | 87 | 5,642 | | | | | | | | |
| Regina | 311 | 274 | 3,769 | 143 | 8 | 33 | | 245 | 625 | 6 | | 1,713 | | | | | | | | |
| Saskatoon | 548 | 501 | 3,703 | 93 | 6 | 11 | | 373 | 447 | 3 | | 3,069 | | | | | | | | |
| Saskatchewan | 859 | 775 | 7,472 | 236 | 1 | 44 | | 618 | 1,072 | 3 | | 4,782 | | | | | | | | |
| Calgary | 94 | 100 | 827 | 34 | 32 | 19 | | 60 | 234 | 1 | | 1,286 | | | | | | | | |
| Edmonton | 115 | 101 | 1,358 | 98 | 3 | 34 | | 149 | 326 | 38 | | 16,922 | | | | | | | | |
| Alberta | 209 | 201 | 2,185 | 132 | 3 | 53 | | 209 | 560 | 2 | | 17,208 | | | | | | | | |
| Nelson | 196 | 48 | 545 | 19 | 21 | 24 | | 153 | 133 | | | 805 | | | | | | | | |
| Vancouver | 139 | 71 | 1,140 | | 17 | 252 | | 289 | 345 | 5 | | 631 | | | | | | | | |
| British Columbia | 335 | 119 | 1,685 | 19 | 1 | 276 | | 442 | 478 | 5 | | 1,436 | | | | | | | | |
| Dawson, Yukon | 3 | 1 | 22 | | | 1 | | | | | | 88 | | | | | | | | |
| Total | 13,606 | 12,002 | 60,909 | 781 | 340 | 359 | 216 | 175 | 4,989 | 14,210 | 247 | 77 | 72 | 13 | 268 | 77,399 | 231 | 727 | 483 | 487 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C.

RETURN showing the Number of Measures of Capacity, Lineal Measures and Miscellaneous Verified in each Inspection Division, during the Fiscal Year ended March 31, 1917.

| Inspection Division | MEASURES OF CAPACITY. | | | MEASURING DEVICES. | | LINEAL MEASURES | MISCELLANEOUS. | |
|---------------------------|-----------------------|--------|-----------|--------------------|------------------|-----------------|----------------|-----------------------|
| | Dominion | Metric | Milk Cans | Pumps. | Measuring Tanks. | Dominion. | Scales. | Measures of Capacity. |
| Belleville..... | 297 | | 3,262 | 62 | | 3 | | |
| Hamilton..... | 18,830 | | 71 | 200 | | | | |
| Kingston..... | 1,980 | | | 19 | | 94 | | |
| London..... | 23,625 | | 13,686 | 385 | | 2,700 | | |
| Ottawa..... | 2,229 | | 2,331 | 361 | | 735 | | |
| Toronto..... | 27,363 | 1,287 | 19,389 | 2,168 | | 515 | | |
| Ontario..... | 74,324 | 1,287 | 38,739 | 3,195 | | 4,047 | | |
| Montreal..... | 22,769 | | 5,382 | 434 | 10 | 1,164 | | |
| Quebec..... | 6,615 | 157 | | 244 | | 1,017 | | |
| Sherbrooke..... | 457 | | | 48 | | 68 | 13 | |
| St. Hyacinthe..... | 2,019 | | 1 | 79 | | 218 | | |
| Three Rivers..... | 629 | | | 42 | | 51 | | |
| Quebec..... | 32,489 | 157 | 5,383 | 847 | | 2,518 | 13 | |
| St. John, N.B..... | 3,920 | | 3,685 | 458 | | 16 | | |
| Halifax..... | 805 | | 51 | 125 | | | | 5 |
| Pictou..... | 618 | | | 333 | | 57 | 25 | |
| Nova Scotia..... | 1,423 | | 51 | 458 | | 57 | 25 | 5 |
| Charlottetown, P.E.I..... | 42 | | | 59 | | | | |
| Winnipeg, Man..... | 6,646 | | 10,669 | 601 | | 286 | | |
| Regina..... | 411 | | 950 | 348 | | 134 | | |
| Saskatoon..... | 737 | | | 350 | | 286 | | |
| Saskatchewan..... | 1,148 | | 950 | 698 | | 420 | | |
| Calgary..... | 9 | | 2,320 | 58 | | 1 | | |
| Edmonton..... | 20 | | 1,713 | 156 | | 1 | | |
| Alberta..... | 29 | | 4,033 | 214 | | 2 | | |
| Nelson..... | 77 | | 20 | 24 | | 44 | 4 | |
| Vancouver..... | 37 | | | 22 | | | 4 | |
| British Columbia..... | 114 | | 20 | 46 | | 44 | 8 | |
| Dawson, Yukon..... | 3 | | | | | | | |
| Totals..... | 120,138 | 1,444 | 63,530 | 6,576 | 10 | 7,390 | 46 | 5 |

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APPENDIX C—Continued.

RETURN showing the Number of Measures of Capacity, Lincal Measures and Miscellaneous, Rejected in each Inspection Division, during the Fiscal Year ended March 31, 1917.

| Inspection Division. | MEASURES OF CAPACITY. | | | MEASURING DEVICES. | | LINEAL MEASURES. | MISCELLANEOUS. | |
|---------------------------|-----------------------|---------|-----------|--------------------|------------------|------------------|----------------|-----------------------|
| | Dominion. | Metric. | MilkCans. | Pumps. | Measuring Tanks. | Dominion. | Scales. | Measures of Capacity. |
| Belleville..... | | | 213 | | | | | |
| Hamilton..... | 3 | | 7 | 22 | | | | |
| Kingston..... | | | | 15 | | | | |
| London..... | 3 | | | 16 | | 41 | | |
| Ottawa..... | 12 | | 30 | 4 | | | | |
| Toronto..... | | | | | | | | |
| Ontario..... | 18 | | 250 | 57 | | 41 | | |
| Montreal..... | | | | 9 | | | | |
| Quebec..... | 6 | | | | | 12 | | |
| Sherbrooke..... | | | | | | | | |
| St. Hyacinthe..... | | | | 20 | | | | |
| Three Rivers..... | | | | 2 | | | | |
| Quebec..... | 6 | | | 31 | | 12 | | |
| St. John, N.B..... | | | | 3 | | | | |
| Halifax..... | | | | | | | | |
| Pictou..... | | | | 3 | | | 1 | |
| Nova Scotia..... | | | | 3 | | | 1 | |
| Charlottetown, P.E.I..... | | | | | | | | |
| Winnipeg, Man..... | | | | 12 | | | | |
| Regina..... | | | | 17 | | | | |
| Saskatoon..... | | | | 32 | | | | |
| Saskatchewan..... | | | | 49 | | | | |
| Calgary..... | | | 225 | 5 | | | | |
| Edmonton..... | | | | 5 | | | | |
| Alberta..... | | | 225 | 10 | | | | |
| Nelson..... | | | | | | | | |
| Vancouver..... | | | | | | | | |
| British Columbia..... | | | | | | | | |
| Dawson, Yukon..... | | | | | | | | |
| Totals..... | 24 | | 475 | 165 | | 53 | 1 | |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C—*Concluded.*

RETURN showing the Total Number of Measures of Capacity, Lineal Measures and Miscellaneous, Submitted in each Inspection Division, during the Fiscal Year ended March 31, 1917.

| Inspection Divisions. | MEASURES OF CAPACITY. | | | MEASURING DEVICES. | | LINEAL MEASURES. | MISCELLANEOUS. | |
|---------------------------|-----------------------|---------|------------|--------------------|------------------|------------------|----------------|-----------------------|
| | Dominion. | Metric. | Milk Cans. | Pumps. | Measuring Tanks. | Dominion. | Scales. | Measures of Capacity. |
| Belleville..... | 297 | | 3,475 | 62 | | 3 | | |
| Hamilton..... | 18,833 | | 78 | 222 | | | | |
| Kingston..... | 1,980 | | | 19 | | 94 | | |
| London..... | 23,628 | | 13,686 | 439 | | 2,700 | | |
| Ottawa..... | 2,241 | | 2,361 | 377 | | 776 | | |
| Toronto..... | 27,363 | 1,287 | 19,389 | 2,172 | | 515 | | |
| Ontario..... | 74,342 | 1,287 | 38,989 | 3,252 | | 4,088 | | |
| Montreal..... | 22,769 | | 5,382 | 443 | 10 | 1,164 | | |
| Quebec..... | 6,621 | 157 | | 244 | | 1,029 | | |
| Sherbrooke..... | 457 | | | 48 | | 68 | | |
| St. Hyacinthe..... | 2,019 | | 1 | 99 | | 218 | | |
| Three Rivers..... | 629 | | | 44 | | 51 | | |
| Quebec..... | 32,495 | 157 | 5,383 | 878 | 10 | 2,530 | 13 | |
| St. John, N.B..... | 3,920 | | 3,685 | 461 | | 16 | | |
| Halifax..... | 805 | | 51 | 125 | | | | 5 |
| Pictou..... | 618 | | | 336 | | 57 | | |
| Nova Scotia..... | 1,423 | | 51 | 461 | | 57 | 26 | 5 |
| Charlottetown, P.E.I..... | 42 | | | 59 | | | | |
| Winnipeg, Man..... | 6,646 | | 10,669 | 613 | | 286 | | |
| Regina..... | 411 | | 950 | 365 | | 134 | | |
| Saskatoon..... | 737 | | | 382 | | 286 | | |
| Saskatchewan..... | 1,148 | | 950 | 747 | | 420 | | |
| Calgary..... | 9 | | 2,545 | 63 | | 1 | | |
| Edmonton..... | 20 | | 1,713 | 161 | | 1 | | |
| Alberta..... | 29 | | 4,258 | 224 | | 2 | | |
| Nelson..... | 77 | | 20 | 24 | | 44 | | 4 |
| Vancouver..... | 37 | | | 22 | | | | 4 |
| British Columbia..... | 114 | | 20 | 46 | | 44 | | 8 |
| Dawson, Yukon..... | 3 | | | | | | | |
| Totals..... | 120,162 | 1,444 | 64,005 | 6,741 | 10 | 7,443 | 4 | 5 |

SESSIONAL PAPER No. 13

APPENDIX D.

STATEMENT of Gas Inspection Expenditures and Revenues for the Fiscal Year ended March 31, 1917.

| Districts. | Inspectors. | EXPENDITURES. | | | | | | Revenues. |
|------------------------------|---|------------------|--------------------------|---------------|-----------------------------|----------------|------------------|------------------|
| | | Salaries. | Special Assist- ance. | Rent. | Travel- ing Expenses. | Sun- dries. | Total. | |
| | | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. | \$ ets. |
| Belleville..... | Fraser, H..... | | 692 82 | 200 00 | 272 95 | 102 69 | 1,268 45 | 2,026 20 |
| Hamilton..... | Lutz, H..... | 4,216 57 | 632 00 | 65 00 | 596 85 | 244 64 | 5,755 06 | 5,978 05 |
| London..... | Nash, A. F..... | 4,920 05 | 429 57 | | 655 20 | 193 63 | 6,198 45 | 6,281 10 |
| Ottawa..... | Kinsman, E. A..... | 4,374 74 | 2,464 42 | 429 90 | 2 00 | 42 51 | 7,313 57 | 2,619 80 |
| Toronto..... | Stiver, J. L..... | 10,899 48 | 180 00 | 180 00 | 217 30 | 201 06 | 11,677 84 | 14,647 90 |
| | <i>Ontario.....</i> | <i>24,410 84</i> | <i>4,398 81</i> | <i>874 90</i> | <i>1,744 30</i> | <i>784 53</i> | <i>32,213 38</i> | <i>31,583 05</i> |
| Montreal..... | Aubin, A..... | 8,099 84 | 66 00 | 432 00 | 123 05 | 151 78 | 8,872 67 | 13,009 30 |
| Quebec..... | Cantin, J. A..... | 766 58 | | | | | 766 58 | 1,006 20 |
| Sherbrooke..... | Simpson, A. F..... | 499 92 | | | | | 499 92 | 236 00 |
| St. Hyacinthe... | Aubin, A., Actg..... | | | | | | | 86 40 |
| | <i>Quebec.....</i> | <i>9,366 34</i> | <i>66 00</i> | <i>432 00</i> | <i>123 05</i> | <i>151 78</i> | <i>10,139 17</i> | <i>14,337 90</i> |
| Fredericton..... | Wilson, J. E., Actg..... | 99 96 | | | | | 99 96 | |
| St. John, N.B.... | Wilson, J. E..... | 2,399 88 | 4 00 | | 287 15 | 31 50 | 2,722 53 | 645 60 |
| | <i>New Brunswick.....</i> | <i>2,499 84</i> | <i>4 00</i> | | <i>287 15</i> | <i>31 50</i> | <i>2,822 49</i> | <i>645 60</i> |
| Halifax, N.S.... | Toale, John..... | 2,399 88 | | 507 36 | 18 65 | 18 60 | 2,944 49 | 543 60 |
| Charlottetown, P.E.I..... | Bell, J. H..... | 499 92 | | | | | 499 92 | 39 50 |
| Winnipeg, Man.. | Hamilton, R..... | 6,749 88 | | | | | 6,749 88 | 2,780 55 |
| Calgary, Alta... | Kyle, W. P..... | | 515 02 | | 91 30 | 49 84 | 656 16 | 997 90 |
| Vancouver..... | Stott, John..... | | | | 0 35 | 3 75 | 4 10 | 2,412 65 |
| Victoria..... | Dresser, F..... | 1,499 88 | 4 00 | | 6 20 | 28 11 | 1,538 19 | 816 60 |
| | <i>British Columbia.....</i> | <i>1,499 88</i> | <i>4 00</i> | | <i>6 55</i> | <i>31 86</i> | <i>1,542 29</i> | <i>3,229 25</i> |
| | Inspector of East- ern Dominion..... | | | | | 17 37 | 17 37 | |
| | Inspector of West- ern Dominion..... | | | | 231 90 | 105 66 | 337 56 | |
| | Totals for Inspectors..... | 47,426 58 | 4,987 83 | 1,814 26 | 2,502 90 | 1,191 14 | 57,922 71 | 54,157 35 |
| General Contingencies..... | | | | | | 316 12 | 316 12 | |
| Printing..... | | | | | | 1,725 18 | 1,725 18 | |
| Stationery..... | | | | | | 1,772 11 | 1,772 11 | |
| Grand Totals..... | | 47,426 58 | 4,987 83 | 1,814 26 | 2,502 90 | 5,004 55 | 61,736 12 | 54,157 35 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

APPENDIX

STATEMENT of the Coal and Water Gas Companies registered and the
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|--|-------------------------------------|-------------------|---------------------------|--------------------|
| | | | Month. | Number Prescribed. |
| Barrie, Ont. Barrie Gas Co. | Carburetted Water Gas. | 665 | Apr., 1916. | 2 |
| | " | | May, 1916. | 2 |
| | " | | June, 1916. | 2 |
| | " | | July, 1916. | 2 |
| | " | | Aug., 1916. | 2 |
| | " | | Sept., 1916. | 3 |
| | " | | Oct., 1916. | 2 |
| | " | | Nov., 1916. | 2 |
| | " | | Dec., 1916. | 2 |
| | " | | Jan., 1917. | 2 |
| Belleville, Ont. Corporation of Belleville. | Coal Gas and Carburetted Water Gas. | 1,463 | Apr., 1916. | 4 |
| | " | | May, 1916. | 4 |
| | " | | June, 1916. | 5 |
| | " | | July, 1916. | 4 |
| | " | | Aug., 1916. | 4 |
| | " | | Sept., 1916. | 5 |
| | " | | Oct., 1916. | 4 |
| | " | | Nov., 1916. | 4 |
| | " | | Dec., 1916. | 4 |
| | " | | Jan., 1917. | 4 |
| Brandon, Man. Brandon Gas & Power Co. | Coal Gas. | 1,110 | | Testing |
| | | | | |
| Brockville, Ont. Corporation of Brockville. | Carburetted Water Gas. | 1,828 | Apr., 1916. | 4 |
| | " | | May, 1916. | 4 |
| | " | | June, 1916. | 5 |
| | " | | July, 1916. | 4 |
| | " | | Aug., 1916. | 4 |
| | " | | Sept., 1916. | 5 |
| | " | | Oct., 1916. | 4 |
| | " | | Nov., 1916. | 4 |
| | " | | Dec., 1916. | 4 |
| | " | | Jan., 1917. | 4 |
| Charlottetown, P.E.I. Charlottetown Lt. & Pt. Co. | Coal Gas. | 65 | Apr., 1916. | 2 |
| | " | | May, 1916. | 2 |
| | " | | June, 1916. | 2 |
| | " | | July, 1916. | 2 |
| | " | | Aug., 1916. | 2 |
| | " | | Sept., 1916. | 3 |
| | " | | Oct., 1916. | 2 |
| | " | | Nov., 1916. | 1 |

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E.

Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace omitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|------------------------------|----------------------|---|-------|----------------|---------------|----------------|---------|--------------------------|
| of Tests Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 2 | 0 | 2 | 2 | 624 | 615 | 620 | | None. |
| 2 | 0 | 2 | 2 | 653 | 619 | 636 | | " |
| 2 | 0 | 2 | 2 | 586 | 583 | 585 | | " |
| 3 | 0 | 2 | 3 | 611 | 571 | 589 | | " |
| 2 | 0 | 2 | 2 | 571 | 555 | 563 | | " |
| 2 | 0 | 3 | 2 | 685 | 590 | 637 | | " |
| 2 | 0 | 2 | 2 | 606 | 577 | 592 | | " |
| 2 | 0 | 2 | 2 | 592 | 586 | 589 | | " |
| 2 | 0 | 2 | 2 | 580 | 548 | 564 | | " |
| 2 | 0 | 2 | 2 | 576 | 559 | 567 | | " |
| 2 | 1 | 2 | 2 | 577 | 569 | 573 | | " |
| 2 | 0 | 2 | 2 | 579 | 549 | 564 | 590 | " |
| 4 | 2 | 4 | 4 | 601 | 480 | 523 | | 499-511-480 |
| 4 | 1 | 4 | 4 | 595 | 519 | 553 | | 519 |
| 5 | 0 | 5 | 5 | 586 | 524 | 548 | | None. |
| 4 | 0 | 4 | 4 | 609 | 530 | 554 | | " |
| 5 | 0 | 4 | 5 | 533 | 522 | 526 | | " |
| 4 | 0 | 5 | 4 | 534 | 516 | 523 | | 516 |
| 4 | 0 | 4 | 4 | 527 | 523 | 525 | | None. |
| 4 | 0 | 4 | 4 | 539 | 523 | 532 | | " |
| 4 | 0 | 4 | 4 | 533 | 506 | 521 | | 506 |
| 4 | 0 | 4 | 4 | 532 | 527 | 531 | | None. |
| 4 | 2 | 4 | 4 | 533 | 502 | 521 | | 502 |
| 4 | 2 | 4 | 4 | 542 | 524 | 530 | 532 | None. |
| apparatus not yet installed. | | | | | | | | |
| 4 | 0 | 4 | 4 | 596 | 577 | 588 | | None. |
| 4 | 0 | 4 | 4 | 560 | 556 | 558 | | " |
| 5 | 0 | 5 | 5 | 576 | 566 | 570 | | " |
| 4 | 0 | 4 | 4 | 586 | 564 | 575 | | " |
| 5 | 0 | 4 | 5 | 574 | 548 | 559 | | " |
| 4 | 0 | 5 | 4 | 600 | 528 | 558 | | " |
| 4 | 0 | 4 | 4 | 568 | 554 | 563 | | " |
| 4 | 0 | 4 | 4 | 548 | 542 | 545 | | " |
| 4 | 0 | 4 | 4 | 560 | 534 | 544 | | " |
| 4 | 0 | 4 | 4 | 565 | 539 | 559 | | " |
| 4 | 0 | 4 | 4 | 594 | 572 | 580 | | " |
| 4 | 0 | 4 | 4 | 588 | 556 | 566 | 564 | " |
| 4 | 3 | 2 | 2 | 761 | 744 | 753 | | None. |
| 4 | 4 | 2 | 2 | 758 | 755 | 757 | | " |
| 3 | 0 | 2 | 3 | 758 | 732 | 748 | | " |
| 2 | 0 | 2 | 2 | 789 | 746 | 768 | | " |
| 0 | 0 | 2 | 0 | ... | ... | ... | | " |
| 2 | 0 | 3 | 2 | 755 | 706 | 731 | | " |
| 2 | 0 | 2 | 2 | 771 | 770 | 770 | | " |
| 1 | 0 | 1 | 1 | 672 | 672 | 672 | 743 | " |

Manufacture stopped and plant shut down in November.

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and the
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|--|---|--|------------------------------|-------------|
| | | | Month. | Number |
| | | | | Prescribed. |
| Cobourg, Ont. Cobourg Gas Light and Water Co. | Coal Gas. | 436 | Apr., 1916.. | 2 |
| | " | | May, 1916.. | 2 |
| | " | | June, 1916.. | 2 |
| | " | | July, 1916.. | 2 |
| | " | | Aug., 1916.. | 2 |
| | " | | Sept., 1916.. | 3 |
| | " | | Oct., 1916.. | 2 |
| | " | | Nov., 1916.. | 2 |
| | " | | Dec., 1916.. | 2 |
| | " | | Jan., 1917.. | 2 |
| | " | | Feb., 1917.. | 2 |
| | " | | Mar., 1917.. | 2 |
| | Cornwall, Ont. Stormont Electric Lt. & Pr. Co. | | Carburetted Water Gas. | 375 | Apr., 1916.. | 2 |
| " | | May, 1916.. | 2 | |
| " | | June, 1916.. | 2 | |
| " | | July, 1916.. | 2 | |
| " | | Aug., 1916.. | 2 | |
| " | | Sept., 1916.. | 3 | |
| " | | Oct., 1916.. | 2 | |
| " | | Nov., 1916.. | 2 | |
| " | | Dec., 1916.. | 2 | |
| " | | Jan., 1917.. | 2 | |
| " | | Feb., 1917.. | 2 | |
| " | | Mar., 1917.. | 2 | |
| Deseronto, Ont. Corporation of Deseronto. | | Carburetted Water Gas. | 128 |  | Apr., 1916.. | 2 |
| | " | May, 1916.. | | 2 |
| | " | June, 1916.. | | 2 |
| | " | July, 1916.. | | 2 |
| | " | Aug., 1916.. | | 2 |
| | " | Sept., 1916.. | | 3 |
| | " | Oct., 1916.. | | 2 |
| | " | Nov., 1916.. | | 2 |
| | " | Dec., 1916.. | | 2 |
| | " | Jan., 1917.. | | 2 |
| | " | Feb., 1917.. | | 2 |
| | " | Mar., 1917.. | | 2 |
| | Guelph, Ont. Corporation of Guelph. | Coal Gas and Carburetted Water Gas. | | 3,241 | Apr., 1916.. | 4 |
| " | | May, 1916.. | 4 | |
| " | | June, 1916.. | 5 | |
| " | | July, 1916.. | 4 | |
| " | | Aug., 1916.. | 4 | |
| " | | Sept., 1916.. | 5 | |
| " | | Oct., 1916.. | 4 | |
| " | | Nov., 1916.. | 8 | |
| " | | Dec., 1916.. | 8 | |
| " | | Jan., 1917.. | 8 | |
| " | | Feb., 1917.. | 8 | |
| " | | Mar., 1917.. | 3 | |

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Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace mitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|--------------------------|----------------------|---|-------|----------------|---------------|----------------|---------|--------------------------|
| of Tests. Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 2 | 0 | 2 | 2 | 631 | 624 | 638 | | None. |
| 2 | 0 | 2 | 2 | 633 | 624 | 629 | | " |
| 3 | 0 | 2 | 3 | 610 | 588 | 600 | | " |
| 2 | 0 | 2 | 2 | 621 | 598 | 610 | | " |
| 2 | 0 | 2 | 2 | 618 | 592 | 605 | | " |
| 2 | 0 | 3 | 2 | 609 | 568 | 589 | | " |
| 2 | 0 | 2 | 2 | 594 | 587 | 591 | | " |
| 2 | 0 | 2 | 2 | 592 | 590 | 591 | | " |
| 2 | 0 | 2 | 2 | 601 | 584 | 593 | | " |
| 2 | 0 | 2 | 2 | 623 | 593 | 608 | | " |
| 2 | 0 | 2 | 2 | 600 | 592 | 596 | | " |
| 2 | 0 | 2 | 2 | 603 | 598 | 600 | 604 | " |
| 2 | 2 | 2 | 2 | 615 | 556 | 586 | | None. |
| 2 | 2 | 2 | 2 | 636 | 595 | 616 | | " |
| 2 | 2 | 2 | 2 | 564 | 551 | 558 | | " |
| 2 | 2 | 2 | 2 | 604 | 575 | 590 | | " |
| 2 | 2 | 2 | 2 | 591 | 584 | 588 | | " |
| 2 | 2 | 3 | 2 | 615 | 571 | 593 | | " |
| 2 | 2 | 2 | 2 | 584 | 576 | 580 | | " |
| 2 | 2 | 2 | 2 | 529 | 526 | 528 | | " |
| 2 | 2 | 2 | 2 | 574 | 574 | 574 | | " |
| 2 | 2 | 2 | 2 | 570 | 523 | 547 | | " |
| 2 | 2 | 2 | 2 | 562 | 531 | 547 | | " |
| 2 | 2 | 2 | 2 | 542 | 540 | 541 | 571 | " |
| 2 | 0 | 2 | 2 | 646 | 575 | 611 | | None. |
| 2 | 1 | 2 | 2 | 650 | 645 | 647 | | " |
| 2 | 0 | 2 | 2 | 672 | 642 | 657 | | " |
| 2 | 1 | 2 | 2 | 698 | 638 | 693 | | " |
| 3 | 2 | 2 | 3 | 695 | 582 | 624 | | " |
| 2 | 1 | 3 | 2 | 744 | 731 | 738 | | " |
| 2 | 1 | 2 | 2 | 636 | 663 | 675 | | " |
| 2 | 0 | 2 | 2 | 719 | 678 | 693 | | " |
| 2 | 0 | 2 | 2 | 742 | 732 | 737 | | " |
| 2 | 1 | 2 | 2 | 761 | 726 | 744 | | " |
| 2 | 2 | 2 | 2 | 751 | 714 | 732 | | " |
| 2 | 0 | 2 | 2 | 712 | 697 | 704 | 688 | " |
| 4 | 0 | 8 | 8 | 627 | 583 | 610 | | None. |
| 4 | 0 | 8 | 8 | 604 | 574 | 587 | | " |
| 5 | 0 | 10 | 10 | 639 | 581 | 605 | | " |
| 4 | 0 | 8 | 8 | 634 | 577 | 602 | | " |
| 5 | 0 | 8 | 10 | 611 | 560 | 582 | | " |
| 4 | 0 | 10 | 8 | 607 | 578 | 592 | | " |
| 4 | 0 | 8 | 8 | 596 | 574 | 585 | | " |
| 8 | 0 | 8 | 8 | 604 | 562 | 580 | | " |
| 8 | 0 | 8 | 8 | 578 | 539 | 560 | | " |
| 8 | 0 | 8 | 8 | 554 | 530 | 541 | | " |
| 8 | 0 | 8 | 8 | 577 | 538 | 559 | | " |
| 8 | 0 | 8 | 8 | 507 | 538 | 571 | 587 | " |

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|---|------------------------------------|-------------------|---------------------------|--------------------|
| | | | Month. | Number Prescribed. |
| Halifax, N.S. Halifax Electric Tramway Co. | Coal Gas | 1,602 | Apr., 1916 | 4 |
| | " | | May, 1916 | 4 |
| | " | | June, 1916 | 5 |
| | " | | July, 1916 | 4 |
| | " | | Aug., 1916 | 4 |
| | " | | Sept., 1916 | 5 |
| | " | | Oct., 1916 | 4 |
| | " | | Nov., 1916 | 4 |
| | " | | Dec., 1916 | 4 |
| | " | | Jan., 1917 | 4 |
| | " | | Feb., 1917 | 4 |
| " | Mar., 1917 | 4 | | |
| Hamilton, Ont. United Gas & Fuel Co. | Coal Gas | 665 | Apr., 1916 | 2 |
| | " | | May, 1916 | 2 |
| | " | | June, 1916 | 2 |
| | " | | July, 1916 | 2 |
| | " | | Aug., 1916 | 2 |
| | " | | Sept., 1916 | 3 |
| | " | | Oct., 1916 | 2 |
| | " | | Nov., 1916 | 2 |
| | " | | Dec., 1916 | 2 |
| | " | | Jan., 1917 | 2 |
| | " | | Feb., 1917 | 2 |
| " | Mar., 1917 | 2 | | |
| Kingston, Ont. Corporation of Kingston. | Carburetted Water Gas | 2,958 | Apr., 1916 | 4 |
| | " | | May, 1916 | 4 |
| | " | | June, 1916 | 5 |
| | " | | July, 1916 | 4 |
| | " | | Aug., 1916 | 4 |
| | " | | Sept., 1916 | 5 |
| | " | | Oct., 1916 | 4 |
| | " | | Nov., 1916 | 8 |
| | " | | Dec., 1916 | 8 |
| | " | | Jan., 1917 | 8 |
| | " | | Feb., 1917 | 8 |
| " | Mar., 1917 | 8 | | |
| Kitchener, Ont. Corporation of Kitchener. | Coal Gas and Carburetted Water Gas | 3,231 | Apr., 1916 | 4 |
| | " | | May, 1916 | 4 |
| | " | | June, 1916 | 5 |
| | " | | July, 1916 | 4 |
| | " | | Aug., 1916 | 4 |
| | " | | Sept., 1916 | 5 |
| | " | | Oct., 1916 | 4 |
| | " | | Nov., 1916 | 8 |
| | " | | Dec., 1916 | 8 |
| | " | | Jan., 1917 | 8 |
| | " | | Feb., 1917 | 8 |
| " | Mar., 1917 | 8 | | |

SESSIONAL PAPER No. 13

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace mitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|-----------------------------|----------------------------|---|-------|-------------------|------------------|----------------|---------|--------------------------------|
| | | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| Made. | Times found present. | | | | | | | |
| 5 | 0 | 4 | 5 | 590 | 567 | 580 | | None. |
| 4 | 0 | 4 | 4 | 600 | 583 | 590 | | " |
| 5 | 0 | 5 | 5 | 593 | 574 | 582 | | " |
| 4 | 0 | 4 | 4 | 586 | 583 | 585 | | " |
| 4 | 0 | 4 | 4 | 586 | 573 | 577 | | " |
| 5 | 0 | 5 | 5 | 571 | 554 | 564 | | " |
| 4 | 0 | 4 | 4 | 556 | 532 | 573 | | " |
| 4 | 0 | 4 | 4 | 612 | 568 | 582 | | " |
| 4 | 0 | 4 | 4 | 562 | 549 | 556 | | " |
| 4 | 0 | 4 | 4 | 567 | 552 | 557 | | " |
| 4 | 0 | 4 | 4 | 554 | 536 | 547 | | " |
| 4 | 0 | 4 | 4 | 540 | 524 | 532 | 569 | " |
| 2 | 0 | 2 | 2 | 534 | 522 | 528 | | None. |
| 3 | 0 | 2 | 2 | 543 | 523 | 533 | | " |
| 2 | 0 | 2 | 2 | 534 | 525 | 530 | | " |
| 3 | 0 | 2 | 2 | 557 | 534 | 546 | | " |
| 2 | 0 | 2 | 2 | 553 | 523 | 538 | | " |
| 3 | 0 | 3 | 3 | 535 | 523 | 529 | | " |
| 2 | 0 | 2 | 2 | 531 | 522 | 527 | | " |
| 2 | 0 | 2 | 2 | 533 | 531 | 532 | | " |
| 2 | 0 | 2 | 2 | 666 | 531 | 599 | | " |
| 2 | 0 | 2 | 2 | 530 | 528 | 529 | | " |
| 2 | 0 | 2 | 2 | 541 | 526 | 534 | | " |
| 2 | 0 | 2 | 2 | 531 | 522 | 527 | 538 | " |
| 4 | 0 | 8 | 8 | 644 | 595 | 618 | | None. |
| 4 | 0 | 8 | 8 | 679 | 596 | 643 | | " |
| 5 | 0 | 10 | 10 | 680 | 622 | 644 | | " |
| 4 | 1 | 8 | 8 | 662 | 617 | 632 | | " |
| 5 | 0 | 8 | 10 | 611 | 524 | 566 | | " |
| 4 | 1 | 10 | 8 | 729 | 673 | 694 | | " |
| 4 | 3 | 8 | 8 | 737 | 681 | 700 | | " |
| 8 | 8 | 8 | 8 | 723 | 584 | 648 | | " |
| 8 | 8 | 8 | 8 | 665 | 530 | 584 | | " |
| 8 | 6 | 8 | 8 | 682 | 505 | 568 | | 505 |
| 8 | 0 | 8 | 8 | 688 | 521 | 607 | | None. |
| 8 | 0 | 8 | 8 | 682 | 511 | 599 | 625 | 511 |
| 4 | 0 | 8 | 8 | 531 | 520 | 525 | | None. |
| 4 | 0 | 8 | 8 | 541 | 524 | 527 | | " |
| 5 | 0 | 10 | 10 | 556 | 520 | 526 | | " |
| 4 | 0 | 8 | 8 | 547 | 521 | 534 | | " |
| 4 | 0 | 8 | 8 | 593 | 533 | 561 | | " |
| 5 | 0 | 10 | 10 | 598 | 522 | 553 | | " |
| 4 | 0 | 8 | 8 | 563 | 520 | 531 | | " |
| 6 | 0 | 8 | 8 | 547 | 501 | 526 | | 501 |
| 8 | 0 | 8 | 8 | 569 | 524 | 541 | | None. |
| 8 | 0 | 8 | 8 | 569 | 522 | 539 | | " |
| 8 | 0 | 8 | 8 | 556 | 520 | 535 | | " |
| 8 | 0 | 8 | 8 | 537 | 523 | 528 | 536 | " |

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|--|---|-------------------|-------------------------------------|--------------------|
| | | | Month. | Number Prescribed. |
| London, Ont. City Gas Company. | Coal Gas and Carburetted Water Gas. | 9,934 | Apr., 1916.. | 12 |
| | " | | May., 1916.. | 12 |
| | " | | June, 1916.. | 15 |
| | " | | July, 1916.. | 12 |
| | " | | Aug., 1916.. | 12 |
| | " | | Sept., 1916.. | 15 |
| | " | | Oct., 1916.. | 12 |
| | " | | Nov., 1916.. | 12 |
| | " | | Dec., 1916.. | 12 |
| | " | | Jan., 1917.. | 12 |
| | " | | Feb., 1917.. | 12 |
| | " | | Mar., 1917.. | 12 |
| | Montreal, P.Q. Montreal Lt. Ht. & Pr. Co. | | Coal Gas and Carburetted Water Gas. | 107,903 | Apr., 1916.. | 12 |
| " | | May, 1916.. | 12 | |
| " | | June, 19 6.. | 15 | |
| " | | July, 1916.. | 12 | |
| " | | Aug., 1916.. | 12 | |
| " | | Sept., 1916.. | 15 | |
| " | | Oct., 1916.. | 12 | |
| " | | Nov., 1916.. | 26 | |
| " | | Dec., 1916.. | 25 | |
| " | | Jan., 1917.. | 26 | |
| " | | Feb., 1917.. | 24 | |
| " | | Mar., 1917.. | 27 | |
| Nanaimo, B.C. Nanaimo City Gas Co. | | Coal Gas. | 306 |  | Apr., 1916.. | 2 |
| | " | May, 1916.. | | 2 |
| | " | June, 1916.. | | 2 |
| | " | July, 1916.. | | 2 |
| | " | Aug., 1916.. | | 2 |
| | " | Sept., 1916.. | | 3 |
| | " | Oct., 1916.. | | 2 |
| | " | Nov., 1916.. | | 2 |
| | " | Dec., 1916.. | | 2 |
| | " | Jan., 1917.. | | 2 |
| | " | Feb., 1917.. | | 2 |
| | " | M.r., 1917.. | | 2 |
| | Napanee, Ont. Napanee Gas Co. to Sept., 1916, since then The Hydro-Electric Power Commission of Ontario. | Coal Gas. | | 341 | Apr., 1916.. | 2 |
| " | | May, 1916.. | 2 | |
| " | | June, 1916.. | 2 | |
| " | | July, 1916.. | 2 | |
| " | | Aug., 1916.. | 2 | |
| " | | Sept., 1916.. | 3 | |
| " | | Oct., 1916.. | 2 | |
| " | | Nov., 1916.. | 2 | |
| " | | Dec., 1916.. | 2 | |
| " | | Jan., 1917.. | 2 | |
| " | | Feb., 1917.. | 2 | |
| " | | Mar., 1917.. | 2 | |
| Nelson, B.C. Corporation of Nelson. | | Coal Gas. | 675 | |

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the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace omitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|---------------------------|----------------------|---|-------|----------------|---------------|----------------|---------|--------------------------|
| of Tests. Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 12 | 0 | 12 | 12 | 563 | 532 | 549 | | None. |
| 12 | 0 | 12 | 12 | 571 | 539 | 555 | | " |
| 12 | 0 | 15 | 12 | 584 | 540 | 554 | | " |
| 15 | 0 | 12 | 15 | 575 | 528 | 552 | | " |
| 12 | 0 | 12 | 12 | 563 | 516 | 551 | | 516 |
| 15 | 0 | 15 | 15 | 580 | 550 | 561 | | None. |
| 12 | 0 | 12 | 12 | 572 | 533 | 549 | | " |
| 12 | 0 | 12 | 12 | 554 | 530 | 541 | | " |
| 12 | 0 | 12 | 12 | 551 | 527 | 539 | | " |
| 12 | 0 | 12 | 12 | 577 | 533 | 547 | | " |
| 12 | 0 | 12 | 12 | 552 | 536 | 542 | | " |
| 12 | 0 | 12 | 12 | 576 | 526 | 543 | 549 | " |
| 13 | 0 | 23 | 23 | 578 | 521 | 535 | | None. |
| 14 | 0 | 26 | 26 | 545 | 521 | 530 | | " |
| 13 | 0 | 25 | 25 | 550 | 520 | 527 | | " |
| 13 | 0 | 25 | 25 | 537 | 520 | 523 | | " |
| 13 | 0 | 27 | 27 | 532 | 520 | 522 | | " |
| 13 | 0 | 25 | 25 | 539 | 520 | 523 | | " |
| 13 | 0 | 25 | 25 | 528 | 520 | 521 | | " |
| 13 | 0 | 26 | 26 | 528 | 520 | 521 | | " |
| 25 | 0 | 25 | 25 | 523 | 520 | 520 | | " |
| 26 | 0 | 26 | 26 | 522 | 520 | 521 | | " |
| 24 | 0 | 24 | 24 | 522 | 520 | 520 | | " |
| 27 | 0 | 27 | 27 | 525 | 520 | 522 | 524 | " |
| 2 | 0 | 2 | 2 | 588 | 574 | 581 | | None. |
| 2 | 0 | 2 | 2 | 589 | 571 | 580 | | " |
| 2 | 0 | 2 | 2 | 590 | 590 | 590 | | " |
| 2 | 0 | 2 | 2 | 575 | 573 | 574 | | " |
| 2 | 0 | 2 | 2 | 599 | 583 | 591 | | " |
| 2 | 0 | 3 | 2 | 571 | 572 | 577 | | " |
| 2 | 0 | 2 | 2 | 559 | 551 | 555 | | " |
| 2 | 0 | 2 | 2 | 551 | 549 | 550 | | " |
| 2 | 0 | 2 | 2 | 577 | 535 | 556 | | " |
| 2 | 0 | 2 | 2 | 581 | 539 | 560 | | " |
| 2 | 0 | 2 | 2 | 613 | 585 | 599 | | " |
| 2 | 0 | 2 | 2 | 568 | 559 | 564 | 573 | " |
| 2 | 0 | 2 | 2 | 592 | 544 | 568 | | None. |
| 2 | 0 | 2 | 2 | 605 | 605 | 605 | | " |
| 2 | 0 | 2 | 2 | 601 | 568 | 585 | | " |
| 2 | 0 | 2 | 2 | 634 | 620 | 627 | | " |
| 3 | 0 | 2 | 3 | 629 | 609 | 620 | | " |
| 2 | 0 | 3 | 2 | 591 | 589 | 590 | | " |
| 2 | 0 | 2 | 2 | 570 | 527 | 548 | | " |
| 2 | 0 | 2 | 2 | 592 | 562 | 577 | | " |
| 2 | 0 | 2 | 2 | 580 | 567 | 573 | | " |
| 2 | 0 | 2 | 2 | 546 | 521 | 533 | | " |
| 2 | 0 | 2 | 2 | 573 | 528 | 550 | | " |
| 2 | 0 | 2 | 2 | 521 | 491 | 506 | 574 | 491 |

Testing apparatus not yet installed.

8 GEORGE V, A. 1918

STATEMENT of Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|---|-----------------------|-------------------------|------------------------------|-----------------------|
| | | | Month. | Number Prescribed. |
| New Westminster, B.C. New Westminster Gas Co. | Coal Gas | 439 | Apr., 1916 | 2 |
| | " | | May, 1916 | 2 |
| | " | | June, 1916 | 2 |
| | " | | July, 1916 | 2 |
| | " | | Aug., 1916 | 2 |
| | " | | Sept., 1916 | 3 |
| | " | | Oct., 1916 | 2 |
| | " | | Nov., 1916 | 2 |
| | " | | Dec., 1916 | 2 |
| | " | | Jan., 1917 | 2 |
| | " | | Feb., 1917 | 2 |
| | " | | Mar., 1917 | 2 |
| Oshawa, Ont. City Gas Co. to Sept., 1916. since then The Hydro-Electric Power Commission of Ontario. | Carburetted Water Gas | 1,138 | Apr., 1916 | 4 |
| | " | | May, 1916 | 4 |
| | " | | June, 1916 | 5 |
| | " | | July, 1916 | 4 |
| | " | | Aug., 1916 | 4 |
| | " | | Sept., 1916 | 5 |
| | " | | Oct., 1916 | 4 |
| | " | | Nov., 1916 | 4 |
| | " | | Dec., 1916 | 4 |
| | " | | Jan., 1917 | 4 |
| | " | | Feb., 1917 | 4 |
| | " | | Mar., 1917 | 4 |
| Ottawa, Ont. Ottawa Gas Co. | Coal Gas | 13,479 | Apr., 1916 | 12 |
| | " | | May, 1916 | 12 |
| | " | | June, 1916 | 15 |
| | " | | July, 1916 | 12 |
| | " | | Aug., 1916 | 12 |
| | " | | Sept., 1916 | 15 |
| | " | | Oct., 1916 | 12 |
| | " | | Nov., 1916 | 25 |
| | " | | Dec., 1916 | 25 |
| | " | | Jan., 1917 | 26 |
| | " | | Feb., 1917 | 23 |
| | " | | Mar., 1917 | 27 |
| Owen Sound, Ont. Corporation of Owen Sound. | Coal Gas | 1619 | Apr., 1916 | 4 |
| | " | | May, 1916 | 4 |
| | " | | June, 1916 | 5 |
| | " | | July, 1916 | 4 |
| | " | | Aug., 1916 | 4 |
| | " | | Sept., 1916 | 5 |
| | " | | Oct., 1916 | 4 |
| | " | | Nov., 1916 | 4 |
| | " | | Dec., 1916 | 4 |
| | " | | Jan., 1917 | 4 |
| | " | | Feb., 1917 | 4 |
| | " | | Mar., 1917 | 4 |

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the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace omitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|---------------------------|----------------------|---|-------|----------------|---------------|----------------|---------|-------------------------|
| of Tests. Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 2 | 0 | 2 | 2 | 646 | 642 | 644 | | None. |
| 2 | 0 | 2 | 2 | 649 | 643 | 646 | | " |
| 2 | 0 | 2 | 2 | 649 | 631 | 640 | | " |
| 2 | 0 | 2 | 2 | 673 | 649 | 661 | | " |
| 2 | 0 | 2 | 2 | 680 | 674 | 677 | | " |
| 2 | 0 | 3 | 2 | 650 | 647 | 649 | | " |
| 2 | 0 | 2 | 2 | 661 | 604 | 632 | | " |
| 2 | 0 | 2 | 2 | 685 | 638 | 662 | | " |
| 2 | 0 | 2 | 2 | 696 | 686 | 691 | | " |
| 2 | 0 | 2 | 2 | 679 | 678 | 679 | | " |
| 2 | 0 | 2 | 2 | 687 | 680 | 683 | | " |
| 2 | 0 | 2 | 2 | 669 | 663 | 666 | 661 | " |
| 4 | 0 | 4 | 4 | 559 | 543 | 549 | | None. |
| 4 | 0 | 4 | 4 | 568 | 534 | 559 | | " |
| 5 | 0 | 5 | 5 | 570 | 546 | 559 | | " |
| 4 | 0 | 4 | 4 | 567 | 529 | 547 | | " |
| 5 | 0 | 4 | 5 | 567 | 549 | 560 | | " |
| 4 | 1 | 5 | 4 | 585 | 523 | 550 | | " |
| 4 | 0 | 4 | 4 | 552 | 485 | 524 | | 485 |
| 4 | 1 | 4 | 4 | 546 | 527 | 536 | | None. |
| 4 | 1 | 4 | 4 | 551 | 524 | 537 | | " |
| 4 | 1 | 4 | 4 | 541 | 526 | 531 | | " |
| 4 | 2 | 4 | 4 | 548 | 530 | 540 | | " |
| 4 | 2 | 4 | 4 | 547 | 504 | 531 | 544 | 504 |
| 12 | 0 | 23 | 23 | 557 | 525 | 537 | | None. |
| 12 | 0 | 26 | 26 | 550 | 524 | 535 | | " |
| 15 | 0 | 24 | 24 | 560 | 535 | 546 | | " |
| 12 | 0 | 25 | 25 | 556 | 523 | 539 | | " |
| 12 | 0 | 26 | 26 | 555 | 523 | 536 | | " |
| 15 | 0 | 25 | 25 | 554 | 522 | 535 | | " |
| 12 | 0 | 25 | 25 | 567 | 526 | 539 | | " |
| 12 | 0 | 25 | 25 | 567 | 521 | 534 | | " |
| 25 | 0 | 25 | 25 | 548 | 521 | 535 | | " |
| 26 | 0 | 26 | 26 | 550 | 522 | 533 | | " |
| 23 | 0 | 23 | 23 | 552 | 523 | 532 | | " |
| 27 | 0 | 27 | 27 | 554 | 520 | 534 | 536 | " |
| 4 | 0 | 4 | 4 | 607 | 574 | 593 | | None. |
| 4 | 0 | 4 | 4 | 611 | 553 | 590 | | " |
| 5 | 0 | 5 | 5 | 601 | 555 | 577 | | " |
| 4 | 0 | 4 | 4 | 583 | 548 | 566 | | " |
| 5 | 0 | 4 | 5 | 604 | 557 | 578 | | " |
| 4 | 0 | 5 | 4 | 603 | 573 | 588 | | " |
| 4 | 0 | 4 | 4 | 615 | 544 | 580 | | " |
| 4 | 0 | 4 | 4 | 570 | 524 | 548 | | " |
| 4 | 0 | 4 | 4 | 567 | 529 | 550 | | " |
| 4 | 0 | 4 | 4 | 571 | 542 | 560 | | " |
| 4 | 0 | 4 | 4 | 610 | 543 | 579 | | " |
| 4 | 0 | 4 | 4 | 559 | 554 | 556 | 572 | " |

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|--|---|-------------------------|--|---|
| | | | Month. | Number |
| | | | | Prescribed. |
| Peterboro, Ont. Peterboro Light & Power Co., to June 1916, since then, The Hydro-Electric Power Commission of Ontario. | Carburetted Water Gas... " " " " " " " " " " " | 2,067 | Apr., 1916.. May, 1916.. June, 1916.. July, 1916.. Aug., 1916.. Sept., 1916.. Oct., 1916.. Nov., 1916.. Dec., 1916.. Jan., 1917.. Feb., 1917.. Mar., 1917.. | 4 4 5 4 4 5 4 4 4 4 4 4 |
| Fort Hope, Ont. Port Hope Gas Co. | Coal Gas..... " " " " " " " " " | 415 | Apr., 1916.. May, 1916.. June, 1916.. July, 1916.. Aug., 1916.. Sept., 1916.. Oct., 1916.. Nov., 1916.. Dec., 1916.. Jan., 1917.. Feb., 1917.. Mar., 1917.. | 2 2 2 2 2 3 2 2 2 2 2 2 |
| Quebec, P.Q. Quebec Ry. Lt. & Pr. Co. | Carburetted Water Gas... " " " " " " " " " | 6,035 | Apr., 1916.. May, 1916.. June, 1916.. July, 1916.. Aug., 1916.. Sept., 1916.. Oct., 1916.. Nov., 1916.. Dec., 1916.. Jan., 1917.. Feb., 1917.. Mar., 1917.. | 8 8 10 8 8 10 8 12 12 12 12 12 |
| S t. Hyacinthe, P.Q. La Cie. du Gaz Electricité et Pouvoir. | Carburetted Water Gas... " " " " " " " " " | 555 | Apr., 1916.. May, 1916.. June, 1916.. July, 1916.. Aug., 1916.. Sept., 1916.. Oct., 1916.. Nov., 1916.. Dec., 1916.. Jan., 1917.. Feb., 1917.. Mar., 1917.. | 2 2 2 2 2 3 2 2 2 2 2 2 |

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the Calorimetric and Sulphuretted Hydrogen Tests made during
March 31, 1917.

| Tests (No trace mitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|-----------------------------|----------------------------|---|-------|-------------------|------------------|----------------|---------|--------------------------------|
| of Tests. Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 4 | 1 | 4 | 4 | 556 | 537 | 547 | | None. |
| 4 | 1 | 4 | 4 | 567 | 559 | 563 | | " |
| 5 | 1 | 5 | 5 | 568 | 559 | 563 | | " |
| 4 | 0 | 4 | 4 | 576 | 561 | 568 | | " |
| 5 | 0 | 4 | 5 | 583 | 568 | 575 | | " |
| 4 | 0 | 5 | 4 | 568 | 561 | 565 | | " |
| 4 | 1 | 4 | 4 | 560 | 549 | 555 | | " |
| 4 | 0 | 4 | 4 | 562 | 548 | 553 | | " |
| 4 | 1 | 4 | 4 | 552 | 551 | 552 | | " |
| 4 | 0 | 4 | 4 | 547 | 541 | 544 | | " |
| 4 | 0 | 4 | 4 | 550 | 543 | 545 | | " |
| 4 | 1 | 4 | 4 | 550 | 539 | 547 | 556 | " |
| 2 | 0 | 2 | 2 | 653 | 621 | 637 | | None. |
| 2 | 0 | 2 | 2 | 641 | 609 | 625 | | " |
| 2 | 0 | 2 | 2 | 658 | 655 | 657 | | " |
| 2 | 0 | 2 | 2 | 626 | 623 | 625 | | " |
| 3 | 0 | 2 | 3 | 642 | 573 | 558 | | " |
| 2 | 0 | 3 | 2 | 650 | 645 | 648 | | " |
| 2 | 0 | 2 | 2 | 643 | 640 | 642 | | " |
| 2 | 0 | 2 | 2 | 650 | 582 | 616 | | " |
| 2 | 0 | 2 | 2 | 652 | 622 | 637 | | " |
| 2 | 0 | 2 | 2 | 630 | 598 | 614 | | " |
| 2 | 0 | 2 | 2 | 591 | 582 | 587 | | " |
| 2 | 0 | 2 | 2 | 662 | 644 | 653 | 625 | " |
| 8 | 0 | 12 | 12 | 587 | 551 | 577 | | None. |
| 9 | 0 | 12 | 14 | 586 | 544 | 572 | | " |
| 9 | 0 | 15 | 13 | 572 | 548 | 563 | | " |
| 8 | 0 | 12 | 12 | 579 | 530 | 565 | | " |
| 9 | 0 | 12 | 14 | 586 | 549 | 567 | | " |
| 9 | 0 | 15 | 13 | 576 | 541 | 565 | | " |
| 9 | 0 | 12 | 13 | 591 | 554 | 576 | | " |
| 8 | 0 | 12 | 12 | 588 | 559 | 573 | | " |
| 9 | 0 | 12 | 13 | 592 | 560 | 581 | | " |
| 12 | 0 | 12 | 12 | 591 | 556 | 577 | | " |
| 12 | 0 | 12 | 12 | 596 | 553 | 568 | | " |
| 12 | 0 | 12 | 12 | 595 | 564 | 581 | 572 | " |
| 2 | 1 | 2 | 2 | 612 | 546 | 579 | | None. |
| 2 | 2 | 2 | 2 | 584 | 570 | 577 | | " |
| 2 | 2 | 2 | 2 | 525 | 522 | 523 | | " |
| 2 | 1 | 2 | 2 | 541 | 464 | 503 | | " |
| 2 | 1 | 2 | 2 | 527 | 520 | 524 | | 464 |
| 2 | 0 | 3 | 2 | 530 | 525 | 528 | | None. |
| 2 | 2 | 2 | 2 | 523 | 520 | 521 | | " |
| 2 | 1 | 2 | 2 | 522 | 520 | 521 | | " |
| 2 | 0 | 2 | 2 | 540 | 520 | 530 | | " |
| 2 | 0 | 2 | 2 | 540 | 520 | 530 | | " |
| 2 | 0 | 2 | 2 | 523 | 521 | 522 | | " |
| 2 | 0 | 2 | 2 | 534 | 521 | 527 | 532 | " |

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|--|-------------------------------------|-------------------|---------------------------|-------------|
| | | | Month. | Number |
| | | | | Prescribed. |
| St. John, N.B. St. John Ry. Co. | Coal Gas. | 1,784 | Apr., 1916.. | 4 |
| | " | | May, 1916.. | 4 |
| | " | | June, 1916.. | 5 |
| | " | | July, 1916.. | 4 |
| | " | | Aug., 1916.. | 4 |
| | " | | Sept., 1916.. | 5 |
| | " | | Oct., 1916.. | 4 |
| | " | | Nov., 1916.. | 4 |
| | " | | Dec., 1916.. | 4 |
| | " | | Jan., 1917.. | 4 |
| | " | | Feb., 1917.. | 4 |
| | " | | Mar., 1917.. | 4 |
| St. Thomas, Ont. Corporation of St. Thomas. | Coal Gas. | 3,236 | Apr., 1916.. | 4 |
| | " | | May, 1916.. | 4 |
| | " | | June, 1916.. | 5 |
| | " | | July, 1916.. | 4 |
| | " | | Aug., 1916.. | 4 |
| | " | | Sept., 1916.. | 5 |
| | " | | Oct., 1916.. | 4 |
| | " | | Nov., 1916.. | 8 |
| | " | | Dec., 1917.. | 8 |
| | " | | Jan., 1917.. | 8 |
| | " | | Feb., 1917.. | 8 |
| | " | | Mar., 1917.. | 8 |
| Sherbrooke, P.Q. Corporation of Sherbrooke. | Carburetted Water Gas. | 974 | Apr., 1916.. | 2 |
| | " | | May, 1916.. | 2 |
| | " | | June, 1916.. | 2 |
| | " | | July, 1916.. | 2 |
| | " | | Aug., 1916.. | 2 |
| | " | | Sept., 1916.. | 3 |
| | " | | Oct., 1916.. | 2 |
| | " | | Nov., 1916.. | 2 |
| | " | | Dec., 1916.. | 2 |
| | " | | Jan., 1917.. | 2 |
| | " | | Feb., 1917.. | 2 |
| | " | | Mar., 1917.. | 2 |
| Sorel, P.Q. Corporation of Sorel. | Coal Gas. | 215 | | |
| Stratford, Ont. Stratford Gas Co. | Coal Gas and Carburetted Water Gas. | 1,341 | Apr., 1916.. | 4 |
| | " | | May, 1916.. | 4 |
| | " | | June, 1916.. | 5 |
| | " | | July, 1916.. | 4 |
| | " | | Aug., 1916.. | 4 |
| | " | | Sept., 1916.. | 5 |
| | " | | Oct., 1916.. | 4 |
| | " | | Nov., 1916.. | 4 |
| | " | | Dec., 1916.. | 4 |
| | " | | Jan., 1917.. | 4 |
| | " | | Feb., 1917.. | 4 |
| | " | | Mar., 1917.. | 4 |

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the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

| Tests (No trace mitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|-----------------------------|----------------------------|---|-------|-------------------|------------------|----------------|---------|--------------------------------|
| of Tests. Made. | Times found present. | Number of Tests. | | Highest B.T.U. | Lowest B.T.U. | Average B.T.U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 4 | 0 | 4 | 4 | 596 | 576 | 591 | | None. |
| 4 | 0 | 4 | 4 | 603 | 591 | 598 | | " |
| 4 | 0 | 5 | 4 | 588 | 563 | 573 | | " |
| 4 | 0 | 4 | 4 | 572 | 556 | 562 | | " |
| 4 | 0 | 4 | 4 | 592 | 581 | 587 | | " |
| 4 | 0 | 5 | 4 | 597 | 583 | 589 | | " |
| 4 | 0 | 4 | 4 | 595 | 587 | 591 | | " |
| 4 | 0 | 4 | 4 | 605 | 590 | 596 | | " |
| 4 | 0 | 4 | 4 | 607 | 569 | 586 | | " |
| 4 | 0 | 4 | 4 | 604 | 592 | 600 | | " |
| 4 | 0 | 4 | 4 | 623 | 592 | 602 | | " |
| 4 | 0 | 4 | 4 | 619 | 574 | 599 | 590 | " |
| 8 | 0 | 8 | 8 | 650 | 610 | 628 | | None. |
| 8 | 0 | 8 | 8 | 660 | 616 | 640 | | " |
| 8 | 0 | 10 | 8 | 658 | 622 | 643 | | " |
| 10 | 0 | 8 | 10 | 655 | 613 | 635 | | " |
| 8 | 0 | 8 | 8 | 655 | 635 | 644 | | " |
| 10 | 0 | 10 | 10 | 680 | 636 | 654 | | " |
| 8 | 0 | 8 | 8 | 666 | 594 | 621 | | " |
| 8 | 0 | 8 | 8 | 634 | 563 | 601 | | " |
| 8 | 0 | 8 | 8 | 629 | 599 | 616 | | " |
| 8 | 0 | 8 | 8 | 631 | 573 | 603 | | " |
| 8 | 0 | 8 | 8 | 642 | 577 | 605 | | " |
| 8 | 0 | 8 | 8 | 608 | 538 | 582 | 623 | " |
| 2 | 2 | 2 | 2 | 637 | 618 | 628 | | None. |
| 2 | 2 | 2 | 2 | 702 | 681 | 692 | | " |
| 2 | 2 | 2 | 2 | 643 | 604 | 623 | | " |
| 2 | 2 | 2 | 2 | 596 | 530 | 563 | | " |
| 2 | 2 | 2 | 2 | 673 | 664 | 668 | | " |
| 2 | 2 | 2 | 2 | 673 | 613 | 643 | | " |
| 2 | 2 | 3 | 2 | 754 | 673 | 714 | | " |
| 2 | 2 | 2 | 2 | 799 | 619 | 709 | | " |
| 2 | 0 | 2 | 10 | 598 | 561 | 577 | | " |
| 2 | 0 | 2 | 4 | 584 | 548 | 566 | | " |
| 2 | 0 | 2 | 4 | 549 | 540 | 544 | | " |
| 2 | 1 | 2 | 4 | 584 | 542 | 563 | 624 | " |

Testing apparatus not yet installed.

| | | | | | | | | |
|---|---|---|---|-----|-----|-----|-----|-------|
| 4 | 0 | 4 | 4 | 650 | 570 | 692 | | None. |
| 4 | 0 | 4 | 4 | 613 | 571 | 596 | | " |
| 4 | 0 | 5 | 4 | 581 | 567 | 575 | | " |
| 5 | 0 | 4 | 5 | 645 | 560 | 599 | | " |
| 4 | 0 | 4 | 4 | 636 | 560 | 603 | | " |
| 5 | 0 | 5 | 5 | 611 | 526 | 585 | | " |
| 4 | 0 | 4 | 4 | 632 | 559 | 599 | | " |
| 4 | 0 | 4 | 4 | 586 | 511 | 550 | | 511 |
| 4 | 0 | 4 | 4 | 621 | 570 | 591 | | None. |
| 4 | 0 | 4 | 4 | 608 | 536 | 571 | | " |
| 4 | 0 | 4 | 4 | 565 | 535 | 546 | | " |
| 4 | 0 | 4 | 4 | 592 | 534 | 566 | 582 | " |

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|---|--|-------------------------|------------------------------|-------------|
| | | | Month. | Number |
| | | | | Prescribed. |
| Toronto, Ont. Consumers Gas Co. | Coal Gas and Carburetted Water Gas. | 104,235 | Apr., 1916 .. | 12 |
| | " | | May, 1916 .. | 12 |
| | " | | June, 1916 .. | 15 |
| | " | | July, 1916 .. | 12 |
| | " | | Aug., 1916 .. | 12 |
| | " | | Sept., 1916 .. | 15 |
| | " | | Oct., 1916 .. | 12 |
| | " | | Nov., 1916 .. | 26 |
| | " | | Dec., 1916 .. | 25 |
| | " | | Jan., 1917 .. | 26 |
| | " | | Feb., 1917 .. | 24 |
| | " | | Mar., 1917 .. | 27 |
| Vancouver, B.C. Vancouver Gas Co. | Coal Gas and Carburetted Water Gas. | 16,827 | Apr., 1916 .. | 12 |
| | " | | May, 1916 .. | 12 |
| | " | | June, 1916 .. | 15 |
| | " | | July, 1916 .. | 12 |
| | " | | Aug., 1916 .. | 12 |
| | " | | Sept., 1916 .. | 15 |
| | " | | Oct., 1916 .. | 12 |
| | " | | Nov., 1916 .. | 25 |
| | " | | Dec., 1916 .. | 25 |
| | " | | Jan., 1917 .. | 26 |
| | " | | Feb., 1917 .. | 24 |
| | " | | Mar., 1917 .. | 27 |
| Victoria, B.C. Victoria Gas Co. | Coal Gas. | 3,247 | Apr., 1916 .. | 4 |
| | " | | May, 1916 .. | 4 |
| | " | | June, 1916 .. | 5 |
| | " | | July, 1916 .. | 4 |
| | " | | Aug., 1916 .. | 4 |
| | " | | Sept., 1916 .. | 5 |
| | " | | Oct., 1916 .. | 4 |
| | " | | Nov., 1916 .. | 8 |
| | " | | Dec., 1916 .. | 8 |
| | " | | Jan., 1917 .. | 8 |
| | " | | Feb., 1917 .. | 8 |
| | " | | Mar., 1917 .. | 8 |
| Waterloo, Ont. Corporation of Waterloo. | Carburetted Water Gas. | 733 | Apr., 1916 .. | 2 |
| | " | | May, 1916 .. | 2 |
| | " | | June, 1916 .. | 2 |
| | " | | July, 1916 .. | 2 |
| | " | | Aug., 1916 .. | 2 |
| | " | | Sept., 1916 .. | 3 |
| | " | | Oct., 1916 .. | 2 |
| | " | | Nov., 1916 .. | 2 |
| | " | | Dec., 1916 .. | 2 |
| | " | | Jan., 1917 .. | 2 |
| | " | | Feb., 1917 .. | 2 |
| | " | | Mar., 1917 .. | 2 |

SESSIONAL PAPER No. 13

The Calorimetric and Sulphuretted Hydrogen Tests made during
March 31, 1917.

| Tests (No trace omitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|---------------------------|---------------------|---|-------|------------------|-----------------|------------------|---------|--------------------------|
| Date of Tests. | Time found present. | Number of Tests. | | Highest B. T. U. | Lowest B. T. U. | Average B. T. U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 15 | 0 | 24 | 24 | 580 | 546 | 559 | | None. |
| 12 | 0 | 26 | 26 | 580 | 527 | 562 | | " |
| 15 | 0 | 25 | 25 | 586 | 561 | 566 | | " |
| 12 | 0 | 25 | 25 | 581 | 547 | 565 | | " |
| 12 | 0 | 26 | 26 | 591 | 542 | 559 | | " |
| 15 | 0 | 25 | 25 | 570 | 542 | 559 | | " |
| 12 | 0 | 25 | 25 | 559 | 536 | 548 | | " |
| 22 | 0 | 26 | 26 | 564 | 542 | 553 | | " |
| 25 | 0 | 25 | 25 | 561 | 542 | 552 | | " |
| 26 | 0 | 26 | 26 | 559 | 532 | 541 | | " |
| 24 | 0 | 24 | 24 | 549 | 530 | 538 | | " |
| 27 | 0 | 27 | 27 | 562 | 530 | 546 | 554 | " |
| | | | | | | | | |
| 12 | 0 | 23 | 23 | 576 | 513 | 535 | | 513 |
| 12 | 0 | 26 | 26 | 555 | 522 | 539 | | None. |
| 15 | 0 | 25 | 25 | 576 | 521 | 538 | | " |
| 12 | 0 | 25 | 25 | 561 | 517 | 538 | | 517 518 |
| 12 | 0 | 27 | 27 | 553 | 521 | 539 | | None. |
| 15 | 0 | 25 | 25 | 555 | 502 | 533 | | 502 |
| 12 | 0 | 25 | 25 | 555 | 511 | 539 | | 511 |
| 21 | 0 | 25 | 25 | 551 | 520 | 533 | | None. |
| 25 | 0 | 25 | 25 | 546 | 520 | 532 | | " |
| 26 | 0 | 26 | 26 | 544 | 520 | 531 | | " |
| 24 | 0 | 24 | 24 | 560 | 513 | 529 | | 513 519 |
| 27 | 0 | 27 | 27 | 552 | 522 | 535 | 535 | None. |
| | | | | | | | | |
| 4 | 0 | 8 | 8 | 594 | 532 | 556 | | None. |
| 4 | 0 | 8 | 8 | 553 | 527 | 539 | | " |
| 4 | 0 | 10 | 9 | 571 | 529 | 547 | | " |
| 4 | 0 | 8 | 9 | 560 | 537 | 548 | | " |
| 4 | 0 | 8 | 8 | 545 | 521 | 531 | | " |
| 4 | 0 | 10 | 8 | 537 | 520 | 529 | | " |
| 4 | 0 | 8 | 8 | 550 | 520 | 529 | | " |
| 8 | 0 | 8 | 8 | 563 | 528 | 549 | | " |
| 8 | 0 | 8 | 8 | 561 | 521 | 544 | | " |
| 8 | 0 | 8 | 8 | 552 | 531 | 540 | | " |
| 8 | 0 | 8 | 8 | 551 | 530 | 541 | | " |
| 8 | 0 | 8 | 8 | 530 | 521 | 526 | 540 | " |
| | | | | | | | | |
| 2 | 0 | 2 | 2 | 583 | 541 | 562 | | None. |
| 3 | 0 | 2 | 2 | 560 | 526 | 543 | | " |
| 2 | 0 | 2 | 2 | 593 | 543 | 568 | | " |
| 3 | 0 | 2 | 2 | 604 | 556 | 580 | | " |
| 2 | 0 | 2 | 2 | 548 | 520 | 534 | | " |
| 3 | 0 | 3 | 3 | 549 | 528 | 541 | | " |
| 2 | 0 | 2 | 2 | 617 | 573 | 595 | | " |
| 2 | 0 | 2 | 2 | 531 | 526 | 529 | | " |
| 2 | 0 | 2 | 2 | 545 | 536 | 541 | | " |
| 2 | 0 | 2 | 2 | 527 | 525 | 526 | | " |
| 2 | 0 | 2 | 2 | 528 | 528 | 528 | | " |
| 2 | 0 | 2 | 2 | 551 | 533 | 542 | 549 | " |

8 GEORGE V, A. 1918

STATEMENT of the Coal and Water Gas Companies registered and
the Fiscal Year ended

| Place and Company. | Kind of Gas. | Number of Meters. | Sulphuretted Hydrogen per | |
|---|--------------|-------------------------|------------------------------|-------------|
| | | | Month. | Number |
| | | | | Prescribed. |
| Winnipeg, Man..... Winnipeg Electric Ry. Co. | Coal Gas. | 19,304 | Apr., 1916.. | 12 |
| | " | | May, 1916.. | 12 |
| | " | | June, 1916.. | 15 |
| | " | | July, 1916.. | 12 |
| | " | | Aug., 1916.. | 12 |
| | " | | Sept., 1916.. | 15 |
| | " | | Oct., 1916.. | 12 |
| | " | | Nov., 1916.. | 25 |
| | " | | Dec., 1916.. | 25 |
| | " | | Jan., 1917.. | 26 |
| | " | | Feb., 1917.. | 24 |
| | " | | Mar., 1917.. | 27 |
| Yarmouth, N.S..... Yarmouth Fuel Gas Co. | Coal Gas. | 291 | Apr., 1916.. | 2 |
| | " | | May, 1916.. | 2 |
| | " | | June, 1916.. | 2 |
| | " | | July, 1916.. | 2 |
| | " | | Aug., 1916.. | 2 |
| | " | | Sept., 1916.. | 3 |
| | " | | Oct., 1916.. | 2 |
| | " | | Nov., 1916.. | 2 |
| | " | | Dec., 1916.. | 2 |
| | " | | Jan., 1917.. | 2 |
| | " | | Feb., 1917.. | 2 |
| | " | | Mar., 1917.. | 2 |

ORMOND HIGMAN,
Chief Engineer.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 13

the Calorimetric and Sulphuretted Hydrogen Tests made during
March 31, 1917.

| Tests (No Trace mitted.) | | Calorimetric Values—(Standard 520 British Thermal Units.) | | | | | | |
|-----------------------------|----------------------------|---|-------|---------------------|--------------------|-----------------|---------|--------------------------------|
| of Tests Made. | Times found present. | Number of Tests. | | Highest B. T. U. | Lowest B. T. U. | Average B.T. U. | | Readings below Standard. |
| | | Prescribed. | Made. | | | Monthly. | Yearly. | |
| 12 | 0 | 23 | 23 | 578 | 542 | 56 | | None. |
| 15 | 0 | 26 | 26 | 572 | 526 | 550 | | " |
| 12 | 0 | 25 | 25 | 582 | 521 | 543 | | " |
| 15 | 0 | 25 | 25 | 565 | 517 | 540 | | 517 |
| 12 | 1 | 26 | 28 | 592 | 525 | 544 | | None. |
| 12 | 0 | 25 | 25 | 563 | 520 | 539 | | " |
| 15 | 0 | 25 | 25 | 588 | 523 | 549 | | " |
| 12 | 0 | 25 | 25 | 565 | 525 | 544 | | " |
| 15 | 0 | 25 | 29 | 581 | 521 | 542 | | " |
| 14 | 0 | 26 | 29 | 571 | 520 | 542 | | " |
| 12 | 0 | 24 | 24 | 548 | 526 | 531 | | " |
| 13 | 0 | 27 | 27 | 572 | 528 | 554 | 545 | " |
| 2 | 0 | 2 | 2 | 596 | 591 | 594 | | None. |
| 2 | 0 | 2 | 2 | 571 | 541 | 556 | | " |
| 3 | 0 | 2 | 2 | 544 | 523 | 534 | | " |
| 2 | 1 | 2 | 3 | 569 | 532 | 546 | | " |
| 2 | 0 | 2 | 2 | 620 | 607 | 614 | | " |
| 2 | 0 | 3 | 2 | 562 | 523 | 543 | | " |
| 2 | 0 | 2 | 2 | 556 | 532 | 544 | | " |
| 2 | 1 | 2 | 2 | 591 | 524 | 558 | | " |
| 2 | 0 | 2 | 2 | 601 | 576 | 588 | | " |
| 2 | 0 | 2 | 2 | 660 | 645 | 652 | | " |
| 2 | 0 | 2 | 2 | 670 | 659 | 665 | | " |
| 2 | 0 | 2 | 2 | 662 | 641 | 652 | 587 | " |

J. U. VINCENT,
Deputy Minister.

APPENDIX

STATEMENT of Gas Meters tested during

| District. | 10 Light Tin and No. 1 Iron Meters. | | | | | 11 to 50 Light Tin and No. 2 Iron Meters. | | | | | No. 3 Iron Meters. | | | | |
|--------------------|-------------------------------------|-------------------|-------------------|---------------|---------------|---|-------------------|-------------------|---------------|---------------|----------------------------------|-------------------|-------------------|---------------|---------------|
| | Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | |
| | Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% Fast. | Over 3% slow. | Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% fast. | Over 3% slow. | Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% fast. | Over 3% slow. |
| Belleville..... | 417 | 318 | 967 | 8 | 17 | 6 | 5 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Calgary..... | 124 | 86 | 1,037 | 28 | 4 | 1 | 4 | 19 | 5 | 1 | 2 | 0 | 0 | 1 | 0 |
| Charlottetown..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Halifax..... | 184 | 88 | 189 | 0 | 0 | 12 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hamilton..... | 3,258 | 601 | 3,678 | 0 | 1 | 66 | 15 | 80 | 0 | 0 | 4 | 0 | 8 | 0 | 0 |
| London..... | 2,132 | 1,053 | 4,517 | 34 | 30 | 18 | 17 | 65 | 3 | 2 | 3 | 2 | 17 | 0 | 0 |
| Montreal..... | 6,026 | 5,110 | 8,347 | 142 | 158 | 54 | 35 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ottawa..... | 592 | 834 | 1,407 | 0 | 0 | 4 | 21 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quebec..... | 474 | 72 | 416 | 0 | 0 | 2 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| St. Hyacinthe..... | 13 | 3 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| St. John..... | 427 | 19 | 269 | 1 | 0 | 4 | 1 | 6 | 1 | 0 | 2 | 0 | 2 | 0 | 0 |
| Sherbrooke..... | 89 | 55 | 76 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Toronto..... | 9,035 | 2,451 | 9,306 | 73 | 84 | 215 | 34 | 220 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| Vancouver..... | 809 | 859 | 737 | 3 | 1 | 16 | 16 | 39 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Victoria..... | 241 | 260 | 223 | 0 | 2 | 15 | 18 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Winnipeg..... | 1,768 | 572 | 833 | 6 | 4 | 10 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals..... | 25,589 | 12,381 | 32,018 | 295 | 303 | 423 | 182 | 575 | 11 | 6 | 16 | 2 | 27 | 1 | 0 |

ORMOND HIGMAN,
Chief Engineer.

DEPARTMENT OF INLAND REVENUE,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 13

F.

the Fiscal Year ended March 31, 1917.

| 51 to 100 Light Tin Meters. | | | | | Larger Tin Meters. | | | | | Larger Iron Meters. | | | | | Totals. |
|----------------------------------|-------------------|-------------------|---------------|---------------|----------------------------------|-------------------|-------------------|---------------|---------------|----------------------------------|-------------------|-------------------|---------------|---------------|---------|
| Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | | |
| Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% fast. | Over 3% slow. | Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% fast. | Over 3% slow. | Correct. | Not over 2% fast. | Not over 3% slow. | Over 2% fast. | Over 3% slow. | |
| 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,757 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 0 | 0 | 1,329 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 489 |
| 5 | 2 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 2 | 22 | 0 | 0 | 7,768 |
| 4 | 2 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 14 | 10 | 66 | 1 | 4 | 8,011 |
| 23 | 36 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20,032 |
| 0 | 6 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,885 |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 973 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 732 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 223 |
| 14 | 8 | 23 | 1 | 0 | 10 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21,483 |
| 0 | 2 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,489 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 779 |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,203 |
| 47 | 59 | 72 | 1 | 5 | 11 | 2 | 7 | 0 | 0 | 32 | 13 | 104 | 1 | 4 | 72,187 |

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

STATEMENT of Natural Gas Companies registered during the Fiscal Year ended
March 31, 1917.

| Location. | Name. | Number of Meters. |
|--------------------------|---|-------------------|
| Brantford, Ont..... | Brantford Gas Co..... | 5,011 |
| Brooks, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 68 |
| Cainsville, Ont..... | Standard Natural Gas Co..... | 83 |
| Caledonia, Ont..... | Port Colborne-Welland Natural Gas & Oil Co..... | 442 |
| Calgary, Alta..... | Calgary Gas Co..... | 6,689 |
| Castor, Alta..... | Corporation of Castor..... | 45 |
| Chatham, Ont..... | Chatham Gas Co..... | 3034 |
| Claresholm, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 124 |
| Ford, Ont..... | Windsor Gas Co..... | 331 |
| Galt, Ont..... | Dominion Natural Gas Co..... | 1868 |
| Granum, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 83 |
| Hamilton, Ont..... | Manufacturers Natural Gas Co..... | 22 |
| Hamilton, Ont..... | United Gas & Fuel Co..... | 17,304 |
| Hillsboro, N.B..... | Moncton Tramways Electricity & Gas Co..... | 233 |
| Ingersoll, Ont..... | Ingersoll Gas Light Co..... | 967 |
| Lethbridge, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 502 |
| Macleod, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 155 |
| Medicine Hat, Alta..... | Corporation of Medicine Hat..... | 2456 |
| Moncton, N.B..... | Moncton Tramways Electricity & Gas Co..... | 2240 |
| Nanton, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 110 |
| Okotoks, Alta..... | Canadian Western Natural Gas, Light, Heat & Power Co..... | 98 |
| Port Colborne, Ont..... | Sterling Gas Co..... | 945 |
| Redcliff, Alta..... | Redcliff Light & Power Co..... | 275 |
| Ridgeway, Ont..... | Bertie Natural Gas Co..... | 175 |
| Rose Hill, Ont..... | Rose Hill Natural Gas Co..... | 38 |
| St. Catharines, Ont..... | Corporation of St. Catharines..... | 467 |
| Sandwich, Ont..... | Windsor Gas Co..... | 429 |
| Sarnia, Ont..... | Sarnia Gas & Electric Light Co..... | 3094 |
| Suffield, Alta..... | Southern Alberta Gas Co..... | 50 |
| Walkerville, Ont..... | Windsor Gas Co..... | 1184 |
| Windsor, Ont..... | Windsor Gas Co..... | 5320 |
| Woodstock, Ont..... | Woodstock Gas Light Co..... | 1855 |

ORMOND HIGMAN,
Chief Engineer.

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 13

APPENDIX G.

STATEMENT of Electric Light Expenditures and Revenues for the fiscal year ended March 31, 1917.

| Districts. | Inspectors. | EXPENDITURES. | | | | | | Revenues. |
|------------------------------------|-------------------------|-----------------|--------------------------|---------------|-----------------------------|----------------|-----------------|------------------|
| | | Salaries. | Special Assist- ance. | Rent. | Travel- ing Expenses. | Sun- dries. | Total. | |
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Belleville..... | Fraser, H..... | 1,499 88 | 1,035 96 | | 287 90 | 49 41 | 2,873 15 | 2,216 40 |
| Fort William..... | Little, E..... | 1,399 92 | 30 00 | | 220 60 | 105 93 | 1,756 45 | 979 50 |
| Hamilton..... | Lutz, H..... | | | | 462 00 | | 462 00 | 4,499 70 |
| London..... | Nash, A. F..... | | 249 99 | | 533 55 | 45 48 | 829 02 | 6,523 95 |
| Ottawa..... | Kinsman, A. E..... | | | | 224 00 | | 224 00 | 4,568 20 |
| Sudbury..... | Bonskill, L. H..... | 115 58 | 497 29 | | 1,098 11 | 54 18 | 1,765 16 | 1,558 20 |
| Toronto..... | Stiver, J. L..... | | | | 741 80 | 42 10 | 783 90 | 11,363 40 |
| Special..... | Kinsman, E. A..... | 750 00 | | | | | 750 00 | |
| | <i>Ontario.....</i> | <i>3,765 38</i> | <i>1,813 24</i> | | <i>3,567 96</i> | <i>297 10</i> | <i>9,443 68</i> | <i>31,709 35</i> |
| Montreal..... | Aubin, A..... | | 2,273 79 | | 337 40 | 64 79 | 2,675 98 | 13,675 15 |
| Quebec..... | Cantin, J. A..... | | 2,154 94 | 611 25 | 449 65 | 183 46 | 3,399 30 | 2,489 05 |
| Sherbrooke..... | Simpson, A. F..... | | | | 182 05 | 45 80 | 227 85 | 903 35 |
| St. Hyacinthe..... | Aubin, A., Act'g..... | | | | | | | 927 40 |
| Three Rivers..... | Oliver, A..... | 499 92 | | 180 00 | 285 80 | 12 85 | 978 57 | 862 13 |
| | <i>Quebec.....</i> | <i>499 92</i> | <i>4,428 73</i> | <i>791 25</i> | <i>1,254 90</i> | <i>306 90</i> | <i>7,281 70</i> | <i>18,857 10</i> |
| St. John, N.B..... | Wilson, J. E..... | | 12 00 | | 298 68 | 44 33 | 355 01 | 1,848 15 |
| Halifax, N. S..... | Toale, John..... | | 60 00 | | 997 20 | 272 97 | 1,330 17 | 2,053 65 |
| Charlottetown, P.E.I..... | Bell, J. H..... | | 60 00 | | 70 30 | 17 46 | 147 76 | 198 00 |
| Winnipeg, Man..... | Hamilton, R..... | | | 533 10 | 185 10 | 123 10 | 841 30 | 2,887 90 |
| Regina, Sask..... | Hunter, W, M..... | 2,300 06 | | | 1,146 70 | 171 40 | 3,618 16 | 2,019 80 |
| Calgary..... | Kyle, W. P..... | 1,500 00 | 514 98 | | 277 60 | 110 70 | 2,403 28 | 1,926 70 |
| Edmonton..... | Cantin, A. J..... | 1,299 96 | | | 282 45 | 117 80 | 1,700 21 | 885 90 |
| | <i>Alberta.....</i> | <i>2,799 96</i> | <i>514 98</i> | | <i>560 05</i> | <i>228 50</i> | <i>4,103 79</i> | <i>2,812 60</i> |
| Vancouver..... | Stott, John..... | 7,077 38 | 900 00 | | 369 90 | 205 62 | 8,552 90 | 6,793 15 |
| Victoria..... | Dresser, F..... | | 44 00 | | 150 10 | 111 59 | 305 69 | 1,935 90 |
| | <i>British Columbia</i> | <i>7,077 38</i> | <i>944 00</i> | | <i>520 00</i> | <i>317 21</i> | <i>8,858 59</i> | <i>8,729 05</i> |
| Dawson, Yukon..... | Stingle, J. W..... | 499 92 | | | | | 499 92 | |
| Chief Electrical Engineer..... | | | | | 224 45 | 350 15 | 574 60 | |
| Inspector of Eastern Division..... | | | | | | | | |
| Inspector of Western Division..... | | 2,599 92 | | | 359 85 | 242 17 | 3,201 94 | |
| Total for Inspectors..... | | 19,542 54 | 7,832 95 | 1,324 35 | 9,185 19 | 2,371 29 | 40,256 32 | 71,115 60 |

APPENDIX G—*Concluded.*STATEMENT of Electric Light Expenditures and Revenues for the fiscal year ended March 31, 1917—*Concluded.*

| | EXPENDITURES. | | | | | | Revenues. |
|--|---------------|--------------------------|----------|------------------------------|----------------|-----------|-----------|
| | Salaries. | Special Assist- ance. | Rent. | Travel- ling Expenses. | Sun- dries. | Total. | |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| General Contingencies..... | | | | | 3,657 72 | 3,657 72 | |
| Printing..... | | | | | 236 56 | 236 56 | |
| Stationery..... | | | | | 45 80 | 45 80 | |
| International Electro-Technical Commission..... | | | | | | | |
| Provisional Allowance..... | | | | | 2,286 44 | 2,286 44 | |
| Export of Electric Power..... | | | | | | | 250 00 |
| Electric Laboratory..... | | | | | | | 101 58 |
| Grand Totals..... | 19,542 54 | 7,832 95 | 1,324 35 | 9,185 19 | 8,597 81 | 46,482 84 | 71,467 18 |

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.J. U. VINCENT,
Deputy Minister.

APPENDIX H.

8 GEORGE V, A. 1918

APPENDIX

STATEMENT of Electric Meters tested during

| District. | Class 1 Meters (2 wire, 1 to 250 volts.) | | | | | Class 2 Meters (3 wire & polyphase, 1 to 250 volts.) | | | | |
|--------------------|--|-------------------|-------------------|---------------|---------------|--|-------------------|-------------------|---------------|---------------|
| | Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | |
| | Correct. | Not over 3% fast. | Not over 3% slow. | Over 3% fast. | Over 3% slow. | Correct. | Not over 3% fast. | Not over 3% slow. | Over 3% fast. | Over 3% slow. |
| Belleville..... | 525 | 1,803 | 681 | 0 | 0 | 112 | 285 | 89 | 0 | 0 |
| Calgary..... | 1,404 | 1,289 | 141 | 3 | 40 | 134 | 108 | 8 | 1 | 3 |
| Charlottetown..... | 127 | 82 | 75 | 1 | 5 | 17 | 7 | 8 | 0 | 0 |
| Edmonton..... | 543 | 759 | 36 | 0 | 1 | 46 | 52 | 8 | 0 | 0 |
| Ft. William..... | 155 | 1,038 | 290 | 1 | 1 | 13 | 45 | 46 | 0 | 0 |
| Halifax..... | 1,521 | 1,396 | 242 | 16 | 9 | 92 | 69 | 18 | 0 | 1 |
| Hamilton..... | 4,618 | 927 | 752 | 0 | 0 | 549 | 63 | 126 | 0 | 0 |
| London..... | 4,069 | 2,882 | 2,420 | 1 | 0 | 297 | 338 | 264 | 0 | 0 |
| Montreal..... | 6,964 | 11,314 | 3,939 | 0 | 2 | 4 | 1 | 0 | 0 | 0 |
| Ottawa..... | 1,142 | 3,838 | 2,227 | 0 | 0 | 14 | 72 | 39 | 1 | 0 |
| Quebec..... | 2,917 | 567 | 452 | 0 | 2 | 3 | 0 | 14 | 0 | 0 |
| Regina..... | 507 | 2,148 | 598 | 5 | 5 | 9 | 55 | 15 | 1 | 0 |
| St. John..... | 1,220 | 831 | 872 | 5 | 6 | 39 | 23 | 45 | 0 | 2 |
| St. Hyacinthe..... | 1,023 | 235 | 216 | 0 | 0 | 9 | 0 | 1 | 0 | 0 |
| Sherbrooke..... | 426 | 372 | 608 | 0 | 0 | 1 | 4 | 2 | 0 | 0 |
| Sudbury..... | 466 | 1,328 | 616 | 2 | 5 | 29 | 62 | 19 | 0 | 2 |
| Three Rivers..... | 1,132 | 92 | 76 | 4 | 0 | 14 | 1 | 0 | 0 | 0 |
| Toronto..... | 8,238 | 5,158 | 1,878 | 6 | 19 | 1,189 | 457 | 50 | 6 | 2 |
| Vancouver..... | 3,538 | 5,223 | 1,824 | 5 | 4 | 97 | 216 | 69 | 0 | 1 |
| Victoria..... | 1,413 | 1,165 | 468 | 1 | 2 | 36 | 34 | 16 | 0 | 0 |
| Winnipeg..... | 1,760 | 1,811 | 301 | 0 | 2 | 181 | 186 | 31 | 0 | 0 |
| Yukon..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals..... | 43,708 | 44,258 | 18,712 | 50 | 103 | 2,885 | 2,069 | 868 | 9 | 11 |

ORMOND HIGMAN,
Chief Engineer.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 13

H.

the Fiscal Year ended March 31, 1917.

| Class 3 Meters (251 to 650 volts). | | | | | Class 4 Meters (over 650 volts.) | | | | | Totals. |
|------------------------------------|-------------------|-------------------|---------------|---------------|----------------------------------|-------------------|-------------------|---------------|---------------|---------|
| Verified as within legal limits. | | | Rejected. | | Verified as within legal limits. | | | Rejected. | | |
| Correct. | Not over 3% fast. | Not over 3% slow. | Over 3% fast. | Over 3% slow. | Correct. | Not over 3% fast. | Not over 3% slow. | Over 3% fast. | Over 3% slow. | |
| 3 | 21 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,526 |
| 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,135 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 322 |
| 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,447 |
| 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,594 |
| 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,365 |
| 74 | 9 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7,147 |
| 45 | 72 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10,422 |
| 32 | 46 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22,450 |
| 10 | 56 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7,428 |
| 57 | 13 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,030 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,343 |
| 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,047 |
| 9 | 8 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1,504 |
| 4 | 2 | 1 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 1,433 |
| 1 | 8 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,545 |
| 42 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,364 |
| 441 | 108 | 44 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 17,601 |
| 24 | 46 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11,076 |
| 7 | 11 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,163 |
| 56 | 99 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4,448 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 811 | 512 | 380 | 5 | 1 | 4 | 4 | 0 | 0 | 0 | 114,390 |

J. U. VINCENT,
Deputy Minister.

APPENDIX I.

STATEMENT showing the amount of Electrical Energy, Gas or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

| Name of Contractor and Place of Business. | Month. | Units Produced for export. | | Units Produced for use in Canada. | | Total Output of Generating Station or other Source. | |
|---|--------------|----------------------------|--------------|-----------------------------------|--------------|---|--------------|
| | | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. |
| Canadian Niagara Power Company, Niagara Falls, Ont. | April..... | 32,154,705 | 4,920-0 | 1,084,295 | 166-0 | 33,239,000 | 5,086-0 |
| | May..... | 35,748,225 | 5,470-0 | 843,775 | 129-0 | 36,592,000 | 5,599-0 |
| | June..... | 34,354,972 | 5,257-0 | 977,028 | 150-0 | 35,332,000 | 5,407-0 |
| | July..... | 32,862,444 | 5,029-0 | 2,046,556 | 313-0 | 34,909,000 | 5,342-0 |
| | August..... | 28,422,608 | 4,349-0 | 9,268,392 | 1,418-0 | 37,691,000 | 5,767-0 |
| | September.. | 26,059,060 | 3,988-0 | 15,382,940 | 2,354-0 | 41,442,000 | 6,342-0 |
| | October..... | 27,477,534 | 4,205-0 | 17,132,466 | 2,621-0 | 44,610,000 | 6,826-0 |
| | November.. | 24,907,855 | 3,811-0 | 21,782,145 | 3,333-0 | 46,690,000 | 7,144-0 |
| | December.. | 21,445,908 | 3,282-0 | 24,891,092 | 3,809-0 | 46,337,000 | 7,091-0 |
| | January..... | 17,431,343 | 2,667-0 | 24,793,657 | 3,794-0 | 42,225,000 | 6,461-0 |
| | February... | 12,937,005 | 1,980-0 | 21,193,995 | 3,243-0 | 34,131,000 | 5,223-0 |
| | March..... | 21,425,820 | 3,279-0 | 25,974,180 | 3,975-0 | 47,400,000 | 7,254-0 |
| | | Totals.. | 315,227,479 | 48,237-0 | 165,370,521 | 25,305-0 | 480,598,000 | 73,542-0 |
| Toronto Power Company, Niagara Falls, Ont..... | April..... | 6,306,000 | 965-0 | 38,044,300 | 5,822-0 | 44,350,300 | 6,787-0 |
| | May..... | 5,937,000 | 908-0 | 41,932,000 | 6,417-0 | 47,869,000 | 7,325-0 |
| | June..... | 5,767,000 | 882-0 | 45,721,500 | 6,996-0 | 51,488,500 | 7,778-0 |
| | July..... | 6,402,000 | 979-0 | 44,538,800 | 6,815-0 | 50,940,800 | 7,794-0 |
| | August..... | 11,782,000 | 1,803-0 | 45,684,800 | 6,991-0 | 57,466,800 | 8,794-0 |
| | September.. | 13,059,000 | 1,998-0 | 48,364,200 | 7,401-0 | 61,423,200 | 9,399-0 |
| | October..... | 13,164,100 | 2,011-0 | 51,809,200 | 7,926-0 | 64,973,300 | 9,937-0 |
| | November.. | 11,286,400 | 1,727-0 | 52,284,500 | 8,001-0 | 63,570,900 | 9,728-0 |
| | December.. | 11,560,700 | 1,769-0 | 52,441,800 | 8,025-0 | 64,002,500 | 9,794-0 |
| | January..... | 11,666,700 | 1,785-0 | 56,114,400 | 8,587-0 | 67,781,100 | 10,372-0 |
| | February... | 10,330,100 | 1,587-0 | 51,281,400 | 7,847-0 | 61,611,500 | 9,434-0 |
| | March..... | 11,095,500 | 1,697-0 | 56,480,900 | 8,643-0 | 67,576,400 | 10,340-0 |
| | | Totals.. | 118,356,500 | 18,111-0 | 584,697,800 | 89,471-0 | 703,054,300 | 107,582-0 |
| Ontario Power Company, Niagara Falls, Ont. | April..... | 14,763,420 | 2,259-0 | 59,747,380 | 9,143-0 | 74,510,800 | 11,402-0 |
| | May..... | 19,261,160 | 2,947-0 | 61,430,740 | 9,400-0 | 80,691,900 | 12,347-0 |
| | June..... | 23,476,040 | 3,592-0 | 56,541,460 | 8,652-0 | 80,017,500 | 12,244-0 |
| | July..... | 25,066,300 | 3,836-0 | 53,266,200 | 8,151-0 | 78,332,500 | 11,987-0 |
| | August..... | 29,008,240 | 4,439-0 | 49,609,560 | 7,591-0 | 78,617,800 | 12,030-0 |
| | September.. | 32,470,540 | 4,969-0 | 45,602,960 | 6,978-0 | 78,073,500 | 11,947-0 |
| | October..... | 31,953,520 | 4,890-0 | 52,754,480 | 8,073-0 | 84,708,000 | 12,963-0 |
| | November.. | 31,334,440 | 4,795-0 | 52,007,760 | 7,958-0 | 83,342,200 | 12,753-0 |
| | December.. | 32,569,180 | 4,984-0 | 52,453,920 | 8,027-0 | 85,023,100 | 13,011-0 |
| | January..... | 31,631,400 | 4,840-0 | 52,713,000 | 8,066-0 | 84,344,400 | 12,906-0 |
| | February... | 27,021,700 | 4,135-0 | 47,839,900 | 7,321-0 | 74,861,600 | 11,456-0 |
| | March..... | 29,886,100 | 4,573-0 | 54,589,800 | 8,353-0 | 84,475,900 | 12,926-0 |
| | | Totals.. | 328,442,040 | 50,259-0 | 638,557,160 | 97,713-0 | 966,999,200 | 147,972-0 |

SESSIONAL PAPER No. 13

APPENDIX I.—Continued.

STATEMENT showing the amount of Electrical Energy, Gas, or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

| Name of Contractor and Place of Business. | Month. | Units Produced for export. | | Units Produced for use in Canada. | | Total Output of Generating Station or other Source. | |
|--|--------------|----------------------------|--------------|-----------------------------------|--------------|---|--------------|
| | | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. |
| Ontario and Minnesota Power Co..... | April..... | 1,151,030 | 176.1 | 957,260 | 146.5 | 2,108,290 | 322.6 |
| | May..... | 1,059,590 | 162.1 | 900,950 | 137.9 | 1,960,540 | 300.0 |
| | June..... | 888,660 | 136.0 | 783,750 | 119.9 | 1,672,410 | 255.9 |
| | July..... | 1,314,750 | 201.2 | 890,310 | 136.2 | 2,205,060 | 337.4 |
| | August..... | 1,811,350 | 277.2 | 1,083,970 | 165.5 | 2,895,320 | 442.7 |
| | September.. | 1,561,760 | 239.0 | 957,470 | 146.5 | 2,519,230 | 385.5 |
| | October..... | 1,784,470 | 273.1 | 1,086,210 | 166.2 | 2,870,680 | 439.3 |
| | November.. | 1,500,358 | 229.6 | 961,054 | 147.0 | 2,461,412 | 376.6 |
| | December.. | 1,460,749 | 223.5 | 882,071 | 135.0 | 2,342,820 | 358.5 |
| | January..... | 1,620,705 | 248.0 | 973,699 | 149.0 | 2,594,404 | 397.0 |
| | February.... | 1,433,540 | 219.4 | 848,760 | 129.9 | 2,282,300 | 349.3 |
| | March..... | 986,022 | 150.9 | 762,650 | 116.7 | 1,748,672 | 267.6 |
| | Totals.. | 16,572,984 | 2,536.1 | 11,088,154 | 1,696.3 | 27,661,138 | 4,232.4 |
| Western Canada Power Company, Vancouver, B.C. | April..... | 604,400 | 92.0 | 4,791,360 | 735.0 | 5,395,760 | 827.0 |
| | May..... | 709,240 | 109.0 | 5,002,380 | 765.0 | 5,711,620 | 874.0 |
| | June..... | 1,248,174 | 191.0 | 5,282,046 | 808.0 | 6,530,220 | 999.0 |
| | July..... | 1,367,514 | 209.0 | 5,548,766 | 849.0 | 6,916,280 | 1,058.0 |
| | August..... | 1,638,422 | 251.0 | 5,278,778 | 808.0 | 6,917,200 | 1,059.0 |
| | September.. | 1,887,516 | 289.0 | 5,074,220 | 776.0 | 6,961,730 | 1,065.0 |
| | October..... | 714,100 | 109.0 | 8,325,020 | 1,274.0 | 9,039,120 | 1,383.0 |
| | November.. | 830,000 | 127.0 | 8,761,720 | 1,341.0 | 9,591,720 | 1,468.0 |
| | December.. | 870,260 | 133.0 | 8,549,220 | 1,308.0 | 9,419,480 | 1,441.0 |
| | January..... | 589,100 | 90.0 | 8,690,270 | 1,330.0 | 9,279,370 | 1,420.0 |
| | February.... | 986,600 | 151.0 | 7,506,980 | 1,147.0 | 8,493,580 | 1,298.0 |
| | March..... | 2,247,500 | 344.0 | 5,983,450 | 916.0 | 8,232,950 | 1,260.0 |
| | Totals.. | 13,692,820 | 2,095.0 | 78,796,210 | 12,057.0 | 92,489,030 | 14,152.0 |
| British Columbia Electric Railway Co., Vancouver, B.C. | April..... | 19,026 | 3.0 | 5,569,874 | 852.0 | 5,588,900 | 855.0 |
| | May..... | 18,831 | 3.0 | 5,478,469 | 838.0 | 5,497,300 | 841.0 |
| | June..... | 16,214 | 2.0 | 5,167,686 | 791.0 | 5,183,900 | 793.0 |
| | July..... | 22,068 | 3.0 | 5,119,882 | 783.0 | 5,141,950 | 786.0 |
| | August..... | 19,437 | 3.0 | 5,743,963 | 879.0 | 5,763,400 | 882.0 |
| | September.. | 22,668 | 3.0 | 6,432,897 | 984.0 | 6,455,565 | 987.0 |
| | October..... | 29,602 | 5.0 | 4,102,098 | 628.0 | 4,131,700 | 633.0 |
| | November.. | 31,067 | 5.0 | 4,426,833 | 678.0 | 4,457,900 | 683.0 |
| | December.. | 36,491 | 5.0 | 3,955,109 | 605.0 | 3,991,600 | 610.0 |
| | January..... | 31,780 | 5.0 | 4,143,720 | 634.0 | 4,175,500 | 639.0 |
| | February.... | 25,447 | 4.0 | 4,096,753 | 627.0 | 4,122,200 | 631.0 |
| | March..... | 23,559 | 4.0 | 6,637,341 | 1,016.0 | 6,660,900 | 1,020.0 |
| | Totals.. | 296,190 | 45.0 | 60,874,625 | 9,315.0 | 61,170,815 | 9,360.0 |

APPENDIX I.—Continued.

STATEMENT showing amount of Electrical Energy, Gas, or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

| Name of Contractor and Place of Business. | Month. | Units Produced for export. | | Units Produced for use in Canada. | | Total Output of Generating Station or other Source. | | |
|---|--|----------------------------|--------------|-----------------------------------|--------------|---|--------------|----------|
| | | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. | K. W. Hours. | H. P. Years. | |
| Maine and New Brunswick Electrical Power Company, Aroostook Falls, N.B. | April..... | 228,949 | 35-0 | 22,151 | 3-0 | 251,100 | 38-0 | |
| | May..... | 230,405 | 35-0 | 18,995 | 3-0 | 249,400 | 38-0 | |
| | June..... | 233,375 | 36-0 | 19,925 | 3-0 | 253,300 | 39-0 | |
| | July..... | 231,791 | 35-0 | 18,309 | 3-0 | 250,100 | 38-0 | |
| | August..... | 257,567 | 40-0 | 16,333 | 2-0 | 273,900 | 42-0 | |
| | September.. | 304,114 | 47-0 | 23,586 | 4-0 | 327,700 | 51-0 | |
| | October..... | 230,678 | 35-0 | 29,122 | 5-0 | 259,800 | 40-0 | |
| | November.. | 368,211 | 56-0 | 30,389 | 5-0 | 398,600 | 61-0 | |
| | December.. | 379,818 | 58-0 | 27,382 | 4-0 | 407,200 | 62-0 | |
| | January..... | 377,115 | 58-0 | 27,085 | 4-0 | 404,200 | 62-0 | |
| | February.... | 354,951 | 54-0 | 26,469 | 4-0 | 381,400 | 58-0 | |
| | March..... | 352,871 | 54-0 | 38,529 | 6-0 | 391,400 | 60-0 | |
| | Totals.. | | 3,549,825 | 543-0 | 298,275 | 46-0 | 3,848,100 | 589-0 |
| | Cedar Rapids Manufacturing and Power Company, Montreal, P.Q. | April..... | 35,767,000 | 5,473-0 | 8,710,000 | 1,333-0 | 44,477,000 | 6,806-0 |
| May..... | | 39,297,000 | 6,013-0 | 9,250,000 | 1,420-0 | 48,547,000 | 7,433-0 | |
| June..... | | 41,764,000 | 6,391-0 | 6,498,000 | 994-0 | 48,262,000 | 7,385-0 | |
| July..... | | 44,052,000 | 6,741-0 | 6,874,000 | 1,052-0 | 50,926,000 | 7,793-0 | |
| August..... | | 41,836,000 | 6,402-0 | 9,064,000 | 1,387-0 | 50,900,000 | 7,789-0 | |
| September.. | | 41,024,000 | 6,278-0 | 9,262,000 | 1,417-0 | 50,286,000 | 7,695-0 | |
| October..... | | 42,838,000 | 6,554-0 | 9,308,000 | 1,424-0 | 52,146,000 | 7,978-0 | |
| November.. | | 42,213,000 | 6,460-0 | 8,740,000 | 1,337-0 | 50,953,000 | 7,797-0 | |
| December.. | | 35,455,000 | 5,425-0 | 9,414,000 | 1,439-0 | 44,869,000 | 6,864-0 | |
| January..... | | 24,563,000 | 3,759-0 | 9,068,000 | 1,387-0 | 33,631,000 | 5,146-0 | |
| February.... | | 17,417,000 | 2,665-0 | 10,915,000 | 1,670-0 | 28,332,000 | 4,335-0 | |
| March..... | | 22,164,000 | 3,392-0 | 17,819,000 | 2,730-0 | 39,983,000 | 6,122-0 | |
| Totals.. | | | 428,390,000 | 65,553-0 | 14,952,000 | 17,590-0 | 543,342,000 | 83,143-0 |
| Sherbrooke Railway and Power Co., Sherbrooke, P.Q. | | April..... | 24,000 | 4-0 | 715,200 | 109-0 | 739,200 | 113-0 |
| | May..... | 25,080 | 4-0 | 765,600 | 117-0 | 790,680 | 121-0 | |
| | June..... | 24,000 | 4-0 | 734,400 | 112-0 | 758,400 | 116-0 | |
| | July..... | 22,080 | 3-0 | 738,240 | 113-0 | 760,320 | 116-0 | |
| | August..... | 19,940 | 3-0 | 776,850 | 119-0 | 796,820 | 122-0 | |
| | September.. | 19,680 | 3-0 | 764,400 | 117-0 | 784,080 | 120-0 | |
| | October..... | 21,600 | 3-0 | 819,600 | 126-0 | 841,296 | 129-0 | |
| | November.. | 22,920 | 3-0 | 798,360 | 122-0 | 821,280 | 125-0 | |
| | December.. | 24,840 | 4-0 | 821,160 | 126-0 | 846,000 | 130-0 | |
| | January..... | 23,640 | 4-0 | 791,640 | 121-0 | 815,280 | 125-0 | |
| | February.... | 21,720 | 3-0 | 748,080 | 114-0 | 769,800 | 117-0 | |
| | March..... | 24,000 | 4-0 | 828,480 | 127-0 | 852,480 | 131-0 | |
| | Totals.. | | 273,500 | 42-0 | 9,302,040 | 1,423-0 | 9,575,540 | 1,465-0 |

APPENDIX I.—*Concluded.*

RECAPITULATION.

| Name of Contractor. | Units Produced for Export. | | Units Produced for use in Canada. | | Total Output of Generating Station or other Source. | |
|--|----------------------------|-------------|-----------------------------------|-------------|---|-------------|
| | K.W. Hours. | H.P. Years. | K.W. Hours. | H.P. Years. | K.W. Hours. | H.P. Years. |
| Canadian Niagara Power Co... | 315,227,479 | 48,237 | 165,370,521 | 25,305 | 480,598,000 | 73,542 |
| Toronto Power Co..... | 118,356,500 | 18,111 | 584,697,800 | 89,471 | 703,054,300 | 107,552 |
| Ontario Power Co..... | 328,442,040 | 50,259 | 638,557,160 | 97,713 | 966,999,200 | 147,972 |
| Ontario and Minnesota Power Co..... | 16,572,984 | 2,536 | 11,088,154 | 1,696 | 27,661,138 | 4,232 |
| Western Canada Power Co... | 13,692,820 | 2,095 | 78,796,210 | 12,057 | 92,489,030 | 14,152 |
| British Columbia Electric Railway Company..... | 296,190 | 45 | 60,874,625 | 9,315 | 61,170,815 | 9,360 |
| Maine and New Brunswick Electric Power Co..... | 3,459,825 | 543 | 298,275 | 46 | 3,758,100 | 589 |
| Cedars Rapids Manufacturing and Power Co..... | 428,390,000 | 65,553 | 114,952,000 | 17,590 | 543,342,000 | 83,143 |
| Sherbrooke Railway and Power Co..... | 273,500 | 42 | 9,302,040 | 1,423 | 9,575,540 | 1,465 |
| Totals..... | 1,224,711,338 | 187,421 | 1,664,037,785 | 254,616 | 2,888,748,123 | 442,037 |

ORMOND HIGMAN,
Chief Engineer.
Gas and Electricity Inspection.

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
 OTTAWA, July 2, 1917.

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, during the Fiscal Year Ended March 31, 1917.

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Pre-frequency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | | |
|--------------------------------------|---|---------------------|----------------|--------------|-------------------|--------------------------|--------------------|-------------------|-----------|-------------------|--------|-----------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | | Power. | Lighting. |
| Charlottetown, P.E.I. | Charlottetown Light and Power Co., Ltd. | Charlottetown..... | Gas and steam. | 952 | 3 | 60 | 2,200 | 110/220 | 110 | 40 | 1,413 | |
| | Ives, C. W. | North Tryon..... | Water. | 15 | | DC. | 110 | | 110 | | | |
| | Kensington Electric Light Co., Ltd. | Kensington..... | Water. | 40 | 3 | 60 | 2,300 | 110 | | | 69 | |
| | Leard Electric Light and Power Co., Ltd. | Leard..... | Water. | 40 | | 60 | 2,200 | 220 | 110 | | 65 | |
| | Leard, Geo. E. & Son. | Crapaud..... | Water. | 20 | 2 | 60 | 2,200 | | 110 | | 21 | |
| | Montague Electric Co., Ltd. | Montague..... | Water. | 44 | 1 | 60 | 2,200 | | 104 | | 61 | |
| | Sun Electric Co., Ltd. | Summerside..... | Gas and steam. | 250 | 1 | 125 | 1,040 | | 110 | | 354 | |
| | Andover and Perth Electric Light Co. | Andover and Perth. | Purchased. | | | | 11,000 | 220 | 110 | | 2 | 157 |
| | Bathurst Electric and Water Power Co. | Bathurst..... | Water. | 1,000 | 3 | 66 | 6,000 | 220 | 110 | | 7 | 266 |
| | Canadian Cottons, Ltd. | Marysville..... | Steam. | 100 | | 60 | 2,200 | | 110 | | | 126 |
| St. John, N.B. | Campbellton Electric and Power Dept. | Campbellton..... | Gas. | 525 | 3 | 60 | 2,200 | 110/220 | 110 | 21 | 550 | |
| | Dalhousie, Town of. | Dalhousie..... | Gas. | 125 | 3 | | 2,200 | | 110 | | 121 | |
| | Dorchester Electric and Power Co. | Dorchester..... | Steam. | 75 | 1 | | 2,040 | | 104 | | 104 | |
| | Eastern Electric and Development Co. | Sackville..... | Steam. | | 3 | 60 | 2,300 | 220 | 220 | 4 | 225 | |
| | Edmundston, Town of. | Edmundston..... | Water. | 500 | 1 | 60 | 2,200 | 2,200 | 110 | 1 | 157 | |
| | Fredericton Gas Light Co. | Fredericton..... | Water. | 900 | 2 | 60 | 2,300 | 220 | 110 | 22 | 865 | |
| | King Lumber Co. | Chipman..... | Steam. | 70 | | DC. | 125 | 110 | 110 | | 23 | |
| | Light Dept. of town of Chatham. | Chatham..... | Oil. | 400 | 3 | 60 | 2,300 | 2,300 | 2,300 | 2 | 312 | |
| | Loggie, A. & R. Co., Ltd. | Northumberland..... | Steam. | 65 | 1 | DC. | 110 | 110 | 110 | | | 1,618 |
| | Moncton Tramways Electric and Gas Co., Ltd. | Moncton..... | Steam. | 900 | 2 | 60 | 1,100 | 110-220/500 | 110 | 40 | | |
| Maine and N.B. Elec. Power Co., Ltd. | Arrostock Junction..... | Hydro Elec. | 3,500 | 3 | 60 | 11,000 | 550 | 110 | | 1 | 44 | |

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| | | | | | | | | |
|---|--------|-------|-----|---------|----------|----------|-----|-------|
| Newcastle, Town of..... | 325 | 2 | 60 | 2,300 | 220 | 110 | 2 | 350 |
| New Brunswick Power Co..... | 7,000 | 3 | DC. | 2,300 | 250 | 107 | 341 | 6,751 |
| Port Elgin Electric Light Co..... | 50 | | | 220 | 220 | 220 | | 72 |
| Sherwood, C. M., Ltd..... | 160 | | | | | 110 | | |
| St. Leonard Electric Co., Ltd..... | 600 | 3 | 60 | 2,000 | 110 | 110 | 5 | 55 |
| St. Stephen Electric Light Co..... | 108 | 3 | 60 | 2,200 | 220 | 110 | 1 | 292 |
| Shediac Electric Light and Power Co..... | 108 | 3 | 60 | 2,200 | 110 | 110 | 1 | 85 |
| Grand Falls, Town of..... | | | | 2,200 | 290 | 110 | | 125 |
| Woodstock Elec. Ry. Light and Power Co..... | 250 | 3 | 60 | 2,300 | 2300/550 | 110 | 4 | 500 |
| Annapolis Royal, Town of..... | 240 | 2 | | 2,500 | 104 | 104 | | 3 |
| Antigonish Electric Co..... | 115 | | DC. | 115/230 | | 115 | | 136 |
| Acadia Electric Light Co..... | 125+50 | 3 | 60 | 2,300 | | 110 | | 246 |
| Stellarton, Town of..... | 5,000 | 3 | 50 | 3,150 | 3150/525 | 110 | | 7 |
| Bridgewater, Town of..... | 316 | 2 | 60 | 2,200 | | 110 | | |
| Bridgewater Electric Light and Power Co., Ltd..... | 175 | 1 | 60 | 2,300 | | 110 | | |
| Bear River and Digby Elec. Lt. H. and Power Co., Ltd..... | 70 | 3 | 60 | 2,200 | | 110 | | |
| Canso, Town of..... | 95 | 3 | 60 | 2,300 | | 110 | | 155 |
| Canadian Electric Co., Ltd..... | 3,000 | | | 11,000 | 2,300- | 110- | 45 | 989 |
| Chambers Electric Light and Power Co., Ltd..... | 545 | | | | 530/220 | 115/220 | 43 | 777 |
| Cape Briton Electric Co., Ltd..... | 2,745 | 2 | 60 | 2,300 | 2300/220 | 2300/110 | 84 | 2,631 |
| Dominion, Town of..... | | 1 | 25 | 22 | | | | 150 |
| Dartmouth Gas, Electric Lt., H'g. and Power Co., Ltd..... | | 3 | 60 | | 220 | 110 | 4 | 651 |
| Daley, John..... | 136 | | | 2,300 | | 104 | | |
| Dartmouth, Town of..... | 50 | 3 | 60 | 2,200 | | 110 | | |
| Edison Electric Light and Power Co..... | 500 | 1 & 2 | 60 | 2,080 | | 101 | | 83 |
| Glace Bay Electric Light Plant..... | 600 | 2 | 60 | 2,200 | 110 | 110 | | 595 |
| Hantsport, Town of..... | 75 | 3 | | 2,200 | | 110 | | 68 |
| Inverness Railway and Coal Co..... | 75 | | DC. | 125 | | 125 | | |
| Kentville Electric Light and Power Co., Ltd..... | 120 | 3 | 60 | 2,200 | | 110 | | 173 |
| Lawrencetown Electric Light Commission..... | 40 | | | | | | | |
| Lunenburg Gas Co., Ltd..... | 400 | 3 | 60 | 3,250 | | 110 | | 48 |
| Liverpool, Town of..... | 730 | 2 | 60 | 2,400 | 220 | 104 | | |
| Mahone Water Commission..... | | 1 | 60 | 2,300 | 220 | 110 | | 40 |
| Middleton Electric Light Co..... | 65 | 3 | 60 | 2,300 | | 110 | | 140 |
| Nova Scotia Trainsways and Power Co., Ltd..... | 4,280 | 3 | 60 | 2,200 | 525 DC. | 110 | 316 | 5,044 |
| Pictou, Municipality of..... | 450 | 2 | | 2,300 | 500/220 | 110 | 6 | 400 |
| Pictou County Electric Co., Ltd..... | 1,125 | 3 | 60 | 2,300 | 110/220 | 104- | 63 | 1,487 |
| Stellarton, Town of..... | | | | | | 108/112 | | |

Halifax, N.S.

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| | | | | | | | | | | |
|--|-------------------------------------|--------------|-------|-------|-------|--------|----------|---------|-------|-------|
| Ste. Anne de Bellevue, Town of. | Ste. Anne de Bellevue, Quebec, Que. | Water..... | 540 | 3 | 60 | 2,200 | 110/220 | 110 | 7 | 211 |
| St. Jerome, Village of. | St. Jerome, Quebec, Que. | Water..... | 500 | 3 | 60 | 6,600 | 2,200 | 110 | 3 | 11 |
| St. Agathe des Monts, Village of. | St. Agathe des Monts, Quebec, Que. | Water..... | 500 | 3 | 60 | 2,200 | ..... | 110 | ..... | 213 |
| Valleyfield Electric Light Co. | Valleyfield, Quebec, Que. | Water..... | 135 | 3 | 60 | 2,300 | 550/220 | 110 | 27 | 376 |
| Vaudreuil Electric Co., Ltd. | Vaudreuil, Quebec, Que. | Purchased. | 800 | 3 | 60 | 6,600 | 550 | 110 | 5 | 321 |
| St. Lambert, Corporation of. | St. Lambert, Quebec, Que. | Purchased. | 1,200 | 3 | 60 | 2,400 | 550 | 110/125 | 8 | 660 |
| Westmount Light and Power Dept. | Westmount, Quebec, Que. | Steam..... | 1,200 | 3 | 60 | 2,300 | 550 | 110 | ..... | 2,906 |
| Willerts, Limited. | Chambly, Quebec, Que. | Purchased. | 1,000 | 2 | 60 | 2,200 | 550/ | 110 | 1 | 100 |
| Basin Electric Light and Power Co. | Montagny, Quebec, Que. | Water..... | 150 | 3 | 60 | 2,200 | 220/110 | 104 | ..... | 260 |
| Bay St. Paul Electric Light and Power Co. | Bay St. Paul, Quebec, Que. | Water..... | 350 | 2 | 60 | 104/ | ..... | 104 | ..... | ..... |
| Beauce Electric Power Co. | Sherbrooke, Quebec, Que. | Purchased. | 150 | ..... | ..... | 2,000 | ..... | ..... | ..... | ..... |
| Beauce Electric Power Co. | Levis, Quebec, Que. | Water..... | 4,800 | 3 | 60 | 15,000 | 220/550 | 110 | 4 | 241 |
| Deblois & Veilleux | St. Anselme, Quebec, Que. | Water..... | 60 | ..... | ..... | 10,500 | 550/2200 | 110 | 55 | 1,500 |
| Julien, Charles. | Pont Rouge, Quebec, Que. | Water..... | ..... | 3 | ..... | 2,400 | ..... | 110 | ..... | 15 |
| La Cie D'Eclairage et d'Energie Electricque du Saguenay. | Pont Rouge, Quebec, Que. | Water..... | 2,000 | 3 | 60 | 2,300 | 550 | 110 | ..... | 35 |
| La Cie D'Energie Electricque de St. Come. | Chicoutimi, Quebec, Que. | Water..... | 50 | 3 | 60 | 2,200 | 500 | 110 | ..... | 42 |
| La Cie Hydraulique de Portneuf, Ltd. | St. Come, Quebec, Que. | Water..... | 650 | 3 | 60 | 660 | 220/550 | 110 | ..... | 68 |
| La Compagnie Electricque D'Anquet. | Deschambault, Quebec, Que. | Water..... | 250 | 3 | 60 | 2,200 | 550 | 110 | ..... | 79 |
| La Ville de Fraserville. | Anquet, Quebec, Que. | Water..... | 300 | 2 | ..... | 2,400 | ..... | 110 | ..... | ..... |
| Nairn Falls Power and Pulp Co., Ltd. | Fraserville, Quebec, Que. | Water..... | 500 | 3 | 60 | 4,400 | 220 | 110 | ..... | 10 |
| Public Service Corporation of Quebec. | Malbate, Quebec, Que. | Water..... | 3,500 | 3 | 60 | 2,400 | 550/ | 220/110 | 125 | 5,400 |
| Quebec Ry., Light, Heat and Power Co. | Quebec, Quebec, Que. | Steam..... | 9,000 | 2 & 3 | 60 | 2,000 | 440/110 | 104 | 278 | 9,000 |
| Rouleau Limitee. | Quebec, Quebec, Que. | Turbine..... | 110 | 3 | 60 | 2,200 | 110 | 110 | ..... | 70 |
| Municipalite Village St. Raymond. | Mont Joli, Quebec, Que. | Turbine..... | 110 | 3 | 60 | 1,100 | ..... | 110 | ..... | 28 |
| St. Lawrence Pulp and Lumber Corporation. | St. Raymond, Quebec, Que. | Water..... | 3,000 | 3 | 60 | 600 | 600 | 110 | 10 | ..... |
| Bromptonville, Municipality of. | Chandler, Quebec, Que. | Water..... | 2,500 | 3 | 133 | 2,200 | ..... | 110 | 2 | 12 |
| Costbrook Electric Dept. | Bromptonville, Quebec, Que. | Water..... | 650 | 3 | 60 | 2,200 | 550/220 | 110 | 15 | 450 |
| Granby, Corporation of. | Costbrook, Quebec, Que. | Water..... | 250 | 1 | 60 | 2,380 | 2,380 | 110/220 | ..... | 528 |
| Hurd, A. G. | Granby, Quebec, Que. | Turbine..... | 85 | 1 | ..... | 2,680 | ..... | 110 | ..... | 42 |
| La Cie d'Eclairage Electricque du Village Megantic. | Sawyerville, Quebec, Que. | Gas..... | 150 | 3 | 60 | 2,000 | ..... | 110 | ..... | 160 |
| La Corporation de la Ville de Magog. | Lake Megantic, Quebec, Que. | Water..... | 1,600 | 2 | 60 | 2,400 | 2,400 | 110 | 4 | 1 |
| La Compagnie Champoux. | Magog, Quebec, Que. | Water..... | 100 | 1 | 60 | 2,000 | ..... | 110 | ..... | 200 |
| Lemnoxville Light and Power Co. | Disraeli, Quebec, Que. | Purchased. | ..... | ..... | ..... | 2,200 | 2200/550 | 110 | 9 | ..... |

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act.,—Continued.

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Frequency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | |
|--|--|-------------------------------|------------------|-------------------------|-------------------|----------------------|--------------------|-------------------|-----------|-------------------|--------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | | Power. | Lighting. |
| Sherbrooke, Que. Concluded. | Mainville, J. U. | Roxton Falls. | Water and steam. | Water, 100 Steam, 80 | 1 | 133 | 1,500 | ..... | 100 | ..... | 32 |
| | Parker, J. B. | Dixville | Water. | 33 | ..... | ..... | 115 | ..... | 100 | ..... | 1 |
| | Pike, W. M. & Son | Rock Island. | Water. | 360 | 2 | DC. | 110 | 110 | 100 | ..... | 400 |
| | Richmond County Electric Co. | Richmond. | Water. | 3,000 | 3 | 133 | 2,300 | 2,400 | 110 | ..... | 30 |
| | St. Francis Water Power Co. | Theford Mines. | Water. | 210-150 | 1 | 60 | 2,080/ | 2,400 | 110 | ..... | 110 |
| | Shipton Electric Light and Power Co. | Danville. | Water and steam. | ..... | ..... | 60 | 2,308 | ..... | ..... | ..... | ..... |
| | Sutton, Corporation of Village of. | Sutton. | Purchased. | ..... | 3 | 60 | 6,000 | 6,000 | 115 | ..... | 250 |
| | Sherbrooke Ry. and Power Co. | Sherbrooke. | Water. | 5,800 | 3 | 60 | 2,200 | 550-220 | 110 | ..... | 618 |
| | Sherbrooke, Corporation of. | Sherbrooke. | Water. | 5,200 | 3 | 60 | 2,200/ | 550-220 | 108 | ..... | 3,731 |
| | Scotstown Electric Light and Power Co. | Scotstown. | Water. | 200 | ..... | 60 | 6,000 | ..... | 110 | ..... | ..... |
| | Two Miles Falls Water Power Co. | Weedon. | Water. | 1,250 | 3 | 60 | 2,400 | 550-220 | 110 | ..... | 33 |
| | Windsor, Corporation of Town of. | Windsor. | Purchased. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 224 |
| | Westbury Electric Light and Power Co. | Cookshire. | Turbine. | 250 | 3 | 60 | 3,000 | 550 | 110 | ..... | 500 |
| | S. Rousseau. | Brome, Que. | Turbine. | 100 | 1 | 133 | 1,040 | ..... | 110 | ..... | 6 |
| | St. Hyacinthe, Que. | Athabaska Water and Power Co. | Victoriaville. | Purchased. | | 3 | 60 | | 2,200/ | 110 | 15 | 345 |
| Belanger, N. | | St. Pie. | Water. | 75 | 60 | 2,200 | 2,200 | 110 | 110 | ..... | 17 |
| Bedford Light Co., Ltd. | | Bedford. | Water and steam. | 100 | 133 | 1,000 | ..... | 110 | 110 | ..... | 3 |
| Beloeil, la Ville de. | | Beloeil. | Purchased. | 135 | 3 | 60 | 2,400 | 550 | 110 | 4 | 162 |
| Clark, W., Ltd., Electric Light Plant. | | St. Remi. | Water. | 27 | 3 | 60 | 2,200 | 220 | 110 | 1 | 132 |
| Cornell, M. S. & Sons. | | Stanbridge East. | Water. | 136 | 3 | DC. | 110 | ..... | 110 | ..... | 2 |
| Dorval, Corporation of. | | Dorval. | Purchased. | ..... | ..... | 60 | 2,200 | 220 | 110 | 2 | 142 |
| Farnham, Town of. | | Farnham. | Water and steam. | 1,560 | 3 | 60 | 2,300 | 550 | 110 | | 425 |
| Guertin, P. | | Acton Vale. | Water and steam. | 50 | 1 | 60 | 2,200 | | 104 | | 14 |

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|---|---------------------------------------|-------|---|-----|--------------|-----------|---------|-----|-------|
| La Cie de Gaz, Electricite et St. Hyacinthe. | Turbine. | 2,000 | 3 | 60 | 6,600 | 550 | 110 | 22 | 1,275 |
| Pouvoir. | | | | | | | | | |
| La Cie Electricque de Nicolet. | Purchased. | | 3 | 60 | | 100&220 | 110 | 4 | 125 |
| Marieville, Corporation de la Marieville Ville. | Purchased. | | 2 | 60 | 2,200 | 220/440 | 110 | | 165 |
| Pierrefonds Electric, Ltd. | St. Genevieve de Pierrefonds. | | 3 | 60 | 2,200 | 550/2200 | 110 | | 59 |
| Sorel Light and Power Co., Ltd. | Purchased. | | 3 | 60 | | 440 | 110 | 30 | 1,000 |
| Southern Canada Power Co. | Water. | 69.2 | 3 | 60 | 2,300 | 550 | 110 | | 15 |
| Southern Canada Power Co. | Water. | 400 | 3 | 60 | 2,300 | 550-220 | 110 | 14 | 500 |
| St. Maurice Light and Power Co. | Purchased. | | 3 | 30 | 5,000 | | 110 | 1 | 53 |
| St. Johns & Iperville Electric Co. | Purchased. | | 3 | 60 | 2,200 | 2,200/550 | 110 | 25 | 922 |
| Vancouver, Mde. V. J. | Water. | 60 | 1 | 133 | 1,100 | 550 | 110 | | 12 |
| Verdun, Corporation of. | Steam. | 600 | 3 | 60 | 2,200 | 550-220 | 110 | 6 | 4,000 |
| Fair & Mullett. | | | | | | | | | |
| Hydro-Electric Power Com. | Water. | 75 | | DC. | 125 | | 125 | | |
| Bobcaygeon Electric Light Commission. | Water. | 200 | 3 | 60 | 2,300 | 110 | 110 | 64 | 1,700 |
| Hydro-Electric Power Commission. | Bowmanville. | 1,500 | | | 44,000/2,200 | 500 | 110 | 17 | 667 |
| Hydro-Electric Power Com. | Brighton. | | | | 2,200 | | | | |
| Public Utilities Com. | Brockville. | 1,400 | 3 | 60 | 2,200 | 220/500 | 110 | 6 | 380 |
| Water and Light Com. | Campbellford. | 3,450 | 3 | 60 | 2,400 | 220/550 | 110 | 59 | 1,361 |
| Hydro-Electric Power Com. | Cobourg. | | | | 2,200 | 220 | 110 | 17 | 646 |
| Hydro-Electric Power Com. | Deseronto. | 600 | 3 | 60 | 550 | 2,400 | 110 | 7 | 165 |
| Menzies A. | Fenelon Falls. | 1,400 | 3 | 60 | 2,400/250 | 550 | 110 | 32 | 458 |
| Electric Light and Water Supply Co., Ltd. | Gananoque. | 100 | 2 | 60 | 2,200 | 110-220 | 110 | | 4 |
| Folds Company, Limited. | Hastings. | 135 | 3 | 60 | 4,400 | | 110 | | |
| Electric Light and Power Co., Ltd. | Havelock. | | | | | | | | |
| Keupville Milling Co. | Water. | 350 | 3 | 60 | 10,000 | 220 | 110 | | 2 |
| Light, Heat and Power Dept. | Kingston. | 800 | 3 | 60 | 2,200 | 550 | 110/220 | 103 | 2,078 |
| Lakefield Electric Light Co. | Lakefield. | 125 | 3 | 60 | 2,200 | 550 | 110 | | |
| Hydro-Electric Power Com. | Lindsay. | 1,500 | 3 | 60 | 550 | 1,040/220 | 110 | 4 | 1,372 |
| Electric Lighting Committee. | Madoc. | 100 | 1 | 125 | 1,040 | 220 | 220 | | 4 |
| Maruora Electric Light Plant. | Turbine. | 750 | 3 | 60 | 600 | 600/ | 104 | | 92 |
| Rideau Power Co., Ltd. | Water. | | | | | 110/220 | 110 | | |
| Hydro-Electric Power Com. | Milbrook. | 100 | 3 | | 44,000 | 110/220 | 110/220 | 3 | 141 |
| Hydro-Electric Power Com. | Napanee. | | | | 44,000 | 2,400 | 110 | 16 | 508 |
| Hydro-Electric Power Com. | Newcastle. | | | | 44,000/2,200 | | 110 | | 144 |

Three Rivers, Que.

APPENDIX J.

Last of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.,—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Frequency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | | |
|--|-----------------------------|-----------------------------------|--------------|--------------|-------------------|----------------------|--------------------|-------------------|-----------|-------------------|-----------|-----|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | Power. | Lighting. | |
| Belleville, Ont. <i>Concluded.</i> | Harrison, W. C. | Norwood | Steam | 75 | 1 | 133 | 1,000 | 110 | | | | |
| | Stephenson, Wm. G. | Omeceec | Water | 30 | | | 220 | 220 | | | | |
| | Hydro-Electric Power Com. | Oroho | | | 3 | 60 | 4,200 | 110 | 4 | | 131 | |
| | Hydro-Electric Power Com. | Oshawa | | | | | 550 | 110 | 49 | | 1,406 | |
| | Peterborough Utilities Com. | Peterborough | | | | | 6,600/110/220 | 110/220 | | | 4,170 | |
| | Hydro-Electric Power Com. | Port Hope | | | 3 | 60 | 2,200 | 220/550 | 110 | 32 | 786 | |
| | Tait, William | Pictou | Steam | | 2 | 60 | 2,200 | 110/220 | 110 | 16 | 640 | |
| | Hydro-Electric Power Com. | Prescott | | | | | 220 | 110 | 15 | | 602 | |
| | Electric Department | Stirling | | | 1 | | 2,400 | 120/240 | 120/240 | | 1 | |
| | Electric Light Co., Ltd. | Sydney | Steam | 90 | 3 | 60 | 2,200 | 110 | 1 | | 76 | |
| | Hydro-Electric Power Com. | Trenton | Water | 5,000 | | 60 | 6,600 | 220 | 120 | 55 | 950 | |
| | Hydro-Electric Power Com. | Tweed | | | | | 6,600 | 2,200 | 110 | 7 | 240 | |
| | Goodrich, J. H. | Warkworth | Water | 80 | 2 | 60 | 2,200 | 110 | 110 | | 5 | |
| | Niles, W. P. | Wellington | Gas | 65 | | | 500 | 500 | 250 | | | |
| | Westport Electric Light Co. | Westport | Water | 286 | | 3 | 60 | 2,300 | 110 | | | |
| | Hydro-Electric Power Com. | Whitby | Water | | | 3 | | 220 | 220 | 5 | | |
| | Benjamin Wheel Co., Ltd. | Yarker | Water | 40 | | | DC. | 125 | 125 | | | |
| | Peebles, G. M. | Colborne | Hydro | | | | | 110 | 110 | 1 | | 150 |
| | Fort William, Ont. | Dryden, Town of | Dryden | Purchased | | 3 | 60 | 550 | 550 | 110 | 1 | 103 |
| | | Dryden Timber and Power Co., Ltd. | Dryden | Water | 2,000 | 3 | 60 | 600 | 600 | 110 | | |
| Ontario and Minnesota Power Co., Ltd. | | Fort Frances | | 6,666 | 3 | 60 | 6,600 | 550 | 2,200/110 | 7 | | |
| Fort Frances, Town of | | Fort Frances | Water | 6,800 | 3 | 60 | 6,600 | 220 | 110 | 15 | 450 | |
| Kuministiquia Power Co., Ltd. | | Fort William | Water | 25,000 | 3 | 60 | 3,600/4,400 | 550 | | | | |
| Kenora, Corporation of Town of | | Kenora | Water | 3,296 | 3 | 60 | 2,400 | 2,200 | 2,200/110 | 15 | 360 | |
| Public Utilities Commission | | Port Arthur | Water | | 3 | 60 | 2,200 | 220/550 | 220/110 | 46 | 3,182 | |
| McMahon, H. C. & Co. | | Mine Centre, Ont. | Oil | 6 | | DC. | 60-70 | 50 | | | | |
| Municipality of McIrvine | | Fort William | Water | 6,800 | 3 | 60 | 6,600 | 110 | 110 | 10 | | |
| Rainy River Electric Light and Power Co. | | Rainy River | Steam | 150 | 3 | 60 | 2,200 | 110 | 110 | | 200 | |
| Electric Dept. of City of Fort William | | Fort William | Purchased | | | | | 224 | 112 | 41 | 4,295 | |

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|--------------------|---|---------------------|---------|-----|--------|-----------------|---------|-----|--------|
| Hamilton, Ont..... | Acton, Corporation of Town of | Hydro..... | 3 | 25 | 13,500 | 550 | 110 | 7 | 245 |
| | Ayr Hydro-Electric System... | Hydro..... | 300 | 25 | 4,000 | 550 | 110/220 | 2 | 118 |
| | Baden, Police Village of..... | Hydro..... | 3 | 25 | 2,400 | 220 | 110 | 5 | 75 |
| | Hamilton Cataract Power, Light and Traction Co., Ltd. | Water..... | 46,000 | 66 | 2,400 | 220 | 112 | 6 | 260 |
| | Western Counties Electric Co., Ltd. | Water..... | 2,800 | 66 | 2,200 | 220 | 110 | 115 | 2,013 |
| | Brantford Hydro-Electric Sys- tem. | Hydro..... | | | 26,000 | 550 | 110/220 | 29 | 2,462 |
| | Hamilton Cataract Power, Light and Traction Co., Ltd. | Water..... | 46,200 | 66 | 2,400 | 220 | 112 | 20 | 680 |
| | Caledonia, Village of..... | Water..... | 290 | 60 | 2,300 | 220 | 110/220 | 6 | 69 |
| | Delhi Light and Power Co., Ltd. | Water..... | | | | 220 | 110 | 4 | 108 |
| | Public Utilities Commission... | Water..... | | 60 | | 220/550 | 110 | 38 | 772 |
| | Dundas Electric Co., Ltd..... | Water..... | 125 | 66 | 2,400 | 220 | 112 | 5 | 75 |
| | Dunville Hydro-Electric Sys- tem. | Water and gases. | | 60 | 2,200 | | 104 | | 102 |
| | Elmira, Public Utilities Com- mission. | Water..... | 300 | 25 | 2,200 | 550 | 110 | 12 | 310 |
| | Hydro-Electric Commission... | Hydro..... | | 25 | 6,600 | 550 | 110/220 | 80 | 2,600 |
| | Hydro-Electric Com. of Twp. Grantham. | Hydro..... | | 25 | 2,200 | 220 | 110/220 | | 125 |
| | Hamilton Cataract Power, Light and Traction Co., Ltd. | Water..... | | 66 | 2,400 | 220 | 112 | 21 | 500 |
| | Hagersville, Corporation of.... | Hydro..... | | 25 | | 2,200 | 110 | 4 | 200 |
| | Hamilton Electric Light and Power Co., Ltd. | Water..... | | 66 | 2,400 | 220/110 | 112 | 60 | 4,289 |
| | Hamilton Cataract Power, Light and Traction Co., Ltd. | Water and steam. | 46,200 | 60 | 2,400 | 220 | 112 | 405 | 60 |
| | Electric Power and Manufac- turing Co., Ltd. | Water..... | | 66 | 2,400 | 112 | | 10 | |
| | Hamilton Hydro-Electric Sys- tem. | Hydro..... | | 25 | 13,200 | 2,200/ 220 | 110 | 450 | 14,038 |
| | Hespeler Hydro-Electric..... | Hydro..... | | 25 | 2,200 | 550/ 2,200 | 110 | 14 | 270 |
| | Kitchener Light Commission. | Hydro..... | | | | 2,200 | 110 | 148 | 3,011 |
| | Merriton Municipal Electric Light and Power Co. | Purchased. | | 25 | | 220/ 2,200 | 110/220 | 1 | 201 |
| | Milton Hydro-Electric Com.... | | 750 | 25 | | 2,200/ 2,200 | 110/220 | 6 | 250 |
| | New Hamburg Municipal Elec- tric Dept. | Hydro..... | 300 | 25 | 2,200 | 550 | 110 | 5 | 280 |
| | Ontario Power Co. of Niagara Falls. | Water..... | 160,000 | 25 | 12,000 | 60,000 | 110 | 34 | 258 |
| | Niagara Falls Hydro-Electric System. | Hydro..... | 60 | 125 | 2,200 | 220/440 | 110 | 41 | 2,350 |

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Frequency of System. | SERVICE VOLTAGES. | | NUMBER OF METERS. | | |
|-------------------------------------|--|-----------------|--------------|--------------|-------------------|----------------------|-------------------|-----------|-------------------|-----------|-------|
| | | | Type. | Horse Power. | | | Power. | Lighting. | Power. | Lighting. | |
| Hamilton, Ont. <i>Concluded.</i> | Municipal Light and Power Plant. | Niagara. | Purchased. | | 1 | 25 | 2,200 | 110/220 | 110 | 330 | |
| | Paris Hydro-Electric and Water Com. | Paris. | Hydro. | 800 | 3 | 25 | 2,200 | 220/550 | 110 | 600 | |
| | Preston Light and Water Com. | Preston. | Hydro. | 1,360 | 3 | 25 | 2,200 | 550 | 110 | 34 | |
| | Simcoe Hydro-Electric Com. | Simcoe. | Hydro. | | 3 | 25 | 26,000 | 550/220 | 110 | 125 | |
| | Municipal Light and Power. | Smithville. | Purchased. | | 3 | 60 | | 220 | 110 | 6 | |
| | Canadian Niagara Power Co. | Niagara Falls. | Water. | 100,000 | 3 | 25 | 11,000 | 220/2250 | 110 | 64 | |
| | | | | | | | 4,400/11,000 | | | | |
| | Lincoln Electric Light and Power Co., Ltd. | St. Catharines. | Water. | | 213 | 60 | 2,200 | 220 | 110 | 115 | 1,000 |
| | Hydro-Electric Com. of St. Catharines. | St. Catharines. | Hydro. | | 3 | 25 | 12,000 | 220/550 | 110/220 | 105 | 2,856 |
| | Green, Arthur E. | St. George. | Hydro. | | 3 | 25 | 4,000 | 550 | 110 | 1 | 81 |
| | Battle, James. | Thorold. | Hydro. | | 3 | 25 | 12,000 | | | 5 | |
| | | | | | | | 2,200 | | | | |
| | Thorold, Corporation of. | Thorold. | Water. | 220 | 3 | 60 | 2,200 | | 110 | | 494 |
| Toronto Power Co., Ltd. | Niagara Falls. | Water. | 125,000 | 3 | 25 | 12,000 | 12,000/60,000 | | 18 | | |
| Waterford Hydro Commission. | Waterford. | Hydro. | | 3 | 25 | 4,000 | 550 | 110 | 1 | 151 | |
| Waterloo Water and Light Com. | Waterloo. | Water. | | 1 | 25 | 13,200/3,200 | 2,200/550 | 110/220 | 43 | 730 | |
| Welland Electrical Co., Ltd. | Welland. | Hydro. | | 3 | 60 | | 220 | 110 | | 275 | |
| Hydro-Electric Power Com. | Welland. | Hydro. | | 3 | 25 | | 220 | 110 | 25 | 500 | |
| Wellesley Light and Power Com. | Wellesley. | Hydro. | | 3 | 25 | | 220/550 | 110 | 2 | 81 | |
| Alvinston Power Co., Ltd. | Alvinston. | Steam. | 40 | DC. | | 250 | 240 | 110 | | 6 | |
| Roek Glen Power Co., Ltd. | Arkona. | Steam. | 60 | 3 | 60 | 2,200 | 220 | 110 | 2 | 63 | |
| Aylmer Water and Light System. | Aylmer. | Steam. | 300 | 3 | 60 | | | 110 | | 400 | |
| Beachville Hydro-Electric System. | Beachville. | Hydro. | 200 | 3 | 50 | 2,200 | 550 | 110 | 3 | 55 | |
| Blenheim Hydro-Electric System. | Blenheim. | Hydro. | | 3 | 25 | | 220 | 110 | 1 | 300 | |

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| The Corporation of Blyth | Blyth | 60 | 1 | 133 | 1,100 | 110 | 80 |
| Cargill Limited | Water | 96 | DC | 60 | 240 | 110 | 95 |
| John Nivins | Steam | 100 | 2 | 60 | 220 | 220 | 1,567 |
| The Chatham Gas Co., Ltd. | Steam and gas | 2,000 | 2 | 60 | 2,300 | 220/110 | 56 |
| The Town of Chesley | Purchased | 600 | 3 | 60 | 2,000 | 110 | 227 |
| Public Utilities Commission | Purchased | 600 | 3 | 25 | 13,200 | 110 | 320 |
| Comber Hydro-Electric | Purchased | 4,000 | 3 | 25 | 220 | 110 | 72 |
| J. S. Pincombe | Purchased | 4,000 | 3 | 25 | 4,000 | 110 | 35 |
| Dresden Hydro-Electric System | Purchased | | 3 | 25 | 2,300 | 110 | 310 |
| Dutton Hydro System | Purchased | | 3 | 25 | 2,300 | 110 | 162 |
| Dorchester Hydro-Electric System | | | 3 | 25 | 220 | 110 | 80 |
| Drumbo Hydro-Electric System | | | 3 | 25 | | 110 | 57 |
| Embro Hydro-Electric System | | | 3 | 25 | 2,200 | 110 | 90 |
| Exeter Hydro-Electric System | | 100 | 3 | 25 | 4,400 | 110 | 240 |
| Public Utilities Commission | | 300 | 3 | 25 | 2,200 | 110 | 340 |
| Glencoe Electric Light Com. | Gas | 96 | 3 | 60 | 2,200 | 110 | 115 |
| The Town of Goderich | Purchased | | 3 | 25 | 550 | 110 | 662 |
| Hensall Hydro-Electric System | | 100 | 3 | 25 | 4,000 | 110 | 113 |
| Ingersoll Water, Light and Sewer Com. | | 300 | 3 | 25 | 2,200 | 110 | 796 |
| Kinairdine Waterworks and Electric Light | Steam | 250 | 3 | 60 | 2,300 | 110 | 225 |
| Trustees Village of Lambeth | Purchased | | 3 | 25 | 550 | 110 | 69 |
| Essex County Light and Power Co., Ltd. | Water | 750 | 3 | 60 | 2,200 | 110 | 1,587 |
| Listowel Water and Light Commission | Purchased | | 3 | 25 | 4,400 | 110 | 354 |
| Helena Costume Co., Ltd | Steam | 400 | DC | | 220 | 110 | 50 |
| London Electric Light Co. | Steam | 2,000 | 1 | 60 | 2,300 | 115 | 1,805 |
| Public Utilities Commission | Hydro | 9,560 | 3 | 25 | 2,200 | 110 | 9,249 |
| Greene Swift Ltd | Steam | 100 | DC | | 500 | 110 | 6 |
| Walter Stewart & Son | Steam | 100 | DC | | 120 | 110 | 19 |
| Village of Lucan | Hydro | | 3 | 25 | 550 | 110 | 134 |
| Jas. McHardy | Gas | 50 | DC | | 110 | 110 | 10 |
| Mildmay Electric Light Co., Ltd. | Purchased | | | | | 110 | 51 |
| Light Power and Water Com. | Hydro | 300 | 3 | 25 | 1,100 | 110 | 300 |
| Hydro-Electric Com. | Hydro | | 3 | 25 | 500 | 110 | 70 |
| H. E. McNaughton | Mount Brydges | 45 | DC | | 110 | 110 | 312 |
| The Norwich Electrical Dept. | Steam | | 3 | 25 | 2,200 | 110 | 217 |
| Hydro-Electric Light and Power Com. | Purchased | | 3 | 25 | 2,300 | 110 | 217 |
| Paisley Electric Light Co. | Water | 135 | 2 | 133 | 2,080 | 104 | 10 |
| H. T. Bairdson & Co. | Steam | 100 | DC | | 220 | 220 | 40 |

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Fre- quency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | |
|---------------------------------|--|------------------|------------------|--------------|-------------------|---------------------------|--------------------|-------------------|-----------|-------------------|-----------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | Power. | Lighting. |
| London— <i>Con.</i> | Corporation of Platts-ville. | Platts-ville. | Hydro. | | 3 | 25 | | 550 | 110 | 2 | 83 |
| | Petrolia Hydro-Electric System. | Petrolia. | Hydro. | | 3 | 25 | | 550 | 110/220 | 1 | 450 |
| | Hydro-Electric Dept. | Port Stanley. | Hydro. | | 3 | 25 | 2,200 | 550 | 110 | 1 | 120 |
| | Public Utilities Com. | Ridgetown. | Hydro. | | 3 | 25 | 4,000 | 550 | 110/220 | 3 | 280 |
| | The Sarnia Hydro-Electric System. | Sarnia. | Hydro. | | 3 | 25 | 4,000 | 550 | 110 | 56 | 2,200 |
| | Water, Light and Sewer Com. | Scaforth. | Hydro. | | 3 | 25 | 13,200 | 220 | 110 | 18 | 397 |
| | Sturgeon Electric Light and Power Co. | Southampton. | Water. | 325 | 3 | 60 | 6,600 | 550 | 110 | 4 | 521 |
| | Public Utilities Com. | Stratford. | Hydro. | | 3 | 25 | 2,200 | 550 | 110 | 95 | 2,500 |
| | Water and Light Com. | Strathroy. | Hydro. | 300 | 3 | 25 | 13,200 | 550 | 110 | 8 | 470 |
| | Hydro-Electric Com. | St. Marys. | Hydro. | | 3 | 25 | 2,200 | 550 | 110 | 34 | 682 |
| | P. E. Steinman. | St. Thomas. | Hydro. | | 3 | 25 | 2,200 | 550 | 110 | 109 | 2,764 |
| | Teeswater Electric Light Co. | Tavistock. | Hydro. | 50 | 3 | 25 | 2,200 | 550 | 110 | | 130 |
| | Thamesford Hydro-Electric System. | Teeswater. | Steam and water. | 100 | 1 & 2 | 25 | 1,100 | | 110 | | 80 |
| | Corporation of Thamesville. | Thamesford. | Hydro. | | 3 | 25 | 4,400 | 550 | 110 | 2 | 88 |
| | Geo. Coutts & Son. | Thamesville. | Hydro. | | | | | | 110 | | 197 |
| | Hydro-Electric Power Com. | Thedford. | Steam. | 80 | 1 | 133 | 1,100 | | 110 | | 60 |
| | Wallaceburg Hydro-Electric System. | Tilbury. | Hydro. | 400 | 3 | 25 | 2,200 | 220 | 110 | 3 | 205 |
| | Walkerton Electric Light and Power Co., Ltd. | Tiltsburg. | Hydro. | 250 | 3 | 25 | 2,200 | 550 | 110 | | 260 |
| | Walkerville Hydro-Electric System. | Wallaceburg. | Hydro. | | 3 | 25 | 2,200 | 550 | 110 | 12 | 599 |
| | Marven White. | Walkerton. | Water. | 400 | 3 | 60 | 2,300 | 220 | 110 | 5 | 250 |
| Sable Falls Light and Power Co. | Walkerville. | Hydro. | | 3 | 25 | 220/550 | | 110/220 | 75 | 1,719 | |
| Town of Wingham. | Wheatley. | Gas. | 55 | DC. | | | 125 | 125 | | | 81 |
| | Warton. | Water. | 220 | 3 | 60 | 6,600 | 220 | 104 | | | |
| | Wingham. | Water and Steam. | 400 | 3 | 60 | 2,200 | 550 | 110 | 2 | 382 | |

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Fre- quency of System. | Generator of Voltage. | SERVICE VOLTAGES. | | * NUMBER OF METERS. | |
|---------------------------|--|--------------------------------|--------------|--------------|-------------------|------------------------|-----------------------|-------------------|-----------|---------------------|-----------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | Power. | Lighting. |
| Ottawa, Ont., <i>Con.</i> | Winchester System | Hydro-Electric Winchester..... | Hydro..... | | | | 4,400/ 3,300 | 220 | 110 | 1 | 160 |
| | Vankleek Hill Electric Co., Ltd. | Vankleek Hill..... | Purchased.. | | 2 | 60 | 120 | 120 | | | 33 |
| Sudbury, Ont..... | Deagle, Fred | Blind River..... | Water..... | 300 | 3 | 60 | 2,400 | 110/220 | 110 | | 1 |
| | Northern Ontario Light and Power Co., Ltd. | Cache Bay..... | Water..... | 2,500 | 3 | 60 | 2,200 | 110/220 | 110 | | 50 |
| | Hydro-Electric Power Com. | Callander..... | Water..... | 400 | 3 | | 2,300 | 220 | 110 | | 94 |
| | Chapleau Electric Light and Power Co. | Chapleau..... | Water..... | | 3 | | 2,300 | 110 | 110 | | 343 |
| | Canadian Copper Co. | Copper Cliff..... | Water..... | 20,600 | 3 | 25 | 2,400 | 550/220 | 110 | 56 | |
| | Charlton-Englehart Light and Power Co. | Englehart..... | Water..... | 1,080 | 3 | 60 | 2,200 | 530/220 | 110 | 6 | 190 |
| | Elk Lake Power Co. | Elk Lake..... | Water..... | 300 | 3 | 60 | 530/580 | | 110 | | 12 |
| | Spanish River Pulp and Paper Mills. | Espanola..... | Water..... | 1,650 | 2 | | 2,250 | 2,250/570 | 110/220 | | |
| | Little Current, corporation of. | Little Current..... | Steam..... | 150 | 3 | | 2,400 | | 110 | | 135 |
| | Mattawa Electric Light and Power Co., Ltd. | Mattawa..... | Water..... | 250 | 3 | | 2,200 | | 110 | | 3 |
| | Abitibi Power and Paper Co., Ltd. | Montreal, Que..... | Water..... | 1,500 | 3 | 60 | 650 | 550 | 110 | | |
| | Hydro Electric Power Com. | North Bay..... | Water..... | 2,000 | 3 | 60 | 2,200 | 550/220 | 110 | 16 | 2,035 |
| | Hydro Electric Power Com. | Powassan..... | Water..... | | 3 | 60 | 220 | 115/220 | 115 | 10 | 100 |
| | Great Lakes Power Co., Ltd. | Sault Ste. Marie..... | Water..... | 350 | 3 | 60 | 2,200/500 | 550/220 | 104 | 6 | 8 |
| | City Water and Light Dept. | Sault Ste. Marie..... | Water..... | | 3 | 60 | 2,300 | 220/110 | 208/104 | 55 | 2,400 |
| | Moose Mountain, Ltd. | Sellwood..... | Purchased.. | | 3 | 60 | | 33,000 | 110 | | 15 |
| | Northern Ontario Light and Power Co. | South Porcupine..... | Water..... | | 3 | 25 | 12,000 | 550/220 | 110 | 12 | 288 |
| | Northern Ontario Light and Power Co. | Sturgeon Falls..... | water..... | 2,300 | 3 | 60 | 2,200 | 110/220 | 110 | | 325 |
| | Steelton, corporation of town of. | Steelton..... | Purchased.. | 6,000 | 3 | 60 | 2,200 | 220 | 110 | | 586 |
| | Sudbury, corporation of town of. | Sudbury..... | Purchased.. | 670 | 2 | 60 | 2,300 | 220 | 110 | | 1,500 |
| | Sudbury Flour Mills, Ltd. | Sudbury..... | Water..... | 1,333 | 60 | 60 | 2,300 | 550 | 110 | | |

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Pro- quency of System. | Generator of Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | |
|-------------------------------------|--|------------------|------------------|--------------|-------------------|---------------------------|-----------------------|-------------------|-----------|-------------------|------------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | Power. | Lighting. |
| Toronto, Ont. <i>Con.</i> | Public Utility Com. | Huntsville. | Water P. | | 3 | 60 | 6,600 | 220 | 110 | 2 | 344 |
| | Hydro Electric Power Com. | Markdale. | Hydro. | | 3 | 60 | 4,000 | 230/110 | 110 | 6 | 175 |
| | Corporation Village of Markham. | Markham. | Steam. | 100 | 2 | 125 | 1,140 | | 110 | | 145 |
| | Georgian Bay Light and Power Co., Ltd. | Meaford. | Steam and water. | 600 | 3 | 60 | 2,300 | 220 | 110 | 3 | 341 |
| | The Midland Water and Light Com. | Midland. | Hydro. | | 3 | 60 | 2,200 | 220 | 110 | 41 | 1,000 |
| | Hydro Electric Power Com. | Mimico. | Hydro. | 600 | 3 | 25 | 2,300 | 550 | 110 | 8 | 659 |
| | Water and Light Com. | Mount Forest. | Hydro. | 400 | 3 | 60 | 2,200 | 220 | 110 | 5 | 259 |
| | Albert Dike. | Mount Albert. | Gas engine. | 65 | DC. | | 250 | 250 | 220 | | Flat rate. |
| | The Corporation of Newmarket. | Newmarket. | T. & Y. Radial. | 120 | 3 | 25 | 1,400 | 550 | 110 | 10 | 545 |
| | Municipality New Toronto. | New Toronto. | Hydro. | | 3 | 25 | 2,300 | 550 | 110/220 | 9 | 250 |
| | H. Grunzner | Neustadt. | Water P. | 300 | 3 | 60 | 2,300 | 110 | 104 | | 25 |
| | Cataract Electric Co., Ltd. | Orangeville. | Water P. | 400 | 3 | 60 | 2,200 | 220 | 110 | | 100 |
| | Town of Orangeville. | Orangeville. | Hydro. | 450 | 3 | 60 | 4,400 | 220 | 110 | | 138 |
| | Orillia Water Light and Power Com. | Orillia. | Water P. | 1,600 | 2 | 66 | 1,200 | 2,200 | 110 | 4 | 254 |
| | Public Utilities Com. | Owen Sound. | Steam. | 2,900 | 3 | 60 | 4,400 | 550 | 110 | | 83 |
| | Corporation Town of Parry Sound. | Parry Sound. | Water P. | 500 | 3 | 60 | 2,200 | 550 | 110 | 13 | 833 |
| | Corporation Toronto Township | Peel County. | Hydro. | 200 | 3 | 25 | 2,200 | 550 | 110 | 6 | 205 |
| | Town of Penetanguishene. | Penetanguishene. | Hydro. | 600 | 3 | 60 | 2,200 | | 110 | 14 | 289 |
| | Corporation town of Port Credit. | Port Credit. | Hydro. | 300 | 3 | 25 | 2,200 | 550 | 110 | 3 | 180 |
| | Corporation Village of Port McNichol. | Port McNichol. | Hydro. | 66 | 3 | 60 | 2,200 | 220 | 115 | 2 | 100 |
| Corporation of Port Perry. | Port Perry. | Steam. | 75 | 1 | 133 | 1,100 | | 110 | 1 | 131 | |
| Municipality Village Richmond Hill. | Richmond Hill. | Purchased. | | 3 | 25 | 4,200 | 550 | 110 | 7 | 149 | |
| Village of Rockwood. | Rockwood. | Purchased. | 50 | 3 | 25 | 15,000 | 220/550 | 110 | 5 | 85 | |
| Shelburn Hydro-Electric Com. | Shelburn. | Hydro. | | 3 | 60 | 4,200 | 220 | 110 | | 181 | |
| South River Electric Co. | South River. | Steam. | 100 | 3 | 60 | 2,300 | 220 | 110 | | Flat rate. | |
| Corporation Town of Stayner. | Stayner. | Hydro. | 400 | 3 | 60 | 4,000 | 220 | 110 | 3 | 185 | |
| Stouffville Electric Light Plant. | Stouffville. | Steam. | 125 | 1 | 60 | 1,100 | | 110 | | 150 | |

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Frequency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | |
|--|--|-----------------|--------------|--------------|-------------------|----------------------|--------------------|-------------------|-----------|-------------------|-----------|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | Power. | Lighting. |
| Regina, Sask. | Arcola Light and Power Co. | Arcola | Oil | 44 | 1 | 60 | 1,100 | 110/220 | ..... | ..... | 91 |
| | Battleford, Town of | Battleford | Purchased | ..... | 3 | 60 | 2,300 | 110 | 220 | 16 | 270 |
| | Broadview, Town of | Broadview | Gas | 75 | 3 | 60 | 2,200 | 110 | 200 | ..... | 102 |
| | Crabb, David E. | Borden | Oil | ..... | ..... | D.C. | 110 | 110 | 110 | ..... | ..... |
| | Canora, Town of | Canora | Oil | 96 | 3 | 60 | 2,200 | 110 | 220 | 1 | 125 |
| | Carlyle Town of | Carlyle | Steam | 52 | 3 | 60 | 2,300 | 110 | 110 | ..... | 74 |
| | Davidson Light and Power Station. | Davidson | Gas | 80 | 3 | 60 | 2,200 | 110 | 220 | ..... | 115 |
| | Ekains, H. G. | Shanavon | Oil | 25 | ..... | D.C. | 110/115 | 119/115 | 110/115 | ..... | 3 |
| | Earl Grey, Village of | Earl Grey | Oil | 15 | ..... | D.C. | 115 | 115 | 115 | ..... | ..... |
| | Eastend Garage | Eastend | Gas | 25 | ..... | D.C. | 125 | 115 | 115 | ..... | 12 |
| | Estevan, Town of | Estevan | Steam | 300 | 3 | 60 | 2,200 | 200 | 200 | 8 | 362 |
| | Fort Qu'Appelle, Town of | Fort Qu'Appelle | Oil | 25 | 3 | 60 | 2,300 | 230 | 115 | 1 | 51 |
| | Govan, Town of | Govan | Oil | ..... | ..... | D.C. | 120 | ..... | 110 | ..... | 53 |
| | Grenfell, Town of | Grenfell | Gas | 64 | 3 | 60 | 2,200 | ..... | 110 | ..... | 123 |
| | Hutchinson, Joseph | Gull Lake | Gas | 64 | 3 | 60 | 2,300 | 220 | 115 | 1 | 102 |
| | Humboldt Electric Dept. | Humboldt | Steam | 250 | 3 | 60 | 2,200 | 220/500 | 110 | 2 | 225 |
| | Indian Head, Town of | Indian Head | Steam | 225 | 3 | 60 | 2,200 | 208 | 104 | ..... | 240 |
| | International Power Co. | North Portal | Purchased | ..... | ..... | ..... | ..... | ..... | 220 | ..... | 25 |
| | Kamsack, Municipality of | Kamsack | Gas | 200 | 3 | 60 | 2,200 | 110/220 | 110 | 3 | 165 |
| | Klassen, H. M. | Herbert | Gas | 64 | 3 | 60 | 2,300 | 115 | 115 | 1 | 139 |
| Kindersley, Town of | | Kindersley | Steam | 135 | 3 | 60 | 2,200 | 220 | 1 | 141 | |
| Langham, Town of | | Langham | Gas | 50 | 3 | 60 | 2,200 | 110 | ..... | 75 | |
| Lake Herbert | | Prussia | Gas | 1-255 | ..... | D.C. | 125 | 115 | 1 | 44 | |
| Lumsden Electric Light and Power Co., Ltd. | | Lumsden | Oil | 1-395 | 3 | 60 | 2,200 | 110 | 110 | ..... | 67 |
| Johnson, W. & Son, Morrison, Wm. W. | Lloydminster | Gas | 100 | ..... | D.C. | 220 | 220 | 220 | ..... | 106 | |
| | Lashburn | Oil | 25 | ..... | D.C. | 110 | 110 | 110 | ..... | 40 | |
| | Maple Creek Light, Power and Milling Co. | Maple Creek | Steam | 100 | 3 | 60 | 2,200 | 110 | ..... | 110 | |
| | Melfort, Town of | Melfort | Oil | 150 | 3 | 60 | 2,200 | 220 | 1 | 188 | |
| Melville, Corporation of | Melville | Gas | 250 | 3 | 60 | 2,300 | 220/2300 | 110/220 | ..... | 350 | |
| McCallum Hill Building, Ltd. | Regina | Purchased | 130 | | D.C. | 110 | 110 | 110 | | 50 | |
| Moose Jaw, City of | Moose Jaw | Steam | 4,000 | 3 | 60 | 2,300 | 220 | 110 | 138 | 3,622 | |

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| | | | | | | | | | |
|--|-------------------|------------------|-----------|---|------|---------|-----------|---------|--------|
| Laponade, E. | Morse. | Gas. | 68 | 3 | 60 | 2,300 | 110 | 110 | 79 |
| North Battleford, City of. | North Battleford. | Oil. | 1,000 | 3 | 60 | 2,300 | 220 | 110 | 670 |
| Outlook, Town of. | Outlook. | Gas. | 72 | 3 | 60 | 2,200 | 220 | 110 | 150 |
| Oxbow, Town of. | Oxbow. | Oil. | 25 | 3 | D.C. | 125 | 110 | 110 | 50 |
| Prince Albert Municipal Elec. Light and Power Plant. | Prince Albert. | Steam. | 1,600 | 3 | 60 | 2,200 | 220/550 | 110/220 | 1,530 |
| Qu'Appelle Electric Light Co. | Qu'Appelle. | Gas. | 90 | 3 | D.C. | 220 | 220 | 220 | 75 |
| Radisson Iron Works. | Radisson. | Oil. | 10,910 | 3 | D.C. | 115 | 115 | 115 | 35 |
| Regina Electric Light and Power Dept. | Regina. | Steam. | 10,910 | 3 | 60 | 2,200 | 110/220 | 110/220 | 5,577 |
| Rosetown Electric Light and Power Co., Ltd. | Rosetown. | Steam. | 110 | 3 | 60 | 2,300 | 220/110 | 220/110 | 80 |
| Rouleau, Town of. | Rouleau. | Gas. | 175 | 3 | 60 | 2,300 | 115 | 115 | 154 |
| Saltcoats, Town of. | Saltcoats. | Gas. | 50 | 3 | 60 | 2,200 | 110 | 110 | 85 |
| Saskatoon Electric Light and Power Dept. | Saskatoon. | Steam. | 7,973 | 2 | 60 | 2,400 | 2,200/220 | 110 | 4,781 |
| Scott, Town of. | Scott. | Oil. | 100 | 3 | D.C. | 2,200 | 220 | 110 | 40 |
| Semans Electric Light Co., Ltd. | Semans. | Oil. | 15 & 9 | 3 | D.C. | 120 | 115 | 115 | 28 |
| Strassburg, Town of. | Strassburg. | Gas. | 51 | 3 | 60 | 2,200 | 110 | 110 | 105 |
| Swift Current, City of. | Swift Current. | Steam and gas. | 900 & 265 | 3 | 60 | 2,200 | 220 | 110 | 860 |
| Townsend, Arthur. | Milestone. | Oil. | 30 | 3 | D.C. | 110 | 110 | 110 | 49 |
| Tisdale Trading and Milling Co., Ltd. | Tisdale. | Steam. | 14" & 14 | 3 | 60 | 530 | 2,200 | 110 | 73 |
| Thompson, Alexander L. | Ponteix. | Oil. | 20 | 3 | D.C. | 110 | 110 | 110 | 73 |
| Wadena Municipal Lighting Plant. | Wadena. | Gas. | 65 | 3 | 60 | 2,300 | 112 | 112 | 120 |
| Watrous Electric Light Co. | Watrous. | Gas. | 88 | 3 | 60 | 2,300 | 110/220 | 110 | 760 |
| Weyburn, Corporation of. | Weyburn. | Steam. | 550 | 3 | 60 | 2,300 | 220 | 110 | 45 |
| Gordon, H. R. | Wilcox. | Oil. | 9 | 3 | D.C. | 115 | 115 | 115 | 130 |
| Wilkie, Town of. | Wilkie. | Oil. | 100 | 3 | 60 | 2,200 | 220 | 110 | 145 |
| Wolsley Light and Power Plant. | Wolsley. | Gas and oil. | 110 | 3 | 60 | 2,300 | 110 | 110 | 70 |
| Yellow Grass, Town of. | Yellow Grass. | Oil. | 25 | 3 | D.C. | 110/115 | 550 | 110 | 614 |
| Yorkton, Corporation of. | Yorkton. | Oil. | 650 | 3 | 60 | 2,200 | 220 | 110 | 372 |
| Bankhead Mines, Limited. | Bankhead. | Steam. | 500 | 3 | 60 | 2,200 | 550-220 | 110 | 4 |
| Bowness Improvement Co. | Calgary. | Gas. | 350 | 3 | 60 | 2,200 | 220 | 110 | 732 |
| Calgary, Corporation of City of. | Calgary. | Steam and gas. | 18,360 | 3 | 60 | 2,300 | 220 | 110 | 14,175 |
| Calgary Water Power Co., Ltd. | Calgary. | Water and steam. | 2,875 | 3 | 60 | 2,200 | 210 | 105 | 1,750 |
| Calgary Power Co., Ltd. | Seebe. | Water. | 30,000 | 3 | 60 | 12,000 | 640 | 110 | 126 |
| Canada West Coal Co., Ltd. | Faber. | Steam. | 200 | 3 | 60 | 2,300 | 110 | 110 | 1 |
| Cardston, Town of. | Cardston. | Steam. | 100 | 2 | 60 | 2,200 | 2,200 | 110 | 164 |
| Clareholm, Town of. | Clareholm. | Steam. | 200 | 3 | 60 | 2,300 | 110 | 110 | 122 |
| Coronation, Town of. | Coronation. | Steam. | 120 | 2 | 60 | 2,200 | 220 | 110 | 120 |
| Didsbury, Town of. | Didsbury. | Steam. | 100 | 3 | 60 | 2,200 | 220 | 110 | 123 |
| Franco-Canadian Collieries, Ltd. | Frank. | Steam. | 750 | 3 | 60 | 2,200 | 440-220 | 110 | 4 |

Calgary, Alta.

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER. | | Phases of System. | Frequency of System. | Generator Voltage. | | SERVICE VOLTAGES. | | NUMBER OF METERS. | |
|---------------------------------|--|--|----------------------|--------------|-------------------|----------------------|--------------------|-------------------|-------------------|-----------|-------------------|--------|
| | | | Type. | Horse Power. | | | Power. | Lighting. | Power. | Lighting. | | |
| Calgary— <i>Con.</i> | International Coal and Coke Co., Ltd. | Coleman..... | Steam..... | 1,800 | 3 | 60 | 2,200/ 250 | 250 | 250 | ..... | ..... | ..... |
| | Innisfail, Town of..... | Innisfail..... | Steam..... | 100 | 3 | 60 | 2,200 | 110 | 110 | ..... | ..... | 133 |
| | Knight Sugar Company..... | Raymond..... | Steam..... | 100 | 3 | 60 | 2,200 | 220 | 110 | ..... | ..... | 4 |
| | Lethbridge, City of..... | Lethbridge..... | Steam..... | 3,000 | 2 | 60 | 2,200 | 2,200- 220/110 | 110 | 94 | ..... | 1,964 |
| | Macleod, Municipality of Town of..... | Macleod..... | Steam..... | 600 | 3 | 60 | 2,300 | 220 | 110 | 7 | ..... | 428 |
| | Medicine Hat, City of..... | Medicine Hat..... | Steam..... | 4,800 | 3 | 60 | 2,300 | 550/220 | 110 | 80 | ..... | 1,100 |
| | Mutz, A..... | Vulcan..... | Oil..... | 85 | ..... | ..... | 120 | 110-120 | ..... | ..... | ..... | 18 |
| | Nanton, Town of..... | Nanton..... | Steam and gas..... | 125-75 | 3 | 60 | 2,200 | 110 | 110 | ..... | ..... | 115 |
| | Northwestern Engineering and Supply Co., Ltd. | Okotoks..... | Gas..... | 100 | 3 | 60 | 2,300 | 220 | 110 | ..... | ..... | ..... |
| | Northwestern Engineering and Supply Co., Ltd. | Drumheller..... | Steam..... | 110 | 3 | 60 | 2,300 | 220 | 110 | 1 | ..... | 77 |
| | Pincher Creek Electric Light, Rocky Mountains Cement Co., Ltd. | Pincher Creek..... | Steam..... | 285 | 3 | 60 | 2,250 | ..... | 110 | ..... | ..... | 200 |
| | United Electric and Engineering Co., Ltd. | Blairmore..... | Steam..... | 150 | 3 | 60 | 2,300 | 110 | 110 | 1 | ..... | 1 |
| | Stagg, Geo..... | High River..... | Steam..... | 160 | 3 | 60 | 2,200 | 110 | 110 | ..... | ..... | 220 |
| | United Electric and Engineering Co., Ltd. | Bassano..... | Steam..... | 80 | 3 | 60 | 2,300 | 220 | 110 | ..... | ..... | 120 |
| | Vigar, F. C..... | Gleichen..... | Steam..... | 75 | ..... | ..... | 110 | 110 | 110 | ..... | ..... | 24 |
| | Wino Power and Light Co..... | East Calgary..... | ..... | ..... | ..... | ..... | 210 | 210 | 110 | 4 | ..... | 6 |
| | Edmonton, Alta... | Camrose Municipal Power Pt. Cardiff Collieries, Ltd. | Camrose..... | Steam..... | 275 | 3 | 60 | 2,300 | 220 | 110 | 10 | ..... | 330 |
| Braycu Collieries, Ltd. | | Cardiff..... | Steam..... | 150 | ..... | ..... | 250 | 250 | ..... | ..... | ..... | ..... |
| Edmonton, City of..... | | Nordegg..... | Steam..... | 500 | 3 | 60 | 2,300 | 440-220 | 110 | 3 | ..... | 16 |
| Fort Saskatchewan, Town of..... | | Edmonton..... | Steam..... | 15,000 | 3 | 60 | 2,200 | 220 | 110/220 | 318 | ..... | 11,799 |
| Hardisty Electric Light Co. | | Fort Saskatchewan..... | Steam..... | 90 | 2 | 60 | 2,200 | ..... | 110 | ..... | ..... | 130 |
| Jasper Park Collieries..... | | Hardisty..... | Oil and gas..... | 12-50 | ..... | ..... | 440-220 | 220 | 220 | ..... | ..... | 26 |
| Lacombe, Town of..... | | Pocahontas..... | Steam..... | 100-250 | 3 | 60 | 480 | 440 | 110 | ..... | ..... | 15 |
| ..... |  | Lacombe..... | Water and steam..... | 125 | 3 | 60 | 2,300 | ..... | 110 | ..... | ..... | 201 |
| Mountain Park Coal Co., Ltd. | | Mountain Park..... | Steam..... | 400 | | | 250 | 250-220 | 250 | | | 12 |
| Ponoka, Town of..... | | Ponoka..... | Steam..... | 75 | 3 | DC. | 2,300 | 110 | 110 | | | 122 |

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| | | | | | | | | |
|-----------------|--|--------|---|-----|-------------|-----|-------|--------|
| Vancouver, B.C. | Stettler..... | 200 | 3 | 60 | 2,200 | 110 | 9 | 170 |
| | Vegreville..... | 225 | 3 | 60 | 2,200 | 110 | | 155 |
| | Vermilion, Town of..... | 75 | 3 | 60 | 2,200 | 110 | | 196 |
| | Wetaskiwin..... | 740 | 2 | 60 | 2,300 | 110 | 401 | 385 |
| | Wetaskiwin, Town of..... | | | | | | | |
| | gas. | | | | | | | |
| | Ashcroft Water, Electric and Improvement Co. Ltd. | 100 | 3 | 60 | 2,300 | 110 | | 98 |
| | Adams River Lumber Co., Ltd. | 75 | 1 | 125 | 1,100 | 110 | | 46 |
| | City of Armstrong..... | 300 | 3 | 60 | 2,200 | 110 | 4 | 200 |
| | City of Britannia Beach..... | 10,000 | 3 | 60 | 6,600 | 110 | | 168 |
| | Co., Ltd. Water and steam. | | | | 440-220 | | | |
| | B.C. Electric Railway Co., Ltd. | 18,000 | 3 | 60 | 2,200 | 110 | 1,831 | 40,580 |
| | Cranbrooke Electric Light Co., Ltd. | 500 | 2 | 60 | 2,200 | 110 | 7 | 590 |
| | Cascade Water, Power and Light Co., Ltd. | 1,000 | 3 | 60 | 2,000 | 110 | | 4 |
| | Canadian Western Lumber Co., Ltd. | 3,000 | 3 | 60 | 500 | 110 | 35 | |
| | Crow's Nest Pass Electric Light and Power Co., Ltd. | 275 | | DC. | 220 | 220 | | |
| | Crow's Nest Pass Electric Light and Power Co., Ltd. | 400 | | DC. | 220 | | | |
| | Denver Light and Power Co., Ltd. | 55 | 3 | 60 | 2,300 | 110 | | 3 |
| | Daly Production Co., Ltd. | 2,100 | 3 | 60 | 6,600-2,200 | 110 | | 3 |
| | Fernie, Corporation of City of. | 250 | 2 | 66 | 2,300 | 115 | 14 | 590 |
| | Golden Light Power and Water Co., Ltd. | 90 | 3 | 60 | 2,300 | 110 | | 5 |
| | Granby Consolidated Mining, Smelting and Power Co., Ltd. | 6,000 | 3 | 60 | 2,200 | 110 | 6 | 172 |
| | Grand Forks, Corporation of City of. | | | | 440/220 | | | |
| | Grand Forks, Corporation of | | | | 2,200 | 110 | 10 | 400 |
| | Greenwood City Waterworks Co. | 150 | 3 | 60 | 4,400 | 115 | 1 | 6 |
| | Kaslo, City of..... | 250 | 2 | 60 | 1,100 | 110 | | 2 |
| | Kelowna, Corporation of City of. | 620 | 3 | 60 | 2,300 | 110 | 36 | 456 |
| | Kamloops, Corporation of..... | 4,000 | 3 | 60 | 2,200 | 110 | 30 | 1,112 |
| | Mission Water, Light and Power Co. | 70 | 3 | 60 | 300 | 110 | | 40 |
| | Merritt, Corporation of City of. | 200 | 3 | 60 | 2,200 | 110 | 1 | 282 |
| | New Westminster, Corporation of. | | 3 | 60 | 2,300 | 110 | | 3,297 |

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

| District. | Company. | Address. | PRIME MOVER | | Phases of System. | Frequency of System. | Generator Voltage. | SERVICE VOLTAGES. | | NUMBER OF METERS. | | |
|---|--|----------------------|-------------------|--------------|-------------------|----------------------|--------------------|-------------------|-----------|-------------------|--------|-----|
| | | | Type. | Horse Power. | | | | Power. | Lighting. | | | |
| Vancouver, B.C.— <i>Con.</i> | Nelson, Corporation of City of | Nelson..... | Water..... | 2,500 | 3 | 60 | 12,000 | 2,200 440/220 | 110 | 27 | 707 | |
| | Okanagan Saw Mills, Ltd. | Enderby..... | Steam..... | 100 | 1 | 60 | 2,080 | 2,300 | 110 | | 160 | |
| | Okanagan Securities Co., Ltd. | Naramata..... | Water..... | 60 | 3 | 60 | 2,000 | | 110 | | 10 | |
| | Penticton, Corporation of | Penticton..... | Oil..... | 200 | 3 | 60 | 4,700 | 220 | 110 | 2 | 435 | |
| | Prince George, City of | Prince George..... | Oil..... | 150 | 3 | 60 | 2,300 | 2,300 | 115 | | 130 | |
| | Prince Rupert, Corporation of | Prince Rupert..... | Water..... | 1,650 | 3 | 60 | 4,400 | 2,200— 220 | 110 | 44 | 803 | |
| | Powell River Corporation, Ltd. | Powell River..... | Water..... | 9,600 | 3 | 50 | 600 | 600 | 110—220 | | 1 | 27 |
| | Phoenix Electric Lighting Co., Ltd. | Phoenix..... | Purchased. | | | | | 250 | 110 | | 1 | 22 |
| | Revelstoke, Corporation of | Revelstoke..... | Gas and water. | 250—2,300 | 3 | 60 | 2,300 | 220 | 110 | | 22 | 722 |
| | Rossland Water and Light Co., City of. | Rossland..... | Purchased | | | | | 110 | 110 | | | 101 |
| | Sumas Electric Light Co. | Huntingdon..... | Purchased | | | | | 2,200 | 110 | | 1 | 6 |
| | Summerland, Corporation of | West Summerland..... | Water..... | 30* 45 | 3 | 60 | 2,200 | 2,200 | 110 | | | 140 |
| | District of. South Kootenay Water Power Co. | Rossland..... | Purchased. | | | | | | | | | |
| | Sandon Water Works and Light Co. | Sandon..... | Water..... | 175 | | | DC. | 125 | 110 | | | |
| Salmon Arm, Corporation of | Salmon Arm..... | Oil..... | 150 | 3 | 60 | 60 | 2,200 | 110 | 110 | 1 | 110 | |
| Vernon, Corporation of | Vernon..... | Oil..... | 725 | 3 | 60 | 60 | 2,200 | 220 | 220/110 | 23 | 692 | |
| Vancouver Power Co., Ltd. | Vancouver..... | Water..... | 64,200 | 3 | 60 | 60 | 2,200 | 220—550 | | | | |
| West Kootenay Power and Light Co., Ltd. | Rossland..... | Water..... | 28,000 | 3 | 60 | 60 | 2,500 | 220—550 | 110 | 39 | | |
| Western Power Co. of Canada, Ltd. | Vancouver..... | Water..... | 39,000 | 3 | 60 | 60 | 4,400 | 220—550 | 115 | 508 | 1,150 | |
| Victoria, B.C. | Alberni, Corporation of | Alberni..... | Purchased. | | | | 200 | | 110 | | 69 | |
| | British Columbia Electric Ry. Co., Ltd. | Victoria..... | Water..... | 2,300 | 3 | 60 | 700 | 220—660 | 110 | 395 | 12,085 | |
| | Canadian Explosives, Limited | Victoria..... | Purchased | | | | | 220 | 110 | | 30 | |
| | Canadian Collieries (Dunsmuir) Ltd. | Cumberland..... | Turbine..... | 10,000 | 3 | 25 | 13,200 | 220—440 | 110 | | 100 | |

SESSIONAL PAPER No. 13

| | | | | | | | | | | | |
|---|--------------|-----------------|----------|---|-----|-------|--|---------|-----|----|-------|
| Courtenay Electric Light and Power Co., Ltd. | Courtenay | Purchased | | | | | | 110 | 110 | 16 | 94 |
| Cumberland Electric Lighting Co., Ltd. | Cumberland | Purchased | | | | | | 110 | 110 | 1 | 446 |
| Duncan, Corporation of | Duncan | Oil | 2-100 | 3 | 60 | 2,200 | | 220 | 110 | 3 | 136 |
| Ladysmith, Corporation of | Ladysmith | Steam | 160 | 3 | 60 | 2,200 | | 110 | 110 | | 400 |
| Nanaimo Electric Light, Power and Heating Co., Ltd. | Nanaimo | Water and steam | 900 | 3 | 60 | 2,300 | | 110/220 | 110 | 14 | 1,753 |
| Pemberton Building Co. | Victoria | Steam | 113 | | DC. | 110 | | 110 | 110 | 2 | 13 |
| Port Alberni, Corporation of | Port Alberni | Oil | 150 | 3 | 60 | 2,300 | | | 110 | | 120 |
| Sayward, J. A. | Victoria | Purchased | | | | | | 500-220 | 110 | 6 | 14 |
| Sussex Manufacturing Co., Ltd. | Sussex | Steam | 75 & 125 | 2 | 133 | 2,000 | | 100 | 100 | | 325 |
| Uplands, Limited | Victoria | Purchased | | | | 2,200 | | 110 | 110 | 3 | 14 |
| Vancouver Portland Cement Co., Ltd. | Victoria | Purchased | | | | | | | 110 | | 15 |
| Vancouver Island Power Co., Ltd. | Victoria | Water | 25,500 | 3 | 60 | 2,300 | | | | | |
| Vancouver Island Power Co., Ltd. | Victoria | Steam | 6,000 | 3 | 60 | 2,300 | | | | | |
| Victoria Electric Company | Victoria | Purchased | | | | | | | 110 | | 19 |

ORMOND HIGMAN,

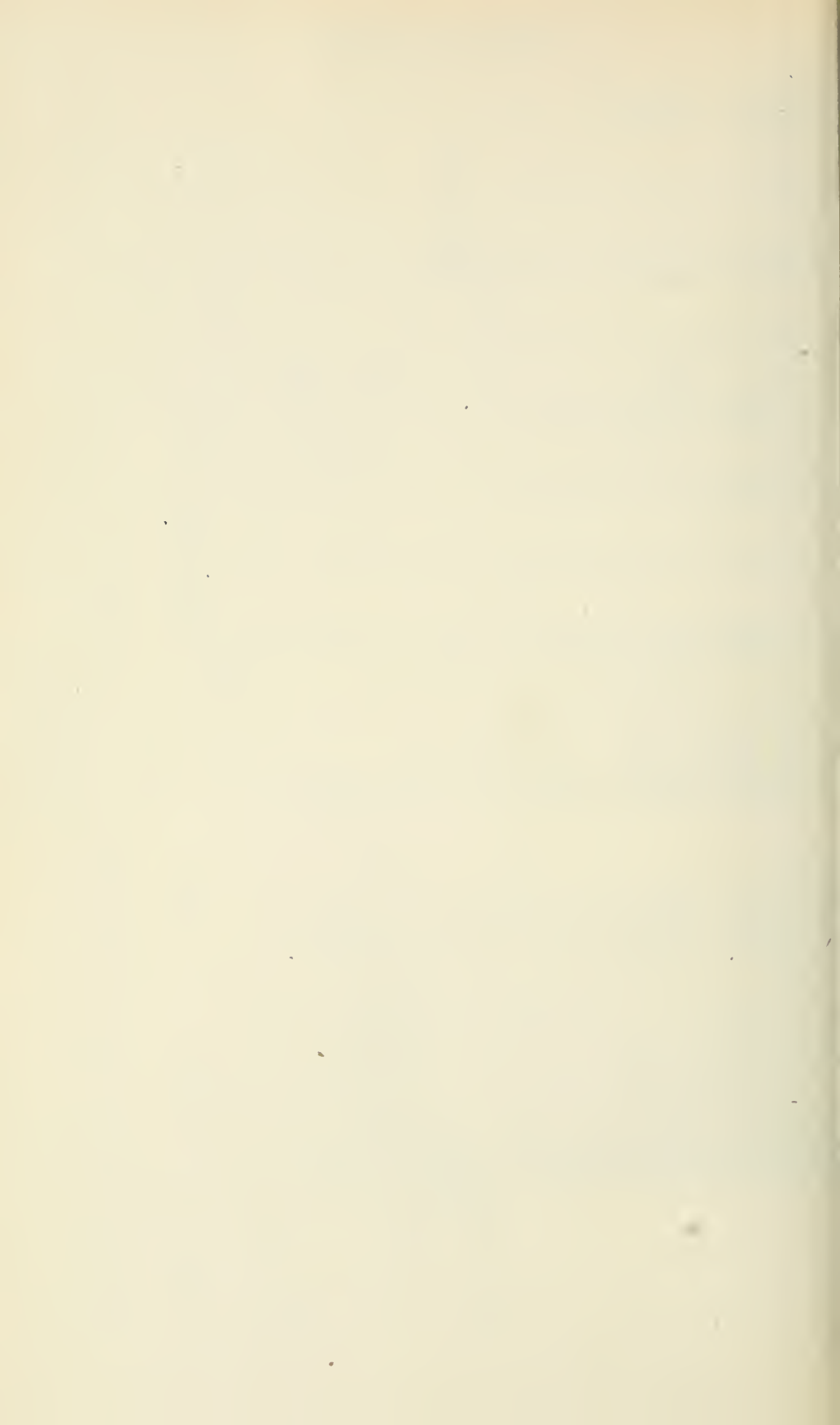
*Chief Engineer,**Gas and Electricity Inspection.*

INLAND REVENUE DEPARTMENT,

OTTAWA, July 2, 1917.

J. U. VINCENT,

Deputy Minister.



REPORTS, RETURNS, AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART III

ADULTERATION OF FOOD

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

J. DE LABROQUERIE TACHÉ

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1917

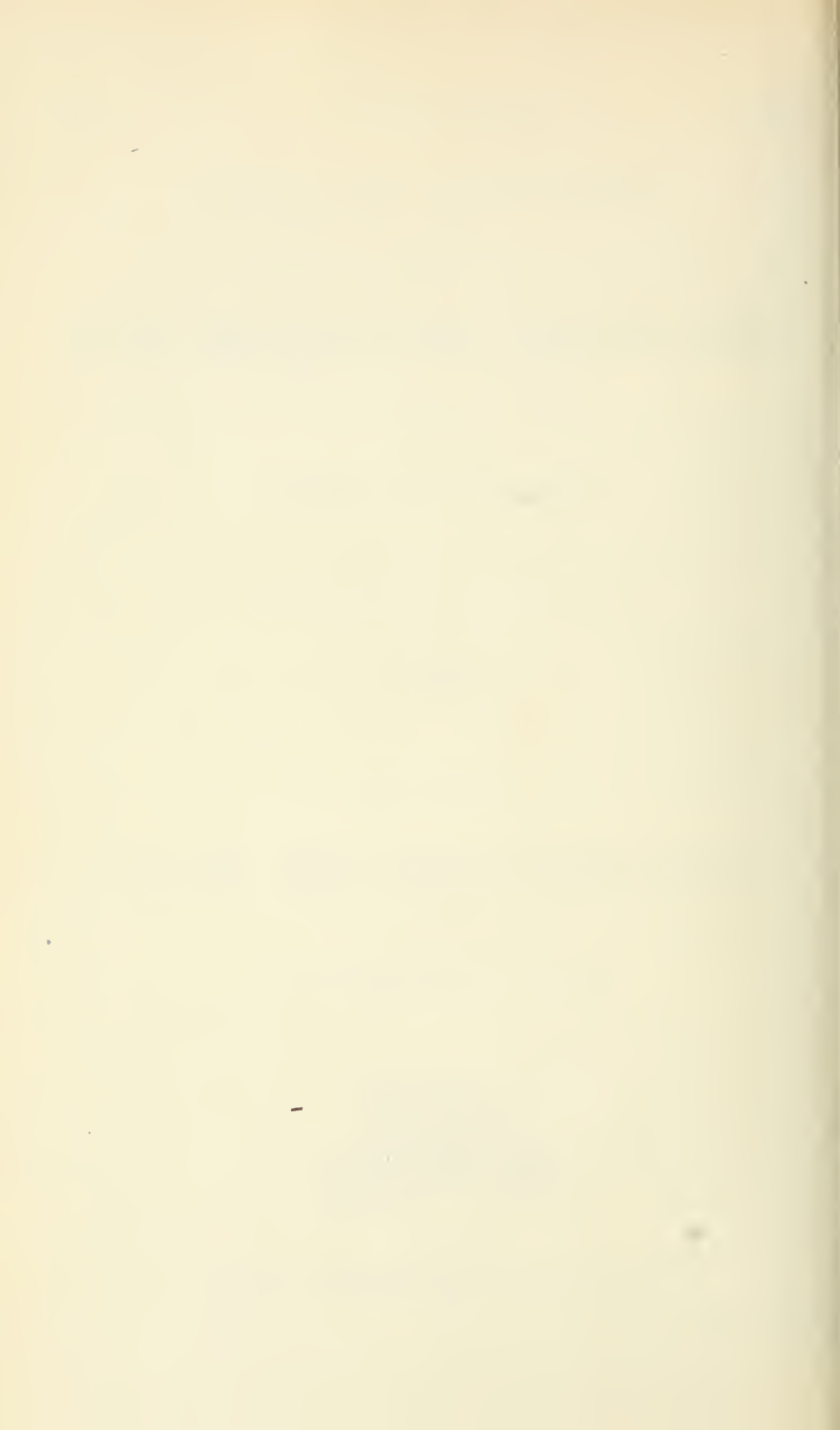


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REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE.

OTTAWA, July 1, 1917.

To the Honourable ALBERT SÉVIGNY,
Minister of Inland Revenue,
Ottawa, Ont.

HONOURABLE SIR,—I have the honour to herewith submit to you a report of the work performed by the Laboratory of the Inland Revenue Department during the fiscal year ending on the 31st of March, 1917.

This report is prefaced by a review from the Chief Analyst of the work performed by the Laboratory staff during the fiscal year. It is unnecessary, therefore, for me to go into the matter therein referred to.

The Laboratory of the Department of Inland Revenue is gradually assuming its proper place amongst the services instituted by the Government for the protection of the public. The establishment of three branches, at Halifax, Winnipeg, and Vancouver respectively, has already proven the importance of this development in both facilitating and expediting the work of the Department, which has shown in many instances to have been a very great advantage to the public in general, and to trade in particular.

The department has, at present, under consideration, the extension of its mailing list, so that a greater public good may be derived from the publication of the bulletins through a wider dissemination of information of great interest to the business world and to the consuming world.

In this year's report, the department has determined to eliminate from the bulletins reproduced herein, the list of samples which usually accompanies the bulletins. This was done for purposes of economy, as there is no practical advantage in reproducing these lists of samples, when they have already been published with the bulletins and widely circulated throughout the year.

In conclusion, I may say that we have tangible evidence that both the honest business man, who happily forms the vast majority of our trade, and the people, are appreciating more and more the excellent work performed by Dr. McGill and his assistants.

I have the honour to be, Honourable Sir,

Yours very truly,

J. U. VINCENT,
Deputy Minister of Inland Revenue.

REPORT OF THE CHIEF ANALYST.

OTTAWA, June 21, 1917.

J. U. VINCENT, Esq., K.C.,

Deputy Minister of Inland Revenue,
Ottawa, Ont.

DEAR SIR,—I beg to submit herewith a report of the work done in the laboratories of the Inland Revenue Department during the fiscal year ending 31st March, 1917.

In my report of last year I referred to the satisfactory working of the sub-laboratories at Halifax, Winnipeg and Vancouver. I am pleased to be able to state that another year's experience goes to justify the step taken in the establishment of these local branches of the main laboratory. They have been found to do good service in many ways, and especially in enabling local work to be performed with less delay than formerly. I expressed a hope that further extensions might be found feasible in the near future, and particularly in the larger manufacturing and commercial centres. Although the demands made upon the national revenues at the present time are such as, for the moment, to necessitate retrenchment wherever possible, I am convinced that one notable outcome of the present war will be the successful development of manufactures heretofore regarded as too well established in the older countries to make hopeful any considerable rivalry on the part of Canada. This will, of course, involve largely increased work for our laboratories, where foods, drugs, or fertilizers are concerned, as well as in cases where alcohol, either as such, or suitably denatured, is permitted to be used, duty free or under specially privileged condition.

Halifax sub-laboratory.—This has been in charge of Mr. C. C. Forward, with Mr. A. J. Landry as assistant.

The subjoined statement gives, in concise form, the work done during this year.

| No. of Samples Received. | Number Reported. | Description. | Date of report to Chief Analyst. |
|--------------------------|------------------|---------------------------------|----------------------------------|
| 4 | 23 | Canned tomatoes, 1916..... | April 24 and May 20. |
| 29 | 41 | Temperance beer..... | " 24 " 20. |
| 4 | 23 | Bran..... | " 24 " 24. |
| 8 | 8 | Florida water, etc..... | " 24. |
| 2 | 3 | Gluten meal or flour..... | " 24. |
| 2 | 5 | Aspirin..... | " 24. |
| 93 | 93 | Fertilizers..... | May 22 and July 18. |
| 40 | 40 | Maple syrup..... | July 18. |
| 33 | 33 | Gelatine..... | " 24. |
| 34 | 34 | Feed flour..... | " 19. |
| 60 | 60 | Tea..... | Aug. 4. |
| 30 | 30 | Prepared mustard..... | July 22. |
| 30 | 30 | Vanilla extract..... | Aug. 12. |
| 30 | 30 | Malt vinegar..... | Oct. 11. |
| 39 | 39 | Canned peas..... | Sept. 25. |
| 39 | 39 | Baking powder..... | Oct. 17. |
| 14 | 14 | White lead paint, 1917..... | Jan. 6, 1917. |
| 15 | 15 | Packaged borax..... | " 6. |
| 20 | 20 | Caramels..... | " 6. |
| 20 | 20 | Headache powders..... | " 6. |
| 20 | 20 | Ketchup..... | " 6. |
| 5 | 5 | Cream of tartar..... | Mar. 31. |
| 35 | | Butter..... | |
| 27 | | Chop feed..... | |
| 66 | | Evaporated fruit..... | |
| 60 | | Black pepper..... | |
| 8 | | Peanut butter..... | |
| 20 | | Fertilizers..... | |
| 787 | 625 | Malt liquors for export—Excise. | |
| 111 | 111 | Special samples as follows:— | |
| 37 | 37 | 19 alcohol tests in beer, etc. | |
| | | 10 fertilizer materials. | |
| | | 4 cream. | |
| | | 1 flour. | |
| | | 1 evaporated apples. | |
| | | 1 boiler feed water. | |
| | | 1 cream of tartar. | |
| 935 | 773 | | |

| | |
|--|-----|
| Total number of samples received..... | 935 |
| Number received before March 31, 1916, reported..... | 54 |
| Total number samples reported..... | 773 |
| Work in hand, March 31, 1917, not reported..... | 196 |

Soda solution supplied to Collector I. R. St. John, N.B., 1 Winchester.

Fees collected for analysis of special samples above mentioned and sent to Department, \$106.25.

Winnipeg sub-laboratory—Has been in charge of Mr. E. L. C. Foster during the year, with Mr. W. A. Davidson as assistant.

Mr. Forster's report is as follows:—

| | | | |
|-----------------------|-----|--------------------------|-----|
| canned tomatoes..... | 30 | Malt vinegar..... | 20 |
| temperance beers..... | 19 | Baking powders..... | 50 |
| maple syrup..... | 10 | Borax..... | 10 |
| fertilizers..... | 42 | Marmalade..... | 20 |
| Florida waters..... | 10 | Ketchup..... | 15 |
| bran..... | 20 | Caramels..... | 15 |
| feed flour..... | 18 | White paint..... | 8 |
| gluten flours..... | 3 | Headache powders..... | 15 |
| gelatine..... | 17 | Black pepper..... | 60 |
| maple syrup..... | 25 | Chop feed..... | 38 |
| prepared mustard..... | 15 | Evaporated fruits..... | 52 |
| tea..... | 129 | Butter..... | 39 |
| vanilla extract..... | 15 | | |
| canned peas..... | 49 | Inspectors' samples..... | 744 |

and the following forty-seven occasional samples:—

| | | | |
|------------------------|----|----------------------|-----|
| Butter..... | 12 | Baking powder..... | 1 |
| Evaporated apples..... | 20 | Vanilla extract..... | 1 |
| Milk..... | 2 | Cream..... | 4 |
| Beer..... | 3 | Buttermilk..... | 1 |
| Cream of tartar..... | 1 | | |
| Wine..... | 2 | Total..... | 791 |

The following excise solutions were also furnished:—

| | | |
|-------------------------------|----|---------------|
| Normal soda solution..... | 34 | winchesters. |
| Normal sulphuric acid..... | 1 | 4-oz. bottle. |
| Phenolphthalein solution..... | 5 | bottles. |

Vancouver sub-laboratory—Has been in charge of Mr. J. A. Dawson during the year, with Mr. P. T. Kirwan as assistant until 31st May, 1916, when he resigned. Mr. F. C. Collier was sent out as assistant, July 1, 1916. Mr. Dawson's report of work done is as follows:—

| Date. | Collection. | P.T.K. | F.C.C. | J.A.D. | Total. |
|---------------|----------------------------|--------|--------|--------|--------|
| 1916. | | | | | |
| April 21..... | Coffee..... | | | 80 | 80 |
| May 2..... | Cream of tartar sub's..... | 3 | | | 3 |
| " 9..... | Vinegar..... | | | 22 | 22 |
| " 18..... | Sugar..... | 49 | | | 49 |
| June 11..... | Fertilizers..... | | | 35 | 35 |
| July 17..... | Chocolate..... | | | 32 | 32 |
| " 22..... | Evaporated fruit..... | | 40 | | 40 |
| Aug. 14..... | Cassia and cinnamon..... | | | 22 | 22 |
| " 25..... | Maple syrup..... | | 27 | | 27 |
| Sept. 15..... | Tomatoes..... | | 29 | | 29 |
| " 22..... | Temperance beer..... | | | 6 | 6 |
| Oct. 5..... | Toilet lotions..... | | | 10 | 10 |
| " 10..... | Gluten flour..... | | 3 | | 3 |
| " 18..... | Feed flour..... | | 8 | | 8 |
| " 31..... | Vanilla extract..... | | | 10 | 10 |
| Nov. 3..... | Bran..... | | 24 | | 24 |
| " 13..... | Gelatine..... | | | 12 | 12 |
| " 25..... | Prepared mustard..... | | | 10 | 10 |
| " 23..... | Tea..... | | 20 | | 20 |
| Dec. 9..... | Malt vinegar..... | | | 20 | 20 |
| " 29..... | Marmalade..... | | 20 | | 20 |
| " 30..... | White lead..... | | | 8 | 8 |
| 1917. | | | | | |
| Jan. 5..... | Borax..... | | 5 | | 5 |
| " 15..... | Catsup..... | | 10 | | 10 |
| " 20..... | Caramels..... | | | 10 | 10 |
| Feb. 14..... | Peanut butter..... | | 5 | | 5 |
| " 15..... | Headache powders..... | | | 10 | 10 |
| Mar. 3..... | Butter..... | | | 30 | 30 |
| " 13..... | Evaporated fruit..... | | | 34 | 34 |
| " 14..... | Chop feed..... | | 31 | | 31 |
| " 28..... | Black pepper..... | | 45 | | 45 |
| | | 52 | 267 | 351 | 670 |
| | Special samples..... | | 14 | 4 | 58 |
| | | 52 | 281 | 355 | 728 |

SESSIONAL PAPER No. 14

The following solutions were supplied: 3 winchesters of normal soda, one bottle NH_2SO_4 , and one bottle phenolphthalein.

The special samples were evaporated apples (Customs) 45, evaporated vegetables 7, vinegar 3, honey 1, sugar 1, arsenic 1.

The personnel of the technical staff of these laboratories, including the sub-laboratories is as follows:—

| Title. | | 31st March, 1916. | 31st March, 1917. |
|-------------------|-------------------------|-----------------------|---------------------|
| At Ottawa..... | 1 Chief Analyst..... | A. McGill..... | A. McGill. |
| | 2 Deputy "..... | A. Lemoine..... | A. Lemoine. |
| | 3 First Assistant..... | A. Valin..... | A. Valin. |
| | 4 Second "..... | V. Kitto..... | V. Kitto. |
| | 5 Third "..... | S. J. Cook..... | S. J. Cook. |
| | 6 Fourth "..... | F. C. Collier..... | F. C. Collier (a). |
| | 7 Fifth "..... | L. E. Westman..... | L. E. Westman (b). |
| | 8 Sixth "..... | Vacant..... | G. H. Brothier (c). |
| | 9 Seventh "..... | "..... | M. Brot (d). |
| | 10 Eighth "..... | "..... | R. M. Rowat (e). |
| | 11 Ninth "..... | "..... | G. E. Grattan (f). |
| | 12 Tenth "..... | "..... | J. A. Gunton (g). |
| | 13 Eleventh "..... | "..... | W. H. Hill (h). |
| | 14 Twelfth "..... | "..... | O. G. Lye (k). |
| | 15 Laboratory Asst..... | Miss Wright..... | Miss Wright. |
| At Halifax..... | 16 In charge..... | C. C. Forward..... | C. C. Forward. |
| | 17 Assistant..... | A. J. Landry..... | A. J. Landry. |
| At Winnipeg..... | 18 In charge..... | E. L. C. Forster..... | E. L. C. Forster. |
| | 19 Assistant..... | W. A. Davidson..... | W. A. Davidson. |
| At Vancouver..... | 20 In charge..... | J. A. Dawson..... | J. A. Dawson. |
| | 21 Assistant..... | P. T. Kirwan..... | F. C. Collier (a). |

(a) Transferred to Vancouver, 30th June, 1916.

(b) Absent, on leave, at Columbia University, from 1st November, 1916.

(c) From 25th May to Sept. 14th, 1916. Absent, on leave, at Toronto University, from Sept. 14th.

(d) From 1st June, 1916, to Dec. 31st. Absent, on leave, for munition work in France from latter date.

(e) From 8th August, 1916.

(f) From 15th January, 1917.

(g) From 13th January, 1917.

(h) " " "

(k) From 10th February, 1917.

It will thus be seen that the technical staff at the main laboratory at Ottawa comprised 5 analysts for the entire year; in addition to which we had:—

Mr. Rowat for 8 months.

Mr. Westman, Mr. Brot for 3 months, Mr. Collier, Mr. Brothier for 3 months, Mr. Grattan, Mr. Gunton and Mr. Hill for $2\frac{1}{2}$ months and Mr. Lye for 2 months.

Vacancies noted in my last report have now been filled and the Ottawa staff, as at present constituted, is very satisfactory.

In addition to the above, Mr. S. Mirsky has been employed since 8th January, 1917, as laboratory assistant.

The following work has been done during the fiscal year; results being published as usual, in the form of bulletins.

ANNUAL REPORT—FISCAL YEAR 1916-17.

| Number of Bulletin. | Subject Bulletins issued. | Number of samples. | Number of Bulletin. | Subject Bulletins Issued. | Number of samples. |
|---------------------|---|--------------------|---------------------|-----------------------------------|--------------------|
| 338 | Sausages..... | 141 | 354 | Gluten flour..... | 21 |
| 339 | Sweet spirit of nitre..... | 85 | 355 | Bran..... | 186 |
| 340 | Ground coffee..... | 407 | 356 | Aspirin tablets..... | 65 |
| 341 | Household ammonia..... | 162 | 357 | Canned tomatoes..... | 222 |
| 342 | Liquid extract of nux vomica..... | 19 | 358 | Cassia..... | 143 |
| 343 | Sugar and icing sugar..... | 251 | 359 | Tea..... | 250 |
| 344 | Spirit of camphor..... | 168 | 360 | Baking powder..... | 213 |
| 345 | Evaporated milk..... | 73 | 361 | Prepared mustard..... | 124 |
| 346 | Chocolate candy..... | 151 | 362 | Gasolene..... | 88 |
| 347 | Fertilizers for 1916..... | 365 | 363 | Malt extract for bakers' use..... | 152 |
| 348 | Maple syrup..... | 162 | 364 | Malt vinegar..... | 185 |
| 349 | Mace..... | 175 | 365 | Caramels..... | 110 |
| 350 | Feed flour..... | 170 | 366 | Canned peas..... | 210 |
| 351 | Bay rum, Florida water, etc..... | 75 | 367 | Gelatin..... | 137 |
| 352 | Evaporated fruits and vegetable tables..... | 180 | 368 | Ketchup..... | 111 |
| 353 | Temperance beer..... | 129 | | Total number of samples..... | 4,930 |

In addition to the above, the following occasional work has been done and reported to the department in the regular correspondence:—

| | | | |
|---------------------------------|----|--------------------------|----|
| Acetic acid..... | 52 | Flour..... | 1 |
| Acetophen..... | 1 | Formin tablets..... | 1 |
| Ale..... | 5 | Fusel oil..... | 13 |
| Ammonium nitrate..... | 1 | Grape dregs..... | 1 |
| Aspirin..... | 1 | Honey..... | 3 |
| Baking powder..... | 1 | Humus..... | 1 |
| Barley..... | 1 | Icing sugar..... | 1 |
| Basic slag..... | 2 | Insecto..... | 1 |
| Beer..... | 48 | Jan..... | 34 |
| Belladonna..... | 1 | Katalys powder..... | 1 |
| Benzol..... | 12 | Lemon extract..... | 3 |
| Bordeaux mixture..... | 1 | Lime juice..... | 2 |
| Bran..... | 1 | Lin. saponis..... | 1 |
| Butter..... | 30 | Liquor..... | 6 |
| Butter substitutes..... | 2 | Malt..... | 1 |
| Cake powder..... | 1 | Malt extract..... | 6 |
| Calf meal..... | 2 | Malt nutrine..... | 1 |
| Canned strawberries..... | 1 | Malt vinegar..... | 5 |
| Cheese..... | 11 | Malted milk..... | 2 |
| Cherry brandy..... | 1 | Maple sugar..... | 2 |
| Chloroform..... | 5 | Maple syrup..... | 11 |
| Cider..... | 1 | Maraschino cherries..... | 1 |
| Cloth..... | 2 | Marmalade..... | 3 |
| Cloves..... | 8 | Milk..... | 38 |
| Coffee..... | 16 | Mineral seal oil..... | 6 |
| Condensed milk..... | 1 | Morphia sulphate..... | 1 |
| Cooking compound..... | 1 | Morphine tablets..... | 1 |
| Cotton seed meal..... | 1 | Mustard..... | 5 |
| Cream of tartar..... | 5 | Nature's plant food..... | 1 |
| Cream of tartar substitute..... | 1 | Nerveline..... | 3 |
| Croela..... | 1 | Oil..... | 1 |
| Cresylone..... | 1 | Oil cake..... | 1 |
| Crude oil..... | 1 | Olive oil..... | 4 |
| Disinfectants..... | 4 | Opium..... | 1 |
| Diastase..... | 1 | Paint..... | 9 |
| Dried distillers' grains..... | 1 | Pastilles calmantes..... | 1 |
| Epsom salts..... | 3 | Peas..... | 1 |
| Ether..... | 2 | Peat..... | 1 |
| Evaporated apples..... | 17 | Pectin..... | 1 |
| Evaporated milk..... | 7 | Pepper..... | 3 |
| Extract lemon..... | 2 | Perolin..... | 1 |
| Feeds..... | 4 | Port wine..... | 1 |
| Fertilizers..... | 10 | Rosin..... | 9 |

SESSIONAL PAPER No. 14

| | | | |
|----------------------|-----|----------------------|-----|
| Salve | 1 | Vanilla extract..... | 2 |
| Sausages | 11 | Vinegar..... | 13 |
| Screenings | 1 | Water | 15 |
| Spent ginger | 1 | Wax | 1 |
| Spirits..... | 190 | Wescol..... | 1 |
| Sprucine..... | 1 | Wine..... | 4 |
| Sugar | 3 | White lead..... | 5 |
| Sugar beer..... | 1 | Wood alcohol..... | 1 |
| Sundries | 6 | | |
| Tea..... | 11 | Grand total..... | 729 |
| Temperance beer..... | 1 | | |

Vinegars tested for excise..... 205

Solutions supplied—

| | | |
|----------------------|-------------|-------|
| Normal soda | Winchesters | 95 |
| " acid..... | bottles. | 8 |
| Phenolphthalein..... | " | 7 |
| | | <hr/> |
| | | 110 |

In conformity with a suggestion made last year, and accepted by yourself, I am furnishing, for inclusion in this report, only the introductory prefaces to bulletins published during the year. These prefaces take note of important conclusions reached as the result of work done. The details as to samples examined, specific analytical results, names and addresses of vendors and manufacturers, etc., are given in the bulletins themselves; and these are available to any person interested, on application to the Deputy Minister or to myself.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL,

Chief Analyst.

BULLETIN No. 338—SAUSAGE 3.

OTTAWA, 12 April, 1916.

SIR,—The present report deals with work done upon one hundred and forty-one (141) samples of sausages; mainly with intent to discover the character of these goods as found in Canada, but also to ascertain whether or not certain modes of treatment not permitted to manufacturers who work under government inspection are in use by sausage manufacturers whose establishments are not supervised by the inspectors of the Department of Agriculture. This has particular reference to the use of dyes, and preservatives.

It has not been considered necessary to make exhaustive analyses upon all the samples, and the work herein reported may be summarized as follows:—

| | | | |
|----------------|----------------------------|-----|----------|
| Examined as to | Moisture content. | 60 | samples. |
| " | " starch content. | 80 | " |
| " | " dyes. | 141 | " |
| " | " preservatives. | 30 | " |
| " | " ash content. | 20 | " |
| " | " proteid content. | 20 | " |
| " | " fat content. | 20 | " |
| " | " bacterial. | 9 | " |

Sausages are defined as follows, by Order in Council of 14th October, 1910 (published as G. 931):—

"2. Sausage, sausage meat, is a comminuted meat from swine or neat cattle or a mixture of such meats, either fresh, salted, pickled or smoked, with added salt and spices and with or without the addition of edible animal fats, cereals, blood and sugar, or subsequent smoking. It contains no larger amount of water than the meats from which it is prepared contain when in their fresh condition, and not more than ten per cent of its weight of cereals; and if it bears a name descriptive of kind, composition or origin, it corresponds to such descriptive name. All animal tissues used as containers, such as casings, stomachs, etc., are clean and sound and impart to the contents no other substance than salt."

Moisture (Water) Content. This is required not to exceed the amount of moisture natural to the meats from which it is prepared. In this connection the following constants possess interest. They are taken from Leach "Food Inspection and Analysis", 2nd Edition, on, p. 213, et seq.

Beef as usually purchased.

| | Chuck. | Ribs. | Loin. | Rump. | Round. | |
|-----------------|--------|-------|-------|-------|--------|----------|
| Lean. | 57.4 | 52.6 | 58.2 | 56.6 | 64.4 | } Water. |
| Medium. | 57.9 | 43.8 | 52.5 | 45.0 | 60.7 | |
| Fat. | 53.3 | 39.6 | 49.2 | 36.2 | 54.0 | |

Pork as usually purchased.

| | Shoulder. | Loin. | Ham. | |
|---------------|-----------|-------|------|----------|
| Lean. | 44.9 | 46.1 | 59.4 | } Water. |
| Fat. | — | 41.8 | 33.6 | |

Of the total water present in sausages, it is generally accepted that the lean sausage meat contributes about 76 per cent the fatty tissue, from 3 to 8 per cent, and the starch or flour from 10 to 15 per cent (Allen Com. Org. Analysis, Vol. VIII, p. 361)

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Konig (Jusammensetzung, etc., p. 1460) quotes 48.24 p.c. water for the mean of many analyses of pork sausages.

The results of analysis in the case of the present collection, and so far as water is concerned, are as below:—

| | | |
|--|------|-----------|
| Average for 10 samples from New Brunswick... | 48.3 | per cent. |
| “ 10 “ Toronto... | 51.9 | “ |
| “ 10 “ Hamilton... | 49.4 | “ |
| “ 10 “ Alberta... | 43.9 | “ |
| “ 10 “ Rocky Mountains... | 50.6 | “ |
| “ 10 “ Vancouver... | 43.8 | “ |

Average for 60 samples... 48.0 per cent.

Starch Content of Sausages. The standards above quoted require that starch shall not exceed 10 per cent. As a matter of fact, our analytical results show that much less than this amount is usually present.

In the case of 80 samples examined, 75 samples contain starch. The average starch content is 3.14 per cent. In greater detail, the results are:—

| | | |
|--------------------------------------|------|-----------|
| For 10 samples from New Brunswick... | 7.44 | per cent. |
| “ 10 “ Toronto... | 2.12 | “ |
| “ 9 “ Hamilton... | 1.76 | “ |
| “ 10 “ Manitoba... | 1.68 | “ |
| “ 10 “ Saskatchewan... | 2.09 | “ |
| “ 7 “ Alberta... | 3.89 | “ |
| “ 10 “ Rocky Mountains... | 2.28 | “ |
| “ 9 “ Vancouver... | 4.10 | “ |
| Mean starch for 75 samples... | 3.14 | “ |

Dyes are present in 13 out of 141 samples examined. Dyed sausages were found as follows: in Montreal 5 samples; in Ottawa 4 samples; in Toronto, 2, and in Hamilton and Windsor, each, 1.

BULLETIN No. 339—SWEET SPIRIT OF NITRE.

OTTAWA, May 3, 1916.

SIR,—I beg to hand you a report upon eighty-five (85) samples of Sweet Spirit of Nitre (*Spiritus Aetheris Nitrosi*) procured by our inspectors during November and December of last year, in the districts of Manitoba and Saskatchewan.

This article has been made the subject of inspection under the Adulteration Act, on four different occasions, namely in 1891 (Bulletin 23), in 1908 (Bulletin 167), in 1911 (Bulletin 234), and in 1913 (Bulletin 255).

I may quote, in this connection, as follows from my introductory letter to the last named Bulletin.

“This important drug has on two former occasions been the subject of inspection, and has always been found to show a high percentage of adulteration; consisting not in the addition of foreign matters, but in containing less of the active principle (Ethyl Nitrite) than the standard set by the pharmacopœia requires.

“As has been pointed out in former bulletins, and emphasized by the pharmacopœias, the article is prone to decomposition and, unless kept with special care,

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will always deteriorate in the hands of the dealer. This fact is so well known to the drug trade that physicians have a right to expect special care on the part of the druggist, who is properly held responsible for the quality of the drugs he dispenses. The following table presents the results of three inspections of Sweet Spirit of Nitre:—

| Bulletin. | Year. | Total samples. | Genuine. | Adulterated. |
|-----------|-------|----------------|----------|--------------|
| | | | p. c. | p. c. |
| 167 | 1908 | 77 | 37 | 63 |
| 234..... | 1911 | 74 | 57 | 43 |
| 255..... | 1913 | 73 | 56 | 44 |

The minimum amount of Ethyl Nitrite required by the British Pharmacopœia is one and three-quarters per cent (1.75) by weight. Of the collection now reported, 44 per cent of the samples contain less than this amount; 30 per cent contain less than 1 per cent of Ethyl Nitrite; 14 per cent contain less than one-half of 1 per cent; while nearly 9 per cent of the samples contain none at all.

“Although the names of the manufacturers, or furnishers as supplied by the vendor, are given in their proper places in the appended table, it is but right to insist that responsibility for the quality of Sweet Spirit of Nitre should rest upon the immediate dealer, or vendor of the article. There is no reason to believe that any manufacturer of repute furnishes this drug otherwise than up to standard strength. The name of the manufacturer or furnisher is given in accordance with section 19 of the Act, and not because of any proved negligence on his part.

“It is abundantly evident, in view of the continued sale of this drug in a condition in which it seriously handicaps the physician, and imperils the well-being of the patient, that druggists must be made to realize their responsibility in dispensing drugs which fail to meet the standard set by the pharmacopœias.

“Experiments made by the late Franklin T. Harrison, Public Analyst, proved that Sweet Spirit of Nitre made according to British Pharmacopœal directions can be kept, without change, for a year, under proper precautions. (See Bulletin No. p. 7.)

“If this important drug cannot be procured by physicians in such condition as the pharmacopœia requires, it should either be removed from the pharmacopœia altogether, or physicians must learn to employ it in full knowledge of its doubtful character and be prepared for most erratic and uncertain results.

“The fact is that it can be prepared and kept by careful and intelligent druggists, and that this is not done must be regarded as a disgrace to the drug trade, and a very serious menace to the public.”

The results of the present inspection may be summarized thus:—

| | Samples. |
|--|----------|
| Found to meet B.P. requirements..... | 4 |
| “ correct as to content of Ethyl Nitrite..... | 31 |
| “ approximately correct as to Ethyl Nitrite content .. | 12 |
| “ to contain decided excess of Ethyl Nitrite.. .. | 19 |
| “ to contain marked deficiency of Ethyl Nitrite.. .. | 19 |
| Total..... | 85 |

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It is to be noted that the revised pharmacopœia of 1914 makes some slight change in the standard for this drug as below:—

| | 1898. | 1914. |
|--|----------------|-------|
| Method of preparation.. | Unchanged. | |
| Ethyl Nitrite in freshly prepared spirit.. . . . | 2.5% | 2.66% |
| Specific gravity.. | 0.838 to 0.842 | |
| Ethyl Nitrite as dispensed: minimum.. . . . | 1.75% | 1.52% |
| “ “ maximum.. . . . | 2.50% | 2.66% |

Since the revised pharmacopœia of 1914 has but recently come into recognition in Canada, it is fair to interpret the results of analysis in such a way as to conform to either the edition of 1898 or that of 1914. As a matter of fact the differences as far as this drug is concerned are negligible.

It will be noted that, in the matter of specific gravity only five (5) samples fall within the limits fixed by the pharmacopœia. Fifty-four (54) samples have a specific gravity below 0.838 and twenty-six (26) samples have specific gravity above 0.842.

The latter are doubtless prepared with weaker alcohol than 90 per cent.

Samples (12 in number) which do not deviate more than 0.5 per cent from ^{on} minimum percentage of Ethyl Nitrite fixed by the pharmacopœia, I have felt justified in describing as approximately correct, in their Ethyl Nitrite content.

Nineteen (19) samples, containing less than this must be described as adulterated under the Act. The percentage of adulteration is 22, and indicates a very considerable improvement when compared with the results of former inspections.

BULLETIN No. 340—GROUND COFFEE.

OTTAWA, May 4, 1918

SIR,—I beg to hand you a report dealing with four hundred and seven (407) samples purchased as Coffee in December, January and February last.

The results of this inspection may be summarized thus:—

| | | |
|---|-------|----------|
| Found genuine.. | 341 | samples. |
| Passed, as containing less than 10 per cent, foreign matter.. | 12 | “ |
| Passed as labelled mixtures.. | 16 | “ |
| Doubtful, for reasons given below.. | 3 | “ |
| Adulterated under the Act.. | 35 | “ |
| | <hr/> | |
| Total.. | 407 | “ |

Five (5) of the samples judged as genuine contain minute amounts of chicory or other foreign matter; but the amount is too small to be regarded as other than accidental.

Twelve (12) samples containing small amounts, generally much below 10 per cent. of foreign matters, are passed without being adjudged as adulterated. It may be that in some of these cases the foreign matter is present accidentally. In a strict interpretation of the results of analysis, these samples are undoubtedly adulterated; and it must not be understood that my action prejudices any future decisions in similar cases.

Three samples are classed as doubtful. See No. 55434, the fact that the article was a compound, was not stated until the purchase had been made.

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No. 55447 contains both chicory, and roasted grain. The presence of chicory is declared on the label, but no mention of the presence of roasted grain is made.

The same is true of No. 52326.

The percentage of genuine samples in this collection is 83.5, indicating a slight falling off since 1910, when a report upon two hundred and ninety-seven (297) samples showed 88 per cent. to be genuine.

BULLETIN No. 341—HOUSEHOLD AMMONIA.

OTTAWA, June 15, 1916.

SIR,—Of late years Ammonia has come to be largely in use in the household, as a detergent and for the convenience of persons in whose hands the strong solution of ammonia would be attended with danger, manufacturers have placed on the market a dilute ammonia under the name of Household Ammonia, which finds very extensive sale. For the most part, this article is simply a dilution with water of the strong solution (Liquor Ammoniae Fortis) of the Pharmacopœia. This latter is required to contain 32.5 per cent by weight of Ammonia (NH_3). A weaker solution is also defined by the Pharmacopœia (Liquor Ammoniae) containing 10 per cent by weight of Ammonia. It may be mentioned here that the Ammonia of the French Codex contains only 20.18 per cent and the Aqua Ammoniae Fortior of the United States Pharmacopœia, 26 per cent by weight of Ammonia.

Some market samples of the article contain, in addition to Ammonia, soaps of various kinds, and other ingredients.

In January 1914, Professor J. F. Snell of Macdonald College, presented to the Canadian Section of the Society of Chemical Industry a study of Commercial Household Ammonia in Canada. (See Journal of the Society, 1914, p. 1177) and recommended that a more extended inspection of the articles be made under the Adulteration Act.

Ammonia, considered as a drug, undoubtedly comes under the purview of this Act. While Household Ammonia cannot be described as a drug in the strict sense, it has been thought well, in the interest of the public generally, to examine this article, and the present report deals with the more or less complete analysis of one hundred and sixty-two (162) samples, purchased by our inspectors as Household Ammonia, in December, January and February last.

Professor Snell reports upon the Analysis of 10 samples of clear ammonias, 5 samples of so-called cloudy Ammonias (containing soaps), and 6 samples of solid Ammonias (essentially carbonate of ammonia) and finds, for the liquid preparations, that "the household Ammonia sells wholesale at from 4 to 14 times the wholesale value of the Ammonia contained in it. The retail price is from 6 to 20 times the wholesale value of the Ammonia," and adds, "How much more economical it would be to buy commercial concentrated ammonia, and dilute it with good soft water."

There is of course a certain convenience in purchasing the article in a form ready for use, and that the average consumer is willing to pay for this service is amply evident when we consider the extensive sale of many foods in neat packages, which could be purchased at much less cost in bulk. It is however, a reasonable claim, when the purchaser asks how much in excess of its minimum market value he pays for the advantage of package, or in the case of Household Ammonia, of dilution and package. It is certainly with surprise and indignation that the purchaser learns of the six-fold increase found by Professor Snell.

With a view to establishing as far as possible, a relation between value and price of these articles I have tabulated (see Table II) the results of analysis, grouping

together samples bearing the same name (Brand). On account of the difficulty attending exact measurement of containers the information given in Table II must be regarded as approximate only.

From this it is seen that one unit of Ammonia, purchased in 12 ounce bottle, costs from 1.877 of a cent (cheapest) to 12.918 cents; the average cost being about 3 cents.

In order to obtain some idea of the cost of the same quantity of Ammonia, in twelve ounce package, bottle included, I caused four samples to be purchased in Ottawa, and Hull, and found these to cost 35 cents, in each case. The Ammonia values were found to be 23.14; 22.54, 21.98 and 23.24; giving a mean value of 22.72 per cent. The value per unit, is thus found to be 1.540 cents.

It is to be noted that this is the cost of a pure Ammonia, and a less highly purified article may be purchased at a considerably lower price. In a general way it may be said that our examination of so-called Household Ammonia essentially substantiates the findings of Professor Snell, and leads to the conclusion that the consumer can effect a substantial saving, by purchasing liquid Ammonia and diluting with water to suit his purposes.

I would respectfully suggest publication of this report as Bulletin No. 341. It contains information which will be helpful to many questioners regarding possible household economies.

BULLETIN No. 342—LIQUID EXTRACT OF NUX VOMICA.

OTTAWA, May 20, 1916.

SIR,—I beg to hand you herewith a report upon nineteen (19) samples of the Liquid Extract of Nux Vomica. This is not to be regarded as a comprehensive inspection of the important drug named, but as an attempt to ascertain what, if any, ground exists in fact for certain complaints made by physicians as to the varying and unsatisfactory results obtained in practice with the Liquid Extract of Nux Vomica. The samples now reported were purchased in Montreal and Toronto only. Their examination is considered, as will be seen to justify a more extended inspection; and the present report is to be regarded as preliminary.

It must be conceded that a certain degree of unsatisfactoriness exists regarding the valuation of this drug. It is prepared from the seeds of Nux Vomica, in No. 2 powder, by repercolation with 70 per cent alcohol. The percolate from a given weight of powder is equal, in units by measure, to the units of weight employed (grammes and cubic centimetres) in the British Pharmacopoeia of 1898; in the revision of 1914, the percolate is only half of this volume. In each case, the strychnine content of the percolate is determined, and the Extract is finally adjusted by addition of 70 per cent alcohol, to contain 1.5 percent of strychnine (weight in volume).

The seeds of *Strychnos Nux Vomica* contain two alkaloids, strychnine and brucine, whose physiological properties appear to be very similar, although the activity of brucine is much less than that of strychnine. Thus, the dose of Strychnine is fixed at $\frac{1}{64}$ to $\frac{1}{8}$ grain (B.P. 1914), while that of brucine is given as $\frac{1}{10}$ to $\frac{1}{2}$ grain. (Squires' Companion to the Pharmacopoeia, Ed'n 1908.) Both of these alkaloids are naturally present in the Liquid Extract; and if they were present in the Seeds of *Strychnos* in a constant ratio, it would of course be possible to infer the amount of either by a determination of the other. Unfortunately this is not the case; and the ratio of strychnine to brucine has been found to vary between 3 to 1 and 1 to 2. (Squire, p. 810).

In the assay of the percolate from powdered Nux Vomica, the preliminary steps are identical in both the 1898 and the 1914 editions of the British Pharmacopoeia. The separation of the two alkaloids was effected, however, in the Edition of 1898, by

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precipitation of the strychnine with potassium ferrocyanide, in sulphuric acid solution, and subsequent decomposing of the strychnine ferrocyanide. It has been found by Schweissinger (Allen, Com. Org. Analysis, VI, 446) that under these conditions strychnine ferrocyanide is co-precipitated, to some extent, thus affecting the accuracy of the method.

In the Edition of 1914, the brucine is destroyed by oxidation with nitric acid in the presence of sulphuric acid, and it is claimed that this method yields more accurate results for strychnine. In illustration of the results of work done upon the same sample by both methods, I may quote the following:—

| Sample. | Method of 1898. | Method of 1914. |
|-----------------|-----------------|-----------------|
| 64627.. | 1'45 | 1'32 |
| 64628.. | 1'54 | 1'45 |
| 64629.. | 1'49 | 1'35 |
| 62636.. | 1'26 | 1'24 |
| 62637.. | 1'49 | 1'32 |
| 62640.. | 0'88 | 0'92 |
| 64632.. | 0'95 | 0'95 |

It will be seen that in most of these cases a somewhat higher apparent strychnine content is obtained with the older (and now no longer official) method.

There can be no doubt that most of the Liquid Extract of *Nux Vomica* now on the market has been assayed by the method given in the pharmacopoeia of 1898; and, indeed, in a strict sense this is the only method recognized by our Adulteration Act, which Section 7 (a) specifically names the Edition of 1898.

Under these circumstances, and inasmuch as the collection of the samples now reported was restricted to two localities, I think it inadvisable that the names of dealers or manufacturers (as stated by the vendors) should be given.

Quite apart, however from this consideration the results of analysis are instructive, and serve to show that variations in the composition of the Liquid Extract of *Nux Vomica* exist, apart from the strychnine content.

The analytical results given in the following table were obtained by Mr. A. J. Landry, of this staff, working by the official method of the British Pharmacopoeia, Edition of 1914.

LIQUID EXTRACT OF NUX VOMICA.

| Sample. | Total Solids. Grm. per 100 cc. | Alcohol. Vol. p.c. | Strychnine. Grm. per 100 cc. |
|-----------------|-----------------------------------|-----------------------|---------------------------------|
| 64626.. | 11'50 | 59'72 | 0'78 |
| 64627.. | 15'90 | 59'72 | 1'32 |
| 64628.. | 14'96 | 54'48 | 1'45 |
| 64629.. | 17'07 | 50'98 | 1'35 |
| 64630.. | 15'38 | 65'32 | 1'44 |
| 64631.. | 11'00 | 36'16 | 0'91 |
| 64632.. | 2'25 | 74'32 | 0'95 |
| 64633.. | 16'26 | 64'96 | 1'44 |
| 64634.. | 11'78 | 68'32 | 1'57 |
| 64635.. | 15'92 | 58'96 | 0'78 |
| 64636.. | 25'36 | 36'52 | 1'46 |
| 64637.. | 15'42 | 56'92 | 1'31 |
| 62636.. | 11'83 | 61'20 | 1'28 |
| 62637.. | 13'50 | 67'56 | 1'32 |
| 62638.. | 18'06 | 50'32 | 1'59 |
| 62639.. | 9'70 | .... | 0'78 |
| 62640.. | 12'02 | .... | 0'92 |
| 62641.. | 9'44 | 46'44 | 1'43 |
| 62642.. | 14'48 | .... | 0'76 |

Mr. Landry reports the usual difficulties attending the estimation of small quantities of alkaloids in solution with fats, vegetable matters of varying kinds and more or less vegetable tissue and colouring; and his duplicates indicate a variation of from 0.01 to 0.15 in strychnine found. Accuracy is only possible where the mean of several carefully conducted determinations is taken.

I know Mr. Landry to be a careful worker, and am convinced that the results given indicate within very narrow limits, the actual strychnine present. The *modus*

operandi for preparation of the Liquid Extract is strictly defined by the pharmacopoeia; and, unless the crude drug varies greatly in its quality, it is difficult to account for the differences in total extractive matter, except on the assumption of carelessness in manufacture.

The British Pharmacopoeia of 1898 did not standardize the powdered drug. The edition of 1914 fixes this at 1.25 per cent of strychnine, and prescribes the addition of milk sugar to adjust this value, within a limit of accuracy of 0.05 per cent excess or defect.

The total solids are found to vary, in these samples, from 2.25 per cent to 25.2 per cent. These extreme differences do not correspond to the variation in strychnine content; the sample giving only 2.25 per cent of total solids contains 0.95 per cent of strychnine; whilst that giving 25.36 per cent solids, yields but 1.45 per cent of the alkaloid. The pharmacopoeal standard requires 1.50 per cent strychnine. Most of the samples which approximate to this percentage show about 14 to 16 per cent total solids. It appears reasonable to suppose that a normal sample of the crude drug should, on definite treatment as prescribed by the pharmacopoeia, yield an extract of approximately constant character as regards dissolved solids. This matter requires investigation.

Alcohol of 70 per cent strength is prescribed; and there can be no sufficient reason for a variation in strength of from 36.16 to 74.32 in the finished extract.

I beg to recommend that this subject be more fully investigated in the near future; and that the present report be published as Bulletin No. 342.

BULLETIN No. 343—SUGAR.

OTTAWA, June 12, 1916.

SIR,—I beg to hand you a report upon 175 samples purchased as Sugar and 70 samples purchased as Icing Sugar, by our inspectors in December, January and February last.

Standards defining Sugar and Icing Sugar were established by Order in Council under Section 26 of the Adulteration Act, on August 1, 1914, and are published as G. 1135 bearing date August 6, 1914, as follows:—

SUGAR.

1. Sugar is the product chemically known as Sucrose (Saccharose) and is at the present time found in commerce as obtained from Sugar Cane, Sugar Beets, Sorghum, Maple and Palm.

2. Sugar whether sold as granulated, loaf, cut, milled or powdered sugar shall contain at least 99.5 (ninety-nine and five-tenths) per cent of sucrose, and shall be free from any artificial colouring matter.

3. Icing sugar is a powdered sugar specially prepared for baker's use, and may contain starch, not to exceed five (5) per cent by weight.

The standards above defined take effect on the 7th day of September, 1914.

The results of examination may thus be summarized:—

Sugar (see Table 1).

| | Samples. |
|--|----------|
| Found genuine refined Sugar. | 143 |
| “ “ brown Sugar. | 25 |
| “ adulterated, as containing a dye. | 6 |
| Passed, as being very close to the standard. | 1 |
| Total. | 175 |

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Sample No. 4003, contains 99.3 instead of 99.5 per cent sucrose.

The following samples contain a blue dyestuff (apparently ultramarine) and in this respect violate standard requirements: 67498, 70567, 70108, 71947, 71953, 52310.

Standards for partially refined Sugar, have not been defined; and samples sold as brown Sugar, or yellow Sugar, are all found to be genuine, in the sense of being true to name.

Icing Sugar (see Table 11).

This form of sugar is permitted to contain starch, not in excess of 5 per cent, by weight. A small quantity of starch is apparently necessary in order to prevent the lumping of the article, when the atmospheric conditions are not satisfactory. A very small amount of moisture in the air causes finely powdered sugar to form lumps, and it is found that a small quantity of dry starch prevents this, while not interfering with the use for which the sugar is intended. It appears to be well established that from two to three per cent of dry starch is quite sufficient for this purpose. Our standards permit starch to be added, not to exceed 5 per cent.

In the case of 16 samples it will be seen that our inspectors have been supplied with powdered sugar, containing no starch, and answering the requirements of refined sugar. In four cases the excess of starch is less than 1 per cent, and I have recommended that these samples be allowed to pass. The results of examination may be thus exhibited:—

| | Samples. |
|---|----------|
| Found genuine as Icing Sugar. | 50 |
| “ within 1 per cent and passed. | 4 |
| “ to be refined Sugar. | 16 |
| “ to contain decided excess starch. | 4 |
| No. 3665 nearly refined Sugar. | 1 |
| “ 71957 containing almonds. | 1 |
| | 76 |

This is the first occasion upon which sugar has been systematically inspected, since fixation of standards. A limited inspection of sugars was made in 1891 and is reported in Bulletin No. 25. In 21 samples of white (refined) sugar the sucrose was found to vary from 98.84 to 99.8 per cent, averaging 99.26 per cent. In 22 samples of yellow sugar, from 86.00 to 94.9 per cent sucrose was found, the average being 90.23 per cent.

BULLETIN No. 344—SPIRIT OF CAMPHOR.

OTTAWA, June 27, 1916.

SIR,—I beg to hand you a report upon Spirit of Camphor.

This article is defined by the British Pharmacopœia (1914) as consisting of 100 parts by volume of 90 per cent alcohol, containing 10 parts by weight of Camphor in solution.

The specific gravity should be between 0.845 and 0.850; and the optical rotation should not be less than 4° at 15.5° Centigrade.

The formula is essentially identical with that given in the edition of 1898.

Our last general inspection of Spirit of Camphor is reported in Bulletin No. 178 (March, 1909). On that occasion, 74 samples were examined as regards alcohol only; and it was considered fair to accept 75 per cent of alcohol as a reasonable minimum in the product as dispensed. This allows a very considerable margin for evaporation due to repeated opening of the container.

The Camphor content should approximate 10 per cent (weight in volume); and although Camphor is more or less volatile from solution, it is relatively less so than alcohol, so that its proportion is likely to increase, rather than diminish in stock solutions. I have therefore considered that anything below 8.5 per cent weight in volume indicates an adulterated article.

The present report deals with 168 samples purchased as Spirit of Camphor. Five samples are evidently accepted by our inspectors in mistake, four of these accepted by Mr. Gendreau being Gum Camphor, and one (No. 62916) being alcohol only.

Nineteen of the remaining samples depart so slightly from the Standard as above interpreted, that I have passed them. The following synopsis presents the detailed results:—

| | |
|---|--------------|
| Meet legal requirements. | 126 samples. |
| Passed, as within narrow limits. | 20 " |
| Adulterated, as deficient in camphor. | 5 " |
| " " both. | 9 " |
| " camphor and alcohol. | 3 " |
| " as containing methyl alcohol. | 5 " |
| Purchased by mistake. | 5 " |
| Total. | 168 |

The substitution of methyl alcohol in whole or in part for ethyl alcohol in Spirit of Camphor, necessarily constitutes adulteration; under the Adulteration Act. It is also forbidden by Section 7 of the Amendment to the Inland Revenue Act, dated April 10, 1908, unless the presence of methyl alcohol is declared upon the label of the container.

I am informed that there is a certain demand for a low-priced Spirit of Camphor, for veterinary use, and that this is frequently prepared with denatured alcohol, or with Columbian Spirit. However this may be, it furnishes no excuse for offering the article as pharmacopoeal Spirit of Camphor.

BULLETIN No. 345—EVAPORATED MILK.

OTTAWA, July 6, 1916.

SIR,—I beg to report certain work done upon a limited collection of samples (73 in number) of evaporated milk. These have been examined with the view of ascertaining whether any ground in fact existed for certain complaints to the effect that the metals of the container (tin and lead) were taken into solution by the contents when these developed an acid reaction.

Acidity has been determined in 17 samples, and is found to vary from 28.8 to as high as 46.4, when stated as cubic centimetres decinormal per 100 grammes of the sample. The full meaning of this as tending to render soluble the metal of the containing vessel has yet to be worked out.

In another series of samples tests were made for tin and lead. Practically no determinable quantities of lead were found in solution. Tin was found in 44 samples, the amount varying from a mere trace to as much as 62 milligrammes per 100 cubic centimetres; or 620 parts per million (about 4 grains per pound or 0.062 per cent).

Regarding the effect of this upon health, I may quote Thresh and Porter (Preservatives, etc.; Churchill, London, 1906, page 204). "At the present time no one seriously contends that the amount of tin in solution in these (acid) foods has any

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effect upon the system. As a rule the quantity is very small, rarely amounting to one grain per pound of food substance. *Autenrieth*. (Laboratory manual, etc., trans. Dr. Warren, pub. Blakistons, Sons., Phila., 1915), page 174, says: "Hence tin vessels may be used, and preserved articles of food containing tin, have practically no deleterious action upon health." *Kunkel*. (Handbuch der Toxikologie, s. 216) says: "This is a very slightly poisonous metal. This is established beyond doubt." The extent, however, of its possibly poisonous action, he considers worth further investigation. Parry (Food and Drugs, Scott, Greenwood & Son, London), page 373, says: "There is no evidence of a cumulative action of tin, until the daily dose exceeds 2 grains. Dr. Buchanan states that the presence of tin in a sample, in quantities approaching 2 grains to the pound may be taken to signify that the food has become potentially deleterious to health." I have noted as excessive an amount of tin exceeding 2 grains per pound, or 0.03 per cent. This occurs in 9 samples out of 44 samples in which quantitative determination of tin was made.

I propose to carry this examination for tin and lead further, at an early date, and to attempt to correlate the acidity of the sample with the amount of metallic contamination.

As judged by the ordinary standards for evaporated milk, 46 samples in which the required determinations have been made give results showing them to be essentially up to standard requirements. Two samples were curdled, owing to incomplete sterilization. In six samples the non-fat solids are somewhat low. These are probably made from a rich milk which has been watered. The content in fat meets our standard for evaporated milk; viz. 7.2 per cent.

It may be noted that our standards requiring 7.2 per cent fat and 18.8 per cent non-fat solids were made legal in November 1910; and were at that time, identical with those obtaining in the United States.

In November 1914, an Amendment of the U.S.A. Department of Agriculture changed the standards so as to require 7.8 per cent fat and 17.7 per cent non-fat solids. This change was considered advisable because it was held that, in certain of the Western States, milk solids were normally lower than in the Eastern and Middle States; and that the deficiency obtained in the non-fat solids. So far as Canada is concerned the matter has not been fully investigated; but it may be that owing to differences in the feed and pasture, the same difference holds good. It seems only just to allow, in the meantime, for a possibility which has been established south of the boundary line.

BULLETIN No. 346—CHOCOLATE CANDY.

OTTAWA, July 27, 1916.

SIR,—I beg to hand you herewith a report dealing with the results of analysis of 151 samples purchased by our inspectors as chocolate candy.

Attention has been drawn, by various large manufacturers of confectionery to the employment of solid paraffin as a stiffener in certain brands of chocolate. One correspondent writes as follows: "We wish that the Government would be as particular in regard to the adulteration of chocolate and chocolate products in Canada, where substitutes are used for cocoa butter and other substitutes for chocolate, as they are in regard to maple. We think it would be of advantage to every one if it were so. We have recently been advised by a salesman for paraffin wax, that the confectioners in Canada are using this very largely. This is an adulterant that has been cut out in almost every other country except Canada. We believe it is largely

used in the cheap chocolates referred to, for when they use a substitute for cocoa butter, they have to use something to stiffen up the chocolate coating."

The National Confectioners' Association of the United States, issued a Food Law Circular under date May 20, 1913, containing a list of substances prohibited in confectionery, among which appears paraffin.

The Food Laws of Illinois, Nebraska and Utah, specifically forbid the use of paraffin in candy; and those of many other States are interpreted in such a way as to condemn its use.

It is certain that so-called paraffin or paraffin wax is wholly without food value; is quite indigestible, and is not a normal component of any natural food material. Its melting point (about 54.5° C. = 130.1° Fah.) is so high as to keep it solid at the body temperature, and being quite insoluble in the digestive fluids, it is conceivable that serious results might ensue from its presence in foods, consequent upon mechanical disturbances.

It will be noted that 126 samples are found to be genuine, in the sense of being essentially cocoa material, while seven samples contain more or less starch, as the only foreign matter. Ten samples show the presence of other fats than cocoa fat, and eight samples contain paraffin.

We have as yet, no legalized definition of confectionery specifically forbidding the use of paraffin. The report now handed you will constitute a basis for the study of this matter, with a view to recommending legislation.

BULLETIN No. 347—FERTILIZERS FOR 1916.

OTTAWA, September 6, 1916.

SIR,—I beg to hand you a report upon the examination of 365 samples of Fertilizers, representing the inspection of fertilizers under the Fertilizers Act of 1910, for the current year.

The results may be summarized as below:—

| | Samples |
|---|---------|
| Found to meet claims. | 330 |
| Found to meet claims by compensated value | 18 |
| Found nearly to meet claims and passed. | 8 |
| Found sold without registration number | 2 |
| Found below claims. | 7 |
| | <hr/> |
| Total. | 365 |

The deviations from guaranteed value are usually very small, and the report now in your hands shows an evident desire on the part of manufacturers of fertilizers, to live up to claims made. It is, however, to be noted that many fertilizers which in other years have claimed considerable amounts of potash, this year claim none, or notably smaller percentages than formerly. This is doubtless due to the scarcity of salts of potash, owing to war conditions.

Six brands of fertilizers make claims for very small amounts of potash, less than 0.50 per cent. These claims represent no tangible values, and I think that claims for less than 0.50 per cent should not be allowed. Our Act (section 15) specifically concedes a deviation of half of one per cent as possibly accidental, and as negligible, provided that the total value of the fertilizer is not materially affected by it.

In 18 samples the words "compensated value" are used. It is sufficiently evident that many manufacturers have confounded the terms available and soluble as applied

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to phosphoric acid. The actual difference in value between water soluble and citric soluble phosphoric acid may be very small, and I have felt justified in recognizing this fact in interpreting the results of analysis. One sample (No. 70700) claims a total value so small as to render it practically useless as a fertilizer. It should not be found on the market.

BULLETIN No. 348—MAPLE SYRUP.

OTTAWA, 14th September, 1916.

SIR,—I have the honour to present you a report upon two hundred and nine (209) samples purchased as Maple Syrup, by our inspectors during the current year.

Of this number, one hundred and sixty-two (162) samples are found to be genuine, in the sense of meeting standard requirements for Maple Syrup as defined in G. 994 and G. 1152. Six samples meet these minimum requirements within such narrow limits as to justify suspicion of their genuineness, but I have recommended that they be passed; thus giving a total of 168 samples as probably genuine, being 80 per cent of the total collection.

Forty one samples are adulterated, in the sense of being mixtures of cane sugar syrup with maple syrup, but sold as Maple Syrup.

Our inspectors were instructed to demand Maple Syrup, and the samples now reported were supplied by the vendors as answering this demand. In two instances the vendor, after making sale, and discovering that the purchaser was an officer of this Department, stated that he did not claim the article sold to be pure Maple Syrup. In one of these cases the manufacturer's label upon the container, claims that the article is Maple Syrup; in the second case the label bears the words "Pure M Syrup", which is undoubtedly intended to make the purchaser believe that he is being served with Maple Syrup.

In most of these cases of fraudulent sale, the manufacturer's label distinctly claims the article to be Maple Syrup; and I have noted the presence of these words on the label where such label has been seen by myself or by the analyst, who did the work of analysis.

There can be no excuse for offering as Maple Syrup an article which is a mixture, as in these cases. The article may be, and in most cases is, a very desirable and nutritious food; but it should be placed upon the market under conditions which would correctly inform the purchaser as to its character. It is noteworthy that the uttering of the surrogate article appears to be entirely in the hands of a small number of manufacturers, in Montreal and Toronto. The great proportion of samples purchased in localities where Maple Syrup is recognized as an established farm industry, as in New Brunswick and Quebec, are found to be genuine; and there can be no doubt that a real injury is done to these provinces when the markets offered by our western provinces and our larger cities are supplied by imitations of Maple Syrup, which profess to be the genuine article.

BULLETIN No. 349—MACE.

OTTAWA, October 18, 1916.

SIR,—I beg to hand you herein a report upon the spice known as Mace. This is the first occasion upon which we have dealt with the article named, and owing to the

facts that comparatively little investigatory work is on record regarding this spice; that no accepted standards for it exist, and that even importers of the article are imperfectly informed as to its source and character, the report now placed in your hands must be considered rather as a study of the subject, than as a record of official inspection.

The attention of the Department has been called to the matter by several interested parties, from one of whose letters I quote the following:

"Has your Department ever made a collection of this spice? The reason we ask is this. A good Amboyna or Penang costs at the present time (April, 1914) about 61½ cents per pound, while Bombay, which is a wild mace, can be purchased for 24 cents a pound. In order to reduce the cost per pound, the spice-grinders generally blend either of the first two with the latter. While Bombay is truly mace, yet it does not contain any essential oil, and has no flavouring power, and therefore really acts as a filler."

Mace is the arillus, or outer coating of the nutmeg, the seed of *Myristica fragrans* (British Pharmacopoeia.) "This tree is indigenous to the Molucca Islands, and is cultivated in Penang, Sumatra, the West Indies, etc. Penang nutmegs, which are the most esteemed, are very aromatic. Singapore nutmegs closely resemble them. Wild nutmegs are longer, narrower, and less aromatic. Bombay nutmegs, (*M. Malabarica*) are devoid of aroma. Of species of *Myristica* other than *M. fragrans*, only one, viz.: *M. Argentea*, the Papua nutmeg, yields aromatic seeds. Mace is the dried arillus. Considerable quantities of valueless Bombay mace are imported." B. P. Codex, p. 652.

Mace, like the nutmeg, owes its value as a spice to its content of volatile oil, and according to Allen (Com. Org. Analysis, IV, 359) this oil is practically identical in nutmeg and mace. The *Oleum Myristicæ* of the pharmacopoeia is stated by Allen to be a fraction only of the natural oil. Specifications for this oil, are somewhat changed in the 1914 edition of the B. P.

| | 1898. | 1914. |
|-------------------------------------|---|------------------------------|
| Specific gravity..... | 0.870 to 0.910..... | 0.876 to 0.925. |
| Optical rotation..... | Not given..... | +13° to +30°. |
| Refractive index..... | "..... | (25° C) 1.474 to 1.484. |
| Solubility..... | In 1 vol. mixture equal parts absolute and 90% alcohol..... | In 3 volumes of 90% alcohol. |
| Residue at temp. of boiling water.. | No crystalline residue..... | Not to exceed 5%. |

That Bombay mace must be regarded as of no value for the purposes of a spice, follows from the above quotation from the B. P. Codex. In addition I may quote Kraemer. (Pharmacognosy, 1915, p. 256.) "Bombay mace is very largely used to adulterate genuine mace." Also Bailey (Food Products, 1914, p. 451.) "Bombay mace, which is often used to adulterate Penang and other true maces, has practically no flavour, and is of little more value than so much inert material."

Leach (Food Inspection, etc., 1909, p. 467) says: "Bombay mace, is almost entirely devoid of odour or taste, being nearly as inert as so much starch. It is most properly regarded as an adulterant from its lack of pungency, even though in a sense, it is a variety of mace."

U. S. A. standards for Mace, are as follows: (Circular 19, Dept. of Agriculture, Washington.) "Mace is the dried arillus of *Myristica fragrans*, and contains not less than 20, nor more than 30 per cent. of non-volatile ether extract; not more than 3 per cent. of total ash, and not more than 0.5 per cent. of ash insoluble in hydrochloric acid; and not more than 10 per cent. of crude fiber."

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"Macassar mace, Papua mace, is the dried arillus of *Myristica Argentca.*"
 "Bombay mace is the dried arillus of *Myristica Malabarica.*"

Leach (*Food Inspection and Analysis*, 2nd edition, p. 466) quotes the following analytical results, obtained by Winton, Ogden and Mitchell upon samples of the three kinds of mace specified in the above standards:

1. True mace (means of 4 samples.)
2. Macassar mace.
3. Bombay mace.

| | 1 | 2 | 3 |
|---|-------|-------|-------|
| Moisture..... | 11.05 | 4.18 | 0.32 |
| Ash total..... | 2.01 | 2.01 | 1.98 |
| Ether extract, volatile..... | 7.58 | 5.89 | 4.65 |
| " non-volatile..... | 22.48 | 53.54 | 59.81 |
| " total..... | 30.06 | 59.43 | 64.46 |
| Alcohol extract..... | 23.11 | 32.89 | 44.27 |
| Reducing matters by acid conversion, as starch..... | 31.73 | 10.39 | 16.20 |
| Starch, by diastase..... | 27.87 | 8.78 | 14.51 |
| Crude fibre..... | 3.20 | 4.57 | 3.21 |
| Nitrogen x 6.25..... | 6.47 | 7.00 | 5.06 |

It will be noted that true mace is sharply distinguished from the other maces by its non-volatile ether extractive, which is much less than that yielded either by Macassar or by Bombay mace.

With regard to Macassar mace, Leach (op. cit.) says: "Macassar mace is sometimes designated as wild mace, but it is by no means as inert as the Bombay variety, and possesses a wintergreen like odour. Its taste, while distinctive, is not that of true Penang mace. It is distinctly an inferior article."

The value of the ethyl ether extractive as indicating the presence of Bombay mace is greatly enhanced if the sample be extracted with petrolic ether before applying the ethyl ether. (Parry, *Food and Drugs*, Vol. 1, p. 237.) Under these conditions, genuine mace yields only from 2 to 3.5 per cent. extractive to ethyl ether, while Bombay mace yields up to 33 per cent.

Macassar mace, however, behaves like Banda mace in this respect.

QUALITATIVE TESTS FOR BOMBAY MACE.

The microscopical characters of these various maces are not such as to satisfactorily distinguish them. Nevertheless, the oil glands in Bombay mace are so much redder than those of true mace, as to afford fairly good evidence of its presence.

Mr. Dawson suggests the possibility of utilizing the brilliant red produced in Bombay mace by treatment with dilute potassium hydroxide, as a means of quantitative determination in admixture.

Mr. A. T. Collins, Chemist to the Colburn Company, Philadelphia, has shown that, when mace is mounted in Canada Balsam, reduced by benzol, the cellular structures come out clearly under the microscope; and he claims that very small percentages of Bombay mace, in admixture with true mace, can easily be detected.

The Hefelmann and Schindler tests depend upon the fact that alcoholic extracts from Bombay mace differ from similar extracts of true mace, in yielding a decided red colour to paper through which they are filtered; and in giving a precipitate of reddish tint with acetate of lead. (Parry, op. cit., p. 237.) Waage's test consists in adding

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potassium chromate to the alcoholic solution, when the solution becomes red, and the precipitate at first yellow, becomes red on standing, if Bombay mace is present. True mace gives a yellow solution and the precipitate does not turn red. (Leach, op. cit., p. 468.) The refractive index of the fixed oil of Bombay mace (at 35° c.) is somewhat lower than that of the fixed oil from other maces. Lythgæ finds as follows:

| | |
|----------------------------------|------------------|
| For Banda mace oil | 1.4747 to 1.4848 |
| “ Batavia mace oil | 1.4893 to 1.4975 |
| “ Papua mace oil | 1.4795 to 1.4816 |
| “ West Indian mace oil | 1.4766 |
| “ Bombay mace oil | 1.4615 to 1.4633 |

E. Spaeth (Leffmann and Beam, Food Analysis, 2nd ed., p. 309-10) extracted a number of samples of mace with petroleum spirit and determined the constants of the material obtained. The figures obtained from mace from Banda, Manado, Penang, Macassar, and Zanzibar closely agreed with each other:—

| | True Mace. | Bombay Mace. |
|--------------------------------------|-------------|--------------|
| Melting Point in open tube | 25-26 | 31-31.5 |
| Saponification Number | 169.9-173 | 189.4-191.4 |
| Iodine Number | 75.6-80.8 | 50.4-53.5 |
| Zeiss Refractometer at 40° | 76-85 | 48-49 |
| Index of Refraction | 1.480-1.487 | 1.463-1.464 |
| Meissl Number (Banda Mace) | 4.1-4.2 | 1.0-1.1 |

In June of last year I was fortunate enough to secure, through the kindness of the late Mr. Grigg, Canadian Commissioner of Commerce, three samples of mace from Mr. E. H. S. Hood, Canadian Trade Commissioner of Barbados. These represent the qualities of mace exported from Grenada, B.W.I., and are described as:

- No. 1. First quality.
- No. 2. Second quality.
- No. 3. Third quality.

The Superintendent of Agriculture for Grenada states that “he does not think there is any adulteration in the No. 3 sample, other than what may accidentally occur in the process of sweeping up the fragments from the curing floors or boxes. The differences in quality are mainly of colour, and strength of the aromatic oil as affected by the action of mildews during drying, and the length of time, and methods used in the curing process.”

The three samples referred to were submitted to analysis by Mr. J. A. Dawson of this staff, who reports as follows:

Sample No. 1. Marked “Best Estates and Buyers” consisted of the clean arillus in whole condition, of a dull yellow colour, with reddish brown to pink along the edges. Weighed 465 grams.

Sample No. 2. Marked “2nd Best Estates and Buyers” was made up of mostly broken arillus of dull reddish to blackish brown colour, with few yellow pieces. One or two fragments of grass or bark. Weighed 463 grams.

Sample No. 3. Marked “Mace Siftings, Estates and Buyers” included small broken fragments of arillus of yellow, red and black or brown colours. Pieces of grass, bark, leaves and chips of wood, with a few whole seeds like peas or coffee beans. Several short pieces of thread, possibly from jute bags, and two dead insects. Weight, 487 grams.

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In sampling, the whole contents of each package were spread out on a sheet of paper and thoroughly mixed. About 100 grams were weighed out and ground to pass a sieve of 1 sq. mm. Figures given are in all cases the mean of two determinations.

| | No. 1. | No. 2. | No. 3. |
|--|---------|---------|---------|
| Total ash..... | 1.50 | 1.70 | 2.10 |
| Ash insol. in 10% HCl..... | 0.05 | 0.05 | 0.09 |
| Non-volatile petrolic ether extractive..... | 29.85 | 29.02 | 26.43 |
| Non-vol. ether extractive after petrolic..... | 1.14 | 1.43 | 1.55 |
| Total ether extracts..... | 30.99 | 30.45 | 27.98 |
| Crude fibre..... | 2.87 | 3.14 | 3.80 |
| Refractive index of non-vol. petrolic ether extract..... | 1.4791 | 1.4788 | 1.4821 |
| Microscopic examination for Bombay mace..... | None. | None. | None. |
| Starch (iodine test)..... | Absent. | Absent. | Absent. |

Two samples of mace obtained direct from Bombay, through the kindness of A. H. Ley, Esq., gave the following results:

Sample A. Known as "Chap" cost 1s. 10d. per lb.

" B. " "Ful" " 1s. 8d. "

| | A | B |
|-----------------------------|-------|-------|
| Total ash..... | 1.94 | 1.96 |
| Insoluble ash..... | 0.044 | 0.012 |
| Crude fibre..... | 3.80 | 3.60 |
| Petrolic ether extract..... | 20.95 | 20.94 |
| Sulph. "..... | 0.87 | 0.54 |
| Total extractive..... | 21.82 | 21.48 |

It is quite apparent that these samples are true mace, and not the Bombay or wild mace.

Two samples of Bombay mace supplied by a friend in Toronto, gave the following results:

| | C | D |
|--------------------------------|-------|-------|
| Petrolic ether extractive..... | 34.32 | 28.44 |
| Sulph. ether "..... | 25.04 | 27.56 |
| Total extractive..... | 59.36 | 56.00 |

These samples gave positive reactions with the Hefelmann and Schindler tests for Bombay mace.

The following work was done by Mr. Dawson upon a sample of commercial mace containing Bombay mace; and upon the components of this sample, separated as completely as possible, under the microscope.

| | The Sample. | True mace. | Bombay mace. |
|---|-------------|------------|--------------|
| | % | % | % |
| Non-volatile petrolic ether extract | 20.96 | 24.07 | 22.43 |
| " ethyl " after petrolic. | 7.24 | 1.83 | 42.30 |
| Total non-volatile ether extracts. | 28.20 | 25.90 | 64.73 |
| Ash. | 1.75 | 1.70 | 1.87 |
| Ash insoluble in HCl. | 0.10 | 0.07 | 0.07 |
| Crude fibre. | 2.91 | 3.00 | 4.80 |

It must be borne in mind that separation of the components is only approximately exact. The sample contained as adulterants, cereal starches, olive stones and turmeric, in addition to wild mace. The analytical results, especially as regards the ether extractive after petrolic ether, are sufficiently marked.

The percentage of Bombay mace present in a mixture with genuine mace may be determined from the formula,—

$$X \text{ equals } \left\{ \frac{E - G(100 - X)}{100} \right\} \times \frac{100}{B} \quad (1)$$

X is the desired percentage of Bombay mace.

E is the per cent of non-volatile ethyl ether extract after petrolic in mixture.

G " " " " " for genuine mace.

B " " " " " for Bombay mace.

If the maximum values of 5% for G and 35% for B, assumed as constants, then the formula becomes,—

$$X \text{ equals } \frac{10}{3} (E - 5) \quad (2)$$

In the majority of cases this formula will give results considerably too low. Applied to the above mentioned mixture, 7.5 per cent is indicated by formula (2), whereas 10 to 15 per cent was found by actual separation. However, if as found the value of 1.83 be given to G, and 42.30 to B, and E for the mixture is 7.24 using formula (1), then 13.3 per cent is indicated which is in good agreement with the results obtained by separation.

It is of course, necessary that the solvents employed should be entirely volatile at the temperature of the water bath. In a comparison of results obtained on the same sample with.

a = ether, redistilled below 40° C.

b = " containing 4 per cent. alcohol.

c = petrolic ether, redistilled below 40° C.

d = " " distilled between 40° C. and 75° C.

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Mr. Dawson obtained the following results:

NON-VOLATILE EXTRACTIVE.

| A | B | C | D |
|------------------|----------------|----------------|----------------|
| 28·28 28·50 | 28·54 28·48 | 29·51 21·03 | 20·91 21·01 |
| Mean . . . 28·39 | 28·51 | 20·77 | 20·96 |

The results prove that slight differences in the quality of the solvent do not greatly affect the extractive.

TABLE 1.

It is of interest to place on record the following analytical results obtained in these laboratories upon 30 commercial samples of mace which appear to be genuine or to contain traces only of foreign material.

| Number. | Ash. | | Non-volatile extraction. | | | |
|-----------------|--------|------------|--------------------------|--------------|--------|------------|
| | Total. | Insoluble. | Petrol ether. | Ethyl ether. | Total. | Crude Fib. |
| 2606 | 2·40 | 0·20 | 26·67 | 1·82 | 28·49 | 4·45 |
| 41871 | 3·30 | 1·05 | 24·00 | 3·91 | 27·91 | 4·90 |
| 41872 | 1·90 | 0·15 | 21·50 | 4·04 | 25·54 | 3·95 |
| 41873 | 3·65 | 0·35 | 28·66 | 4·92 | 33·58 | 6·75 |
| 53683 | 2·40 | 0·35 | 23·08 | 2·32 | 25·40 | 4·00 |
| 55022 | 2·25 | 0·20 | 26·82 | 2·34 | 29·16 | 3·95 |
| 56277 | 3·80 | 1·00 | 30·10 | 1·88 | 31·98 | 4·75 |
| 58388 | 1·75 | 0·10 | 28·74 | 1·76 | 30·50 | 3·66 |
| 59532 | 2·65 | 0·15 | 26·96 | 4·26 | 31·22 | 5·20 |
| 59535 | 3·55 | 0·35 | 29·22 | 4·66 | 33·88 | 6·00 |
| 61636 | 2·90 | 0·25 | 26·02 | 3·06 | 29·08 | 4·50 |
| 62361 | 2·00 | 0·05 | 26·06 | 2·15 | 28·21 | 4·10 |
| 63426 | 1·95 | 0·15 | 25·86 | 2·50 | 28·36 | 3·00 |
| 63429 | 1·85 | 0·02 | 25·86 | 2·24 | 28·10 | 3·80 |
| 66162 | 1·66 | 0·12 | 27·60 | 3·32 | 30·92 | 4·00 |
| 60373 | 2·33 | 0·37 | 25·06 | 3·68 | 28·74 | 4·00 |
| 61218 | 2·32 | 0·20 | 26·00 | 4·72 | 30·72 | 4·00 |
| 64220 | 2·32 | 0·22 | 28·74 | 3·82 | 32·56 | 4·00 |
| 58401 . . . . . | ..... | ..... | 23·60 | 2·60 | 26·20 | ..... |
| 58403 . . . . . | ..... | ..... | 30·04 | 1·84 | 31·88 | ..... |
| 58404 . . . . . | ..... | ..... | 31·30 | 1·60 | 32·90 | ..... |
| 70598 . . . . . | ..... | ..... | 26·56 | 0·72 | 27·28 | ..... |
| 70521 . . . . . | ..... | ..... | 31·06 | 0·80 | 31·86 | ..... |
| 70523 . . . . . | ..... | ..... | 26·64 | 1·92 | 28·56 | ..... |
| 70522 . . . . . | ..... | ..... | 30·62 | 0·80 | 31·42 | ..... |
| 69965 . . . . . | ..... | ..... | 31·80 | 1·20 | 33·00 | ..... |
| 54681 . . . . . | ..... | ..... | 28·08 | 6·62 | 34·70 | ..... |
| 54692 . . . . . | ..... | ..... | 28·96 | 3·68 | 32·64 | ..... |
| 58470 . . . . . | ..... | ..... | 22·72 | 1·03 | 23·80 | ..... |
| 61415 | 1·84 | 6·10 | 27·20 | 2·90 | 30·10 | 2·85 |
| means | 2·46 | 0·28 | 27·18 | 2·77 | 29·96 | 4·39 |

TABLE 2.

In the following table I have brought together data obtained upon 95 samples of commercial ground mace which were found practically free from added starchy material, and whose principal foreign content is presumably Bombay mace.

| Number. | Ash. | | Non-volatile Extractive. | | | | |
|---------|--------|--------|--------------------------|--------------|--------|----------|------|
| | Total. | Insol. | Petrol. ether. | Ethyl ether. | Total. | Cr. Fib. | X. |
| 52266 | 2.00 | 0.25 | 26.04 | 33.36 | 59.40 | 3.85 | .... |
| 52267 | 3.90 | 0.60 | 17.62 | 20.56 | 38.18 | 7.65 | 66 |
| 52268 | 2.65 | 0.30 | 26.62 | 23.36 | 49.98 | 5.60 | 76 |
| 52269 | 1.50 | 0.15 | 24.84 | 34.42 | 59.26 | 4.05 | .... |
| 52270 | 2.10 | 0.25 | 23.72 | 32.32 | 56.04 | 4.05 | .... |
| 53372 | 2.55 | 0.30 | 22.02 | 29.08 | 51.10 | 5.20 | 96 |
| 53373 | 2.50 | 0.75 | 23.44 | 29.70 | 53.14 | 4.40 | 99 |
| 61888 | 2.45 | 0.20 | 26.06 | 21.82 | 52.88 | 5.20 | 88 |
| 66630 | 2.85 | 0.30 | 23.68 | 26.26 | 49.94 | 5.90 | 85 |
| 66636 | 2.55 | 0.35 | 24.64 | 28.02 | 52.66 | 5.55 | 93 |
| 66637 | 2.05 | 0.25 | 22.44 | 26.08 | 48.52 | 3.80 | 86 |
| 2135 | 2.10 | 0.30 | 26.58 | 17.76 | 44.34 | 3.80 | 56 |
| 2136 | 1.80 | 0.40 | 27.78 | 28.44 | 56.22 | 4.15 | 94 |
| 2137 | 2.15 | 0.15 | 26.12 | 22.48 | 48.60 | 4.25 | 73 |
| 2607 | 1.55 | 0.15 | 36.96 | 9.14 | 46.10 | 3.90 | 25 |
| 2844 | 3.90 | 0.75 | 22.30 | 23.06 | 45.36 | 6.75 | 75 |
| 41874 | 2.40 | 0.25 | 24.54 | 20.88 | 45.42 | 4.58 | 67 |
| 41875 | 2.10 | 0.15 | 26.84 | 9.92 | 36.76 | 3.80 | 28 |
| 51991 | 3.00 | 0.45 | 24.90 | 27.86 | 52.76 | 3.85 | 92 |
| 51992 | 3.15 | 0.45 | 24.18 | 25.92 | 50.10 | 6.85 | 85 |
| 51993 | 1.80 | 0.15 | 22.50 | 32.18 | 54.68 | 4.50 | .... |
| 51994 | 1.90 | 0.30 | 27.54 | 34.46 | 62.00 | 4.10 | .... |
| 51995 | 1.70 | 0.25 | 29.04 | 34.06 | 63.10 | 4.25 | .... |
| 53685 | 1.90 | 0.20 | 21.54 | 26.36 | 47.90 | 5.45 | 87 |
| 55018 | 2.30 | 0.35 | 21.28 | 23.89 | 45.17 | 3.90 | 78 |
| 55020 | 2.90 | 0.45 | 25.78 | 27.10 | 52.88 | 6.90 | 89 |
| 56276 | 1.75 | 0.10 | 25.88 | 17.64 | 43.52 | 3.80 | 55 |
| 56278 | 1.85 | 0.40 | 26.50 | 32.78 | 59.28 | 5.00 | .... |
| 56279 | 2.30 | 0.35 | 28.86 | 19.56 | 48.42 | 5.35 | 62 |
| 56280 | 2.00 | 0.15 | 23.82 | 15.78 | 39.60 | 5.80 | 49 |
| 59531 | 2.10 | 0.15 | 27.54 | 6.42 | 33.96 | 3.35 | 15 |
| 59534 | 2.00 | 0.20 | 23.72 | 24.98 | 48.70 | 4.35 | 77 |
| 61141 | 2.35 | 0.35 | 23.64 | 14.98 | 38.62 | 5.40 | 16 |
| 61142 | 2.45 | 0.25 | 27.44 | 27.26 | 54.70 | 5.60 | 90 |
| 61143 | 2.70 | 0.30 | 24.20 | 30.54 | 54.74 | 5.35 | .... |
| 61144 | 2.20 | 0.20 | 22.50 | 15.16 | 37.66 | 4.50 | 47 |
| 61145 | 2.30 | 0.40 | 22.70 | 22.72 | 45.42 | 4.50 | 74 |
| 61531 | 2.20 | 0.25 | 20.50 | 27.42 | 47.62 | 4.20 | 90 |
| 61532 | 2.90 | 0.65 | 27.86 | 11.70 | 39.56 | 4.40 | 34 |
| 61533 | 2.50 | 0.25 | 26.88 | 24.24 | 50.62 | 4.45 | 79 |
| 61534 | 1.85 | 0.15 | 28.06 | 23.80 | 51.86 | 4.20 | 77 |
| 61535 | 1.95 | 0.15 | 26.34 | 18.44 | 44.78 | 4.20 | 58 |
| 61649 | 2.85 | 0.35 | 24.96 | 27.36 | 52.32 | 5.60 | 90 |
| 61926 | 3.05 | 0.50 | 20.38 | 34.46 | 54.84 | 6.30 | .... |
| 61940 | 2.60 | 0.45 | 23.68 | 16.18 | 39.86 | 4.40 | 50 |
| 61942 | 2.75 | 0.45 | 29.36 | 10.58 | 39.94 | 4.90 | 30 |
| 62360 | 2.25 | 0.20 | 28.88 | 10.08 | 38.96 | 4.85 | 28 |
| 62363 | 2.55 | 0.40 | 21.96 | 18.44 | 40.40 | 5.15 | 58 |
| 63252 | 2.45 | 0.20 | 24.62 | 21.28 | 45.90 | 4.85 | 68 |
| 63254 | 2.35 | 0.45 | 24.60 | 32.02 | 56.62 | 4.95 | .... |
| 63255 | 1.95 | 0.20 | 26.02 | 29.32 | 55.34 | 4.70 | 97 |
| 63256 | 2.05 | 0.15 | 24.54 | 20.66 | 45.20 | 4.05 | 66 |
| 63294 | 1.90 | 0.20 | 25.36 | 29.88 | 55.24 | 4.00 | 99 |
| 63295 | 1.95 | 0.15 | 25.82 | 19.66 | 45.48 | 4.95 | 63 |
| 63297 | 2.50 | 0.20 | 21.42 | 20.06 | 41.48 | 5.15 | 64 |
| 63298 | 2.50 | 0.25 | 24.28 | 25.08 | 49.36 | 4.90 | 82 |
| 63427 | 2.00 | 0.15 | 28.40 | 22.12 | 50.52 | 3.90 | 71 |
| 63428 | 2.20 | 0.15 | 26.14 | 7.18 | 33.32 | 4.45 | 18 |
| 63430 | 1.85 | 0.25 | 33.26 | 23.44 | 56.70 | 4.20 | 76 |
| 63751 | 3.00 | 0.15 | 26.84 | 17.96 | 44.80 | 8.05 | 57 |
| 63757 | 2.35 | 0.40 | 21.32 | 28.02 | 49.34 | 5.05 | 92 |
| 63760 | 1.90 | 0.15 | 27.16 | 23.66 | 50.82 | 4.60 | 77 |

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TABLE 2—*Concluded.*

| Number. | Ash. | | Non-volatile Extractive. | | | | |
|------------|--------|--------|--------------------------|--------------|--------|----------|-------|
| | Total. | Insol. | Petrol. ether. | Ethyl ether. | Total. | Cr. Fib. | X. |
| 63764..... | 3 10 | 0 15 | 27 70 | 20 78 | 48 48 | 8 25 | 67 |
| 63901..... | 2 15 | 0 15 | 20 68 | 19 78 | 40 46 | 5 30 | 63 |
| 63903..... | 1 75 | 0 20 | 24 00 | 32 66 | 56 66 | 4 05 | ..... |
| 63906..... | 2 85 | 0 65 | 21 56 | 22 28 | 43 84 | 4 55 | 72 |
| 64006..... | 1 75 | 0 15 | 28 80 | 19 60 | 48 40 | 3 80 | 62 |
| 64017..... | 2 05 | 0 20 | 21 72 | 28 98 | 50 70 | 4 65 | 96 |
| 64024..... | 1 90 | 0 25 | 22 06 | 37 90 | 59 96 | 4 65 | ..... |
| 56531..... | 1 97 | 0 28 | 27 86 | 24 26 | 52 12 | ..... | 79 |
| 56532..... | 1 62 | 0 15 | 27 88 | 33 88 | 61 76 | ..... | ..... |
| 56533..... | 1 81 | 0 17 | 25 04 | 21 89 | 46 93 | ..... | 71 |
| 56534..... | 1 80 | 0 10 | 41 07 | 17 79 | 58 86 | ..... | 56 |
| 56535..... | 1 78 | 0 15 | 28 55 | 28 86 | 57 41 | ..... | 95 |
| 66161..... | 2 06 | 0 26 | 27 12 | 28 56 | 55 68 | ..... | 94 |
| 66163..... | 2 03 | 0 19 | 28 40 | 8 99 | 37 39 | ..... | 24 |
| 66165..... | 1 66 | 0 15 | 28 92 | 23 17 | 52 69 | ..... | 75 |
| 60374..... | 1 90 | 0 22 | 25 86 | 24 42 | 50 28 | ..... | 80 |
| 60375..... | 2 20 | 0 18 | 29 94 | 10 11 | 40 05 | ..... | 28 |
| 64219..... | 1 65 | 0 14 | 26 60 | 28 59 | 55 19 | ..... | 94 |
| 64221..... | 2 76 | 0 39 | 31 11 | 8 75 | 39 86 | ..... | 24 |
| 61412..... | 2 90 | 0 20 | 21 54 | 19 90 | 41 24 | 3 65 | 63 |
| 61413..... | 2 40 | 0 22 | 18 28 | 31 98 | 50 26 | 4 95 | ..... |
| 61431..... | 2 36 | 0 30 | 24 28 | 9 96 | 34 24 | 4 10 | 28 |
| 69966..... | ..... | ..... | 24 32 | 24 00 | 48 32 | ..... | 78 |
| 69967..... | ..... | ..... | 29 44 | 22 18 | 41 62 | ..... | 72 |
| 69968..... | ..... | ..... | 27 44 | 11 24 | 38 58 | ..... | 33 |
| 69969..... | ..... | ..... | 26 10 | 16 00 | 42 10 | ..... | 50 |
| 76535..... | ..... | ..... | 25 70 | 10 76 | 36 46 | ..... | 31 |
| 54504..... | ..... | ..... | 24 68 | 10 54 | 35 22 | ..... | 30 |
| 54505..... | ..... | ..... | 20 58 | 20 36 | 40 94 | ..... | 65 |
| 54688..... | ..... | ..... | 25 70 | 23 40 | 49 10 | ..... | 76 |
| 70262..... | ..... | ..... | 22 00 | 9 68 | 31 68 | ..... | 27 |
| 58469..... | ..... | ..... | 26 60 | 24 06 | 50 66 | ..... | 78 |
| 58471..... | ..... | ..... | 24 00 | 8 66 | 32 66 | ..... | 23 |

The trustworthiness of any formula employed to calculate the percentage of Bombay mace present in a mixture of this mace with the genuine, is dependent upon the accuracy of the constants involved. If we use as a basis of judgment the amount of extractive to ethyl-ether after petroleic, it is necessary to define the solvents, as well as the manner in which they are used; and also to determine the normal extractive by this method, for true mace and for Bombay mace respectively.

The samples enumerated in Table 2 were extracted in a Knorr apparatus, for 16 hours with petroleic ether (redistilled between 25° and 70° C.); then for a similar length of time with ethyl-ether (redistilled 35° to 37° C.) The extractive was dried to constant weight, at 110° C. The quantity operated on was 5 grams.

We have the following data for the extractive yielded by true mace:

| | Per cent. | |
|---------------------------------------|-----------|----------|
| Sample No. 1..... | 1 14 | Dawson. |
| " " 2..... | 1 43 | " |
| " " 3..... | 1 55 | " |
| " " 2606..... | 1 82 | " |
| " A..... | 0 87 | Valin. |
| " B..... | 0 54 | " |
| Sample separated from a mixture..... | 1 83 | Dawson. |
| Mean of 30 samples (see Table 1)..... | 2 77 | Various. |
| Penang mace..... | 2 68 | Parry. |
| Pale West Indian mace..... | 2 04 | " |
| Red " "..... | 3 90 | " |
| Sample No. 4..... | 3 67 | Valin. |
| " " 6..... | 5 05 | " |
| Mean value..... | 2 25 | |

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Data for extractive yielded by Bombay mace, under conditions above described:—

| | Per cent. |
|---|-----------|
| Sample C | 25·04 |
| " D | 27·56 |
| Parry, Food & Drugs, page 237 | 29·11 |
| Sample No. 5 | 32·69 |
| Mean value | 28·60 |

It will be noted that 14 samples of Table 2, yielded more than 30 per cent. extractive to ethyl-ether after petrolic. The mean extractive for these 14 samples is 33·35 per cent. Since these samples were found on careful qualitative examination to consist essentially of mace, it follows that some samples of Bombay, or other wild mace, must yield much more than the above average of 28·60 per cent. extractive. It is to be regretted that, at the time of writing this, I am unable to avail myself of fuller data for Bombay mace.

If we accept 30 per cent. as an approximate value for this mace, and take 2 as the corresponding number for genuine mace, the percentage of Bombay mace (x) in a mixture of the two maces, may be calculated from the formula,

$$x = \frac{100 (e - 2)}{28}$$

where (e) is the extractive found for the sample.

The resultant values are given in the last column of Table 2. It must be understood that they are merely approximations to the actual percentage amounts of Bombay mace in these samples.

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TABLE 3.

In this table I have arranged the results of analysis for 43 samples of commercial ground mace, found to contain other material than Bombay mace. In most cases this foreign matter is cereal or nutmeg starch, with turmeric.

| Number. | Ash. | | Extractive. | | | Crude Fibre. | Remarks based on microscopic examination. |
|---------|--------|--------|-------------|--------|--------|--------------|---|
| | Total. | Insol. | Petrol. | Ethyl. | Total. | | |
| 55371. | 1.45 | 0.15 | 18.65 | 24.88 | 43.53 | 3.15 | Bombay mace and maize starch in large amount. |
| 55374. | 2.15 | 0.35 | 21.72 | 26.56 | 48.28 | 4.20 | Much Bombay mace and small amount of starch. |
| 55375. | 1.85 | 0.15 | 20.06 | 25.10 | 45.16 | 3.95 | Much Bombay mace and starch. |
| 61893. | 2.45 | 0.25 | 20.70 | 8.34 | 29.04 | 3.80 | Small amount Bombay mace with much starch. |
| 61895. | 1.85 | 0.15 | 18.58 | 26.22 | 44.80 | 3.70 | Much Bombay mace. Considerable starch. |
| 68103. | 2.05 | 0.25 | 19.28 | 22.54 | 41.82 | 3.80 | " " " |
| 68106. | 2.85 | 0.20 | 18.88 | 10.28 | 29.16 | 4.80 | Bombay mace small, much starch. |
| 66619. | 2.40 | 0.20 | 26.60 | 16.68 | 43.28 | 5.25 | Bombay mace large amount and considerable starch. |
| 66627. | 1.75 | 0.15 | 23.66 | 25.48 | 48.54 | 3.10 | Bombay mace much; also starch. |
| 2608. | 1.65 | 0.15 | 22.24 | 1.44 | 23.68 | 2.30 | Much starch with turmeric. |
| 55019. | 2.00 | 0.25 | 19.47 | 27.72 | 47.19 | 4.80 | Small amount starch much Bombay mace. |
| 55021. | 2.30 | 0.35 | 22.28 | 23.02 | 45.30 | 5.35 | " " " |
| 58386. | 3.25 | 0.25 | 27.16 | 6.64 | 33.80 | 9.80 | Bombay mace little, much starch. |
| 58387. | 1.55 | 0.10 | 24.12 | 0.74 | 24.86 | 2.25 | Large amount starch, with turmeric. |
| 58389. | 3.20 | 0.30 | 26.78 | 6.38 | 33.16 | 7.85 | Little Bombay mace and starch. |
| 58390. | 1.55 | 0.10 | 25.02 | 0.74 | 25.76 | 2.30 | Much starch and turmeric. |
| 59533. | 3.30 | 0.70 | 24.20 | 10.32 | 34.52 | 5.05 | Considerable Bombay mace traces of starch. |
| 61620. | 2.20 | 0.45 | 21.84 | 25.58 | 47.42 | 4.65 | Much Bombay mace. |
| 61625. | 1.90 | 0.25 | 19.08 | 21.24 | 40.32 | 3.50 | " " little starch. |
| 61641. | 1.45 | 0.15 | 17.56 | 18.92 | 36.48 | 3.05 | " " some starch. |
| 61935. | 2.05 | 0.10 | 27.66 | 17.44 | 45.10 | 3.65 | Considerable Bombay mace and starch. |
| 61938. | 2.30 | 0.45 | 22.12 | 24.00 | 46.12 | 4.70 | Much Bombay mace, little starch. |
| 62362. | 2.05 | 0.10 | 25.56 | 0.58 | 26.14 | 3.20 | Much starch and turmeric. |
| 63253. | 2.45 | 0.15 | 20.08 | 10.52 | 30.60 | 4.35 | Considerable Bombay mace and starch. |
| 63296. | 2.70 | 0.35 | 23.08 | 21.60 | 44.68 | 4.95 | Much Bombay mace, little starch. |
| 63769. | 1.95 | 0.20 | 19.06 | 28.76 | 47.82 | 4.35 | Much Bombay mace and starch. |
| 64021. | 2.45 | 0.30 | 20.88 | 1.92 | 22.80 | 3.35 | No Bombay mace much starch. |
| 64023. | 2.40 | 0.45 | 16.60 | 19.48 | 36.08 | 4.35 | Much Bombay mace and starch. |
| 66164. | 1.81 | 0.17 | 26.78 | 17.50 | 44.28 | ... | " " and some starch. |
| 61414. | 2.12 | 0.20 | 23.70 | 9.32 | 33.02 | 3.35 | Some Bombay mace and starch. |
| 58402. | ..... | ..... | 24.48 | 1.16 | 25.64 | ..... | 15 to 20% wheat starch. |
| 58405. | ..... | ..... | 23.80 | 1.68 | 25.48 | ..... | " " " |
| 70261. | ..... | ..... | 20.02 | 12.50 | 32.52 | ..... | 20 to 30% Bombay mace and starch. |
| 70263. | ..... | ..... | 23.04 | 26.68 | 49.72 | ..... | 60 to 35% " " |
| 70264. | ..... | ..... | 18.96 | 25.62 | 44.64 | ..... | " " " |
| 70265. | ..... | ..... | 29.54 | 2.84 | 32.38 | ..... | No Bombay mace. 25 to 30% starch. |
| 58467. | ..... | ..... | 27.50 | 24.00 | 51.50 | ..... | 50 to 60% Bombay mace and starch. |
| 58463. | ..... | ..... | 27.66 | 1.92 | 29.58 | ..... | No Bombay mace, 25 to 30% " |
| 67466. | ..... | ..... | 25.42 | 0.66 | 26.08 | ..... | " " 10 to 15% " |
| 67467. | ..... | ..... | 25.58 | 2.20 | 27.78 | ..... | " " " " |
| 67468. | ..... | ..... | 20.18 | 0.36 | 20.54 | ..... | " " 20% " |
| 67469. | ..... | ..... | 26.66 | 0.64 | 27.30 | ..... | " " " " |
| 67470. | ..... | ..... | 40.64 | 0.65 | 41.29 | ..... | Is ground nutmeg. |

A study of the numerical results in Table III, taken in connection with the results noted from microscopic observation, leads to the conclusion that very definite inference as to the composition of these mixtures may be drawn from the extractive.

The presence of starch decidedly lowers the total extractive; while the ethyl-ether extractive plainly indicates the presence of Bombay mace. Where this is less than about 2 per cent. the absence of any considerable amount of Bombay mace is evident; and when in excess of 2 per cent. a close approximation to the actual amount present may be derived from a comparison of the ethyl-ether extractive with the total extractive.

The refractive index of the fixed oil from Bombay mace is given by Lythgæ as varying from 1.4615 to 1.4633 at 35° C., while that from other maces varies from 1.4747 to 1.4975. The refractive indices for the fixed oils obtained from the samples included in Table 1, were read by Mr. Dawson at 35° C. and are found to be uniformly higher

than the maximum limit quoted for Bombay mace oil. Unfortunately this is also true for most of the samples recorded in Table 2, many of these, even when containing very high percentages of Bombay mace, (as judged from the ethyl-ether extractive) giving refractive indices of 1.4800 or higher. It would hence appear that, while the existence of a refractive index below 1.4700, points to the presence of Bombay mace, the finding of a higher reading than this cannot be regarded as evidence of the absence of Bombay mace.

The most conclusive chemical evidence of this adulteration of mace appears to be afforded by the ethyl-ether extract. In the case of Bombay mace, the resins seem to be less readily dissolved by petrolic ether than the fats. When these last are removed by petrolic ether, the subsequent extraction by ethyl-ether gives a number which is highly characteristic. It may be that alcohol, on account of its great solvent power for resins, might take the place of ethyl-ether, and effect a saving of time. This point may be investigated later.

Investigatory work done by Mr. Valin, since the above was written, has demonstrated certain points of importance in regard to details of operating. These are briefly:

1. The inadvisability of drying the sample at 100°—110° C. before extracting the fat and resins. Such treatment tends to make the extraction difficult.
2. The extractive matter is difficult to dry to constant weight, and an exposure of from 24 to 48 hours at 110° C. is required.
3. Extraction with petrolic ether is not usually complete in less than 16 hours.
4. The use of alcohol instead of ethyl ether, gives a somewhat higher extractive; but shows less characteristic difference between genuine and Bombay mace than does ether. For this reason it is not recommended.

The report now placed in your hands deals with 175 samples of mace, which are classified as follows:

| | |
|---|-----|
| Samples of known origin | 7 |
| “ essentially true mace | 30 |
| “ mixed with true and wild mace | 95 |
| “ variously adulterated | 43 |
| Total | 175 |

Their study would appear to justify the following standards for mace.

1. True mace is the dried arillus of *Myristica fragrans* (Houttyn.) It contains not more than three (3) per cent. of total ash, and not more than half of one per cent. (0.5) of ash insoluble in hydrochloric acid. Its crude fiber content does not exceed seven (7) per cent.

After extraction with petrolic ether, the ethyl-ether extractive does not exceed five (5) per cent. The total extractive by both solvents, does not exceed thirty three (33) per cent.

2. Macassar mace is the dried arillus of *myristica argentea* (Warb.)

3. Bombay Mace, is the dried arillus of *myristica malabarica* (Lamarck.) This mace must not be present in admixture with true mace, unless the label, or other mark clearly declares its presence, and approximate percentage amount.

It is recognized that the limited number of samples of certified origin included in this report, leaves much to be desired in the way of assured knowledge of the limits of variation which may obtain in different samples of the maces studied, where these are the production of different soils and localities. At the same time, I am convinced that no injustice will be done to importers by official adoption of the very liberal standards suggested; while a very much needed protection will thereby be afforded to the consumer.

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BULLETIN No. 350—FEED FLOUR.

OTTAWA, November 2, 1916.

SIR,—I beg to hand you a report upon 170 samples of feeds, purchased under the name of Feed Flour.

This inspection has been rendered necessary in consequence of certain features of the operation of the Feeding Stuffs Act of 1909. These features were brought to your notice in my introductory letter published with Bulletin No. 311 (April, 1915). Briefly, they may be recapitulated as follows:—

Feeds which bear names of definite and distinctive character, are permitted to be sold without registration, because standards can be fixed for such feeds under Section 26 of the Adulteration Act.

The recognition of this class of feeds finds justification in the fact that all the smaller mills possess local markets for Bran, Shorts and Chop, as defined under our Act, and it is usual for farmers to buy direct from the mills. There is usually little or no accumulation of these feeds at the mill, the whole output being sold as produced. It would be an evident hardship were the miller required to keep distinct his product from each shipment of grain, and to furnish a guarantee of value with the sale. Such procedure would necessitate an increase in price to the consumer, and would not find favour with the farming community in whose interest the Act is framed. Experience gained since 1910 is decidedly favourable to recognition of a class of feeds of this kind; although the terms and standards fixed by Order in Council of May 1, 1911 (published as Circular G. 968) have been found to be unsatisfactory in several particulars.

Objections have been pointed out in Bulletins 254 and 311—and consequent upon these facts and others brought into notice through extended correspondence, it was considered desirable to invite comment by all parties interested, with a view to such amendment as might be found necessary.

In August of last year, a Circular (G. 1200) was extensively distributed through the kindness of the Canadian Manufacturers' Association, and through our own Food Inspectors.

Suggestions have been received from several of the larger milling companies and from a few of the smaller millers, but, upon the whole, it is felt that the subject has elicited less interest than its importance deserves.

Under the name of Special Shorts, or Choice Shorts, or Feed Flour or Low Grade Flour an article containing very nearly the same proteid and fat value as normal shorts, but a decidedly lower percentage of fibre, is offered. This variety is richer in starchy content than normal shorts, and is whiter in colour. Although its nutritive value is but slightly, if at all, higher than that of normal shorts, it commands a higher price, probably because of its appearance rather than for any other reason.

At a meeting of the Dominion Millers' Association held in Toronto on February 24, 1916, the present standards for the class of feeds now under consideration were discussed; and, among other business, a resolution was unanimously passed approving of the practical equivalency of the terms Shorts and Middlings, and recognizing the fairness of existing standards for this article.

It was however considered desirable and proper that an article generally known as Feed Flour, should be distinguished from Shorts; and the general impression prevailed that considerable latitude in the composition of this feed should be permitted. In order to obtain data for defining feed flour it was agreed that a collection of samples sold under this name should be made at an early date.

The samples herein reported were purchased in May and June of this year, for the purpose of establishing the nature of Feed Flour as sold in Canada.

Of 170 samples collected by our inspectors, under the name Feed Flour, 45 samples practically meet requirements for Shorts (Middlings) and must be regarded as such.

The outstanding feature in the article known as Feed Flour is its low content of fibre; and while frequently sold as Special Shorts or Choice Shorts, it is in reality a low grade flour. It usually commands a higher price than shorts proper, and appears to be regarded as superior to shorts, its superiority consisting in its whiter colour, its fineness, and its flour-like appearance. It usually shows a lower fat content than shorts, but its protein content is nearly equal to that of shorts.

It will be observed that I have excluded from the Feed Flour class all samples giving a higher fibre content than 2 per cent. From a large number of samples of flour examined by the Bureau of Chemistry, Washington, and reported in Bulletin 13, part 9, the following averages are taken:—

| | |
|--|----------------|
| Patent Wheat flour (40 samples), crude fibre. | 0.21 per cent. |
| Common Market flour (19 samples), crude fibre. | 0.28 “ |
| Bakers' and family. (14 samples), crude fibre. | 0.22 “ |
| Mean. | 0.24 “ |

In whole wheat flour, ground from the grain inclusive of its husk (bran) the crude fibre may amount to a little over 2 per cent; but all the samples now reported were evidently ground from the grain after removal of the bran; or the bran had been separated by bolting after grinding; and it is to a product closely resembling ordinary flour that the term Feed Flour is evidently intended to apply. Of the 125 samples now reported, 63 contain less than 1 per cent fibre; and 30 samples contain less than 0.5 per cent.

FAT CONTENT.

| | |
|---------------------------------------|-------------|
| Between 1 and 2 per cent fat. | 23 samples. |
| “ 2 “ 3 “ | 47 “ |
| “ 3 “ 4 “ | 44 “ |
| Above 4 per cent. | 10 “ |

PROTEIN CONTENT.

| | |
|---|------------|
| Above 18 per cent protein. | 6 samples. |
| Between 17 and 18 per cent protein. | 6 “ |
| “ 16 “ 17 “ | 21 “ |
| “ 15 “ 16 “ | 23 “ |
| “ 14 “ 15 “ | 26 “ |
| “ 13 “ 14 “ | 15 “ |
| “ 12 “ 13 “ | 18 “ |
| “ 11 “ 12 “ | 5 “ |
| “ 10 “ 11 “ | 3 “ |
| Below 10 per cent protein. | 1 “ |

It is scarcely necessary to add that no vital weed seeds were found in any of these samples. The fineness of grinding precluded the possibility of this.

If it be asked whether in view of the data now reported, the Department would be justified in recognizing Feed Flour as a distinct article from Shorts or Middlings, I must confess to some hesitation in arriving at a decision.

If the point be conceded, it would seem reasonable to require Feed Flour to

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approximate in composition to ordinary flour, in which case the subjoined standards would apply:

| | |
|-------------------|------------------------------|
| Moisture. | not to exceed 13.5 per cent. |
| Proteids. | " less than 10.0 " |
| Fat. | " " 1.0 " |
| Fibre. | " more than 1.5 " |

The suggested standards are based on the composition of flours of a low grade, such as might naturally be looked for in flour offered for sale as a cattle feed. With a single exception (No. 5725) all the samples reported would meet such a standard.

The alternative mode of treating these feeds would be to require them to be marketed as registered feed, and sold on the basis of guaranteed value. Many of them so considerably exceed the minimum values suggested as standards for Feed Flours, that it would doubtless be to the advantage of the manufacturer to adopt this method, and sell them as registered feeds.

Whether or not the convenience to manufacturer and to consumer would outweigh the loss to the manufacturer incurred by selling as feed flour an article greatly exceeding suggested standard requirements for this article, is matter for the consideration of both parties.

BULLETIN No. 351—BAY RUM, FLORIDA WATER, Etc.

OTTAWA, November 3, 1916.

SIR,—I beg to hand you herewith a report upon 75 samples of toilet preparations, chiefly Bay Rum and Florida Water, containing alcohol.

The Inland Revenue Act, as amended in 1908, requires all preparations containing methyl alcohol to be labelled in such a way as to inform the purchaser of the fact.

"Every person who uses methyl alcohol, or spirits containing methyl alcohol in any form, in any pharmaceutical, medicinal or other preparation intended for external use shall affix to the vessel containing the said preparation a label stating, in black letters not less than one-fourth of an inch in height, the presence of methyl alcohol therein; and every person violating the provisions of this sub-section shall incur a penalty not less than fifty dollars and not exceeding two hundred dollars."

Four samples of the present collection contain methyl alcohol in violation of the Act named.

BULLETIN No. 352—EVAPORATED FRUIT AND VEGETABLES.

OTTAWA, November 16, 1916.

SIR:—I beg to hand you a report upon 180 samples purchased by our inspectors in December, January and February last, as dried or evaporated Fruit and Vegetables.

The object had in view in this inspection was the ascertainment of the content of sulphur-dioxide in this class of foods. An order in Council of 4th April, 1914, published as Circular G. 1111, limits the amount of sulphurous acid (sulphur-dioxide) which may be present in solid foods to 1 part in 2,000 parts (equivalent to 500 parts per million).

Sulphurous Acid is largely employed in the bleaching of those fruits and vegetables

in whose case it is desirable to have the product as light coloured as possible. There is, of course, a temptation to use excess of the bleaching agent; and as this is more or less poisonous, above very narrow limits, it is important that a strict watch be kept upon the articles treated with it.

Our inspectors have, unfortunately, included a large number of samples in whose case the employment of a bleaching agent is unnecessary; such as prunes, raisins, currants, etc. These samples, which of course, contain no sulphur-dioxide, I have relegated to Table II in this report, and have merely reported upon their general soundness and cleanliness. The samples included in this report may be grouped as follows:

TABLE I.

Sample in whose preparation sulphurous acid is likely to be employed as a bleach.

| | |
|----------------------------|-------------|
| Evaporated Apples. | 35 samples. |
| “ Apricots. | 18 “ |
| “ Peaches. | 30 “ |
| “ Pears. | 4 “ |
| | <hr/> |
| Total. | 87 “ |

TABLE II.

Samples in whose preparation sulphurous acid is not required as a bleach.

| | |
|--------------------------|------------|
| Tinned goods. | 3 samples. |
| Prunes. | 36 “ |
| Figs. | 12 “ |
| Dates. | 3 “ |
| Raisins. | 3 “ |
| Pineapple. | 1 sample. |
| Vegetable soups. | 3 samples. |
| Candied peel. | 2 “ |
| Currants. | 2 “ |
| Dried carrots. | 1 sample. |
| “ peas. | 1 “ |
| “ potatoes. | 1 “ |
| “ peaches. | 7 samples. |
| “ apricots. | 9 “ |
| “ apples. | 5 “ |
| “ pears. | 4 “ |
| | <hr/> |
| Total. | 93 “ |

In the last five kinds sulphurous acid might be present; but these are included in Table II because, through oversight, its determination was not made in these twenty-six samples.

So far as the 93 samples of Table I are concerned, I find as follows:

| | |
|---|-------------|
| Contain no sulphurous acid. | 19 samples. |
| “ no excess sulphurous acid. | 47 “ |
| “ slight excess sulphurous acid. | 3 “ |
| “ decided excess sulphurous acid. | 18 “ |
| | <hr/> |
| Total. | 87 “ |

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Eighteen samples containing above one and one half (1.5) parts of sulphurous acid per 2,000 parts by weight, I find:—

| | |
|---------------------------------------|------------|
| Containing 4 parts per 2,000. | 1 sample. |
| “ 3 “ | 5 samples. |
| “ 2 “ | 8 “ |
| “ less than 2 parts. | 4 “ |
| Total. | 18 “ |

It is regrettable that this report has been so long delayed, due to press of work and the fact that our staff is shorthanded. I would respectfully recommend that no action be taken upon it, partly for this reason, and partly because it is a first inspection under our standards for sulphurous acid. A further and more extended inspection will be made at as early a date as possible.

BULLETIN No. 353—TEMPERANCE BEER.

OTTAWA, November 13, 1916.

SIR,—I beg to hand you a report upon 129 samples purchased by our inspectors in February, March and April last as Temperance Beer.

An Order in Council of February 8, 1911 and published as Circular G. 947 defines Malt Liquors and Malt Beverages as follows:

“1. Malt Liquor is a beverage made by the alcoholic fermentation of an infusion in potable water, of barley malt and hops.

2. Ale or beer is a beverage produced by top fermentation of an infusion, in potable water, of barley malt and hops; with or without other starchy and saccharine matters and contains in one hundred (100) cubic centimetres (20° C.) not less than two and seventy-five one-hundredths (2.75) grammes of alcohol (equivalent to six (6) per cent by volume of proof spirits), not less than three and one half (3.5) grammes of extract, and not less than eleven one-hundredths (0.11) gramme of ash, chiefly potassium phosphate.

3. Porter and Stout are varieties of ale or beer made in part from highly roasted malt, or barley, and agree, in other respects, with the requirements for ale and beer.

4. Lager Beer, is beer produced by bottom fermentation which contains, in one hundred (100) cubic centimetres (20° C.), not less than three and one-half (3.5) grammes of extractive matter and eleven one-hundredths (0.11) gramme of ash, chiefly potassium phosphate, and not less than two and fifty hundredths (2.50) grammes of alcohol, equivalent to five and five tenths (5.5) per cent by volume, of proof spirits.

5. Light Beer, is a Beer, containing in one hundred (100 cubic centimetres, at 20° C. less than two (2) grammes of alcohol (equivalent to less than four and four-tenths (4.4) per cent by volume of proof spirits).”

It will be observed that Beer (Ale), Lager Beer and Light Beer are defined. The last named may contain up to 4.4 per cent. of proof spirits.

The article known and extensively sold as Temperance Beer, or Non-alcoholic Beer, has appeared on our markets since the enactment of the above quoted standards, and is, undoubtedly intended to meet the requirements of the Anti-Liquor Laws recently passed by several of the Provincial Legislatures.

All the above named types of Beer defined by G. 947 are spirituous liquors, and as such are debarred from sale wherever the Anti-Liquor laws are in force. Brewers have quite naturally sought to meet the popular demand for an article resembling beer, and

possessing some of the properties of beer, by placing on the market a malt product which should contain so little alcohol as to permit its sale as a non-alcoholic beverage.

In defining fruit juices and other non-alcoholic drinks, it was found necessary to recognize the fact that, as most of these beverages contain fermentable material (sugars), small quantities of alcohol must naturally be present, due to unintentional fermentation in manufacture or in storage. The actual amount of such accidental alcohol might be very small; but practical conditions of bottling, transportation and storage make it possible for the alcohol—to increase in amount, after leaving the factory, and it was necessary to ascertain, by actual analysis, the facts of the case. It may be well to introduce here a brief summary of the data upon whose study a recommendation was made by your Advisory Board.

(Alcohol is stated in terms of proof spirit)

Bulletin No. 82, published in 1902, reported 15 samples sold as Unfermented Grape Juice:

| | | | |
|---|---------|-----------|---|
| 2 | samples | contained | no alcohol. |
| 9 | " | " | traces only. |
| 4 | " | " | amounts varying from 1.86 per cent. to 3.30 per cent. |

Bulletin No. 94, published in 1904, reported 21 samples of Sweet Cider.

| | | | |
|----|--------|-----------|---|
| 1 | sample | contained | no alcohol. |
| 15 | " | " | less than 1.75 per cent. |
| 5 | " | " | more than 1.75 per cent. and up to 3.85 per cent. |

Bulletin No. 166, published in 1908, reported 63 samples of so-called Unfermented Grape Juice.

| | | | |
|----|---------|-----------|-----------------------------|
| 51 | samples | contained | no alcohol, or traces only. |
| 1 | " | " | less than 1 per cent. |
| 2 | " | " | less than 2 per cent. |
| 1 | " | " | less than 3 per cent. |
| 5 | " | " | less than 4 per cent. |
| 2 | " | " | less than 5 per cent. |
| 1 | " | " | above 5 per cent. |

Bulletin No. 169, published in 1908, reported 15 samples of Sweet Cider.

| | | | |
|----|---------|-----------|----------------------------|
| 10 | samples | contained | no alcohol or traces only. |
| 3 | " | " | less than 1 per cent. |
| 1 | " | " | 1.16 per cent. |
| 1 | " | " | 2.48 per cent. |

Bulletin No. 239, published in 1912, reports upon 36 samples of Sweet Cider, very few of which were entirely free from alcohol.

| | | | |
|----|---------|----------------------------|-----------------------|
| 22 | samples | gave less than 1 per cent. | |
| 5 | " | " | 2 " |
| 7 | " | " | 3 " |
| 2 | " | " | more than 3 per cent. |

Bulletin No. 280, published in 1914, reports 150 samples of so-called Soft Drinks. Most of these are free from more than traces of alcohol; but three samples of Ginger Beer contained over 3.50 per cent. proof spirits.

Bulletin No. 307, published in 1915, reports upon 111 samples of Unfermented Grape Juice. With few exceptions the alcohol does not exceed 3.50 per cent. (proof spirit), but scarcely any samples are entirely free from alcohol.

Experience gained since 1911 serves to strengthen my opinion that the limit fixed by Order in Council, in that year, is a reasonable one. Anything more exacting would work unnecessary hardship to manufacturers of Grape Juice, Sweet Cider, and so-called Soft Drinks.

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It is of course, to be kept in mind that the number 3.5 per cent. proof spirit is a limit number, which will, under normal conditions of sale, be met with in soft drinks only at long intervals and in rare cases.

So-called "Temperance Beer" is, on the contrary, intended to be a non-alcoholic beverage only in the sense of containing not more alcohol than 3.5 per cent. while the manufacturer endeavours to work as close to this limit number as possible. It has even been urged that an occasional excess of spirit above 3.5 per cent. should not be held to constitute adulteration, since the fact that, as a rule, this class of beer contains no more than 3.5 per cent. of spirit proves the brewer's intention not to exceed this limit. Occasional excess is therefore clearly accidental and should be so regarded.

If Temperance Beer is given legal recognition—at present it has none—the above contention may be regarded as reasonable.

The report now placed in your hands concerns 129 samples sold as Temperance Beer. Of this number, 114 samples contain not more than 3.5 per cent. of proof spirit; and if the terms of the Order in Council of 8th February 1911 may be construed as applying to the article in question, these samples must be regarded as non-alcoholic beverages, under the Federal Act.

Several of the Provincial Acts fix 2.5 per cent. of proof spirit as the limit for temperance beers. Eighty-four (84) of these samples meet provincial requirements.

Fifteen (15) samples contain more than 3.5 per cent. In detail as follows:

| | |
|----------------|-----------|
| 3.71 per cent. | 1 sample. |
| 4.12 " | 2 " |
| 4.26 " | 1 " |
| 4.40 " | 1 " |
| 4.52 " | 2 " |
| 4.64 " | 1 " |
| 4.76 " | 1 " |
| 4.89 " | 2 " |
| 5.01 " | 2 " |
| 5.37 " | 1 " |
| 5.98 " | 1 " |

Since Temperance Beer, under which name these articles were sold, is not recognized legally, it is questionable whether or not they can be judged as adulterated under the Act. Of course if we recognize this term as defining a non-alcoholic beverage, they contravene the Order in Council of 8th February 1911, and are adulterated.

In this connection it may be well to point out that the specific gravity of the alcoholic distillate has been interpreted by reference to the Hahn Tables. These Tables have, since 1884, when a special edition of them was published by this Department and distributed for the use of its officers, been accepted as official. I have not, however, been able to find any strictly legal sanction for their use in preference to other Alcohol Tables, variously authorized, with which they do not strictly conform.

I would respectfully advise the authoritative adoption of some one set of tables; and a set recently prepared under the direction of Sir Edward Thorpe, Principal of the Government Laboratories of Great Britain, would appear to be the best available. The Tables in question have been constructed with very great care, and are based upon the latest and most exact data in existence.

It is further to be observed that under ordinary conditions of working, there is a limit to accuracy practically obtainable. Very extended work in these laboratories leads me to conclude that the fourth decimal figure of the number expressing the specific gravity of a highly diluted alcohol may, even in careful hands, vary to the extent of one unit. This corresponds to an amount of proof spirit represented by approximately two-tenths (0.2) of one per cent. and I regard it as reasonable to allow a variation of this amount in interpretation. In other words, a beverage showing 3.70 per cent. of proof spirit, as the result of analysis, should not be held to exceed the legal limit of 3.50 per cent. by an amount which could justify legal penalty.

BULLETIN No. 354—GLUTEN FLOUR, Etc.

OTTAWA, November 16, 1916.

STR,—We have on many occasions during recent years been asked to make an examination of the cereal foods offered especially for the use of persons suffering from diabetes mellitus. These foods, of which a considerable number are on the market, are usually high priced articles; and that they should be costly in comparison with ordinary cereal foods, is but reasonable, since if they fulfil their claim to contain a high percentage of cereal proteins, and in consequence, a comparatively small percentage of starch, their manufacture necessitates the employment of a correspondingly large amount of raw material, as well as the use of skilled labour.

The wrong done to sufferers from diabetes caused by misrepresentation of the character of these foods, is very apparent; and the demand that we should require foods of the class referred to, to meet definite standards is not at all unreasonable. It is acknowledged by physicians that the use of foods containing starch or sugar (glycogenic carbohydrates) in large amount, is dangerous to persons suffering from diabetes; and the whole class of foods to which I refer is characterized by relatively low carbohydrate content. That carbohydrates should be entirely absent is neither necessary nor desirable; but the degree of toleration of carbohydrates must be determined by the physician in each individual case.

It is evident that intelligent advice can only be given when the physician is correctly informed as to the composition of the food which he prescribes. Alike, then, from the point of view of physician and patient, it is necessary that dietary foods for the diabetic should be standardized; and the name under which such foods are sold, should carry a definite meaning.

The work of the Agricultural Experiment Station at New Haven, Conn. during the past five years (see reports for 1911 to 1915) has demonstrated that many of the special foods sold for the use of diabetics, are essentially fraudulent; and national attention has been called to the matter by the excellent work done in Connecticut and elsewhere. In consequence of this, the following decision has quite recently been issued by the Department of Agriculture at Washington.

FOOD INSPECTION DECISION 160.

Gluten products and "Diabetic" Food.

The following definitions and standards for gluten products and "diabetic" food were adopted by the Joint Committee on Definitions and Standards April 9, 1915, and were approved by the Association of American Dairy, Food, and Drug Officials, August 3, 1915, and by the Association of Official Agricultural Chemists, November 17, 1915:

Ground gluten is the clean, sound product made from wheat flour by the almost complete removal of starch and contains not more than ten per cent (10%) of moisture, and, calculated on the water-free basis, not less than fourteen and two-tenths per cent (14.2%) of nitrogen, not more than fifteen per cent (15%) of nitrogen-free extract (using protein factor 5.7) and not more than five and five-tenths per cent (5.5%) of starch (as determined by the diastase method).

Gluten flour is the clean, sound product made from wheat flour by the removal of a large part of the starch and contains not more than ten per cent (10%) of moisture, and, calculated on the water-free basis, not less than seven and one-tenth per cent

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(7.1%) of nitrogen, not more than fifty-six per cent (56%) of nitrogen-free extract (using the protein factor 5.7), and not more than forty-four per cent (44%) of starch (as determined by the diastase method.)

Gluten flour, self-raising, is a gluten flour containing not more than ten per cent (10%) of moisture, and leavening agents with or without salt.

“Diabetic food.” Although most foods may be suitable under certain conditions for the use of persons suffering from diabetes, the term “diabetic” as applied to food indicates a considerable lessening of the carbohydrates found in ordinary products of the same class, and this belief is fostered by many manufacturers on their labels and in their advertising literature.

A “diabetic” food contains not more than half as much glycogenic carbohydrates as the normal food of the same class. Any statement on the label which gives the impression that any single food in unlimited quantity is suitable for the diabetic patient is false and misleading.

The foregoing definitions and standards are adopted as a guide for the officials of this Department in enforcing the Food and Drugs Act.

D. F. HOUSTON,
Secretary of Agriculture.

WASHINGTON, D.C., January 3, 1916.

It will be noted that the terms “ground gluten” “gluten flour” and “diabetic food” are more or less closely defined. In the present state of our knowledge, I do not think it practicable to be more specific than the requirements of the Decision above quoted.

The present report concerns 21 samples purchased by our inspectors under various names, but all evidently intended for the use of sufferers from diabetes. They may be classified as follows:

| | | |
|-------------------------------|----|----------|
| Gluten flour | 9 | samples. |
| Gluten meal | 3 | “ |
| Gluten bread | 3 | “ |
| Diabetic bread | 1 | “ |
| Diet flour | 2 | “ |
| Dainty Fluffs | 1 | “ |
| Gum Gluten Granules | 1 | “ |
| Casoid Biscuits | 1 | “ |
| Total | 21 | samples. |

In order to apply standards effectively it should be required of manufacturers that, in addition to whatever specific name they may choose to give their product, a subtitle should be used, and legibly printed on the label, fixing the special class:—ground gluten, gluten flour or diabetic food to which the article conforms.

It will be noted that ground gluten is required to contain at least 14.2 per cent. of nitrogen (equivalent to 80.94 per cent. protein, if the factor 5.7 is used, or 88.75 per cent if the usual factor, 6.25 is used); gluten flour, 7.1 per cent. nitrogen (equivalent to 40.47 or 44.375 per cent. protein) or half the amount contained in gluten.

Diabetic foods generally, are required to contain not more than half the amount of carbohydrates that a normal food of the same class would contain.

The starch limit for gluten is fixed at 5.5 per cent. and for gluten flour at 44 per cent.

Wynter Blyth (quoted by Allen 1, 459) gives the following proteid and carbohydrate percentages for wheaten bread:—calculated on the loaf containing moisture.

| | Minimum. | Maximum. | Mean for Fine bread. | Mean for Coarse bread. |
|------------------------|----------|----------|-------------------------|---------------------------|
| Water. | 26.39 | 47.90 | 38.51 | 41.02 |
| Proteids. | 4.81 | 8.69 | 6.82 | 6.23 |
| Carbohydrates. | 39.75 | 67.45 | 49.97 | 48.69 |

The average proteids and carbohydrates in ordinary bread, calculated upon the dry material, would therefore be.

| | | | |
|------------------|---|------------------------|-----------------|
| For fine bread | } | Proteids. | 11.91 per cent. |
| | | Carbohydrates. | 81.26 |
| For coarse bread | } | Proteids. | 10.56 |
| | | Carbohydrates. | 82.55 |

According to this standard, diabetic breads should not contain above about 40 per cent. of carbohydrates, calculated upon the dry material; and by a parity of reasoning they should contain at least 22 per cent. of proteids.

I have used the following numbers as a guide in interpreting the results of analysis. It must be remembered that, in the absence of legalized standards, my conclusions must be regarded as merely expressions of opinion.

Limits for

| | Proteids. (Minimum). | Carbohydrates. (Maximum). |
|--------------------------|-------------------------|------------------------------|
| Gluten. | 80 | 6 |
| Gluten Flour. | 40 | 45 |
| Diabetic Breads. | 20 | 42 |

Three (3) samples meet the required standard for gluten, and five (5) samples meet the standard suggested for diabetic flour or bread.

The remaining thirteen (13) samples do not justify any reasonable claim to be regarded as diabetic foods.

BULLETIN No. 355—BRAN.

OTTAWA, November 17, 1916.

SIR,—I have the honour to hand you a report upon 186 samples of Bran, purchased by our inspectors throughout the Dominion in February, March and April of this year.

Standards for Bran were legalized by Order in Council in October, 1910 (G. 932) and require this article to contain at least 14 per cent of proteids and 3 per cent of fat, with not more than 10 per cent of fibre. The Feeding Stuffs Act of 1909, Section 15, provides that a deficiency of one per cent of protein or fat, or an excess of two per cent of fibre shall not be held as evidence of fraudulent intent on the part of the manufacturer, so long as the total value of the feeding stuff in nutritive materials is substantially equivalent to its guaranteed value.

I am glad to say that all of the samples now reported fulfil legal requirements in respect to nutritive value. The great majority of these samples are indeed, considerably above the minimum value required for Bran.

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In reply to a Circular of inquiry (G. 1200) distributed to the milling industry in August of last year, several of the larger milling companies contended that our standards for fibre in Bran were too high. They asserted that, while for most years the fibre in Bran might not exceed 10 per cent, in exceptional years, the fibre content would exceed this limit.

Regarding this matter, the subjoined data are available.

| Source of information. | Year. | No. of samples examined. | No. exceeding 10% fibre. | Mean fibre p. c. |
|-------------------------|-------|--------------------------|--------------------------|------------------|
| I. R. Bulletin 116..... | 1906 | 29 | 19 | 11.11 |
| " 156..... | 1908 | 27 | 5 | 8.69 |
| " 191..... | 1909 | 148 | 39 | 9.26 |
| " 231..... | 1912 | 78 | 8 | 8.60 |
| " 254..... | 1913 | 135 | 8 | 8.86 |
| " 302..... | 1915 | 187 | 19 | 9.00 |
| Connecticut..... | 1905 | 25 | ..... | 9.90 |
| Massachusetts..... | 1912 | 28 | ..... | 8.73 |
| "..... | 1913 | 57 | ..... | 9.48 |
| "..... | 1914 | 54 | ..... | 9.48 |
| "..... | 1915 | 72 | ..... | 9.64 |
| Pennsylvania..... | 1913 | 76 | ..... | 9.22 |
| "..... | 1914 | 46 | ..... | 9.14 |

It is to be kept in mind that the figures just quoted were obtained by work done upon commercial samples of Bran, many of which were adulterated by addition of oat-hulls and other matters containing fibre, hence the average results are decidedly higher than would be the case had only genuine wheat-bran been included.

So far as the present inspection is concerned, 35 samples (out of 186) show more than 10 per cent of fibre. Only 8 samples exceed 11 per cent and the highest fibre found is 11.95 per cent.

Section 15 of the Feeding Stuffs Act permits an excess of two per cent (maximum of 12 per cent fibre) provided that the total value of the Bran meets requirements. The particular sample now referred to shows 14.53 per cent proteids and 5.26 per cent of fat, so that the excess of fibre is fully compensated. The great majority of these samples fall well within the 10 per cent limit.

Under these circumstances I find no reason for advising reconsideration of the fibre standard for Bran.

Although from the point of view of nutrient value all the samples herein reported meet legal requirements. Fifteen samples are found to contain more than 25 noxious weed seeds per pound. The very liberal interpretation of the Weeds Seeds Act, in virtue of which we permit 25 seeds per pound is based upon the consideration that before these seeds have a chance of germination they are passed through the digestive system of animals to whom the Bran is fed, and it is reasonable to expect that a considerable proportion of the vital seeds in the feed will in this way have their germinating power destroyed.

Experimental work on this subject done in the Maryland Experiment Station in 1908, and quoted in Bulletin No. 254 of this Department, seems to justify the limit of 25 seeds per pound as reasonable. At the same time, it is to be noted that this limit has not, up to the present, received legal recognition.

BULLETIN No. 356—ASPIRIN TABLETS.

OTTAWA, November 17, 1916.

SIR:—I beg to hand you a report upon 65 Tablets containing Aspirin analyzed in these laboratories.

Inspection of this article was made on account of complaints originating in Chicago, where Canadian made tablets were suspected to be spurious and fraudulent.

So far as the work recorded goes, it shows the Canadian made article to be of very good quality.

The tablets nominally contain 5 grains of aspirin, and the variations found are not in excess, for the most part, of normal variation for machine made tablets.

BULLETIN No. 357—CANNED TOMATOES.

OTTAWA, 23rd NOVEMBER, 1916.

SIR,—I have the honour to hand you a report upon Canned Tomatoes, as purchased by our inspectors in February, March and April of this year.

Without exception the contents of these cans proved to be sound and good; and it is evident that care had been taken to employ only fruit of good quality in their preparation.

As in the inspection of 1912 (see Bulletin No. 246) the cans in which these tomatoes are packed, represent three sizes, which may be designated as large, medium and small.

| | |
|---|--------------|
| <i>Large size</i> , from 950 to 1,050 cubic centimetres, or approximately from 34 to 37 ounces. | 199 samples. |
| <i>Medium size</i> , from 850 to 875 cubic centimetres, or approximately 31 ounces. | 27 “ |
| <i>Small size</i> , about 600 cubic centimetres, or approximately 21 ounces. | 6 “ |

The small size tins are only found in Western Canada, 1 sample having been obtained in Manitoba and 5 samples in British Columbia.

The medium size appears also to be characteristic of Western Canada, 1 sample was found in the Eastern Townships, 1 in Ontario, 6 in Alberta, and 19 in British Columbia.

The subject matter of this report represents 88 different brands of Canned Tomatoes. By far the larger number of these are put up in tins of 34 to 37 ounces capacity, usually known as two pound tins.

Of course the value furnished to the consumer is dependent upon the content of actual fruit; and while it is a matter of great difficulty to determine this with any high degree of exactness, the method employed by us is probably as satisfactory as any that could be devised.

In all of the samples now reported, the gross weight of the tin and contents has first been ascertained. The whole contents are then turned out upon a piece of cheese cloth, of known weight, spread upon a sieve of six inches diameter, and allowed to drain for approximately two hours, without pressure, or until drops fall at intervals, of more than 5 seconds. The weight of residual solids is determined either by direct weighing, or by deducting the weight of the separated water.

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The following method has been tentatively recommended by the Association of Official Agricultural Chemists of the U.S.A. (See Journal, August 15, 1915, p. 185).

"The preparation of the sample for analysis depends upon the character of the product and the determinations to be made. Samples in which only the solid or liquid portion is required should be treated as follows: Weigh the full can, open, pour off the liquid, allow the solid portion to drain for a minute, re-weigh the can and drained vegetables, then remove the solid portion and weigh the dry, empty can. The method selected for draining the vegetables is dependent upon the nature and condition of the sample. In most cases it is sufficient to cut around the cover and before turning it back allow the liquor to drain through the slit. Whenever a portion of the solid material would escape with the liquor by this procedure, drain upon a piece of cheesecloth. From the weights thus obtained determine the percentage of liquid and solid contents."

The difficulty of defining a perfectly satisfactory method of working has delayed the adoption of regulations in the matter of Canned Tomatoes. The U.S.A., Bureau of Chemistry, under date 11 Oct. 1916 (see Service and Regulatory Announcements No. 184) makes the following statement:

"Since Circular 68 was issued, there are being produced in increasing quantities, tomato products of varying degrees of concentration. The Department is considering the adoption of a scale for testing tomato products, varying with the degree of concentration. If it is decided to adopt such a scale, public announcement will be given."

The information given by the report now handed to you, together with that supplied in Bulletin No. 246, should enable your Advisory Board to proceed intelligently in the matter of recommending action under Section 26 of the Adulteration Act, should action be considered necessary.

In order to a more convenient study of these data, I have arranged them in parallel columns with the corresponding results obtained in 1912 and published in Bulletin No. 246.

Most of the brands named are put up only in cans of large size. A small number of brands are put up only in medium and small sized cans. The following list, which includes samples inspected in 1912 as well as those now reported, shows the brands which are packed variously.

TABLE I.

Brands of Canned Tomatoes put up in tins of differing size. Inspections of 1912 and 1916.

| Brand Name. | Large size. | Medium | Small. | Total. |
|--------------------------|-------------|--------|--------|--------|
| Big..... | 1 | 0 | 1 | 2 |
| British Canadian..... | 2 | 0 | 1 | 3 |
| Canada First..... | 7 | 3 | 1 | 11 |
| E D. S..... | 3 | 0 | 1 | 4 |
| Fretz..... | 1 | 1 | 0 | 2 |
| Kelowna..... | 0 | 1 | 2 | 3 |
| Lynn Valley..... | 17 | 1 | 0 | 18 |
| Maple Leaf..... | 10 | 2 | 0 | 12 |
| Orchard City..... | 3 | 2 | 0 | 5 |
| Prairie..... | 5 | 1 | 0 | 6 |
| Pride Niagara Falls..... | 1 | 1 | 0 | 2 |
| Pure Food..... | 0 | 1 | 0 | 1 |
| Quaker..... | 6 | 7 | 3 | 16 |
| Red Feather..... | 1 | 1 | 0 | 2 |
| Royal City..... | 0 | 2 | 1 | 3 |
| Standard of Empire..... | 1 | 2 | 0 | 3 |
| Thistle..... | 5 | 4 | 0 | 9 |
| Totals..... | 63 | 29 | 10 | 102 |

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Mountain Crest is put up in the small size only, and the following brands, in medium size only, so far as our inspections show: viz:—

Meco, Talisman, Alamo, Bear, Bohemian, Cutting P. Co., Del Monte, Finest, Faultless, Gold Medal Malkins Best, North Star, Sunshine.

TABLE II.

The following table gives the weight of the contents of small size tins. This weight refers to the solids determined as already described, and is stated in ounces.

| Brand. | Number of Samples. | | Total. | Weight of Contents. |
|-----------------------|--------------------|-------|--------|---------------------|
| | 1912. | 1916. | | |
| Big..... | 1 | 0 | 1 | 9.5 |
| British Canadian..... | 0 | 1 | 1 | 10.0 |
| Canada First..... | 0 | 1 | 1 | 8.2 |
| F. D. S..... | 1 | 0 | 1 | 14.4 |
| Kelowna..... | 2 | 0 | 2 | 12.0* |
| Mountain Crest..... | 0 | 1 | 1 | 10.5 |
| Quaker..... | 1 | 2 | 3 | 8.6* |
| Royal City..... | 0 | 1 | 1 | 8.0 |
| Totals..... | 5 | 6 | 11 | 10.1* |

* Mean.

TABLE III.

Samples contained in Medium size tins.

| Brand. | Number of Samples. | | Total. | Weight of Contents. |
|-------------------------|--------------------|-------|--------|---------------------|
| | 1912. | 1916. | | |
| Alamo..... | 1 | 0 | 1 | 16.9 |
| All Gold..... | 1 | 0 | 1 | 18.8 |
| Bear..... | 2 | 0 | 2 | 16.9 |
| Bohemian..... | 3 | 0 | 3 | 16.5 |
| Canada First..... | 2 | 1 | 3 | 14.6 |
| Cutting P. Co..... | 2 | 0 | 2 | 17.3* |
| Del Monte..... | 0 | 1 | 1 | 16.6 |
| Faultless..... | 1 | 0 | 1 | 12.9 |
| Finest..... | 0 | 1 | 1 | 14.0 |
| Fretz..... | 0 | 1 | 1 | 14.5 |
| Gold Medal..... | 0 | 2 | 2 | 11.8* |
| Kelowna..... | 1 | 0 | 1 | 20.8 |
| Lynn Valley..... | 1 | 0 | 1 | 14.8 |
| Malkins' Best..... | 0 | 2 | 2 | 11.7* |
| Maple Leaf..... | 0 | 2 | 2 | 12.5 |
| Meco..... | 1 | 0 | 1 | 13.8 |
| North Star..... | 0 | 1 | 1 | 14.3 |
| Orchard City..... | 0 | 2 | 2 | 13.2* |
| Prairie..... | 0 | 1 | 1 | 13.3 |
| Pride N. Falls..... | 0 | 1 | 1 | 17.8 |
| Pure Food..... | 0 | 1 | 1 | 10.6 |
| Quaker..... | 4 | 3 | 7 | 14.7* |
| Red Feather..... | 0 | 1 | 1 | 14.2 |
| Royal City..... | 0 | 2 | 2 | 14.5 |
| Standard of Empire..... | 0 | 2 | 2 | 12.4* |
| Sunshine..... | 0 | 1 | 1 | 13.3 |
| Talisman..... | 2 | 0 | 2 | 12.9* |
| Thistle..... | 2 | 2 | 4 | 14.4* |
| Totals..... | 23 | 27 | 50 | 14.7* |

* Mean.

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TABLE IV.
Samples packed in large size tins.

| Brand. | 1912. | 1916. | Total. | Solids (ounces.) |
|--------------------------|-------|-------|--------|---------------------|
| 1 Air Ship..... | 3 | 0 | 3 | 14.2* |
| 2 Alexandra..... | 0 | 2 | 2 | 14.3* |
| 3 Anchor..... | 0 | 1 | 1 | 12.5 |
| 4 Bell Cow..... | 3 | 0 | 3 | 16.6* |
| 5 Big..... | 1 | 0 | 1 | 20.8 |
| 6 Bloomfield..... | 1 | 0 | 1 | 20.9 |
| 7 Booths..... | 1 | 0 | 1 | 19.4 |
| 8 Boulter..... | 2 | 0 | 2 | 13.7* |
| 9 Britannia..... | 0 | 3 | 3 | 11.5* |
| 10 British Canadian..... | 0 | 2 | 2 | 15.1* |
| 11 Burlington..... | 0 | 1 | 1 | 15.0 |
| 12 Carada First..... | 0 | 7 | 7 | 15.9* |
| 13 Canada's Pride..... | 2 | 0 | 2 | 19.8* |
| 14 Canned Foods..... | 0 | 2 | 2 | 15.7* |
| 15 Clark..... | 1 | 0 | 1 | 22.4 |
| 16 Colonist..... | 0 | 1 | 1 | 14.2 |
| 17 Cottage..... | 0 | 1 | 1 | 15.2 |
| 18 Crusader..... | 0 | 7 | 7 | 15.4* |
| 19 D. A. H..... | 0 | 1 | 1 | 13.7 |
| 20 Degruchy..... | 1 | 0 | 1 | 19.9 |
| 21 Dominion..... | 0 | 1 | 1 | 13.5 |
| 22 Donalco..... | 0 | 1 | 1 | 14.7 |
| 23 Dove..... | 0 | 1 | 1 | 13.2 |
| 24 Dundee..... | 0 | 1 | 1 | 16.5 |
| 25 E. D. S..... | 1 | 2 | 3 | 16.4* |
| 26 Edisons..... | 0 | 1 | 1 | 15.5 |
| 27 Elgin..... | 0 | 1 | 1 | 16.5 |
| 28 Essex..... | 2 | 2 | 4 | 17.4* |
| 29 Farmer..... | 0 | 1 | 1 | 13.0 |
| 30 First Pick..... | 0 | 2 | 2 | 20.9* |
| 31 F. F. V..... | 1 | 0 | 1 | 22.9 |
| 32 Fleur de lis..... | 0 | 5 | 5 | 13.9* |
| 33 Foote's Best..... | 1 | 0 | 1 | 12.8 |
| 34 Frankford..... | 0 | 3 | 3 | 17.6* |
| 35 Fretz..... | 0 | 1 | 1 | 18.1 |
| 36 Frontenac..... | 0 | 3 | 3 | 16.2* |
| 37 Garden City..... | 1 | 1 | 2 | 17.1* |
| 38 Gazelle..... | 2 | 4 | 6 | 16.6* |
| 39 Glenrose..... | 2 | 0 | 2 | 22.0* |
| 40 Gold..... | 1 | 0 | 1 | 18.3 |
| 41 Gold Bond..... | 0 | 3 | 3 | 16.1* |
| 42 Golden West..... | 0 | 1 | 1 | 16.0 |
| 43 Grand River..... | 1 | 1 | 2 | 15.0* |
| 44 Greens..... | 0 | 2 | 2 | 15.0* |
| 45 Harvest..... | 0 | 4 | 4 | 16.6* |
| 46 Harvester..... | 1 | 0 | 1 | 16.4 |
| 47 Highlander..... | 4 | 1 | 5 | 19.4* |
| 48 Home Grown..... | 1 | 0 | 1 | 21.6 |
| 49 Horseshoe..... | 0 | 1 | 1 | 14.5 |
| 50 Hygeian..... | 0 | 3 | 3 | 16.6* |
| 51 Ice Castle..... | 1 | 0 | 1 | 19.0 |
| 52 King Lake..... | 0 | 1 | 1 | 15.2 |
| 53 Lasso..... | 3 | 0 | 3 | 17.6* |
| 54 Lily Vale..... | 0 | 1 | 1 | 13.5 |
| 55 Lion..... | 1 | 14 | 15 | 14.5* |
| 56 Little Chief..... | 8 | 21 | 29 | 15.4* |
| 57 Log Cabin..... | 0 | 6 | 6 | 15.4* |
| 58 Lynn Valley..... | 7 | 11 | 18 | 16.9* |
| 59 Lucky Horseshoe..... | 1 | 0 | 1 | 20.5 |
| 60 Maple Leaf..... | 5 | 5 | 10 | 16.9* |

* Mean.

| Brand. | 1912. | 1916. | Total. | Solids (ounces.) |
|--------------------------------|-------|-------|--------|---------------------|
| 61 Meadow Sweet..... | 1 | 0 | 1 | 19.7 |
| 62 Milden..... | 1 | 0 | 1 | 20.4 |
| 63 Monarch..... | 0 | 1 | 1 | 16.0 |
| 64 Northern..... | 0 | 2 | 2 | 15.2 |
| 65 No Vary..... | 0 | 2 | 2 | 17.7* |
| 66 Old Arm Chair..... | 0 | 5 | 5 | 14.0* |
| 67 Old Church..... | 0 | 1 | 1 | 16.3 |
| 68 Old Homestead..... | 5 | 2 | 7 | 17.5* |
| 69 Old Mill..... | 0 | 1 | 1 | 16.0 |
| 70 Old Oak..... | 0 | 1 | 1 | 15.2 |
| 71 Old Orchard..... | 0 | 4 | 4 | 17.5* |
| 72 Old Scout..... | 2 | 0 | 2 | 17.8 |
| 73 Orchard City..... | 1 | 2 | 3 | 16.6* |
| 74 Oxford Choice..... | 0 | 1 | 1 | 16.3 |
| 75 Parliament..... | 9 | 2 | 2 | 12.8* |
| 76 Peerless..... | 2 | 0 | 2 | 18.0 |
| 77 Pelham..... | 1 | 1 | 2 | 18.1* |
| 78 Perfection..... | 0 | 1 | 1 | 15.0 |
| 79 Pointer..... | 1 | 0 | 1 | 19.0 |
| 80 Prairie..... | 5 | 0 | 5 | 19.3* |
| 81 Pride of Golden Hill..... | 1 | 0 | 1 | 19.2 |
| 82 Pride of Niagara Falls..... | 0 | 1 | 1 | 17.0 |
| 83 Primus..... | 0 | 1 | 1 | 13.5 |
| 84 Prince Edward Pride..... | 4 | 1 | 5 | 18.3* |
| 85 Princess..... | 1 | 1 | 2 | 17.7* |
| 86 Prosperity..... | 0 | 1 | 1 | 15.2 |
| 87 Prospectors..... | 0 | 6 | 6 | 15.0* |
| 88 Pure Food..... | 1 | 0 | 1 | 22.3 |
| 89 Puritan..... | 1 | 1 | 2 | 18.6* |
| 90 Quaker..... | 3 | 3 | 6 | 17.1* |
| 91 Queen..... | 0 | 1 | 1 | 15.5 |
| 92 Red Feather..... | 0 | 1 | 1 | 14.5 |
| 93 Riverside..... | 0 | 2 | 2 | 17.0* |
| 94 Rose Hill..... | 1 | 0 | 1 | 17.9 |
| 95 Royal..... | 1 | 0 | 1 | 15.5 |
| 96 Sanitary..... | 2 | 0 | 2 | 17.3* |
| 97 Shield..... | 2 | 0 | 2 | 17.1* |
| 98 Standard of Empire..... | 0 | 1 | 1 | 14.2 |
| 99 Star..... | 1 | 0 | 1 | 19.6 |
| 100 St. Lawrence..... | 0 | 2 | 2 | 14.5* |
| 101 Sunset..... | 1 | 1 | 2 | 19.1* |
| 102 Swiss Bell..... | 0 | 2 | 2 | 15.7* |
| 103 Tartan..... | 2 | 1 | 3 | 15.7* |
| 104 Tauru..... | 0 | 1 | 1 | 20.0 |
| 105 Tecumseh..... | 5 | 0 | 5 | 17.9* |
| 106 Thistle..... | 2 | 3 | 5 | 16.0* |
| 107 Three Stars..... | 1 | 0 | 1 | 16.5 |
| 108 Triangle..... | 0 | 1 | 1 | 13.5 |
| 109 Union..... | 3 | 0 | 3 | 20.8 |
| 110 Vallee de Richelieu..... | 0 | 1 | 1 | 14.5 |
| 111 Victoria..... | 0 | 1 | 1 | 14.0 |
| 112 Vine..... | 2 | 6 | 8 | 17.4* |
| 113 Vulcan..... | 0 | 1 | 1 | 13.5 |
| 114 White Rose..... | 0 | 1 | 1 | 13.5 |

* Mean.

In many of the 114 brands reported in Table IV, where more than a single sample has been examined, great variability in the quantity of solids has been observed. I have selected a few of the brands—those in which at least six samples have been examined—in illustration of this variability.

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TABLE V.

| Name of Brand. | Total samples. | Solids (ounces). | | |
|---------------------|----------------|------------------|----------|-------|
| | | Maximum. | Minimum. | Mean. |
| Canada First | 7 | 16.5 | 15.3 | 15.9 |
| Crusader | 7 | 17.5 | 13.7 | 15.4 |
| Gazelle | 6 | 20.2 | 15.3 | 16.6 |
| Lion | 15 | 18.1 | 12.0 | 14.5 |
| Little Chief | 29 | 22.0 | 11.2 | 15.4 |
| Log Cabin | 6 | 16.0 | 14.5 | 15.4 |
| Lynn Valley | 18 | 23.2 | 14.2 | 16.9 |
| Maple Leaf | 10 | 24.3 | 12.3 | 16.9 |
| Old Homestead | 7 | 20.8 | 15.0 | 17.5 |
| Prospectors | 6 | 17.2 | 14.6 | 15.0 |
| Quaker | 6 | 19.0 | 15.0 | 17.1 |
| Vine | 8 | 22.5 | 14.0 | 17.4 |

The extremely large variation in amount of fruit solids contained in tins of similar size, and similar selling value, is noteworthy. If such differences are necessitated by the nature of the process of packing tomatoes, then surely there is great room for improvement in this art.

In Bulletin No. 246 I ventured to recommend that a minimum weight of fruit solids should be legalized for each size of can, and suggested the following:

| | | |
|--------------------------|------|---------|
| For large size cans..... | 20 | ounces. |
| “ medium “ “ | 17 | “ |
| “ small “ “ | 12.5 | “ |

It will be seen from Table V, that the suggested maximum for large sized tins is reached by six brands only, and this only as an exception; the mean contents for these six brands being 16.6; 15.4; 16.9; 16.9; 17.5; 17.4 ounces. It may be that the suggested minimum was too high.

The whole subject demands further consideration; and it is in the belief that the facts now recorded may be helpful in enabling a just conclusion to be reached that I, would respectfully advise publication of this report as Bulletin No. 357.

BULLETIN No. 358—CASSIA.

OTTAWA, December 6, 1916.

SIR,—I beg to hand you a report upon 143 samples purchased throughout Canada by our inspectors, as Cassia.

This spice, which finds extensive sale in Canada, has never been legally defined in such a way as to fix limiting values, and to enable us to declare its genuineness or otherwise.

Cassia closely resembles the spice known as Cinnamon, and indeed may be regarded as indistinguishable from the latter, so far as retail spice trade is concerned.

Cinnamon and Cassia are the dry barks of trees which belong to the same botanic genus, Cinnamomum. Cinnamon is the bark of *C. Zeylanicum*, chiefly grown in Ceylon and the East Indies; Cassia is the bark of *C. Cassia*, chiefly grown in China

and India. The former bark is thinner, lighter in colour and exists (commercially) in smaller rolls than Cassia bark. It is sufficiently easy to distinguish the two articles, in the unground state; and there is a considerable difference in price between whole cinnamon and whole cassia. The botanical elements of the two are, however, practically identical; and, in the finely ground state, it becomes a difficult, if not an impossible thing, to discriminate between them. The darker colour of Cassia is almost the only distinctive character that remains.

Whether cassia is inferior to cinnamon for flavouring purposes, in cookery, is an open question. The general impression is that cinnamon is preferable. Its higher price is doubtless due to this preference. At the same time it is certain that much, if not most, of the ground cinnamon of commerce, is really ground cassia.

Several grinders distinctly label their goods with the word Cassia; and it is probable that the same spicemen put on the market a higher priced article under the name Cinnamon; but of this I have no conclusive proof. It is however quite certain that the spice in question is known to most domestic users as Cinnamon; while the term Cassia conveys a very vague meaning, or no meaning whatever. Throughout Quebec the article is known as Canelle, which means cinnamon as distinguished from cassia, to which belongs the term Casse, seldom mentioned except as a drug.

From an interesting paper on the subject, by H. E. Sindall, Chemist to the Meikel and Smith Spice Co. of Philadelphia (*Journal Industrial and Engineering Chemistry*, 1912, 590) it appears that the classification of the article as Cinnamon or Cassia in commerce depends as much upon its source as upon its chemical or physical properties.

The British Pharmacopoeia defines Cinnamon bark (*Cinnamomi cortex*) which is required to be free from cork or woody tissues, and to contain not more than 5 per cent ash; but Cassia is not defined by the pharmacopoeias.

So far as our experience goes, true Cinnamon, in the restricted sense, is but little if at all employed as a spice, in the ground condition.

Under these circumstances, it will be seen that a discrimination between cinnamon and cassia, as spices, is difficult to maintain. It is open to question how far we may take the darker colour of cassia, as evidence of its presence.

The difficulty of distinguishing between cinnamon and cassia, in the ground state, is recognized by the Committee of Standards at Washington, as shown by the following definitions proclaimed as legal for the United States in June, 1906.

Cinnamon is the dried bark of any species of the genus *Cinnamomum*, from which the outer layers may or may not have been removed.

True Cinnamon is the dried inner bark of *Cinnamomum Zeylanicum*, Breyne.

Cassia, is the dried bark of various species of *Cinnamomum*, other than *Cinnamomum Zeylanicum*, from which the outer layers may or may not have been removed.

Cassia buds are the dried, immature fruit of species of *Cinnamomum*.

Ground Cinnamon, Ground Cassia, is a powder consisting of Cinnamon, Cassia or Cassia buds, or a mixture of these species and contains not more than six (6) per cent of total ash, and not more than two (2) per cent of sand.

It will be noted that ground Cinnamon and ground Cassia are virtually recognized as identical; and this is in accord with actual experience.

The flavour of true Cinnamon is usually understood to be somewhat more delicate than that of Cassia; but on careful examination of the matter I am of opinion that the distinction has no value for purposes of a definition.

According to accessible literature, the article shipped as Cassia from China, Ceylon, Batavia and other sources, varies greatly in cleanliness; and it would seem that determination of the ash furnishes the most valuable datum in this regard. The total ash in a large number of samples reported by Sindall (*Journal Industrial and Eng. Chemistry* 1912, 590), representing extensive importations for the years 1908 to 1911, varied from about 3 per cent to about 13 per cent. The last quoted figure is however quite exceptional, and very few samples exceeded 7 per cent.

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Six per cent appears to be a very reasonable maximum figure for a good article; and I have noted "ash excessive" in samples now reported, wherever the total ash exceeds 6 per cent or the insoluble ash (sand) exceeds 2 per cent.

Twenty two (22) samples show ash in excess of the suggested standard.

BULLETIN No. 359—TEA.

OTTAWA, December 30, 1916.

SIR,—I have the honour to submit herewith a report upon the examination of 250 samples purchased as tea. These samples represent the article as sold at retail, throughout Canada, and were purchased by the Food Inspectors of this department between April and July of the present year.

Advantage has been taken of this opportunity to make an exhaustive study of methods variously employed in ascertaining the extractive matters of tea. The importance and indeed the necessity of this investigation will be evident from the following résumé of correspondence, etc. in the matter.

The first systematic inspection of tea, under the Adulteration Act, was made in 1891, and is reported in Bulletin No. 24 of this department.

The work recorded in this report was done upon 58 samples of tea, examined by the late Professor E. B. Kenrick of Winnipeg. Professor Kenrick determined the extractive matter by what he called the Domestic Method, which he thus describes: "100 parts of boiling water are poured on 1 part of tea, and the infusion poured off at the end of 10 minutes."

His results are summarized as follows:

| NATURE OF THE TEA. | TOTAL EXTRACTIVE. |
|--------------------------|-------------------|
| Congou. | 23·37 per cent. |
| Unelassed Black. | 23·76 " |
| Average. | 23·56 " |
| | |
| NATURE OF THE TEA. | TOTAL EXTRACTIVE. |
| Gunpowders. | 28·55 per cent. |
| Young Hysons. | 34·22 " |
| Average. | 31·38 " |

The Adulteration Act, Section 26, provides that the Governor in Council shall, from time to time, establish standards of quality, and fix the limits of variability permissible in any article of food.

No action has, up to this time, been taken in regard to tea, by the Department of Inland Revenue, and no standard is legally fixed under the Act named.

An Order in Council, dated 11th September, 1894, published by the Department of Customs, and apparently initiated by the Commissioner of Customs, contains the following regulations in regard to tea.

"Tea shall be considered as adulterated which contains leaves other than those of the tea-plant; or previously infused leaves or leaves of inferior quality to such an extent as to reduce the amount of extract or substances soluble in hot water to less than thirty per cent, or cause the proportion of ash soluble in hot water to be less than two and three-quarters per cent; or any admixture of chemicals or other deleterious

substances, or such an amount of mineral matter as will cause the amount of ash to exceed eight per cent reckoned on the sample dried at 100° C."

Since 1891, when Prof. Kenrick's work was published, systematic inspections of tea have been made by this department as follows:—

| | | | | |
|----------------|-----|--------------|--------------|-----|
| 1904.. | 73 | samples.—See | Bulletin No. | 99 |
| 1906.. | 89 | " | " | 130 |
| 1909.. | 222 | " | " | 183 |
| 1913.. | 149 | " | " | 287 |

In the case of the inspection of 1913, I found myself justified in saying: "On the whole, this report may be taken to prove that there is no noteworthy adulteration of tea in Canada."

That such a state of things exists, must be largely credited to the care given by the Department of Customs, to control of importations. Instructions to Collectors of Customs were issued by the Commissioner in April 1895 (Memo. 740 B) and again in March, 1899 (Memo. No. 1035 B). The following Memo. No. 1414 B, at present governs in the matter.

No. 1414 B.

MEMORANDUM.

DEPARTMENT OF CUSTOMS, CANADA,
OTTAWA, May 31, 1907.

To Collectors of Customs:

PROHIBITION OF ADULTERATED TEAS.

The following instructions are substituted for Section 2 of Memo. No. 1035 B. of 1st March, 1899, concerning the Prohibition of Adulterated Teas:

2. Representative samples of the following classes of Imported Teas, when entered for consumption shall be sent to the Department of Customs at Ottawa to be tested, before such teas shall be released by the Collectors, viz:—

(a) Representative samples of all teas from the United States not accompanied by Customs certificates of fitness for consumption in the United States.

(b) Representative samples of all tea dust.

(c) Representative samples of all teas costing twenty cents per pound or less in the country of growth, or costing when landed in Canada twenty-two cents per pound or less.

(d) Representative samples of all teas shipped on *consignment*.

Collectors may permit imported teas to be removed to the importers' warehouses pending test, subject to Custom control until released as fit for consumption.

JOHN MCDUGALD,
Commissioner of Customs.

Mailed to Outports.

In a still earlier report (see Bulletin 130, p. 3) my predecessor in office made the following statement:

"On the whole it has to be stated that there is no evidence of adulteration to be found in the samples collected, although there are no doubt great variations as regards quality. This favourable showing is to be expected in view of the fact that the following clause under "Prohibited Goods" still forms part of the Customs Tariff: "1205. Tea adulterated with spurious leaf or with exhausted leaves, or containing so great an admixture of chemicals or other deleterious substances as to make it unfit for use. Nevertheless it is necessary that great care should be exercised in the inspection of teas as they arrive at the ports of entry, because, according to the report of the Prin-

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perial Chemist of Great Britain for the year ended March 31, 1906 (page 7), of the 2,917 samples (of tea) examined 259 were reported against, chiefly on account of the presence of foreign substances. It is not impossible that some of these rejected lots might find their way to Canada."

The Order in Council of 11th September, 1894 establishes the following limit numbers for tea:—

1. *Ash*—must not exceed 8 per cent by weight on the dry tea.
2. *Water Soluble Ash*—must not be less than 2.75 per cent.
3. *Extractive Matter*—must not be less than 30 per cent of the weight of the tea.

In my report of 1909 (Bulletin No. 183) I drew attention to the fact that variations in the method of working for determination of extractive matter result in great differences in the amount of extractive.

Thus, 157 samples out of 222 reported, yielded 30 per cent of extractive when treated as follows:—

To 5 grammes of the sample, ground to a tolerable degree of fineness, 200cc. of water is added, and boiled on a sand bath, in a glass flask for two hours. It is then thrown on a filter, and the residue washed 3 times with warm water. The filtrate and washings are made up to 250cc. and an aliquot portion is evaporated to dryness at 100° C.

Of 50 samples which failed to reach the standard limit of 30 per cent 31 were black teas, and 19 were green teas. It has been abundantly demonstrated that the average extractive matter in green teas is distinctly higher than in black teas, when the same method of working is employed.

Quite the most important feature of this report is the proof that changes in the method of determining extractive matter in tea so greatly affect results, that the fixing of a legal minimum of 30 per cent has no practical meaning unless the method of working for extractive is carefully defined. Four samples of tea, which yielded less than 30 per cent of extractive matter, when treated as above described, gave greatly increased yields on continued boiling.

| Sample. | Extractive for 2 hours. | Extractive on longer boiling. |
|---------|-------------------------|-------------------------------|
| 1..... | 23.52 | 34.74 |
| 2..... | 23.68 | 26.04 |
| 3..... | 22.56 | 32.69 |
| 4..... | 21.72 | 25.30 |

There can be no doubt that continuous boiling effects change in the celluloses of the tea-leaf, producing soluble bodies of the nature of pectins; and that this action goes on indefinitely; or at least for such a length of time as to make a sharply defined end point to continued solution impracticable. I pointed out the necessity of including in any definition of tea involving a minimum extractive, a description of the mode of making the extraction.

One of the largest English producers and importers of tea addressed the Secretary of the London Chamber of Commerce, under date, 20th October, 1909, as follows:—

"Dear Sir,—We should be obliged if you would call the attention of General Laurie, —Chairman of the Canadian Trade Section of the Chamber of Commerce—to Bulletin No. 183 of the Laboratory of the Inland Revenue Department, Ottawa, which contains a report by Mr. A. McGill (Chief Analyst) to the Deputy Minister of Inland Revenue on 222 samples of tea.

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The wording of the report shows that he is dissatisfied with the method laid down by the Order in Council of 11th September 1894 for determining a method of analysis.

The Order in Council referred to fixed 30% as a minimum of extractive matter, without, however, defining the method by which the extractive should be made, and the Chief Analyst points out that differences in method of extraction show different results, and suggests that in consequence, there is a difficulty in deciding as to the quality of the tea. He expresses the opinion that the Order in Council should be definite in stating the exact method which the analyst should employ in order to arrive at the percentage of extractive.

This is a matter of the greatest importance to ourselves and to all firms who import tea into Canada, and at this stage we desire to express the opinion that there is no better method, or one that works more satisfactorily than that employed by H. M. Customs and which is not, we understand, governed by rigid methods. It is moreover so extremely technical that we are not capable of precisely indicating it. We may say, however, that the question of the prevention of the importation into this country of tea of very poor quality with a view to excluding all teas of a character detrimental to health or in any way adulterated was as lately as 1905 under the consideration of the then Chancellor of the Exchequer, H. M. Customs, and the London Tea Trade, and the view expressed was that the adoption of arbitrary standards based either on the chemical analysis of the product or on a definite size and make of leaf was unadvisable and tended to hamper trading conditions. This opinion was based on the personal experience of several members of the trade who had had experience of the working in the United States of America and in the Australian Commonwealth, of laws designed to exclude inferior teas; and they were, in consequence, able to point out that the adoption of arbitrary standards led to such grave dissatisfaction, that such standards had to be modified by the very experts responsible for adopting them, so as not to unduly hamper trading conditions.

There can be no doubt that the object to be attained is the provision of real protection both to the importer and to the consumer of tea—and we desire respectfully to suggest that if the Canadian Government would put themselves into communication with the London Customs Authorities and arrange for an exchange of ideas on the subject, it might be found that the method adopted by H. M. Customs in London is less complicated and more reliable than the system at present adopted by the Canadian Authorities, or any amendment of that system, such as indicated as desirable by the Chief Analyst. Indeed, we understand that the Australian Government at one time employed method similar to that now used by the Canadian Government, and abandoned it in favour of the method employed by H. M. Customs in London.

We know from previous experience the prompt attention which is paid by the Government of Canada to any representations which are endorsed by General Laurie, and for this reason we venture to ask for his valuable assistance in conveying to the Dominion Government our earnest desire that the suggestion indicated above, may receive the early and sympathetic consideration of the Deputy Minister of Inland Revenue."

In reply to enquiry as to methods in use by the London Custom House, I received the following letter from the Secretary:

CUSTOM HOUSE, LONDON, E.C.,
6th December, 1909.

SIR,—In reply to your letter of the 9th ultimo, addressed to the Right Honourable the Chancellor of the Exchequer, I am directed by the Board of Customs and Excise to inform you that the provisions governing the admission of tea into the United Kingdom are contained in the Sale of Food and Drugs Act, 1875 Sections 30 and 31, a copy of which is enclosed. It will be seen that there is no legal standard for the

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percentage of extractive matter, (or other constituent) of tea; consequently no official method for the estimation of the extractive matter is prescribed.

In the ordinary course of examination of tea, however, the amount of extractive is of course taken into account by the Government Analyst, and the method employed is essentially the same as that adopted in Canada, i.e. the determination of the *total* extractive by complete exhaustion of the tea, as distinguished from the "domestic" method of partial extraction of the soluble constituents by infusion for a few minutes only.

The satisfactory results attributed to the British system of examination are probably due to the absence of any fixed analytical standards and the consequent discretion allowed to the Analyst to deal with each sample on its individual merits.

I am, sir,
Your obedient servant,

W. G. LEWIS.

The Chief Analyst,
Inland Revenue Department,
317 Queen Street,
Ottawa, Canada.

The provisions of the Sale of Food and Drugs Act, 1875, to which reference is made in the above letter, are as follows:—

*Extract from the Sale of Food and Drugs Act, 1875.
38 and 39, Vict. Cap. 63.*

Tea to be examined by the Customs on importation. Sec. 30. From and after the first day of January one thousand eight hundred and seventy-six all tea imported as merchandise into and landed at any port in Great Britain or Ireland shall be subject to examination by persons to be appointed by the Commissioners of Customs, subject to the approval of the Treasury, for the inspection and analysis thereof, for which purpose samples may, when, deemed necessary by such inspectors be taken and with all convenient speed be examined by the analysts to be so appointed; and if upon such analysis the same shall be found to be mixed with other substances or exhausted tea, the same shall not be delivered unless with the sanction of the said commissioners and on such terms and conditions as they shall see fit to direct, either for home consumption or for use as ships stores or for exportation; but if on such inspection and analysis it shall appear that such tea is in the opinion of the analyst unfit for human food, the same shall be forfeited and destroyed or otherwise disposed of in such manner as the said commissioners may direct.

Interpretation of Act. Sec. 31. Tea to which the term "exhausted" is applied in this Act shall mean and include any tea which has been deprived of its proper quality strength, or virtue by steeping, infusion, decoction or other means.

An examination of Mr. Lewis' letter, and of Sections 30 and 31 of the Sale of Food and Drugs Act, will show that the methods adopted by the London Customs Authorities, and so highly approved by importers of tea only differ from our own methods, and those sanctioned by the Canadian Customs Authorities, by being less exactly defined. The closing sentence of Mr. Lewis' letter suggests that "The satisfactory results attributed to the British system of examination are probably due to the absence of any fixed analytical standards, and the consequent discretion allowed to the Analyst to deal with each sample on its individual merits."

I think it must be conceded that this is a highly unsatisfactory state of things, considered from the consumer's standpoint. It has been shown that the extractive matter obtainable from tea may vary, for the same sample to the extent of eleven per

cent depending upon the length of time, and other conditions, of the extraction. In the absence of a strictly defined method of working, determination of extractive has no value whatever, and the fixing of a minimum value, below which the tea shall be regarded as adulterated, means nothing at all as a protection to the consumer.

Under these circumstances, it seems to me that the following points demand investigation:—

1. Is it reasonable and proper to fix a minimum limit for extractive matter in tea?
2. Should such limit be fixed without regard to the class of tea examined?
3. Under what conditions of working should determination of extractive be made?
4. What other determinations possess value in deciding as to the character of tea?

1. The value of tea is so evidently dependent upon the amount and character of the substances which it yields to hot water, that the first question appears to answer itself. The soluble matters of tea are essentially caffeine, tannin, proteins, gum, dextrin, colouring matter, mineral matter, with minute amounts of other substances.

The sophistication of tea by partial extraction, and subsequent treatment of the leaves with gum, rolling and drying, was at one time a very common practice, and doubtless obtains to some extent at the present day. The extractive matters thus obtained can be profitably employed for preparation of the alkaloid. It is apparent that the simplest way of ascertaining whether or not a sample of tea contains considerable amounts of exhausted leaves, is by determination of the extractive.

2. I have already pointed out the fact that black teas generally yield decidedly lower extractive than green teas.

The amount of extractive is affected to a considerable extent by the quality of the tea, the locality where grown, and the care taken in its preparation for market. With these differences, we are not concerned; the object had in view by the Analyst is not the grading of the tea as first or second quality; but the determination of its specific genuineness.

The following amounts of total extractive in black and green teas, are recorded by the authors named:—

| Author. | Black. | Green. |
|--------------------------------|--------|--------|
| Hassal (average)..... | 33.85 | 41.20 |
| Slater "..... | 30.36 | 41.48 |
| Battershall (average)..... | 30.13 | 37.95 |
| Kenrick (domestic method)..... | 23.56 | 31.38 |
| Y. Kozai (Japan teas)..... | 47.23 | 53.74 |

While the above quoted results give speaking testimony to the need for adoption of an authoritative method for determining extractive, they prove conclusively that, no matter what method is used, black teas yield a decidedly lower extractive than green teas. This is quite in accord with our own experience.

It would seem unreasonable, on this account, to legalize the same standard for both classes of tea.

German standards for tea (*Deutsches Nahrungsmittelbuch*, 1909, p. 232) require at least 28 per cent extractive matter for green tea, and 24 per cent for black tea; and are the only standards known to me which recognize this difference of extractive in green and black teas.

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3. The method of working for determination of extractive matters in tea employed in these laboratories, has been the following:—

(a) To 5 grammes of the sample, ground to a tolerable degree of fineness, 200 cc of distilled water is added, and boiled on a sand bath in a glass flask for 2 hours. It is then thrown on a filter, and the residue washed 3 times with warm water. The filtrate and washings are made up to definite volume, and an aliquot portion is evaporated to dryness at 100° C.

The Krausch method of working, recommended by the A.O.A.C. Washington (see Bull. Bureau of Chemistry No. 107, revised, p. 147) is as follows:—

(b) Treat 20 grams of tea with 400cc. of water, and heat on a boiling water bath for 6 hours. Filter through a tared filter, wash with water until the filtrate measures 1000cc. Dry and weigh the residue. Determine the water soluble substance by difference.

This method is greatly modified in the latest revision of tentative standards (see Jour. A.O.A.C. Nov., 1916, p. 335) as follows:—

(c) To 2 grams of the original sample in a 500cc. Erlenmeyer flask add 200cc. of hot water and boil over a low flame for an hour. The flask should be closed with a rubber stopper through which passes a glass tube 18 inches long for a condenser. The loss from evaporation should be replaced from time to time by the addition of hot water. Filter through a tared filter and wash the residue until the filtrate measures 500cc. stirring the contents of the filter throughout the process to facilitate the filtering. Dry the filter paper and residue in the funnel in the steam oven until the excess of water is removed, transfer paper and contents to a tared weighing bottle and dry to constant weight at 100° C.

Allen (Organic Analysis, Vol. VI, 621) recommends the following:—

(d) 2 grams tea, in powder form, is boiled for 1 hour with 100cc. water. The liquid is filtered hot, and the residue again boiled with 50cc water and filtered. This process is repeated so long as any colouring matter continues to be extracted. Finally the decoction is made up to a definite volume and an aliquot portion is evaporated to dryness and weighed. As a check, the filter and contents are dried at 100° C. and the insoluble matters detached and weighed.

In all these methods, it is sought to obtain the total extractive matter. As I have already pointed out, there is a more or less considerable hydrolysis of the matters of the tea-leaf, with formation of soluble pectins, on continued boiling; and no definite end point is practically attainable. The same objection holds in the case of repeated extractions as recommended by Allen. A certain amount of colouring matter will be obtained from tea, on boiling with distilled water for an hour, even after many extractions. Wigner found in successive extractions of tea, powdered and boiled for one hour periods: (a) 22.90 (b) 8.17 (c) 3.75 (d) 1.75. Sum total, 36.57 per cent. But undoubtedly this figure could have been made 40 per cent or higher, by continued treatment of the same kind.

The methods which require filtration of the whole of the water employed in extraction are tedious, and frequently impracticable, owing to the clogging of the filter with gelatinous pectins. If a small filter be used, the operation is excessively tedious; if a large filter, there is possibility of considerable error in weighing.

The work herein tabulated comprises the results obtained by variously modifying the methods already described.

In 50 samples, representing collections in Nova Scotia, New Brunswick, Prince Edward Island and Quebec City, the method A is that described as (a) on page 13; method B is the Krausch method.

Mr. Forward remarks: "It was impossible to filter without heating, as some of the extractive precipitates out on cooling, and clogs the filter." He finds the first modi-

fication of the Krausch method impracticable. Duplicates by method A are consistently within 0.5 per cent if conditions of filtering are the same. Extractive by method A is uniformly higher than by method B.

Forty-nine samples representing various portions of Quebec province, were worked by Mr. Valin, who used 5 grammes of tea, ground to pass through a sieve of 20 meshes per inch, with 500cc. water.

The methods employed in determination of extractive as reported herein, are essentially those already described on page 13—Slight modifications adopted by the analysts are detailed below, the letters referring to those placed at the head of the columns giving extractive in the tables.

A.—5 grammes tea, powdered to pass $\frac{1}{4}$ inch mesh; 200cc. water; boiled 1 hour; filtered at 75° C.—(Forward).

B.—20 grammes; 400cc. water; heated 6 hours—Filtrate to 1000cc. Residue is weighed.

Filtration found impossible in some cases. Duplicates not closer than 2 per cent. (Forward.)

C.—5 grammes tea, powdered to pass sieve of 20 meshes per inch; 500cc. water; boiled 2 hours; cooled; made up to 500cc.; filtered 50cc.—dried and weighed. (Valin.)

D.—Same as above; but boiled one hour only. Mr. Valin found that the amount of extractive is dependent to some extent upon the volume of the solvent. Thus:—

| | Tea. | Boiled for | | | |
|-------------------------|---------|------------|--------|--------|--------|
| | | 1 hr. | 2 hrs. | 4 hrs. | 6 hrs. |
| Using 500 cc water..... | 5 grms. | 37.85 | 38.15 | 39.50 | 40.70 |
| | 2.5 " | ..... | 41.30 | 43.10 | 44.60 |
| | 1 " | 43.25 | ..... | ..... | ..... |

E.—Same as A but filtration at ordinary temperature of room. (Davidson.)

F.—Essentially Krausch method, and found unsatisfactory (Davidson).

G.—Krausch method, using 10 grams and 200cc. water, filtrate to 750cc.—washed with warm water.

G. (1) Krausch method—20 grms. 400cc. filtrate to 1000cc.—washed with cold water.

G. (2) As above, but 20 in 400cc.—filtrate to 1000cc.—washed with hot water. (Forster.)

Mr. Collier who worked by methods A and B says: "I have come to the conclusion that method A is by far the quickest and most reliable."

4. Determinations of moisture, tannin and caffeine are important, as serving to fix with exactness the character of a sample of tea. But these estimations cannot be regarded as of first importance in fixing the specific genuineness of the article. It is to be noted that this has no regard to the quality of tea, as dependent upon immaturity of the leaf, content of volatile oil, aroma, and other considerations which regulate market values. Tea selling at 25 cents per pound may be as truly genuine, in consisting wholly of the leaves of species of *Camellia*, as an article worth several dollars per pound.

For the purpose of ascertaining specific genuineness, it is usually sufficient to examine the botanical character of the leaf; while in order to detect exhaustion, facing, etc., it suffices to determine ash and extractive.

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For purposes of legal definition, it suffices to consider the following:—

1. Botanical character of leaf, bud and stalk.
2. Microscopic examination for "facing", etc.
3. Total ash per cent.
4. Water soluble ash per cent.
5. Extractive; as obtained by a strictly defined method.

As regards the samples (250 in number) of the present report:—

1. No leaves, other than those of the tea plant have been found.
2. No "facing" of the leaves is reported as having been verified by the microscope.
3. The total ash varies from 5 per cent to 7.68 per cent.

In greater detail:—

| | |
|-------------------------------------|-------------|
| From 5.00 to 5.50 per cent. | 43 samples. |
| " 5.50 " 6.00 " | 115 " |
| " 6.00 " 6.50 " | 70 " |
| " 6.50 " 7.00 " | 16 " |
| Above 7 per cent. | 4 " |

4. Water soluble Ash:—

| | |
|---------------------------|-------------|
| Above 4 per cent. | 17 samples. |
| " 3.5 " | 121 " |
| " 3.0 " | 97 " |
| " 2.5 " | 13 " |
| Below 2.5 " | none. |

5. Extractive.

On account of the variety of methods employed in determining extractive, it is impossible to summarize results.

It may be noted however, that the great majority of samples treated by method A, or its modifications, yield from 35 to 40 per cent extractive.

There is observed a difference of about 3 to 4 per cent between green and black teas, worked by this process.

The only samples yielding less than 30 per cent extractive, are the following:—

| | Ash. | | Extractive mean. |
|-----------------------------|--------|------------|------------------|
| | Total. | Soluble. ~ | |
| No. 56732 (black) | 6.33 | 2.57 | 24.46 |
| No. 4335 (black) | 6.40 | 2.60 | 25.70 |
| No. 67868 | 6.48 | 2.82 | 23.60 |
| No. 67347 | 6.30 | 2.72 | 24.80 |
| No. 73144 (black) | 6.64 | 3.28 | 26.19 |
| No. 73147 (black) | 5.80 | 3.10 | 26.49 |
| No. 72845 (black) | 5.80 | 2.66 | 24.22 |
| No. 71830 | 5.82 | 3.28 | 27.45 |

These are all very low grade teas; and, in the event of standards being established under Section 26 of the Adulteration Act, I have no doubt that they would be found adulterated.

The necessity of legalizing standards for tea is self-evident. Without them Canada is likely to become a dumping ground for tea unable to find a market elsewhere.

BULLETIN No. 360—BAKING POWDER.

OTTAWA, January 17, 1917.

SIR,—I beg to hand you a report upon 213 samples of Baking Powders, purchased by our inspectors during the period, June to August of last year.

This important food material has been made the subject of systematic inspection on five different occasions before the present; and was last reported in March 1915. (Bulletin No. 308.)

The main reason for the present report is the desire to establish a standard for available gas, below which amount the article shall be held illegal. Apart from considerations of the wholesomeness of the ingredients and the harmlessness of the residues left in the bread, it is evident that the gas-producing power of baking powder is its most important character. An article which has been so badly made, or which has so much deteriorated through prolonged keeping, as to be incapable of yielding a reasonable volume of gas, is necessarily disappointing to the baker, and, beyond fixed limits, which should be legally defined, must be regarded as fraudulent.

The generally accepted and what may be regarded as the normal baking powder is expected to yield from 12 to 13 per cent. of gas (weight) when freshly made. The nature of Cream Tartar, which was the original acid ingredient of baking powders, doubtless determined this figure, which has been so long, and so widely accepted that any considerable departure from it would be confusing to the baker. (Bull. 308, p. 4.) Although burnt alum and other acid components which have more recently come into use in baking powders, are capable of producing a much higher percentage of gas, they have usually been reduced in strength by addition of starch or other neutral material so as to conform to the strength of Cream of Tartar.

The nature of a mixture of bicarbonate of soda with any acid substance is such that gradual interaction of the components must occur on prolonged keeping; and unless kept very dry and cool, this interaction may be quite rapid, and must result in the loss of so considerable an amount of gas as to render the article valueless for baking purposes.

The States of Florida, North Dakota and, I believe, some others as well as the Government of Western Australia (Gazette, July 17, 1914) have fixed 10 per cent of gas as the minimum limit for a legal Baking Powder. The following tabulation of results obtained by this Department is of interest:

| Date of Inspection. | Number of Samples in which CO ₂ Determined. | Average Gas p.c. |
|---------------------|--|------------------|
| 1889.. | 149 | 8·17 |
| 1900.. | 156 | 9·89 |
| 1908.. | 158 | 10·24 |
| 1911.. | 150 | 11·00 |
| 1914.. | 251 | 11·31 |
| 1915.. | 195 | 11·91 |

The averages quoted include, of course, a certain number of samples whose content of gas fell short of 10 per cent; nevertheless the means found are well above this limit, and show continuous improvement in the quality of baking powder, from the point of view of gas production.

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Details of gas producing power for the last two inspections are of interest:

| Available Gas. | Inspection of | |
|----------------------------|---------------|-------|
| | 1915. | 1916. |
| Above 13 per cent. | 48 | 53 |
| “ 12 “ | 52 | 56 |
| “ 11 “ | 62 | 51 |
| “ 10 “ | 45 | 13 |
| “ 9 “ | 12 | 6 |
| “ 8 “ | 15 | 6 |
| “ 7 “ | 5 | 4 |
| “ 6 “ | 5 | 4 |
| Below 6 “ | 7 | 2 |
| Total | 251 | 195 |

It will be seen that 82 per cent. of the collection of 1915 and 83 per cent. of that of 1916, yielded more than 10 per cent. of gas. I am of opinion that 10 per cent. of available gas is a reasonable limit, below which a baking powder should be regarded as illegal.

It is however to be noted as important that a well defined method of working should be employed in estimating available gas. This is necessary because of the very difficult solubility of burnt alum, and because of the slow decomposition of bi-carbonate of soda at a boiling temperature, quite apart from the reaction of this salt with the acid ingredient of the powder. Bi-carbonate of soda is usually present in slight excess of the amount required to neutralize the free acid of the sample. Macara (Analyst, 1915, p. 272) has shown that this reaction, on sufficiently prolonged boiling, may go on until the sesqui-carbonate is formed; in other words, until 25 per cent. of the carbonic acid in bi-carbonate is driven off.

As already stated, the question of method has been especially studied, during the progress of the work herein reported. Three general types may be noted:

1st. Methods involving the absorption of liberated gas by soda-lime or by solution of potash (gravimetric.)

2nd. Methods involving the absorption of the gas in measured excess of soda or barium hydrate solutions, and subsequent titration of the excess of absorbent (volumetric.)

3rd. Collection of the evolved gas over saturated solution of common salt, and measurement at definite temperature and pressure (gasometric.)

The effect of prolonged boiling; ratio of weight of sample to volume of solvent, and other points, have also been studied.

As the result of our investigations the following method of determining available gas in Baking Powders is recommended.

From 1 to 2 grams of the sample is used; this is boiled with about 100cc. water for 10 minutes from the time when boiling begins; with aspiration of a slow current of air which carries the liberated gas through a series of U tubes, etc., arranged as follows:—

1. A short Liebig condenser, arranged so as to return the condensed steam to the boiling flask.

2. A U tube (or tower) containing pumice saturated with strong sulphuric acid.

3. A smaller U tube containing fragments of pumice saturated with strong sulphuric acid; or lumps of fused calcium chloride, which must be neutral.

4. A U tube containing soda-lime or Liebig bulbs containing 30 per cent. soda solution.

5. Duplicate of (4.)

6. A U tube like (3.)

7. Same as (6) and connected at exit end to an aspirator or suction pump.

(A T tube should be interposed between the exit end of number 7 and the suction. The third leg of the T tube carries a piece of rubber tubing and a pinch cock. The

suction may then be turned on full, and the rate of the air current regulated by the pinch cock.)

U tubes 3, 4, 5 and 6 are weighed. Number 3 should not materially gain weight, and serves to protect 4 and 5. The increase in weight should be almost entirely confined to No. 4. When No. 5 begins to show notable increase in weight, No. 4 should be freshly charged.

After 10 minutes boiling the heat is turned off, but aspiration is continued for 20 minutes longer.

The decomposition flask may be charged with the sample and the water added through a funnel tube reaching nearly to the bottom of the flask; or, more conveniently by first charging with water, and dropping in the sample, wrapped in tissue paper immediately replacing the rubber cork which carries the funnel tube and the exit tube.

The air aspirated through the apparatus may be freed from carbonic acid by a soda lime tube, above the funnel tube. This precaution is not usually necessary, the error due to atmospheric CO_2 being so small as to be negligible. It is also desirable to have an absorption bottle immediately before the suction tube in order to observe conveniently the rate of the air current. A negative pressure must be maintained during the whole operation; but the rate of flow of air should not exceed three bubbles per second.

The source of the leavening gas, is always bi-carbonate of soda. The acid component, by which the gas is liberated, is Tartaric acid, either free or as Cream of Tartar; Sulphuric acid, as one or other of the desiccated alums, (usually soda alum) or Phosphoric acid, employed as Acid phosphate of lime, or as acid phosphate of soda. Sometimes mixtures of these are found, and, very commonly, alum and acid phosphate of lime are found together.

I think it desirable that manufacturers of Baking Powder should be required to state, on the label, the acid component used. The consumer has a right to this information, as also has the physician. Although investigation by a Board of experts of recognized competency (see Bull. No. 103, Department of Agriculture, Washington; or, Bulletin No. 308 of the Inland Revenue Department, Ottawa, p. 6) has shown that "When aluminium compounds are mixed or packed with a food, the quality or strength of said food, has not been found to be thereby reduced, lowered, or injuriously affected," many physicians, and a very large number of laymen are far from convinced that the continuous use of alum is without harmful effect upon the health. Indeed the report above referred to contains the following: "Aluminium compounds when added to foods in the form of baking powders, usually provoke catharsis. This action of aluminium baking powders is due to the sodium sulphate which results from the reaction." The inhibitive effect of alum upon gastric digestion is well established (Bulletin No. 68, Inland Revenue Department) and the great insolubility of desiccated alum compels the inference that alum as such, remains in the bread, in all cases where an alum baking powder has been used.

ALBUMEN IN BAKING POWDERS.

The addition of albumen to a baking powder would evidently increase its value, provided that the amount of albumen added was at all considerable. As a matter of fact, albumen to the amount of about $\frac{15}{100}$ of 1 per cent. of the weight of the powder has been found in some baking powders. It is inconceivable that such an addition can have any appreciable value, as rendering the article superior in baking. It is contended that the true reason for this addition of albumen is found in the fact that, on adding water to such a powder, the increased viscosity causes a persistent froth to be formed, and thus furnishes the vendor with a means of demonstrating apparent superiority, in comparison with other powders, which do not contain albumen. Of course such a use of the article is plainly for purposes of fraud; and several States of the

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American Union have forbidden the addition of albumen to baking powders, because of the fraudulent use of what is called the "Cold Water test" or "Water glass test" and the fact that the amount of albumen is so small as to possess no tangible value. It is scarcely necessary to add that, albumen being in itself a desirable food product, we cannot under the Adulteration Act, forbid its addition to Baking Powders. No intelligent buyer will permit himself to be deceived by the water glass test; and should actual deception be practiced, anyone has recourse under the common law.

EGG-SUBSTITUTES.

These are, for the most part, merely baking powders, to which has been added wheat flour rich in gluten; casein, or other proteid matter, and a yellow dye. This last is used to simulate egg-yolk; and possibly to deceive the purchaser into a belief that egg is present in the article.

The Government of Western Australia has legislated as follows: "The word 'egg' and expressions or devices which imply or suggest the presence of egg, or the equivalent of egg, shall not be written on, or attached to any package which contains baking powder." Gazette, 17 July, 1914.

I regard this action as right and proper. The high price of eggs tempts the baker to purchase anything that promises to be a substitute; and in this way, an article of little cost and of less value, is able to secure sale at an exorbitant price. The artificial colouring of a so-called egg powder, so as to make it resemble egg-yolk, should be forbidden by law.

Another class of egg-substitutes, not containing gas producing components is found on the market. For the most part, these articles consist of casein, with flour, some fat and a little sugar, coloured with a yellow dye. Fancy names like Egg-o-let, sub-egg-o, etc., have been coined for some of them. In all such articles, a plain statement of composition should be required on the label; and the employment of a dye should be forbidden.

It is hoped that this report will supply data upon which to establish standards for Baking Powder under the sanction of Section 26 of the Adulteration Act.

BULLETIN No. 361—PREPARED MUSTARD.

OTTAWA, January 19, 1917.

SIR,—I beg to hand you a report upon 124 samples of so-called Prepared Mustard purchased by our inspectors during the period April to July of last year.

This inspection was ordered consequent upon representations made to the Department to the effect that adulteration of the article was largely practised by manufacturers who use starch, turmeric and pepper instead of mustard.

It must be noted here that standards for the article known as Prepared Mustard have not been legalized in Canada. We have found it impossible, up to the present, to define Mustard itself; due to conflicting evidence as regards charlock or so-called wild mustard. It is expected that standards regarding Mustard will shortly be submitted by your advisory Board.

Prepared Mustard clearly implies the presence of Mustard. What else it may imply, is not so clear.

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The name Mustard indicates that this spice was used originally as a condiment by mixing the seeds with unfermented wine (*Latin, Mustum*) and so-called *German Mustard* is to this day prepared with Rhine wine, or tarragon, vinegar, spices, etc., while *French Mustard* is prepared with salt, vinegar, spices, etc. (Webster's dictionary). It is quite apparent that so-called Prepared Mustard is merely a condiment, ready for use, and having Mustard as its most characteristic component. There are probably as many formulas for the preparation of the article, as there are manufacturers of it.

It would, of course, be possible to forbid the use of certain substances in the manufacture of prepared mustard; or even to legalize a fixed formula for the article. Unless, however, the forbidden articles were shown to be unwholesome, or added for purposes of fraud, such interference with trade, would, in my opinion, be entirely foreign to the intention of the Adulteration Act. So long as only sound materials of a wholesome kind are employed; and mustard is used as the chief ingredient, I think that a free hand should be given to manufacturers. Competition, and the discrimination of the public, must decide the question of superiority.

As in the case of all foods, it must be understood that no false claims appear on the label. It would seem reasonable to expect an honourable rivalry among manufacturers for the production of the most satisfactory condiment, having mustard as a base; the crux of the claim being not so much that the article is prepared mustard, as that it is Brown's, Jones' or Robertson's prepared mustard.

Tentative Standards, published as Circular 19, June 26, 1906, by the Department of Agriculture, Washington, define *Prepared Mustard* as follows:—

“Prepared mustard, German mustard, French mustard, mustard paste, is a paste composed of a mixture of ground mustard seed or mustard flour with salt spices and vinegar, and calculated free from water, fat and salt, contains not more than 24 per cent of carbohydrates calculated as starch, determined according to the official methods; not more than 12 per cent of crude fibre nor less than 35 per cent of protein, derived solely from the materials named.”

The total proteids of mustard flour may be taken as about 30 per cent. (Allen Org. Analysis, 4th edition, vii, 107). Based on this figure, the above requirements for Prepared Mustard demand that the whole of the dry material of prepared mustard free from fat and salt, shall consist of mustard flour, or equivalent protein containing spice, thus excluding starch altogether. It is therefore difficult to see why any mention of carbohydrates is made.

I am not aware of any decisions by the Courts which establish the validity of the above standard. A case is reported (U.S.A. Notice of Judgment, No. 1552) in which misbranding was alleged because wild mustard (charlock) was substituted for the usual product, and turmeric was present without declaration on the label. A verdict of not guilty was rendered.

The question of recognizing charlock as a condimental mustard cannot be considered here. It will be discussed in our next report upon mustard.

An interesting paper by Barnard & Bishop, dealing with Prepared Mustard was read before the American Association of Food, Dairy and Drug Officials at Seattle in 1912. Of 32 samples analysed 17 failed to meet the requirements of the above suggested standard, 10 contained excess carbohydrates, 2 an excess of crude fibre, and 4 samples were too low in protein.

The authors suggest a minimum of 15 per cent solids, exclusive of salt, as a desirable additional requirement, thus preventing “infinite dilution” of the article. It seems to me undesirable that our standards should take into account any constants

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regarding which the ordinary consumer is as well informed, and as competent to judge, as the analyst, and it is open to question whether this is not the case with the degree of dilution of a prepared mustard.

Forty-four samples herein reported have been examined in such a way as to enable me to state the percentage of solids, other than salt and fat. These show as follows:—

| No. | Solids (less salt and fat). | Starch. | Difference (mustard). | Salt. | Fat. | Carbohydrates p.c. on solids, less salt and fat. |
|--------|-----------------------------------|---------|--------------------------|-------|------|---|
| 54294 | 23.58 | 12.60 | 10.98 | 0.23 | 0.79 | 53.4 |
| 69495 | 23.23 | 11.86 | 11.37 | 0.30 | 1.05 | 50.3 |
| +69445 | 18.85 | 10.93 | 7.92 | 0.56 | 3.59 | 58.0 |
| 71869 | 11.85 | 2.32 | 9.53 | 2.67 | 3.76 | 19.5 |
| *69441 | 18.04 | 9.80 | 8.24 | 1.33 | 1.28 | 54.2 |
| 52457 | 8.88 | 1.61 | 7.27 | 2.74 | 0.92 | 18.1 |
| 71579 | 8.06 | 1.61 | 6.45 | 2.72 | 1.64 | 19.9 |
| 71842 | 8.86 | 2.25 | 6.61 | 1.74 | 2.10 | 25.4 |
| 69493 | 8.71 | 2.07 | 6.64 | 3.21 | 1.16 | 23.8 |
| 69492 | 8.58 | 2.23 | 6.35 | 3.40 | 1.10 | 25.9 |
| 73222 | 8.44 | 1.81 | 6.63 | 1.61 | 1.61 | 21.4 |
| 69443 | 7.09 | 1.61 | 5.48 | 2.46 | 1.65 | 22.7 |
| 52460 | 15.37 | 7.03 | 8.34 | 2.31 | 1.94 | 45.7 |
| 52459 | 14.36 | 7.18 | 7.18 | 2.26 | 4.00 | 50.0 |
| 71841 | 14.33 | 2.81 | 11.52 | 2.97 | 5.66 | 19.6 |
| 54292 | 14.37 | 2.82 | 11.55 | 1.52 | 7.39 | 19.6 |
| 73226 | 13.79 | 2.70 | 11.09 | 2.50 | 6.66 | 19.5 |
| 69491 | 13.12 | 2.61 | 10.51 | 2.27 | 6.59 | 19.8 |
| 52461 | 13.89 | 3.20 | 10.69 | 2.72 | 7.34 | 23.0 |
| 69494 | 13.55 | 2.49 | 11.06 | 1.42 | 1.23 | 18.3 |
| 52458 | 12.96 | 2.36 | 10.60 | 3.42 | 6.22 | 18.2 |
| 4974 | 12.60 | 4.55 | 8.05 | 1.75 | 2.17 | 36.1 |
| 71840 | 11.00 | 2.24 | 8.76 | 3.16 | 3.74 | 20.5 |
| 56741 | 12.17 | 3.66 | 8.51 | 1.68 | 3.66 | 30.0 |
| 56743 | 11.86 | 3.85 | 8.01 | 1.85 | 4.00 | 32.4 |
| 54295 | 11.89 | 2.81 | 9.08 | 1.08 | 4.95 | 23.6 |
| 54291 | 10.77 | 2.29 | 8.48 | 1.01 | 1.64 | 21.3 |
| 54293 | 10.38 | 2.39 | 7.99 | 0.09 | 2.69 | 25.0 |
| 71571 | 10.70 | 2.32 | 8.38 | 0.82 | 3.26 | 21.6 |
| 73225 | 9.05 | 0.24 | 8.81 | 1.47 | 1.60 | 2.6 |
| 73223 | 10.28 | 2.29 | 7.99 | 1.42 | 2.12 | 22.2 |
| 73224 | 9.81 | 2.00 | 7.81 | 1.94 | 2.42 | 20.3 |
| 4969 | 9.49 | 2.44 | 7.05 | 0.77 | 1.90 | 25.7 |
| 69441 | 10.84 | 2.43 | 8.41 | 0.98 | 1.42 | 22.4 |
| 71592 | 10.77 | 2.67 | 8.10 | 2.35 | 2.72 | 24.7 |
| 4960 | 9.81 | 2.23 | 7.58 | 2.86 | 3.26 | 22.7 |
| 69442 | 5.55 | 2.04 | 3.51 | 2.27 | 0.58 | 36.7 |
| 71838 | 9.33 | 1.94 | 7.39 | 2.15 | 1.26 | 20.7 |
| 71574 | 7.59 | 1.49 | 6.10 | 0.65 | 1.06 | 19.6 |
| 71594 | 8.48 | 1.91 | 6.57 | 2.12 | 3.22 | 22.5 |
| 56745 | 8.61 | 1.89 | 6.72 | 1.80 | 2.12 | 21.9 |
| 56744 | 7.97 | 1.89 | 6.08 | 2.20 | 1.88 | 23.7 |
| 4978 | 7.80 | 2.01 | 5.79 | 1.82 | 2.19 | 25.7 |
| 56742 | 10.86 | 3.31 | 7.55 | 1.80 | 3.49 | 30.4 |

+ Sold as mustard cream.

* Sold as salad dressing.

Examination of the above shows that manufacturers differ among themselves as to composition of a satisfactory prepared mustard. No harmful ingredients have been found in any of these samples; and I have no doubt that, as in the case of condimentary sauces, some preparations appeal to one section of the public, and some to another. An article which finds no favour with the public, will cease to be manufactured. Within the limits above named the public must judge for itself among the many varieties of Prepared Mustard offered.

Except by insisting that preparations advertised as containing mustard shall actually contain this article I do not see that any regulations or restrictions governing the matter can be justified.

BULLETIN No. 362—GASOLINE.

OTTAWA, January 23, 1917.

SIR,—The matter of inspection of gasoline has been repeatedly brought before the Department in recent years. I would specially refer to your Files of the following numbers:—

| | |
|--------------------|------------------------|
| January 8, 1914. | L. 112657 of F. 105594 |
| April 27, 1914. | L. 116577 of F. 106155 |
| October 23, 1915 | L. 135806 |
| November 16, 1915. | L. 136753 |
| April 17, 1916. | L. 143678 |
| May 15, 1916. | L. 145057 of F. 110804 |

In reply to L 135806 I furnished you with a memorandum dated October 28, 1915, in which I supplied general information upon the subject of gasoline that may be quoted here as an introduction to the matter of this report.

Gasoline.—I have examined, so far as possible, the history of this term, and of the article signified by it, since the year 1880, when I find it used by *Arthur Burgman* in his work on "*Petroleum und Erdwachs*." He gives the density as from 0.6667 to 0.6829, and does not quote any limits for boiling points.

Prof. Hans Hofer (1888) in "*Das Erdöl*" quotes density from 0.640 to 0.667, and B.P. from 70° to 80°C (=158° to 176° Fah.)

Dr. Alex. Veith (1892) in "*Das Erdöl*," gives the terms gasoline, canadol and petroleum benzine for a product of density 0.660 to 0.680, and B.P. from 50° to 70° C. (=122° to 158° Fah.)

Dr. W. Scheithauer, (1895), in "*Fabrikation der Mineralöle*," quotes naphtha from Shale as of density 0.700 to 0.715, and calls it raw gasoline; from this, a gasoline of density 0.640 to 0.660 is obtained by rectification.

The above are German sources of information. Further, and fairly complete details as regards petroleum generally, are obtained from Redwood's comprehensive work "*Petroleum*," 2 vols., 1906; and from Tinkler and Challenger's "*Chemistry of Petroleum*," 1915.

From the first named it appears that the fractions of crude oil (petroleum) which distil below the minimum temperature fixed for a product (Kerosene, coal oil, etc.) available for use in lamps having a wick, and very generally employed in domestic lighting, have been classed as gasolife, without any definite discrimination, for the most part.

In the early history of the refining of crude oil, these fractions had little commercial value, and were either rejected or used to furnish fuel for the stills. The minimum limit for safe burning oil is very different for different countries, and at different times. The so-called "flash test" is merely a simple way of ascertaining the boiling point of the lowest (most volatile) component of a mineral oil; and the test is made either *open* or *closed*; the latter method requiring the use of the Abel apparatus, or some similar one, the former being made in an open, saucer-shaped dish. It goes without saying that the closed test is to be preferred, wherever practicable. The so-called *fire-test* is sometimes applied, and aims at determination of the temperature at which the oil, once lighted in the open, continues to burn.

Redwood quotes the minimum limit for a great many European and American ports of entry, and it ranges variously from 70° Fah. to 110° Fah. For Canada it is 55° Fah.

Tinkler and Challenger quote the following trade names for fractions which older classifications recognize as *gasoline*, or did not accurately define at all.

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Benzine.—A fraction having B.P. 70° to 120° C. ($=158^{\circ}$ to 248° Fah.) chiefly Heptane.

Benzoline.—The more volatile portion obtained on redistilling benzine; B.P. about 70° to 95° C. ($=158^{\circ}$ to 203° Fah.)

Gasoline.—That fraction of B.P. 40° to 70° C. (104° to 158° Fah.) obtained in the refining of Pennsylvania oil. Consists largely of pentane and hexane.

Motor spirit.—The saturated aliphatic hydrocarbons of American oil; the polymethylenes from baku oil, or the saturated hydrocarbons derived from shale oil, as well as benzine (C_6H_6) and alcohol (C_2H_5OH) are employed in internal combustion engines. The boiling points are usually below 120° C. ($=240^{\circ}$ Fah.).

Naphtha.—The less volatile portion obtained on redistilling benzine. Boils from about 95° to 120° C. ($=203^{\circ}$ to 248° Fah.). The term is unfortunately very loosely applied, and is synonymous with mineral naphtha.

Petrol.—Same as light petroleum, or benzine.

Petroleum ether.—Same as gasolene or benzine.

Petroleum naphtha.—Loosely employed; often denotes the first fraction (B.P. up to 150° C. 302° Fah.) obtained on distillation of crude oil. Often applied to any low boiling petroleum product.

Petroleum spirit and light petroleum.—Benzine, benzoline and naphtha, all of which terms are more or less synonymous.

Rhigoline.—The most volatile liquid fraction obtained in the refining of crude petroleum. B. P. 18° C. ($=64.4^{\circ}$ Fah.). Used as a local anaesthetic. Consists largely of pentane.

Shale naphtha.—Shale spirit; the lower boiling fractions obtained in the refining of crude shale oil. Sp. Grav. 0.70 to 0.76. Used as a motor spirit. Contains about 50 to 60 per cent of unsaturated hydrocarbons.

Sherwood oil.—Same as light petroleum and petroleum ether.

Solene.—Synonymous with gasoline and petroleum ether.

It is sufficiently obvious from the foregoing, that the term *gasoline*, and its equivalents, is employed with much vagueness. It is much to be desired that the term should be defined by legal enactment; since it has come into very general use, and without such definition, it is impossible to protect the public by any regulations which the government may desire to ordain for such purpose. The necessity of having such regulations, and enforcing them is apparent when we consider the great number of melancholy accidents involving life and property that are chronicled in the daily papers.

It will be noted that all of the above definitions refer to gasoline as a more or less volatile fraction of crude oil, obtained in the progressive distillation of the latter. This was true of gasoline as known in the early days of oil refining. It is not true to-day.

So long as the fraction in demand by the public, was that known as coal oil or kerosene, and designed for domestic use in lamps and stoves, the refiner found difficulty in obtaining a market for light-boiling fractions. These were chiefly used for making so-called "air gas", or for carburetting water-gas or were burned under the stills. When however, the use of internal combustion engines in motor-boats, motor-

cars, and for a multitude of other purposes, came about, the demand for these light-boiling fractions became very great, and today the refiner realizes that gasoline is the most profitable product.

This has resulted in the discovery that the heavier hydrocarbons can be broken down, by appropriate methods (cracking) and, in this way, a gasoline can be produced which is very different from the older article bearing that name. The term *saturated* hydrocarbon has appeared more than once in these definitions. Briefly, it means a hydrocarbon in which the ratio of Hydrogen to Carbon atoms in the molecule is represented by the expression C_nH_{2n+2} where C stands for a carbon atom, and H for a hydrogen atom.

Crude petroleum is, generally speaking, a mixture of such hydrocarbons, in which n has values ranging from 4 to 35 or even higher. Crude oils differ very greatly in the proportions in which they contain these hydrocarbons, some having large percentages of the lower members of the series; others having very small proportions of the lower members. The boiling point (volatility) constantly increases as we ascend the series; and it may be interesting to quote the following:

| Formula. | Name. | B.P. (Fah.) | Density. |
|----------------|---------|-------------|----------|
| C_4H_{10} | Butane | 31.3° | 0.600 |
| C_5H_{12} | Pentane | 79.3° | 0.627 |
| C_6H_{14} | Hexane | 156.0° | 0.658 |
| C_7H_{16} | Heptane | 209.1° | 0.683 |
| C_8H_{18} | Octane | 257.9° | 0.702 |
| C_9H_{20} | Nonane | 301.1° | 0.718 |
| $C_{10}H_{22}$ | Decane | 364.2° | 0.730 |

Pentane and Hexane are the chief components of the older gasolines. The succeeding members of the series beginning with nonane are the chief components of well-refined coal oil (Kerosene) which is usually defined as that fraction of crude oil which boils between 150° and 300° C. (=302° to 572° Fah.) containing therefore, the hydrocarbons from nonane to hentria—contane $C_{31}H_{64}$ with B.P. 575.6 Fah.

Another series of hydrocarbons many of whose members are available for lighting, or for use as gasoline, has the general formula C_nH_{2n} . It will be noted that the molecule of this series (known as olefines, in contradistinction to the first series, which are called paraffins) has relatively less hydrogen; or stated otherwise, has relatively more carbon. Its members, for this reason, tend to burn with a sooty, or smoky flame, and are on this account, less desirable for use in internal combustion engines. The boiling points of some olefines may be noted, as below:—

| Formula. | Name. | B.P. (Fah.) |
|-------------|-----------|-------------|
| C_5H_{10} | Amylene | 102.2° |
| C_6H_{12} | Hexylene | 154.4 |
| C_7H_{14} | Heptylene | 208.4 |
| C_8H_{16} | Octylene | 255.2 |
| C_9H_{18} | Nonylene | 307.4 |

If we assume that it is not desirable in a motor gasoline to have a higher boiling point than 200° F., and that in a coal oil for domestic use it is not desirable to have a lower boiling point than 300° F. we see that, of the paraffin series, Heptane (B.P. 209.1°) marks the limit for gasoline; while in the olefine series Heptylene marks this limit; also for domestic coal oil, nothing below Nonane can be permitted in the paraffin series, or below Nonylene in the olefine series.

It is possible, by the process known as "cracking" to change the higher members of the paraffin series into lower members, with simultaneous production of an olefine. Thus, the hydrocarbon $C_{12}H_{26}$ may be resolved into the paraffin C_6H_{14} and the olefine C_6H_{12} , both of which are available as components of gasoline, although the hydrocarbon Dodecane ($C_{12}H_{26}$) with a boiling point of 418.1° Fah. would not be thus available. This last is a normal component of coal oil. If the refiner can make a greater profit by converting dodecane into hexane and hexylene and selling it as gasoline, he will be tempted to "crack" the hydrocarbon, instead of selling it as coal-oil (kerosene).

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Unfortunately, the operation of cracking does not always proceed, in practice, as the above assumptions would indicate. Under varying pressures and temperatures the hydrocarbon $C_{12}H_{26}$ may crack in any of the following ways:—

| Paraffin. | | Paraffin. | | Olefine. |
|----------------|------------|-------------|---|-------------|
| $C_{12}H_{26}$ | .. . . . . | C_6H_{14} | + | C_6H_{12} |
| or | .. . . . . | C_5H_{12} | + | C_7H_{14} |
| or | .. . . . . | C_4H_{10} | + | C_8H_{16} |

Should the cracking result in the formation, even to a slight extent, of either C_5H_{12} (pentane, B.P. 79.3°) or C_4H_{10} (butane) (B.P. 31.8°), it will be seen that very volatile substances are produced, and these, even when small percentages only are present, render the total product exceedingly dangerous in transport or in storage or in use. The safety of the public demands that these extremely dangerous components of gasoline, as manufactured by the cracking process, should be removed from the final product before this is permitted to be placed on the market. This might be done by blowing air through it, until volatilization of the dangerous components of gasoline, as manufactured by the cracking process, should be removed from the final product before this is permitted to be placed on the market. Of course this would entail shrinkage of volume, and an apparent loss to the producer; and for these reasons, is not done; or is done very imperfectly. It is for this reason that such large losses in transportation occur as are quoted by Mr. Henderson, who asserts that a tank car may lose from 100 gallons to 300 gallons in a ten day's journey.

A modification of the "cracking" process has recently been patented, and is, I believe, being worked somewhere in New Jersey. This depends upon the catalytic action of aluminium chloride, and may prove a rival of the older processes, although that has yet to be demonstrated.

SUGGESTIONS.

I do not think that the specific gravity of a sample of gasoline gives any information of value, concerning its safety. This is much better ascertained by determining the volatility of the article; which, as regards the less volatile grades, might be ascertained by a flash test, employing a specially designed apparatus.

A still better way might be to determine the loss of volume produced by causing a current of air of known temperature and volume to bubble through a column, of definite length, of the liquid to be tested. In order to the intelligent application of this test, and interpretation of its results, considerable investigatory work would be necessary.

Should you desire such investigation to be made in these laboratories, I shall be pleased to undertake the work, on receiving your instructions.

The above quoted memorandum presents, in a general way, the main features of gasoline production; but by no means covers the subject completely. Particularly should be mentioned the fact that the cracking process results in the formation of varying amounts of hydrocarbon products other than paraffins and olefines. These may include various members of the benzene series (aromatic hydrocarbons); and considerable amounts of benzene, toluene and xylene may be obtained from certain crude oils, by variously modifying the conditions of the cracking process.

It may also be noted that so-called casing-head gasoline is obtained from certain varieties of natural gas by compression and condensation, or by washing the gas with heavy oils and subsequent separation of the gasoline by distillation. Naturally this variety of gasoline is extremely volatile, and is employed for blending purposes.

Anyone interested in the further study of this aspect of the matter is referred to Bulletin No. 114 of the Bureau of Mines, Washington, D.C.

In March 1914 I addressed a circular letter to several of the larger users of motor gasoline, including the railway companies, in order to ascertain whether or not they purchased to specification. Replies indicate that usually no specification is submitted with call for tenders; and that, in cases where requirements are defined, the specific gravity of the article is the only consideration.

I have already stated my opinion that specific gravity alone, furnishes very imperfect information regarding a sample of gasoline. This is apparent when we consider that most, if not all, of the gasolines on the market, are mixtures of fractional distillates of widely varying density; and it is an easy thing for the producer to make choice of such components as shall produce a complex of any desired specific gravity.

It is usual to express the density of gasoline in degrees Baume: a method which should be obsolete. To convert degrees Baume, for liquids lighter than water, the following formula may be used.

$$\text{Spec. Grav.} = \frac{\text{Modulus}}{(\text{Modulus} - 10) + \text{degrees B.}}$$

The modulus generally employed is 140; but is not constant. The U.S.A. Bureau of Standards has approved 140.

In order to ascertain whether or not the brand name under which the article is sold, means uniformity of character, I tabulate below the results of analysis of 21 samples purchased by our inspectors as Premier; 9 samples purchased as White Rose; 6 samples purchased as Peerless, and 3 samples as British Motor.

In each series, the samples are arranged in order of the content of unsaturated hydrocarbons (olefines, etc.) as determined by contraction on treatment with fuming sulphuric acid.

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PREMIER Brand

arranged in order of olefine content

| Serial No. | Collector's No. | Spec. Grav. 15°5° | Fractionation. | | | | | Iodine No. | Polymerization olefine. | Volatile below 120°. | Volatile above 140°. | Loss. |
|------------|-----------------|-------------------|----------------|--------------|---------------|---------------|-------------|------------|-------------------------|----------------------|----------------------|-------|
| | | | Below 70° C. | 70° to 120°. | 120° to 140°. | 140° to 150°. | Above 150°. | | | | | |
| 1 | 69538 | 0.721 | 11.0 | 70.0 | 11.0 | 2.5 | 4.5 | 8.5 | 2.2 | 81.0 | 7.0 | 1.0 |
| 2 | 69536 | 0.720 | 11.5 | 71.2 | 10.0 | 2.8 | 4.5 | 8.6 | 2.7 | 82.7 | 7.3 | 0.0 |
| 3 | 69531 | 0.720 | 12.5 | 70.2 | 10.5 | 1.8 | 4.0 | 8.7 | 2.8 | 82.7 | 5.8 | 1.0 |
| 4 | 69537 | 0.721 | 12.0 | 67.5 | 12.0 | 3.5 | 4.5 | 8.1 | 2.9 | 79.5 | 8.0 | 0.5 |
| 5 | 69539 | 0.720 | 11.0 | 71.7 | 10.8 | 2.0 | 4.0 | 8.8 | 3.4 | 82.7 | 6.0 | 0.5 |
| 6 | 69534 | 0.719 | 11.5 | 72.0 | 10.0 | 2.0 | 3.4 | 8.5 | 3.5 | 83.5 | 5.4 | 1.1 |
| 7 | 69532 | 0.720 | 13.5 | 69.2 | 10.8 | 2.0 | 4.0 | 8.5 | 3.6 | 82.7 | 6.0 | 0.5 |
| 8 | 69540 | 0.721 | 9.5 | 73.0 | 11.5 | 0.0 | 5.0 | 9.0 | 3.7 | 82.5 | 5.0 | 1.0 |
| 9 | 68247 | 0.739 | 7.0 | 64.6 | 15.2 | 5.2 | 7.0 | 9.1 | 3.8 | 71.6 | 12.2 | 1.0 |
| 10 | 52508 | 0.744 | 6.0 | 58.5 | 17.5 | 7.0 | 10.6 | 12.2 | 4.7 | 64.5 | 17.6 | 0.4 |
| 11 | 52509 | 0.741 | 6.5 | 58.0 | 18.0 | 6.7 | 10.3 | 12.8 | 5.8 | 64.5 | 17.0 | 0.5 |
| 12 | 65007 | 0.743 | 3.5 | 49.5 | 18.0 | 7.5 | 21.2 | 28.2 | 6.9 | 53.0 | 28.7 | 0.3 |
| 13 | B. | 0.736 | 3.5 | 54.0 | 20.0 | 7.5 | 14.6 | 32.0 | 8.0 | 57.5 | 22.1 | 0.4 |
| 14 | G. | 0.738 | 3.7 | 51.3 | 20.8 | 7.4 | 15.5 | 32.4 | 8.4 | 55.0 | 22.9 | 1.3 |
| 15 | I. | 0.741 | 3.0 | 50.8 | 22.7 | 7.8 | 15.0 | 30.5 | 8.5 | 53.8 | 22.8 | 0.7 |
| 16 | 71602 | 0.732 | 6.5 | 54.0 | 20.3 | 6.7 | 11.2 | 35.0 | 8.8 | 60.5 | 17.9 | 1.3 |
| 17 | A. | 0.740 | 4.5 | 51.2 | 26.7 | 7.6 | 15.8 | 31.7 | 8.9 | 55.7 | 23.4 | 0.2 |
| 18 | 75458 | 0.732 | 10.5 | 46.0 | 20.0 | 7.0 | 16.0 | 33.4 | 9.3 | 56.5 | 23.0 | 0.5 |
| 19 | 75436 | 0.734 | 6.0 | 52.8 | 17.7 | 8.0 | 15.0 | 37.9 | 9.6 | 58.8 | 23.0 | 0.5 |
| 20 | C. | 0.733 | 6.5 | 52.0 | 20.0 | 7.5 | 13.0 | 38.6 | 10.2 | 58.5 | 20.5 | 1.0 |
| 21 | 65032 | 0.735 | 7.0 | 49.5 | 18.5 | 7.1 | 17.0 | 44.0 | 11.3 | 56.5 | 24.1 | 0.9 |

White Rose Brand.

| | | | | | | | | | | | | |
|---|-------|-------|------|------|------|------|------|-------|-----|------|------|------|
| 1 | 75437 | 0.744 | 5.0 | 66.5 | 14.5 | 5.5 | 8.5 | 1.9 | 1.7 | 71.5 | 14.0 | -0.0 |
| 2 | 68248 | 0.743 | 6.0 | 57.5 | 18.0 | 7.4 | 10.2 | 4.3 | 2.4 | 63.5 | 17.6 | -0.9 |
| 3 | R. | 0.729 | 2.5 | 72.0 | 14.0 | 4.7 | 5.9 | ..... | 2.6 | 74.5 | 10.6 | -0.9 |
| 4 | Q. | 0.729 | 3.0 | 67.0 | 17.0 | 4.9 | 7.5 | 12.4 | 2.8 | 70.0 | 12.4 | -0.6 |
| 5 | 71603 | 0.736 | 12.0 | 48.0 | 13.5 | 8.1 | 17.5 | 3.3 | 3.0 | 60.0 | 25.6 | -0.9 |
| 6 | 69535 | 0.746 | 1.0 | 42.0 | 26.7 | 10.3 | 20.0 | ..... | 3.6 | 43.0 | 30.3 | -0.0 |
| 7 | 69533 | 0.743 | 2.0 | 45.5 | 22.0 | 9.5 | 20.0 | ..... | 4.0 | 47.5 | 29.5 | -1.0 |
| 8 | 52505 | 0.734 | 9.5 | 47.5 | 19.5 | 8.3 | 14.0 | 25.5 | 7.9 | 57.0 | 22.3 | -1.2 |
| 9 | H. | 0.741 | 5.5 | 52.0 | 20.0 | 7.3 | 13.6 | 30.9 | 8.4 | 57.5 | 20.9 | -2.1 |

Peerless Brand.

| | | | | | | | | | | | | |
|---|-------|-------|------|------|------|------|------|-------|-----|------|------|------|
| 1 | 65006 | 0.730 | 3.5 | 59.5 | 15.5 | 6.5 | 13.5 | 4.8 | 1.5 | 63.0 | 20.0 | -1.5 |
| 2 | E. | 0.720 | 10.5 | 67.0 | 9.7 | 3.3 | 6.7 | 1.3 | 2.0 | 77.5 | 10.0 | -2.8 |
| 3 | 75461 | 0.737 | 3.5 | 54.0 | 20.0 | 9.3 | 13.2 | 7.7 | 2.1 | 57.5 | 22.5 | -0.0 |
| 4 | O. | 0.732 | 12.8 | 18.2 | 16.5 | 12.0 | 36.8 | ..... | 3.8 | 31.0 | 48.8 | -3.7 |
| 5 | F. | 0.730 | 12.7 | 44.9 | 15.2 | 6.2 | 20.0 | 3.2 | 3.9 | 57.6 | 26.2 | -1.0 |
| 6 | 65034 | 0.729 | 4.0 | 57.0 | 18.5 | 7.1 | 13.4 | 4.3 | 4.3 | 61.0 | 20.5 | -0.0 |

British Motor Brand.

| | | | | | | | | | | | | |
|---|-------|-------|------|------|------|-----|------|-------|-----|------|------|------|
| 1 | M. | 0.720 | 11.5 | 58.0 | 13.5 | 6.5 | 10.5 | ..... | 3.1 | 69.5 | 17.0 | -0.0 |
| 2 | N. | 0.732 | 6.5 | 49.0 | 19.0 | 8.5 | 17.0 | ..... | 3.5 | 55.5 | 25.5 | -0.0 |
| 3 | 75459 | 0.735 | 5.5 | 47.0 | 21.5 | 8.5 | 16.7 | 20.8 | 5.6 | 52.5 | 25.2 | -0.8 |

Premier Brand.—A user who had found satisfactory the first seven samples, which fairly resemble each other, would assuredly be disappointed with number 12 and succeeding samples, except perhaps number 18, which may contain enough of the component volatile at 70° to gaseify the heavy hydrocarbons, volatile only above 140°.

It will be noted that the specific gravity gives no certain indication of the composition of the article. While in a general way, a gravity not exceeding 0.720 indicates a large percentage boiling below 120° C. (in samples 1 to 8, about 80 per cent), the higher gravities, from 0.730 to 0.740, correspond to very irregular composition of the mixture. Thus, numbers 9.11 and A, which possess nearly the same gravity, contain respectively 71.6; 64.5 and 55.7 per cent boiling below 120° C.; 12.2; 17.0 and 23.4 per cent above 140° C.; of which 7.0; 10.3 and 15.8 is only volatile above 150° C.

White Rose Brand.—Much the same thing is indicated here. The fraction volatile below 70° C. varies from 1 to 12 per cent of the mixture; while the portion volatile above 150° C. runs from 5.9 to 20 per cent.

Peerless Brand.—Similar differences in character are found here. The portion volatile below 70° C. varies from 3.5 to 12.8 per cent, while that volatile above 150° C. varies from 6.7 to 36.8 per cent. It is certain that an adjustment of feed which would give satisfactory working with No. 2, would fail to give results with No. 4.

British Motor Brand.—This shows considerable differences between the samples; although the small number reported makes detailed comparison impossible.

Internal combustion engines, using gasoline, are employed under extremely varying conditions. For motor cars, where frequent stopping and starting is the rule, it is evident that a readily volatile gasoline is required; and particularly is this necessary in cold weather. Quite other conditions obtain in the case of stationary engines, working under cover. From these, and other considerations, it appears reasonable to expect that gasoline should be sold under a guarantee of specific character; and both manufacturer and consumer should understand the importance of recognizing well defined grades of the article. I learn (*Metallurgical and Chemical Engineering*, 1916, 557) that the Bureau of Mines, Washington has prepared tentative specifications in regard to gasoline, having special reference to the grading of this fuel. It is suggested that three classes be named, and defined according to the maximum temperature limit below which 90 to 95 per cent volume will distil. The specific gravity test is to be discarded as of no real value with mixed gasolenes. Other specifications require that the gasoline should not contain excessive percentages of unsaturated or aromatic hydrocarbons, nor too high a percentage of very volatile products, which cause danger and loss by evaporation; nor should any considerable amounts of heavy or non-volatile constituents be present.

The post office authorities of Chicago, as reported in the *Chicago American* (Oct. 1916) have fixed the following standards for gasoline for their use:

1. The boiling point must not be higher than 60° C.
2. Fifty per cent must distil below 135° C.
3. Ninety-five per cent below 177° C.
4. One hundred per cent below 191° C.
5. Not less than 95 per cent must be recovered by distillation: *i.e.* loss on distilling must not exceed 5 per cent.
6. Five cubic centimetres must evaporate from white paper without leaving a stain.

Holde (Translation by Mueller, 1915, p. 51) quotes the following specifications for Automobile Gasoline:—

1. Must be obtained by fractional distillation.
2. Must not leave a spot on white paper.
3. Running through a sieve should not separate into fine drops.

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4. Of uniform composition, and, not a mixture of high and low boiling products.
5. Light naphtha should distil 80 per cent. under 100°C, and completely under 130°C.
6. Heavy naphtha, 50 per cent. under 100°C, and all under 140°C.
7. For passenger service the specific gravity should be from 0.70 to 0.72 at 15°C; for trucks, from 0.72 to 0.75.

It will, of course, be evident that authoritative classification of the 88 samples herein reported is impossible. This report will however serve the purpose of acquainting the public with the character of gasoline as found on Canadian markets.

TABLE I.

LIGHT GASOLINE

At least 10 per cent. distils below 70°C. Less than 10 per cent. residue above 150°C. Samples are arranged in order of the distillate below 70°C.

| Serial No. | Collector's No. | Where Obtained. | Spec Grav. 15°C. | Fractionation. | | | | | Iodine No. | Polymerization by Sulphuric Acid. | Loss. |
|------------|-----------------|-------------------------|------------------|----------------|--------------|---------------|---------------|-------------|------------|-----------------------------------|-------|
| | | | | Below 70°. | 70° to 120°. | 120° to 140°. | 140° to 150°. | Above 150°. | | | |
| 1 | 75438 | Hamilton | .700 | 28.5 | 54.0 | 8.2 | 0.0 | 9.0 | 2.4 | 2.4 | 0.3 |
| 2 | 69532 | St. John, N.B. | .720 | 13.5 | 69.2 | 10.8 | 2.0 | 4.0 | 8.3 | 3.6 | 0.5 |
| 3 | 69531 | " N.B. | .720 | 12.5 | 70.2 | 10.5 | 1.8 | 4.0 | 8.7 | 2.8 | 1.0 |
| 4 | 69537 | Fairville, N.B. | .721 | 12.0 | 67.5 | 12.0 | 3.5 | 4.5 | 8.1 | 2.9 | 0.5 |
| 5 | 69534 | St. John, N.B. | .719 | 11.5 | 72.0 | 10.0 | 2.0 | 3.4 | ... | 3.5 | 1.1 |
| 6 | 69536 | Gold Brook | .720 | 11.5 | 71.2 | 10.0 | 2.8 | 4.5 | 8.6 | 2.7 | 0.0 |
| 7 | 69538 | St. John, N.B. | .721 | 11.0 | 70.0 | 11.0 | 2.5 | 4.5 | 8.5 | 2.2 | 1.0 |
| 8 | 69539 | " N.B. | .720 | 11.0 | 71.7 | 10.8 | 2.0 | 4.0 | 8.8 | 3.4 | 0.5 |
| 9 | E | Ottawa | .720 | 10.5 | 67.0 | 9.7 | 3.3 | 6.7 | 1.3 | 2.0 | 2.8 |
| 10 | 55670 | Vancouver, B.C. . . . . | ..... | 10.1 | 64.9 | 12.5 | 5.1 | 6.0 | 0.5 | 1.6 | 1.4 |

Gasoline of this type will probably give no trouble to the user as far as starting the engine is concerned. It may be found dangerous in storage on account of its ready volatility, and it may show considerable loss in transport. It contains little, if any, of the cracked product.

TABLE II.

Gasoline containing large fractions volatile only above 150°C, but having more than 10 per cent. volatile below 70°C. Samples are arranged in order of the residue above 150°C.

| Serial No. | Collector's No. | Where Obtained. | Spec. Gravity 15°C. | Fractionation. | | | | | Iodine No. | Polymerization by Sulphuric Acid. | Loss. | Percentage Volatile Below 140°C. |
|------------|-----------------|------------------------|---------------------|----------------|--------------|---------------|---------------|-------------|------------|-----------------------------------|-------|----------------------------------|
| | | | | Below 70°. | 70° to 120°. | 120° to 140°. | 140° to 150°. | Above 150°. | | | | |
| 1 | 75462 | Toronto..... | 738 | 12.5 | 18.1 | 13.2 | 7.7 | 48.0 | 9.2 | 3.4 | 0.5 | 43.8 |
| 2 | O | Ottawa..... | 732 | 12.8 | 18.2 | 16.5 | 12.0 | 36.8 | ..... | 3.8 | 3.7 | 47.5 |
| 3 | 75463 | Toronto..... | 730 | 14.5 | 38.5 | 15.0 | 6.2 | 24.5 | 26.9 | 8.0 | 1.3 | 68.0 |
| 4 | 75432 | Owen Sound..... | 720 | 17.5 | 40.0 | 13.0 | 6.1 | 22.5 | ..... | 3.7 | 2.9 | 70.5 |
| 5 | F | Trenton, Ont..... | 730 | 12.7 | 44.9 | 15.2 | 6.2 | 20.0 | 3.2 | 3.9 | 1.0 | 72.8 |
| 6 | 52507 | Calgary..... | 732 | 15.0 | 40.0 | 15.5 | 8.0 | 19.0 | 4.2 | 2.0 | 2.5 | 70.5 |
| 7 | 71603 | Indian Head, Sask..... | 736 | 12.0 | 48.0 | 13.0 | 8.1 | 17.5 | 3.3 | 3.0 | 1.4 | 73.0 |
| 8 | 75458 | Toronto..... | 732 | 10.5 | 46.0 | 20.0 | 7.0 | 16.0 | 33.4 | 9.3 | 0.5 | 76.5 |
| 9 | 52504 | Calgary..... | 730 | 10.5 | 53.0 | 17.4 | 3.6 | 15.5 | 2.8 | 1.4 | 0.0 | 81.9 |
| 10 | 52501 | "..... | 731 | 12.0 | 50.0 | 17.5 | 6.5 | 13.5 | 2.4 | 2.8 | 0.5 | 79.5 |
| 11 | 71616 | Wolseley, Sask..... | 724 | 15.0 | 55.5 | 10.3 | 4.7 | 12.9 | 4.2 | 2.0 | 1.6 | 80.8 |
| 12 | M | Ottawa..... | 720 | 11.5 | 53.0 | 13.5 | 6.5 | 10.5 | ..... | 3.1 | 0.0 | 83.0 |

The whole of the gasolines of this series, but more particularly the earlier numbers, will give trouble in motor engines; the percentage volatile above 150° is great, and the amount of very light hydrocarbon is not great enough to assure complete volatilization of the high boiling fraction. Numbers 3 and 8 contain notable amounts of cracked gasoline. The high boiling residue is practically in inverse ratio to the total volatile below 140°C. It will be noted that numbers 1 and 2 are quite exceptional in this regard.

It is probable that samples giving Iodine numbers of 8 or higher contain cracked gasoline; and if the number is higher than 10 the indication is practically certain. (Technical paper 163, Bureau of Mines, Washington.)

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TABLE III.

GASOLINES in which both the most volatile fraction (below 70°C.) and the least volatile fraction above 150°C.) are below 10 per cent arranged in order of total volatility below 140°C.

| Serial No. | Collector's Number. | Where Obtained. | Spec. Gravity 15°C. | Fractionation. | | | | | Iodine Number. | Polymerization by Sulphuric Acid. | Loss. | Percentage Volatile Below 140°C. |
|------------|---------------------|--------------------------|---------------------|----------------|--------------|---------------|---------------|-------------|----------------|-----------------------------------|-------|----------------------------------|
| | | | | Below 70°. | 70° to 120°. | 120° to 140°. | 140° to 150°. | Above 150°. | | | | |
| 1 | 69540 | St. John, N.B. | 721 | 9.5 | 73.0 | 11.5 | 0.0 | 5.0 | 9.0 | 3.7 | 1.0 | 94.0 |
| 2 | 63859 | Sydney, N.S. | 724 | 9.5 | 71.0 | 11.0 | 4.3 | 4.0 | 6.9 | 3.4 | 0.2 | 91.5 |
| 3 | 5456 | St. Gabriel, Brandon ... | 723 | 7.0 | 69.5 | 12.5 | 4.0 | 5.9 | 7.8 | 2.2 | 1.1 | 89.0 |
| 4 | 5433 | St. Jean Matha ... | 726 | 8.5 | 69.5 | 10.8 | 5.0 | 5.0 | 8.9 | 2.6 | 1.2 | 88.8 |
| 5 | R | Hamilton ... | 729 | 2.5 | 72.0 | 14.0 | 4.7 | 5.9 | ..... | 2.6 | 0.9 | 88.5 |
| 6 | 55669 | Vancouver ... | 742 | 8.8 | 66.7 | 13.0 | 4.5 | 6.5 | 0.6 | 3.9 | 0.5 | 88.5 |
| 7 | 55676 | South Vancouver..... | 744 | 9.5 | 66.0 | 12.0 | 5.0 | 6.8 | ..... | 2.8 | 0.7 | 87.5 |
| 8 | 55678 | Vancouver ... | 743 | 8.9 | 66.1 | 12.5 | 5.0 | 6.0 | 0.6 | 1.8 | 1.5 | 87.5 |
| 9 | Q | Hamilton ... | 729 | 3.0 | 67.0 | 17.0 | 4.9 | 7.5 | 2.8 | 2.0 | 0.6 | 87.0 |
| 10 | 68247 | Nelson, B.C. | 759 | 7.0 | 64.6 | 15.2 | 5.2 | 7.0 | 9.1 | 3.8 | 1.0 | 86.8 |
| 11 | 52503 | Calgary ... | 732 | 9.5 | 63.0 | 14.0 | 4.5 | 8.5 | 9.8 | 4.5 | 0.5 | 86.5 |
| 12 | 52502 | " | 732 | 9.0 | 64.7 | 12.8 | 5.0 | 8.5 | 9.5 | 2.9 | 0.0 | 86.5 |
| 13 | 5444 | St. Gabriel, Brandon ... | 727 | 8.0 | 62.5 | 16.0 | 4.6 | 8.4 | 14.7 | 4.0 | 1.0 | 86.0 |
| 14 | 75437 | Hamilton ... | 744 | 5.0 | 66.5 | 14.5 | 5.5 | 8.5 | 1.9 | 1.7 | 0.0 | 86.0 |
| 15 | D | " | 724 | 5.0 | 63.5 | 17.0 | 5.5 | 8.0 | ..... | 2.8 | 1.0 | 85.5 |
| 16 | 55680 | New Westminster..... | 742 | 5.5 | 62.0 | 18.0 | 5.7 | 8.5 | 15.2 | 4.1 | 0.3 | 85.5 |
| 17 | 55672 | Vancouver ... | 741 | 5.0 | 63.5 | 17.0 | 5.5 | 8.5 | 8.3 | 3.8 | 0.5 | 85.5 |
| 18 | 5432 | St. Felix de Valois ... | 729 | 6.8 | 66.1 | 11.7 | 6.4 | 8.8 | 14.5 | 4.4 | 0.2 | 84.6 |
| 19 | 71617 | Wolseley, Sask. | 735 | 3.7 | 61.8 | 18.5 | 5.8 | 8.5 | 30.6 | 7.4 | 1.7 | 84.0 |
| 20 | 55679 | New Westminster..... | 743 | 5.5 | 61.5 | 16.8 | 6.2 | 9.0 | 14.6 | 5.0 | 1.0 | 83.8 |
| 21 | 55675 | Vancouver ... | 743 | 5.5 | 60.0 | 17.5 | 6.5 | 8.5 | 9.6 | 4.0 | 2.0 | 83.0 |

Gasolines of the type represented in this table, should be found satisfactory. They do not contain enough of the very volatile component to make them abnormally dangerous in storage; nor is the high-boiling residue excessive. Cracked gasoline if present in a few of them is in small amount.

TABLE IV.

FORTY-FIVE samples Gasoline not included in the preceding Tables; and having more than 10 per cent residue over 150°C., arranged in order of this residue.

| Serial Number. | Collector's Number. | Where Obtained. | Spec. Gravity 15°C. | Fractionation. | | | | | Iodine Number. | Polymerization by Sulphuric Acid | Loss. | Percentage Volatile Below 140°. |
|----------------|---------------------|---------------------|---------------------|----------------|--------------|---------------|---------------|-------------|----------------|----------------------------------|-------|---------------------------------|
| | | | | Below 70°. | 70° to 120°. | 120° to 140°. | 140° to 150°. | Above 150°. | | | | |
| 1 | 75445 | Niagara Falls..... | ·746 | 5·0 | 46·0 | 17·8 | 7·7 | 23·0 | 38·5 | 10·4 | 0·5 | 68·8 |
| 2 | 65007 | Exeter, Ont. | ·743 | 3·5 | 49·5 | 18·0 | 7·5 | 21·2 | 38·2 | 6·9 | 0·3 | 71·0 |
| 3 | 65533 | St. John, N.B. | ·743 | 2·0 | 45·5 | 22·0 | 9·5 | 20·0 | ... | 4·0 | 1·0 | 69·5 |
| 4 | 69535 | " | ·746 | 1·0 | 42·0 | 26·7 | 10·3 | 20·0 | ... | 3·6 | 0·0 | 69·7 |
| 5 | 75466 | Toronto | ·740 | 5·5 | 45·5 | 20·5 | 8·0 | 20·0 | 12·8 | 4·3 | 0·5 | 71·5 |
| 6 | L | Ottawa.. | ·738 | 5·0 | 47·2 | 19·3 | 8·0 | 19·7 | 36·1 | 8·8 | 0·8 | 71·5 |
| 7 | 63860 | Sydney, N.S. | ·743 | 2·0 | 45·5 | 24·0 | 10·0 | 18·5 | 4·6 | 2·5 | 0·0 | 71·5 |
| 8 | P | Ottawa .. | ·737 | 6·7 | 51·8 | 15·0 | 7·4 | 17·5 | 47·4 | 11·5 | 1·6 | 73·5 |
| 9 | 75460 | Toronto | ·736 | 6·0 | 46·5 | 21·3 | 8·9 | 17·0 | 15·2 | 4·4 | 0·3 | 73·8 |
| 10 | 65032 | London, Ont..... | ·735 | 7·0 | 49·5 | 18·5 | 7·1 | 17·0 | 44·0 | 11·3 | 0·9 | 75·0 |
| 11 | N | Ottawa .. | ·732 | 6·5 | 49·0 | 19·0 | 8·5 | 17·0 | ... | 3·5 | 1·0 | 73·5 |
| 12 | 75459 | Toronto | ·735 | 5·5 | 47·0 | 21·5 | 8·9 | 16·7 | 20·8 | 5·6 | 0·8 | 74·0 |
| 13 | A | Hamilton. | ·740 | 4·5 | 51·2 | 20·7 | 7·6 | 15·8 | 31·7 | 8·9 | 0·2 | 76·4 |
| 14 | G | Kingston .. | ·738 | 3·7 | 51·3 | 20·8 | 7·4 | 15·5 | 32·4 | 8·4 | 1·3 | 75·8 |
| 15 | 65037 | London, Ont .. | ·729 | 4·0 | 59·0 | 15·5 | 6·0 | 15·0 | 4·2 | 4·8 | 0·5 | 78·5 |
| 16 | 75433 | Warton, Ont .. | ·743 | 1·5 | 49·3 | 24·9 | 9·2 | 15·0 | ... | 3·6 | 0·1 | 75·7 |
| 17 | 75435 | Brantford .. | ·733 | 8·5 | 50·0 | 19·0 | 7·0 | 15·0 | 51·5 | 12·2 | 0·5 | 77·5 |
| 18 | 75436 | " | ·734 | 6·0 | 52·8 | 17·7 | 8·0 | 15·0 | 37·9 | 9·6 | 0·5 | 76·5 |
| 19 | I | Kingston..... | ·741 | 3·0 | 50·8 | 22·7 | 7·8 | 15·0 | 30·5 | 8·5 | 0·7 | 76·5 |
| 20 | J | " | ·739 | 3·8 | 51·9 | 19·8 | 9·0 | 15·0 | 32·7 | 8·0 | 0·5 | 75·5 |
| 21 | B | Port Hope .. | ·736 | 3·5 | 54·0 | 20·0 | 7·5 | 14·6 | 32·9 | 8·0 | 0·4 | 77·5 |
| 22 | 52505 | Calgary .. | ·734 | 9·5 | 47·5 | 19·5 | 8·3 | 14·0 | 25·5 | 7·9 | 1·2 | 76·5 |
| 23 | H | Hamilton..... | ·741 | 5·5 | 52·0 | 20·0 | 7·3 | 13·6 | 30·9 | 8·4 | 1·6 | 77·5 |
| 24 | K | " | ·737 | 4·5 | 52·5 | 21·5 | 7·3 | 13·5 | 28·4 | 9·6 | 0·7 | 78·5 |
| 25 | 6500 | Exeter, Ont .. | ·730 | 3·5 | 59·5 | 15·5 | 6·5 | 13·5 | 4·8 | 1·5 | 1·5 | 78·5 |
| 26 | 65038 | London..... | ... | 5·0 | 57·0 | 15·0 | 7·5 | 13·5 | ... | ... | 2·0 | 77·0 |
| 27 | 65034 | " | ·729 | 4·0 | 57·0 | 18·5 | 7·1 | 13·4 | 4·3 | 4·3 | 0·0 | 79·5 |
| 28 | 75461 | Toronto .. | ·737 | 3·5 | 54·0 | 20·0 | 9·3 | 13·2 | 7·7 | 2·1 | 0·0 | 77·5 |
| 29 | C | Ottawa .. | ·733 | 6·5 | 52·0 | 20·0 | 7·5 | 13·0 | 38·6 | 10·2 | 1·0 | 78·5 |
| 30 | 5441 | Joliette..... | ·734 | 4·5 | 53·0 | 20·5 | 8·0 | 12·5 | 30·9 | 8·2 | 1·5 | 78·0 |
| 31 | 75464 | Toronto .. | ·731 | 7·0 | 52·5 | 20·5 | 7·0 | 12·5 | 41·7 | 10·5 | 0·5 | 80·0 |
| 32 | 75465 | " | ·729 | 5·0 | 55·7 | 19·3 | 8·0 | 12·0 | 4·8 | 3·9 | 0·0 | 80·0 |
| 33 | 5447 | Joliette..... | ·734 | 4·5 | 54·0 | 21·0 | 8·0 | 12·0 | 31·5 | 8·5 | 0·5 | 79·5 |
| 34 | 71610 | Grenfell .. | ·733 | 4·5 | 56·5 | 19·0 | 7·2 | 11·5 | 35·2 | 9·5 | 1·3 | 80·0 |
| 35 | 5426 | Joliette..... | ·735 | 4·0 | 55·0 | 20·5 | 7·5 | 11·3 | 30·9 | 8·2 | 1·2 | 80·0 |
| 36 | 71602 | Indian Head..... | ·732 | 6·5 | 51·0 | 20·3 | 6·7 | 11·2 | 35·0 | 8·8 | 1·3 | 80·8 |
| 37 | 55677 | So. Vancouver .. | ·745 | 8·0 | 56·5 | 17·5 | 6·6 | 11·0 | 3·3 | 4·0 | 0·4 | 82·0 |
| 38 | 5425 | Joliette..... | ·737 | 4·5 | 55·5 | 20·7 | 6·8 | 11·0 | 33·9 | 9·4 | 1·5 | 80·7 |
| 39 | 55668 | Vancouver .. | ·745 | 6·0 | 57·5 | 18·3 | 7·3 | 10·8 | ... | 4·4 | 0·1 | 81·8 |
| 40 | 52508 | Calgary .. | ·744 | 6·0 | 58·5 | 17·5 | 7·0 | 10·6 | 12·2 | 4·7 | 0·4 | 82·0 |
| 41 | 52506 | " | ·739 | 6·0 | 62·0 | 15·0 | 6·5 | 10·5 | 11·6 | 3·0 | 0·0 | 83·0 |
| 42 | 52509 | " | ·741 | 6·5 | 58·0 | 18·0 | 6·7 | 10·3 | 12·8 | 5·8 | 0·5 | 82·5 |
| 43 | 68248 | Nelson, B.C. | ·743 | 6·0 | 57·5 | 18·0 | 7·4 | 10·2 | 4·3 | 2·4 | 0·9 | 81·5 |
| 44 | 52511 | Calgary .. | ·743 | 5·0 | 58·5 | 19·0 | 6·5 | 10·2 | 16·1 | 5·2 | 0·8 | 82·5 |
| 45 | 75431 | Owen Sound .. | ·730 | 7·0 | 55·0 | 23·0 | 4·5 | 10·0 | 29·7 | 8·0 | 0·5 | 85·0 |

With a few exceptions at the extremes of this table, the gasolines which it includes, show notable uniformity so far as the percentage distilling below 140°C. is concerned; and this in spite of the fact that the amount of cracked gasoline in them is extremely variable. This is indicated by the large iodine number and the contraction on polymerization, which, in a general way, approximates one fourth of the iodine number. While it is apparent that most of these samples contain more or less cracked gasoline, those designated P, 65032, 75435, C, and 75464, contain very large amounts. The mixing has, however, been done with judgment; and a machine adjusted so as to

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work well with almost any one of these samples would probably work satisfactorily with any other.

It would seem useless to object to the presence of cracked gasolines, since the demand for gasoline is so great, that, straight distillates from the crude, would entirely fail to meet it, and the cracking of heavier hydrocarbons is imperative.

The main features of the present report may be summarized as follows:—

1. The term gasoline has, at the present time, a quite different signification from that which it originally possessed.
2. When the most important application of petroleum was in domestic lighting, it was necessary to legislate to protect the consumer of coal oil. The reverse is the case to-day, and the user of gasoline requires protection.
3. Gasoline should not contain too volatile constituents, which make it dangerous in use, and entail loss in transportation.
4. Neither should it contain too great a percentage of difficultly volatile fractions, which seriously affect its use in motor engines.
5. Since most modern gasolines are mixtures, the specific gravity of the article affords no satisfactory indication of its character.
6. Various types of gasoline should be recognized and defined; since internal combustion engines are employed under widely varying conditions.
7. The brand name under which gasoline is sold in Canada is no guarantee of uniformity of character.
8. Cracked gasoline and Casing head gasoline, are not necessarily objectionable as components of mixed gasoline; but the mixed article should be made to conform to definite and well understood specification, and should be sold in such a way as to inform the buyer as to its character.
9. Gasoline should always be purchased to specification.

I believe that the report now in your hands will be useful in assisting the Department to regulate the sale of gasoline; and that it will afford users of the article, information which will be helpful to them; and enable them better to understand why ground for complaint is so widely apparent.

BULLETIN No. 363.—MALT EXTRACT FOR BAKERS' USE.

OTTAWA, 9th February, 1917.

SIR,—I had the honour, in February of last year, to report to you upon a collection of so-called Malt Extracts (152 samples) since published as Bulletin No. 326.

This term was found to include many different types of food material, varying from the pharmacopoeal article, to extracts which differed little, if at all, from ordinary beer.

Since publication of the report named, many inquiries have been made regarding the Malt Extracts which are now largely employed by bakers, and which were not specially represented in my last report.

The article in question is generally understood to be a concentrated preparation of the soluble matters of barley malt, so treated as not to destroy the activity of the diastase, whose presence and amount constitutes, probably, the most valuable feature of the extract from the baker's standpoint.

The diastatic value of Malt, and Malt Extract is usually expressed in degrees Lintner; and I have used this form of stating it, as being most intelligible to ordinary

readers. A malt preparation is said to have a value of 100 degrees Lintner, when one-tenth cubic centimeter of a 5 per cent solution converts enough starch to completely reduce 5cc of a standard Fehling's Solution, certain definite conditions of time and temperature being observed.

The Malt Extract of the British pharmacopoeia, as reported in Bulletin No. 326, was found to possess Lintner values somewhat above 100 degrees in the best samples, average samples giving values from 50 to 60 degrees.

Malt.—According to Ebertz and Schule (Lunge, Technical Methods, Vol. 111, 698) the diastatic power of English brewing malt is usually between 20° to 40° Lintner, while that of green malt may be as high as 100° to 125°.

Five of the samples purchased by our inspectors, are found to be, not malt extracts, as called for by their instructions, but ground malt, or malt flour. These five samples possess diastatic values ranging from 54.4 degrees Lintner to 61.5 degrees. (See samples 74813, 74814, 74815, 74818 and 75029.)

Malt Extract.

Baker (Allen's Commercial Organic Analysis, 4th Edn., Vol. 1, 145) quotes six samples of commercial extracts as giving Lintner values from 25.6 degrees, to 46.5 degrees; the mean value being 33.6 degrees.

Parry (Food and Drugs, 1911, page 166) quotes six samples of Malt Extracts, as varying from 14° Lintner to 38°; and mentions the last as being "one of the best known brands, and of the best quality." The mean value for these six samples is 26.7 degrees Lintner.

Eighteen samples herein reported vary from 12.2 degrees Lintner to 50.0 degrees, the average value being 30.0 degrees.

The content in reducing sugars, which represent complete hydrolysis of starchy matter, is also a condition of value. These substances not only give sweetness to the bread, but also assist in retaining the natural moisture of the loaf. According to Parry (loc. cit.) the reducing sugars, stated as maltose, in nine samples, varied from 48 per cent to 62 per cent, the average amount being 56.7 per cent.

Eighteen samples reported herein give reducing sugars (as maltose) from 60 to 75 per cent, averaging 67.9 per cent.

The ash of malt and malt extracts, represents the mineral constituents of the article; and this mineral matter possesses a value as yeast food.

There is no evidence in the accompanying analytical results, to show that additions have been made to the extracts for the purpose of increasing such yeast food. The ash normal to malt extracts, varies from about 1.4 to about 1.7 as a percentage on the extract. The ash found only exceeds these limits by being less in amount than the minimum quoted.

This is the first occasion upon which we have examined the special extract which forms the subject of this report; and I am not aware of any standards for the article having authoritative endorsement. If it should be considered desirable to fix such standards, a much fuller, and more extended investigation should be undertaken.

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BULLETIN No. 364.—MALT VINEGAR.

OTTAWA, February 13, 1917.

SIR,—I beg to hand you a report concerning 185 samples of Vinegar, the great majority of which were sold as Malt Vinegars.

The report consists of two parts. The first part (twenty-two samples) represents a special collection made in Vancouver and Victoria, in February, March and April of last year. This collection was made consequent upon specific complaint (see L-138566) to the effect that vinegar was being offered in British Columbia, as Malt Vinegar, which was in reality not Malt Vinegar, but a fraudulent imitation of the article. An examination of this report proves conclusively that the complaint was well founded, only 11 of the 22 samples being genuine.

Further investigation, however, showed that in several instances, the apparent fraud was due to incorrect reading of our standards for Vinegar, as published in G. 1096, dated December 29, 1913. The standards referred to provide for the sale of Blended Vinegar, which is defined as a mixture of two or more varieties of Vinegar. Most of the samples found to be illegal, were labelled in a manner to indicate that they were blended; but while the amount of Malt Vinegar in the blend was very small, the words Malt Vinegar were most conspicuous on the label, with the result of deceiving the purchaser into the belief that he was buying a genuine Malt Vinegar or at least an article which contained a large proportion of Malt Vinegar.

Since a comprehensive inspection of the article was proposed for June, July and August of 1916, it was considered reasonable to permit the offence, as above described, to be passed over with a formal warning.

The remainder of this report deals with 163 samples purchased in June, July and August of last year. Inspectors were carefully instructed to purchase Malt Vinegar only; and in most instances this instruction was observed. In the case of Mr. Inspector Audet, five samples (5353, 5356, 5359, 5361 and 5364) are invoiced simply as Vinegars. None of these samples are Malt Vinegars, and if sold as such, are adulterated under the Act. Mr. Inspector Audet has since explained (see his letter of March 1, 1917), that he demanded malt vinegar in every instance.

The subjoined synopsis gives the general results of this examination.

COLLECTION OF FEBRUARY, MARCH AND APRIL, 1916.

| | |
|---|-------------|
| Found genuine Malt Vinegars. | 11 samples. |
| Found not to be Malt Vinegars, but sold under names which implied Malt Vinegar either entirely or as a blend. | 11 " |
| | — |
| | 22 " |

COLLECTION OF JUNE TO AUGUST, 1916.

| | |
|---|-------------|
| Found genuine Malt Vinegars. | 97 samples. |
| “ adulterated under the Act. | 31 “ |
| “ slightly below standard and passed. | 35 “ |

Standards for Vinegar have been legalized since December 19, 1913; and Circular G. 1096 embodying these standards was published on December 29, 1913. Bulletin No. 313, which contains a detailed report of two hundred and forty-five samples of Vinegar, was published in May, 1915. I mention these facts to justify the conclusion that vendors of the article have been fully warned in the matter, and cannot

reasonably urge any excuse for selling as Malt Vinegar an article which does not comply with legal requirements.

The characteristic constants of Malt Vinegar comprise a minimum content of solids (1.80 per cent) and a minimum content of mineral solids, or ash (0.20 per cent). Phosphates are characteristic of the ash of Malt Vinegar; and it will be found on examination of this report, that the amount of phosphoric acid is seldom less than about 40 to 50 milligrammes per 100cc. of Vinegar. In many cases it reaches a much higher number. Spirit Vinegar, on the other hand, contains but little ash, and the phosphoric acid content is trifling, or nil.

A considerable number of samples yield results which prove conclusively that malt has been employed in their manufacture. This industry is a new one in Canada, and it is fair to assume that failure to produce a perfectly satisfactory malt vinegar is rather due to inexperience than to any desire to put out a surrogate article. Being convinced of the essential truth of this assumption, I have ventured to pass all samples which give evidence of having been made from malt, even although such samples fail to reach the standard of a normal malt vinegar; and, I would respectfully ask you to justify my interpretation, for this occasion. Of course it must be understood that such concession can form no precedent for future decisions; and that it is granted in recognition of the fact that honest efforts are being made by Canadian manufacturers to produce a malt vinegar which shall fully meet legal requirements.

When Acetic Acid is employed in the manufacture or fortification of a Vinegar, traces of formic acid are almost invariably found in a distillate from such Vinegar. Mr. Rowat, of this staff, has done a considerable amount of research work, at my request, for the purpose of establishing the following points:—

1. Do genuine Malt Vinegars yield a distillate which could be mistaken to contain formic acid?
2. If a genuine Malt Vinegar, not responding to the test for formic acid, be fortified by addition of commercial, refined acetic acid, will it then give the formic acid reaction?
3. If it does so, is the intensity of the reaction proportional to the amount of acetic acid added?

Mr. Rowat's work clearly shows that genuine Malt Vinegars give no reaction for formic acid when treated by the method of Woodman and Burwell (Allen, Com. Org. Analysis, 4th Edn. Vol. 1, page 521); that addition of commercial acetic acid, containing traces of formic acid, is readily detected; and that the depth of colour with fuchsin, is approximately proportional to the amount of acetic acid added.

BULLETIN No. 365—CARAMELS.

OTTAWA, March 12, 1917.

SIR,—In Bulletin No. 346 (published in July of last year) I drew attention to the alleged extensive employment of paraffin as a stiffener in the form of candy sold as Chocolates. Seven samples of the 151 samples therein reported were found to contain paraffin; but the amount was not determined.

Concerning paraffin as a component of a food product I made the following statement:—

“The National Confectioners' Association of the United States, issued a Food Law Circular under date May 20, 1913, containing a list of substances prohibited in confectionery, among which appears paraffin.

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The food laws of Illinois, Nebraska and Utah, specifically forbid the use of paraffin in candy; and those of many other States are interpreted in such a way as to condemn its use.

It is certain that so-called paraffin or paraffin wax is wholly without food value; is quite indigestible, and is not a normal component of any natural food material. Its melting point (about $54.5^{\circ}\text{C.} = 130.1^{\circ}\text{Fah.}$) is so high as to keep it solid at the body temperature, and being quite insoluble in the digestive fluids, it is conceivable that serious results might ensue from its presence in foods consequent upon mechanical disturbances."

Several correspondents have claimed that, while paraffin is occasionally employed by manufacturers of the cheaper grades of so-called Chocolates, it is much more largely used in that form of confection known as Caramels.

It was considered desirable to ascertain the facts of the case, and in consequence a collection of caramels was ordered in October and November of last year.

This report, dealing with 110 samples may be summarized as follows:—

| | |
|--|-------------|
| Caramels containing no paraffin. | 30 samples. |
| " " traces only. | 8 " |
| " " less than 0.5 per cent. | 8 " |
| " " more than 0.5 per cent but less than 1.0 per cent. | 13 " |
| " " more than 1 per cent. | 51 " |
| — | |
| Total. | 110 |

Of 51 samples which contain above 1 per cent by weight of paraffin, the subjoined table gives particulars:—

| | |
|--|-------------|
| From 1 to 2 per cent paraffin. | 23 samples. |
| " 2 " 3 " " | 12 " |
| " 3 " 4 " " | 10 " |
| " 4 " 5 " " | 5 " |
| " 5 " 6 " " | 0 " |
| " 6 " 7 " " | 1 " |
| — | |
| Total. | 51 |

We have no direct legislation against the use of paraffin in candy. Whether or not the amounts above indicated can be regarded as harmful to health is a matter for very careful consideration, and will be duly investigated.

Since writing the above I have received the following expression of opinion from Dr. A. D. Blackader, Professor of Pharmacology at McGill College, Montreal, and Medical Adviser to this Department.

"It is a subject to which my attention had never been previously drawn, and I have taken time to consult my confrères and made enquiries from all whom I thought might give me an opinion. The answer I received from most of my confrères was to the effect that in amount so small as 1 per cent it was not likely to do any harm, one might even say 2 per cent, but that in larger amounts there was a possible risk in persons or children who consumed large amounts of candy.

In his very recent volume on Pharmacology (1916) Sollman states that pure paraffin is harmless, ill-refined paraffin may give rise to toxic symptoms. Any impurity in the paraffin used for caramels may do harm in several ways. Care therefore must be taken that only pure paraffin is employed. If the paraffin is pure, and in amount does not exceed 1 per cent I do not think its employment can do harm. The only objections to it is that it is of no use as a food, and in candy may be regarded as an adulteration."

BULLETIN No. 366—CANNED PEAS.

OTTAWA, March 16, 1917.

SIR,—I beg to hand you a report upon 210 samples of canned peas. All of these samples prove to be of good quality so far as the vegetable matter is concerned.

The special object had in view in this collection was the ascertaining whether or not departmental regulations as regards the presence of copper in peas were being observed.

Our last systematic inspection of peas, was made in 1909, and is published as Bulletin No. 192. No regulations in the matter of copper colouring existed at that time; and it was particularly desired to ascertain whether or not the presence of such amounts of copper as experience has shown sufficient to give a desired colour to peas, was attended with danger to the health of the consumer.

I recommended that the subject should be referred to competent medical authorities; and as the result of such action, the following decision was reached, and is incorporated in an Order in Council of January 9, 1915, published as G. 1167.

“III. In all cases except such as are covered by sections I and II above, the presence of artificial colouring matter must be declared upon the label, in easily legible type.

IV. When used in the amounts necessary to produce desirable colours in foods, the following substances are regarded in the light of present knowledge of their physiological effects, as harmless to health, within the meaning of the Adulteration Act. Should more extended knowledge of the effects upon the health of any of the colouring matters named below establish their harmfulness, they would, in such case, come under section 3 (*f*) of the Adulteration Act; and their presence in foods would constitute adulteration:—

Copper salts, in the greening of peas, provided that the amount of copper (expressed as metallic copper) in the peas does not exceed 80 parts (by weight) per million in the drained peas or 10 parts per million in the imbedding liquid.”

The inspection now reported shows that only 26 samples out of a total of 210 samples are coloured with copper. These are, as far as can be ascertained, all imported peas. It is satisfactory to know that the demand for coppered peas is not largely in evidence in Canada; and that the colouring of peas with copper is not known to Canadian industry.

The conditions under which copper is permitted as a colouring material in peas, require (1) That the copper in the peas shall not exceed 80 parts per million. (2) That the copper in the imbedding liquid shall not exceed 10 parts per million. (3) That declaration of the presence of copper shall be made on the label.

Our work shows that no noteworthy excess of copper in the peas themselves occurs in any of these samples.

Excess of copper in the imbedding liquid is found in five samples. The amount varies from 20 to 73 parts per million.

The presence of copper is declared in three samples. Twenty-three samples contain copper without mention of this fact on the label.

BULLETIN No. 367—EDIBLE GELATIN.

OTTAWA, 22nd March, 1917.

SIR,—I have the honour to report upon 137 samples of Gelatin, purchased by our inspectors in April, May and June of last year.

The report is arranged in three parts. Table 1 furnishes the ordinary analytical results upon 57 samples. Table II gives results in greater detail upon 52 samples, specially examined by Mr. M. Brot of this staff now at the front, somewhere in France. Table III gives results for sulphurous acid only, in 28 samples of so called Jelly Powders. These articles are not properly described as Gelatin, although they contain gelatin as an ingredient.

Both edible gelatin and glue are obtained by treating the collagens of bones, tendons, cartilage, etc. with boiling water. It will be readily understood that, fundamentally, they are the same thing. The essential character of edible gelatin, as distinguished from glue, is its purity. Glue may be a perfectly pure article without ceasing to be glue; but edible gelatin must be a pure article; and, in order to ensure a satisfactory degree of purity, it should be required to meet certain specified standards.

The treatment which the original material receives in the manufacture of gelatin is such as to fairly well assure the destruction of organic impurity. But when we consider the nature of the material available for the manufacture of glue, dead animals of all kinds, and in various stages of decomposition, we must recognize the desirability of giving the consumer of gelatin a guarantee that only selected and unobjectionable materials have been used in its production. This can only be done by efficient inspection at the factory; and for this reason, the inspection of all gelatin factories should be undertaken by Government. So far as Canada is concerned, this is the case; and the Department of Agriculture, in its administration of the Meat Inspection Act, guarantees the quality of the material used in manufacture of edible gelatin, so far as meat packers, doing an export business is concerned. I am not however aware that the manufacture of gelatin is anywhere in Canada carried on beyond the actual requirements of the manufacturer in his own business. Practically all of the gelatin used in Jelly Powder manufacture, in ice-cream, etc. is of foreign manufacture.

The Department of Customs has kindly furnished me with the following statistics concerning the importation of gelatin and isinglass (fish gelatin) for the fiscal year ending 31st March, 1916.

| | Lbs. | Value. |
|-------------------------|---------|-----------|
| United Kingdom. | 179,173 | \$43,327 |
| China. | 41 | 8 |
| France. | 13,112 | 2,507 |
| Holland. | 2,231 | 460 |
| Japan. | 10,280 | 3,570 |
| Switzerland. | 13,862 | 2,684 |
| United States. | 246,116 | 91,035 |
| Total. | 464,815 | \$145,591 |

Gelatin is thus defined by the British Pharmacopœia, revision of 1914; "Is the air-dried product obtained by the action of boiling water on animal tissues, such as skin, tendons, ligaments and bones.

Characters and Tests.—In almost colourless, translucent sheets or shreds. Insoluble in alcohol (90 per cent) and in ether: soluble in acetic acid. A solution in hot water (1 in 50) is inodorous, and solidifies to a jelly on cooling. An aqueous solution yields a precipitate with solution of tannic acid, but not with solutions of other acids, or with dilute solution of alum, solution of lead acetate, or test solution of ferric chloride. Ash not more than 2 per cent."

Gelatin finds extensive uses in the arts, and most of its applications require the article to possess a high degree of purity. The definition above quoted has primary regard to its employment in medicine, where it is used in the manufacture of capsules and otherwise: It is, however, with its use as a food material that we are immediately concerned.

As a food, gelatin enters into the manufacture of so-called jelly powders, in jellied meats, as a stiffener in ice cream, etc.

Investigatory work, having for its object the fixing of definite distinction between edible gelatin and glue, as used in the arts, has for a considerable time been carried on by the Department of Agriculture at Washington. I am not informed of the completion of the work referred to, but by correspondence I learn that the most important characters considered to establish the distinction are odour, turbidity, jelly strength, fat and ash.

Colour is of necessity, a matter of importance, although the bright colours given by coal-tar dyes to most jelly powders, reduce its importance so far as these are concerned. Where select materials are employed in the manufacture, it should not be necessary to use bleaching agents to give edible gelatin desirable lightness of colour. Our standards require that sulphur dioxide (sulphurous acid) shall not be present in solid foods above 1 part in 2,000 parts (50 parts per 100,000). This limit is exceeded in 11 samples of Table I and in 10 samples of Table II.

Traces only of sulphuric acid are found in the jelly powders enumerated in Table III.

Ash.—The British Pharmacopœia fixes 2 per cent, as the ash limit in gelatin. This limit is exceeded in 27 samples of Table I, and in 10 samples of Table II.

Odour.—This is observed by soaking in cold water for 4 hours and then making into a jelly by heating with water. Good samples yield no offensive odour. Thirteen samples of Table I and 14 samples of Table II gave more or less unpleasant odour when thus treated. Of this number 5 samples were decidedly objectionable, and should undoubtedly be classed as glue.

Turbidity of a 25 per cent, solution was observed in the samples arranged in Table II. Of the total number (52 samples) 15 samples gave more or less distinct turbidity; in 9 of them the turbidity was very marked.

Viscosity.—This may be determined by the method of flow, which however we have found to be very unsatisfactory and subject to large experimental error. Determinations as recorded in Table II were made on 25 per cent, solutions at 80° C. In a general way the results corroborated those ascertained by the use of the Doolittle Viscosimeter, but these last are much more trustworthy and duplicates in close agreement are easily obtained.

The instrument is standardized in terms of sugar solutions made as per instructions accompanying it.

We have not yet been able to formulate specific standards for gelatin, but it is hoped that this may be done in the near future, and the information furnished herewith will be helpful to this end.

BULLETIN No. 368—KETCHUP.

OTTAWA, 31st March, 1917.

SIR,—I beg to hand you a report upon 111 samples purchased as Ketchup (Catsup) by our inspectors in October and November of last year. With a single exception these represent Tomato Ketchup.

Four of these samples were found to be more or less fermented. Of this number, only one sample contained a preservative (benzoic acid) and this was present in mere trace. All the other samples were in good condition.

Fifty-five (55) samples contain a preservative; salicylic acid in two cases; in all the others, benzoic acid.

An Order in Council of 4th April, 1914 permits the use of benzoic acid to the amount of 1 part per 1,000 parts; and of salicylic acid, to the amount of 1 part in 5,000, under the following conditions:

“Provided that not more than one kind of preservative substance, named in this list, shall be added to any one kind of food, or to any mixture of two or more kinds of food; that the amount of preservative shall not exceed the maximum amount herein named, and that the presence of the preservative shall be declared on the label.” (Circular G. 1111.)

Twenty-four (24) samples contain a dye (coal tar dye). This is permitted by Order in Council of 9th January, 1915, provided that only those dyes specially named in Circular G. 1167, may be used, and that the presence of the dye is declared upon the label, in clearly legible type.

No illegal dyes have been found in any of these samples; and preservatives are in all cases but three, within the legal limit. Benzoic acid is present to the amount of 1.8 parts per 1,000 in No. 76332; and to the amount of 1.3 parts per 1,000 in No. 73245. These quantities are probably harmless, in an article like Ketchup, which is employed as a condiment only. Sample No. 56835 contains salicylic acid to the amount of 2.6 parts per 1,000; and as the limit for salicylic acid is only 0.2 per 1,000, this represent a very large excess.

Many of these samples which contain either or both preservative and dye, make declaration of the fact upon the label. In 29 cases, however, there is failure to declare the presence of preservative or dye, or both, as required by the Orders in Council above cited. This, of course, constitutes a violation of the Act, and makes the vendor, or manufacturer liable of penalty.

In extenuation, it is claimed that many of these samples were on the market either before or very shortly after publication of our standards, and are, without any intention of violating the Act, labelled in the same way as was customary before standards regulating the use of preservatives and dyes were established. The standards in question are dated, April 1914 and January 1915 respectively. Purchase of these samples was made about the end of 1916, or about two years after legalization of standards.

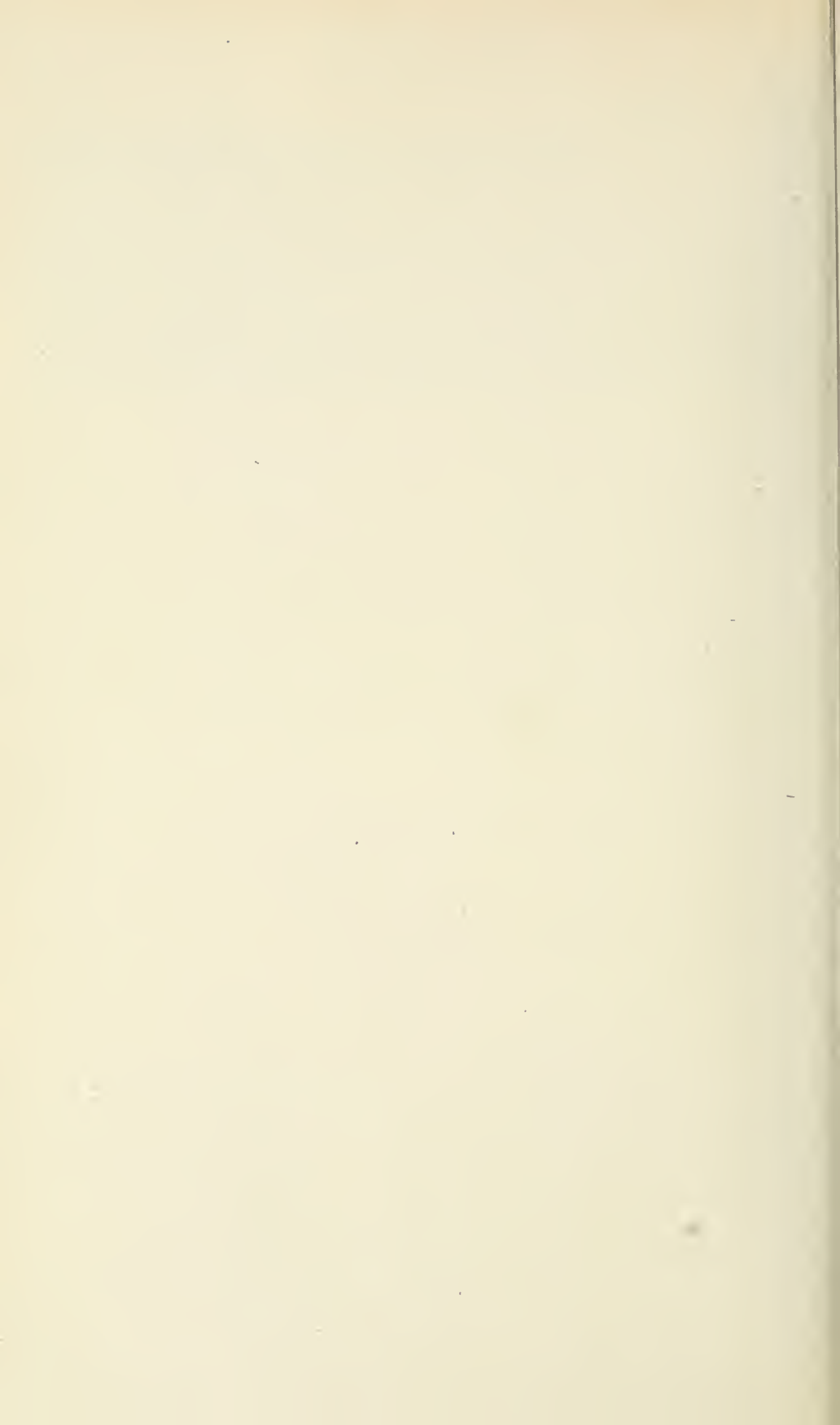
There would appear, therefore, to be no validity in the claim made by manufacturers to be held exempt from penalty; but, since nothing that can be regarded as endangering public health can be urged against any of these articles, (with the single exception of No. 56835-. I would respectfully suggest that this report, so far as it affects the declaration of preservatives and dyes on the label, be regarded as a warning.

to manufacturers of Ketchup that they will, in the future, be strictly held to the terms of our standards as published in G. 1111 and G. 1167.

It will further be noted that these samples vary greatly in the amount of solid material which they contain.

There can be no doubt that, as regards cost of manufacture and value to the consumer, they possess unequal values. A discussion of this phase of the matter will be found in the introduction to Bulletin No. 275 (February 1914) our last report on Ketchup.

I am not prepared however, to discuss this aspect of the question. Ketchup is a condiment, rather than a food proper, and it may be that the kind and quality of the material entering into its manufacture are of more importance than the quantity of such material. The consideration of this subject may be postponed for the present.



REPORT

OF THE

MINISTER OF AGRICULTURE

FOR THE

DOMINION OF CANADA

FOR THE YEAR ENDED MARCH 31

1917

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA

J. DE LABROQUERIE TACHÉ

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1917

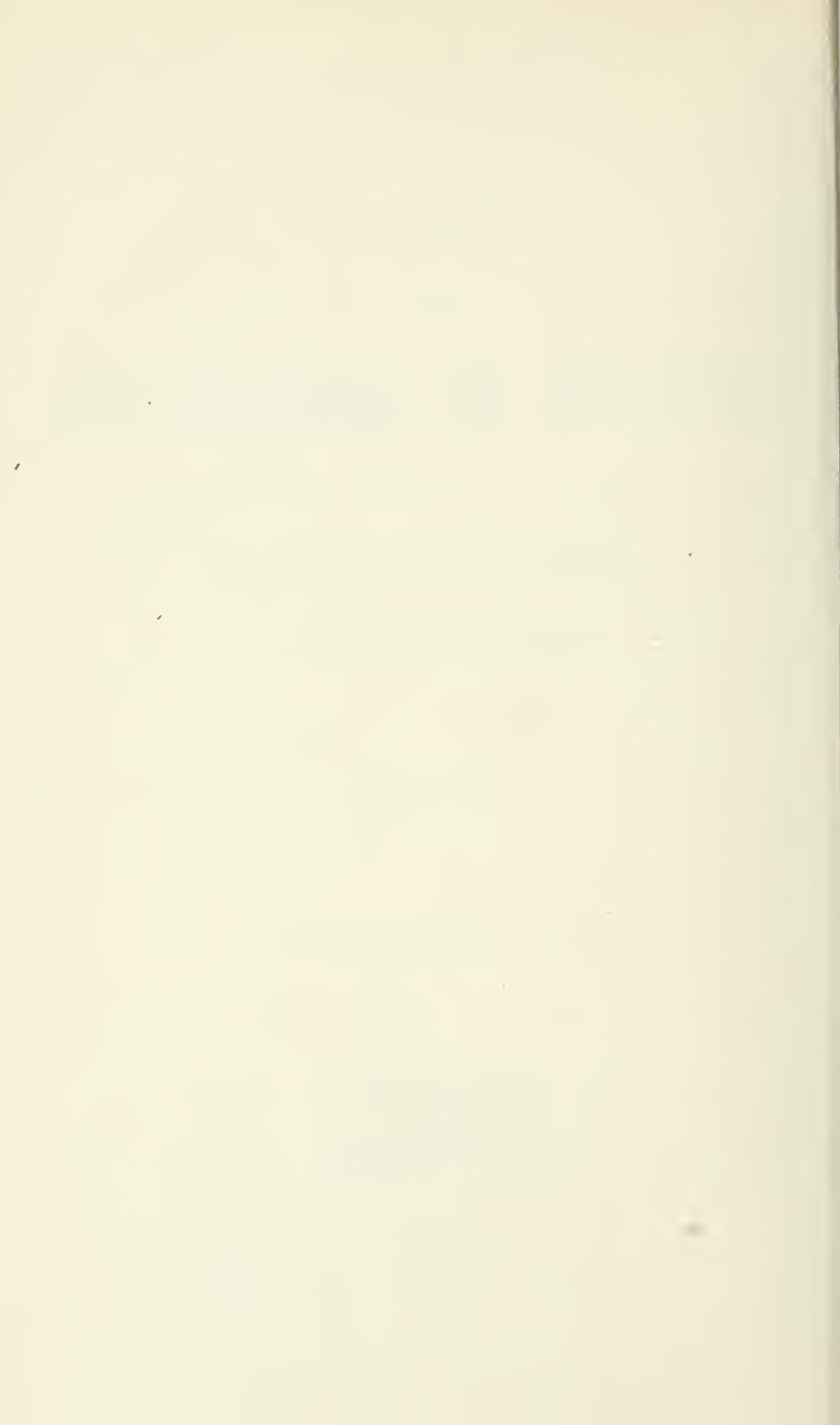


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REPORT

OF THE

MINISTER OF AGRICULTURE

1916-17.

*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1917.

I. GENERAL REMARKS.

Under the respective headings of the branches and divisions of this department will be found a synopsis of proceedings during the past year. The work in each branch has been efficiently carried on.

There has been no legislation affecting the department during this period.

By an Order in Council of date the 28th day of August, 1916, the general regulations under "The Destructive Insect and Pest Act", approved under date the 4th November, 1914, and amendments thereto, were further amended by striking out regulation IV and substituting therefor the following:—

IV. *An Inspector shall have power to enter any lands, nursery, or other premises where there is reason to believe that any of the insects, pests or diseases hereinafter specified are or may be present, or where there exists trees, shrubs, or other vegetation which prevents the successful control of the said insects, pests or diseases. An Inspector shall give such instructions as may be necessary for the treatment or destruction of any tree, bush, crop or other vegetation or vegetable matter or the containers thereof, which may be found or suspected to be infected with, or constitute an obstacle to the successful control of any of the insects, pests or diseases hereinafter specified, and such instructions shall be carried out by the owner or lessee of the infected, suspected, or*

menacing vegetation, vegetable matter or containers thereof and such remedial treatment shall be carried out and continued until the insect, pest or disease shall be deemed by the Inspector to have been exterminated or the menace removed. *The Inspector shall have power to carry out the required treatment or destruction if necessary.*

Vide Canada Gazette, vol. L, p. 723.

I have to report with regret the death, on the 23rd June, of Dr. C. C. James, C.M.G., Commissioner under the Agricultural Instruction Act. Devoted to agriculture, he was indefatigable in his service, and by his broad knowledge and tireless energy he contributed in an unusual degree to the betterment of the conditions of this great Canadian industry.

Mr. W. J. Black, B.S.A., late Secretary of the Economic and Development Commission, was appointed to succeed the late Dr. James, on the 19th July, 1916.

Canada participated in the Panama-California International Exposition held in San Diego, California, during 1916 and also up to the 31st of March last. The exhibit was considered one of the main features of the exposition, and attracted a great deal of attention.

As there are no big international exhibitions in sight, it has been decided to pack up the Canadian exhibits and ship them to Ottawa.

A report from the Canadian Exhibition Commissioner for the fiscal year ended March 31, 1917, will be found as an appendix hereto. (See appendix No. 2.)

II. ARTS AND AGRICULTURE.

DAIRY AND COLD STORAGE BRANCH.

The year under review was a very profitable one for the dairying industry of Canada. There was a large increase in the production of milk, and consequently in the output of butter, cheese, and condensed milk. A glance at the figures of our export trade in dairy produce will show a very gratifying increase in the quantity shipped abroad, and a much larger increase in value, due to the high prices that have prevailed.

In the fiscal year ended March 31, 1914, the quantity of butter exported was 1,228,753 pounds valued at \$309,046, while during the past year the quantity exported was 7,990,453 pounds valued at \$2,491,992.

In 1914 the quantity of cheese exported was 144,478,340 pounds valued at \$18,868,785, whereas this year the quantity was 180,733,426 pounds valued at \$36,721,136.

In 1914 the quantity of condensed milk exported was 9,339,382 pounds, worth \$666,941. This year the quantity was 15,858,622 pounds, and the value, \$1,371,610.

Taking the aggregate value of butter, cheese, condensed milk, fresh cream, and casein exported from Canada during the past year, it amounts to the fine total of \$41,367,705, a sum which is \$10,000,000 in excess of any previous year. If to this

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we add the value of the milk, butter, and cheese consumed at home, a reasonable estimate of which would be \$140,000,000, we arrive at a total production of \$181,367,705.

The foregoing figures present in unmistakable form a convincing illustration of the argument that the best spur to increased production is found in high prices.

A DISASTER TO THE CHEESE INDUSTRY AVERTED.

In the beginning of the season of 1916 the very existence of the cheese industry was seriously threatened by a shortage of rennet, the agent which has been used from the earliest times to coagulate the milk as the first step in the process of manufacturing cheese. Rennet is prepared from calves' stomachs, the supply of which has been obtained during the last thirty years principally from Bavaria, Hungary, and Russia. Supplies from these countries being entirely cut off by the war, it was obvious that, unless a substitute could be found, the cheese factories would have to cease operations as soon as the stock on hand was exhausted, or until such time as farmers and butchers could be induced to save a sufficient number of the stomachs of calves slaughtered in this country. The efforts made to secure calves' stomachs in Canada were not very successful, and it soon became evident that something else must be depended on.

A SUBSTITUTE FOR RENNET.

It had been known for some years that a pharmacopœial preparation known as "pepsin," prepared from the stomachs of pigs, had coagulating properties similar to rennet, but it had never been used in the commercial manufacture of cheese.

Experiments were at once undertaken at the Finch Dairy Station, in which various chemicals and different preparations of pepsin were tried, and by careful tests it was demonstrated that pepsin could be safely employed as a substitute for rennet, and that cheese made in this way were equal in quality to those made with rennet. The matter was taken up with the manufacturing chemists, and the result was that in a few weeks, standard preparations, suitable for cheesemaking, were put on the market, which are now being used very extensively in the place of rennet.

UNSUITABLE PREPARATIONS OFFERED.

The prospects for a new business in supplying rennet substitutes attracted considerable attention, and several preparations were offered to the cheesemakers which were quite unsuitable for the purpose. Many chemicals will coagulate milk, but more is required than mere coagulation. There is a somewhat obscure fermentation or digestive process set up by rennet and pepsin which seems to control the ripening, or curing, of the cheese. The cheesemaker is not in a position to determine, without making a practical test, whether any alleged coagulant is suitable for the purpose or not, and as a large quantity of milk is handled daily in a cheese factory, and it is weeks before it can be determined whether the coagulant is serving the purpose or not, it is evident that the risk involved is very great.

8 GEORGE V, A. 1918

The Dairy Commissioner advised the cheesemakers not to purchase any preparation which had not been thoroughly tried by some competent person who could recommend it. The results of the tests of inferior articles were published as soon as known. In this way the reputation of Canadian cheese was protected, and heavy losses averted. There was also the danger of uninformed persons attributing any defect in the quality of the cheese to the use of pepsin, and thus injuring the reputation of the Canadian product. Any alleged defects in cheese due to pepsin which were reported were followed up by the experts of the department, and in every case it was found that the defect was due to something else, or to the fact that the pepsin was not properly used. By thus proving the satisfactory character of pepsin, confidence was established in a very short time.

PEPSIN SUPPLIED BY THE DEPARTMENT AT COST.

As a precaution against an actual shortage, I authorized the Dairy Commissioner to purchase a quantity of pepsin to be sold to cheesemakers at cost in cases of failure on their part to secure supplies through the regular trade channels, or in the event of any attempt being made to unduly inflate the price of pepsin. The result is that cheesemakers can now secure pepsin in both liquid and powdered form at a price, which, although higher than the pre-war price of rennet extract, is only about one-third the present cost of standard rennet extract.

It was thought at first that there was a slightly larger loss of fat in the whey when pepsin only was used, but further investigations and experience in the use of pepsin show that quite as good results in this respect can be obtained with pepsin as with rennet. With this last objection removed, there is no reason why cheesemakers should pay high prices for rennet.

THE DAIRY STATION AT FINCH, ONT.

The dairy station at Finch, Ont., was under operation by the department as a model cheese factory and creamery the entire year, as usual, the business increasing slightly over that of the previous year. The total quantity of milk received in 1916 was 2,486,380 pounds and the average value to the patrons was \$1.60 per 100 pounds, compared with 2,418,010 pounds of milk received in 1915 and an average value of \$1.35 per 100 pounds.

THE CREAMERY AT ST. HILAIRE, N.B.

The Madawaska creamery at St. Hilaire, N.B., was operated by the department during the summer months of 1916, and there was a considerable increase in the quantity of butter made in comparison with the previous season. Farmers in the district are well pleased with the results obtained, and a further increase is looked for in the quantity of milk furnished to this creamery during the coming season of 1917.

The average price paid to the patrons in 1916 was 35.55 cents per pound of butter fat. In 1915 the average price paid was 27.09 cents per pound.

COW TESTING.

During the season of 1916 the general plan of cow testing was continued as in former years:—

(a) Through "Cow Testing Associations," in which the testing of milk samples from individual cows was done entirely by managers of cheese factories and creameries, for which they were paid by the department at the rate of 5 cents per test. (Under this plan there were 572 herds with 4,457 cows tested in 1916.)

(b) Through "Dairy Record Centres," in which an officer of the department had direct charge of the milk testing.

The following table shows the steady growth of the work at the thirty-five dairy record centres in the last three years, without increasing the number of men employed:—

| | Total Number of Herds. | Total Number of Cows Under Test. | Total Number of Records Received. |
|---------|------------------------------|--|---|
| 1914... | 2,027 | 17,777 | 126,527 |
| 1915... | 2,743 | 23,009 | 183,560 |
| 1916... | 3,353 | 29,409 | 212,854 |

The above figures do not include the large number of individual farmers who are making tests privately as a result of the cow-testing propaganda, and who are supplied with forms without charge by the Dairy and Cold Storage Branch.

The steadily increasing number of applications for milk and food record forms, particularly the forms for daily weights of each milking, that continue to come from all corners of the Dominion, testify to the widespread desire for the information to be derived from cow testing. There are also a great many inquiries from farmers for information about milk-testing apparatus.

Statistics show that there has been an average increase in milk production of over 1,000 pounds per cow for the whole of Canada since this work was started. At present values, this increase represents about \$40,000,000.

INSPECTION OF DAIRY PRODUCTS.

The inspection of dairy products has been carried on during the past year in the same manner and by the same staff as during the previous year. The methods of inspection are described in detail in Appendix IX of the Report of the Dairy and Cold Storage Commissioner for the fiscal year ending March 31, 1915.

ADULTERATION OF BUTTER.

Preliminary tests for water-content were made of 2,040 samples of creamery, dairy, and whey butter, of which 114 samples ($5\frac{1}{2}$ per cent of the number tested) contained more than the legal maximum of 16 per cent of water, and were therefore adulterated.

This does not mean, however, that $5\frac{1}{2}$ per cent of all butter sold is adulterated, as usually only butter which appears to be high in water-content is sampled for testing. In most cases, when the water-content of butter is in excess of the legal maximum, it is evident that such excess is not due to any intent to defraud, but is rather due to ignorance of the principles controlling the incorporation of water in butter, or

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to carelessness in the application of same. If circumstances indicate that there is no definite intent to defraud, the offender, for a first violation, is usually let off with a warning.

During the year, six prosecutions were made on account of excess water, a conviction being secured and a fine imposed in each case.

IMITATIONS OF BUTTER.

During the year two convictions have been secured for the sale of butter imitations, and a fine of \$200, together with the costs of prosecution, was imposed in each case.

WEIGHTS OF PRINTS OR BLOCKS OF BUTTER.

The weights of prints or blocks of butter throughout the country continue to improve. During the past year, eighteen cases of short-weight prints have been prosecuted, and convictions secured. The fines imposed ranged from \$10 to \$50, with costs. The number of convictions on account of short-weight prints is fifteen more than during the previous year. This is due to a more vigorous policy in connection with this part of the work. Short weight is the greatest form of fraud in connection with the butter trade at the present time. With butter retailing at the present high price of about three cents per ounce, the question of short weight becomes very important.

BRANDING OF CREAMERY BUTTER.

During the past year two prosecutions have been taken, and convictions secured, on account of creamery butter being branded in such a manner as to give false information as to the creamery in which the butter was made.

REFRIGERATOR CAR SERVICES FOR BUTTER AND CHEESE.

The special refrigerator car service for butter was in operation from May 8 to October 7. About 1,300 cars were operated in this service, at a cost to the Department of about seven thousand dollars. By reason of a guarantee of earnings from my department, a regular refrigerator service was provided for the dairy sections of the country, and shippers were able to forward any quantity of butter, from one package upwards, without any expense other than the regular less-than-carload freight rate. During the period referred to, two inspectors were employed at Montreal, one at Toronto, and one at Halifax to report the condition of the butter cars on arrival, the temperature of the butter, quantity of ice remaining in the bunkers, etc. These reports were received daily at Ottawa, and anything of an adverse character was promptly transmitted to the railway company concerned.

From June 12 to September 9, about 1,300 carloads of cheese were moved by refrigerator cars to Montreal and Quebec for export, and on these shipments the department paid the icing charge of \$5 per car. This was in accordance with the agreement between my department and the railway companies, which provides for a refrigerator car service for carload shipments of cheese between the dates mentioned.

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CARGO INSPECTION.

Four cargo inspectors were employed at Montreal during the season of navigation, instead of six as in pre-war days, and one inspector at Halifax. In Great Britain the usual staff of four inspectors was maintained, covering the ports of London, Liverpool, Glasgow, and Bristol. Under existing conditions the class of labour employed in loading and unloading the ships was naturally not so expert as before the war, and the proportion of breakage was therefore considerably increased. The inspectors did the best they could to supervise the handling and to keep down the percentage of breakage to a minimum. Thermographs were placed in the regular liners, and temperature records were obtained for the information of the shippers. Full reports were also made on the condition of all perishable cargo loaded or discharged at any of the ports mentioned above.

THE GRIMSBY PRECOOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE.

During the season of 1916 the experimental cold storage warehouse at Grimsby, Ont., which is owned and managed by this department, under the direction of the Dairy and Cold Storage Commissioner, carried on experiments and demonstrations on:—

The proper maturity of fruit for long-distance shipment.

Best style of package.

Methods of loading cars.

The use of brine tank cars for fruit shipments.

The rate of precooling at different temperatures, and in different styles of packages.

Bulletins covering the experiments have been issued and are available for distribution.

During the season this warehouse handled 1,567,328 pounds of fruit for the local growers. This quantity is equivalent to about eighty carloads.

PUBLIC COLD STORAGE WAREHOUSES.

Under the provisions of the Cold Storage Act (chapter 6, 6-7 Edward VII) the sum of \$26,053.21 was paid in the form of subsidies to public cold storage warehouses that had been erected in conformity with the above Act. No new contracts were entered into during the year, and the expenditure under this head is decreasing rapidly each year.

CREAMERY COLD STORAGE.

A bonus of \$100 is paid to any creamery that builds a suitable cold-storage room according to plans and specifications furnished free by the department. During the year, forty-one applications for this bonus were received and thirty were approved and paid. In the case of the other eleven the conditions laid down by the department were not complied with. This bonus system was commenced in 1897, and since that time 977 creameries have taken advantage of it.

PUBLICATIONS.

During the year the following publications have been issued:—

Bulletin 49.—Small Cold Storages and Dairy Buildings.

Bulletin 50.—The Use of Brine Tank Refrigerator Cars for Fruit Shipment.

Bulletin 51.—The Rate of Precooling Fruit in Different Styles of Packages and at Different Temperatures.

Bulletin 52.—Methods of Handling Basket Fruits.

Circular 18.—The Use of Pepsin as Substitute or Partial Substitute for Rennet in the Manufacture of Cheese.

Circular 19.—Directions for Using Soluble Powdered Pepsin as a Substitute for Rennet.

Circular 20.—Cow Testing:

Circular 21.—Further Notes on the Use of Pepsin and Other Substitutes for Rennet in the Manufacture of Cheese.

THE SEED COMMISSIONER'S BRANCH.

The work of the Seed Commissioner's Branch during the past year has been under four main divisions—seed growing, seed testing, seed inspection, and seed supply. The question of seed supply has required more attention than usual.

The production and use of better seed is encouraged by subventions to the provinces for field-crop competitions, seed fairs and provincial seed exhibitions, and to growers of field root and vegetable seeds under certain conditions. A grant is also made to the Canadian Seed Growers' Association, which directs the production of registered and improved seeds grown from superior stocks.

Seeds are tested for purity and germination at the Ottawa and Calgary laboratories. Twenty-five samples are tested free of charge for any company or individual. For each additional test a charge of 25 cents is made. This work has increased greatly during the last few years.

The seed trade is regulated under the Seed Control Act. Inspectors are assigned to definite districts to visit seed dealers and growers, report the kinds and quantity of seeds offered for sale, and forward samples from inferior lots for official analysis. The Seed Control Act defines the quality of different grades of timothy, red clover, alsike, and alfalfa seeds. Special seed grades are also defined by Order in Council for Western Canada grain, and seed corn on the cob is sold under the voluntary control agreement. Those seeds for which grades are not defined must be labelled with the names of all noxious weed seeds which are present in excess of a stated proportion. All seeds not up to vitality standards for good seed of the kind must be sold under mark of actual percentage germination. Violations of the Act are punishable by fines.

Information is collected and compiled on seed supplies for farm and garden crops. Where a shortage occurs, special efforts are made to stimulate production and facilitate securing and distributing available supplies. Timothy seed growing is being encouraged in Alberta, and field root and vegetable seeds where conditions are favourable. This year seed grain in large quantities has been purchased and distributed at cost.

The following summary report gives in more detail the nature of the work carried on by this branch.

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SEED GROWING.

FIELD CROP COMPETITIONS AND SEED FAIRS.

These services are conducted by the provinces, with the assistance of Dominion subventions amounting to two-thirds of the moneys awarded in cash prizes, but not exceeding approximately one-half the total cost of conducting this educational work. The number of competitions held continues to increase. During the summer of 1916 there were 442 field-crop competitions conducted, on which subvention amounting to \$25,785.57 was claimed, as follows:—

| | |
|--------------------------------|-----------|
| Prince Edward Island.. | \$ 686 99 |
| Nova Scotia.. | 796 27 |
| New Brunswick.. | 781 00 |
| Quebec.. | 4,000 00 |
| Ontario.. | 13,013 33 |
| Manitoba.. | 46 65 |
| Saskatchewan.. | 2,612 31 |
| Alberta.. | 2,849 32 |
| British Columbia.. | 1,000 00 |

This number of competitions held shows an increase of twenty-five over the previous season. The total subvention claimed is about \$60 less than in 1915. The falling-off was principally in Nova Scotia, Manitoba, and British Columbia. Substantial increases are shown by New Brunswick, Quebec, Saskatchewan, and Alberta.

In the winter and early spring of 1915-16 there were 177 local seed fairs on which subvention was paid amounting to \$7,083.69, divided as follows:—

| | |
|--------------------------------|-----------|
| Prince Edward Island.. | \$ 200 00 |
| Nova Scotia.. | 240 32 |
| New Brunswick.. | 300 00 |
| Quebec.. | 1,934 51 |
| Ontario.. | 113 53 |
| Manitoba.. | 1,225 10 |
| Saskatchewan.. | 1,767 00 |
| Alberta.. | 1,303 23 |

These returns show an increase of thirty-two in the total number of seed fairs held in comparison with the previous season, and an increase of nearly \$1,000 in the subvention paid.

Provincial seed exhibitions were conducted during the winter of 1915-16, and subventions paid as follows:—

| | |
|-------------------------------------|-------------------|
| Prince Edward Island.. | \$446 00 |
| Nova Scotia.. | 187 00 |
| Maritime Provinces Winter.. | 595 00 |
| Fair, Amherst, N.S.. . . . . | ..... |
| New Brunswick.. | 419 00 |
| Quebec.. | 450 00 |
| Ontario, Guelph.. | 550 67 |
| Ottawa.. | 582 67 |
| Manitoba.. | 600 00 |
| Saskatchewan.. | 300 67 |
| Alberta.. | 400 00 |
| Total | <u>\$4,531 01</u> |

The returns for the seed fairs and provincial seed exhibitions conducted during the present year are not completed.

FIELD ROOT AND VEGETABLE SEEDS.

The production of field-root and garden vegetable seeds has been further encouraged during the past year. For the supervision of this work the employment of special officers became necessary. Supplies of these seeds from Europe have been materially reduced and have advanced in values. Seedsmen, accordingly, have offered contracts and stock seed to Canadian growers for 1917 and 1918 production at quite remunerative prices. My officers in direct charge of this work have been able to arrange for the production of a substantial part of our requirements of these seeds by assisting seedsmen in placing orders for their supplies with experienced growers in the provinces of British Columbia and Ontario. The acreage of swede turnip and the hardier vegetable seeds is also being extended in Quebec and the Maritime Provinces. It is anticipated that by thus placing the industry on a sound business basis, profitable to both the grower and the trade, greatly increased production will result.

The quantity of homegrown seeds produced in 1916 remained practically as in 1915. The seed on which subvention was paid amounted to over 27,400 pounds, the subvention being approximately \$1,200. The kinds and amounts produced were: sugar beet, 20,325 pounds; mangel, 2,283; swede, 1,948; parsnip, 1,209; onion, 1,066; garden beet, 250; and smaller quantities of table carrot, cabbage, tomato, and radish. A large number of farmers and gardeners also grew sufficient seed for their own use.

REGISTERED AND IMPROVED SEED.

Financial support to the work of the Canadian Seed Growers' Association has been continued. This association is now receiving \$7,000 per year from the Seed Commissioner's Branch appropriation. Valuable work is being done by members of this association in the production of superior strains of seed, particularly cereals. Under the direction of the association, individual growers or farming clubs are provided with select seed, usually developed by an Experimental Farm, which is grown under rules to maintain its purity. The product of this select stock seed is catalogued each year by the association as registered or improved seed, according to its standing, and constitutes a valuable source of supply for high class seed.

SEED TESTING.

Under this general division of the work is included the testing of seeds for farmers and merchants, identification of samples, and general educational and investigation work in connection with the cleaning and handling of seeds. Many samples of seed are also tested in connection with the seed inspection system.

SEED TESTED FOR FARMERS AND MERCHANTS.

Severe injury to the principal grain crops from different causes throughout Western and much of Eastern Canada last fall resulted in a great increase in the volume of work demanded of the seed laboratories at Ottawa and Calgary. The Calgary laboratory has been enlarged and improved, and has been able to render an immense

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service to the grain growers of Western Canada by giving them exact information in regard to the purity and vitality of grain which they were contemplating using as seed.

From September 1, 1916, to March 31, 1917, 11,870 samples of grain and other seeds were received and tested at Calgary, as compared with 6,882 for the same period last year. In reporting on samples sent by farmers, the results of the germination tests have been accompanied by remarks as to the impurities and recommendations for improving the seed by cleaning.

At the Ottawa laboratory, 9,763 samples were received from September 1 to March 31. The larger proportion of these were received from wholesale and retail merchants, and represent lots of timothy, red clover, alsike and alfalfa intended for sale throughout the trade under grades as required by the Seed Control Act.

An unusually large number of red clover seed samples were received from Ontario farmers, due no doubt to the excellent conditions for seed production obtaining the previous fall. The seed was of an unusually high quality, but too much of the Ontario seed is polluted with the seeds of ribgrass, ragweed, night-flowering catchfly, foxtail and other weeds whose seeds are of such a size that they are difficult or impossible of separation by sieves in ordinary cleaning machinery. Accompanying the ordinary purity reports issued to farmers on red clover samples, letters and circulars have been sent giving information in respect to cleaning and handling the seed.

EDUCATIONAL WORK.

The influence of the seed laboratory in spreading information in regard to the value and meaning of seed testing has been enlarged through the work of district representatives of the provincial Departments of Agriculture and others who conduct short courses in agriculture for farmers and farmers' sons. These courses usually include work on seed testing, seed judging, weed-seed identification and related subjects. The seed laboratory has supplied those responsible for the conduct of these classes with weed seeds, grain, screens and suggested outlines of work that might be taken up in connection therewith. Similar assistance has also been given to those taking up agriculture subjects in collegiate institutes, high schools and continuation classes.

A good deal of attention has also been given to the question of cleaning grain and other seeds by means of the ordinary fanning mill. One of the chief reasons why such poor results are accomplished by fanning mills is that many of the sieves that were originally supplied have been lost or worn out. An improvement in this connection is expected, as the co-operation of the manufacturers of fanning mills has been enlisted and they are now prepared to supply sieving to cover old frames to fit the farmers' mills.

Our efforts towards bringing about more careful and thorough cleaning of western grain at threshing time are being continued, and we have evidence that improvement has been made in many sections. Considerable interest has been aroused among the grain growers and live-stock men, and reports of successful experiments in cleaning grain at threshing time have been received. The manufacturers of threshing machines have been acquainted with the problem and at least one firm has set about per-

fecting an appliance for attachment to the threshing machine to separate the screenings. Live stock and other associations have been given information in regard to the feeding and handling of screenings. It is of interest to note that the screenings accumulating at the Canadian Government elevators are being utilized as recommended in the department's bulletin on "Grain Screenings."

It has been found necessary to limit somewhat the distribution of our reference collections of one hundred kinds of weed and economic seeds.

The identification of seeds of weeds and other plants has received careful attention, necessitating much correspondence.

The laboratories are co-operating with the Association of Official Seed Analysts of North America in its efforts to improve the methods of germination and purity analysis. Mr. E. D. Eddy, Chief Seed Inspector, was president of the association last season and attended the annual meeting in St. Paul in July; Mr. J. R. Dymond, Acting Chief Seed Analyst, has been referee on purity analysis for the association for two years, and attended an executive meeting of the Association held in New York in December, 1916, in affiliation with the American Association for the Advancement of Science.

SEED INSPECTION.

Inspection under the Seed Control Act has been continued along the usual lines. Owing to the light crop of clover seed in Ontario in the fall of 1915, a larger proportion than usual of the seed on the market the next spring was imported. Most of this seed was of excellent quality in respect to purity, and was properly graded when offered for sale. The 1916 crop of clover seed was much better than that of the previous season, and a larger proportion of the seed being sold this spring is Canadian grown. Some of the finest clover seed, both red and alsike, on the market this year was produced in New Ontario.

As has been the case for a number of years, very little clover and timothy seed is being put on the market by large dealers that is not in conformity with the Seed Control Act requirements. Most of the violations are on the part of farmers or local dealers in the seed-producing districts who do not have their seed thoroughly cleaned, tested, and properly graded. One of the principle difficulties with which local dealers and farmers have to contend is that a great deal of the seed when threshed is badly contaminated with weed seeds, and cannot be properly prepared for market except by the use of power cleaners, which are now operated only by the large dealers.

In the spring of 1916 the seed being offered for sale was inspected in 2,203 places, a decrease of sixty-five compared with the previous season. The larger places were visited by the inspectors several times. For this work temporary seed inspectors are employed to assist the regular district officers of the Seed Branch. Apart from vegetable seeds, 615 violations of the Act were detected in the spring of 1916, a decrease of about fifty compared with the previous year. Of these, 205 were for not having timothy, red clover, alsike, or alfalfa marked with the grade number; forty-eight were for having these seeds wrongly graded; and 175 for offering seeds which were below the standard for No. 3. There were 144 violations for exposing cereals and other seeds for which grades are not provided, without being labelled to indicate the presence

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of noxious weed seeds, and forty-three for seeds being below the germination requirements. Most of the violations were for first offences or of a minor character, and it was considered necessary to institute legal proceedings against only thirteen dealers. One of the seedsmen whose samples were collected in connection with the paper-packet seed investigation was included in this number.

PAPER PACKET SEEDS.

The paper packet seed investigation commenced in the spring of 1915 has been continued and some valuable results secured. The work of the second year has confirmed the results during the first season, in that it shows a great difference respecting the vitality and quantity of seed supplied in paper packets by various dealers. For the purpose of the investigation, sample packets of twenty standard varieties of vegetable seeds put up by ten of the largest dealers were collected by seed inspectors. The difference in the vitality of seeds supplied by various dealers is shown by the range in the proportion of their samples germinating below two-thirds of the standard for good seed which was from 8 to 53 per cent. The quantity of vital seed supplied also varied greatly with the different dealers, and in some cases with different packets put out by the same firm. Results so far indicate that certain dealers are supplying seed very low in vitality and also decidedly inferior in respect to uniformity and type character. The investigation is being continued, with more attention being given to type and the quality of the crop produced.

SEED CORN CONTROL.

The Seed Corn Control agreement which was inaugurated in the spring of 1916 has been renewed with some slight modifications. Under this agreement, producers of Canadian-grown corn undertake to sell seed corn on the cob only under certain regulations, which require that the corn shall be properly named as to variety and marked grade No 1 or No. 2 according to defined standards. All corn sold under the agreement is subject to sampling by seed inspectors or the purchaser, and if it is found to be wrongly graded certain penalties are attached. An alphabetical list of the growers offering seed corn under the agreement renewed were received from ensilage growers, who consider it a valuable protection against being supplied with inferior seed, and also from the seed-corn growers.

Owing to the extremely unfavourable weather conditions which prevailed during the season of 1916, the amount of corn produced in Canada which was suitable for seed was very limited, probably not more than 10 per cent of the normal supply. The small quantity available was exhausted early in the season, and most of the growers who would otherwise be offering seed this spring under the control system of marketing now have none for sale. These conditions have greatly reduced the number of growers under the agreement and the amount of seed offered this season.

THE SEED SUPPLY.

SEED GRAIN GRADES.

The special grades for seed grain inspected at the Canadian Government elevators, referred to in last year's report, was revised in October on my recommendation to the

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Governor in Council. Standards were defined for No. 1 Canada Western seed oats, No. 1 Northern and No. 2 seed wheat, and No. 3 Canada Western seed barley. These grades are based on the commercial grade standards with further requirements in respect to purity, dockage, and vitality. For the seed grades, Red Fife and Marquis wheat are kept separate. All grain on which ex-elevator seed certificates are issued must be cleaned to the dockage set by the seed inspectors and be free from noxious weed seeds within the meaning of the Seed Control Act. The application of these special seed grades is effected through the co-operation of my colleague, the Honourable the Minister of Trade and Commerce, whose officers are responsible for handling the grain in the elevators, apart from the inspection for the seed grades. The inspection of the seed when it enters the elevators, and when cleaned for shipment, is done by my staff of seed inspectors.

SEED PURCHASING COMMISSION.

Owing to the extremely unfavourable weather conditions prevailing in parts of Canada last season, the grain crop was greatly reduced in yield and the quality much impaired. Early in the fall it became evident that prompt action was desirable, on the part of the Government, in order to preserve the best part of the western crop and make it available for seed this spring.

With this in view the Governor in Council, on my recommendation, appointed a special seed-purchasing commission with authority to purchase, and store in the Canadian Government elevators, grain that was suitable for seed. This grain was to be cleaned to the seed-grade standards, under the inspection of Seed Branch officers, and delivered, on order of the chief commissioner, at a price sufficient to cover the average cost of the grain plus charges for cleaning, sacks, loading ex-elevator, and other necessary expenses. The cost of the commission, including salaries, is being met from the Seed Branch appropriation. For the personnel of the commission, appointments were made from the most experienced inspectors of the Seed Branch staff. Mr. A. E. Wilson, Indian Head, Sask., is chief commissioner and purchasing agent.

The duties of the Seed Purchasing Commission included negotiations with provincial and municipal governing bodies in the three prairie provinces with a view to securing their co-operation in the matter of providing seed to grain growers who were really in need of financial support. The provinces of Manitoba and Saskatchewan promptly adopted suitable legislation authorizing their municipal governing bodies to extend credit to those farmers who were in need. With these arrangements completed, and in view of the fact that shortage of seed supply in the province of Alberta was confined to a few relatively small localities which were taken care of by local interests, apart from special legislation, the seed purchasing commission were able throughout to maintain a basis for selling seed grain subject to payment by bank draft on arrival of the seed.

The Seed Purchasing Commission, acting for Western Canada, and the Canadian Government Elevators Seed Department, with officers at 226 Grain Exchange, Winnipeg, acting as selling agent for the commission for Eastern Canada, were able to fill all orders for seed grain from municipal governing bodies, farmers' organizations, farmers, and also wholesale and retail seed merchants in all parts of Canada, that were received, with grain of superior quality that was clean and suitable for seeding.

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The sum of \$400,000 was first made available for the purchase of seed wheat, according to the terms of the Order in Council (P.C. 2314) October 7, 1916. A further sum of \$800,000 was provided by Order in Council (P.C. 3073) December 14, for the purchase of seed oats and barley as well as wheat. On March 23 a final appropriation of \$500,000 was made by Order in Council, (P.C. 830), making a total of \$1,700,000 made available for the purchase of seed grain. The money was placed at the credit of the Seed Purchasing Commission at the Bank of Montreal, Regina, Sask., in installments of \$100,000 as required. The total amount issued to the credit of the commission at Regina was \$1,400,000. All seed sold by the commission was for cash, and all proceeds from sales of seed grain were deposited to the credit of the Receiver General. It is expected that all the money advanced to the commission for purchases will be returned from sales before the end of June, with the probability of a small surplus.

Up to March 31 the commission had purchased 629,383 bushels of wheat, 392,815 bushels of oats, and 1,566 bushels of barley. The average cost of the wheat at the elevators was approximately \$1.84 per bushel, No. 1 Northern basis; and the oats, approximately 59 cents per bushel. In the cost price is included the premium over the commercial grade price paid for seed grain and the inward freight to the elevators.

The quantity sold and delivered by the commission up to April 7 amounted to 398,063 bushels of cleaned seed wheat, at an average price of approximately \$1.98 per bushel, No. 1 Northern basis, and 7,480 bushels of oats at an average price of approximately 69½ cents per bushel. These prices include freight paid to point of shipment, and sacks and sacking for a part of the grain. These oat sales do not include the sale made through the Winnipeg office of the Canadian Government Elevators where orders were accepted from Eastern Canada for No. 1 Canada Western cleaned seed oats which were sold at 80 cents per bushel, freight paid to Fort William.

WESTERN CANADA TIMOTHY SEED.

For several years officers of this branch have devoted considerable attention to the production of timothy seed in Western Canada, particularly certain districts in Alberta. It has been found that the seed produced in the Prairie Provinces is usually of excellent quality. In 1912 a propaganda was instituted to stimulate timothy seed production in the principal live-stock districts of Alberta. By 1915 the industry had developed sufficiently to supply the needs of the province, and nine car loads of Alberta timothy seed were shipped to points outside the province.

An inquiry last August indicated a large increase in the timothy seed harvest with considerable anxiety on the part of farmers as to facilities for assembling and cleaning the seed for market. The matter was submitted by the Seed Commissioner to the Board of Grain Commissioners, resulting in an arrangement becoming effective September 1 for handling the seed at the Canadian Government terminal elevator at Calgary, on the general basis that is applied to flax seed and cereal grains. Announcement was made to growers and dealers that timothy seed would be received at the Calgary elevator, cleaned, graded, warehouse receipt issued for the net weight of re-cleaned seed, stored for fifteen days, and finally sacked and loaded on the cars

ex-elevator at a total charge of 5 cents per hundredweight. It was recognized that this was merely a nominal charge, as the process of cleaning timothy seed is much slower than with flax seed or cereal grains.

During the past season, 1,337,460 pounds of timothy seed were received at the Calgary elevator. Of this amount about 86 per cent was graded No. 2 under the Seed Control Act standards, 12½ per cent No. 3, and only 1½ per cent was below the No. 3 standard. The Alberta seed has found a ready market.

THE LIVE STOCK BRANCH.

I took the opportunity last year of pointing out, through my report, the very great importance of live-stock production as an increasing commercial asset to the country and, at the same time, called attention to the advantages of stimulating and developing our export trade in establishing a permanent and lucrative market for our surplus live-stock products. During the year which has just closed, the significant truth of the statements then made has been more clearly and impressively emphasized through the growing urgency of the food problem which has confronted the United Kingdom and her allies. Throughout the twelve months, prices of eggs, poultry, bacon, and beef have risen to an unprecedented level, a fact which serves to indicate very faithfully the well-recognized world shortage of meats and meat products. That the farmers of Canada are contributing a substantial quota to the Empire's need in this regard is made clear by a consideration of the amounts of our exports of such staple commodities as are included in the following statement. Comparison with the exports of previous years indicates the remarkable resources of the country in the ability to respond to a market demand which has been called into being in such a limited interval of time.

EXPORTS.

| | Fiscal Year. | | | | |
|--------------|--------------|-----------|------------|------------|------------|
| | 1913. | 1914. | 1915. | 1916. | 1917. |
| | \$ | \$ | \$ | \$ | \$ |
| Eggs..... | 58,176 | 92,322 | 1,206,518 | 2,705,416 | 1,810,380 |
| Poultry..... | 279,276 | 211,763 | 551,078 | 440,319 | 388,035 |
| Bacon..... | 5,351,225 | 3,763,330 | 11,812,186 | 25,759,266 | 43,011,439 |
| Beef..... | 160,877 | 1,165,295 | 2,060,430 | 6,154,632 | 5,750,435 |
| Ham..... | 322,669 | 270,049 | 2,654,064 | 1,382,734 | 766,595 |
| Pork..... | 79,687 | 216,810 | 2,610,776 | 2,054,316 | 2,522,926 |
| Wool..... | 314,588 | 803,522 | 2,786,665 | 1,506,579 | 2,595,488 |
| Totals..... | 6,566,498 | 6,523,091 | 23,681,717 | 40,003,262 | 56,845,298 |

NOTE.—The figures for 1913-14-15-16 include importations re-exported. For 1917, the figures are for domestic exports only.

I am glad to be able to say that the services of the Live Stock Branch have been utilized to the very fullest possible extent in developing the movement and in strengthening the position of the country in this direction. Under the circumstances, I feel

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that there is ample justification for the increasing appropriations which Parliament has been asked to provide for this work. The activities which have been undertaken during the past year have undoubtedly aided greatly in extending production, in increasing the facilities in marketing, and in developing a strong, confident attitude throughout the country which, even under the difficulties presented through shortage of labour and high prices for feed, has stimulated an extension of effort and of enterprise in all the provinces of the Dominion. I am particularly glad to be able to comment upon the willingness of such powerful institutions as the banks, the railways, and the distributors to co-operate with the department in what has been undertaken. The need for the commercial expansion of our live-stock industry upon a sound business basis is being widely recognized, and I am satisfied that even more significant developments are yet to be expected.

Following is a brief enumeration of the activities of the Live Stock Branch during the past year:—

HORSE DIVISION.

DISTRIBUTION OF PURE-BRED STALLIONS.

During the year the work of loaning stallions was continued. The original intention of the policy to loan stallions in the outlying and newly settled districts is being closely adhered to. Stallions have been supplied to many new associations in outlying districts which otherwise would be forced to use scrubs, as the people are unable to purchase pure-bred animals for themselves. The branch has purchased, since the inception of the policy in 1913, some 158 horses. These have been distributed from Cape Breton Island to the new districts of British Columbia and up in the Peace River country. To date only eight of these stallions have died. Considering the varying conditions under which these horses are kept, it is really a remarkable showing. As a whole, these horses have been particularly healthy, and have left a high percentage of good, serviceable colts. Many letters and reports have been received during the year from various sections of the country telling of the great improvement that has been brought about by the strong prepotent blood of the pure-bred. Many associations sent in renewal applications, although the stallions had been with them three or even four years.

In addition to improvement in the horse stock, the value of sticking to one breed and the advantage of co-operation among the breeders is slowly but surely taking root. Districts that formerly had the loan of stallions from this branch have this year reorganized their associations into clubs for the purpose of hiring horses. In several cases, at least, clubs would not have been formed had it not been for the fact that the value of co-operation among the breeders and the advantages of using a good stallion had already been demonstrated.

FEDERAL ASSISTANCE TO HORSE BREEDING.

This policy of allowing a district to organize a club for the purpose of hiring a good stallion for the use of the members is proving particularly popular. The reports show that the clubs are hiring the best stallions to be found in the country.

This will have a two-fold influence upon horse breeding. The generous patronage given to good horses will result in having a larger number of high-class colts than heretofore. Moreover, the fact that the clubs are hiring the best horses will result in the importers bringing a better class of stallion into the country, while our own breeders will be encouraged to use not only the best stallions, but to procure the best mares in their efforts to raise the high-quality class of horses required. This policy has received the favourable commendation of experienced breeders throughout the country. Time and again letters have been received stating that it is undoubtedly the best policy at present in operation in any horse-breeding country of the world. From the number of applications already received there will undoubtedly be five or six times as many clubs in operation during the season of 1917 than there were in 1916. From the inquiries for good stallions throughout the country, it would appear that the farmers are again giving serious attention to horse breeding.

During the year, in addition to the several thousand horses purchased for war purposes, some 12,000 were shipped from eastern points to the western farms. Saskatchewan dealers also bought largely in Manitoba and in Alberta. Unlike other classes of live stock, the prices of horses have not been enhanced by war conditions. However, everything considered, the average price has been fairly good. Reports go to show that some sections of the country have sold rather short. Particularly is this true in the case of good, young mares. Farmers to-day would be wise not only to retain their good, young mares, but to breed them to the best stallions within reach. Horses are not a class of live stock that a farmer can go out of to-day and step into to-morrow. If the best results are to be obtained and a constant steady supply kept up, their breeding must be given steady, persistent attention.

CATTLE DIVISION.

DISTRIBUTION OF PURE-BRED BULLS.

In 1913 the policy of loaning pure-bred bulls to associations specially organized under rules laid down by the Live Stock Branch was inaugurated. Each season the number of applications has been very large, and the filling of same has practically absorbed the annual supply of suitable bulls. On December 31, 1916, the number of bulls in the hands of associations was as follows:—

| Breed. | British Columbia. | Alberta. | Saskatchewan. | Manitoba. | Ontario. | Quebec. | New Brunswick. | Nova Scotia. | Prince Edward Island. | Total. |
|----------------|-------------------|----------|---------------|-----------|----------|---------|----------------|--------------|-----------------------|--------|
| Shorthorn..... | 19 | 181 | 256 | 69 | 69 | 126 | 2 | 11 | 21 | 754 |
| Ayrshire..... | 10 | 1 | 3 | ..... | 5 | 189 | 12 | 25 | 9 | 254 |
| Holstein..... | 13 | 5 | 18 | 8 | 13 | 42 | 2 | 3 | 2 | 106 |
| Hereford..... | ..... | 15 | 13 | 9 | 2 | 3 | ..... | ..... | ..... | 42 |
| A. Angus..... | 1 | 7 | 6 | 6 | 1 | ..... | ..... | ..... | ..... | 21 |
| Canadian..... | | | | | | 23 | | | | 23 |
| Jersey..... | 6 | | | | | 1 | 1 | 2 | | 10 |
| Guernsey..... | 1 | | | | | | | 2 | | 3 |
| R. Polled..... | 1 | | 1 | 1 | | | | | | 3 |
| | 51 | 209 | 297 | 93 | 90 | 384 | 17 | 43 | 32 | 1,216 |

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These sires are loaned for only one year at a time, and an association is required to meet the cost of maintaining an animal as long as it remains in its hands. The department reserves the right to inspect the animals at any time and withdraw assistance in the event of it being found that an association is not living up to its agreement. An association may renew its application for the loan of the same animal at the expiration of its term, and, if all the requirements have been complied with, such applications are promptly approved. When necessary the sires are exchanged, but only for animals of the same breed. All bulls are inspected at least once a year by regular officers of the Live Stock Branch. By their advice and recommendations our inspectors are able to do much towards promoting the objects of the associations, and, in addition, it has been found that the bulls are kept in much more satisfactory condition when inspections are made regularly. Usually one inspection a year is made, but when it is found necessary two and even three visits are made.

The reports received indicate that in the majority of cases the sires placed have resulted in a marked improvement in the quality of the live stock of the districts affected. Such improvements usually result in increased interest in cattle raising, and in many cases districts assisted two or three years ago have now so increased their holdings of cattle that the members have purchased bulls of their own and no longer require assistance from the branch. An effort is being made to encourage the members of the associations to feed their young stock properly so that an advantage obtained by superior blood will not be lost through unintelligent handling.

CAR-LOT POLICY.

To effect a more equal distribution of our live-stock population, the granting of assistance through the Live Stock Branch to farmers wishing to secure good breeding stock has been authorized. Under this policy the department pays reasonable travelling expenses of the representative of individuals or associations from any section of Canada desiring to purchase one or more carloads of breeding stock in any part of the country, the expenses allowed to cover railway transportation and living expenses from the home of the purchaser to the point at which it is expected that the purchase will be made, also hotel expenses and livery expenses for the time which should be sufficient to purchase the consignment. No assistance in the payment of freight is rendered, nor is any responsibility assumed by the branch in connection with the purchase price of the consignment. Further, no assistance under the policy is rendered if stock is purchased for speculative purposes. This policy has been quite widely taken advantage of during the past two or three years.

In the fall of 1916 the policy was extended to admit of the payment of the expenses of farmers purchasing stockers and feeders at the stockyards in Western Canada. This action was deemed advisable in view of the need of maintaining in the country, if possible, the stocker and feeder cattle which would otherwise go across the line as in previous years. The results obtained are summarized in a concise form in the following table:—

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STATEMENT of the Shipments of Feeding and Breeding Cattle from Union Stock Yards, St. Boniface, Manitoba, October, 1916, to March, 1917, when the "Car Lot Policy" was in force; also a Statement showing Shipments during a similar period twelve months previous.

| | West Shipments. | | United States Shipments. | | Totals. | Totals. |
|---------------|-----------------|----------|--------------------------|----------|----------|----------|
| | 1915-16. | 1916-17. | 1915-16. | 1916-17. | 1915-16. | 1916-17. |
| October..... | 810 | 6,017 | 9,709 | 5,511 | 10,519 | 11,528 |
| November..... | 1,962 | 7,240 | 5,464 | 2,455 | 7,426 | 9,695 |
| December..... | 1,590 | 3,942 | 882 | 866 | 2,472 | 4,808 |
| January..... | 225 | 1,076 | 51 | 241 | 276 | 1,317 |
| February..... | 687 | 1,665 | 25 | 247 | 712 | 1,912 |
| March..... | 1,187 | 2,338 | 167 | 225 | 1,354 | 2,563 |
| Totals..... | 6,461 | 22,278 | 16,298 | 9,545 | 22,759 | 31,823 |

Comparing the periods, October to March, 1915-16, and October to March, 1916-17, if the same proportion had gone south last season as in the previous season, almost 23,000 unfinished and breeding cattle would have left the Dominion, while the actual figures show but 9,545. Taking the matter in another way, there were 22,278 head shipped to points in the country, as compared with 6,641 in the previous period—a conservation to the country of nearly 16,000 head. In addition, there were about 3,600 breeding and feeding cattle returned to the country under the "Car-lot Policy," from the Calgary and Edmonton markets.

RECORD OF PERFORMANCE.

The year 1916-17 has been a very hard one for most owners of dairy cows. Large numbers of cows, which, under ordinary conditions, would have been milked all winter, were allowed to go dry in the fall owing to the scarcity of grain, roots and silage.

It was not encouraging at any time after the spring of 1916 for a man to enter his cows for any kind of test for production. Notwithstanding these adverse conditions, the interest in the record of performance test shows no signs of abatement, and owners who have had to drop out of the test for awhile, in nearly all cases express their intention of commencing again as soon as feed conditions are better. A number of applications for entry of cows in the test have been received from beginners with small herds.

The number of herds in the western provinces from which cows are entered for test, is increasing steadily. The average production of the cows under test, and the percentage qualifying for a certificate is gradually increasing.

The inspectors on this work not only test the cows entered for the record of performance, but large numbers of others. In many cases there may be only a few of a herd under test, but the owner likes to know what the rest are producing. Very often neighbours bring samples of their cow's milk to be tested. Where milk or cream is being shipped, the inspector is often requested to test it. The work is appreciated, and is promoting the improvement of dairy stock and is leading to the adoption of better methods in its care.

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The following is a brief summary of the work for the year:—

| | |
|-------------------------------------|-------------|
| Number of cows entered in the test— | |
| Ayrshires... | 656 |
| French-Canadians... | 44 |
| Guernseys... | 27 |
| Holstein-Friesians... | 628 |
| Jerseys... | 192 |
| Shorthorns... | 137 |
| Total.. | <hr/> 1,634 |
| Number of cows qualified— | |
| Ayrshires... | 223 |
| French-Canadians... | 14 |
| Guernseys... | 8 |
| Holstein-Friesians... | 221 |
| Jerseys... | 64 |
| Shorthorns... | 50 |
| Total.. | <hr/> 580 |
| Number of bulls qualified— | |
| Ayrshires... | 8 |
| French-Canadians... | 1 |
| Holstein-Friesians... | 8 |
| Jerseys... | 1 |
| Total.. | <hr/> 18 |

APPENDIX.

The records tabulated in the appendix are for cows which have produced sufficient milk and fat to qualify, but which have failed to freshen within fifteen months after the commencement of test.

| | |
|-----------------------|----------|
| Ayrshires... | 28 |
| French-Canadians... | 1 |
| Holstein-Friesians... | 41 |
| Jerseys... | 9 |
| Shorthorns... | 13 |
| Total.. | <hr/> 92 |

SHEEP AND GOAT DIVISION.

Sheep raising is assuming a role of great importance in live-stock production in Canada. The supply of wool and mutton products throughout the world are by no means sufficient to meet requirements. This is especially true of wool, which represents a necessity in the prosecution of the war for the manufacture of soldiers' clothing. Canadian farmers are manfully trying to cope with these conditions of scarcity, and are entering upon sheep raising with the determination to conserve and increase the country's flocks and raise the standard to a degree which will bring recognition to Canada as a premier sheep-producing country.

Assistance to Co-operative Associations in Preparing Wool for Market.—However, the sheep industry in the past by no means occupied the prominent position in Canadian agriculture which its importance demands. Realizing this, I instructed the officers of the Live Stock Branch in 1913 to undertake a study of the character of Canadian wool and sheep and determine what steps should be taken to effect an improvement in their status. Results of the investigations showed clearly that the

principal objections with wool obtained chiefly with condition. The quality of the scoured product for those grades produced here was most satisfactory. The fault lay with the preparation of the wool.

Under the conditions existing, Canadian woollen manufacturers were able to purchase their wool to better advantage on outside markets, owing to their being able to secure a uniform and dependable quality and a much cleaner product. A further objection to domestic wool was that it was neither classified nor graded.

In connection with the efforts of the department in conducting a propaganda for more and better wool, wool growers' associations were organized, and an appeal was made to the sheep-raiser to introduce modern methods of preparing the wool for market. Wool prepared by members of these associations was then classified by expert wool graders, supplied free of charge to the associations by the Live Stock Branch. As a result of this work, which has now been in progress for three years, wool is eagerly sought after by dealer and manufacturer, and commands a price greatly in advance of what breeders were able to obtain when following the old unsystematic methods.

Wool growers' associations are now organized in every province of the Dominion. In order to convey some idea of the manner in which the co-operative sales of wool are appreciated by the wool growers, the following review has been prepared of the progress of the work since its inception. In 1914, 206,129 pounds of wool were graded for societies organized in four provinces—namely, Quebec, Ontario, Manitoba, and Alberta. In 1915 the number of organizations formed for this purpose was increased to nineteen. Approximately 420,000 pounds were classified and offered for co-operative sale. In 1916 this amount had reached the total of 1,721,598 pounds, with a value of \$579,678.69, and every province was represented.

Wools east of Port Arthur last year brought an average of 41.01 cents per pound, while wool west of that point brought an average of 31.53 cents. The difference in price per pound may be explained by the greater shrinkage in the wools of Western Canada, and the closer proximity of eastern domestic wools to the woollen markets of this country. It is worthy of note that over \$500,000 has been received by the sheep-raisers of Canada during the present year through the medium of the co-operative wool sales.

Observations made with regard to the advantages to be obtained by the wool grower through the sale of wool in a graded condition reveal the fact that, in many instances, where wool disposed of through co-operative associations brought 36 cents per pound, a similar grade or quality of wool, grown in the same vicinity, marketed in a haphazard fashion, returned the producer only 28 cents per pound.

Another step forward in the co-operative movement, in connection with the sale of wool, has been the introduction of lamb sales. In the fall of 1916 the Antigonish, N.S., Sheep-raisers' Association disposed of over 2,000 head of lambs by co-operative sale. It is expected sales of this character will assume greater proportions next year.

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The following tabular statement shows clearly the advance which has been made in co-operative wool sales in Canada since the inception of this policy:—

| Name of Association. | Amount of Wool. | Amount of Wool. | Amount of Wool. |
|--|-----------------------|-----------------------|-------------------------|
| | 1914. | 1915. | 1916. |
| | lb. | lb. | lb. |
| Prince Edward Island— | | | |
| Prince Edward Island Wool Growers' Assn..... | | 5,496 $\frac{1}{2}$ | 28,176 $\frac{1}{2}$ |
| Nova Scotia— | | | |
| Antigonish Wool Growers' Assn..... | | 12,271 | 17,322 |
| Guysboro Wool Growers' Assn..... | | | 1,119 $\frac{1}{2}$ |
| New Brunswick— | | | |
| Moncton & Westmorland Wool Growers' Assn..... | | | 1,873 |
| Sussex & Studholm Wool Growers' Assn..... | | 1,103 $\frac{3}{4}$ | 3,257 |
| Quebec— | | | |
| Argenteuil Wool Growers' Assn..... | | 6,372 | 10,608 $\frac{1}{2}$ |
| Beauharnois Wool Growers' Assn..... | | 8,601 | 13,607 |
| Bedford Wool Growers' Assn..... | | 6,702 | 16,521 $\frac{1}{2}$ |
| Compton Wool Growers' Assn..... | | 12,849 | 24,404 $\frac{1}{2}$ |
| Megantic Wool Growers' Assn..... | | | 3,998 $\frac{3}{4}$ |
| Pontiac Wool Growers' Assn..... | 12,000 | 43,657 | 52,590 $\frac{1}{2}$ |
| Richmond Wool Growers' Assn..... | | 10,030 | 16,923 $\frac{3}{4}$ |
| Sherbrooke Wool Growers' Assn..... | | 6,045 | 16,088 $\frac{1}{2}$ |
| Stanstead Wool Growers' Assn..... | | 9,936 | 13,958 |
| Ontario— | | | |
| Manitoulin Island Wool Growers' Assn..... | 15,742 | 20,295 | 17,989 |
| Manitoba— | | | |
| Elkhorn Wool Growers' Assn..... | | 10,648 | 9,220 |
| Manitoba Sheep Breeders' Assn..... | 44,059 | 64,777 | 141,719 |
| Saskatchewan— | | | |
| Saskatchewan Wool Growers' Assn..... | | | 178,000 |
| Alberta— | | | |
| Alberta Sheep Breeders' Assn. (Calgary)..... | 95,137 | 105,883 | 385,675 |
| Alberta Provincial Sheep Breeders' Assn. (Edmonton)..... | | 12,788 | 52,270 |
| † Carstairs Wool Growers' Assn..... | 11,039 $\frac{1}{2}$ | | |
| ‡ Central Alberta Wool Growers' Assn..... | 18,216 | | |
| Lacombe Wool Growers' Assn..... | 9,935 | 24,141 | 35,979 |
| Pincher District Wool Growers' Assn..... | | 35,916 | 20,246 |
| Southern Alberta Wool Growers' Assn..... | | | 503,944 |
| Cardston District Wool Growers' Assn..... | | | 106,455 |
| Vermilion Wool Growers' Assn..... | | 29,642 | 33,901 |
| British Columbia— | | | |
| Vancouver Island Flock Masters' Assn..... | | | 15,751 |
| Total | 206,128 $\frac{1}{2}$ | * 427,153 | 1,721,593 $\frac{1}{4}$ |

† United with Alberta Sheep Breeders' Association 1915.

‡ United with Lacombe Wool Growers' Association 1915.

Wool Warehouse.—Difficulties in disposing satisfactorily of the western wool, owing to the great distance from the consuming market, which is in the eastern provinces, made it appear advisable to establish a central warehouse in proximity to the woollen mills, where the wool may be shipped and stored until such time as would seem expedient for its sale. This will be located in Toronto, and will be in operation during 1917. The wool, as received from the associations graded by officials of the Live Stock Branch in the field, will be held for sale by the department, acting as custodian for the growers and subject to their order. Arrangements with the banks will permit the growers to receive from them a monetary advance upon grading statements and bills of lading after the wool is sealed in the cars at shipping point.

This undertaking was decided upon following a conference with western wool growers' associations, and as a result of an investigation of the situation by officers of the department. The market for Canadian wool is in the east, where practically all the woollen mills are located. There are no mills using wool in the grease in Western Canada. Largely owing to this fact, western growers have been unable in the past, even though the wool in the last three years has been carefully graded and assembled in bulk at several important shipping centres, to secure satisfactory competitive bids. Permanent storage capacity being unavailable, the growers have been obliged to accept whatever bids could be obtained and, consequently, have always been at a disadvantage in marketing their product.

Prizes for Fleece Wool at Fairs.—Prizes for wool in the fleece represent an innovation established, at the instance of the department through the medium of the Live Stock Branch, by many Canadian fairs during the year. A greater number of fleeces were entered in most instances than it was expected the first year would bring forth, and the interest the exhibits aroused upon display augurs well for a substantial increase in the number of entries in this class next year. Secretaries of fairs offering prizes were satisfied with the showing this department made, so much so that not only is a continuance assured, but other exhibitions have proposed introducing a similar classification in their prize lists.

Most of the eastern fairs had the prizes divided into three sections: fine, medium, and coarse, but two exhibitions included lustre as well, which makes the classification very complete, covering all types of domestic wool produced to any degree. In the Prairie Provinces four classes were provided, two for range or merino, fine and medium, and two for domestic, medium and coarse. Four, five, and in some instances as many as seven awards were given. Sheep-raisers alone were permitted to compete, manufacturers and dealers being excluded.

Wool Exhibit.—Greater interest attended the presentation of the wool exhibit than in any previous year. Consequently, its itinerary was extended and it was displayed at a greater number of fairs. It has already this year been shown at thirty-one fairs, from Vancouver to Halifax, and was visited by more than a million people. During that time, 84,900 copies of pamphlets upon the sheep and wool husbandry were distributed to people distinctly interested in the pursuit of this phase of the live stock industry.

Many new features this year were added to the exhibit. A very complete display of Karakule wool and Persian lamb-skins produced in Canada acted as an educational attraction, together with sheep-skins, pulled wool, slats, and their manufactured articles. Products of the home woollen industries of Canada were exhibited in an effort not only to introduce them to the consuming public, but to create a more widely spread interest in the development of work of this character by women in the home. Demonstrations, showing the most approved methods of preparing wool for market, and in grading and sorting, were given at every fair. At the Canadian National Exhibition, Toronto, a special educational feature was staged, in connection with the display of home-spun woollen fabrics, showing the process of manufacture from wool to yarn and cloth as spun and woven by hand.

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Sheep Breeders' Directory.—A directory has been prepared of breeders of sheep in the different provinces. This comprises both pure-bred and commercial animals, and contains data of the class or grade of sheep, together with the number raised or for sale by each breeder. This information is for public distribution, and the plan is proving most useful in conserving breeding stock by serving to get prospective breeders more closely in touch with those who have animals of this character for sale. Under previously existing conditions, sheep suitable for breeding purposes were all too liable to find their way to the shambles.

Distribution of Pure-bred Rams and Boars.—The policy of loaning pure-bred sires to farmers' associations has now been in operation four years. Assistance of this nature is confined to districts where the farmers have difficulty in securing well-bred sires, or are in financial circumstances which restrict their ability to purchase the most suitable type of breeding male. In pursuing this work, it has been the purpose of the branch to limit an association to a single breed and advise persistent use of the original selection. Adherence to this system by societies has already shown results of the greatest benefit in fostering not only a keen desire amongst members to produce a better class of live stock but in creating, as well, a uniform type within a district. Live-stock breeding in Canada has never conformed to any distinctive standard. The farmer would in many instances, switch from one type to another radically different, without assuring himself whether the change would be advantageous or not. Not infrequently this caused undoubted injury and produced a haphazard in breeding which was not wholesome. An advance toward the establishment of the community system of breeding which obtains so satisfactorily in Great Britain, is a direct result of this policy of the branch.

As the following tabulated statement shows, fifteen hundred and twenty-three rams, and four hundred and sixteen boars of all the most prominent breeds have been distributed.

RAMS Loaned to Associations of Farmers. (Corrected to January 1, 1917.)

| Breed. | Prince Edward Island. | Nova Scotia. | New Brunswick. | Quebec. | Ontario. | Manitoba. | Saskatchewan. | Alberta. | British Columbia. | Total. |
|------------------|-----------------------|--------------|----------------|---------|----------|-----------|---------------|----------|-------------------|--------|
| Shropshire | 86 | 100 | 23 | 229 | 30 | 9 | 5 | 82 | 1 | 535 |
| Oxford Down..... | 32 | 214 | 12 | 86 | 8 | 27 | 2 | 51 | 1 | 433 |
| Leicester..... | 15 | 8 | 14 | 262 | 54 | 3 | 3 | ..... | ..... | 359 |
| Cheviot..... | 5 | 4 | 3 | 16 | ..... | ..... | ..... | ..... | ..... | 28 |
| Southdown | 9 | 16 | 1 | 12 | 2 | ..... | ..... | ..... | 4 | 44 |
| Hampshire ..... | ..... | ..... | 7 | 61 | ..... | ..... | ..... | ..... | ..... | 68 |
| Lincoln ..... | ..... | ..... | 3 | 14 | ..... | ..... | ..... | ..... | ..... | 17 |
| Suffolk ..... | ..... | ..... | ..... | ..... | ..... | 6 | ..... | ..... | ..... | 6 |
| Cotswold..... | ..... | ..... | ..... | 1 | 2 | ..... | ..... | ..... | ..... | 3 |
| Total..... | 147 | 342 | 63 | 681 | 96 | 45 | 10 | 133 | 6 | 1,523 |

BOARS LOANED TO ASSOCIATIONS OF FARMERS. (Corrected to January 1, 1917.)

| Breed. | Prince Edward Island. | Nova Scotia. | New Brunswick. | Quebec. | Ontario. | Manitoba. | Saskatchewan. | Alberta. | British Columbia. | Total. |
|---------------------|-----------------------|--------------|----------------|---------|----------|-----------|---------------|----------|-------------------|--------|
| Yorkshire. | 2 | 10 | 4 | 107 | 16 | 7 | 24 | 20 | 3 | 193 |
| Berkshire. | 6 | 1 | 1 | 4 | 16 | 16 | 33 | 44 | 8 | 129 |
| Poland China. | | | | | 1 | | 9 | 4 | 2 | 16 |
| Duroc Jersey. | | | | | | 1 | 7 | 17 | 3 | 28 |
| Chester White. | | 6 | 1 | 32 | 3 | | | | | 42 |
| Tamworth. | | | | 4 | | 2 | 1 | 1 | | 8 |
| Total. | 8 | 17 | 6 | 147 | 36 | 26 | 74 | 86 | 16 | 416 |

POULTRY DIVISION.

Under the impetus given by the increasing export demand, the poultry industry of the Dominion has taken on new life. In no way is this more apparent than in the interest expressed by the individual farmer. Heretofore, poultry have not been seriously considered on many farms. During the past year, however, conditions have been such as to emphasize the importance and profitableness of poultry-keeping. The price of eggs has been unprecedented. Starting at a comparatively low level last April, it showed a steady increase through the summer, fall, and winter months. A considerable quantity of eggs went out for export in the month of June and early July, and so heavy was the movement during the fall and early winter months that the Canadian markets were practically bare of Canadian eggs during January, February, and early March.

The very wet spring interfered with hatching to quite an extent and, as a result, the lateness of the pullets, combined with the particularly severe winter, mitigated against a maximum production of winter eggs, so much so that a considerable quantity of imported eggs was required to supply the consumptive demand.

The scarcity of feed has also affected the poultry industry, and many individuals who had not been accustomed to secure winter eggs rather seriously depleted their flocks last fall. Despite this fact, the high price of eggs last winter, when, in some instances, producers received as high as 78 cents or 80 cents a dozen, awakened such an interest that this spring there has been more attention paid to pure-bred poultry, more chickens hatched, and a greater endeavour made by producers everywhere to place the poultry business upon a practical paying basis.

The Live Stock Branch, through its Poultry Division, has kept in close touch with the market situation throughout the year. Every encouragement and assistance has been given to co-operative marketing, with exceptionally good results. The inter-provincial movement of eggs has been encouraged and fostered, and efforts made to raise the standard and bring about that uniformity in quality which will serve as the best advertisement for the Canadian product in the export trade following the war.

In this connection, extended publicity has been given to the matter of uniform standards for eggs. Classes for eggs graded in accordance with these standards have been encouraged at all of the larger exhibitions with very creditable entries at many points. These standards are being adopted by the trade and used in connection with

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the interprovincial movement of eggs. The egg exhibits and candling demonstrations at fairs have been continued. In all, 156 exhibits were made during the year, with an attendance of some 243,400 people. The candling demonstrations given in connection with these exhibits proved to be quite popular, it being estimated that some 98,000 people took advantage of the instruction given in the art of candling and grading eggs. Of those availing themselves of the demonstration, over 75,000 made application for candling appliances, which have been duly forwarded to them.

Eggs.

Canadian eggs continue to find favour on the British market, as is apparent chiefly from the enhanced price of from 2 cents to 5 cents a dozen which the Canadian product has commanded in comparison with that of the United States. The markets of Great Britain have taken all the Canadian surplus, amounting to between seven and eight million dozens. Their requirements were much greater than this, as is evidenced by the large quantities of United States eggs passing through Canada in bond, most of which have been re-packed for shipment in this country. The regulations recommended to and applied by the Customs Department with respect to the branding of the packages of all foreign eggs passing through Canada for export, has effectively overcome much of the misrepresentation previously occurring with respect to the sale of foreign eggs as Canadian. Indications are not lacking, however, that more stringent regulations are required with respect to the grading and labelling of our own domestic product, in order to adequately safeguard the interests of our future export trade.

THE CO-OPERATIVE MARKETING OF EGGS AND POULTRY.

The high prices prevailing for eggs and the keenness of competition for a quality product has given, during the past year, a strong impetus to co-operative organization. The older associations with an established connection have been unusually successful. The newer associations organized have also benefited materially from the increasing demand for Egg Circle eggs.

In all, last year some three-quarters of a million dollars' worth of eggs and poultry were marketed co-operatively throughout the Dominion. Of this, the Prince Edward Island Co-operative Association contributed a quarter of a million and the egg Circles in Ontario over a hundred thousand dollars' worth.

In addition to the organization of new units, the efforts of the department have been directed towards perfecting the older associations in a co-operative way. This is particularly true in Prince Edward Island and in some parts of Ontario, the Prince Edward Island Association having been described as perhaps having no equal in America with respect to its equity, finance, and truly co-operative spirit. This association is particularly strong financially, and has not only acquired its own property in Charlottetown but has added greatly to its warehouse accommodation.

In the newer fields, the work in the province of Alberta is showing special promise at the present time. During the winter a great many meetings were held, and the co-operative system of marketing fully explained. This spring a central receiving

station has been opened in Calgary, and the prospects are that another will be required in Edmonton at an early date. Increasing interest in this connection has also been shown among producers in both Saskatchewan and Manitoba.

THE EGG AND POULTRY MARKETS' REPORT.

In connection with the Markets Intelligence Service organized under the Live Stock Branch, special attention has been given to the matter of the egg and poultry situation. During the past year the sources of market information have been gradually improved and a tentative report issued weekly to a limited mailing list of the officers of the branch, and certain others especially interested. I am now arranging to give this report wider distribution in connection with the Markets Intelligence Service of this department, and already have had many very appreciative letters regarding same and the steps being taken to place the market situation fully and frankly before the people.

FEDERAL ASSISTANCE TO FAIR ASSOCIATIONS.

The establishment of the policy of increased grants to fair associations, which was commenced in 1915, proved so satisfactory that it was continued during the year 1916. Needless to say, all the associations which had benefited by this grant in the year 1915 applied for further assistance during the past year. The many letters received from secretaries and other officers of these associations proved that this policy was adopted by the department just at the correct time, and that without it many of the medium-sized and even some of the larger fairs would have had to suspend operations. The basis under which the grants were given was practically the same as in the previous year.

To fair associations which paid out at their 1915 exhibition for prizes in the utility classes of horses, cattle, sheep, swine, and poultry a sum of \$5,000 or over, a grant was made equal to half the amount actually paid out, the maximum grant in any case not to exceed \$5,000. The prize lists of these exhibitions were first submitted to the Live Stock Commissioner for his approval before being printed, and in this way many suggestions which later proved to be very useful were made. During the year 1916, twenty-eight fairs were given grants by the department, this entailing an expenditure of \$109,375.72.

THE MARKETS INTELLIGENCE SERVICE.

Recognizing the need of information which would be of assistance to the producer in marketing his live stock in a more intelligent manner, the Intelligence Service was organized for the purpose of gathering detailed information regarding current live-stock prices, and the supply and demand for Canadian live stock and live-stock products. As the public live-stock markets are the centres where supply and demand are best indicated and where and index to the general live-stock conditions can best be secured, representatives were placed at all the large central live-stock markets in Canada. In addition to keeping in touch with the trend of the markets, the representatives have secured details as to prices; the different kinds of live stock have been

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classified according to quality; the district in each province from which they came has been ascertained and the disposition of the stock procured. Arrangements are being made that the branch may be always in close contact with the source of production, in order that the future condition of the market may be correctly interpreted. The co-operation of the farm press has been secured in connection with the distribution, weekly, of this information and it is expected that a very efficient system in this direction will be perfected. The dissemination of this market data among all interested in the sale of live stock and live-stock products will give stability to the trade, tend to better uniformity of prices, consequent on a more regular supply, and further will create greater confidence in the future of our live stock industry.

DOMINION EXPERIMENTAL FARMS AND STATIONS.

The work of the Experimental Farms Branch has been actively pursued during the year. In addition to the experimental work carried on at the Central and Branch Farms, all possible attention has been given to the problems connected with maximum production of crops during the war.

The flax investigation work has been continued. Acre lots of fibre were grown in various sections of the Dominion. These have been gathered at the Central Farm, where a flax building has been erected and is now ready for the installation of machinery. The flax will be retted and scutched, and it will then be possible to form some opinion as to its quality as compared with flax grown in Ireland and other parts of Europe. Arrangements have been made for growing further experimental areas of flax during the coming season.

Plant pathological laboratories have been erected at Brandon, Man., and Indian Head, Sask. It is expected that the chief work at these will be the study of diseases affecting cereal crops.

Preparatory work, such as clearing and draining, were continued at the new Stations at Kapuskasing, Ont., and Spirit Lake, Que., and a large area on each is ready for crop this coming season.

Lack of buildings has delayed the work, especially with live stock, on some of the newer Stations.

During the year the following publications have been issued or are now in the press:—

The Annual Report of the Experimental Farms for 1915-16.

In the Regular Series of Bulletins—

- No. 87. The Principles of Poultry House Construction, by F. C. Elford, Dominion Poultry Husbandman.
- No. 88. The Preparation of Poultry Produce for Market, by the same author.
- No. 89. Poultry Keeping in Town and Country, by the same author.

In the Second Series—

- No. 27. Soil Fertility, by Dr. F. T. Shutt, Dominion Chemist.
- No. 28. Flax for Fibre, by John Adams, Assistant Dominion Botanist.
- No. 29. Cranberry Culture, by M. B. Davis, Assistant in Horticulture.
- No. 30. Feeding for Beef in Alberta, by W. H. Fairfield and G. H. Hutton.
- No. 31. Gopher Destruction, compiled by J. H. Grisdale.

In Pamphlets—

- No. 14. The Home Vegetable Garden, by W. T. Macoun, Dominion Horticulturist.

In Circulars—

- No. 12. The Black or Stem Rust of Wheat, by H. T. Gussow, Dominion Botanist.
 No. 13. Garden Making on Vacant Lots, by W. T. Macoun, Dominion Horticulturist.

Special Circulars—

- No. 1. Grain Growing on the Prairies, by J. H. Grisdale.
 No. 2. Maximum Crops, 1917, by W. L. Graham.
 No. 3. Varieties of Grain recommended for Use in Canada, by Dr. C. E. Saunders.
 No. 4. Notes on the Cultivation of Some Staple Vegetables, by W. S. Blair.
 No. 5. Preparing Farm Horses for Summer Work, by E. S. Archibald.
 No. 6. Produce more Poultry Products, by F. C. Elford and Geo. Robertson.
 No. 7. The Dairy Cow, by E. S. Archibald.
 No. 8. Feeding of Swine, by Geo. Rothwell.
 No. 9. Recommended Varieties of Field Roots, by F. S. Browne.
 No. 10. Field Beans, by W. L. Graham.

In 1916, crop conditions, on the whole, were much less favourable than those of the record-breaking year 1915. In the Prairie Provinces, the prospects for a good yield of cereals were excellent up to the beginning of August, but during that month a serious attack of rust developed in Manitoba and Saskatchewan, which either destroyed the crop over large areas or materially lowered both yield and grade. Average yields throughout the Dominion were lower than in 1915.

Potatoes were a poor crop in Ontario and Quebec, but good in the Maritime Provinces and fair in the Prairie Provinces and British Columbia. Fodder corn also gave low yields.

Hay and clover gave record returns, with a total yield of 14,799,000 tons, an average of 1.86 tons per acre.

Increased prices helped to offset lower yields. The total value of the field crops of Canada in 1916 is estimated at \$808,054,000, as compared with \$841,297,500 in 1915.

Below are tabulated some data on the yields and value of the principal field crops of Canada in 1916. A table is also given showing the numbers of the principal classes of live stock in the Dominion during 1912-16, inclusive.

HARVESTED Areas, Estimated Yields, and Value of Field Crops, 1916.

| Crop. | Area. | Yield per Acre. | Total Yield. | Weight per Measured Bushel. | Average Price per Bushel. | Total Value. |
|----------------------------|------------|-----------------|--------------|-----------------------------|---------------------------|--------------|
| | Acres. | Bush. | Bush. | Lb. | \$ | \$ |
| Fall wheat | 936,600 | 21.50 | 20,131,000 | 59.52 | 1.53 | 30,687,000 |
| Spring wheat..... | 11,942,900 | 16.75 | 200,236,000 | 56.61 | 1.29 | 258,687,000 |
| All wheat..... | 12,879,500 | 17.00 | 220,367,000 | 57.10 | 1.31 | 289,374,000 |
| Oats | 9,835,100 | 35.75 | 351,174,000 | 33.86 | 0.53 | 187,759,000 |
| Barley | 1,651,100 | 25.00 | 41,318,000 | 45.66 | 0.82 | 34,010,000 |
| Rye | 145,120 | 20.00 | 2,896,400 | 54.95 | 1.11 | 3,205,800 |
| Peas | 150,280 | 14.46 | 2,172,400 | 59.88 | 2.22 | 4,816,000 |
| Beans | 32,500 | 12.70 | 412,600 | 60.00 | 5.40 | 2,228,000 |
| Buckwheat | 341,500 | 17.50 | 5,976,000 | 46.35 | 1.07 | 6,375,000 |
| Mixed grains..... | 397,770 | 25.33 | 10,077,000 | 43.13 | 0.90 | 9,076,300 |
| Flax | 605,700 | 11.75 | 7,122,300 | 54.99 | 2.05 | 14,581,300 |
| Corn for husking | 173,000 | 36.31 | 6,282,000 | 36.51 | 1.07 | 6,747,000 |
| Potatoes | 448,800 | 136.20 | 61,128,000 | ..... | 0.81 | 49,654,000 |
| Turnips, mangels, etc..... | 156,200 | 264.24 | 41,274,000 | ..... | 0.41 | 16,761,000 |
| | | Tons. | Tons. | | Per ton. | |
| Hay and clover..... | 7,974,000 | 1.86 | 14,799,000 | ..... | 11.52 | 170,504,000 |
| Fodder corn..... | 297,100 | 6.65 | 1,976,700 | ..... | 4.92 | 9,725,300 |
| Sugar beets..... | 15,000 | 4.75 | 71,000 | | 6.20 | 440,000 |
| Alfalfa..... | 89,780 | 2.91 | 261,450 | | 10.70 | 2,797,300 |

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LIVE STOCK IN THE DOMINION.

The following table gives the numbers of the principal classes of live stock in the Dominion for the years 1912-16, inclusive:—

| Live Stock. | 1912. | 1913. | 1914. | 1915. | 1916. |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| | No. | No. | No. | No. | No. |
| Canada— | | | | | |
| Horses..... | 2,692,357 | 2,866,088 | 2,947,738 | 2,996,099 | 2,990,635 |
| Milch cows..... | 2,604,488 | 2,740,434 | 2,673,286 | 2,666,846 | 2,603,345 |
| Other cattle..... | 3,827,373 | 3,915,687 | 3,363,531 | 3,399,155 | 3,313,519 |
| Sheep..... | 2,082,381 | 2,128,531 | 2,058,045 | 2,038,662 | 1,965,101 |
| Swine..... | 3,477,310 | 3,448,326 | 3,434,261 | 3,111,900 | 2,814,672 |

DIVISION OF CHEMISTRY.

The work of this important division during the past year has been satisfactorily prosecuted in spite of the fact that three of the assistant chemists were absent on active military service and great difficulty experienced in temporarily filling their places. It has been found necessary to lay aside for the time being certain of the investigations, but work upon these will be resumed as soon as opportunity permits. A very considerable amount of extra work in connection with the Dominion-wide campaign for an increased production of foodstuffs has fallen upon this division. This has included analytical work, correspondence, addresses, and the writing of special articles on matters pertaining to agricultural operations and farm life.

As already indicated, the chief energies of the division have been directed towards giving assistance to the man on the land, in the care and use of manure, in the choice of fertilizer, in the purchase of feeding stuffs, etc. In this connection from 1,500 to 2,000 samples have been received, examined, and reported on. These included soils, naturally occurring fertilizers, limes and ground limestones, fodders and feeding stuffs, insecticides and fungicides, well waters, etc. We believe that this phase of the division's work has been found of very considerable value to the farming communities.

The total number of samples received for examination, and reported on during the year, was 3,736, about 1,500 of which constituted samples collected in connection with special investigations and matters of research.

The work of examination of flour samples, representatives of flour purchases made by the British War Office through the Department of Agriculture, has continued throughout the year. In all 704 samples have been analyzed as to water-content, and there has also been a very considerable amount of investigatory work done on the various methods in use in this determination, with a view of ascertaining their relative accuracy.

The Meat Inspection Division of the Health of Animals Branch submitted during the year 851 samples of examination and report. These comprised lards, tallows, oils, preserved meats, sausages, colouring matters and dyestuffs, preservatives, pickling solutions, spices and condiments, evaporated apples, and waste, etc. In addition to the analysis of these samples to learn if they met the requirements of the food stan-

dards, work of an investigatory nature has been undertaken in connection with certain newly introduced cures for meat products, methods of sampling and analysis for vegetable canned goods, and several other matters of considerable importance relating to the products of the packing-house industry.

The investigational work with fertilizers, continues to yield interesting and valuable data. During the past year this experimental work has been extended to other Stations of the system where conditions indicate the desirability of attempting the solution of soil fertility problems by this means.

In this connection the co-operation of a large number of farmers throughout the Maritime Provinces and Quebec was enlisted to test, under varying conditions of soil and climate, the fertilizing value of dried ground seaweed. Many of the results indicate that this material is one of considerable promise in furnishing available nitrogen and potash.

It is satisfactory to note that the large and ever-increasing volume of correspondence on the subject of manures and fertilizers has received prompt attention. Numerous samples of soil submitted to the division with these requests have been examined as to their nature and essential characteristics. The results thus obtained have permitted reports as to the most suitable means for the soil's amelioration.

The interest in the value of lime and ground limestone for the improvement of soils that are sour or naturally deficient in lime continues to increase and, consequent upon this interest, a considerable number of soils have been examined for farmers as to the lime requirements. A number of limestones occurring in various parts of the Dominion have also been analysed with the view of determining their suitability for the manufacture of ground limestone.

In continuation of the investigation to ascertain the suitability of soil and climatic conditions throughout the Dominion for the growth of sugar beets for the production of sugar, varieties have been grown under special culture on the various Farms and Stations of the system, and the product analysed as to sugar-content and purity of juice. The results, as in the past, have been, on the whole, very promising.

The work on the influence of environment on the composition of wheat begun in 1905, has, through the assistance and co-operation of the Meteorological Service, been expanded and now constitutes a study in agricultural meteorology. The correlation of weather condition with crop growth which this extension of the work makes possible, promises to yield results of very considerable importance to Canadian agriculture.

It is gratifying to record that the interest of the farming community in the purity of their home water supply is maintained. There is no more important asset on the farm, looking to the health of the family and the thrift of the stock, than an ample supply of pure water. The results of the analyses of the past year might be taken as indicating more care in the selection of a location for the well and in the means for protecting the supply from pollution.

In the examination of soils from the several irrigation tracts in Alberta, fifty-five groups, comprising 225 samples of soil have been analysed as to their water-soluble saline content. The results have been used by the Irrigation Branch of the Department of the Interior in their re-classification of the areas involved into irrigable and non-irrigable lands.

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THE DIVISION OF FIELD HUSBANDRY.

The main subdivisions as relating to the investigations being conducted by the Division of Field Husbandry at the Experimental Farms and Stations throughout the Dominion include:—

- (a) Studies in the methods of culture and curing of field crops.
- (b) Investigations of the relative merits of different crop rotations.
- (c) Determinations of the costs of growing field crops under regular farm conditions.
- (d) Tests of the influence of size and character of cultural implements on cost of crop production.
- (e) Comparisons (in a limited way) of varieties of grain and forage crops as food producers.
- (f) Experiments to show the value of underdrainage and irrigation.

At the Central Experimental Farm, Ottawa, work is hampered, due to the fact that suitable land is not available upon which to conduct the several experiments that should naturally be included. The main object at the present time is to provide supplies of fodder and grain for the upkeep of the live stock on the Farm. At the same time the following projects are under consideration:—

- (a) Cost of production of field crops.
- (b) Merits of different crop rotations.
- (c) Methods of cultivation, including a test of deep ploughing versus shallow ploughing and subsoiling.
- (d) Merits of commercial fertilizers as a partial substitute for barnyard manure.
- (e) Value of underdrainage.

WEATHER CONDITIONS AND CROP NOTES.

The season was most unfavourable for seeding operations. The weather was excessively wet, making work on the land tedious and discouraging. After repeated interruptions, seeding was completed out of season, some areas being sown two and three times to secure a stand. However, growth was rapid, with prospects of a fair harvest. Hay grew luxuriantly, and a bumper crop of good quality resulted. Grain also did well but ripened prematurely, thus giving a low yield of inferior quality. Roots, forage corn, and potatoes were only fair, but favourable harvest weather prevailed. Conditions for fall ploughing, which was completed in good season, were also satisfactory.

COST OF PRODUCTION OF FIELD CROPS.

The data contained in the accompanying table comprise yields, and costs of production of corn, oats, and hay grown under field conditions.

Cost of Production of Field Crops, Central Farm, 1916.

| Crops. | Area. | Yield per acre. | | Cost to produce. | | |
|--------------------|-------|-----------------|-------|------------------|-----------|----------|
| | | acres. | tons. | bush. | per acre. | per ton. | per bush. cents. |
| Ensilage corn..... | 33 | 12.46 | ..... | \$27 44 | \$2 20 | ..... |
| Oats..... | 39 | ..... | 44.4 | 16 23 | ..... | 28 |
| Oat straw..... | 39 | 1.19 | ..... | ..... | 3 26 | ..... |
| Hay..... | 33 | 4.62 | ..... | 19 97 | 4 32 | ..... |

CROP ROTATIONS.

The most important field of investigation is that with crop rotations. This work has been in progress at the Central Farm for many years, and at present thirteen rotations varying in duration and treatment, are permanently located. These rotations are being closely observed and studied, keeping in mind the following factors:—

- (1) Their ability to supply different crops in the proper proportions for certain needs.
- (2) Their power to keep weeds in check.
- (3) Their comparative profit.
- (4) Their effect on the fertility of the soil.

Five regular farm rotations are under way according to the following outline:—

Rotation "A" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay, dressed with manure in autumn; timothy hay, field ploughed in August, top worked and ribbed up in October; grain, seeded down with red clover to be ploughed under the following spring when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass seeds, top dressed with manure in autumn; clover hay, ploughed in autumn; grain seeded down with clovers and grass; clover hay.

Rotation "C" (four years' duration).—Hoed crop, manured; grain, seeded down with clover and grass; clover hay; timothy hay, field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay.

Soiling Crop, Rotation "R" (three years' duration).—Corn for early fall feed, manured; peas and oats to cut green, seeded down with clovers and grass; clover hay, to cut green.

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The accompanying table contains the chief items in connection with these rotations:—

Cost, Returns and Net Profits of Rotations "A," "B," "C," "D," and "R,"

| Rotation. | Cost to operate | Value of returns | Profit or loss |
|--------------------------------|-----------------|------------------|----------------|
| | per acre. | per acre. | per acre. |
| | § cts. | § cts. | § cts. |
| A (five years' duration)..... | 17 73 | 19 32 | 1 59 |
| B (five years' duration)..... | 17 58 | 16 75 | 0 83 |
| C (four years' duration)..... | 17 69 | 17 16 | 0 53 |
| D (three years' duration)..... | 20 29 | 19 64 | 0 63 |
| R (three years' duration)..... | 18 73 | 24 66 | 5 93 |

The results for all crops in the rotations, with the exception of hay, were low, due largely to the very unsatisfactory weather conditions which prevailed during the seeding and harvesting season for grain especially.

SHALLOW PLOUGHING AND SUBSOILING VERSUS DEEP PLOUGHING.

This experiment has been under way for thirteen years. Two four-year rotations differing only in the preparation of sod land for corn or roots, as mentioned above, are used, but the results have not yet shown any decided advantage in favour of either method.

COMMERCIAL FERTILIZER AS A PART SUBSTITUTE FOR BARNYARD MANURE.

This experiment was designed in 1913 to supply information regarding the relative merits in regular farm rotation of:—

- (1) No manure or fertilizer of any kind but pastured one year in four.
- (2) Barnyard manure.
- (3) Complete commercial fertilizer.
- (4) Barnyard manure, together with commercial fertilizer.

The results are in favour of barnyard manure alone over commercial fertilizer alone for this soil, with the possibility of combining the two advantageously under conditions where manure is scarce or high in price.

DIVISION OF ANIMAL HUSBANDRY.

The Animal Husbandry Division of the Experimental Farms has made a satisfactory expansion in the scope of its work during the past fiscal year. The lines of work which fall to this division are the laying out and the superintending of feeding, breeding, purchasing, management, and housing of farm animals; the manufacturing and marketing of their products, together with all experimental and demonstrational work connected therewith on the Central Experimental Farm, and, in consultation

with the Director of the Experimental Farms and the Superintendents of branch Farms, the supervision of similar work on branch Farms and Stations throughout Canada.

LIVE STOCK ON THE CENTRAL FARM.

The horses on this Farm are all of draught type excepting the necessary drivers. Among the draught horses are a number of excellently bred Clydesdale mares which are used not only for general farm work but also for breeding purposes. An excellent crop of filly foals was obtained during the past year, and already several mares have again dropped valuable foals this spring. Feeding experiments both with the working horses and breeding stock are being continued on the Central Farm in conjunction with somewhat similar work on the branch Farms.

The extremely important work with beef cattle is of necessity still curtailed for lack of sufficient housing accommodation. However, a few choice young steers were finished for baby beef, not only to demonstrate the profits from such work, but also that these animals be used for demonstrational purposes in lectures to the many visitors.

The herds of dairy cattle have improved rapidly during the past year. Good representatives may be found of four breeds, viz., Ayrshires, French Canadians, Holsteins, and Jerseys, as well as a few choice grades of the Ayrshire and Holstein breeds.

The milk production per cow has, amongst all breeds, increased largely during the past year. Some splendid records have been made by animals which were entered both in the Record of Performance and Record of Merit, all breeds showing a marked increase in maximum production and maximum profits. Many pure-bred animals from these herds are annually sold for a moderate price to breeders throughout Canada, it being the object in the making of these sales, to place this stock where the greatest amount of good may be done. A large number of experiments in the feeding, breeding, and handling of dairy cattle have been conducted during the past year. An increasing number of experiments with equipment, such as milking machines, have been conducted. Special attention also has been paid to the feeding and rearing of young stock, and a large number of calf-feeding experiments have been conducted.

Experimental work along the line of dairy manufacturing is continuing to hold a very important place in the work of this division. The manufacturing, curing, and marketing of many dairy products, such as butter, fancy cheeses, cheddar cheese, and the like, has received all attention possible under the existing circumstances. With the construction of a more capacious dairy, the amount of experimental work will be largely increased. From this division also has been distributed, to thousands of Canadian farmers, a large amount of information regarding dairying, as well as free forms for the keeping of cow records.

The sheep on the Central Experimental Farm have again shown a marked improvement both as to numbers, quality, condition, and profits. Only two breeds, viz., Shropshires and Leicesters are represented on this Farm. However, from these flocks a number of excellent breeding animals have been distributed to branch Farms and to sheep breeders throughout Eastern Canada.

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Swine raising has again demonstrated itself as one of the best-paying branches in this division. Three breeds are represented in this herd, viz., Yorkshire, Berkshire, and Tamworth. Large numbers of young pure-bred animals have been sold during the past year for breeding purposes. Again a large number of feeding experiments have been conducted both under summer, fall, and winter conditions; these experiments dealing with more economical feeding, the choosing of superior foodstuffs, both for raising on the farm and to be purchased on the markets, the saving of labour in the feeding of hogs, and many such economic problems.

ASSISTANCE TO BRANCH FARMS.

The Dominion Animal Husbandman has visited the branch Farms and Stations throughout Canada and continued to be of assistance to the Superintendent of these Farms. In conjunction with the Superintendents, and under the supervision of the Director of the Experimental Farms, many new lines of live-stock work have been initiated. In addition a large number of sketch plans of buildings proposed for these branch Farms and Stations have been made by this division, which plans have been approved of and completed by the Department of Public Works. By such means of co-operation, building work on the branch Farms has been facilitated and the buildings constructed are better adapted both for the purpose for which they are intended and as an example to the farmers in those provinces. It may be again recorded that the modern buildings on the Dominion Experimental Farms are being copied, in their essentials at least, by a large number of both the small and extensive live-stock breeders throughout Canada. Such is then a tremendous influence toward more modern, sanitary, and economical farm structures.

MISCELLANEOUS.

The regular correspondence of this division has again increased more than 30 per cent over the previous year. Every possible assistance has been given inquiring farmers along the lines of maintenance of live stock, feeds, feeding, methods of breeding and general management for improved health and increased profits. The increase in correspondence again shows the greater confidence which Canadian farmers have in the work of this division.

A most gratifying result of the work is the increasing interest of the Canadian farmer in improving of his live-stock buildings. This division has continued to assist Canadian farmers in every way possible toward the planning of new or the remodelling of old farm buildings. Over 550 blue-prints of modern farm structures to suit the individual needs of farmers inquiring, as well as photographs and brief specifications, have been distributed during the past fiscal year.

Members of the staff of this division have judged at a large number of agricultural fairs, assisted at many agricultural short courses, and have addressed a large number of meetings throughout Eastern Canada during the year ending March 31, 1917.

DIVISION OF HORTICULTURE.

The season of 1916 was one of the most unfavourable for fruit that has been experienced for many years in Ontario. A very wet spring and early summer was followed by an extremely dry, late summer and early autumn, with the result that disease injured the crop to a marked degree while the weather was wet, and drought injured it when the weather became dry. In the orchards at the Central Experimental Farm, five sprayings were necessary to control the apple scab, and some varieties of apples were sprayed six times. During the month of September apples dropped badly, as the ground had become very dry. Notwithstanding the unfavourable conditions, the largest crop of apples in the history of the Farm was harvested, and other fruits bore medium crops.

New Apples.—The many new varieties of apples originated at the Central Experimental Farm have attracted much attention. Collections of these were shown at various exhibitions in 1916. Some of the most valuable are seedlings of McIntosh Red and Northern Spy, there being varieties among them having somewhat the same flavour as these well-known sorts but different in season, thus ensuring a season for apples of the McIntosh type from summer until winter, and of the Northern Spy type from September until late winter, and being hardier than the Northern Spy. The best of these have been named and are being tested at different points throughout Canada. Some of the McIntosh seedlings which are of the greatest promise are named Melba, Joyce, Brock, and Pedro; and of Northern Spy seedlings, Thurso, Rocket, Donald, Elmer, and Niobe. As there are too many varieties of apples already on the market it is not desired to recommend these for general planting until they have been thoroughly tested in a number of places. A bulletin entitled "The Apple in Canada—Its Cultivation and Improvement" was prepared by the Dominion Horticulturist and published during the year.

The varietal and cultural work with fruits, vegetables, and ornamental plants was continued at the Central Farm much as in previous years, although the absence of two assistants on active service was much felt, and the development of certain features of the work was delayed on this account.

The breeding of new varieties of fruits, vegetables, and flowers was continued in 1916, and many new crosses and selections made. The Early Malcolm corn and Alacrity tomato, developed in the Horticultural Division, have proved very desirable varieties and were offered for sale by seedsmen in 1916. Especial attention is being given to the breeding of early and productive varieties of vegetables, as it is believed that there is great need for such in Canada.

About seven acres of land devoted to experiments with vegetables and strawberries was equipped with an overhead system of irrigation in 1915, and in 1916 this was in operation. Owing to the excessive rains, however, until nearly midsummer the strawberries and early vegetables were not in need of artificial irrigation, but it was used on the later vegetables with good results.

The campaign for the utilization of vacant land in 1916 to grow food crops, and the call to Canadians to increase production everywhere, together with the opening of an information bureau to which any one desiring information might apply, resulted

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in greatly increasing the correspondence of the Horticultural Division, as a large proportion of those who wrote desired information in regard to the growing of vegetables. To help meet the demands for such information, two pamphlets were prepared by the Dominion Horticulturist, one of four pages and entitled "The Home Vegetable Garden," and another sixteen page one called "Garden Making on Vacant Lots, and The Home Vegetable Garden." These two pamphlets, of which large editions were published, seem to have met the needs of the people very well, and they have been asked for in large numbers, many cities and towns having taken up the utilization of vacant lots as a civic undertaking. It is believed that the production of vegetables will be greatly increased in 1917.

BRANCH FARMS AND STATIONS.

The greatest amount of new work in horticulture was done at the two new Experimental Stations at Morden, Man., and Summerland, B.C., in 1916. Little planting had been done at the Morden Station in 1915 with the exception of the planting of Caragana hedges, which were to act as windbreaks for the future orchards, but in 1916 an orchard of between nine and ten acres, consisting of apples, crab apples, and plums was sent out. Between the rows of permanent trees were planted some 27,000 apple seedlings of the hardiest known varieties. These trees, in addition to the Caraganas, will be windbreaks for the named varieties, and from them it is expected to obtain at least a few good hardy sorts. Plantations of brush fruits were sent out, and experiments in the growing of vegetables and ornamental plants begun.

The experimental Station established at Summerland, B.C., in the Okanagan valley, has already made good progress in horticultural work. Orchards of the principal fruits were set out in the spring of 1916, and the trees made a good start. A carefully planned series of irrigation experiments with fruit trees was laid out, from which valuable information should be obtained. Vegetable experiments and experiments with flowers were also carried on in 1916. Already a considerable number of horticulturists have been attracted to this Station which, though established but a short time, has become well known in the valley.

The horticultural work on the older branch Farms and Stations was continued much as usual. There is being accumulated at these places a mass of useful information in regard to horticultural plants and their cultivation and how they succeed in different parts of Canada that is invaluable both to the new and old settlers. These Farms and Stations have also proved bureaus of information to those desiring to grow vegetables during war times to aid the Empire.

CEREAL DIVISION.

THE SEASON.

The year 1916 proved one of the least favourable years for cereals since the establishment of the Dominion Experimental Farm system. In some parts of Canada excellent crops were produced, but the areas where small or injured harvests were reaped were unusually large. In the east a great area of country suffered from exces-

sive rains in spring which continued well into the month of June, with the result that many fields, which would have been sown with cereals, had to be treated in some other way; and among the fields which were sown many were so wet that the young plants started under very adverse conditions. The long period of wet weather was followed very quickly by intense heat which continued almost up to harvest time, and prevented the grain from filling out properly. Such a season was particularly hard on cereals and the yields were almost invariably small throughout the area in question.

In the great grain-growing provinces of Central and Western Canada there were some districts which produced excellent crops, but the total yield of grain in the three provinces was rather low. Rust, frost, and hail all did an unusual amount of damage, though there were some favoured localities which escaped all three. Southern Alberta was perhaps the most fortunate. The worst damage from rust occurred in southern Manitoba and in southeastern Saskatchewan. The damage from this disease became gradually less as one passed from the southeastern towards the northwestern section of the great plains.

An altogether exceptional frost, which occurred about the 10th of August, damaged grain on many of the low-lying fields over a very large section of country in the northern part of the settled portion of Alberta and Saskatchewan.

While there was perhaps no large area of country which suffered particularly from hail, there was unusual damage from this source in many districts, the number of severe storms being quite abnormal.

While it is regrettable that the season of 1916 should have fallen so much below that of 1915, in regard to the yields of cereals, it must be remembered that the previous year was extraordinarily favourable, and any comparisons which are to be made should take into account the average crop for a series of years rather than the wonderful crop of 1915.

VARIETY TESTS.

While the weather at Ottawa was decidedly unfavourable for cereals, and while the tests of varieties were therefore carried out with unusual difficulty, nevertheless fairly good results were secured and some progress was made along all lines. At most of the branch Farms good crops were obtained, and useful observations were made at all of them, except at one where the crops were entirely destroyed.

Among the hundreds of new cross-bred varieties and new selections which are under test, a few of the exceptionally promising sorts are now being propagated for more thorough trial in a greater number of localities. It is expected that in the near future at least one new variety of hulless oats, one new variety of hulless barley, and one new variety of hard, red early-ripening wheat will be introduced to the public. This work necessarily proceeds very slowly, as it is important to avoid the mistake of prematurely introducing varieties which have not been sufficiently tested. Many new sorts are now, however, approaching the end of what may be termed their probation period, and among these there are several of great promise.

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MARQUIS WHEAT.

As usual, this extraordinary variety again won the highest international award last season and, in addition, it created what is probably a world's record for the yield of spring wheat on a large field, when a farmer in southern Alberta harvested 54,395 bushels from 1,000 acres of land. Such a magnificent yield would scarcely be credited were it not properly attested by trustworthy persons.

FREE DISTRIBUTION OF SEED.

In spite of unusual difficulties, a good stock of seed of the best varieties was secured for the distribution, chiefly from the Experimental Farms at Indian Head, Cap Rouge, and Ste. Anne de la Pocatière. As the farmers have become of late years very critical in regard to the quality of the seed supplied to them, an earnest endeavour is made to send out nothing but the very highest class of grain, and free from all impurities. Many appreciative letters are received from farmers who are delighted with the quality of the grain which they receive.

This year it was thought best to print an application form, on which a series of questions was asked, so as to easily obtain from the applicant a clear statement as to the conditions on his farm. The use of this application form so much facilitated the sending in of satisfactory applications, that a much larger number than usual was accepted. While the distribution is not complete at the time of writing this report, the statement may be made that the total number of samples of grain distributed this winter will be over 7,500, and that, in addition to these, about 3,000 samples of potatoes will also be sent out. This is a considerable increase over the number distributed in the previous year. The grain samples are sent to all parts of Canada, but the samples of potatoes distributed from Ottawa are limited to the provinces of Ontario and Quebec, the other provinces being supplied locally from their own Experimental Farms or Stations.

DIVISION OF BOTANY.

DESTRUCTIVE INSECTS AND PEST ACT.

The work in connection with the "plant disease" section under this Act is directed by the Dominion Botanist. During the year, special attention has been devoted to the elimination of diseases of potatoes, by a system of field inspection during the summer, and by the inspection of the crops resulting, during fall and winter months. The systematic work clearly demonstrates the benefits resulting to farmers from attention to the control of diseases conveyed by planting tubers infected with black-leg, scab, rhizoctonia, etc., and particularly from the elimination of those groups of diseases which are conveyed by the tuber, but which do not show any symptoms on the same, as for instance, leaf roll, curly dwarf, mosaic, etc. The work also includes spraying demonstrations against late blight and rot.

PLANT PATHOLOGY.

Interesting progress has been made in the investigation of various phases of the white pine blister rust. This rust is destructive to all five-leaved pines, and also affects

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wild and cultivated currants which act as secondary hosts. This important disease will receive increased attention in the near future, as it is being realized that otherwise serious damage may result to these valuable resources of our forests. Likewise, good progress is being made by the various field laboratories, of which three are now in full working order.

The St. Catharines laboratory continues its investigation of fruit-tree diseases, and a publication on the control of peach canker, which has now been satisfactorily worked out, is contemplated in the near future. The officer in charge also devotes considerable time to the problem of white-pine blister rust, which is firmly established throughout the Niagara peninsula.

The laboratory at Charlottetown for Prince Edward Island, and temporarily for Nova Scotia, has devoted much time and attention to the improvement of the Bermuda seed potato industry. The Bermuda growers obtain most of their requirements of the potato variety "Garnet Chile" from Nova Scotia, and during recent years it was found that certain strains of this variety from Nova Scotia resulted in serious failures when planted in Bermuda. The work done to prevent such losses to the Bermuda farmers, and most likely the loss of trade in this variety for the Nova Scotia growers, has been very successful and is being highly appreciated in Nova Scotia and Bermuda. Several special publications were issued by the officer in charge, on the control of Late Blight, Black-leg and Mosaic diseases of potatoes. Experiments were also conducted in Nova Scotia with dusting compounds for the control of apple scab, which have so far not been conclusive, though promising.

The laboratory for New Brunswick and Quebec has also much progress to report. The organization of the producers of potatoes, aiming at the improvement of the potato industry as far as freedom from disease, purity of variety, and increase in yield is concerned, has found many supporters.

Among the experiments may be mentioned, "control of club root," "Experiments on the control of powdery scab of potatoes," besides a general plant disease survey over the two provinces.

The Central laboratory finds its time very fully occupied by attention to the numerous inquiries received from farmers all over the Dominion.

The demand for nitro-cultures for legumes has increased tenfold since last year, and the first returns are now being received, which clearly indicate the advantages of treated seed versus untreated seed. Pure cultures are much more reliable in their results, and far more easily applied.

Of the more outstanding features of the work may be mentioned the activity of the divisional officers in connection with the blister rust of pines; various phases of research work were outlined, and experiments were conducted. The department participated in several conferences, held in Albany, N.Y., and Washington, D.C., being represented at these meetings by a special delegate.

During the year the Dominion Botanist investigated the cause and effect of one of the most destructive rust epidemics affecting principally the spring wheat in the western provinces, and the establishment of two new field laboratories for research on rust and grain diseases was authorized. One of these laboratories is situated at Brandon, Man., the other at Indian Head, Sask. Towards the close of the fiscal year

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the appointment of Mr. W. A. Fraser, M.A., was authorized, to take charge of this special and highly technical work. Mr. Fraser, formerly Assistant Professor of Biology at Macdonald College, is regarded as an eminent authority on rust diseases, and his appointment promises results of value to the grain-growing provinces particularly. The Dominion Botanist suggested and had designed by one of his technical assistants—an experienced artist—material for a coloured poster on black or stem rust of wheat, which, together with an authoritative statement, will form a very acceptable and instructive publication. The poster just came to hand at the close of the year, and will be widely distributed throughout the western provinces.

ECONOMIC BOTANY.

During the past year more than 1,000 species of plants were received for identification, some of these being weeds, some medicinal, and others poisonous.

Considerable progress was made in connection with the herbarium, 628 mounted sheets having been added to the collection.

As in previous years, an exchange list of 429 species of plants was sent out to the leading botanical gardens of the world; 584 packets of seeds were received, and 697 packets were sent out.

Some experimental work on flax commenced in the previous year was completed, the flax fibre being pronounced by an expert as the finest he had yet seen in Canada.

Several plots of hemp for seed and fibre were grown, the report on the latter from the Doon Twines Company, Limited, being quite favourable.

Several varieties of Soy beans ripened their seeds satisfactorily, as also did several plots devoted to the culture of the Castor Oil plant.

Both black and white mustard, as the result of experiments carried on during the year, appear to be well suited to the climate of Canada.

Chicory roots, grown here during last season, were reported on by the Dominion Chicory Company as being "excellent in every way."

The summer of 1916 was specially favourable for the growth of broom corn, but the report of the Parker Broom Company, on the sample submitted, would indicate that for purposes of manufacture this crop is hardly suitable for the Ottawa district.

Several species of medicinal plants, of which the more important were opium poppy, anise, dill, belladonna, etc., were grown with fairly satisfactory results.

The use of chemical solutions of iron sulphate and sodium arsenite, as a remedy for noxious weeds, was tested in the case of dandelion on lawns, wild mustard, and Canada thistle, with favourable results.

DIVISION OF FORAGE PLANTS.

The scope of the work of the Division of Forage Plants is gradually being extended. New lines are taken up every year as the work progresses, the most important ones this year being production of seed of various forage plants and experiments with grass and clover mixtures for hay and pasture.

VARIETY TESTS.

A great number of varieties of field roots, including mangels, swede and fall turnips, carrots, and sugar beets, and also of Indian corn were tested as usual. Owing, however, to the very adverse climatic conditions, especially in the spring and early summer, the variety tests with the said crops did not give as good results as they usually do.

BREEDING WORK.

The breeding work is progressing very satisfactorily. It includes work with alfalfa, red clover, timothy, orchard grass, western rye grass, red top, meadow fescue, Kentucky Blue grass, English rye grass, mangels, and swede turnips.

In previous reports it has been explained that the breeding work with alfalfa has for its main object the production of hardy, uniform strains of superior-yielding capacity. It is gratifying to be able to report that, this year, several hardy strains which has been developed during the last few years showed almost complete uniformity, when reproduced by seed.

The breeding work with red clover is conducted chiefly with a view of producing hardy and, as a consequence, high-yielding varieties, it having been demonstrated through previous experiments that there exists a direct relation between degree of hardiness and yielding capacity in different so-called red clover varieties. Several "strains" have been developed which, according to experiences gained so far, are perfectly hardy in the Ottawa district.

The breeding work with grasses is also progressing satisfactorily. Most advanced is the work with Western rye and timothy, of which quite a number of uniform varieties are being developed.

SEED-GROWING EXPERIMENTS.

The experiments with field root seed growing, so successfully started in 1915, were repeated this year and gave results similar to those of last year's, i.e., they indicated, most decidedly, that seed of good quality can be raised in the Dominion and that seed raising, if carefully undertaken, is a rather profitable business.

In addition to the seed-growing experiments with field roots, some work was started this year with seed raising of alfalfa, red clover, and timothy. The principal object of these experiments, besides furnishing data as to yields and profits, is to ascertain what cultural methods give best results.

VALUE OF CANADIAN-GROWN SEED.

In order to test the veracity of the statements, often made in recent years, that home-grown seed of such crops as mangels, turnips, and carrots is at least as good as imported seed, a great number of experiments were conducted, not only at the various Farms and Stations belonging to the Experimental Farms' system, but also with private farmers, in most cases members of the Canadian Seed Growers' Association. Several varieties of mangels and turnips, seed of which was produced, in 1915, at the

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Central Experimental Farm, Ottawa, Experimental Station, Charlottetown, P.E.I., Experimental Station, Kentville, N.S., Experimental Station, Fredericton, N.B., Experimental Station, Lennoxville, Que., and the Experimental Farm, Agassiz, B.C., were sown in comparison with ordinary commercial seed of the same varieties. The results were very much in favour of the Canadian-grown seed, as the crops realized from it were, in the vast majority of cases, larger than those obtained from commercial seed.

MISCELLANEOUS.

The herbarium material of grasses and kindred plants was largely added to this year, especially with forms from the foothills of the Rocky mountains, the district around Prince Rupert, B.C., and the Yukon Territory.

In this connection it may be stated that arrangements were made with the Canadian Klondike Mining Company, Dawson, Y.T., to conduct a large number of experiments of forage plants in the Klondike valley, the chief object being to investigate the hay-growing possibilities in the Yukon Territory.

DIVISION OF BEES.

The outstanding feature of the year 1916 was the unusually large crops of honey from alsike and white clover produced in Ontario, Quebec, and Manitoba, principally due to the wet spring followed by fine warm weather when the plants were in flower. The honey was sold at a fractional advance on the prices obtained the previous year, and was quickly bought up by housekeepers, sugar and canned fruits being high.

Bees are now being kept on fifteen of the Dominion Experimental Farms. The highest production in 1916 was at Ottawa, where thirty-five colonies produced 8,269 pounds of honey, an average production of 236 pounds, or \$30.77 per colony. Ste. Anne de la Pocatière, Que., came second, producing 132 pounds per colony, and Invermere, B.C., third, with 118 pounds per colony.

During the summer of 1916 the apiarist visited each of the Farms at which bees are kept, and made detours into promising regions for honey production, visiting apiaries and investigating in detail the species of plants from which the honey is gathered, and the weather conditions favourable for abundant production. The conclusion was reached that honey crops that will compare favourably in size and quality with those to be obtained in the best regions in North America may be secured in selected places in the Ottawa River basin, especially in some of its northern valleys, where alsike and white clover, fireweed, and certain species of golden rod and aster form successive sources of honey. For the fuller investigation of this region, co-operative experiments with experienced beekeepers having apiaries situated at Montcerf, Que., Lytton, Que., and Thornloe, Ont., were carried out in 1916. Colonies of bees were also taken from Ottawa to representative locations at Sully, Que., and Kazubazua, Que., for the summer.

Other promising regions visited by the apiarist were the districts south and southeast of lake Winnipeg, certain rich farming and swamp lands in the Maritime Provinces, and the alfalfa districts of southern Alberta. Two days spent at Melfort,

Sask., indicate that beekeeping is worthy of attention as a side line in this district. An extension of the system of co-operative experiments to these and other districts has been organized.

Further study of the wild bees believed to be instrumental in pollinating alfalfa was made by the apiarist in southern Alberta.

Wintering bees outside, four hives packed in shavings in a case, in an inclosure sheltered from wind, without attention during the winter, continues to prove successful in Ottawa, the average results of the last four years showing that the bees so wintered did better than those wintered in the cellar.

An experiment in importing bees without combs by express from the south in spring was made at Ottawa and showed good promise.

Containers for granulated honey made of white bond paper waterproofed with paraffin wax have been tried as an alternative for tin cans, the cost of which has greatly increased.

The large earnings of beekeepers in East-Central Canada in 1916 has stimulated an increased interest in bees, and there has been a heavy demand for our new bulletin "Bees and How to Keep Them," published during the year, especially the French edition.

The continued high rate of increase in the correspondence of the division, and calls to the apiarist, to which he responded, to contribute papers to the annual convention of the Ontario Beekeepers' Association at Toronto, the Quebec Beekeepers' Association at Montreal, the Beekeepers' Association of British Columbia at Vancouver, and the Manitoba Beekeepers' Association, the first three of which he attended in person, as well as from several smaller organizations and the press, serve to indicate the growing service that the Bee Division has been called upon and has been enabled to give.

POULTRY DIVISION.

As usual the work in the Poultry Department includes experiments along all lines that are of interest to the poultry producer.

This year special attention has been given to experiments on the cost of feeds, cost of production, incubation, brooding, diseases, etc. Experiments along these lines have been conducted at the Central plant and also to a limited extent at the various branch Farms.

ALTERATIONS TO CENTRAL PLANT.

During the year the Central plant has been rearranged to make it more convenient for the visitors to be able to see the plant and stock without the danger of having the experiments interfered with. A new entrance has been made to the front of the plant connected with a driveway which runs lengthwise of the plant parallel with Maple avenue.

The turkey plant has been refenced and two subways placed beneath the sidewalk. These subways connect the original plant with a portion of the forest belt that borders the Farm.

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In order to assist in the turkey experiments, a small, rough farm of thirty acres was rented, upon which the range turkeys were reared. The young turkeys were placed on this farm when hatched, and remained there until fall.

HOUSES.

A hot-water pipe brooder house has been erected and is in use for the early spring chicks. This house was much needed for the early hatches and, so far, is proving quite satisfactory.

Unfortunately the water-fowl house on the duck plant was burned in the fall, which necessitated the transferring of the ducks and geese to the upper plant for the winter.

The work at those branch Farms upon which poultry is kept has been made more efficient by the completion of most of the buildings and equipment, and the installing of a fuller stock of birds. Owing to enlistment and the demand for men in commercial lines it has been difficult to retain some of the poultry men, and it was necessary to make shifts sometimes when most inconvenient.

DISEASES.

Through the courtesy of Dr. Torrence, Veterinary Director General, Dr. A. B. Wickware, Assistant Biologist, has been assigned to poultry work. This makes it possible to carry on investigation in poultry diseases that up to this time was not possible. Considerable work along poultry disease investigation is being conducted, and we are looking for good results in this department.

EXTENSION.

Even more than usual has the demand this year for poultry lectures, judges, etc. With the exception of Mr. Fortier, it has not been possible for the members of the staff to accede to this demand. Mr. Fortier, however, has had much of his time occupied in this way, and owing to lack of time many of the requests for lectures, etc., have had to be refused.

The survey work, started over a year ago, has apparently been very much appreciated, and has been the means of improving poultry conditions in the sections where the work has been conducted. During the year a second block of farmers in the province of Quebec has been selected. This block is in the vicinity of Ste. Anne de la Pocatière Experimental Station. Similar work to that which is carried on at Cap Rouge is being conducted there.

Through the Illustration Station Division, eggs have been distributed to the farmers operating these farms. The Experimental Farms or Stations in the three provinces, where this illustration work is being conducted, supplied to each of the Farms two settings of Barred Rock or White Wyandotte eggs. From these eggs very satisfactory reports have been received.

During the winter and spring there has been an increased demand for poultry information, through correspondence and through visitors. The high price of living,

coupled with the encouragement the Government is giving, seems to have stimulated more persons than usual to take up poultry-keeping. The inquiries come from those who live in towns and cities, as well as from farmers and specialists.

TOBACCO DIVISION.

The season of 1916 was no more favourable to tobacco growing than to most other crops. Speaking generally, the summer was too cool, and the rainfall was excessive.

At Ottawa the tobacco suffered from sharp alternations between heavy rainfall and drought. The latter, especially, prevented the full development of the tobacco plants.

In the province of Quebec the proportion of wrapper tobacco was considerably reduced by the poor development of the leaves on most plantations. The only areas spared were some hilly sections, having light, easily-drained soil, and which, in a normal season, give a yield below the average.

In Ontario the situation was slightly better, and, despite the unfavourable season, the yield was not too greatly below the normal.

The shortage in the tobacco crop generally throughout Canada led to a marked rise in prices. Ontario White Burleys at from 12 to 15 cents per pound. In Quebec the demand for the varieties grown there was very active, from 16 to 17 cents per pound being paid for a first-class product.

The short crop of wrapper and binder tobacco in the United States raised the price of these grades in Canada materially. Canadian-grown wrapper tobacco sold at 40 cents a pound and binder tobacco at from 30 to 35 cents.

The fact that such high prices were paid for the Canadian products would seem to indicate that the quality of the leaf was found satisfactory by the cigar manufacturer.

The growing of the yellow, hot-air cured tobaccos of the Virginia type, continues to increase rapidly in Ontario. The crop of 1916, about 500 tons, was the greatest yet produced.

The inspection work, as yet confined to Ontario, is already producing results. About one thousand farmers were visited, their tobacco crops examined, and tobacco growing problems discussed.

In the preparation of tobacco for the market the study of the fermentation of Canadian tobacco, with a view to its utilization in cigar manufacture, has been continued. It has already been shown in a general way that certain varieties are suitable for this purpose, and it has been also shown that the strength of such tobaccos may be reduced by successive fermentations. However, much work yet remains in order to determine the best method to obtain a mild, fragrant tobacco, without excess of free ammonia, and suitable for the manufacture of cigars.

From the Harrow Tobacco Station a distribution of White Burley seed was made, and from that at St. Cesaire, Que., a distribution of Comstack Spanish. In all, over 8,000 samples were sent out.

Inquiries from tobacco growers become more numerous each year. In addition to this correspondence, a number of articles on tobacco growing in Canada were prepared by this division, and appeared in the agricultural press and trade journals.

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DIVISION OF ECONOMIC FIBRE PRODUCTION.

During the past year a new division has been organized in connection with the Experimental Farms Branch, called the Division of Economic Fibre Production. The object of this division is to carry on experimental work with fibre plants and to investigate fibre production and manipulation in Canada. Investigational work is being carried on more especially with reference to flax and flax fibre.

A complete experimental flax mill has been erected on the Central Farm at Ottawa. The mill is being equipped largely with the machinery at present in use in flax mills, but provision is being made for the installation of new machinery in order to determine the efficiency and economy of some of the newer inventions. The mill is provided with three tanks for water-retting experiments. It is also provided with drying chambers in order to determine whether the costly system of field drying can be dispensed with.

In addition to mill experiments, field experimental work with both flax and hemp is being conducted. These experiments are being carried on with a view to determining what areas in Canada are suitable to fibre production; what varieties and strains of seed are best suited to different localities; the proper amount of seed to sow per acre; the right stage to sow and harvest fibre crops; the extent to which flax reduces the fertility of the soil; and what fertilizers can be economically used with fibre plants.

During the past season experimental plots of flax, consisting of one acre each, were grown in various parts of Canada. While no conclusions can be drawn until fibre tests are made, it would seem that excellent fibre flax can be produced in many different sections of Canada. The Maritime Provinces, Quebec, Ontario, and British Columbia would seem to have special possibilities along this line.

Investigational work is being carried on as to the possibility of utilizing western seed flax straw for such commercial purposes as upholstering tow, fibre board and paper manufacture. Up to the present most of the work of this division has been along the lines of preliminary investigation, but it is hoped some concrete results will be available for publication another year.

DIVISION OF ILLUSTRATIVE STATIONS.

This being the second season during which the Illustration Stations have been in operation in the province of Alberta and Saskatchewan, results of the work carried on are now noticeable, particularly with the production of good seed.

The department undertakes, for the first year, to supply farmers operating the Stations, with the best seed procurable.

The varieties of seed chosen are selected and tested varieties grown on the Dominion Experimental Farms and proven most suitable to the climate and soil in which the Illustration Stations are located. In 1915, choice seed wheat was sown on the Illustration Stations, each having $17\frac{1}{2}$ acres, which gave an average of $39\frac{1}{2}$ bushels per acre. Each farmer also had 5 acres of Banner oats, which gave an average yield of 73 bushels per acre.

The farmers operating the Stations were allowed to reserve a certain quantity for their own seeding, the balance of the good seed being sold to farmers of the neighbourhood, at reasonable prices. In most districts farmers took advantage of this opportunity to secure well-graded seed. This year the advantage of good, well-graded seed is shown in several instances. The good seed, being nearly all of one variety, ripened earlier and gave a larger yield per acre than the poorly graded seed. Although the ripening season was late, in several instances the Marquis wheat grown on the Illustration fields and the crops grown from seed secured from the Illustration Stations were either ripe or far enough advanced to escape much injury from the early frosts. So noticeable has this been that farmers, when passing, made inquiries as to the variety of the grain growing, and in many instances gave orders for the seed.

FORAGE CROPS.

One of the special features of the work of the Illustration Stations is the introduction of good forage crops. Now that the prairie is being rapidly broken, and more live stock being pastured, farmers are finding it more difficult to secure sufficient prairie hay to carry them over winter, especially those going more into live-stock farming.

Two years ago this division made provision for two acres to be sown with western rye grass on each of the Illustration Stations. This season's crop in every instance has been very satisfactory. Reports to hand give yields of from two to three tons of dried fodder, and as high as 760 pounds per acre of pure clean seed was harvested, which seed was sold to the farmers in the immediate district. The rye grass from which the seed was threshed was well cured and made good feed for live stock during the winter. During the past season many special inquiries have been made as to where the seed for this forage crop could be purchased, how much seed should be sown per acre, and many other questions.

Alfalfa sown in 1915 has this year yielded heavy crops of excellent fodder, several stations recording as high as two and two and a half tons per acre. Next season it is the intention to save seed from as many fields as possible.

The alfalfa fields seeded in 1916 made a strong growth and a good stand was left as a cover to the roots over winter.

GARDENS.

No farm home is complete without a vegetable, fruit, and flower garden, and it is a pleasure to state that several stations had good gardens in 1916, although many others had none whatever.

The Dominion Horticulturist arranged and sent a suitable collection of seed to each Illustration Station. Several kinds of seed, which had been generated and their suitability tested on the Central Experimental Farm, were sent along with instructions and record sheets so that notes might be taken as to their suitability to the different sections of the Dominion. One pleasing feature about the gardens is the interest taken in them by the women and children, as in many cases they do all the work, and find it both instructive and profitable.

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POTATOES.

Potatoes are used in every home in Canada, and little thought is given to varieties having good cooking qualities.

In 1916 the Experimental Farms supplied each operator of the Illustration Stations with two bags of the leading variety which had given good yields for a number of years, had good cooking qualities, shallow eyes and good shape, the object being to grow large quantities of good seed and also to have large quantities of one variety or at least one type of potatoes for sale. Farmers have suffered in having to accept lower prices because it was so difficult for a potato buyer to go into a country point and make up a full car of potatoes of an even grade in colour, size or in quality. Each farmer would offer a different variety which would mean a different colour and different qualities.

The potato crop in the province of Quebec varied. In the eastern section, potatoes were a big average crop, while in central Quebec the crop was extremely light. Potatoes in Saskatchewan and Alberta were fairly good, yielding from 150 to 300 bushels per acre.

POULTRY.

While the chief object of the Illustration Stations is soil cultivation and crop production, other departments of the farm receive more or less attention from the instructors.

One of the departments, in which all farms are interested and upon which considerable information is asked, is poultry. The flocks, as a rule, are not what they might be, in most cases being a mongrel lot, without suitable care and housing. After consultation with the Poultry Division at Ottawa it was decided to send from the branch Experimental Farms in the respective provinces, two settings of eggs to each of the Illustration Stations.

Therefore, in the spring of 1916, two settings were supplied the operators of the Illustration Stations.

Arrangements are made with the operators of the Illustration Stations to sell, at reasonable prices, settings of eggs or spare cockerels to persons wishing to purchase for breeding purposes.

The results from the first year's effort in this department are very encouraging. On some farms there have been this winter, a small bunch of pullets that will be used for breeding this spring. In several cases good cockerels were sold to neighbours, one operator of an Illustration Station in Saskatchewan supplying eight good breeding cockerels to his neighbours.

VISITS.

During the season, each Illustration Station was visited at least once each month by the inspector having charge of the work in each province, or by the supervisor. The object of these visits is to instruct the operators as to the best methods of cultivation and crop rotations, and also to give advice on general farm work.

The inspector for the province of Alberta, Mr. J. F. Irwin, made a total of one hundred and one visits, while the supervisor made one visit to each of the fifteen stations in that province.

The inspector for the province of Saskatchewan, Mr. E. C. Sackville, made seventy-five visits, while the supervisor made twenty visits to the fourteen Stations in the province.

The inspector for the province of Quebec, Mr. J. E. Montreuil, made eighty-two visits, and the supervisor twenty-eight to the ten stations.

MEETINGS.

During the year, eleven meetings were held in Alberta, five in Saskatchewan, and twenty in Quebec by the supervisor and the inspectors, assisted by the Director of Experimental Farms and other speakers from the Department of Agriculture. The operators of the Stations gave their experiences and results with the work, which greatly interested the farmers of the district.

A special feature has been introduced, that of holding meetings on the farms on which the illustration work is being conducted.

In this way farmers derive a great deal of benefit from seeing the crops grow and having the kind of crop and method of cultivation explained on the field.

DIVISION OF EXTENSION AND PUBLICITY.

The work of this division has materially expended during the year. An Experimental Farms exhibit was staged, under its supervision, at 166 places throughout the Dominion. Had it not been for the clashing of dates in the case of some of the smaller fairs, and the fact that at some points the fair buildings had been taken over for military purposes, the number would have been considerably greater.

For distribution at these fairs, a number of additional exhibition circulars were brought out, there being now almost a hundred circulars in the series.

Numbers 5, 6, and 7 of "Seasonable Hints" were issued.

The efforts to increase the departmental mailing lists were continued, by means of taking names at exhibitions, by extending an invitation to join the list in each issue of "Seasonable Hints," and by mailing return cards to farmers. In these various ways, the division has increased the mailing lists by 42,450 names during the year.

The multigraphs operated in this division, in addition to handling a large amount of form work for the various divisions and branch Farms, have rendered possible the issuing to the agricultural press of a number of timely articles on a variety of farming topics. These have met with a very favourable reception, and it is planned to continue them during the coming year.

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

Spring work started about a week earlier than for a number of years, and all cereals were sown by the end of May. Ample rainfall and good growing weather brought crops on rapidly. Hay and clover gave excellent crops, while the yields of cereals were higher than the average, although wheat suffered a little from blight and insects. Potatoes and corn gave full crops. Fall pastures remained good, and live stock went into the stable for winter in good condition.

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Experimental steer feeding was carried on during the winter, and good prices were realized for the finished animals.

No building operations of any importance were carried on at this Station during the year.

EXPERIMENTAL STATION, KENTVILLE, N.S.

Spring opened with fairly moderate weather, and by the end of May seeding operations were well advanced. Moderate rains in June resulted in a splendid growth of all farm crops, but was not so satisfactory for fruit. Hay gave a much better crop than the previous year, but owing to dark weather in July, its cuing was considerably delayed. Dry weather in August caused the roots and potatoes to suffer greatly, but corn was unusually good. The grain crop, on the whole, was a good one, and the apple crop was of good quality.

Experimental work in steer feeding was carried on during the winter.

No buildings were erected during the season at this Station.

EXPERIMENTAL FARM, NAPPAN, N.S.

Farming operations commenced about two weeks earlier than usual, and practically all grain was sown before the end of May. Cold and wet weather during June, however, retarded growth. Good weather in August enabled the hay crop to be cured and stored satisfactorily. Grain and root crops were good, while corn gave exceptionally good returns. The apple crop was light.

Some 35 acres were chopped, cleared, and stumped by the interned prisoners during the season.

A number of steers were purchased for experimental feeding in November, and a new steer-feeding shed was built. Various repairs were made to the older buildings on the Farm.

EXPERIMENTAL STATION, FREDERICTON, N.B.

The spring was very dry, and farming operations began well, but heavy rains in June delayed seeding considerably. Heavy floods injured the crops on the low-lying land, but on the higher land the yield of hay was very heavy. The weather during July and August was most favourable for crop growth. The grain crop was good, but potatoes only yielded about 75 per cent of the average crop. Corn and roots also yielded well.

The pumping station, destroyed by fire in 1914, was rebuilt. Three colony houses for poultry were also built, and various repairs to old buildings carried out. A plant pathological laboratory in connection with the Division of Botany was erected.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUE.

Spring opened much earlier than usual, and seeding operations were started in good time, but were considerably hindered by rainy weather in early June. A severe drought was experienced in July and August, and this lowered the yields of all grains, potatoes, and hay. Good crops of roots were obtained.

A large amount of drainage work was carried on during the season.

Several buildings, commenced last year, were completed, and a new permanent poultry house was erected.

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EXPERIMENTAL STATION, CAP ROUGE, QUE.

Although unfavourable weather caused some delay in seeding operations in the district, this work was completed at the Station at about the usual time. Hay gave good crops, while cereals and roots were about the average.

A number of buildings on the Station were repaired during the season, but no new buildings of any importance were erected.

An additional area of some eight acres, lying at the northeast corner of the Station, was purchased and added to the Station area.

A great deal of work with live stock was carried on during the season.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

Heavy rainfall during May held back seeding operations somewhat, especially on the low-lying land, and continued rain made haying very late, but this crop turned out very well, and was saved in good condition. The yield of grain was light, but corn produced a good crop. Potatoes gave only a light yield.

A new dairy barn was built during the season, and a dairy herd installed. Live stock work with sheep and steers for feeding experiments was also carried on.

A large amount of drainage work was accomplished.

EXPERIMENTAL STATION, SPIRIT LAKE, QUE.

Preparatory work was carried on at this new Station under a foreman-manager. The interned prisoners formerly kept at Spirit Lake were removed, and the Station is now entirely under the charge of this department. Horses, implements, and other equipment have been purchased and installed, and a considerable amount of clearing and drainage work carried on.

A fairly large area has now been cleared, and will be ready for cropping in 1917.

EXPERIMENTAL STATION, KAPUSKASING, ONT.

A certain amount of clearing work has been carried on at this Station under the supervision of a foreman-manager, in preparation for cultivation and cropping this year.

A new barn, office building, and house for the stableman have been erected, as well as a water tank and power. A pump has been installed and a water system laid to maintain the water supply. Most of the lumber for the new buildings was cut, sawn and prepared on the Station.

EXPERIMENTAL STATION, MORDEN, MAN.

Further work with field crops and live stock has been carried on at Morden during the past season, and further work in the organization of the Station has been continued. Work in horticulture has also been commenced. A new office building has been erected.

EXPERIMENTAL FARM, BRANDON, MAN.

Cold weather in the spring delayed seeding operations somewhat, but better weather during June and July gave promise that a normal crop would be obtained. However,

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an attack of black rust, first noticed at the end of July, practically destroyed the wheat crop, and late oats and barley were also affected slightly; consequently, the cereal crop was much below average. A heavy yield of hay was harvested, and corn did well.

The main barn was remodelled during the season, but a disastrous fire occurred in December, which destroyed all the barns, together with feed, machinery, and other equipment. All the live stock, however, were saved. A temporary roof was put over the basement of the main barn, in order to house the live stock during the winter.

A plant pathological laboratory, in connection with the Division of Botany, was erected in the fall.

Experimental work in feeding steers has been carried on, all the animals showing good gains.

EXPERIMENTAL FARM, INDIAN HEAD SASK.

Seeding operations were delayed considerably by a cold spring, but more favourable weather in June and July caused the crops to make good growth. A large yield of hay was obtained. Some damage to root crops and corn was done by cutworms, and warm, damp weather in August caused rust to make its appearance, destroying a considerable amount of the wheat and late-sown oat and barley crops. Potatoes, fodder corn, and roots gave good yields.

A poultry administration building was erected, and also a plant pathological laboratory to facilitate work in the study of plant diseases.

Experimental work with steer feeding was carried on, and the finished animals were sold at an excellent profit.

EXPERIMENTAL STATION, ROSTHERN, SASK.

A late spring delayed seeding at this Station, so that much of the crop was not put in until the middle of June. Dry weather in June caused the hay crop to be much smaller than usual. The grain crop promised well, but was totally destroyed by a severe hail-storm in August. The vegetable and flower gardens were also destroyed.

A new sheep barn was erected during the season at this Station.

Live stock work in the experimental feeding of steers was carried on during the winter.

EXPERIMENTAL STATION, SCOTT, SASK.

Owing to cold weather in April, seeding was not started until later than usual, while rainy weather in May delayed operations still further. Warm weather in June and July brought on the cereal and hay crops rapidly, the hay yielding well. Although several hail-storms did some damage in the district, the crops at the Station did not suffer in this regard. Potatoes gave a good crop.

A new sheep barn and steer-feeding sheds were built.

A herd of steers for experimental feeding was purchased in the fall.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

The season at Lethbridge was normal. The hay crop was a little below the average. Slight hail-storms early in the season damaged the apple blossom, but did no

damage to the other crops. Some rust was noticed in the district, but no damage was done at the Station. The grain crops in general were good, and potatoes and roots also gave good yields.

Steers and lambs were purchased in the fall for feeding experiments.

No building operations were carried on this year.

EXPERIMENTAL STATION, LACOMBE, ALTA.

Favourable weather in April allowed most of the grain to be seeded by the end of the month. A cold spell in May retarded growth a little, but prospects for an average crop were good. Unfavourable weather interfered somewhat with haymaking, and wet weather at harvest-time held back the gathering of the grain crops considerably. A killing frost in August did considerable damage to crops in some sections, and, although the yields were as high as usual, the grading was lower.

Work with live stock, including steer-feeding, was carried on during the season.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

Preparatory work was continued at this Station. Some field crops were grown, and work in horticulture continued. Irrigation work was carried out, and a further quantity of fluming put up in this connection.

Experimental work in steer-feeding was carried on during the winter.

No permanent buildings have as yet been erected at this Station.

EXPERIMENTAL STATION, INVERMERE, B.C.

Exceptionally cold weather at the beginning of the growing season retarded growth considerably, but more favourable weather in July caused the crops to make good progress. Some damage to root and vegetable crops was caused by cut-worms. The alfalfa and clover crops were very good, while the grain yield and fruit crop were about average.

Some work in road-making was carried on during the season, but no new buildings were put up.

EXPERIMENTAL FARM, AGASSIZ, B.C.

Cold, wet weather in the early spring delayed seeding considerably, but the weather later in the season being more favourable, the crops made good progress. The hay crop was very good, and the cereal crops were about the average, good weather during August and September allowed harvesting operations to be carried out satisfactorily.

A great deal of work with live stock, including beef and dairy cattle, sheep and swine was carried on during the season, most of the animals giving good returns.

No building operations of any importance were carried on during the year.

EXPERIMENTAL STATION, SIDNEY, B.C.

Field crops of cereals and forage plants were grown and variety tests of fruits and vegetables made. Corn for ensilage and alfalfa gave good crops, but root crops

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were lighter than usual. The hay crop was good, and grain gave larger yields than expected. Pastures were a little short and dry, making it necessary to feed green corn. The quality of the orchard fruits was excellent and the yield a good one.

Some work in fencing, drainage, and laying out areas for various lines of work on the Station was carried out, and a shed for steer-feeding work and two poultry houses were erected during the season.

SUBSTATIONS.

Experimental work was continued at Forts Smith, Resolution, and Providence, in the Northwest Territories, Fort Vermilion, Grouard, and Beaverlodge, in northern Alberta, Salmon Arm in British Columbia, and Minto Bridge in the Yukon Territory.

Reports received from these points, together with samples of grain grown, proved of great value in obtaining information as to the agricultural possibilities at these far-distant points.

HEALTH OF ANIMALS BRANCH.

The Contagious Diseases Division of this branch is maintained for the purpose of preventing the introduction of the contagious animal diseases from outside sources, for the control and eradication of these diseases in the country, as well as the conduct of experimental and research work to determine certain facts, and to obtain definite knowledge to enable the department to deal intelligently with the many problems continually confronting it.

Although two pathologists and nineteen other officers of this division are on active service in Europe, there has been, during the past year, no cessation of activity in the various lines of work conducted in this division. While this has necessitated the making of many changes, the efforts to protect the live stock of the country from disease have been faithfully continued, not only in guarding against its introduction from abroad, but by preventing the spread of infection already existing among Canadian herds and flocks.

The nature of the duties performed by the officers of this branch is very frequently such as to provoke adverse criticism from those members of the general stock-owning and especially stock-dealing public, who, from want of thought or of experience regarding the disastrous effects of uncontrolled animal plagues, are inclined to look upon veterinary inspection with an unfriendly eye. It is therefore a source of gratification to find that the efforts of my officers in this direction are becoming more appreciated and understood, and that the work of controlling contagious diseases by the necessary compulsory methods is now being accepted by the stockmen as national and wise.

The statistics for the year 1916-17, which will be found in the special report of the Veterinary Director-General, indicate that the policies of my department are sound and practical, and effective in controlling contagious diseases of animals.

GLANDERS.

The very dangerous and highly infectious disease of horses, mules, and asses, known as glanders, has been practically eradicated from the greater portion of the

Dominion. During the last few years the most serious outbreaks have occurred in limited areas in the provinces of Alberta and Saskatchewan.

The success which has followed the slaughter of all the horses reacting to mallein, and the payment of compensation therefor, would indicate that it will also be possible to clear up the infected centres in the provinces in which it now exists. There is no doubt, however, that the department will be confronted in the future with new outbreaks throughout this country, as even the most careful measures will not absolutely prevent the importation of infection through some unobserved source.

There were approximately 224 horses destroyed for this disease during the past year, for which \$21,928 will be paid in compensation, this being a slight reduction over the amount paid in compensation last year.

The mallein which is used by the inspectors of this branch for diagnostic purposes is all manufactured at the Biological Laboratory here, and during the past year over 14,000 doses were distributed to our officers.

The same policy has been enforced in dealing with this disease since 1905, and consists in quarantining suspected animals until they have been shown to be free from the disease by the mallein test. All reacting horses are destroyed and, after the lapse of a suitable period, the contact horses are again tested, and if no reactions are obtained the quarantine restrictions are promptly removed.

The same precautionary measures are taken with regard to the importation of horses from other countries. Those coming from the United States, if not accompanied by a satisfactory mallein test chart, signed or endorsed by an officer of the Bureau of Animal Industry, are held at the boundary port and tested there by one of my officers. Those arriving from Great Britain must be accompanied by a certificate signed by an officer of the Board of Agriculture and Fisheries, stating that no contagious disease of horses has existed in the district from which the horses came.

Horses accompanied by these certificates are not tested but are allowed entry after a careful inspection is made. This procedure has been found to be quite satisfactory, owing to the fact that these importations are almost entirely limited to valuable pure-bred stock, in which the disease is seldom seen.

DOURINE.

Excellent progress has been made in controlling this disease, which is largely due to the serum method of diagnosis.

Very great difficulty was experienced for many years in dealing with this insidious malady, owing to the impossibility of recognizing it until the infection had been widely spread. Affected animals do not always manifest symptoms, but they are just as capable of transmitting the disease. It was therefore necessary, before the serum method was discovered to keep animals under restriction for very long periods, during which breeding was not permitted. This entailed serious financial losses to the horse owners, especially so as this disease was first discovered on the range in one of the best horse-raising districts in Alberta.

Owing to the seriousness of the situation, the department decided to secure land for experimental purposes in the infected area, on which was established a research

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laboratory. Dr. Watson, whose experience at the Biological Laboratory, Ottawa, specially fitted him for this work, was placed in charge, and after several years was able to perfect a method of serum diagnosis, which has proved to be of the very greatest benefit, as by this means the disease can be diagnosed in affected animals, although they may show no symptoms and appear in perfect health. There have been approximately 5,000 blood tests made, with only forty-eight positive results. The diseased animals have been slaughtered, and \$3,900 will be paid in compensation.

With the exception of one case, all of these animals were found in the old infected districts in the province of Alberta. The disease has therefore been practically eradicated in Saskatchewan, where a few years ago it gave considerable concern. There is now every reason to believe that the officers of this branch will be able to eradicate this disease in this country in the very near future.

MANGE IN CATTLE AND HORSES.

Mange in cattle and horses has been found to a more limited extent than in previous years. This disease has never been prevalent in horses in this country, and any outbreaks that have occurred among these animals have been quickly controlled. In cattle, however, it has given the department anxiety for many years, as it has existed on the open range in the provinces of Alberta and Saskatchewan.

The disease was so widely spread that it was necessary, before I assumed charge of this department, to enforce general compulsory dipping operations over an extended territory. Sufficient progress was, however, made to change this very troublesome and unpopular procedure to one of individual quaranting of affected and contract herds.

The stockmen readily co-operated in the enforcement of these regulations, as they did not affect those whose herds were free from mange, and which had no history of having been in contact with infection. As, however, the infection is still on the open range, it is even now necessary to restrict the movement of any cattle from a defined area in these two provinces, as otherwise the most careful measures could not prevent the extension of the infected area.

Under the Special Mange Order, cattle cannot be moved out of this area unless they are accompanied by a veterinary inspector's certificate. Each shipment must be inspected by the veterinary inspector, and if the cattle are for any other purpose than immediate slaughter they must first be dipped twice under his supervision.

Good progress has been made, and approximately one hundred townships were removed from the requirements of this order during the past year.

Systematic measures are followed in dealing with this disease and in making careful inspections of all cattle in the mange area. A number of range riders are employed to ride the range and to report their findings to a veterinary inspector, who is given charge of a certain portion of the area. In this way it is possible for my officers to keep in close touch with the existing conditions throughout the centre territory covered by the order.

There were 1,450 animals found actually affected with this disease during the past year, and while the decrease in the number of active cases over the previous year is small, the infected area is yearly becoming more limited, and will enable the officers of this branch to concentrate their efforts with better results.

SHEEP SCAB.

Sheep scab has not been dealt with during the past year in any part of Canada, with the exception of Manitoba. In this province it still exists to a slight extent, fifty-four (54) cases having been detected in an infected district.

A thorough inspection has been made of all suspected flocks, and all diseased and contact sheep are being systematically dipped. All possible measures are being taken to eradicate this outbreak at the earliest possible date.

In view of the importance of keeping our flocks free from this disease, special measures are enforced for the protection of Canadian sheep from the introduction of infection from outside. Sheep from the United States imported for any other purpose than immediate slaughter must either be accompanied by a satisfactory dipping certificate, signed by a Bureau officer, or be held at the boundary for thirty days, during which period any action which may be considered desirable can be taken with regard to them.

ANTHRAX.

This disease is fortunately not at all prevalent in this country, and in the last five years it has only been detected in the provinces of Ontario and Quebec, where it has caused thirty-seven fatalities.

In view, however, of the many opportunities of introducing infection in fodders, grains, and hides, as well as in other indirect ways, from foreign countries, in which the disease is prevalent, it is fortunate that there has not been a larger number of cases.

My department supplies anthrax vaccine for immunizing purposes at cost. This is manufactured at the Biological Laboratory in Ottawa, and is forwarded to veterinary practitioners only after the premises on which the disease has been found have been quarantined and a veterinary inspector has supervised the proper disposal of the carcasses of animals dying from this disease, as well as all contact matter.

It is not considered wise to allow the veterinary inspectors to immunize the contact animals, and the owners must, therefore, give the department the name of the veterinarian whom they decide to employ to do this work, before the vaccine is forwarded.

RABIES.

There were approximately only nine animals found affected with this disease during the past fiscal period. It is very fortunate indeed that this troublesome malady, which is transmitted by the bites of rapid animals, chiefly the dog, and which is most important from a public health standpoint, has only been detected in a few areas in Ontario. While the fullest investigation did not result in determining the exact origin of the infection, the information obtained would indicate that the disease was introduced from New York state.

In view of the limited number of cases detected in this country during the past year, it has not been necessary to enforce a muzzling order, as the individual cases were dealt with by ordinary quarantine measures.

TUBERCULOSIS.

The suppression of bovine tuberculosis by reasonable practical measures has received very careful consideration for many years, but, with the exception of the Tuberculosis Order for dairy cattle, I have not so far been able to justify the changing of the old policy of the department.

Tuberculin is still manufactured at the Biological Laboratory in Ottawa and supplied upon the request of cattle owners to veterinarians, provided the owners agree to have all reacting cattle promptly earmarked. The veterinarian must report the result of the test on charts specially prepared for this purpose.

The department also assumes charge of herds for the eradication of this disease, and makes systematic tests free of charge. All reacting animals are earmarked, after which the owner can dispose of them under official supervision in any way he may see fit. Before the department takes action in these cases the owner must give his assurance that he will follow the advice of the inspectors of the department.

The inspectors also test pure-bred cattle for shipment to the United States, as well as those consigned to points in the province of British Columbia.

The Tuberculosis Order, which was passed in 1914, and which provides for departmental assistance to municipalities which decide to provide milk for their citizens from tuberculin-tested healthy cattle, has been satisfactorily enforced in Saskatoon. Unfortunately, however, other municipalities have not seen fit to take advantage of this order, owing to the fact that they were unable to license all dairies from which milk was obtained. In some cases, milk was imported from the United States, while in other cases the provincial legislation did not give the municipality power to pass by-laws which would make the tuberculin test compulsory.

The city of Regina came under the order, and the work of testing was well under way when the municipality discovered that certain provincial requirements made it impossible to comply with the requirements of the order. This work was therefore discontinued in this district.

I am quite satisfied, however, from the experience which has been gained in the enforcement of this order in Saskatoon that its enforcement will be of material benefit to any community, and will also, if taken advantage of in a general way, prove of value in the eradication of bovine tuberculosis.

The reduction in the number of reactors discovered during this year, compared with those found during the previous one, undoubtedly supports this view. There were approximately 160 reacting cattle out of 2,937 tests during 1915-16, and 39 out of 2,612 tests during the last fiscal period.

The total amount of compensation paid in 1915-16 was \$3,144.57, and last year \$541.65. The owners, however, realized, in addition, \$928.24 in salvage for the carcasses, which were passed during the last year and \$3,824 during the previous year.

As many municipalities were unable to observe certain requirements, I am, upon the advice of Dr. Torrance, considering asking Council to amend the order in such a way as to make it more practicable. It is my intention to have this order apply to any municipality, provided it is able to employ a paid sanitary inspector for its satisfactory enforcement, instead of limiting it to municipalities of not less than 5,000 inhabitants.

It is also my intention to have the dairies classified as raw-milk dairies and pasteurized-milk dairies. In the former case it will be compulsory for all cattle to be tested with tuberculin, and in the latter case the test will not be enforced, but the milk will be scientifically pasteurized under proper supervision.

HOG CHOLERA.

A compulsory slaughter and compensation policy has been followed in dealing with this disease for many years, with satisfactory results. There has been a material reduction in the number of outbreaks of this disease during the last year. It has only been prevalent in the provinces of Ontario and Quebec; only a few small outbreaks having occurred in British Columbia, Alberta, and Nova Scotia; in Manitoba one isolated outbreak was dealt with, and in Saskatchewan the disease has not been observed.

It is a difficult matter to trace the origin of these outbreaks, but from the facts which have been ascertained there is no doubt that the infection is maintained in this country very largely through the feeding of scraps of United States pork.

The occurrence of the Manitoba outbreaks was of interest in that it occurred on premises where the hogs are being fed on garbage, and at a time when the garbage was being fed in a raw state.

Special measures were put into force a few years ago, with a view to controlling the feeding of garbage to hogs. A policy of insisting upon garbage feeders being licensed has been followed, and in all cases where these licenses are issued the owners must have proper facilities for cooking the garbage, and must also have suitable accommodation for the number of hogs fed, which must be kept in a sanitary condition.

Although this material is not considered to be a suitable food for hogs, owing to the fact that by the time it is fed it is frequently in a sour and fermented state, it is nevertheless questionable whether or not it would be practicable or desirable to absolutely prohibit its use for food purposes. The department is therefore taking reasonable measures in restricting its use and endeavouring to educate the hog owner to feed this material in a fresh but thoroughly cooked state, and also in the keeping of his premises in a clean and sanitary state.

The inauguration, two years ago, of the system of inspecting and licensing premises where hogs are fed on garbage, together with the enforcement of the regulations with regard to the proper cooking of this material, has no doubt been an important factor in preventing outbreaks of hog cholera.

Although the department still slaughters all hogs showing evidences of being affected with this disease, it does not in all cases follow the old policy of slaughtering all contact hogs which do not show symptoms of illness. The procedure started last year has been followed again this year, with satisfactory results.

Contact hogs giving normal temperatures are injected with hog cholera serum. The premises on which they are kept are strictly quarantined and disinfected, and the owner is allowed to fatten the serum-treated hogs for the block.

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In view of the danger of disseminating the hog cholera virus from plants where manufactured, these products are not permitted to be made in this country. The serum used by the department is procured from a reliable firm in the United States, and is used only by the officers of this branch.

The importation of hogs from the United States into this country is also prohibited, unless an affidavit accompanies each shipment, stating that the hogs comprising the shipment have not been immunized against this disease.

The United States authorities have suspected for years that the use of hog cholera virus as an immunizing agent has, through carelessness, caused very many outbreaks of hog cholera throughout that country. This department, therefore, considered it wise to restrict the use of serum to its own officials.

It has been estimated that a material saving has resulted to the department, as well as to the hog owners, through the use of this serum. The department has treated with serum approximately 8,500 hogs. Under the old system the majority of these hogs would have been slaughtered as contacts, and an approximate compensation, amounting to \$57,000, paid therefor. These hogs, however, have been treated, fed and slaughtered for pork.

The cost of the treatment of these hogs amounted to \$1,600. The saving to the department alone has, therefore, been approximately \$55,400. In addition to this saving the farmer realized the market value for his pork, as the treated hogs were, with very few exceptions, free from disease, and were therefore utilized as a food product instead of being wasted.

During the past fiscal year, 4,623 hogs have been slaughtered for this disease and \$30,449.32 compensation paid therefor.

FOXES.

Owing to the great value of the fox industry on Prince Edward Island, I have thought it advisable to continue quarantining all foxes landed on this island until it can be ascertained positively that they are free from disease. These animals are quarantined at Charlottetown for thirty days on a site provided by the provincial authorities, where they are examined and kept under the supervision of a veterinary officer.

Thirty-five (35) imported foxes were quarantined during the last fiscal period, all of which were found to be healthy.

LABORATORIES.

The work in the laboratories at Ottawa, Lethbridge, Alta., and Agassiz, B.C., has been of very great value to the livestock interests throughout the country. The many biological products manufactured at Ottawa for diagnostic and immunizing purposes have been of inestimable value in eradicating and controlling outbreaks of contagious disease.

There have also been many thousand specimens examined microscopically at these laboratories for the purpose of ascertaining the cause of fatalities.

In view of the importance of ascertaining facts with regard to contagious abortion, and of determining some practical method for the control and eradication of this disease, one of the pathologists at the Ottawa laboratory is devoting his attention specially to it. An immunizing vaccine has already been made, but our work in connection with it has not advanced sufficiently to attempt its general use. I am in hopes, however, that the vaccine may eventually prove to be the agent needed for the eradication of this very serious malady. Another of the pathologists at this laboratory is devoting his whole time to investigating the diseases of poultry.

The work in the laboratories in the West consists principally of the investigation of diseases peculiar to the provinces in which the laboratories are maintained.

A great deal of the time of the pathologists at the Lethbridge laboratory is devoted to the examination of blood taken from suspected cases of dourine and forwarded by the officers in the field.

The pathologist at Agassiz is engaged in investigating the life-history of certain parasites, with a view to determining to what extent they may carry infection of contagious diseases. He has also undertaken some interesting experimental work with regard to fern poisoning, and has definitely determined that a species of fern growing in certain localities in British Columbia actually contains an alkaloid, which is poisonous to horses.

In addition to those lines the pathologists at these laboratories examine, microscopically, specimens of diseased tissues forwarded from the abattoirs under federal inspection, with a view to deciding what official action should be taken in doubtful cases.

Systematic measures are taken for the constant disinfection of stock cars, chutes, and yards, as there is probably no other more certain means of disseminating the infection of contagious diseases than by permitting the use of unsanitary cars, chutes, or yards. There are approximately twenty-five (25) inspectors, who devote all of their time to this work; with the exception of four travelling inspectors they are located at suitable points where cleaning and disinfecting facilities exist.

In order to ensure that all cars are regularly disinfected, an order is in force which provides that all empty stock cars arriving at or passing through any of the places mentioned below, shall, unless bearing evidence of having previously been so treated, be cleansed and disinfected under the supervision of an inspector before being allowed to proceed:—Halifax, N.S.; St. John, N.B.; Montreal, Point Levis, Quebec, Que.; Chatham, Toronto, Ont.; Winnipeg, St. Boniface, Man.; Moosejaw, Sask.; Medicine Hat, Lethbridge, Calgary, Edmonton and Strathcona, Alta.; Cranbrook, Kamloops, Nelson, Port Mann, Revelstoke and Vancouver, B.C.

In order that this work shall be effective, it is very essential to ascertain the true disinfecting properties of materials used. The railway companies are required to forward to the laboratory here samples of disinfectants which they intend to purchase for the disinfection of their cars and yards. These samples are carefully examined by the pathologist and their phenol coefficient definitely ascertained. If they are found to be satisfactory the railway companies are promptly notified and the use of the disinfectant allowed; if not satisfactory, the department does not, under any circumstances, permit the preparation to be used.

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QUARANTINES.

The quarantine stations on the Atlantic and Pacific seaboard, as well as along the international boundary, are being maintained in a good sanitary and serviceable state, as it is most important that animals presented for entry can be safely detained and kept under official supervision in comfortable quarters.

Special measures have been taken to make the Levis quarantine station modern in every respect. This is the largest and most important of our quarantine stations, and the one through which the most valuable importations from overseas enter. The buildings have been erected on the site which was purchased a few years ago, and are located in such a manner as to permit each individual shipment to be kept quite separate while in the stables and also while out at pasture.

It was found advisable to change the inspection port at Bridesville, B.C., to a quarantine station, and to establish inspection ports at Sprague, Man., and Centreville, N.B. The latter point was made an inspection port in place of Florenceville, owing to the fact that it was closer to the international boundary and in a more suitable position.

MEAT AND CANNED FOODS DIVISION.

The work of this division continues to increase, and its growth has been especially marked during the past year. This at first sight might appear to be a somewhat strange statement in view of the many reports of the shortage of meat-producing animals. The statistics, however, show that there were slaughtered at establishments operating under the Meat and Canned Foods Act, approximately 648,859 cattle, 2,245,515 swine, and 416,575 sheep. With the slaughter must also be considered the extraordinary imports made by the managements of the inspected plants. These amounted in port alone to 1,032,719 carcasses, besides cuts of pork which in weight would equal another 200,000 carcasses.

The tremendous demands for meat foods to feed the armies of the Allies has drawn very heavily upon the supply in Canada; in fact, to carry out their contracts, Canadian packers were compelled, as above stated, to draw on the United States for nearly one-third of the pork handled.

The prices paid to farmers have been the highest on record, and while the prices of grain and feedstuffs have been high there appears to have been a reasonable margin of profit left to the feeder. I trust, therefore, that the producers of Canada, upon whom so much depends at this time, will redouble their efforts in order that a steady supply of meat foods may be available both for export and home consumption.

Time and space will not permit me to explain in detail the work carried on under the Act, which applies only to establishments engaged in export trade (either foreign or interprovincial) in meats or meat food products, fish, fruit or vegetables.

The inspection of meats and their products is most rigid and thorough, and the work is performed by two classes of inspectors, veterinary and lay.

The veterinary inspectors must first be graduates of a recognized veterinary college, and must pass a further examination prescribed by the Act before they can be appointed. They serve a probationary period during which they are instructed

regarding their duties, and their work is supervised by one of our older officers. If at the end of this time they have shown their fitness for the position, they become attached to the staff; if not, their services are dispensed with.

The veterinarians' duties begin with the arrival of the animals at the plant, when a careful examination is made and those showing suspicious symptoms are separated, tagged, and slaughtered at some specified time when they are given special examination. All animals at the time of slaughter are very carefully examined, and those showing disease or abnormal conditions are dealt with as required by the regulations or as the judgment of the inspector demands.

The lay inspectors also are required to pass a qualifying examination and to serve a probationary period before they become permanent employees. Their duties are confined to the maintenance of the general sanitary conditions of the plant, the equipment, the handling of the products, and also the marking of shipments leaving the establishment.

Edible meats or meat food products which leave an establishment under inspection must be marked with the inspection legend, which consists of the words "Canada Approved," the crown and the establishment number. Indelible products must be plainly and distinctly marked "Indelible, unfit for food." Every operation in these establishments is under the direct supervision and control of my officers during the whole time that work is being done.

There are at present thirty-nine establishments under inspection, at which one hundred and twenty-seven veterinary and sixty-seven lay inspectors are stationed.

FRUIT AND VEGETABLES.

The inspection carried on in connection with establishments engaged in the manufacture of canned, preserved, and evaporated fruits and vegetables is confined principally to sanitary conditions. My officers visit at such times as it is deemed necessary and advisable, examine closely the entire plant, leave a written statement as to the conditions found, and issue instructions as to needed improvements. A reasonable time is given to comply with their demands. If these are not met the plants are forbidden to operate. Careful examination is also made of all raw as well as of all finished products, and any that are found unwholesome or unfit for food are destroyed. As, however, they are not during the whole time of preparation under our supervision, no special mark is authorized to be placed upon fruit or vegetable products to show that they have been manufactured under the provisions of the Act.

During the past four years samples have been taken of every fruit and vegetable canned in Canada. These have been very carefully examined, and much valuable information secured which has been recorded and which will assist materially in the promulgation of standards of quality, a matter at the present time receiving very serious consideration. Such standards, if indicated upon the label, would enable the purchaser to be reasonably sure of the quality of the contents of the tin.

The very unfavourable weather during the past season reduced the pack to such an extent that extremely high prices prevailed.

CONDENSED AND EVAPORATED MILK.

This industry is growing rapidly, and has given us very little trouble. Nearly all the plants are models of construction and sanitation.

During the year sediment tests have been made from the milk furnished by each individual supplying the plants. These tests show the condition of the raw milk in nearly all cases to be very satisfactory.

From present indications my officers engaged in this work under the Act will have an extremely busy year, as the demand for the class of foods coming under their supervision is enormous.

FRUIT BRANCH.

The commissioner spent some time in the early part of the summer visiting the various fruit-producing districts of Canada, in order to keep in touch with conditions and with the marketing methods adopted in each section. A visit was also made to the state of Washington in order to form some estimate of the probable crop there, as the fruit from this state, together with that from other western states, seriously competes with Canadian apples in many of our markets.

Special efforts were made to bring producers in closer touch with the wholesale trade, and to create a spirit of co-operation that would result in more satisfactory methods of marketing.

The co-operation of the various railroads operating in Canada was obtained to give some publicity to Canadian fruit in their dining cars and hotels, and doubtless home consumption was increased by that means. No extensive advertising campaign was carried on.

THE FRUIT SEASON.

The apple season of 1916 was one of the most unfavourable in the history of the industry. The spring was very wet in all sections of the Dominion except the Maritime Provinces, and growers were unable to get on to the land for spraying, cultivating, etc. In many instances, orchards did not receive proper attention, and the development of apple scab was consequently very serious and rapid.

In Ontario, the apple crop was so poor in quality that less than 10 per cent was graded No. 1, and the total crop was only about 75 per cent of that harvested the previous year. In fact, the crop was undoubtedly the lightest and poorest in quality produced in many years.

The Nova Scotia crop was about 680 barrels, or slightly more than that harvested in 1915, and of very good quality. Of the total crop, 415,000 barrels were exported, 200,000 barrels marketed in Canada, and 65,000 barrels used in evaporators and canning factories, etc.

In British Columbia the crop was slightly more than the previous year but there was a smaller percentage of No. 1 grade. The province exported to Australia and New Zealand, 70,000 boxes of apples, as compared with 31,000 boxes in 1913, 41,000 in 1914, and 55,000 in 1915.

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Peaches were about 75 per cent of a normal crop in Ontario, and practically a full crop in British Columbia. Plums and pears were a light crop in all sections, except in parts of British Columbia, where the pear crop was about 25 per cent larger than in 1915.

Grapes were less than a normal crop.

FRUIT CROP REPORTS.

As in 1915, monthly fruit crop reports were published on the first of each month from June to October, inclusive. These reports dealt with all varieties of fruit in every section of Canada and in many parts of the United States as well.

The publication of telegraphic reports was also continued. Every effort was made to secure information by telegram from reliable authorities in the producing districts of Canada and the United States, and from our fruit inspectors in the large markets. Cables were also received twice a week from Mr. J. Forsyth Smith, Canadian Fruit Trade Commissioner, giving the sale price of all varieties of Canadian and American apples in Great Britain.

These telegraphic reports were published twice weekly from August 15 to April 15. They have proven to be a valuable source of information to the public, and our mailing list is rapidly increasing as their value becomes known.

INSPECTION WORK.

For the purposes of inspection under part IX of the Inspection and Sale Act, the country was divided in 1912 into five districts, with a chief inspector in charge of each. This system has proved satisfactory and has been continued from year to year. The districts are:—

1. Maritime Provinces,
2. Eastern Ontario and Quebec,
3. Western Ontario,
4. Manitoba, Saskatchewan and Alberta,
5. British Columbia,

In district 1 the number of inspectors was the same as last season, that is two permanent and fourteen temporary inspectors. All these men with the exception of one permanent inspector for New Brunswick and two temporary men detailed for duty on the docks at Halifax, were located in the producing district of Nova Scotia. The system of inspection at point of shipment, inaugurated in the Annapolis valley in 1914, has been continued and has been heartily endorsed by all the leading growers and dealers of the province. Nova Scotia had a crop somewhat below the average of the past seven or eight years, but of fair quality and our inspectors, moving about the packing houses, were able to do much to raise the standard of the packing and grading, and the fruit exported from Nova Scotia during the season was honestly packed and brought high prices on the British markets.

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In Quebec, while the crop as a whole was of poor quality, many well-cared-for orchards gave crops not excelled in any other part of the Dominion. Although commercial fruit growing has not of late years received the same attention here that it has in other sections of Canada, varieties of the McIntosh and Fameuse type are produced to a high state of perfection and there appear to be signs of a revival of interest in orcharding just at present. During the past season, therefore, when the exports from Montreal were exceedingly light, only some 68,000 barrels being shipped from that port, it was possible to locate our inspectors in the growing districts, where they were able to do excellent work, not only by assisting the growers towards a higher standard of grading and packing, but by enthusing them to give the proper attention to their orchards.

In eastern Ontario, as everywhere in this province, the apple crop was short and of exceedingly poor quality except in the few commercial orchards that had received particularly good care. Both here and in western Ontario the value of inspection at point of shipment was clearly demonstrated. With a short crop of poor quality, making the output of high-class fruit low and prices correspondingly high, the temptation was great to run as much fruit as possible into the No. 1 and No. 2 grades, notwithstanding the standards laid down in the Inspection and Sale Act. The constant presence of our inspectors, in the orchards and packing houses, where they were able to give practical demonstrations of the proper methods of grading and packing, had such a restraining influence that the growers and shippers, instead of lowering the quality of the higher grades, packed an unusually high percentage of the crop in the No. 3 grade, thus keeping the No. 1 and No. 2 fruit remarkably true to grade.

In pursuance of the policy of inspection at point of shipment, three of the temporary inspectors, who in former years were stationed in the marketing centres in the Prairie Provinces, were this year detailed for work in the producing districts of Ontario. In district 4 (the Prairie Provinces) there were, consequently, only eight inspectors, where last season we had eleven. I feel confident though that the additional work done in the producing districts more than offset the fact that somewhat fewer inspections were made in the marketing centres of the West. The inspection on the prairies is largely a matter of checking up the work done at the shipping points, and of catching lots which it has been impossible for the district inspector to examine. The inspection of imported fruit is also an important feature of the work here, as large quantities of American fruit compete in these markets with our domestic fruit. In the western markets too, our inspectors are able to be of considerable assistance to the growers and shippers in sending exact reports of the condition in which their fruit reaches its destination. In fact, our inspectors' reports have often been the means of effecting an amicable settlement of disputes between buyers and sellers which, in many cases, are caused merely by the misunderstanding that so often arises when business is carried on by persons more than a thousand miles apart, and having no personal knowledge of each other.

In district 5 (British Columbia) the staff consisted during the past year of two permanent and five temporary inspectors, and the inspection work proceeded along much the same as in Eastern Canada. The temporary inspectors, appointed for the active fruit season, being experienced fruit men, have been able to give practical

assistance in the grading, packing and loading of fruit. This has been particularly valuable during the past couple of years when the fruit-growing districts of the province have been practically denuded of all men of military age who before the war devoted their attention to the production of fruit. In many cases, women have been left alone to harvest the crop, and the inspectors of this department have esteemed it a privilege to assist in this work wherever possible.

The systematic inspection of basket factories, commenced during the season of 1915, was continued during 1916. Owing largely to the representations made to the makers by the inspectors of this department, the quality of the packages has been much improved, and very few complaints were received from growers as to the strength and size of packages supplied to them during the past year.

A complete list of the number of inspections made, the number of packages examined, etc., is hereto appended. It will be noted that in these figures the number of packages of small fruit examined in the season 1916-17 is very much less than the corresponding figures in previous years. This is due to the fact that, up to this year, these figures were given in quarts, whereas this year, and in future years, it is our intention to publish them in packages, without reducing the contents of each package to quarts.

PROSECUTIONS.

Violation of the Inspection and Sale Act, part IX, with respect to the false packing and marking of fruit, have been fewer this season than for many years. This was due, in part, no doubt, to the light crop, which gave our inspectors a chance to keep in touch with a much larger percentage of the shipments than usual, but credit must also be given to the system of inspection at point of shipment which has been adopted the last couple of years, the full value of which is just being felt. The educational effect of having the inspectors located at the producing points, so that they have been constantly in touch with the shippers in their orchards and packing houses, has been very marked.

The campaign commenced in 1915, to give adequate inspection to basket fruit, was continued during the past season, and the good result of the work done by our staff of inspectors in the soft fruit district was very apparent. Prosecutions in regard to the over-facing of packages—that is the placing of fine, large, highly coloured specimens on the top layer of a basket, while underneath the fruit was immature, off colour, and small—were only twelve in 1916, in comparison with twenty-one in 1915; and complaints of the under-filling of baskets and berry boxes, which had been common in the past, have almost entirely ceased. The trade recognizes that this is the result of the constant vigilance of our inspectors at the shipping points.

In 1915, too, a vigorous campaign was carried on with respect to imported fruit to see that it was packed and marked in accordance with the requirements of the Inspection and Sale Act. The effect of that campaign and of the twenty-five convictions secured against importers who continued, after warning, to neglect to mark their fruit in conformance with the law, was such that this season there has been practically no complaint in regard to imported fruit, only two convictions being recorded for the whole season.

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INSPECTION STATISTICS.

The following table gives comparative statements of the number of lots inspected and the number of packages inspected for the seasons 1912-13 to 1916-17, inclusive:—

| Variety. | Number of lots inspected. | Number of packages in lots inspected. | Number of packages inspected. | |
|--------------------|---------------------------|---------------------------------------|-------------------------------|---------|
| 1912-13. | | | | |
| Apples | Brls.... | 18,457 | 1,321,440 | 80,102 |
| " | Boxes... | 2,101 | 204,971 | 33,578 |
| " | Baskets. | 119 | 16,249 | 2,719 |
| Crab apples..... | Boxes... | 62 | 12,136 | 695 |
| " | Baskets. | 17 | 1,395 | 660 |
| Pears | Boxes... | 272 | 36,356 | 2,202 |
| Peaches..... | " | 65 | 25,592 | 1,557 |
| " | Baskets. | 121 | 18,837 | 2,139 |
| Plums..... | " | 186 | 67,751 | 7,254 |
| Tomatoes..... | " | 264 | 39,174 | 6,949 |
| Small fruits..... | Quarts. | 1,187 | 2,264,559 | 172,945 |
| Total..... | | | | 310,791 |
| 1913-14. | | | | |
| Apples | Brls.... | 11,725 | 799,510 | 59,643 |
| " | Boxes... | 2,631 | 341,679 | 29,879 |
| " | Baskets. | 105 | 11,908 | 1,219 |
| Crab apples..... | Boxes... | 192 | 13,250 | 1,462 |
| Pears | " | 977 | 48,274 | 8,559 |
| Peaches..... | " | 806 | 35,494 | 12,657 |
| " | Baskets. | 353 | 60,771 | 7,564 |
| Plums | " | 679 | 132,159 | 15,200 |
| Tomatoes..... | " | 173 | 59,707 | 7,305 |
| Small fruits | Quarts.. | 736 | 1,128,907 | 95,841 |
| Total | | | | 239,329 |
| 1914-15. | | | | |
| Apples..... | Brls.... | 8,926 | 765,445 | 59,602 |
| " | Boxes... | 2,769 | 457,055 | 36,118 |
| " | Baskets. | 191 | 29,476 | 3,994 |
| Crab apples..... | Boxes... | 38 | 2,443 | 951 |
| Pears..... | " | 894 | 91,121 | 9,760 |
| Peaches..... | " | 735 | 183,952 | 10,035 |
| " | Baskets. | 147 | 17,797 | 2,422 |
| Plums..... | " | 643 | 180,154 | 12,294 |
| Tomatoes..... | " | 305 | 103,742 | 12,171 |
| Small fruits..... | Quarts.. | 1,162 | 1,529,598 | 151,599 |
| Grapes..... | Baskets. | 244 | 308,728 | 22,394 |
| Total..... | | | | 321,300 |
| 1915-16. | | | | |
| Apples..... | Brls.... | 8,882 | 710,858 | 60,248 |
| " | Boxes... | 4,297 | 758,337 | 46,791 |
| " | Baskets. | 204 | 14,319 | 1,797 |
| Pears | Boxes... | 1,062 | 121,414 | 8,816 |
| Peaches..... | " | 1,022 | 270,508 | 12,575 |
| " | Baskets. | 838 | 106,569 | 10,796 |
| Plums | " | 998 | 482,416 | 22,231 |
| Tomatoes..... | " | 633 | 200,343 | 7,926 |
| Small fruits..... | Quarts.. | 1,724 | 2,670,984 | 275,234 |
| Grapes..... | Baskets. | 260 | 382,332 | 11,395 |
| Total..... | | | | 457,809 |

INSPECTION STATISTICS.—Continued.

| Variety. | | Number of lots inspected. | Number of packages in lots inspected. | Number of packages inspected. |
|--------------|----------|---------------------------|---------------------------------------|-------------------------------|
| 1916-17. | | | | |
| Apples | Brls. | 6,412 | 404,597 | 43,359 |
| " | Boxes | 2,337 | 679,148 | 32,420 |
| " | Baskets | 188 | 14,472 | 1,332 |
| Pears | Boxes | 200 | 108,426 | 6,108 |
| Peaches | " | 1,179 | 289,560 | 15,612 |
| Plums | Baskets | 609 | 158,133 | 7,215 |
| Tomatoes | " | 624 | 136,993 | 5,812 |
| Small fruits | Packages | 2,039 | 282,365 | 99,799 |
| Grapes | Baskets | 193 | 273,435 | 7,951 |
| Total | | | | 219,608 |

MOVEMENT OF APPLES.

During the season (1916-17), 415,908 barrels and 2,703 boxes of Canadian apples were exported from Halifax, and 45,588 barrels and 67,725 boxes from Montreal. The Prairie Provinces received, up to the end of December, 1,076 cars of British Columbia apples, 616 cars of Ontario apples, 644 cars of imported apples, and 63 cars of Nova Scotian apples, a total of 2,399 cars. Between January 1 and March 31, 1917, 130 cars of apples were received in Winnipeg.

MEETINGS.

In addition to their other duties, the fruit inspectors have assisted at numerous meetings during the year in various parts of the Dominion, and in many cases have acted as judges of fruit at local fairs and exhibitions. Members of the staff have also been invited to attend and address meetings of fruit growers in the states of New Hampshire, Virginia, and New York.

The packing expert of the department has done good work during the year, having conducted short courses in packing in Ontario, Nova Scotia, and New Brunswick. The box-packing end of his work is particularly important at the present time, inasmuch as our eastern growers have not been accustomed to putting their apples up in boxes, and yet of late years the box has been growing in favour with the consuming public, and if our growers do not have an opportunity of becoming expert in this work, there is a grave danger of the market being captured by imported fruit. In British Columbia, while the art of box packing is thoroughly understood by the experienced packers, much good work has been done by our inspectors in teaching the young, inexperienced packers who have, to a great extent, had to look after this work since the beginning of the war. In addition to the general work along this line carried on throughout the active fruit season, during the past winter one of our permanent inspectors, an expert box packer, has conducted special packing courses at various points throughout British Columbia, all the arrangements for these courses being made by the Provincial Department of Agriculture.

PRICES.

Owing to the shortness of the fruit crop, the prices received by the growers were generally higher than those of 1915. Strawberries and raspberries showed an advance of perhaps 15 per cent. The scarcity of labour, however, seriously interfered with the picking of these crops, and in some parts of Ontario considerable quantities of raspberries and currants were not harvested. Peaches, plums, and cherries were in good demand. The average wholesale price of peaches and plums on the Toronto and Montreal markets were:—

| | |
|----------|---|
| Peaches, | 45 cents and 35 cents per 11 and 6-quart basket |
| Plums | 45 cents and 30 cent “ “ “ |

In spite of the information sent out from this department, through our crop and market reports, fruit growers did not realize the shortness of the apple crop, and, while prices for the ordinary commercial varieties averaged to the grower about \$3.50 for No. 1's, \$3 for No. 2's, and \$2 for No. 3's, f.o.b. shipping point, it was found that when these were collected by the various dealers, the supply was much shorter than had been anticipated, with the result that the dealers forced the price up to the retail merchants, and prices ranged from \$5 to \$8 per barrel for No. 1 grade, according to variety, the higher figures being for McIntosh, Fameuse, and Spy. The chief factor, however, in the high price of apples to the Canadian consumer was the tremendous demand for this fruit in Great Britain. The apple crop of England was practically a failure, and there was keen competition for Canadian shipments on arrival in those markets. The highest prices we have ever known on a commercial scale were realized, the highest paid being for some Virginia Albemarle Pippins which sold at from \$17 to \$19 per barrel, and the average on the British markets for No. 1 barreled stock of the following Canadian standard varieties being as follows:—

Nova Scotia Fruit.

| | | | |
|--------------------|--------|-------------------------|--------|
| King | \$7 50 | Golden Russet | \$9 25 |
| Blenheim | 6 50 | Stark | 6 50 |
| Ribston | 6 25 | Northern Spy | 7 75 |
| Greening | 6 50 | Ben Davis | 8 00 |
| Baldwin | 7 00 | | |

Ontario Fruit.

| | | | |
|------------------------|---------|-------------------------|---------|
| Wealthy | \$ 9 50 | Snow | \$11 00 |
| Alexander | 7 00 | Baldwin | 9 50 |
| McIntosh Red | 11 00 | Ben Davis | 8 25 |
| King | 10 25 | Golden Russet | 9 25 |
| Greening | 9 00 | Stark | 9 00 |
| Cranberry | 9 50 | Northern Spy | 8 75 |

NOTE.—The Nova Scotian barrel is slightly smaller than the Ontario barrel.

The natural result of these high prices was that practically all the fruit that was available, and for which space could be secured, went forward, resulting in a serious shortage of good fruit in Canada and very high prices being demanded for all that was offered for sale.

APPLE EMBARGO.

On February 24, 1917, a proclamation was issued in Great Britain prohibiting the importation of fruit into Great Britain, except under license. Representations were made to the British Government on behalf of the fruit interests of this country

and the dealers of Great Britain, with the result that the embargo was raised, until the 31st of July, 1917, to allow the fruit of the Dominions to enter the United Kingdom to the extent of 50 per cent of the imports of 1916. After July 31 the prohibition becomes absolute, unless the conditions necessitating the embargo have changed. The lifting of the embargo was a great relief to many Canadian shippers, who had held apples for shipment to the markets of Great Britain and who would consequently have suffered great loss had they been obliged to divert the fruit to other markets. The Canadian apples were also eagerly sought by the consumers of the United Kingdom.

ENTOMOLOGICAL BRANCH.

The work of this branch has comprised the administration of the Insects and Pests regulations of the Destructive Insect and Pest Act; the suppression of the brown-tail moth in Nova Scotia and New Brunswick and the introduction of its parasitic and predacious insect enemies and those of the gypsy moth into Eastern Canada; the conducting of investigations upon insects affecting farm, garden and orchard crops, forest and shade trees, domestic and other animals, household and public health, mills and stored products, and the giving of advice concerning the control of such insects; the naming of collections of insects for institutions and individuals; and the administration of an appropriation for the care of the orchards in the Indian reservations in British Columbia. In addition, the Dominion Entomologist has been called upon to advise on questions relating to the protection and encouragement of birds and on the conservation of wild life generally.

Under the Destructive Insect and Pest Act, nursery stock originating in countries in which the San José scale occurs was fumigated at our various fumigation stations. In addition nursery stock originating in Europe, Japan and the New England States was inspected either at the ports of entry for nursery stock or on the premises of the importers for the gypsy and brown-tail moths and other foreign insect pests that such imported trees and plants are likely to introduce into the country. Owing to the continued disturbed conditions in Europe, particularly in Belgium, Holland, and France, from which the greater part of the foreign nursery stock is imported, a continued decrease in the amount of nursery stock occurred; but in spite of all these changed conditions and the difficulties experienced in securing ocean transportation, it was possible to obtain a fairly large quantity of these foreign supplies upon which our nurserymen and florists are to a large extent dependent.

The brown-tail moth situation in Nova Scotia and New Brunswick can still be regarded as being in a satisfactory condition owing to the careful scouting and destruction of the winter-webs of the insects in these two provinces. In Nova Scotia, 14,755 winter-webs were collected during the winter of 1915-16, as compared with 18,154 winter-webs collected during the winter 1914-15, and in New Brunswick, where the infested territory is more extensive, 395 winter-webs were collected in 1915-16, as compared with 239 winter-webs collected during the previous season of 1914-15. Every effort is being made to prevent this dangerous insect pest of our fruit and shade trees from firmly establishing itself in New Brunswick, and from increasing in serious numbers and spreading in Nova Scotia. I am pleased to have the opportunity of

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acknowledging the continued co-operation of the provincial governments, who employ half the number of men engaged on this work under the direction of my officers.

We are fortunately still able to record the fact that the gipsy moth, whose depredations are more serious in their effect than those of brown-tail moth, has not yet reached Canadian territory, although its arrival on account of its northeasterly spread in Maine may be expected any year, especially as it has now been demonstrated that the young caterpillars of the gipsy moth can be carried many miles by the prevailing winds.

With a view to being more prepared for the arrival of the gipsy moth, which is only a matter of time, and to assist in securing the natural control of the brown-tail moth, we have continued to import the natural parasitic and predacious enemies of these pests from the New England states, which work has been rendered possible through the continued co-operation of the United States Department of Agriculture, which is gratefully acknowledged. The parasitic and predacious insects were collected by my officers in Massachusetts, and the parasites were reared at the gipsy moth laboratory, Melrose Highlands, Mass., where we were afforded laboratory facilities: From this point these useful insects were shipped to our Entomologist Laboratory at Fredericton, and a distribution of the insects made from the laboratory to various strategical points in the provinces of Nova Scotia, New Brunswick, Quebec, and Ontario. Up to date nearly 100,000 parasites and 4,200 predacious beetles have been imported and liberated.

The investigation of insect pests and their control is now mainly carried on at the entomological field laboratories that have been established throughout Canada during the last five years. The following is a brief summary of the various lines of inquiry that have been undertaken during the last year by my officers in charge of these laboratories under the direction of the Dominion Entomologist:—

Annapolis Royal, N.S.—Investigations on the brown-tail moth, the introduction of its parasites and control work. The control of insects affecting orchard crops, including extensive experiments on the comparative value of different insecticides. In this work we have demonstrated the value of arsenate of lime as a substitute for arsenate of lead, both from the point of view of lower cost and superior mixing power. Our experimental and demonstration work in orchard spraying has resulted in a very great increase in the practice of spraying in the province, with a consequent increase in the amount and quality of the fruit.

Fredericton, N.B.—In addition to the control work and investigations on the brown-tail moth in New Brunswick, my officers at this laboratory have had charge of the introduction and establishment of the parasitic and predacious enemies of the brown-tail and gipsy moths. Important investigations on the means by which the natural control of the tent caterpillars, the spruce budworm, and the fall webworm is effected were continued with important results, as comparatively little is known concerning the factors affecting the increase and decrease of these insects that from time to time are responsible for widespread depredations in Canada.

Hemmingford, Que.—Investigations and demonstration work on the control of orchard insects in a region where little attempt is made to control orchard insects were

continued with beneficial results. In addition to educational work, a beginning was made of a study of a control of the wharble fly which is widely prevalent in the dairying sections of this region.

Vineland Ont.—An investigation of the aphids affecting apple, and their control was continued and satisfactory progress was made. In co-operation with the Provincial Entomologist of Ontario the possibility of controlling the apple maggot by means of arsenical sprays was demonstrated. Investigations on insects occurring in greenhouses, and the more important insects affecting bush fruits in the Niagara fruit district were also continued.

Strathroy, Ont.—The investigations on white grub, which are so widely destructive to field crops, was continued. Valuable data were secured.

Treesbank, Man.—The main lines of investigation at this laboratory were: the continuation of the study of the local species of white grubs, the life-histories and distribution of the various species of grass stem-maggots and other insects affecting cereals.

Lethbridge, Alta.—The investigations on cutworms, and particularly the army cutworm, were concluded during the early summer and the results of these valuable investigations were published during the year.

Agassiz, B.C., and Royal Oak, B.C.—At the Entomological Laboratory at Agassiz, and also at a temporary laboratory at Royal Oak, investigations on fruit insects were carried on with conspicuous success. At Royal Oak the life-history and control of the newly discovered orchard pest, the pear thrip, were studied, and the methods of control by spraying was demonstrated to the great benefit of the fruit-growers in the infested region. In the Okanagan valley a beginning was made of a study of the codling moth under British Columbia conditions.

Vancouver, B.C.—Further investigations on insects affecting the forest trees of the province were made from this laboratory, and special attention was paid to a serious borer affecting the cedar along the coast. The survey of insects affecting the coniferous forests of the interior of the province was also continued, but the state of the lumbering industry prevented the carrying out of certain lines of control work that otherwise would have been conducted.

It is gratifying to note the increased value of these regional laboratories to the agriculturists whom they are intended to help. The advice and assistance of the officers in charge of the laboratories is in constant demand, and their work is proving to be of great value in rendering timely assistance.

At Ottawa, investigations on white grubs were commenced and experiments on the control of root maggots were continued. A new species of moth was received from Newfoundland, where it was destructive to cabbages. Certain species of greenhouse pests were studied, including the Florida fern caterpillar, which had not been recorded previously in Canada.

The investigations on forest insect depredations in British Columbia have been continued, and more attention was given during the past year to insects affecting the

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forests and lumber industry in Eastern Canada. Special attention was paid to the control of borers in logs, which insects cause serious losses annually, and effective methods of preventing these losses were found. The study of several important species of insects destructive to shade trees in Eastern Canada was undertaken, and good progress was made with the result that it is possible to recommend satisfactory methods of control for the locust borer and alder leaf-miner.

By an arrangement with the Department of Militia and Defence, the Dominion Entomologist visited most of the military camps in Canada last summer, for the purpose of lecturing on the control of insects affecting troops, and advising the sanitary officers in the prevention of flies and lice in the camps. This assistance was greatly appreciated. In addition, a special circular on this subject was prepared for distribution to the officers and non-commissioned officers of the Canadian overseas forces. Further progress in the study of the mosquitoes of Western Canada was made.

Numerous other miscellaneous lines of study have been undertaken on insects affecting the household, stored grain, etc.

A large portion of the time of the Dominion Entomologist has been devoted to questions relating to the conservation of our native birds and mammals. It is gratifying to be able to record the successful conclusion of our efforts to secure better and much-needed protection for our migratory insectivorous birds and wild fowl by the ratification in Washington on December 7, 1916, of the International Convention between Great Britain and the United States for the protection of migratory birds in Canada and the United States. The Dominion Entomologist has also been called upon to advise on the protection of mammals and the treatment of noxious species, and is acting as secretary to the interdepartmental Advisory Board on Wild Life Protection which was appointed in December last.

The following publications have been issued from the Entomological Branch during the year:—

The Cabbage Root Maggott and its Control in Canada, with notes on the Imported Onion Maggott and the Seedcorn Maggott. By Arthur Gibson and R. C. Treherne. Bulletin No. 12, 58 pp., 29 figs., 1916.

The Army Cutworm. By E. H. Strickland. Bulletin No. 13, 31 pp., 15 figs., 1916.

Spraying for Insects affecting Apple Orchards in Nova Scotia. By G. E. Sanders and W. H. Brittain, Entomological Circular No. 8, 11 pp., with spray calendar, 1916.

The Suppression of Two Insects affecting Troops. By C. Gordon Hewitt. Special Circular for Canadian Expeditionary Forces, 8 pp., 2 figs., 1916.

In addition to the above publications the officers of the branch have contributed papers embodying the more technical results of their work to *The Canadian Entomologist* and other scientific journals. Articles have also been contributed each month to *The Agricultural Gazette of Canada*, and in a number of cases reprints of these articles were issued.

During the year considerable additions have been made to the National Collection of Insects, which is now in good order and, with certain exceptions, most of the orders

of insects have been arranged and correctly named. In addition to the insects collected by my officers, we have received numerous donations from private collectors, and one of my officers, Mr. Tom Wilson, whose subsequent death I record with regret, gave the large private collection made by himself and Mr. W. H. Bush in British Columbia. The insects collected on the Canadian Arctic Expedition, 1913-16, have now been received, and arrangements are being made for their identification and description.

BRANCH OF THE CANADIAN COMMISSIONER OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE.

NOTES.—On April 4, the opening of the new fiscal year was marked by the re-election, by the Permanent Committee, of Marquis Cappelli to the Presidency of the Institute. He had occupied this office for six years, and his address to the Permanent Committee reviewed briefly the progress that had been made during that time. At the beginning of that period its only organ was a meagre bulletin giving in a very few pages the then imperfect statistics of cereal production. It had now developed so as to be an international review of the statistics of practically all agricultural production and commerce. There was introduced during the same period the "International Review of the Science and Practice of Agriculture" and the "International Review of Agricultural Economics," both published in five different languages. The former is a review of reviews of agriculture, its material being abstracted from 2,500 periodical publications issued in all countries and written in all languages. This work is impossible of accomplishment by any particular individual or any existing institution. The "International Review of Agricultural Economics" served as the basis of the studies of the American Committee which visited Europe in 1913 to study co-operation and agricultural credit, the committee having begun their campaign at Rome by consulting the Institute experts and attending the meetings of the General Assembly then being held. In the same six years, the president continued, there were created the "International Year Book of Agricultural Statistics" and the "International Year Book of Agricultural Legislation," containing for each year the text of the most important agricultural laws in all countries. These results had been brought about by harmonious co-operation between the Permanent Committee and the employees of the staff, to whose efficiency the president paid a tribute. There was a tendency to extend the statistical data to the production and commerce of all agricultural products, and to the information necessary for a thorough appreciation of all the great economic movements such as freights and exchange, which refer directly or indirectly to the trade of these products. There was, moreover, a tendency to extend the Institute's activity to the whole scientific and practical movement connected with plant diseases and pests, to make the Institute the authorized centre and organ of all the agricultural laboratories and institutions in the world.

Later the president took up the same theme and read before the Permanent Committee the address on the International Institute made by the Minister of External Affairs of Australia, in which the latter also reviewed and highly commended the remarkable work accomplished during the past six years.

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Financial Situation.—The expenditure for the calendar year 1916 was 870,000 francs, and the cash held in reserve at the end of the year 691,000 francs. It is expected that the arrears of contributions, which are due chiefly by the central European belligerent governments, will be paid up after the war, as those governments have not ceased to derive the usual benefits from the Institute's operation.

Sir Edward Buck, K.C.S.I., representative for India on the Permanent Committee, died at Rome on July 5, 1916. In the early spring he had undertaken to replace Sir James Wilson, the regular representative of Great Britain, India, and the British Dominions, during the latter's temporary absence in London. He was, however, unable to attend the last two meetings which preceded the summer holidays. Sir Edward Buck, formerly a Director of Agriculture for India, possessing high technical qualifications and the rare experience of a long and successful career, was a deeply convinced champion of the International Institute. He was one of the most active and effective workers in connection with the Institute's original organization, and, only a year or so before his death, made a strong appeal to the various British governments to increase their active support of and collaboration with the Institute.

Changes in the Institute Staff.—By reason of a successful competitive examination in October, 1915, Professor Lorenzoni was chosen to occupy the chair of political economy at the University of Macerata, and tendered his resignation as Secretary-General, to take effect from October 31, 1916. He was succeeded by Mr. Dragoni, Instructor General and Chief of the Service in the Italian Ministry of Agriculture, Commerce and Industries, and who had been connected with the settlement of important international questions. At the same time the Acting Secretary-General, Dr. Paul Van Hissenhoven, became free to devote himself exclusively to the statistical branch of the Institute work, of which he is the permanent chief. Dr. Hissenhoven is particularly well qualified for this work in consequence of his previous experience as secretary of the Antwerp Board of Trade and professor at the Antwerp Commercial Institute.

Professor Lorenzoni's retirement caused much regret, inasmuch as he had been connected from the start with the creation of the Institute, and, besides the duties of Secretary-General, filled with exceptional distinction the position of Chief of the Bureau of Economic and Social Institutions. It is unfortunate that his severance from the institute is chiefly the result of the protest of Austria because notwithstanding his being a native of Italia Irrendenta, he served a term at the front in this war in the Italian army.

Ocean Freight Rates.—One of the notable reports of the year was that undertaken by the retiring Secretary-General, Professor Lorenzoni, entitled "Ocean Freight Rates and the Transportation by Sea of Cereals." The first part of the report, presented in November, 1916, was received by the Permanent Committee with the highest commendation, and Professor Lorenzoni was charged by private arrangement to proceed with the completion of part II after his retirement from the Institute to undertake University work. This report, when completed, will serve as the basis for the discussions on this important question at the next General Assembly.

Control of Grasshoppers.—In April, on the initiative of the Government of Morocco, Mr. Louis Dop, Vice-President of the Institute, introduced proposals for the purpose of bringing about international action in the control of grasshoppers and locusts. It was suggested by Mr. Dop that action should be especially directed towards suppressing the pest in its original breeding grounds. He was of the opinion that a permanent concerted campaign carried on by Egypt, Tripoli, Tunis, Algeria, Morocco, and West Africa would either abate or entirely suppress the periodical migration of the acridians. Measures of like nature had been adopted with success in South Africa and in South America. On the latter continent the convention organized in Montevideo, Uruguay, in 1913, had been followed by another congress after a visit had been made by specialists to the supposed original habitat of the acridians in Bolivia. On the proposal of the delegate for Russia that many other world states would be interested in the question, it was decided to consult the adhering Governments on the expediency of holding an International Conference, which might be held, as was the last International Meteorological Conference, just before the meetings of the General Assembly, by which its deliberations might be ratified. An elaborate monograph of 186 pages was prepared by the Bureau of Agricultural Intelligence and Plant Diseases and sent to the various Governments to aid them in coming to a decision.

The Canadian Office.—The "Bulletin of Foreign Agricultural Intelligence," which had been published since October, 1910, was discontinued with the December, 1916, number. This was done to give effect to a recommendation in the report of the Joint Committee of both Houses on the Printing of Parliament.

A section of the "Agricultural Gazette" (Part V) has been allotted in order to replace the Bulletin to some extent, and to continue to make available to Canadians the valuable information published by the Institute at Rome.

Among the more prominent articles published in the "Bulletin of Foreign Agricultural Intelligence" during the year were: "Co-operation in Minnesota," "Co-operative Dairy Societies in Great Britain," "The Value of Birds to Man," "Review of the World's Agricultural Legislation of 1914," "Co-operative Abattoirs in Denmark," "Insurance Conditions in Reference to the Transport of Cereals," "Droughts and Hot Weather," "Entomophagous Insects and their Practical Employment in Agriculture," "The United States Federal Farm Loan Act," "Protection of Orchards against Frost," "Protection of Birds in Canada and the United States," "International Control of Ocean Carriage and Freight Rates," "Meteorology and Agriculture," "Wheat and the War, 1915-16 and 1916-17," and other similar editorial reviews of the world's cereal situation.

A large number of inquiries for more information than was furnished in the summarized articles published in the Bulletin were answered during the year. In many cases the original article and additional information were procured from the author or the Institute.

A limited number of the three original Institute Bulletins, "The International Review of the Science and Practice of Agriculture," "The International Review of Agricultural Economics," and "The International Crop Report and Agricultural Statistics," in French and in English, are received from Rome by the Institute Bianchi. These are sent to a list of Government officials and experts in different lines

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of agriculture. A number of copies are held in reserve at the branch to be sent occasionally to readers of the Foreign Intelligence section of the "Agricultural Gazette," who wish to receive more details of the information therein outlined.

Library of the Institute Branch.—The library records show that there were, on March 31, 3,448 bound books and 27,130 unbound books and pamphlets, irregular serials being included in the latter term. The United States periodical "Agricultural Index," received by the library, covers pretty thoroughly all current agricultural literature of the English-speaking countries. Practically all of the periodicals therein indexed, together with many others received in exchange, in all some 350, are conveniently arranged on the library shelves.

The various card catalogues, about 165,000 in number, published by the United States Department of Agriculture and the Library of Congress, have been kept up to date. These are of great assistance to the experts making use of the library, an effective means of building up the library, and in compiling bibliographies.

While the library primarily serves the purposes of the Institute, it is sought to make it of the utmost assistance to agricultural experts, whether officials of the Federal Government or otherwise. It is of particular importance that an official should, by this means, be able to examine the latest books and publications to enable him to decide upon the acquisition of the ones most suitable for his own special purposes. Hence, lists of the volumes received were from time to time circulated among the various agricultural specialists.

THE PUBLICATIONS BRANCH.

The work of the Publications Branch is continually on the increase. While the number of publications issued by the department was slightly less for the fiscal year of 1916-17 than in 1915-16, or sixty-two compared with sixty-six, the number of copies sent out exceeded that of the previous year by 215,283.

It is noteworthy that since the introduction of the Patriotism and Production and the Production and Thrift movements, the increase both of the mailing lists and of the general demand has been most marked, the total of 1914-15 over 1913-14 being 737,021; of 1915-16 over 1914-15, 1,284,981; and of 1916-17 over 1915-16, 215,283; or an aggregate increase in three years of 2,237,285.

In these circumstances the comparative growth from year to year warrants the assumption that the work will continue to develop in extent. This possesses the appearance of ever-widening appreciation of the efforts of the department to prepare and send forth informatory and advisory literature to farmers, breeders, fruit growers, and to amateurs who follow any one of these pursuits.

The steady increase from year to year of the number of publications sent out on request by mail from all parts of the country is evidence not alone of abiding influence, but also of the growth of intelligent interest in products of the soil by the public in general. This phase of the question is especially illustrated by the demand for publications bearing on the cultivation of home and school gardens. For a pamphlet entitled "The School Garden," 21,600 requests were received, apart from 1,800 dis-

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tributed according to mailing list; for another entitled "The Home Vegetable Garden," 15,300 requests were received; and for a third, entitled "The Home Vegetable Garden and Patriotic Garden Competition," 8,100 requests were recorded. For the complete Experimental Farms report altogether 114,360 requests were complied with, and for the divisional reports the total distribution reached 694,400. For "Seasonable Hints," in addition to 802,844 sent out as per mailing list, 14,460 were despatched in response to requests. Of entomological publications, 66,740 were circulated. In all, the requests responded to in 1916-17 numbered 333,767, in addition to 2,972,951 supplied to the regular mailing lists.

A complete statement of circulation for the year follows, and also a statement for the last five years indicating the expansion of the work of the branch:—

CIRCULATED IN 1916-17.

| Character of Publications. | Mailing List. | Requests. |
|---|---------------|-----------|
| Reports | 782,690 | 149,690 |
| Bulletins | 366,012 | 65,060 |
| Seasonable Hints (3 issues) | 802,844 | 14,460 |
| Pamphlets | 272,502 | 64,037 |
| Circulars | 386,500 | 14,360 |
| Leaflets | 131,000 | |
| Gazette (12 issues) | 71,982 | 270 |
| Foreign Agricultural Intelligence (9 issues) | 149,431 | 3,620 |
| Agricultural Institute publications, original | 8,190 | 170 |
| War Book | 1,800 | 22,100 |
| Total | 2,972,951 | 333,767 |

COMPARATIVE STATEMENT FOR FIVE YEARS.

| Year. | Names on Lists. | Number of Publications. | Number Mailed. | Increase over Preceding Year. |
|---------------------------|-----------------|-------------------------|----------------|-------------------------------|
| 1912-13 | 168,292 | 48 | 1,450,000 | |
| 1913-14 | 178,000 | 59 | 1,069,433 | |
| 1914-15 | 202,000 | 46 | 1,806,454 | 737,021 |
| 1915-16 | 240,000 | 66 | 3,091,435 | 1,284,981 |
| 1916-17 | 306,200 | 62 | 3,306,718 | 215,283 |
| Total in five years | | | 10,724,040 | 2,237,285 |

The methods of operation in circulation have been detailed in previous reports, but improvements are still being made from time to time and every effort is put forth to adopt expeditious and labour-saving devices. In common with other branches of the service, the circulation, recording, storing, and despatching divisions of the branch have suffered in the loss of experienced help. Female labour has been substituted to some extent for male labour, and to partially supply the place of seven young men who have joined the overseas force and two others who have secured engagements elsewhere. There are now employed in the branch, including the editorial staff of *The Agricultural*

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Gazette, thirty-six people, comprising twenty-five men and eleven women. Of these, twenty are clerks, four messengers, and twelve packers.

During the year *The Agricultural Gazette* has ranged in volume each month from eighty to ninety-six pages, and has contained contributions, varying from one to fifteen from each contributor on different subjects, from 180 officials of the Federal Department of Agriculture or of the agricultural, educational or other departments of the nine provinces of the Dominion, in addition to the writings of the editorial staff. Each month symposia have been given of the subjects more immediately receiving the attention of the various provincial governments. Every effort has been made to make these as complete as possible in order that the whole country might be covered and the activities of each province be known one to the other.

A large amount of work in connection with the revision and growth of the mailing lists was done. During the past fiscal year about 120,000 new stencils were embossed. In the work of revision, 16,150 addresses were changed or cancelled. On the addressing machines, 2,408,700 envelopes were addressed. A total of 435,000 stencils were used.

III. PATENTS OF INVENTION.

The following tables show the transactions of the Patent Office, Department of Agriculture, from April, 1916, to March 31, 1917:—

| | |
|-----------------------------------|-------|
| Applications for patents..... | 8,751 |
| Patents and certificates granted— | |
| Patents..... | 7,520 |
| Certificates..... | 1,599 |
| Total..... | 9,119 |
| Caveats..... | 358 |
| Assignments of Patents..... | 3,661 |
| Notices under section 8..... | 831 |

| Receipts. | | Expenditure. | |
|--------------------|------------|--------------------------------|------------|
| | \$ cts. | | \$ cts. |
| Cash received..... | 227,094 09 | Salaries..... | 90,850 00 |
| Cash refunded..... | 3,777 39 | Patent record..... | 28,916 91 |
| | | | 119,766 91 |
| | | Receipts over expenditure..... | 103,549 79 |
| Net cash..... | 223,316 70 | | 223,316 70 |

DETAILED STATEMENT Patent Office Fees for Year 1916-17.

| Month. | Notices. | Patents. | Assignments. | Certified Copies. | Caveats. | Sundries. | Subscription. | Total. |
|----------------|----------|------------|--------------|-------------------|----------|-----------|---------------|------------|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1916. | | | | | | | | |
| April..... | 174 00 | 17,905 20 | 752 90 | 297 05 | 190 00 | 5 00 | 16 10 | 19,340 25 |
| May..... | 156 00 | 19,236 95 | 784 15 | 237 35 | 160 00 | 29 16 | 12 80 | 20,616 41 |
| June..... | 150 00 | 15,922 80 | 603 80 | 230 81 | 205 00 | 22 15 | 52 20 | 17,186 76 |
| July..... | 126 00 | 15,212 57 | 624 50 | 304 75 | 189 00 | 14 45 | 28 80 | 16,500 07 |
| August..... | 102 85 | 14,777 55 | 609 95 | 257 55 | 143 00 | 14 00 | 6 95 | 15,911 85 |
| September..... | 134 00 | 15,385 69 | 585 35 | 221 90 | 125 00 | 10 00 | 7 85 | 16,469 79 |
| October..... | 130 90 | 15,998 40 | 670 10 | 243 80 | 165 00 | 12 40 | 42 40 | 17,263 00 |
| November..... | 111 00 | 16,822 62 | 673 10 | 263 85 | 170 00 | 12 90 | 31 20 | 17,984 67 |
| December..... | 124 00 | 16,791 90 | 733 84 | 171 85 | 125 00 | 13 00 | 38 65 | 17,998 24 |
| 1917. | | | | | | | | |
| January..... | 164 40 | 22,379 44 | 804 95 | 362 67 | 165 00 | 20 25 | 28 69 | 23,925 40 |
| February..... | 132 00 | 18,911 00 | 860 00 | 248 64 | 165 00 | 11 00 | 13 55 | 20,341 19 |
| March..... | 157 00 | 22,001 48 | 800 28 | 288 75 | 213 00 | 47 65 | 48 30 | 23,556 46 |
| | 1,662 15 | 211,345 60 | 5,402 92 | 3,128 97 | 2,015 00 | 211 96 | 327 49 | 227,094 09 |

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The total number of patents granted to Canadian inventors was 1,091, and were distributed among the provinces of the Dominion as follows:—

| | |
|--------------------------------|-----|
| Ontario | 465 |
| Quebec | 287 |
| British Columbia | 72 |
| Manitoba | 84 |
| Alberta | 59 |
| Saskatchewan | 62 |
| New Brunswick | 29 |
| Nova Scotia | 29 |
| Prince Edward Island | 3 |
| Yukon | 1 |

Patents issued to residents of Canada, with the ratio of population to each patent granted:—

| Provinces. | Patents. | One to Every. |
|--------------------------------|----------|---------------|
| Manitoba | 84 | 5,423 |
| Ontario | 465 | 5,426 |
| British Columbia | 72 | 5,451 |
| Alberta | 59 | 6,350 |
| Quebec | 287 | 6,979 |
| Saskatchewan | 62 | 7,942 |
| Yukon | 1 | 8,512 |
| New Brunswick | 29 | 12,134 |
| Nova Scotia | 29 | 16,977 |
| Prince Edward Island | 3 | 31,242 |

Statement of the number of patents issued under the Act, on which the fees are paid for periods of six, twelve, or eighteen years, at the option of the patentee; and of patents on which the certificates of payments of fees were attached after the issue of patents originally granted for periods of six and twelve years:—

| | | |
|--|--|-------|
| Period for which fees were paid on first issue— | | |
| 6 years | | 7,493 |
| 12 " | | 4 |
| 18 " | | 23 |
| Patents on which Certificates were attached after issue— | | |
| 6 years | | 1,555 |
| 12 " | | 44 |
| Reissues— | | |
| 6 years | | 10 |
| 12 " | | 2 |
| 18 " | | 1 |

COMPARATIVE STATEMENT of the transactions of the Patent Office from 1907 to 1917, inclusive.

| Years. | Applica- tions for Patents. | Patents and Certificates Granted. | | | Caveats. | Assign- ments of Patents. | Fees received. |
|----------------|-----------------------------------|--------------------------------------|--------------------|--------|----------|---------------------------------|-------------------|
| | | Patents. | Certifi- cates. | Total. | | | |
| 1907 | 7,077 | 6,121 | 634 | 6,755 | 285 | 3,003 | 169,548 78 |
| 1908 | 7,406 | 6,774 | 744 | 7,518 | 317 | 2,900 | 178,482 49 |
| 1909 | 7,239 | 6,395 | 827 | 7,222 | 319 | 3,001 | 176,692 05 |
| 1910 | 7,789 | 7,223 | 1,010 | 8,233 | 448 | 3,147 | 194,571 54 |
| 1911 | 8,037 | 7,249 | 1,002 | 8,251 | 406 | 3,256 | 200,164 41 |
| 1912 | 8,293 | 7,399 | 1,113 | 8,512 | 348 | 3,725 | 207,762 77 |
| 1913 | 8,681 | 7,502 | 1,199 | 8,701 | 353 | 3,741 | 218,125 02 |
| 1914 | 8,359 | 7,918 | 1,323 | 9,241 | 354 | 3,432 | 215,001 71 |
| 1915 | 7,302 | 6,867 | 1,211 | 8,078 | 391 | 3,391 | 190,028 37 |
| 1916 | 7,793 | 6,812 | 1,419 | 8,231 | 419 | 3,311 | 202,630 40 |
| 1917 | 8,751 | 7,520 | 1,599 | 9,119 | 358 | 3,661 | 227,094 09 |

NATIONALITY OF INVENTORS.

| Countries. | 1910. | 1911. | 1912. | 1913. | 1914. | 1915. | 1916. | 1917. |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| United States of America | 5,021 | 4,885 | 4,997 | 4,964 | 5,220 | 4,645 | 4,972 | 5,772 |
| Great Britain and Ireland | 392 | 359 | 506 | 495 | 558 | 450 | 360 | 352 |
| * Germany | 241 | 304 | 336 | 307 | 300 | 107 | 14 | 10 |
| Australia | 60 | 77 | 99 | 75 | 76 | 76 | 76 | 62 |
| France | 75 | 97 | 108 | 100 | 115 | 83 | 55 | 45 |
| New Zealand | 37 | 33 | 46 | 47 | 50 | 29 | 31 | 37 |
| Sweden | 39 | 54 | 52 | 64 | 40 | 40 | 44 | 43 |
| Belgium | 20 | 25 | 20 | 23 | 33 | 19 | 21 | 5 |
| Austria | 23 | 20 | 24 | 40 | 35 | 11 | 0 | 0 |
| Italy | 8 | 12 | 6 | 16 | 14 | 15 | 8 | 8 |
| Switzerland | 12 | 26 | 23 | 20 | 22 | 14 | 22 | 10 |
| Denmark | 8 | 5 | 14 | 15 | 16 | 11 | 12 | 18 |
| Transvaal | 12 | 16 | 10 | 7 | 1 | 3 | 3 | 3 |
| Hungary | 7 | 6 | 6 | 6 | 5 | 5 | 0 | 0 |
| Russia | 14 | 18 | 6 | 17 | 13 | 9 | 5 | 6 |
| Norway | 18 | 20 | 17 | 10 | 32 | 24 | 29 | 20 |
| Newfoundland | 2 | 3 | 1 | 2 | 1 | 1 | 1 | 0 |
| Netherlands | 0 | 0 | ..... | ..... | 7 | 4 | 2 | 2 |
| Mexico | 11 | 7 | 10 | 8 | 7 | 4 | 4 | 0 |
| Cape Province | 0 | 3 | 4 | 4 | 1 | 0 | 0 | 1 |
| Cuba | 1 | 5 | 1 | 1 | 9 | 3 | 0 | 0 |
| Spain | 1 | 3 | ..... | ..... | 1 | 1 | 3 | 0 |
| Chile | 0 | 1 | ..... | 1 | 0 | 0 | 1 | 0 |
| Finland | 0 | 1 | ..... | 1 | 0 | 0 | 0 | 0 |
| Portugal | 0 | 0 | ..... | ..... | 0 | 1 | 0 | 0 |
| Roumania | 0 | 1 | 1 | ..... | 0 | 1 | 0 | 0 |
| Grand Duchy of Luxemburg | 0 | 0 | ..... | ..... | 0 | 3 | 0 | 0 |
| Algeria | 0 | 1 | ..... | ..... | 0 | 0 | 0 | 0 |
| Japan | 2 | 0 | 2 | 2 | 1 | 3 | 2 | 1 |
| India | 0 | 5 | 3 | 1 | 7 | 3 | 0 | 0 |
| Natal | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 |
| Nicaragua | 0 | 1 | ..... | ..... | 0 | 0 | 0 | 0 |
| Brazil | 0 | 2 | 1 | ..... | 1 | 3 | 0 | 2 |
| Turkey | 0 | 0 | ..... | ..... | 0 | 0 | 0 | 0 |
| Poland | 2 | 0 | ..... | ..... | 0 | 0 | 0 | 0 |
| Holland | 2 | 11 | 8 | 7 | 8 | 5 | 2 | 7 |
| Argentine Republic | 5 | 1 | 1 | ..... | 2 | 3 | 5 | 3 |
| Panama (Canal Zone) | 0 | 0 | 3 | ..... | 3 | 0 | 1 | 0 |
| Egypt | 1 | 1 | ..... | ..... | 1 | 1 | 0 | 1 |
| Southern Rhodesia | 1 | ..... | ..... | ..... | 0 | 0 | 2 | 0 |
| Peru ..... | ..... | ..... | 3 | 2 | 0 | 0 | 0 | 1 |
| Hawaii ..... | ..... | ..... | 3 | 3 | 0 | 0 | 2 | 4 |
| Venezuela ..... | ..... | ..... | 2 | 1 | 1 | 0 | 0 | 0 |
| Trinidad ..... | ..... | ..... | 1 | ..... | 0 | 0 | 0 | 0 |
| Porto Rico ..... | ..... | ..... | 1 | 2 | 0 | 0 | 0 | 0 |
| Tunis ..... | ..... | ..... | ..... | 1 | 0 | 0 | 0 | 0 |
| Ceylon ..... | ..... | ..... | ..... | 1 | 0 | 0 | 0 | 0 |
| Straits Settlements ..... | ..... | ..... | ..... | 1 | 0 | 0 | 0 | 3 |
| Philippine Islands ..... | ..... | ..... | ..... | ..... | 1 | 1 | 2 | 0 |
| Canary Islands ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 | 0 |
| Java ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 | 0 |
| Channel Islands ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 | 2 |
| China ..... | ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 |
| West Indies ..... | ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 |
| Isle of Man ..... | ..... | ..... | ..... | ..... | ..... | 1 | 0 | 0 |
| Norfolk Islands (South Pacific) ..... | ..... | ..... | ..... | ..... | ..... | 2 | 1 | 0 |
| Alaska ..... | ..... | ..... | ..... | ..... | ..... | 2 | 1 | 5 |
| Bermuda ..... | ..... | ..... | ..... | ..... | ..... | 1 | 2 | 0 |
| Zululand ..... | ..... | ..... | ..... | ..... | ..... | 0 | 1 | 0 |
| Central America ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 |

* These ten patents were granted during the year to assignees of subjects of the Emperor of Germany; the assignment to citizens of countries not at war with Great Britain having been made previous to the outbreak of hostilities.

The total number of reports issued by the examiners during the year was 13,019 and 13 patents were surrendered and reissued.

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Out of the total number of patents granted by this office during the year there were 5,772 issued to inventors or assignees resident in the United States, being 76 per cent of the whole issue. There were more patents granted to citizens of the United States during the last fiscal year than in any previous year of record.

This branch of the department continues to receive the official reports of patents from Great Britain, Australia, New Zealand, United States, Mexico, Portugal, Italy, Belgium, France, and Japan, in addition to other periodicals of a scientific nature, in exchange for the Canadian Patent Office Record.

There were 2,198 patents brought under the conditions of the compulsory license clause, section 44 of the Patent Act.

The number of notices under section 8 of the Patent Act was 831.

Since the declaration of war, the following licenses were granted under the Orders and Regulations respecting Patents of Invention, made under "The War Measures Act, 1914":—

| Number of Patent. | Name of Registered Owner. | Short Title. | Name and Address of Licensees. | Date of Grant. |
|-------------------|--|---|---|----------------|
| 133636 | Farbwerke Vorm. Meister Lucius & Bruning assignee of Paul Ehrlich and Alfred Bertheim. | The Manufacture of New Derivatives of the Para-Oxyarylar-sinic acids. | Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que. | Nov. 28, 1914. |
| 152320 | Farbwerke Vorm. Meister Lucius & Bruning assignee of Paul Ehrlich and Alfred Bertheim. | The Manufacture of New Derivatives of the Para-Oxyarylar-sinic acids. | Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que. | |
| 144873 | Farbwerke Vorm. Meister Lucius & Bruning assignee of George Korndörfer. | The Manufacture of Derivatives of Dioxydiamino-arsenobenzene. | Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que. | |
| 144874 | Farbwerke Vorm. Meister Lucius & Bruning assignee of George Korndörfer and Baptist Reuter. | The Manufacture of Derivatives of Diamidodioxy-arsenobenzene. | Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que. | |
| 78745 | Hülsberg & Co. Gesellschaft mit beschränkter Haftung, assignee of Max Rüping. | Improvements in or relating to the Impregnation of Wood and Other Porous Materials. | Vancouver Creosoting Co., Ltd., Vancouver, B.C. | July 12, 1916. |
| 92353 | Hülsberg & Co. Gesellschaft mit beschränkter Haftung, assignee of Max Rüping. | The Impregnation of Wood and other Porous Materials. | Vancouver Creosoting Co., Ltd., Vancouver, B.C. | |

IV. COPYRIGHTS, TRADE MARKS, INDUSTRIAL DESIGNS AND TIMBER MARKS.

STATEMENT of Fees received by the Copyright and Trade Mark Branch from April 1,
1916, to March 31, 1917.

| Month. | Trade Marks. | Copy- rights. | Designs. | Timber Marks. | Assign- ments. | Copies. | Totals. |
|----------------|-----------------|------------------|----------|------------------|-------------------|---------|-----------|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1916. | | | | | | | |
| April..... | 2,792 24 | 125 54 | 82 50 | 19 90 | 76 00 | 11 50 | 3,107 68 |
| May..... | 2,566 05 | 125 50 | 128 00 | 4 25 | 31 50 | 58 00 | 2,013 30 |
| June..... | 2,766 50 | 115 75 | 134 50 | 2 00 | 71 00 | 17 50 | 3,107 25 |
| July..... | 2,289 90 | 98 00 | 110 00 | 4 00 | 31 00 | 28 75 | 2,561 65 |
| August..... | 1,827 00 | 130 75 | 131 00 | 6 00 | 48 00 | 35 00 | 2,177 75 |
| September..... | 2,380 00 | 109 00 | 60 00 | 6 00 | 36 00 | 27 00 | 2,618 70 |
| October..... | 2,892 00 | 131 60 | 100 00 | 6 00 | 58 00 | 45 00 | 3,232 60 |
| November..... | 2,584 82 | 149 60 | 135 00 | 14 00 | 32 00 | 53 75 | 2,969 17 |
| December..... | 2,430 63 | 164 65 | 73 80 | 2 00 | 27 00 | 33 25 | 2,731 33 |
| 1917. | | | | | | | |
| January..... | 3,261 73 | 128 30 | 83 50 | 20 00 | 125 00 | 38 10 | 3,656 63 |
| February..... | 2,636 55 | 139 70 | 140 00 | 26 00 | 43 00 | 35 65 | 3,020 90 |
| March..... | 3,036 50 | 160 50 | 391 00 | 12 00 | 95 50 | 36 75 | 3,732 25 |
| | 31,463 92 | 1,578 89 | 1,569 30 | 122 15 | 674 00 | 420 25 | 35,829 21 |
| Refunds..... | 6,944 90 | 21 00 | 197 00 | 2 00 | 19 50 | 2 00 | 7,186 40 |
| | 24,519 02 | 1,557 89 | 1,372 30 | 120 15 | 654 50 | 418 25 | 28,642 81 |

The particulars of the registrations made by the Copyright and Trade Mark Branch of the Department of Agriculture during the year ended March 31, 1917, are as follows:—

| | | |
|--|-------|--|
| I. Copyrights— | | |
| Full copyrights without certificates..... | 1,082 | |
| Full copyrights with certificates..... | 150 | |
| Temporary copyrights without certificates..... | 30 | |
| Temporary copyrights with certificates..... | 112 | |
| Interim copyrights without certificates..... | 112 | |
| Interim copyrights with certificates..... | 10 | |
| Renewals of copyrights..... | 4 | |
| Assignments..... | 53 | |
| | 1,441 | |
| II. Trade marks..... | 840 | |
| Renewals of specific trade marks..... | 74 | |
| Assignments of trade marks..... | 249 | |
| III. Industrial designs..... | 196 | |
| Renewals..... | 38 | |
| Assignments..... | 27 | |
| IV. Timber marks..... | 55 | |
| Assignments..... | 4 | |
| | 2,924 | |
| V. Letters received..... | 6,822 | |
| VI. Letters sent..... | 7,075 | |

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The following table shows a comparative statement of the business of this branch from 1904 to 1916, inclusive:—

| Year. | Letters Received. | Letters sent. | Copyrights Registered. | Certificates of Copyright. | Trade Marks Registered. | Industrial Designs Registered. | Timber Marks Registered. | Assignments Registered. | Fees Received Gross. | Fees Received Net. |
|------------|-------------------|---------------|------------------------|----------------------------|-------------------------|--------------------------------|--------------------------|-------------------------|----------------------|--------------------|
| | | | | | | | | | \$ cts. | \$ cts. |
| 1904 | 2,858 | 3,293 | 1,106 | 228 | 621 | 107 | 25 | 118 | 20,647 30 | |
| 1905 | 3,367 | 3,902 | 1,130 | 189 | 661 | 139 | 32 | 154 | 23,706 75 | |
| 1906 | 5,340 | 5,193 | 1,228 | 169 | 1,119 | 125 | 47 | 282 | 33,107 10 | |
| 1907 | 4,475 | 4,353 | 1,140 | 175 | 848 | 182 | 39 | 136 | 30,073 20 | |
| 1908 | 6,647 | 4,980 | 1,416 | 170 | 892 | 162 | 44 | 343 | 37,514 00 | |
| 1909 | 6,320 | 5,750 | 1,535 | 171 | 1,059 | 143 | 108 | 174 | 35,071 31 | |
| 1910 | 6,411 | 7,688 | 1,699 | 206 | 1,021 | 118 | 39 | 386 | 42,153 76 | |
| 1911 | 7,027 | 7,091 | 1,593 | 213 | 1,212 | 149 | 39 | 230 | 43,327 86 | |
| 1912 | 9,435 | 9,322 | 1,760 | 205 | 2,315 | 228 | 15 | 559 | 51,043 21 | 43,061 56 |
| 1913 | 8,441 | 9,220 | 1,835 | 207 | 1,378 | 165 | 57 | 264 | 49,409 68 | 41,251 98 |
| 1914 | 2,190 | 9,292 | 1,675 | 193 | 1,106 | 224 | 24 | 242 | 39,599 69 | 32,840 87 |
| 1915 | 6,815 | 7,446 | 1,477 | 146 | 1,019 | 215 | 27 | 279 | 35,653 21 | 29,645 11 |
| 1916 | 6,822 | 7,075 | 1,384 | 160 | 840 | 196 | 55 | 333 | 35,829 21 | 28,642 81 |

V. PUBLIC HEALTH AND QUARANTINE.

Perhaps the most noted event during the year from the Public Health standpoint has been the epidemic outbreak of infantile paralysis in the United States, and to a much less extent in Canada.

Other infectious diseases have not prevailed to any unusual extent during the year.

At the coast quarantine stations on the Atlantic and Pacific coasts, 168,857 persons have been inspected. In 1914, the last year before the war, the number was 582,697.

The admissions to the quarantine hospitals were 96. In the last year before the war the number was 1,996.

In every instance the disease was stamped out at the station, and so prevented from appearing inland.

From the middle of August until the end of November the production was required of certain prescribed certificates from all children under sixteen years of age desirous of entry into Canada from the states affected with infantile paralysis, over the international boundary between the Dominion and the United States.

Asiatic Cholera.—During the past year this disease has been reported in the following countries: Austria-Hungary, Borneo, Ceylon, China, Egypt, Germany, Greece, India, Indo-China, Japan, Java, Korea, Persia, Philippine Islands, Russia, Siam, Straits Settlements, Turkey in Asia, and Turkey in Europe.

On account of the prevalence of cholera in many localities in the Orient, steerage passengers arriving at the British Columbia quarantine station at William Head were subjected to bacteriological examination and were not admitted to entry until it had been determined by such examinations that they were not cholera carriers. By the 24th of February last the threatening had so far passed that such examinations were suspended. Similar action was taken at the same time at the quarantine stations of the contiguous states on the Pacific.

Bubonic Plague.—This disease has been reported during the year in the following countries: Argentina, Azores, Brazil, Ceylon, Chile, China, Ecuador, Egypt, Great Britain, Greece, Hawaii, India, Indo-China, Japan, Java, Mauritius, Persia, Peru, Russia, Straits Settlements, Siam, Union of South Africa, British East Africa.

In Great Britain eleven cases of human plague have been reported during the year. Three in Bristol, two in Hull with one death, and six in Liverpool with three deaths.

Plague-infected rats have been found in London and in Liverpool during the year. Precautionary measures were taken at our Atlantic ports to prevent the landing of rats from vessels arriving.

Plague-infected rats have also been found during the year in Hong Kong, Shanghai, and Hawaii; and at New Orleans, La., and Seattle, Wash., in the United States. In California, plague continues also amongst the ground squirrels.

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In India the following figures give some indication of the ravages of this disease: October 15 to December 23, 1916, cases 89,512, deaths 67,068; December 31, 1916, to January 13, 1917, cases 30,487, deaths 23,538; January 21 to 27, cases 15,872, deaths 12,783.

Smallpox.—This disease has had its usual worldwide prevalence again this year. It has not shown itself at any of my Atlantic stations, owing possibly to the small number of passengers arriving from Europe. It has been brought from the Orient to the British Columbia station by two steamships.

Typhus Fever.—This disease, one of the oldest diseases of which record can be found, was, up to two years ago, an almost forgotten malady, at any rate as an epidemic, though always more or less present in many countries where sanitation is backward, such as the Balkans, Turkey, Persia, Arabia, China, and most of Asia. Now, however, war conditions have spread the disease through Serbia, and disturbed economic conditions in Mexico have disseminated the infection far and wide in that country, where it has always been present in a limited or endemic form.

Yellow Fever.—The results of the application of the steps to prevent and destroy the mosquito host of the yellow fever germ have reduced this disease to a negligible quantity as far as this continent is concerned. Its principal habitat now seems to be the west coast of Africa.

Enteric Fever.—One of the striking things about this war is the triumph of science over this disease. During the Boer war it was stated that one man out of every nine in the British force in South Africa was invalided through this disease. In the Spanish-American war, of 107,000 men in camps, 20,000 contracted the disease. Whilst our own Department of Militia has just announced that during the twelve months ending December 31 last, only 167 cases of typhoid fever occurred amongst the many thousands of men of the Canadian Expeditionary force in Canada.

Leprosy.—There are at present in the lazaretto at Tracadie, N.B., thirteen lepers, six males and seven females. This is the smallest number for very many years, and only about half the number present a few years ago. Ten are of French-Canadian origin, one of Icelandic, one of Russian, and one of Assyrian.

There were two deaths during the year. No admissions. Amelioration of symptoms and sufferings continues to be observed under the treatment now being carried out.

The two former inmates discharged, apparently cured, in 1912, and the two residents seemingly now free from the disease, remain without any indication of its recurrence.

Officers report their high admiration of the continued devotion of the nursing religious sisters in their attendance on the lepers.

At the leper lazaretto at Darcy Island, B.C., five lepers have been admitted during the year. One, a Japanese, was deported; one, a Russian, was, after three months' observation, released under certain conditions of periodic examination, as not being a menace to the public health; the remaining three, being two Chinese and one Chilean-Kanaka, are still under treatment and care.

Beri-beri.—The importance which diet plays in the production, prevention, and treatment of this disease is now generally recognized. When certain substances are lacking, nutrition suffers, and when they are removed disease supervenes. Diseases of this nature have been denominated deficiency diseases, of which one of the most typical would seem to be beri-beri.

Anthrax.—A fatal case of this disease was reported on the 8th instant as occurring at Longwood, in the vicinity of Huddersfield, England, in an employee in a woollen mill at that place. The wool originated mostly in the East Indies. A second case occurred on the 15th instant.

Infantile Paralysis.—In view of the large number of cases of this disease—stated to be 24,000 in all—in the neighbouring States, instructions were issued in August last requiring every person under sixteen years old, desiring to enter Canada over our land frontier, coming from any one of the affected group of states to produce a certificate properly attested, stating that the bearer had not the disease, nor had been in contact with any one who had. This certificate had to be issued not longer than twenty-four hours before departure. This requirement was raised at midnight of November 30 last.

Precautions against rats.—Owing to the reported finding of plague-infected rats at Liverpool, it was thought necessary that steps should be taken to prevent the landing of rats from vessels at the Atlantic ports.

The precautions are:—

The breasting out of the vessel from the pier for not less than six feet.

The placing on every hawser between the vessel and the pier of a funnel or disc of metal, not less than three feet in diameter and not more than three feet from the vessel.

The reduction of the gangways to a minimum by day and their guarding by quartermasters. At night all gangways to be withdrawn, or if one be essential, that it be lighted as well as guarded.

As once a quarantine clearance is given, incoming vessels pass from my jurisdiction to that of the Minister of Marine, that department undertook to instruct its harbourmasters at all Atlantic ports to have these precautions enforced.

Cerebro-spinal Meningitis.—Information was received from the Militia Department this spring that certain soldiers returning to Canada by way of St. John, N.B., were supposed to have been in contact with cases of cerebro-spinal meningitis before embarking at Liverpool. These men were detained at quarantine for special examination by the bacteriologist there. His report was that the cultures were negative in all cases.

Circulars.—Circular letters were issued from time to time to the different officers, drawing their attention to the various matters during the year connected with the appearances and movements of epidemic disease abroad.

Public Health Meetings.—During the year the Director-General of Public Health attended the annual meeting of the Canadian Public Health Association for the Prevention of Tuberculosis at Quebec in September.

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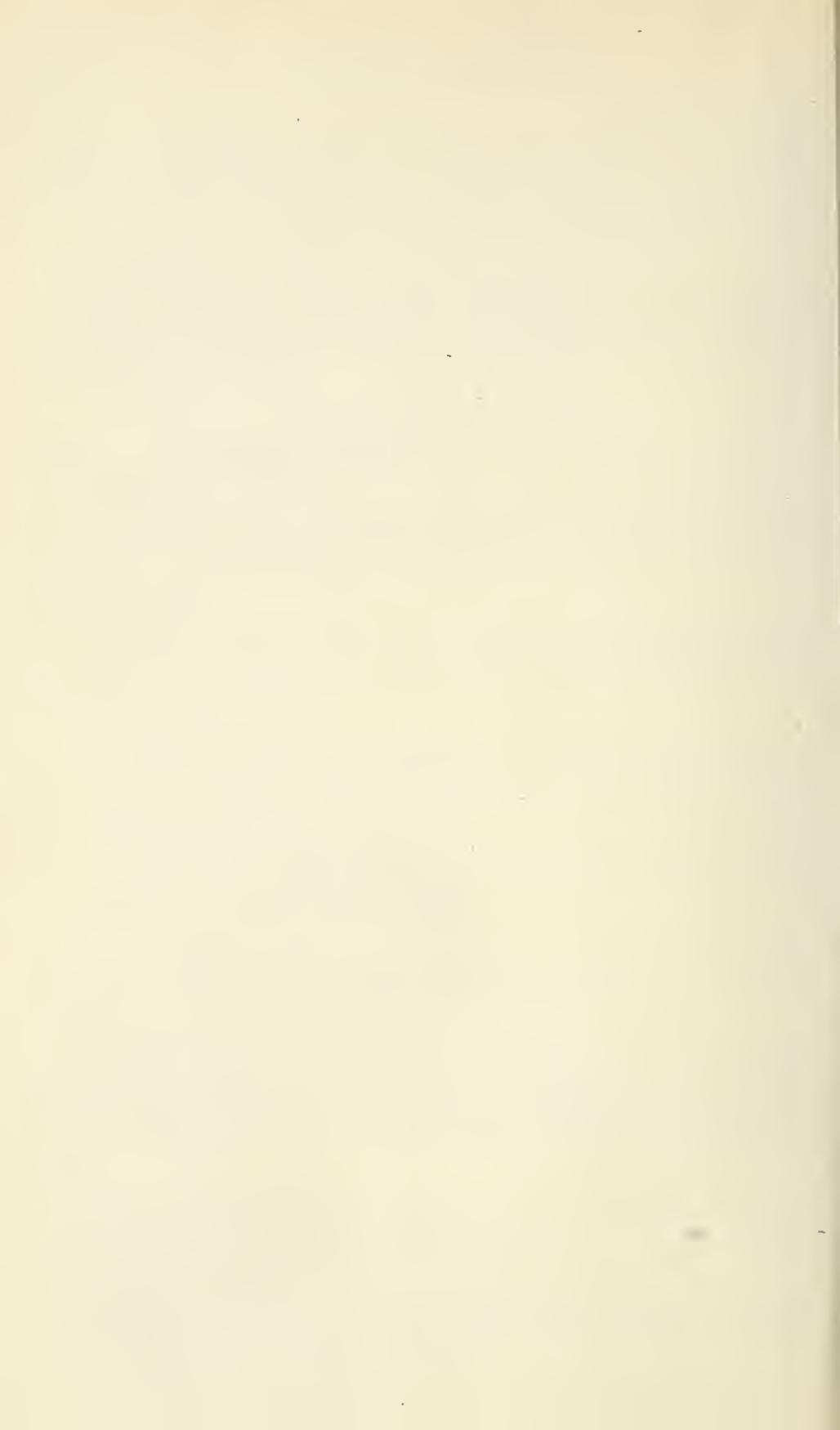
Public Works, Health Act.—The inspectors report that the year has been exceptionally free from infectious disease amongst the workmen employed in the various works connected with railway construction, canals, and tunnels. They report the medical service as satisfactory, and the sleeping quarters and boarding of the men employed fully equal to the good conditions of previous years.

Changes in the Medical Staff.—At Halifax, N.S., Dr. J. V. Graham has replaced Dr. Blackett as substitute for Dr. V. N. Mackay, overseas. At St. John, N.B., Dr. Heagerty again took winter duty for Dr. Warwick, overseas. At William Head, B.C., the position of assistant medical officer and bacteriologist is at present vacant. At Prince Rupert, B.C., Dr. John Cade is acting as a substitute for Dr. Tremayne, overseas.

The whole respectfully submitted,

MARTIN BURRELL.

Minister of Agriculture.



PUBLIC HEALTH

REPORT OF THE DIRECTOR-GENERAL OF PUBLIC HEALTH.

(F. MONTIZAMBERT, C.M.G., I.S.O., M.D.EDIN., F.R.C.S.E., D.C.L.)

MARCH 31, 1917.

SIR,—I have the honour to submit this my report as Director-General of Public Health for the year ending this day.

At your various coast quarantine stations the number of persons inspected, and of persons admitted to your quarantine hospitals continue to show a marked decrease owing to the enormous falling-off in immigration and passenger travel on account of the war.

The number of vessels inspected continues to show an increase, in part at least due to the withdrawal for war purposes of large vessels and their replacement by more numerous smaller ones.

Along a considerable portion of your frontier international quarantine line precautions have had to be taken against the inroads of *Anterior Poliomyelitis* (infantile paralysis) which has been present during a part of the year as an epidemic in some of the adjoining states.

Asiatic Cholera.—Since my last annual report this disease has been reported in the following countries: Austria-Hungary, Borneo, Ceylon, China, Egypt, Germany, Greece, India, Indo-China, Japan, Java, Korea, Persia, Philippine Islands, Russia, Siam, Straits Settlements, Turkey in Asia, and Turkey in Europe.

On account of the prevalence of Cholera in many localities in Asia, steerage passengers arriving at your British Columbia quarantine station at William Head were subjected to bacteriological examination, and were not admitted to entry until it had been determined by such examination that they were not cholera bacillus carriers. This was continued until the 24th of February last. Up to that time 1,087 bacteriological examinations were made. No cholera carrier was found. At that date the threatening had so far passed that this examination ceased to be necessary, and was consequently suspended. Similar action was taken at the same time at the contiguous United States stations.

In the British Medical Journal, September 30, 1916, Capt. H. Grame Gibson, R.A.M.C., gives the following account of a new solid medium for the isolation of the cholera vibrio:—

Based on the fact that the cholera vibrio alone of all the intestinal organisms acidifies starch, the following alkaline medium has been devised for its rapid isolation.

Owing to the medium possessing differentiating properties it should be especially useful in the detection of "cholera carriers," as the faeces emulsified in broth can be plated directly on to it. In the case of water examination, after enrichment in peptone water for a few hours, if a drop or two of the peptone water is plated a tentative diagnosis can be arrived at in eighteen hours owing to the allied vibrios taking a longer time than the true cholera vibrio to

bring about acid production. The formula is: Agar 30 grams, peptone 10 grams, starch 10 grams, sodium bicarbonate 1.5 grams, litmus (sufficient to colour medium), and water 1,000 c.cm.

Weigh out 30 grams of powdered agar and emulsify with 250 c.cm. of cold water. Then weigh out 10 grams of peptone (Chapoteaut and 1.5 grams of sodium bicarbonate. Mix together and emulsify in another 250 c.cm. of cold water. The two emulsions are then mixed in a two-litre flask and another 500 c.cm. of water added. The solution is complete in the steamer. When dissolved the medium is clarified with white of egg and filtered in the steamer.

Weigh out 10 grams of potato starch, emulsify it with some of the filtered agar, and add the emulsion to the remainder of the medium.

The whole is sterilized by the fractional method, after which enough sterile watery solution of litmus is added to bring about a blue colour of the medium.

The final reaction of the medium will be found to be -2 to phenolphthalein. I tried several degrees of alkalinity and found that 0.15 per cent sodium bicarbonate gave quite the best results.

If the plates are examined eighteen hours after inoculation, by looking obliquely through them with a dark background behind, the plate being held parallel to the window, the cholera colonies will be seen to have acquired a faint pink colour, while the colonies of the other intestinal organisms are blue or of a whitish colour. The examination is facilitated by the use of a hand lens. At this time the allied vibrios also produce blue colonies, but at the end of about thirty-six hours they also acidify the medium, though to a less extent than cholera.

At the end of twenty-four to thirty-six hours the cholera colonies have attained a delicate pink colour with a faint pink halo round them, while the other colonies still remain blue; also the colonies are of a good workable size to pick off and proceed with the serological tests.

After forty-eight hours, if the cholera colonies are in excess and the plate spread somewhat thickly, the medium itself becomes distinctly acid, and colonies other than those of cholera take on the pink tinge. However, the cholera colony even at this time can still be distinguished by the deeper red centre which the other colonies lack.

The only other organisms which are known to acidify starch are some of the diphtheroid group and some of the non-pathogenic water vibrios. These should not present any great difficulty, as Gram's stain on the one hand, and the serological test on the other, dispose of these organisms.

Experiment 1.—Ten cubic centimeters of broth were inoculated by emulsifying some faeces in it. To this was added a very small quantity of a culture of *V. cholerae*. The tube was well shaken, and 0.25 c.cm. of the broth transferred to a second tube of broth. Two drops of this broth were immediately plated on to the medium, the same rod being successively used for three plates. The first plate was too crowded to be of any use, but the second and third plates gave good discrete colonies, and on these plates the cholera colonies could be recognized in eighteen hours. Every colony on these plates was picked off, and all the pink colonies were proved to be cholera, whilst the blue colonies in every case proved otherwise.

Experiment 2.—The first broth tube from the previous experiment was kept at room temperature for two days. At the end of that time 0.25 c.cm. of this broth was added to 10 c.cm. of fresh broth, and a drop of this was immediately plated out as in the first experiment. The plates were rather too thickly spread to give good discrete colonies, but the cholera colonies could be easily detected. These colonies were again tested with cholera immune serum, and the differentiation proved correct.

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Experiment 3.—This experiment was undertaken to see whether any of the normal water vibrios were capable of acidifying starch. The water was taken from a pond after heavy rain, and was taken straight to the laboratory. Some of the water was first enriched by incubating in peptone water for a few hours. One drop of this peptone water was then plated, and at the end of eighteen hours a few pinkish colonies were present. Some more of the water was plated direct, and in this case it took twenty-four hours before any pinkish colonies appeared. In both cases the pink colonies that were present were of a lighter shade than that which is produced by the cholera vibrio, and I do not think that they are very likely to be confounded with it. In addition, the red centre to the colony that is produced by the cholera vibrio in forty-eight hours was not present in these cases. This organism proved to be a normal vibrio of water..

Other Experiments.—The following organisms were also plated out: *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, coliform organisms, *B. dysenteriae* (Shiga and Flexner), *B. enteritidis* (Gaertner), streptococci, V. Finkler Prior, *V. metchnikovi*.

In no case did the above organisms acidify the medium, except in the case of the two vibrios, which produce a slight pink halo, but the colonies themselves, when viewed obliquely, do not become pink until a very much longer time has elapsed than that required to recognize the vibrio of cholera.

In a recent number of *The American Journal of Tropical Diseases and Preventive Medicine*, Allan J. McLaughlin, United States Public Health Service, Commissioner of Health of the Commonwealth of Massachusetts, says in speaking of improvement in media:—

One other advance in our methods of handling Asiatic cholera suspects has been made by Goldberger, which promises to increase our efficiency in detecting Asiatic cholera carriers when making stool examinations on a large scale.

There has been no great change in the bacteriologic methods of Asiatic cholera diagnosis in the past ten years, and these methods are based upon the procedure of the German Imperial Health Office.

As a time-saving measure, test tubes are used instead of large flasks for the peptone solution. This necessitates that the amount of feces added to the tube must be small, and if the vibrios are very scarce a carrier might be recorded as negative. Large flasks and many platings are impracticable on a large scale where the daily examinations may run in thousands. Goldberger's media permit the planting of relatively large quantities of feces, using the same convenient size of test tubes.

Goldberger suggests two enriching solutions, an alkaline egg peptone, and an alkaline meat infusion peptone. The cholera vibrio grows well in both solutions, though less luxuriantly than in ordinary cholera peptone. The multiplication of the ordinary fecal bacteria is markedly restrained, especially the colon bacillus. Goldberger's work shows that in his media the vibrios, if present even in small numbers, will increase and not be overgrown, even after seventy-two hours.

Goldberger's media were devised after a careful study and test of the various selective media suggested by Dicudonné, Neufeld and Wiothe, Esch, Pilon, Crenderopoulo and Panayotatou, Krunwiede, Pratt and Grund, Hoffman and Kutscher, Moldavan and others.

The addition of Goldberger's media to our equipment should make the passage of an Asiatic cholera carrier through our quarantines still more unlikely. It is true that this medium has not yet been tested in actual field work, but the laboratory tests suggest that it is the most valuable addition to our cholera technic which has been made in recent years.

Bubonic Plague.—This disease has been reported during the year in the following countries: Argentine, Azores, Brazil, Ceylon, Chile, China, Ecuador, Egypt, Great Britain, Greece, Hawaii, India, Indo-China, Japan, Java, Mauritius, Persia, Peru, Russia, Straits Settlements, Siam, Union of South Africa, British East Africa.

How plague may be present in rats without making its appearance in man is well illustrated by the experience of the steamship *City of Durham*. The history of this vessel emphasizes what students of the subject know must be true, namely, that throughout the world there are many ports infected with plague in which the presence of the disease is not known because human cases have either not developed at all or not in sufficient numbers to attract attention. Such ports in turn undoubtedly serve as foci from which the infection is carried by rats to ships and thus to other ports.

The steamship *City of Durham* arrived at Hongkong August 23, 1916, without cargo, from Shanghai, China, and proceeded at once alongside of a concrete rat-proof wharf. Immediately upon arrival the ship was fumigated with 4 per cent sulphur dioxide. After the fumigation six dead rats were found. Examination of these rats showed that two of them were plague infected. The crew of 66 men were immediately examined and none found sick. The captain stated that no case of human plague had ever occurred aboard his ship.

This steamship is engaged in a general freight trade between New York, Boston, Philadelphia, and ports in the Far East, including Calcutta, Bombay, Rangoon, Vladivostok, Japan ports, Shanghai, Hongkong, and others. On her last voyage the ship left New York June 17, 1916, calling at Colon, Canal Zone, San Francisco, Muroran, Vladivostok, Shanghai, and Hongkong in the order named. The master of the ship stated that while en route between Colon and San Francisco a member of the crew died of "internal trouble" June 29 and was buried at sea. On previous voyages the ship had been alongside the wharves at Calcutta and Rangoon, but whenever tied to a wharf standard rat guards had always been used on all lines. It was further stated that rats had very seldom been seen on the ship and the master had never known of sick or dead rats being found on the vessel.

Great Britain.—Eleven cases of human plague have been reported during the year. Three in Bristol, August 18-31; two in Hull, August 19-31, with one death; and six in Liverpool, Sept. 22-Oct. 6, with three deaths.

The Local Board of Health of England and Wales stated that the three cases reported at Bristol occurred in persons connected with a rag factory in that city, and one of the cases at Hull was in a boy who had been at work on the steamship *Kench* lying at Hull for repairs. The three cases reported at Liverpool on September 22 occurred in residents in the stable warehouse district one mile distant from the waterfront, and were all in persons of the same family. The last plague-infected rat at Liverpool was reported found during the month of October, 1916. In London during the period from October 5 to November 6, 1916, out of 601 rats examined four were found plague-infected. The last plague-infected rat was found November 6, 1916.

Plague-infected rats have also been found during the year in Hong Kong, Shanghai, Hawaii; and in New Orleans and Seattle, Wash., in the United States. The last one at Seattle was reported by Surgeon Lloyd as having been on the 16th of this month at Pike Place market, between Pike and Pine streets, and was proved positive for plague infection on the 25th instant.

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In California plague infection continues also amongst the ground-squirrels. For the following summary with relation to places in California I am indebted to the Public Health Reports issued by the United States Public Health Service.

RECORD OF PLAGUE INFECTION.

| Places in California. | Date of Last Case of Human Plague. | Date of Last Case of Rat Plague. | Date of Last Case of Squirrel Plague. | Total Number Rodents Found Infected since May, 1907. |
|--|------------------------------------|----------------------------------|---------------------------------------|--|
| Cities: | | | | |
| San Francisco | Jan. 30, 1918. | Oct. 23, 1908. | None | 398 rats. |
| Oakland | Aug. 9, 1911. | Dec. 1, 1908. | " | 126 rats. |
| Berkeley | Aug. 28, 1907. | None | " | None. |
| Los Angeles | Aug. 11, 1908. | " | Aug. 21, 1908. | 1 squirrel. |
| Counties: | | | | |
| Alameda (exclusive of Oakland and Berkeley). | Sept. 24, 1909. | ¹ Oct. 17, 1909 | June 23, 1916. | 293 squirrels; 1 wood rat. |
| Contra Costa | July 13, 1915. | None | June 28, 1916. | 1,629 squirrels. |
| Fresno | None | " | Oct. 27, 1911. | 1 squirrel. |
| Merced | " | " | May 12, 1916. | 7 squirrels. |
| Monterey | " | " | May 27, 1916. | 38 squirrels. |
| San Benito | June 4, 1913. | " | July 1, 1916. | 72 squirrels. |
| San Joaquin | Sept. 18, 1911. | " | Aug. 26, 1911. | 18 squirrels. |
| Santa Clara | Aug. 31, 1910. | " | June 21, 1916. | 32 squirrels. |
| San Luis Obispo | None | " | Jan. 29, 1910. | 1 squirrel. |
| Santa Cruz | " | " | May 30, 1916. | 5 squirrels. |
| Stanislaus | " | " | June 2, 1911. | 18 squirrels. |
| San Mateo | " | " | June 21, 1916. | 1 squirrel. |

¹ Wood rat.

The work is being carried on in the following-named counties: Alameda, Contra Costa, Stanislaus, San Benito, Santa Cruz, Monterey, Merced and Santa Clara.

Passed Asst. Surg. Williams reported that a squirrel killed March 16, 1917, in San Mateo county, Cal., 2 miles west of San Mateo, was proved positive for plague infection March 29, 1917.

In June, 1916, a plague-infected squirrel was shot near Redwood city, San Mateo county. This was the first infected squirrel that had been found in this county. San Mateo county had constituted a presumably uninfected barrier between the city of San Francisco and the territory in which infected squirrels were known to be present. Redwood city, where the first squirrel was found, is 20 miles from San Francisco, while the locality where the second squirrel was found near San Mateo is 10 miles nearer the city. If this indicates that the infection is travelling north in San Mateo county, measures will need to be taken to prevent the further spread to the suburbs of San Francisco and the reinfection of the rats in the city.

In South America, Col. D. C. Howard, Chief Health Officer, Balboa Heights, Canal Zone, states:—

Bubonic plague has shown no decrease in its distribution in South America during the year of this report, but on the contrary has probably extended to localities previously considered non-infected or at most only in the suspicious class. One marked increase of this disease occurred in the vicinity of Paíta, Peru, and an extension of the disease northward from Guayaquil, Ecuador, has taken place, involving the country districts in the vicinity of Manta and Bahía, Ecuador, these ports are a relatively short distance below the Colombian border and the prevalence of plague in these vicinities can only mean an extension of the disease northward and closer toward zone ports. In view of the fact that plague is so generally distributed, along the west coast of South America

particularly, we have endeavoured to tighten and improve our anti-plague measures with reference to the ships in zone ports. Our local measures of breasting off, rat guarding, raising of gangways at night, fumigation, etc., have been watched very closely because the potential danger to the zone from the standpoint of rat introduction is much greater than through the agencies of human transmission. To this end mechanical cleanliness and improved sanitary conditions aboard ship have received careful attention, and the value of all these measures emphasized to the local shipping interests.

In India the following figures give some indication of the ravages of plague: October 15 to December 23, 1916, cases 89,512, deaths 67,068; December 31, 1916, to January 13, 1917, cases 30,487, deaths 23,538; January 21 to 27, cases 15,872, deaths 12,783.

Smallpox.—This disease has had its worldwide prevalence again this year. It has not shown itself at any of your Atlantic ports of entry, possibly from the small number of passengers arriving. It has been brought from the Orient to your William Head, B.C., station. In a speech made by Socialist Deputy Hoffmann in the Reichstag, March 22, he is said to have stated that there are 30,000 cases of smallpox in Germany and that the disease is spreading rapidly. This report, which has been repeated by newspapers in Austria, has been denied by the German authorities, who admit that there have been 135 cases of smallpox in Berlin alone, with eleven deaths.

Typhus Fever.—With regard to this disease the *Medical Record* says:—

Typhus fever, one of the oldest diseases of which record can be found, was up to two years ago an almost forgotten malady, at any rate, as an epidemic True, in many countries, in which sanitation was backward, and especially where domestic hygiene was lacking, typhus was endemic, and, as First-Lieut. Horace C. Hall points out in the *Military Surgeon*, November, 1916, in the Balkans, Turkey, Persia, Arabia, China, and in Asia generally typhus has been endemic since the earliest of folk-lore legends. And within the past three centuries, along lines of commercial intercourse and travel, the disease has become largely endemic in Russia, Poland, Austria, Germany, and Latin America. But, as said before, there has been no serious epidemic of typhus fever until war conditions spread the disease through Serbia, and disturbed economic conditions in Mexico disseminated the infection far and wide in that country. It is a disease which is spread by neglect of proper sanitary precautions and conditions favourable to vermin also favour the spread of typhus. In fact, it has been demonstrated that the disease may be transmitted from man to monkey and therefore presumably from man to man by means of the common body louse. While admitting that the body louse does convey the infection and that the head louse and bedbug may be regarded as suspicious conveyers, Hall thinks that it has not been conclusively proven that vermin are the only means of conveying the disease. The predisposing causes of typhus are famine, filth, overcrowding, and conditions favourable for the thriving of vermin.

The main means of prevention are to find and kill the lice and bugs, a difficult task indeed when dealing with a primitive and dirty people such as the Mexican peons, the class of individuals among whom Hall gained his experience.

With regard to treatment it was found that immunizing vaccine, so far available, had not been of any material service. Hall controls the fever with baths, the delirium with bromides and an ice-cap, and gives egg albumen in water, even though it has to be placed in the stomach through a tube passed through the nose. He gives large broken doses of calomel, followed by mag-

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nesium sulphate and high enemata which are left in as long as possible. If the urine is scanty, these enemata are of physiological salt solution. He begins the strychnine as a matter of routine, to combat the muscular weakness which is certain to follow. An ice-cap is kept on the patient's head and he is bathed not oftener than four times within the twenty-four hours. When the crisis is approaching Hall gives hypodermic injections of camphor in oil, alternated with spartein sulphate, to tide over the period.

The only specific complication noticed by this observer is that of gangrene of the leg, most commonly the left, below the seat of election for amputation just below the knee. It is a dry gangrene, extremely painful and slow to show the line of demarcation. In 95 per cent of such cases it is best to amputate, as soon as the line of demarcation is indicated. Hall remarks that in 25 per cent of the educated, high-strung civilized American patients he has treated for this disease he has observed a form of toxic insanity complicating the final outcome of the cases. This is due, no doubt, to the continued high fever and severe toxic poisoning. This insanity is not transitory, that is to say, that while within a few weeks the reasoning power returns to nearly normal, there remains a mild delusional insanity for a considerable period.

The Medical Journal states:—

Naturally the occurrence of typhus fever on a large scale in some of the countries engaged in war has aroused much interest in the cause and prevention of this disease. Most physicians are familiar with the measures used for preventing typhus infection by destruction of the body louse. At this time attention is directed to observations bearing directly on the primary cause of typhus fever. Some time ago Plotz described a bacillus, *B. typhi-exanthematici*, which he cultivated from the blood of a patient with the mild form of typhus—Brill's disease—occurring in New York, and also from the blood of immigrants with typical epidemic typhus. Now the bacteriologic study of the blood has been extended to the disease as it occurs in the Balkans and Russia, as well as in Mexico, blood cultures on typhus patients in these countries in a large percentage of cases revealing the presence of *B. typhi-exanthematici*. In Mexico, Olitsky, Denzer and Husk obtained the bacillus in most of the cases studied, the bacilli being most numerous in the early stages of the attack and in the most severe forms of the disease. They found the blood of the typhus patients whom they studied to be infectious for guinea pigs, and recovered the bacillus from the spleen of guinea-pigs infected with typhus blood or by means of lice from typhus patients. They also assert that they have obtained the bacillus from lice from typhus patients; but when so isolated the bacillus is gram-negative, becoming, however, gram-positive on subculture. Baehr and Plotz, who made the investigations in the Balkans and Russia, obtained cultures of the bacillus from the blood in nineteen of forty patients in Serbia and Bulgaria, while in Russia and Galicia, where the conditions were more favourable, the cultures were positive in nineteen of twenty-four cases. They were able to show that the bacillus is present in the blood during the entire course of the fever from the first day on, and that the more severe the disease the more marked the bacteremia. In two cases in which cultures were made during the initial chill, the blood contained enormous numbers of bacilli; in one case ninety-one colonies developed to each cubic centimetre of blood inoculated.

The results obtained so far from blood cultures show, then, that the bacillus described by Plotz appears to be present in the blood in the febrile period of typhus fever as it occurs in the United States (Brill's disease and epidemic typhus), Mexico, Serbia, Bulgaria, Austria and Russia, and certainly the intimate association of this bacillus with typhus fever would seem to be estab-

lished clearly enough. It is a matter of regret, however, that, owing to the prevailing conditions in the countries in which the disease now is epidemic, it has not been possible to carry on still more extended investigations on this important bacillus, more particularly in the line of prophylactic inoculations, which, so far as the results at hand appear to indicate, may be of great value. The agglutininus for *B. typhi-exanthematici* first appear at about the time of the crisis and describe a typical immunity curve.

An exceedingly interesting development in the typhus work is the demonstration of Prowazek, Rocha-Lima, and Toepfer and Schüssler that lice which have bitten typhus patients in the febrile stages of the attack contain large numbers of peculiar minute bodies, especially in the epithelial cells of the digestive tract. In Giemsa preparations these bodies are reddish, short, elliptic and coccus-like, sometimes with polar staining. It may be recalled that Ricketts and Wilder also described rods with polar bodies in lice infected with typhus fever, and Rocha-Lima has given these bodies the designation *Rickettsia prowazeki*. So far these bodies have been found only in lice which have been picked up from typhus fever patients or from their clothes or from other sources, and placed on typhus fever patients and allowed to bite them. Early in the attack there are only a few infected lice found on the typhus patient under natural conditions, but as the attack progresses the number increases and in the early stages of convalescence most of the lice found are said to contain the bodies. Experiments appear to show practically the same conditions; that is to say, early in the disease the lice must be left in contact with the patient longer before the bodies develop to any extent; but toward the ninth day or so, only a short time, even a single bite suffices. When convalescence has set in it is impossible to secure the development of the bodies by letting lice bite the patients. As stated, the bodies are absent in lice obtained from healthy persons and from persons suffering with diseases other than typhus fever; hence the presence of such bodies in a number of lice obtained in suspected cases of typhus fever is said to be sufficient to make the diagnosis of typhus. Teofer and Schüssler state that abortive cases of typhus fever give rise to a rich development of *Rickettsia* in lice. Lice containing them are infectious for guinea pigs; that is to say, when guinea pigs are injected with suspensions of crushed bodies of such lice, they develop the febrile reaction which is regarded as characteristic of typhus infection in guinea pigs. Rocha-Lima was unable to obtain growths of the bodies in the mediums employed by Plotz to grow *B. typhi-exanthematici*, and he also found only a superficial similarity between the Plotz bacillus and *Rickettsia*, the bacillus being larger and gram-positive, whereas the bodies are gram-negative; but Baehr and Plotz appear to regard the bodies as identical with the bacillus, and Olitsky, Denzer and Husk report the successful isolation of the Plotz bacillus from typhus lice.

Nicolle is an investigator of typhus fever who holds that we are still ignorant of the actual cause of the disease. In his experimental work he employs what he calls typhus virus, by which is meant virulent emulsions of the spleen and other organs of typhus-infected guinea pigs. His most recent work deals with the production of an antityphus serum. The serum from typhus convalescents having been found to possess specific preventive properties, he assumed that the typhus virus serve as antigen. Accordingly, asses were injected intravenously with emulsions of leukocytes of infected guinea pigs, and then many times with emulsions of spleen. The serum was found to acquire antityphus properties, being preventive as well as curative in guinea pigs, and the Tunisian investigators even claim that the serum has given favourable results in human-typhus, the death rate in a series of serum-treated cases being much reduced as compared with the ordinary death rate. By means

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of suitable immunity tests, Nicolle shows that Algerian, Moroccan and Balkan typhus viruses appear to be identical. These apparently significant results are not of necessity inconsistent with the view that the bacillus described by Plotz is the cause of typhus, as this bacillus has been found in the blood and organs of guinea pigs infected with typhus and consequently may have been the actual agent of immunization. If that is the case, immunization with the bacillus itself should give the same or even better results. At all events, it is clear enough that still further work will be required to settle all the questions as to the causation of typhus, even though great progress has been made.

Soldiers of the Turkish army in Syria are dying from typhus at the rate of 1,000 a day, according to a despatch from the country forwarded through Port Said and given out by the American committee for Armenian and Syrian relief. In addition to the famine from which the people of Syria are long reported to have been suffering, epidemics of both typhus fever and cholera are sweeping over that country, the despatch says.

Outbreaks of typhus fever in Germany have occasioned fresh attempts to be made to discover the micro-organism of this disease. Bofinger has figured appearances in the red blood corpuscles, which bear a very close resemblance to Seidelin's "bodies" in yellow fever; in view of the findings in the third report of the Yellow Fever Commission (West Africa) these objects may safely be excluded as bearing any causal relation to the diseases under consideration. Goldenstein, when investigating an epidemic due to Macedonian prisoners of war at Sofia, obtained a motile bacillus in pure culture from the blood of thirteen out of twenty-four patients during life. Unlike the organism of Plotz, it grows under aerobic conditions. It is a very short diplo-bacillus, and on agar forms small dry scale-like colonies of yellowish colour. On sub-culture a more definitely bacillary form is assumed, and the colonies become softer in consistency; it reacts negatively to Gram's stain. Gelatine is not liquefied. The serum of patients with fully developed typhus fever agglutinated this organism by the hanging drop method in dilutions varying from 1 in 50 up to 1 in 1,600 in one case. Injection of cultures into guinea-pigs caused only the unsatisfactory phenomenon of fever, which lasted for five to ten days and then disappeared. The author himself preserves an open mind as to whether he has found the true causal agent.

Though the transmission of typhus by lice is generally accepted as proved, yet the disease has been acquired under conditions in which there was no intimate contact with patients and the mode of passage of the sluggish louse from the infected to the healthy individual appeared inapplicable. Schilling, finding that Turkish officers entertained the belief that lice could be borne through the air for a considerable distance, tested this belief by an experiment which consisted of standing in a moderate wind a short distance to leeward of infested men who had stripped. Small lice, measuring about one-twelfth of an inch, appeared on the outer surface of the clothing of the observers, and it was concluded that they had been detached and carried along by the wind. The adult louse is usually anchored to the under surface of the shirt, but young lice are more active and would therefore be the more readily detached. The observation, if confirmed, may help to clear up some difficulties in explaining the spread of typhus fever in certain circumstances.

Yellow Fever.—The British Medical Journal speaking of the Yellow Fever Commission appointed by the Colonial Office, says:—

A series of reports on questions connected with the investigation of non-malarial fevers in West Africa, instituted by the Yellow Fever Commission recently appointed by the Colonial Office, have been published as supplements of the Yellow Fever Bureau *Bulletin*. They form two bulky volumes, of which the first has 7 plates, 9 plans and maps, and 128 charts, the total number of

pages being 352. Volume II has 12 plates, 1 map, 107 charts, and contains 400 pages. It is thus evident that an enormous mass of material has been collected, and Sir James Kingston Fowler in his preface states that "whilst accepting no responsibility for the views expressed in these reports, the Commission are of opinion that the results of these researches, conducted, as many have been, in the face of very great difficulties, should be placed on record, not only to commemorate the painstaking efforts of the investigators concerned, but also because they may prove useful as a basis for criticism and discussion, and may thus assist in the solution of the problems which still confront those whose administrative duties bring them into contact with yellow fever."

The recent history of yellow fever in West Africa is interesting. The late Sir Rubert Boyce, it will be remembered, some years ago propounded the theory that yellow fever was universally endemic all over the West Coast of Africa. If he had said that it prevailed endemically in certain areas, probably no one would have seriously disagreed with him, but the assertion of its universality was severely criticised. In many ways, however, these present reports are a result of Boyce's views. They bring out the fact—a fact, however, not seriously disputed before—that epidemics of yellow fever do from time to time occur in West Africa, the origin of which cannot be traced to importation from other parts of the world. The disease can, then, be spoken of as being endemic in West Africa, or at least in parts of it.

Yet another point brought out is the difficulty of diagnosing yellow fever, not only clinically, but even in some instances pathologically after death. The parasite of yellow fever is still unknown; there is therefore no single definite test by which it can be established that any individual case is or is not one of yellow fever. Mild atypical cases are notoriously difficult of diagnosis, and as those who thus suffer do not die, it is not possible to be absolutely certain the attack was one of yellow fever. This is a point in connection with which much work remains to be done. It is, of course, right to state that Seidelin, one of the commissioners' investigators, claims that he has discovered the parasite of yellow fever, and the open-minded attitude the commission takes is shown by the fact that papers for and against that view appear side by side in the second volume of these reports. The destructive criticism of Seidelin's views contained in a recent paper by Wenyon and Low finds support in papers by David Thompson and Lieutenant-Colonel Harvey, and it seems probable that the suggestion that the paraplasm is the parasite of yellow fever will not survive. In that case much of the matter in Volume II will have no permanent value, as, for instance, the chapters on experimental yellow fever in laboratory animals, reports on the transmission of *Paraplasma flavigenum*, and the report on some histological lesions observed in laboratory animals infected with yellow fever. Apart from these criticisms, many of the other reports are very valuable, and show evidence of careful and painstaking work. Lieutenant-Colonel Statham's conclusions on page 386 should be carefully noted by future investigators of the disease in West Africa. The pendulum has swung to the other side, and, as he states, fever with transient albuminuria is now considered highly suspicious of yellow fever. Albuminuria, however, is common not only in some of the types of malaria, but also equally in many other conditions, so that too much stress must not be laid on the symptom. Dr. Wyler's and Dr. Leonard's reports give a good idea of the yellow fever cases observed in Lagos during 1913 and the beginning of 1914. No one who has seen yellow fever in the West Indies and South America can read these reports without being convinced of the correctness of the diagnosis. Some of the cases which showed malarial parasites in the blood—notably, for example, Case 26, p. 270—might be questioned, but about the majority there is not the slightest doubt. The only point

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lacking in the reports of the cases is the absence of careful blood counts per cubic millimetre and differentially. It is a pity that so good a chance was lost.

The volumes as a whole, then, form a valuable contribution to our knowledge of yellow fever, and they will no doubt give rise to criticism and discussion. One word of warning to those who administer the West Coast colonies—*Stegomyia fasciata*, the carrier of yellow fever, seems to be as prevalent as ever in many parts of the coast. Now is the time to act against it. To wait until another epidemic appears will be too late. To be forewarned is to be forearmed; remove the intermediary and there will be no further trouble with the disease it carries. The examples of Cuba, Panama, Colon, and Rio point the way.

Enteric Fever.—The Department of Militia and Defence have just announced that for the twelve months ending December 31, 1916, only 167 cases of typhoid fever were reported as having occurred amongst the many thousands of men of the Canadian Expeditionary Force in Canada, notwithstanding the fact that typhoid fever is endemic in all parts of Canada, and is a disease especially affecting young adults from 17 to 30 years of age. This comparative freedom on the part of the Canadian Expeditionary Force is seen to be most striking when it is recalled that during the Boer war one man out of every nine in the British forces in South Africa was invalided through this disease, and that in the Spanish-American war, of 107,000 men in the camps at Tampa, Florida, and elsewhere, who had not left the shores of the United States, 20,000 contracted the disease. The remarkable change can only be attributed to inoculation. The Provincial Board of Health for Ontario has supplied to date all the typhoid and paratyphoid vaccine used by the entire Canadian Expeditionary Force (about 450,000 men). In all, nearly 600,000 doses have been supplied free of cost.

At the German Congress of International Medicine, which has been in session at Warsaw, Surgeon-General Huenermann reported that in the worst typhoid month (December, 1914), since the war began the number of typhoid cases in the German army was only one-fourteenth as many as in the worst month of the Franco-Prussian War, when the total number of German troops in the field was far smaller than now. The use of the Pfeiffer-Kolle anti-typhoid vaccine, which is now in general use, has, he said, been given in millions of instances without any serious consequences, and it was due to this vaccine that such a wonderful reduction of typhoid fever cases has been brought about.

To quote an extract from the London *Times*' report of the speech in the House of Commons on March 1 of Mr. H. W. Forster, financial secretary to the War Office:—

Nothing in the war was more striking than the triumph of science over disease. One of the most remarkable phenomena was the almost total disappearance of enteric fever, the dread scourge which in former wars had decimated our armies even more effectually than the efforts of the enemy. That was the more surprising when one considered the vast numbers of men, their density on the ground, and the poisoned condition of the soil, especially in France.

The last weekly returns of the number in hospitals suffering from typhoid fever were: France, four cases; Saloniki, nine; Egypt, three; Mesopotamia, eight; total, 24. The fever among British troops in France up to November 1 last year was 1,684; para typhoid 2,534 and indefinite cases 353, a total of 4,574. In the South African war nearly 60,000 cases were admitted to hospital, and there were 8,227 deaths. Thus several times as many died from this disease in South Africa as there were cases in France up to November 1 last.

The admission ratio of typhoid fever among the troops in France who had not been protected by inoculation was fifteen times higher than amongst those who had been inoculated and the death ratio was seventy times higher.

Leprosy.—There are at present in your lazaretto at Tracadie, N.B., thirteen leper patients, six males and seven females. This is the smallest number for many years past. There were two deaths during the year. There were not any admissions. Ten are of French-Canadian origin, one of Icelandic, one of Russian, and one of Assyrian.

The Medical Superintendent, Dr. Langis, reports in part as follows: It is now six months since we resumed the treatment by means of intramuscular injections of chaulmoogra oil, combined with camphor and resorein. We inject 5 c.c. of this compound once a week. The good results obtained at the San Lazaro Leper Hospital, Manila, and elsewhere, by administering the oil with the hypodermic syringe, these last three or four years, decided five of our patients to submit to the objectionable pain caused by the needle. It is sore, especially the young ones find it so, but the good derived from it more than compensates the suffering, which generally does not last long. There have been no inflammatory processes following these injections.

The inmates taking advantage of this treatment from the very first experienced some relief, and if they continue a few months longer we hope to find them greatly improved.

To this date, with two female patients, thirteen and nineteen years old, the youngest has improved the most. The few nodules on her face are disappearing; also the characteristic macules and infiltrated patches on her body. The other is an advanced case, but with her so far the improvement is remarkable.

With the other women, one a tubercular, the other a mixed type of leprosy, the disease is not progressing. Results obtained so far are encouraging.

The fifth case, a male, suffered with keratitis, but the opacity on the cornea is slowly disappearing.

The evidence in favour of chaulmoogra oil so administered is well demonstrated in our small colony by comparing almost similar cases of the disease who obstinately refuse the injections. They are complaining and getting worse every day. The disease with them is fast progressing.

The medical superintendent of the Lazaretto writes: "I wish to express my deep appreciation of the good sisters for their unflinching assistance and co-operation. The sublime service rendered by them to our unfortunate lepers especially during the last and most trying stage of the disease, cannot be given in words to do them justice."

To this I desire to add my tribute of praise and appreciation. Nothing could be nobler than the self-effacing devotion exhibited in their attendance on the lepers, evidently from the highest possible sense of religious duty.

In the United States in 1915, special blanks sent to the health departments of states and to cities having a population of over 10,000 at the time of the 1910 census asking for information regarding the known occurrence of leprosy in their respective jurisdictions during the calendar year 1915. The following table gives the information furnished in the blanks returned. It is probable that there were a few known cases in cities from which no reports were received. Undoubtedly there were also a number of cases which were not reported because their existence was unknown to the health departments.

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REPORTS of Leprosy, by States, for 1915.

| State. | Reported during 1915. | Died or removed, 1915. | Present Dec. 31, 1915. | Isolated under State control. | Isolated under local control. | Not isolated. |
|---------------------------|-----------------------|------------------------|------------------------|-------------------------------|-------------------------------|---------------|
| District of Columbia | | | 1 | | 1 | |
| Hawaii | 70 | | 670 | 670 | | |
| Leper settlement, Molokai | | | 614 | 614 | | |
| Kalihi Hospital, Honolulu | | | 56 | 56 | | |
| Louisiana : | | | 102 | 102 | | |
| Lepers Home of Louisiana | | | | | | |
| Massachusetts | 2 | | 12 | 12 | | |
| Penikese Hospital | | | 12 | 12 | | |
| Michigan | | | (1) | | | |
| Bay City | | | 1 | | | |
| Big Rapids | | | 1 | | | |
| Three Rivers | | | 1 | | | |
| Minnesota | 1 | | 10 | (2) | (2) | (2) |
| Albert Lea | | | 1 | | | |
| Cokato | | | 1 | | | |
| Elbow Lake | | | 1 | | | |
| Brown County— | | | | | | |
| Linden Township | | | 1 | | | |
| Maple Bay | | | 1 | | | |
| Minneapolis | | | 2 | | | |
| Montevideo | | | 1 | | | |
| Freeborn County— | | | | | | |
| Moscow Township | | | 1 | | | |
| St. Paul | | | 1 | | | |
| Oregon | 1 | (3) 1 | | | | |
| Philippine Islands | 841 | | 4,472 | 3,972 | 250 | 250 |
| Culion | | | 3,680 | 3,680 | | |
| San Lazaro | | | 292 | 292 | | |
| Various Provinces | | | (4) 500 | | 250 | 250 |
| Porto Rico | 3 | | 37 | 37 | | |
| Leprosy colony | | | 37 | 37 | | |
| Tennessee : | | | 1 | | | |
| Slayden | 1 | | | | | |
| Washington | | | (5) | | | |

¹ The health officer estimates at least 15 cases in Michigan.
² The health officer states: "In one sense, none; in another sense, all, because we advise how these cases shall be handled. All cases, however, are practically isolated at home or in some institution. One case is isolated on a county poor farm."
³ Patient died October 7, 1915.
⁴ Estimated
⁵ Some cases at Diamond Head, not under State control.

A French historian in connection with the introduction of the alleged cure for tuberculosis by Dr. Friedmann a few years ago, calls attention to the little-known fact that the medicinal use of the sea turtle is by no means of recent date.

On July 8, 1483, King Louis XI of France sent George the Greek, master mariner, to the Cape Verde islands to seek "various things touching nearly to the well-being and health of our person." The Cape Verde islanders had the reputation of possessing a cure of leprosy, a report of which had been brought back to France by a traveller from the coast of Guinea at about the time King Louis was in declining health. According to the recital of this traveller, the big sea turtles were caught by the islanders when they came out on the beach at low tide to feed. They were at once killed and their blood caught in large tubs. Persons afflicted with leprosy bathed in the blood and afterwards ate of the turtles' flesh. This treatment was kept up for two years, at the end of which time the patients were usually completely cured of the dreadful disease.

This record would tend to show that Louis XI was a leper. That such was the case had been rumoured by chroniclers, but the reason of the expedition to the Cape Verde islands, now published for the first time, throws much light on the psychology of Louis XI, his ill-humour and his sedulous avoidance of mankind during the last days of his life. The wretched man evidently believed himself smitten with leprosy. He was, however, never fated to test the efficacy of the sea turtle remedy for he died August 30, 1483, before the return of the expedition.

In the *British Medical Journal*, October 21 last, Sir Leonard Rogers, Professor of Pathology, Calcutta, inserts a preliminary note on the intravenous injection of gyncardate of soda in leprosy. He writes as follows:—

In a recent paper I recorded a long experience of gyncardates by the mouth, and six months' use of solutions injected subcutaneously in the treatment of leprosy, and stated that this line of treatment had given greater improvement in my hands than any other. I find from my correspondence that as early as July, 1912, I inquired from a leading firm of manufacturing chemists if they could supply me with a soluble form of gyncardic acid or magnesium gyncardate suitable for hypodermic injection, but received a reply in the negative. In my recent paper I regarded gyncardic acid and chaulmoogric acid as synonymous on the strength of the following statement in the last (1915) edition of Martindale and Westcott's *Extra Pharmacopoeia*: "Chaulmoogra oil contains a quantity of palmitic acid, with three other fatty acids; of these the so-called gyncardic acid (chaulmoogric acid) is supposed to be the active ingredient."

Dr. Pyman has kindly informed me that this view is erroneous, as the work of Moss, and subsequently of Power and Gornall, showed that, on fractionizing the total fatty acids of chaulmoogra oil, those with the higher melting points, including palmitic and chaulmoogric acids, the sodium salts of which are very sparingly soluble in water, first separate, while Moss gave the name of gyncardic acid to the residual acids with low melting point of about 29° C., the sodium salts of which are freely soluble in water. According to Power and Gornall, Moss's gyncardic acid is not an individual substance, but is composed of a number of fatty acids with different melting points.

What I have used, then, for hypodermic injection in leprosy are the soluble soaps of lower melting point, fatty acids of chaulmoogra oil, which, following Moss, are rightly designated gyncardic acid, and which give the characteristic reddish-brown colour changing to olive green, with strong sulphuric acid. By further fractionization, several acids with different melting points can be separated, which may conveniently be called fractions B, C, etc. During the present year I have been isolating and investigating these with the help of Dr. Sudhamoy Ghose, D.Sc.Edin., working in the laboratory of Professor Rai Chuni

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Lal Bose Bahadur, and aided by a grant from the Indian Medical Research Fund, obtained through the kindness of Sir Pardey Lukis, Director-General Indian Medical Service, to each of whom I desire to express my thanks.

I have now discovered that the sodium salts of the lower melting point fatty acids can be safely given intravenously in animals in relatively very large doses, and I have already used them intravenously in some twenty well-marked leprosy cases during the last six weeks, with results which clearly show the intravenous route to present important advantages over the subcutaneous one. I therefore propose in the present paper to place on record briefly my methods so as to allow others to test them in this distressing and widely prevalent disease. I should mention that M. Vahram has recently recorded cases of leprosy treated by subcutaneous and intravenous injections of a suspension of a dried and pulverized mixture of chaulmoogra oil and gum arabic, the dose of the oil having been only from $\frac{1}{400}$ to $\frac{1}{50}$ of a grain; yet two cases were reported as improved after some thirty injections. I find the sodium gynocardate I have been using is two hundred times less toxic for rabbits than his insoluble dried chaulmoogra oil, while my preparations have the immense advantages of being freely soluble in water, being, indeed, just the form of substance in which fats are normally absorbed from the digestive canal through the blood vessels, so the soluble gynocardates appear to possess manifest advantages over Vahram's insoluble suspension of dried chaulmoogra oil, which was fatal to rabbits in the small doses of 0.0004 gram per kilo.

These substances may be prepared either from the cold-drawn chaulmoogra oil, or, as I pointed out in my former paper, from the buttery substance obtained by further compression of the seed of *Taraktogenos kurzii* (products of which alone are dealt with in this paper, although hydrocarpus oils are also being investigated, but the soluble sodium soaps of which have been found to be more irritating when injected subcutaneously than those of *Taraktogenos kurzii*) with the aid of heat obtained by steam circulating around the compression chamber. Hitherto this product has been regarded as a waste product, although I have found it to contain a large proportion of the active substances of the oil. Briefly, the method of preparation is to saponify the oil or butter with caustic potash and absolute alcohol, the soaps thus obtained being converted into fatty acids by means of sulphuric acid. These fatty acids are dissolved in hot alcohol and separated into fractions with varying melting points by gradual cooling and removal of the acids, which solidify at differing degrees. The fractions thus obtained may be further purified by dissolving in ether and recovering again by evaporating off the solvent, by which means they are rendered somewhat less irritating when the sodium salts are injected subcutaneously, for which purpose they must be neutralized accurately with the aid of phenol-phthalein. When about two-thirds of the fatty acids have thus been separated the residual third, which is liquid at room temperature in Calcutta (about 28° C.), is obtained by distilling off the alcohol, and may be previously termed gynocardic acid C. Of the first separated two-thirds those with the higher melting points of from 43° to 40.8° C. form sodium soaps which are insoluble, or only slightly soluble in water, and may be termed fraction A. They include palmitic and chaulmoogric acids, and are unsuited for either hypodermic or intravenous use, while it is very doubtful if they are of any value internally. They constitute about half of the total fatty acids. The remaining acids of this two-thirds have melting points from 37° to 40° C. and form sodium soaps which are freely soluble in water and may be termed gynocardic acid B. A still larger number of fractions may be separated out if desired, as we have recently done. The best product for clinical use which we have yet obtained was got by extracting finely divided and dried *Taraktogenos*

seeds with ether and subsequent fractionization as above. The sodium soaps of fractions B and C mixed together caused very little local irritation when injected subcutaneously, while the observations on intravenous injections recorded later in this paper are mainly based on the use of this product, which clearly contains all the lower melting point acids of both the cold compressed oil and the butter obtained by further compression of the seeds with heat. It will be referred to as fractions B and C of the whole seed.

First, with regard to the further progress of the three cases described in my first paper. Case 1 has not been seen again, but I have received reports that the satisfactory condition recorded previously is maintained. Case 2 wrote to me several months after his return to Europe that a leading British authority had declared him to be free from all active signs of the disease, so he may be regarded as apparently cured, although a longer period must elapse before it will be evident if the recovery will be permanent. Case 3 is still under observation, although she has only been able to attend very irregularly for the injections. After a month's absence she returned with slight recrudescence of the macular patches, but improved again with further treatment, but is still not clear of the disease, having given the method no fair trial.

I have now just completed a year's experience of the subcutaneous method, but owing to my cases having been, with one exception, entirely out-patients or very advanced cases in a leper asylum, and to the earlier preparations in particular having given rise to considerable local pain and induration, only one patient has been under observation for the full period of a year, and eight more have been under regular treatment for six months and over. Five of the cases were of the anaesthetic type and four tubercular. The former includes the patient who has been under observation for a full year, and at the end of eight months all the light patches had disappeared and sensation had returned to them, which was complete except in the largest patch, where there is still slight loss of response to a light touch. An ulcer early healed, and he has regained power in one foot which previously showed foot-drop. During the last four months he has only received occasional injections, so as to keep him under observation, and he continues free from symptoms and appears to be practically cured. Two other cases in which the hands were affected have nearly regained the lost anaesthesia and some power, and continue to improve steadily. The fourth case showed typical claw hands, with great loss of sensation and power, and also foot-drop, as well as anaesthetic patches on the face and neck. After six months' treatment he has regained nearly all the lost sensation, except in one hand, where it is partially restored, and much of the power, being able to shave himself with a razor, and his case is most promising. The fifth anaesthetic patient improved so much that after eight months he considered himself cured and went to his country against advice. He returned after four months with some return of anaesthesia and is improving again under the intravenous treatment. The results, then, in the anaesthetic cases may be regarded as very promising.

Of the four tubercular cases one advanced case in a boy has been under treatment for ten months, during which greatly thickened and nodular ears have become smooth, and his face is now normal. Very few broken down bacilli could be found at the last microscopical examination, and he appears to be nearly free from the disease, the improvement having been most remarkable. The second case showed a number of tubercles on the chin and nose, up to half an inch in diameter, being the most advanced case I have ever seen. Here again the improvement after eight months has been great, although numerous bacilli can still be found, and progress is slow. It has been more rapid since intravenous injections have been given. Two other cases with well

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marked facial affection have also greatly improved after seven and eight months' treatment respectively, but are still not well. In addition, an earlier case with affection of the face, and hard nodes on the arms containing numerous bacilli at first, after treatment for four months has lost nearly all his lesions, and no leprosy bacilli could be found in the remains of a node recently examined, so in this case the outlook is very hopeful. On the whole the tubercular cases have responded rather more slowly to the treatment than the anaesthetic ones, while I have noticed that there is greater local pain and induration at the sites of the injections in the former class. It is not improbable that intramuscular injections of sodium gynocardate would be more rapidly absorbed and more effective than subcutaneous ones, but I have not yet tested this point. Dr. Victor G. Heiser obtained his very favourable results in leprosy by intramuscular injections of chaulmoogra oil combined with camphorated oil and resorcin.

In the case of pigeons the minimal lethal dose of a 2 or 3 per cent solution of fractions B and C was 0.045 gram per kilo. Of fraction B it was 0.04 and of fraction C 0.06 per kilo., so the sodium soaps of the lower melting point acids are less toxic for pigeons than the lighter melting point ones; 4 and 5 per cent solutions are more toxic for pigeons than 2 and 3 per cent ones containing the same amount of the drug. In the case of rabbits, 0.1 gram per kilo. in a 3 per cent solution proved fatal, but 0.075 produced no effect, although it is equivalent to 78 grains in a man of 80 kilos., showing the very slight toxicity of the drug even intravenously. Lieutenant-Colonel W. D. Sutherland, I.M.S., Imperial Serologist, has very kindly tested the haemolytic action of sodium gynocardate, and he informs me that it produces a slight and interesting type of haemolysis, but one which is negligible from the practical point of view. When death takes place in pigeons it occurs within one to four minutes with convulsions. If this period is survived vomiting often occurs, but is followed by recovery. When over 1 grain had been given without any harm in rabbits of 1.500 grams, equivalent to over 50 grains in a man of 70 kilos., I felt justified in trying the drug intravenously in leprosy cases, beginning with one-tenth of a grain, and increasing by one-tenth at each successive dose, using a 2 per cent solution, and have already given up to four-fifths of a grain with no immediate effect, or any sign of toxic influence, apart from the local reactions and fever to be described later, and rarely some headache.

A 2 or 3 per cent solution may be made in distilled water (or normal saline), and after sterilization in an autoclave $\frac{1}{2}$ per cent carbolic acid is added. For intravenous use the solution should be quite clear, and if any precipitate forms it should be filtered and resterilized. The veins in the forearm are distended by stretching a stout piece of rubber tubing around the upper arm, one end being put through a loop under the other, so that it can be rapidly loosened by pulling out the loop. If the veins are very small the air bag of a sphygmomanometer may be used and pumped as tight as necessary to fully distend the veins. The selected vein is punctured through the skin of the forearm or hand with a fine sharp needle, and, if there is any doubt about the vessel having been entered, a drop of blood may be drawn up in the syringe, and the whole quickly injected before clotting can take place. The pressure hand may now be released, the needle withdrawn, and collodion applied on cotton wool. Little or no irritation results if some of 2 per cent solution escapes into the tissues around the vein, so the same vessel may be used repeatedly.

The two great advantages of the intravenous over the subcutaneous method are its painlessness and greater efficiency. As nearly all my cases are Indian out-patients, over whom there is no control, some of them ceased to attend long before any material result could be expected from the subcutaneous injec-

tion on account of the pain and induration at the seat of injection. Since the intravenous route has been used no such disappointments have been experienced. Of much greater importance is the more rapid improvement which has been observed to follow the intravenous injections, which is already clearly evident. Several months are required to produce any decided improvement by the subcutaneous method, while, especially in tubercular cases, the progress is apt to be disappointingly slow even after it has started. It is far too early to say what will be the ultimate results of the intravenous medication, but my present experience is decidedly encouraging.

The most striking result is the occurrence of definite local reactions in the diseased tissues, sometimes accompanied by fever, which has been seen in several cases after from two-fifths to three-fifths of a grain of sodium gynocardate intravenously, of a degree that I have not seen occur after subcutaneous injections, although Dr. Heiser has recorded some local reaction after intramuscular injections of chaulmoogra oil, and I have seen more rapid improvement of lesions in whose neighbourhood the subcutaneous injections of gynocardates have been made. The most decided reaction was in the greatly thickened ears of a tubercular case, in whom fever occurred for three days with redness and swelling of the helix, accompanied by some serious discharge containing broken down leprosy bacilli. After the subsidence of the reaction at the end of ten days the diseased tissues were decidedly softer and less indurated than before, while nodules on the face, not showing the local reaction, were also diminished in size. In another case with very large tubercles on the face, a similar but less acute reaction was also followed by distinct improvement. In two anaesthetic cases, with greatly thickened ulnar nerves, tenderness and slight swelling appeared in the affected portions after intravenous injections, which has been followed by some return of sensation in previous anaesthetic areas of the hand. One of these patients also had fever, but had been previously subject to it. It is thus clear that intravenous injections of the drug have produced selective local reactions in the diseased tissues, which have been most evident in those patients with the greatest amount of infiltration of the tissues with leprosy bacilli, so they are most interesting and suggestive. It is too early to say whether the drug should be pushed to the extent of producing such reactions, but I am inclined at present to think they are decidedly beneficial when moderate in degree, while I have as yet seen no ill effect to follow them, although the possibility of dissemination of the bacilli in the body must not be lost sight of.

Conclusions.—I have now given about two hundred intravenous injections of gynocardate, and my experience has led me to substitute it almost entirely for the subcutaneous method. Further experience is required to ascertain how far it is advisable to push the doses, but there can be little room for doubt that even half a grain intravenously is likely to have a greater effect than four grains slowly absorbed from a subcutaneous injection. My present impression is that the intravenous method is likely to prove as great an advance on the subcutaneous one as the latter has in my hands on the oral administration of gynocardates or chaulmoogra oil. I desire, however, once more to clearly state that I make no claim to be able to cure leprosy, although I now have hopes that in time even this may eventually result from continued researches on the lines indicated in this and my previous paper on gynocardates, which are largely an extension of Dr. Heiser's important work on the treatment of leprosy by injections of chaulmoogra oil.

In conclusion, I may point out that the reactions produced by gynocardates in leprosy tissues, and the apparent destruction of Hansen's bacillus, raises the very important question as to whether some such similar reaction may not be obtained in the case of another human acid-fast bacillus—namely, that of

tubercular diseases. Fortunately, this hypothesis can be tested by animal experiment, and I have already commenced a research on the subject.

Beri-Beri.—The Medical Journal of January 27, 1917, has the following:—

It is in a high degree interesting to observe that the importance which diet plays in the production, prevention, and treatment of disease is now generally recognized. This recognition is due, to some extent, to increased and more definite knowledge as to the diet necessary for nutrition and growth. It used to be thought that such diet should consist solely of proteins, carbohydrates, fats, salts, and water. This view, however, has been revised by the discovery by Funk and others that a diet, to fulfil all the conditions requisite for normal nutrition and growth, must contain also vitamins. Our knowledge of these vitamins is yet very far from complete, but enough has been ascertained by experimental research and by clinical experience to state that when these substances are lacking nutrition suffers; and that, following a diet from which the vitamins have been removed, disease supervenes. Diseases of this nature have been denominated deficiency diseases, of which one of the most typical is beri-beri.

The deficiency theory of beri-beri is strongly borne out by a careful consideration of all the circumstances. Experimentally, it has been demonstrated that by feeding fowls on polished rice a polynéuritis is brought about, a condition is produced, indeed, pathologically indistinguishable from beri-beri. Furthermore, when rice polishings are added to the rice, the birds rapidly return to the normal. It was in this manner that Funk showed that there was present in the aleurone layer of the rice grain an organic substance the absence of which caused beri-beri.

But the proofs that beri-beri is a deficiency disease are eminently conclusive from the clinical standpoint. As Marshall Findlay points out in the *Practitioner* for January, 1917, the experiments of Frazer and Stanton in Java are almost classical. In these experiments four hundred and ninety-three Japanese coolies were employed; of these, 220 were fed on white rice, the remainder on the non-polished variety, with the result that among the former class twenty cases of beri-beri developed, while among the latter there were no cases. Instance can be piled upon instance in which the continued consumption of rice deprived of its pericarp and the greater part of its aleurone layer has been followed by beri-beri; and per contra, when the deficiency has been supplied, the disease has speedily been cured.

It is probable, in fact more than likely; that there are other predisposing causes, of which the most important, according to Findlay, are the temperature and relative humidity of the atmosphere. In the Philippines, beri-beri is much more common among men than women, although the diet of both sexes is practically the same. The men, however, are largely employed in mines, in which the air is hot and moist.

In the *Lancet* of March 11, 1916, Wilcox contributed an especially able paper on beri-beri, in the course of which he dealt exhaustively with the treatment of the disease, and pointed out that the vitamine for preventing beri-beri or polyneuritis in animals is different from that which prevents scurvy. He further drew attention to the fact that yeast is a substance which is perhaps the richest in anti-beri-beri vitamine, and that egg-yolk, brain, liver, kidney, sweetbread, oatmeal, haricot beans, and peas, are all fairly rich in vitamine. In the treatment of beri-beri, first of all, when available, yeast should be given. Three or four raw eggs should be given daily. Pea soup is a valuable article of diet in the treatment of this condition, and naturally all foodstuffs which contain the largest amount of anti-beri-beri vitamine are indicated. Moreover, a valuable addition to such dietary will be fresh lemon juice.

Vitamines is the new word that is attracting so much attention in the medical world at the present time. It signifies certain qualities in food materials which are essential to normal vitality in animals and human beings, though their presence has been up to this time scarcely suspected and though they exist in quite small quantities. Whenever they are entirely absent from the diet of a particular individual he will eventually suffer from a severe painful condition of nerves and certain mutilating developments in the skin.

For instance, when rice is polished before being eaten certain materials are removed which are necessary to health, and if rice is a large factor in the diet beri-beri results. The same conditions with regard to corn lead to pellagra. Highly milled wheat is lacking in vitamins, but usually the people who eat white bread supply their vitamins from other sources. They must be healthy. Sterilized milk is always lacking in vitamins, and pasteurized milk very probably also, the heat destroying these substances.

Apparently the vitamins, as the name would imply, represent certain vital qualities in foodstuffs which may be rather easily destroyed or removed. Because of their presence a great many important foods are more healthful if taken in the natural state.

Dr. Casimir Funk, of New York, claiming to be the author of the term "vitamin," writes to the *Journal* as follows:—

The following statements I wish to make in justification of my position as the author of the term "vitamin" as well as in refutation of some of the statements printed in your editorial entitled "What is a Vitamin?" (*The Journal*, May 6, 1916, p. 1470). I have no doubt that the sense of justice and fairness which have always impressed me in your publication will guide you to publish my letter in an early issue of *The Journal*.

When early in 1911 I started the research which led to the isolation of the vitamin-fraction from various foodstuffs, my work was inspired by the remarkable results of Eijkman, Grijus and Sehaumann, who were able to prove that in rice-polishings and in yeast, substances are present which protect fowls, pigeons and men against beri-beri. My task was then to find out to which chemical group these protective substances belong, and this has been successfully accomplished and described in two publications (*Lancet*, London, November 4, 1911; *Jour. Physiol.*, December 22, 1911). From reasons unknown to me, references to these two early publications are usually omitted in the literature, and the paper of Hopkins (*Jour. Physiol.*, 1912, xliv, 425) is quoted, which has been undoubtedly partially influenced by my work. It was only in 1912 (*Jour. State Med.*, June, 1912) after a careful revision of my experimental data that I introduced the term "vitamin" for these protective substances which are indispensable for life and which, judging from their chemical reactions, belong undoubtedly to the group of organic nitrogenous bases. Later on I went farther, and a few substances were isolated and analyzed which, I have reasons to believe, are chemically related to the original vitamin present in less purified fractions. I am glad to say that even now, after five years, there is not a single paper in the existing literature able to refute my experimental data. That the introduction of the term "vitamin" was justified we can judge from the quick succession of terms used to designate the same substances: torulin of Moore, oryzanin of Susuki, antiberi-berin of Tsuzuki, accessory substances of Hopkins, and finally substances A and B of McCollum. If terms could only be applied to chemically pure, fully identified substances, 90 per cent of the already existing names in the physiologic chemistry would have been discontinued (example: names of ferments, hormones, proteins, nucleins, polysaccharids, lipoids, cerebrosids, etc.).

As to the necessity of two different substances (one soluble in alcohol and the other in water) for growth of young animals, the work done in conjunction with A. B. Macallum was not able to substantiate it. Vitamin is soluble in alcohol and more so in water, but we are dealing here with one and the same substance. Our present results so far show that the beri-beri-vitamin suffices for growth of young rats; for long maintenance (over sixty days) a small supply of antiscorbutic vitamin seems necessary; otherwise scurvy with even slight rachitic symptoms occurs in rats. This condition can be avoided by using autolyzed (wet) yeast or orange juice, in difference to dried yeast, which apparently possesses no anti-scorbutic properties for rats. So far in our experiments butter was found to have no action on the growth of rats, but was found to have slight antiscorbutic effect (scurvy-vitamin carried down from milk). In order to avoid further complications and fallacies in the already complicated problem of growth in rats, we wish to test our preliminary results in all directions before final publication; but we find that some of the recent results on the growth of rats, on which your editorial is based, give not the slightest justification for the discontinuation of the term "vitamin."

In the same issue of *The Journal*, Dr. E. J. Wood deals with pellagra as being due to a deficiency of vitamin. Apparently by mistake my name was omitted as the originator of this hypothesis (*Jour. State Med.*, June, 1912; "Die Vitamine," Wiesbaden, 1914). Later on I pointed out (*Jour. Physiol.*, December, 1913; *Michen. med Wchnschr.*, 1914, No. 13) that the acute form of pellagra prevailing in the United States might be due to the use of extensively milled corn, to which conclusion Dr. Wood also arrives.

E. B. Vedder, Washington, D.C., ends an article on the relation of diet to beri-beri with the following conclusions: "As there are many conditions under which it is difficult for certain people and institutions to produce a rich and varied diet, I should like to repeat and emphasize the simple dietary rules which I have elsewhere formulated for the prevention of deficiency diseases: 1. In an institution where bread is the staple article of diet, it should be made from whole wheat flour. 2. When rice is used in any quantity, the brown undermilled, or so-called hygienic rice, should be furnished. 3. Beans, peas or other legumes, known to prevent beri-beri should be served at least once a week. Canned beans or peas should not be used. 4. Some fresh vegetables or fruit should be issued at least once a week and preferably at least twice a week. 5. Barley, a known preventive of beri-beri, should be used in all soups. 6. If corn-meal is the staple of diet it should be yellow meal or water-ground meal, that is, made from the whole grain. 7. While potatoes and fresh meat, known preventives of beri-beri and scurvy, should be served at least once a week, and preferably once daily. 8. The too exclusive use of canned goods must be carefully avoided. I am sure that the strict application of these rules will eradicate scurvy and beri-beri, and believe that they would be equally efficacious in eradicating pellagra.

Dengue. Since the original work of Graham in 1903, of Bancroft in 1905, and of Ashburn and Craig in 1907, *Culex fatigans* has generally been supposed to be the real carrier of dengue. It is true that Bancroft had apparently two successful cases of infection with *Stegomyia fasciata*, the subjects being bitten by such insects twelve and ten days after they had bitten dengue patients. Clelland, Bradley, and McDonald have recently followed up the insect carrier in an epidemic of dengue which was raging in Queensland, and had extended to some of the north coast towns of New South Wales. In a critical analysis of the previous work they point out that Graham admits that in many, perhaps in all, of his experiments *Stegomyia fasciata* was present amongst his mosquitos, and that therefore all he proved was that mosquitos can carry the disease, the variety, or varieties remaining in doubt. They further criticize Ashburn and Craig's account of transmission by *Culex fatigans*. "The successful

case," they say, "was probably one of dengue, but arguing on analogy with yellow fever, the very short mosquito 'ripening' period (less than two days) would make one accept it with reserve as originating from the mosquitos. One cannot certainly exclude the possibility of there being other sources of infection. Failing other evidence, the case is undoubtedly very suggestive of the possibility of *Culex* being a vector of dengue, but we can hardly understand the importance attributed to this isolated case by most textbooks." The three observers made two series of mosquito experiments. In the first, four persons were bitten by *Stegomyia* and two by *Culex*. The results were negative. There was, however, a large mortality in the mosquitos collected, and, except one individual who received ten bites, the bitings were unsatisfactory; these results are not further referred to in the paper. In the second series of experiments a collection of about 100 *Stegomyia fasciata* and 112 *Culex fatigans* was made from the district in which dengue fever had occurred; in some cases the insects were taken from the actual bedrooms where patients were lying sick with the disease. This heterogeneous collection was then given the chance of feeding upon a dengue patient, and many of both types bit freely. They were then taken to Sydney, a town free from dengue cases, and there produced the disease in four out of seven persons on whom biting experiments were made. That the disease produced was really dengue was proved by the fact that blood taken from three of the cases reproduced the disease when injected into other persons. Two cases were heavily and repeatedly bitten by *Culex fatigans* with no result. These experiments prove that *Stegomyia fasciata* can spread the disease, but whether *Culex fatigans* also may not do so is not quite clear from the context of the paper. It is, at any rate, not absolutely disproved. The failure of *Culex fatigans* to produce the disease in the two cases mentioned may have been due to non-infection of the insects or to some insusceptibility of those bitten. More experiments are required to prove this point. It would be well to rear the mosquitos from larvae and then let them bite infected cases; this would also afford useful information as to the length of the cycle of development in the mosquito, the incubation period in man, and other interesting points. The observations, however, as they stand are very interesting and suggestive, though they do not finally settle the point as to whether one genus of mosquito or more is implicated in the spread of dengue.

Anthrax.—A fatal case of anthrax was reported March 8, 1917, as occurring at Longwood, in the vicinity of Huddersfield, England, in an employee in a woollen mill at that place. The patient was a man who had been working at a shaking machine at which dust was shaken from the wool and carried by a fan into another room. The wool originated mostly in the East Indies. The type of the disease in the case reported was internal or pulmonary anthrax. A second case occurred on the 15th instant.

Acute Anterior Poliomyelitis. (Infantile Paralysis.) D. James J. Walsh points out that this is not a new disease. If any one, he says, will go to the Philadelphia Museum he will find there the skeleton of a little prince of one of the early dynasties of Egypt who lived more than 4,000 years ago and who was crippled by infantile paralysis.

The form of crippling by this disease is so typical that Dr. John K. Mitchell, the son of Dr. S. Weir Mitchell, of Philadelphia, did not hesitate to make the diagnosis even after this length of time. Besides there are a number of pictures of the sixteenth and seventeenth centuries which present victims of infantile paralysis. Some of Murillo's pictures of the objects of charity down the centuries painted as decorations for the Hospital at Seville in Spain present some of them. Spanish painters were very realistic in their studies of such subjects, and so it is not hard to recognize the actual diseases present.

Indeed, the hardest thing in the world I know of, after years spent at the history of medicine, would be to find a new disease that we were sure was new. Tuberculosis has been traced back for more than 4,000 years; hints of cancer are to be found for as

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long as the memory of man runneth. Bubonic plague has been definitely traced 1,000 or more years before Christ.

The name for appendicitis is only twenty-five years old, but the disease has been traced far beyond and is as old as mankind's present stage of anatomy. Hookworm disease is familiar only for ten or fifteen years, but Dr. Sandwirth, of Cairo, finds traces of it in Egypt more than 3,000 years ago. The examination of the arteries of mummies shows "hardening of the arteries," that latest disease to attract attention, in existence 2,000 years before Christ. Infantile paralysis in ancient Egypt then would be no surprise. Since 1905, infantile paralysis has appeared more or less frequently throughout North America, from the Atlantic to the Pacific and from Alaska to the Gulf of Mexico. As a rule the disease has occurred in isolated form; but, occasionally, there have been severe and alarming epidemics. There have been cases of anterior poliomyelitis—as infantile paralysis is scientifically known—in every state in the Union and in every large city each year for a number of years past. Epidemics have occurred in New York in 1907, in Minnesota and Nebraska in 1908-1909, in Iowa in 1910, in Ohio and Kentucky in 1911, in New York State in 1912. The disease appeared in epidemic form in the city of New York during the early part of last summer (1916).

Since the early summer of 1916 there have been 24,000 cases of infantile paralysis in the United States. Eighteen thousand of these were in New York City and the adjacent territory, in the States of New York, New Jersey, Pennsylvania, Connecticut and Massachusetts, the Borough of Brooklyn being the first to become infected.

In the Montreal district, from October 16 to 25, there have been twelve cases of infantile paralysis in Westmount, and only one since the last-mentioned date. In Verdun, there have been only two cases before the 24th of October. In Montreal West, they had two cases on the 25th of October. In Lachine, there was only one case on the 26th. In Ville Saint-Pierre, they have had three cases previous to the 24th of October. In Outremont, there has not been a single case reported. And in Montreal where there had been eighty-five cases from January until the 26th of October, we have had since this last date three cases on the 27th, two cases on the 28th, two cases on the 30th, two cases on the 31st, one case on November 2, one case on the 3rd, two cases on the 4th and not a single one on the 29th of October, the 1st, 5th, 6th, 7th, 8th and 9th of November.

Infantile paralysis is an acute, infectious disease, usually attacking children, ushered in, as a rule, with the symptoms common to other acute infections and resulting in partial paralysis which comes early in its course. It is caused by the invasion of the brain and spinal cord by a minute germ or organism.

The disease is not as infectious as scarlet fever or diphtheria. In most communities only a very small percentage of exposed persons acquire it. This percentage varies, however, and is usually higher in rural districts than in larger cities. Under certain conditions, which we do not clearly understand, the disease becomes very infectious and epidemics result.

The apparent difference in infectiousness in city and country has been explained by these facts: (1) Only a small percentage of people are susceptible to infantile paralysis. (2) When the disease appears in a community, those persons who are exposed and not immune, acquire the disease and, if they survive the attack, are doubtless immune to a later attack. (3) Infantile paralysis is present more or less constantly in large cities so that exposure of susceptible persons is much more likely than in smaller centres of population. It is this lesser likelihood of exposure of the susceptible person in the smaller and more isolated community which is said to be responsible for the greater percentage of infections and also for the larger number of adults affected in rural epidemics.

Age is an important factor in the disease. As a rule it attacks those under 5 years of age. It is stated that children under 5 constitute but 10 per cent of the total population; but that they furnish 50 to 90 per cent of the cases of infantile paralysis.

In some epidemics, children from 5 to 15 years of age seem as susceptible as those younger.

Not over 10 per cent of cases are among adults.

Practically all epidemics of infantile paralysis and most isolated cases occur during the summer season—between the months of May and November—and there is said to be some connection between the disease and hot, dry weather. On this account, the disease is thought by some authorities on the subject to be spread by dust.

It is interesting to note that the epidemics at Buffalo and Cincinnati occurred during wet weather.

As a rule the disease in the United States has been largely confined to the Northern and North Central states and the chief epidemics have occurred in these sections. Virginia, Mississippi and some other southern states have not entirely escaped outbreaks.

The disease is transmitted, in all probability, by the secretions of the patient, dried or otherwise, coming in contact with the nasal passages or throat of the susceptible person. Experimentally the disease has been transmitted through the digestive tract, but it is not likely that this occurs often.

The fact that the virus so tenaciously resists drying makes it reasonable to assume that the disease is carried in infected dust.

At the present time, it seems that the chief means of transmission are kissing, sneezing and coughing, the two latter throwing the virus into the air whence it is directly carried to the noses and throats of others. Many cases are transmitted by mothers, who, after caring for the noses and throats of children who may be carriers of infection, carry the virus to other children.

Lower animals, birds and fowls very probably suffer from this infection; but it is not likely that man acquires infection in very many instances from these animals. However, poultry, pigs, dogs and cats are still somewhat under suspicion.

In certain cases it has been practically proven that flies carry infection; but this is not the common means of transmission. At one time it was believed that the disease could be transmitted by biting insects carrying the virus in the blood taken from the patient. This is not proven nor have the germs been shown to be present in the blood.

Incidentally, the character of living conditions seem to have little to do with the development of the disease. It develops in clean homes as well as in those which are filthy; and attacks the healthy child as well as it does the weakling.

In recent epidemics it has been possible to prove contact with the sick in only about 25 per cent of cases. This is doubtless due to the large number of undiagnosed cases and the healthy virus carriers.

With regard to prevention.—according to Dr. Simon Flexner, "Protection to the public can be best secured through the discovery and isolation of those ill of the disease, and the sanitary control of those persons who have associated with the sick and whose business calls them away from home. Both these conditions can be secured without too great interference with the comforts and the rights of individuals."

The essential facts upon which our preventive measures rest are:—

- (1) Infantile paralysis is contagious.
- (2) The convalescent patient may carry the organisms of the disease for weeks or months.
- (3) Healthy persons, exposed to infection, may carry organisms in their throats and nasal passages for a long period of time.
- (4) The infectious material comes largely from the nose and throat; but it is also found in the intestinal passages and may be present in the urine and sweat.
- (5) Children are particularly susceptible; but adults are not necessarily immune.

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(6) Infection probably takes place through the mucous membranes of the nose and throat.

(7) The exact means of transmission is uncertain. The disease has been attributed to dust infection, to fly-borne infection, to food infection and to direct contact. It is impossible at this time to say which, if any, of these theories is correct.

In view of this uncertainty, preventive measures to be effective must be very general in character.

All persons suffering from the disease must be rigidly quarantined for a period of at least five weeks.

There should also be quarantine or rigid observation of all persons who have been in contact with patients suffering from the disease.

There should be careful destruction of all discharges from infected persons and of all things contaminated with such discharges. After the death, removal or recovery of the patient, the premises should be thoroughly disinfected.

The virus of infantile paralysis is destroyed by bright sunlight. Hence the quarters occupied by the patient and the rest of the house should permit free access of sunlight at all times. Disinfection of rooms and contents should be followed by thorough sunning.

The public should be warned that convalescent patients may carry the virus of the disease for considerable and uncertain periods after complete recovery.

At the annual meeting of the American Public Health Association held in Cincinnati, Ohio, October 24-27 last, it was moved by Dr. E. P. Lachapelle of Montreal, seconded by Dr. Frederick Montizambert, of Ottawa:—

That in view of the fact that infantile paralysis has existed for several months and still exists in the United States and Canada, taking on in some localities an epidemic character; that considerable anxiety is expressed by the public generally, and that the public, the physicians and the health authorities may well expect an authoritative statement upon the subject from this association in annual convention;

Be it resolved, that the President be forthwith authorized to appoint a small committee of specialists and of those who have had experience of the disease, with instructions to meet immediately and to prepare a report of the present actual knowledge of the cause of the disease, the manner and agents by which it is spread, the best methods of treatment, and the best preventive measures;

And that this committee submit its report before the close of this annual meeting; and that such report be given to the public immediately.

The resolution committee of the association unanimously approved of the above resolution, and, in accordance with it, the president, John F. Anderson, appointed the following special committee: Dr. Haven Emerson, Commissioner of Health, New York City; Dr. Wade Frost, United States Public Health Service, Cincinnati, O.; Dr. A. J. Chesley, Epidemiologist, Minnesota State Board of Health.

Committee Report.—The specific cause of poliomyelitis is a micro-organism, a so-called virus, which may be positively identified at present only by its production of poliomyelitis in monkeys experimentally inoculated. Such experiments have shown this virus to be present not only in the nervous tissues and certain other organs of persons who have died of poliomyelitis, but also in the nose, mouth and bowel discharges of patients suffering from the disease. It has been proved by similar experiments that healthy associates of poliomyelitis cases may harbour the virus in their noses and throats.

These experiments, together with the fact that monkeys have been infected by direct application of the virus to the mucous membrane of the nose and by feeding of

the virus, are strong evidence that in nature infection may be directly spread from person to person.

Observations on the occurrence of the disease might seem at first thought to be inconsistent with this conception, since contact between recognized cases can seldom be traced. However, this may be adequately explained by the lack of means for detecting mild non-paralytic cases and by the belief that healthy carriers of the virus and undetected cases are considerably more numerous than frankly paralyzed cases.

Many facts, such as the seasonal incidence and rural prevalence of the disease have seemed to indicate that some insect or animal host, as yet unrecognized, may be a necessary factor in the spread of poliomyelitis, but specific evidence to this effect is lacking, and the weight of present opinion inclines to the view that poliomyelitis is exclusively a human disease and is spread by personal contact, whatever other causes may be found to contribute to its spread. In personal contact we mean to include all the usual opportunities, direct or indirect, immediate or intermediate, for the transference of body discharges from person to person, having in mind as a possibility that the infection may occur through contaminated food.

The incubation period has not been definitely established in human beings. The information at hand indicates that it is less than two weeks, and probably in the great majority of cases between three and eight days.

If the foregoing conception of the disease is correct, it is obvious that effective preventive measures, approaching complete control, are impracticable, because isolation of recognized cases of the disease and restraint upon their immediate associates must fail to prevent the spread of infection by unrecognized cases and carriers. These difficulties would appear to be inherent in the nature of the disease. Nevertheless, we may hope for the development of more thorough knowledge which will permit of more effective control of the disease than is now practicable. Of first importance is the more general recognition by practitioners of non-paralytic cases through clinical observation and laboratory procedures. Lumbar puncture has been shown to offer valuable aid in diagnosis, and a more general use of this test is to be encouraged, since it not only facilitates accurate and early diagnosis, but in many cases affords symptomatic relief as a therapeutic procedure. Without undertaking to predict the future progress of research, we may hope for certain possible developments which may afford far more effective control of the disease, with substantial relief from many inconveniences at present inevitable. Among these possibilities we would include a practical test for the detection of all clinical types and carriers, a simple and reliable test for distinguishing between susceptible and insusceptible persons, and means of conferring artificial immunity against poliomyelitis.

At present our information demands the employment of the following administrative procedures in attempting to control the disease:—

1. The requirement that all recognized and suspected cases be promptly reported.
2. Isolation of patients in screened premises. The duration of infectivity being unknown, the period of isolation must necessarily be arbitrary. Six weeks has been recommended by the Conference of State and Territorial Health Officers with the Surgeon General of the Public Health Service as sufficient, and this period has been generally accepted throughout the United States.
3. Disinfection of all body discharges.
4. Restriction of the movements of intimate associates of the patient as far as practicable. This should include at least exclusion of the children of the family from schools and other gatherings.
5. Protection of the children as far as possible from contact with other children or with the general public during epidemics.
6. Observation of contacts for two weeks after the last exposure.

There is no specific treatment of established value in poliomyelitis. During the persistence of the acute symptoms of the disease the important principles of treatment

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are rest in bed, symptomatic relief, and passive support for the prevention of deformities. Active measures during this stage are not only useless but are apt to cause serious and often permanent injury. Hospitalization of patients where possible should be encouraged. The best chances of recovery from residual paralysis demand skilful after-care, often long continued, and always under the direction of a physician familiar with the neurological and orthopedic principles of treatment. The provision of such after-care often becomes a community problem, demanding the co-operation of all available agencies, social and professional.

In view of the large number of cases of this disease in the neighbouring states instructions were issued by you requiring every person under sixteen years old desiring to enter over the land frontier, coming from any one of the affected group of states to produce a certificate properly signed stating that the bearer had not the disease, nor had been in contact with any one who had. And the certificate had to be issued not longer than 24 hours before departure. Through the kindness of the Immigration and Customs Services their officers examined and checked these certificates.

This inspection was put on in August and taken off at midnight of 30th November. As far as the United States Public Health Service was concerned the epidemic in New York was officially declared to be at an end on the 5th October.

The inspection of children in interstate traffic was discontinued and the quarantine lifted. Government physicians who had been on duty in that city were directed to report to their regular stations in various parts of the country.

In Philadelphia, quarantine was raised on October 1; and in Baltimore on November 1.

Opening the new Yorkville Forum, at the Lyceum, Eighty-sixth street and Third avenue, Dr. Haven Emerson, Health Commissioner, expressed his belief that there will be no epidemic of infantile paralysis next summer. At the same time he made it clear to the two hundred persons present that common rules for health must be obeyed strictly as a precaution against the disease. He also explained how infantile paralysis could be prevented from spreading.

"Last summer," said Dr. Emerson, "there were 2,400 deaths from infantile paralysis, but we do not expect an epidemic of the disease this summer. The fear of the disease last summer led people to be more careful about their health and continued precautions in this direction will be very helpful as a means of preventing infantile paralysis.

Keep the sick from the well. There are many mothers and fathers who fail to call a physician when their children get sick and allow them to remain ill without professional medical aid for a week or more. By that time the disease is in an advanced stage. Had the parents called in a physician at the beginning a different story might be told.

Since last December there have been reported on an average each month until now two or three cases of infantile paralysis. But the disease is more prevalent in the summer, and we expected to have more cases during that time. There is no reason to believe, however, that there will be an epidemic of infantile paralysis next summer.

The New York Herald of 3rd December last has the following as a special despatch:—

In the laboratories of the famous Mayo Brothers' clinic at Rochester, Minn., a micro-organism has been discovered which is believed by investigators in pathology to be the causative agent of infantile paralysis, which last summer killed or crippled, it is said, nearly twenty thousand American babies.

Dr. E. C. Rosenow, who is in charge of the experiments, will not yet assert positively that the germ which he and his associates, Dr. E. B. Towne, of Roston, and Dr. G. W. Wheeler, of New York, have succeeded in isolating, is the germ

of infantile paralysis, but in what he terms a "preliminary note," presented to the State Medical Society, it is shown that innumerable experiments during the last few months all point in the same direction.

If it be true that the agent of the disease has thus been found—and there is no real doubt in the minds of the scientists acquainted with the experiments that this has been done—then half of one of the greatest battles in modern medical science already has been won. There remains the important task of developing a serum or vaccine, or perhaps both, with which immunity may be established in human beings. Before another summer the world may hear that infantile paralysis has been definitely relegated to the category of such diseases as diphtheria and small-pox and other readily controlled diseases. With the memory of last summer's horror still fresh in the public mind, the full importance of the discovery cannot be overlooked.

Because of the high hopes which the discovery of some mistake or broken link in the present chain of scientific evidence would dash, those interested in the experiments at Rochester are especially chary of making announcements. Nevertheless, Dr. Rosenow's guarded report cannot but have the effect of creating intense public interest in the outcome of experimentation with curative vaccines and serums. It is known that a quantity of both already has been prepared and is being employed upon animals at the Mayo laboratories.

In the "preliminary note," Drs. Rosenow, Towne and Wheeler give the results of their study of the epidemic which was worst last summer in New York. Dr. Rosenow passed more than a month in the thick of the fight waged against the disease by the New York health authorities and the experiments outlined were based upon more than fifty acute cases of the disease both in New York and Rochester.

Inoculation of rabbits, dogs and monkeys with the germ taken from human beings has been followed in every case by the onset of what is called characteristic poliomyelitis, or infantile paralysis. The symptoms produced in the animals are in every respect the same as those witnessed in human beings. Cultures made from dogs and rabbits dead of the disease, when injected into other dogs and rabbits have produced instant and fatal attacks of infantile paralysis.

It is no secret that since the isolation of the germ of infantile paralysis many experiments have been made at Rochester looking to the perfection of a vaccine or serum for its prevention. It should be added, however, that the cure, even if found, would not restore the use of their crippled limbs to children who have been victims of the disease.

More iniquities of the Rat.—The *British Medical Journal* of February 17 last adds another indictment against the rat and its fleas as the carriers of the infective agent in Weil's disease. And Dr. Mark Richardson, formerly Secretary of the Massachusetts State Board of Health has added still another to the list of their enormities by advancing the theory that the rat and its fleas may be responsible for the spread of infantile paralysis.

The *British Medical Journal* says:—

Every man's hand is against the rat. In political circles the rat's character is held to explain the moral turpitude that leads from time to time to defections from the party. Women, it is credibly reported, will fly from the rat with all the alacrity they display in escaping from the dangerous proximity of the domestic mouse. Indeed, one would probably be well within the truth in stating that the rat's only real friend among human beings is the schoolboy, who is apt to cherish white specimens of the race as pets. From the epidemiological point of view rats have had a thoroughly bad name of late years, if only as the presumed involuntary carriers of fleas infected with the bacillus of bubonic

plague, a disease that kills its tens of thousands every year. Rats, too, are the carriers of infection in the rare disease known by the name of "rat-bite fever," of which over eighty cases have been described in Europe, Asia, and America, during the last twenty years. It is of interest to note, while this fever is under discussion, that certain Japanese investigators have quite recently reported that, after investigating two cases of the disease, they have identified a new spirochaete, which they name the *S. morsus muris*, as the cause of rat-bite fever in Japan. This organism is found in about 3 per cent of Japanese house rats, and, a matter of importance from the point of view of treatment, it is most markedly affected by salvarsan. It is true that other scientists have found quite other organisms (aspergilli, telosporidia, diplococci, bacilli) to be the cause of rat-bite fever, and in the *British Medical Journal* of February 19, 1916 (p. 285), will be found an account of Dr. F. G. Blake's confirmation of Schottmüller's discovery that the causal organism of the fever is a streptothrix. But it is pointed out that rat bites may be quite capable of infecting human beings with other diseases as well as with true "rat-bite fever," and that the cases recorded by Schottmüller and Blake differed in several important particulars from rat-bite fever as it occurs in Japan. From the experimental point of view, rat-bite fever may be transmitted from rats to guinea-pigs, as was proved by Ogata in 1911. This experimental rat-bite fever has been investigated by three bacteriologists at Tokyo, and they claim to have proved that the disease is due to a spirochaete that under the microscope differs in form from that described by the four Japanese investigators mentioned above, but resembles it in being sensitive to the action of arsenical compounds. About ten rats out of some forty employed with success in these experiments were found to be carriers of the spirochaete of rat-bite fever.

But this does not complete the tale of the rat's nosological infamy. There is now good reason for believing that rats may also be the carriers of the infecting agent in Weil's disease. As may be seen by reference to any medical textbook, some thirty years ago Weil described an epidemic form of infectious jaundice that has since been known by his name, and is now also known as spirochaetosis icterohaemorrhagica. A variety of jaundice that is similar, if not identical, occurs in Japan; and, as was related in the *British Medical Journal* of April 1, 1916 (p. 491) certain Japanese medical men identified in 1915 a new spirochaete, the *S. icterohaemorrhagiae*, as the organism giving rise to this variety of epidemic jaundice. The identical organism has been isolated from cases of infectious jaundice in France, in Italy, and in the lands of the Central Powers. An account of the occurrence of the same disease in the army in Flanders, written by Captain Adrian Stokes, R.A.M.C. (T.), and Captain J. A. Ryle, R.A.M.C. (S.R.), will be found in the *British Medical Journal* of September 23, 1916 (p. 413). The disease is clearly widespread at the present time, therefore. It is also highly infectious, and has even been caught in a bacteriological laboratory by a very careful worker engaged in transmitting the virus from one experimental animal—a guinea-pig—to another. The pathogenic spirochaetes are excreted in the urine and faeces of the patients, a fact which may indicate the common routes of infection in Weil's disease, and points out the paths along which general prophylaxis against its spread must be sought. But prophylaxis by both active and passive immunization is also possible. A recent paper on the subject by the Japanese doctors Ido, Hoki, Ito, and Wani, establishes the fact that guinea-pigs can be protected against infection by the specific spirochaete in two ways—either by inoculation with cultures of the organism, or by the injection of immune serum from other animals already protected in this manner. In the case of man, only passive immunization has yet

been attempted, by the use of serum derived from a horse protected against spirochaetosis icterohaemorrhagica through vaccination with preparations of the spirochaete. Although no case has occurred in which the efficacy of this immune serum could actually be put to the test, the authors are of opinion that it does confer on man a partial immunity to the disease; this is supposed to last for from six months to a year. They also give evidence to show that in Japan both the house rats and the brown ditch rats are often carriers of the spirochaete which may be found in their kidneys, as was pointed out in 1916 by Miyajima. The importance of this observation is indicated by the fact that cooks and butchers seem particularly prone to this form of acute infectious jaundice; indeed, two of the fifty-five patients treated by the authors had been bitten by rats from seven to nine days before they developed the disease. Probably the infection is transmitted from rats to man by means of the rat's urine, directly or indirectly, in most cases. Nearly 40 per cent of the rats in the city and coal mines of Kyushu were found to carry highly virulent pathogenic spirochaetes in their kidneys.

A full account of the serum treatment of Weil's disease, so far as it has been tried at present, has been published by Drs, Inada, Ido, Hoki, Ito, and Wani. At first the serum was obtained from goats immunized by inoculation with the spirochaete. This was in August, 1915; later the serum obtained from patients convalescent from the disease was employed, and later still the serum from actively immunized horses. The serum acts mainly by destroying the spirochaetes; technically speaking it is spirochaetolytic and spirochaetocidal, and that it has any antitoxic effect has not yet been demonstrated. It should be given subcutaneously or intravenously in large doses (up to 60 c.c.) as early as possible in the disease. In all, thirty-five patients were treated, of whom five died of the disease, though one was moribund on admission to hospital. These figures show a mortality of about 11 per cent. As a rule, the mortality from Weil's disease in Japan appears to be from 30 to 50 per cent. Such results as these show that the serum treatment is at any rate promising; but the authors do not claim more for it at present, considering that the number of cases treated is not large enough to justify the drawing of any more definite conclusions. They find that the serum destroys the spirochaetes contained in the circulating blood, promotes the development of antibodies, and lessens the number of the organisms in the patients' viscera, where they are already numerous by the fifth day of the disease.

The following facts supporting the theory that infantile paralysis is transferred by rodents, insects, or both are offered by Richardson. (1) Summer incidence of the disease; (2) the resemblance of the disease in its epidemiology to malaria and yellow fever has been noted more than once; (3) the positive results of Rosenau and also of Anderson and Frost, together with the successful experience of Flexner with the bedbug. That the bedbug might be the intermediate link in the chain seemed to Richardson highly improbable in view of the fact that infantile paralysis attacks with almost equal frequency all strata of society. The possible relation of the rat to infantile paralysis was first brought to Richardson's attention in 1910 through an observation made by Dr. Charles E. Simpson, state inspector of health. In investigating an epidemic of the disease, Dr. Simpson observed the fact that many rats, whose homes had been in a town dump, were compelled, because of a fire in that dump, to seek refuge in the neighbouring houses. In these houses infantile paralysis seemed to be unduly prevalent. Another experience pointing in the same direction occurred in a small country neighbourhood occupied as a summer colony by a number of city residents. The only immediate unusual factor to

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be assigned for this epidemic was the removal, from one situation to another, of an old barn. The barn cellar was dug up and improved, and during this operation, the affected children played in the excavation. The inference is, of course, that many old rat holes were destroyed and that the accumulation of years in the way of rat disease and fleas may have been distributed broadcast to the outside world. A third observation, but a rare one, was made in a Massachusetts city where, in an infected district, many rats were said to have been found dead. In another city a muddy river and its tributaries honey-combed to a greater or less extent the municipality. The location of the cases of infantile paralysis seemed to have a remarkable relation to this stream and its branches. Indeed, the whole Massachusetts experience seems to indicate that the disease has been endemic along its rivers, most of which are polluted by sewage to a greater or less extent. The possible association of the water rat was thus indicated.

The great increase in poliomyelitis during the last twenty-five years has been explained as due to great increase in facility of transportation all over the world, so that infinitely increased human contact has become possible. The same argument would apply, however, to the transfer of infected rats from one locality to another. Indeed such transfer in freight cars and ships carrying grain, cattle, pigs, etc., must be common. The relation to the railroads of cases of infantile paralysis has been noticed by a number of observers.

Nothing could be more probable than that children living near railroads should play in rat infected freight cars. Infected rats furthermore, if dropped from freight cars, would necessarily seek their food in the immediate neighbourhood. In the transfer of the infection from the rat to man, the agency of the flea is assumed, although the possible contamination of food by rodent excretions might well be considered. The insect transfer might be simply mechanical or it might require a preliminary cycle of development of the virus in the flea. Furthermore, the possible role of cats, dogs and other animals, or even human beings, as carriers of infected fleas, would be apparent. Moreover, in grossly unsanitary surroundings, the fleas might carry infection from one child to another directly. These theories, Richardson says, explain better than any other hypothesis submitted the epidemiologic facts as observed in infantile paralysis.

Dr. Richardson states that Rosenau has recently produced paralytic phenomena in rats by inoculation of the virus of infantile paralysis. Extended experimental investigations will be necessary to determine the value which should be attached to his theory, but Dr. Richardson is, we think, correct in saying that it is not easy to make the theory that it is conveyed by human contact fit all the facts.

According to the Federal Public Health Service, it costs \$1.82 to board a healthy rat a year, says the *Minneapolis Journal*. That is at the rate of half a cent a day. The rat is voracious and not over-particular about his food, taking the same wherever he can find it. The total annual board bill of the rat tribe in the United States must therefore be some hundreds of millions of dollars.

In return for this liberal expenditure in his behalf Monsieur Rat does nothing whatever that is useful, and much that is positively harmful. His worst disservice is playing host to the fleas that spread the bubonic plague, but he spreads other disease germs as well. From an economic standpoint he is a wastrel, and from a health standpoint a plague-carrier.

It has been generally accepted that rat population of a country is about equal to the human in numbers. Taking the population of Canada at seven and a half millions at the above cited cost of the board of a rat, our total annual board bill of the rat tribe would amount to \$13,650,000.

Anti-rat Regulations.—To limit or prevent the landing of infected rats from incoming vessels arriving from Liverpool after the discovery of plague-infected rats there certain precautions now enjoined by you at our Atlantic ports. These included. The breasting out of the vessel from the pier for not less than six feet.

The placing on every hawser between the vessel and the pier of a funnel or disc of metal not less than three feet in diameter and not more than three feet from the vessel.

The reduction of the gangways to a minimum by day, and their guarding by quartermasters. At night all gangways to be withdrawn, or if one be essential, that it be lighted as well as guarded.

As soon as an incoming vessel has received her quarantine clearance she passes from your jurisdiction and comes under that of the Minister of Marine. The Marine Department kindly consented to have your views in this matter carried out, and they issued instructions to all their harbour-masters at all the Atlantic ports to have these regulations enforced.

Cerebro-spinal meningitis.—Having received information from the Militia Department that some soldiers returning to Canada via St. John, N.B., this month were supposed to have been in contact with cases of cerebro spinal meningitis before embarking at Liverpool, these men were detained at quarantine for bacteriological examination. These proved negative in all cases.

International Frontier Inspection.—No frontier quarantine inspection has been required this year, with the exception of the precautions against the introduction of infantile paralysis already described.

Transfer of Baltimore Quarantine.—In June last the *Medical Record* announced that this State controlled station was in course of being transferred to the United States Public Health Service. This completes the transfer of State quarantines to the United States Federal Government.

Circulars.—Circular letters were issued from time to time to your different officers, calling their attention to the various matters during the year connected with the appearances of epidemic diseases abroad.

Bulletins, etc., received.—The weekly Public Health Reports of the United States Public Health Service have been regularly received and are of great value, as are also the monthly bulletin from provincial, state, and municipal boards of health in Canada, the United States, and other countries. The bulletins of the International Office of Public Health, Paris, and of the Sleeping Sickness Bureau, London, have been regularly received throughout the year, and in both cases spare copies have been distributed to the provincial boards of health.

Official visits, inspections, etc.—On the 23rd June I left, by your instructions to inspect on the Atlantic seaboard, inspected at Grosse Isle, Que., the leper lazaretto at Tracadie, N.B.; the quarantine stations at Chatham and St. John, N.B.; Digby, Halifax, Sydney and Louisburg, N.S.; and Charlottetown and Summerside, P.E.I.

On August 17, I left for the Pacific coast. I inspected at Vancouver, Victoria, William Head, and Prince Rupert, and the leper lazaretto at Darcy Island.

No annual meeting of the Canadian Medical Association was held this year, owing to the absence of so many medical men on military duty.

On September 12 and 13 I attended a Joint Congress of the Canadian Public Health Association, and the Canadian Association for the Prevention of Tuberculosis at Quebec, Que.

On October 24 and 27 I attended the annual meeting of the American Public Health Association, which includes the United States, Canada, Mexico and Cuba, at Cincinnati, Ohio.

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Changes in Medical Staff.—Halifax, N.S., D. J. V. Graham has replaced Dr. Blackett as substitute for Dr. V. W. Mackay, overseas. St. John, N.B., Dr. Hagerty again took winter duty for Dr. Warwick, overseas. William Head, B.C., no successor yet for Dr. Chester P. Brown. Prince Rupert, B.C., Dr. John Code substitutes for Dr. Tremayne, overseas.

Stations, etc.—*Grosse Isle, Que.*—Vessels inspected 355, being an increase of 10 over last year, and at the advanced inspection Station at Rimouski, Que., 28, being a decrease of 12 since last year. Persons inspected at Grosse Isle 32,281, at Rimouski 16,707. A total of 48,988, a decrease of 4,348 since last year, of 162,329 as compared with the season of 1913, and of 244,580 as compared with 1914.

Infectious disease occurred on 24 vessels. The admissions to hospital were 60. One death from diphtheria. In 1913 there were 947 admissions, and in 1914, 1,720. These figures are liable to be equalled or surpassed after the war.

By order of the Department dated August 3, 1916, all troop ships and Admiralty transports were exempted from quarantine inspection when in a healthy condition.

Owing to the decrease this year in the number of mail steamers coming up the St. Lawrence, you were satisfied from the 1st of July, with two inspecting officers instead of three. Drs. Lepage and Lord continued on duty for the season.

Halifax, N.S.—Vessels inspected 402, being 128 more than last year. Persons inspected 29,042, 18,347 less than last year.

The admissions to hospital were eleven.

St. John, N.B.—Vessels inspected 267, being 5 less than last year. Persons inspected 30,882, being an increase of 7,005 over last year. Admissions to hospital seven.

Chatham, N.B.—Vessels inspected 120. Persons inspected 1,149. No quarantinable disease.

Digby, N.S.—No vessels for quarantine inspection.

Sydney, N.S.—Vessels inspected 276, being 28 more than last year. Persons inspected 70,979, being within 54 of last years figure. Only two cases of sickness; one case of measles, one case enteric fever.

Louisburg, N. S.—Vessels inspected 78, as against 112 last year. Persons inspected 2,119, last year 2,985.

Charlottetown, P.E.I.—Vessels inspected 14. Persons inspected 114. No case of quarantinable disease was found on these vessels. The charge of two cases of measles in March off the Car Ferry belonging to the Marine Department was assumed as a help to that Department. As our quarantine hospital was not accessible at that time of year, they were treated at a private house. All expenses were assumed by this Department. In May a case of diphtheria in a member of the crew of the same Car Ferry was admitted to and treated in our quarantine hospital.

Summerside, P.E.I.—No vessels for quarantine inspection.

William Head, B.C.—Vessels inspected 230. Persons inspected 44,679. This shows an increase of 57 in vessels inspected, and of 17,899 in persons inspected as contrasted with last year. Smallpox was brought to the station by two steamships. Other minor diseases were amoebic dysentery varicella, and mumps.

Total admissions to hospital fifteen.

Owing to an outbreak of cholera in Japan from the beginning of October all storage passengers from the Orient were detained for the bacteriological examination of their secretæ. A total of 1,087 persons were so examined. No cholera carrier was found.

On the 24th February last the threatening Nod so far passed that these examinations were from that date suspended. Similar action was taken at the same time by the public health authorities of the contiguous ports of the United States.

Victoria, B.C.—Vessels inspected six. Persons inspected 1,005. No quarantinable disease.

Vancouver, B.C.—No vessels inspected.

Prince Rupert, B.C.—No vessels inspected. A fresh water supply is urgently required. Also a disinfection building. There is, as yet, no provision made for handling an infected vessel at this port.

Tracadie Leper Lazaretto.—There are at present only thirteen patients. Six males and seven females. Only about half the number present a few years ago. Two deaths during the year. No admissions. Those of the patients who are being treated by intra-muscular injections of Chaulmoogra Oil combined with camphor and resorcin show continued signs of improvement.

The devotion and care given to the patients by the nursing religious sisters continue to be above all praise.

Darcy Island Leper Lazaretto, B.C.—Five lepers have been admitted during the year. One a Japanese has been deported. One a Russian after three months observation has been released under conditions of periodic examination as not being a menace to the public health. Two Chinese, and one, a Chilean-Kanaka, remain under treatment and care.

The sudden death occurred on April 19 last of A. E. Wilson, the orderly and caretaker at Darcy Island. He had been for years a faithful and valuable official, and his death is a loss to the service.

Public Works Health Act.—Mr. C. A. L. Fisher, your inspector for Eastern Canada states that the public works in his territory have been composed of railway, canal and mountain tunnel construction. He reports the year as having been exceptional in the non-appearance of infectious diseases amongst the men employed, with the exception of half a dozen cases of enteric fever (mostly mild) on the Welland Ship Canal works.

Mr. Fisher on his several tours of inspection found the medical service fully satisfactory, and the sleeping quarters and boarding of the men employed fully equal to the good conditions of previous years.

Dr. A. E. Clendenan your inspector for Western Canada points out that the volume of work has been very materially lessened with the duration of the war.

The Grand Trunk Pacific has ceased construction. The Canadian Pacific have no large undertakings since the completion of the Rogers Pass Tunnel. The Canadian Northern has only diminished numbers of employees on urgent lines. On the other hand the Edmonton, Dunvegan and British Columbia railway with its branch the Canada Central, The Hudson Bay railway, Esquimalt harbour on the Pacific ocean, and Nelson harbour on Hudson bay are all being pushed with the vigour of former years.

The medical service has been such that no complaints have been made by employees.

Not one epidemic of infectious disease has occurred during the year. Here and there individual cases cropped up but were so treated as to prevent their being a menace to others.

I have the honour to be, sir,

Your obedient servant,

F. MONTIZAMBERT, M.D.

Director-General of Public Health.

MISCELLANEOUS.

APPENDIX No. 2.

EXHIBITIONS.

SAN DIEGO, CALIFORNIA, March 31 1917.

SIR,—I have the honour to submit the following report of the operation of the Exhibition Branch of your Department for the fiscal year ending March 31, 1917.

During the whole fiscal year of 1916-17, our exhibit has been one of the main features of the Panama-California International Exposition, held at San Diego, California. This exposition opened its doors to the public on the 18th February, 1916. Our participation was then quite ready, the Canadian Building having in fact been opened to the visitors three days before the official opening, viz., on the 16th of February.

Our display is installed in one of the finest buildings of the exposition which has been placed at our disposal by the management, free of charge. It occupies a most advantageous situation on the main thoroughfare of the exposition, so that no visitors to the grounds can fail it to see it.

The Canadian exhibit is composed of the natural products of the country. It includes the products of agriculture, horticulture and forestry, as well as important collections of minerals and of fish and game specimens. The water-powers of Canada are also shown in relief maps. The progress of colonization in our Country is fully illustrated by means of large panoramas and other pictures. Our transportation systems are well advertised, especially those affording facilities for the handling of the crops in the Canadian Northwest. Our display of fresh and bottled fruit is particularly effective, and our mineral exhibit is receiving the highest commendations from all.

During the whole period of the exposition the weather was fine and the influx of tourists at San Diego very important. Large numbers of people visited the exposition, and very few of them, if any, failed to see our exhibit.

One of the especially gratifying features of our participation was the visit of several high officials of the various United States trancontinental railroads, who were all very complimentary in their praise of our exhibit as a priceless advertisement for Canada and our three Canadian trancontinental railways.

Numerous inquiries about the wheat lands of the Canadian Northwest were received by the staff, and also by the representative of the Department of the Interior who had his quarters in the Canadian Building. The interest created regarding Canada in this part of the country by our exposition was very noticeable and has been demonstrated in a practical manner by the numerous bookings for the Canadian West that have been made continuously during the year.

The Panama-California International Exposition was scheduled to close its doors on the 31st of December, 1916; but in view of the fact that the attendance at the end of the month of December was still very satisfactory, and considering also that during the winter months the tourists are very numerous in San Diego as well as in the whole of southern California, the management of the exposition decided to prolong the exposition during three months, that is, until the end of March, 1917. The expectations of the committee in that respect were fully realized, as the success of the exposition continued unabated until the end of the three months' extension.

We received an extensive and very complimentary publicity from all the newspapers of this part of the country, and the management of the exposition have been

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very appreciative in their remarks regarding the value of our exhibit as a drawing card. And I am glad to state that, in fact, the Canadian exhibit has achieved here a great success, and of a kind that will entail the best practical and beneficial results for Canada.

The whole respectfully submitted.

WM. HUTCHISON,
Commissioner.

The Honourable
The Minister of Agriculture of Canada,
Ottawa, Ont., Canada.

DEPARTMENT OF AGRICULTURE
CANADA

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

(F. TORRANCE, B.A., D.V.S.)

FOR THE

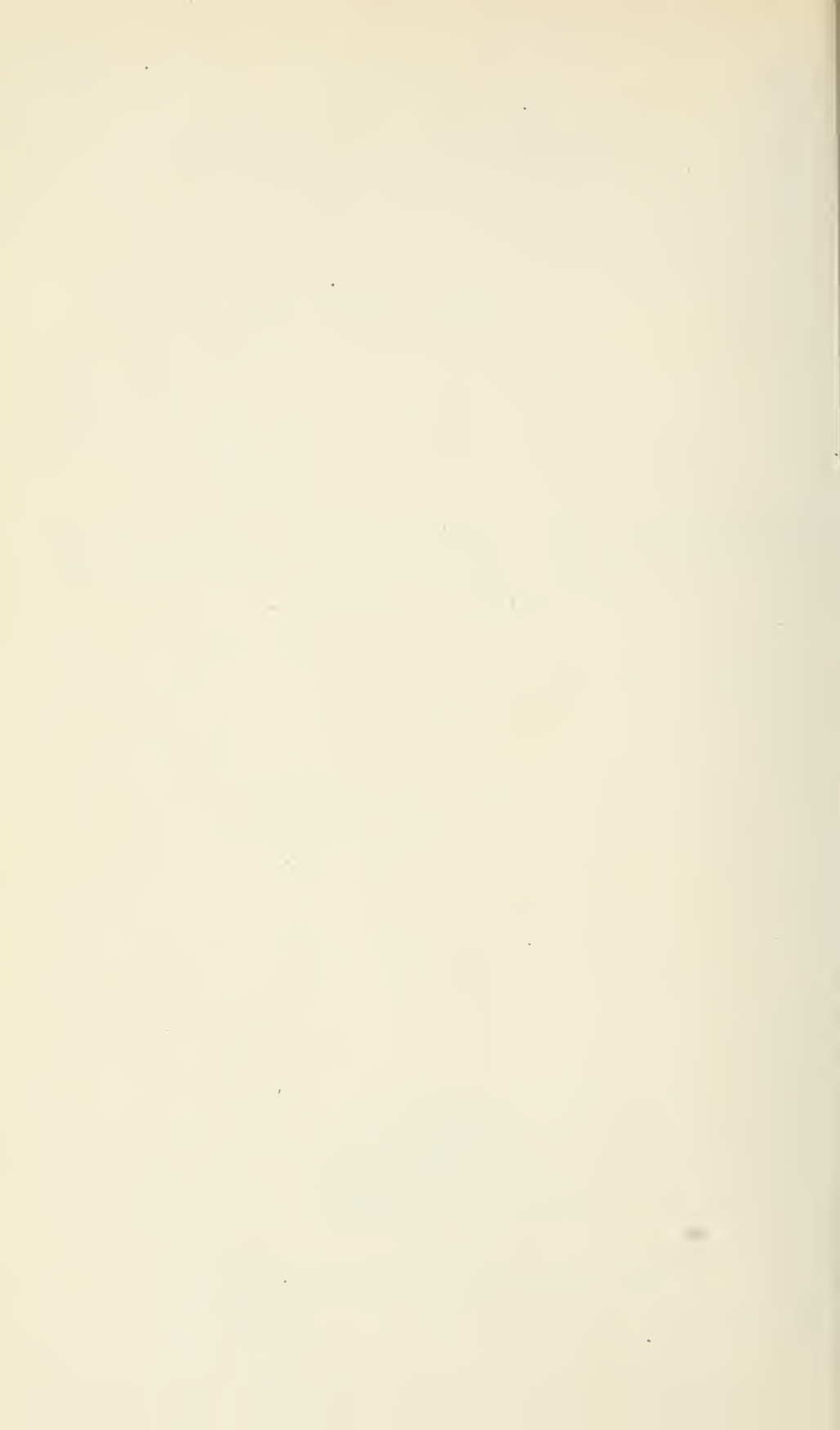
YEAR ENDING MARCH 31, 1917

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1918



REPORT

OF THE

VETERINARY DIRECTOR GENERAL.

OTTAWA, March 31, 1917.

SIR,—I have the honour to present my report for the year ending March 31, 1917.

The health of Canadian live stock has been fairly good, and the ravages of contagious diseases in general have been restrained within narrow limits, the statistics comparing favourably with those of previous years. The stamping out of foot-and-mouth disease in the United States has relieved us of much anxiety and enabled us to dispense with the extra precautions it had been necessary to take for the protection of Canada from this infection. Tuberculosis of hogs is shown by slaughter-house statistics to have again increased, and during the past five years has increased at the rate of 1 per cent per annum, and is now at the alarming figure of 19.37 per cent of hogs under federal inspection. The figures for cattle do not show any corresponding increase, the percentage for the same five years remaining practically stationary. Conservation of food demands that this great loss of food, lost through condemnation of tubercular meats, should be prevented by attacking the sources of infection and preventing the spread of the disease from cattle to hogs. This can be accomplished to a great extent by the sterilization of the by-products of cheese factories and creameries, and in my opinion this should be made compulsory. The cost of sterilization would be more than repaid by the protection of hogs and calves against tuberculosis.

In spite of the absence on military service of many members of our staff, the work of the branch has been carried on efficiently and economically, in both the Contagious Diseases and Meat Inspection Divisions. A detailed description of the work of the two divisions follows, beginning with our field work in control of contagious diseases.

GLANDERS.

A slight reduction in the number of horses destroyed is noted, as compared with last year, and, as before, the greater number of these were found in Saskatchewan. As previously indicated in former reports, the conditions in that province render the eradication more difficult than in other parts of Canada, and I am glad to note a reduction from 191 killed in 1916, to 164 killed in 1917.

Dominion.—Two were killed on inspection, 187 at first test, 31 at second test, 7 at third test, 1 at fourth test, total 228 (valued at \$33,609, at a cost of \$22,238.95).

Eighty-two showed clinical symptoms.

Eight thousand four hundred and eleven horses were tested with mallein, of which 233 reacted, 229 reactors being destroyed, the remaining 4 were returned to the United States. Of the 233 reactors, 82 showed clinical symptoms of glanders at or during the test.

Eighty-four horses are under control for retest.

Of the above 229 horses slaughtered, 2 were killed without compensation.

Nova Scotia.—Fifty-two horses were tested and proved to be healthy.

New Brunswick.—One hundred horses and one shetland pony tested and proved to be healthy.

Quebec.—Eight were killed at first test, 1 at second test, total 9 (valued at \$1,494, at a cost of \$995.99).

Six showed clinical symptoms.

Seven hundred and ninety-five horses were tested with mallein, of which 9 reacted and were destroyed. Of the 9 reactors, 6 showed clinical symptoms at or during the test.

No horses are under control for retest.

Of the nine slaughtered, 5 were in the electoral district of Nicolet, 2 in Terrebonne, 1 in Dorchester, and 1 in Pontiac.

Ontario.—One horse reacted to first test and was destroyed.

Two hundred and ninety-three horses, 5 mules, and one jack were tested with mallein; one horse reacted and was destroyed, having been imported at Cornwall, Ont.

Manitoba.—Six hundred and sixty-two horses and seven mules were submitted to the mallein test for the first time, and nine horses to the second test; all proved healthy.

Saskatchewan.—One hundred and twenty-four were killed at 1st test, 30 at 2nd test, 7 at 3rd test, 1 at 4th test, 2 on inspection; total, 164 (valued at \$24,320, at a cost of \$16,046.35).

Fifty-two showed clinical symptoms.

Four thousand seven hundred and twelve horses, 89 mules, 4 asses, were tested with mallein, of which 165 reacted; 164 were destroyed and one returned to the United States.

Of the 165 reactors, 52 showed clinical symptoms at or during the test.

Six horses are under control for retest.

Of the 164 horses slaughtered, 97 were in the electoral district of Regina, 46 in Moose Jaw, 13 in Assiniboia, 4 in Humboldt, 4 in Battleford.

Alberta.—Fifty-four were killed at 1st test, 1 at 2nd test; total, 55 (valued at \$7,795, at a cost of \$5,196.61).

Twenty-four showed clinical symptoms.

Some 1,167 horses and 20 mules were tested with mallein, of which 55 horses reacted and were destroyed. Of the 55 reactors, 24 showed clinical symptoms at or during the test.

Seventy-eight horses are under control for retest.

Of the 55 slaughtered, 39 were in the electoral district of Macleod, and 16 in Medicine Hat.

British Columbia.—A total of 496 horses and 6 mules were tested with mallein, of which 3 reacted and were returned to United States.

Yukon Territory.—One horse tested at White Horse, and proved healthy.

HOG CHOLERA.

Comparing this year with last, our losses show a reduction of 18.8 per cent. Again most of our outbreaks started from premises where raw garbage was fed to pigs. Our system of licensing garbage feeders appears to be working well, enabling us to maintain a close supervision over these places, and to get early information of the appearance of disease.

SESSIONAL PAPER No. 15b

The use of serum for the protection of exposed hogs has been as extensive as circumstances would permit, and has resulted in a large saving to the country and to the hog raisers.

Serum Treatment of Hogs, 1916-17.

A total of 7,197 hogs were serum treated, 7 of which received second treatment; 289,794 cubic centimetres were used in above-mentioned treatment.

Serum cost, \$4,350.

Amount saved by serum treatment—

| | |
|---|-----------|
| Compensation saved to Department | \$ 72,000 |
| Value saved to owners (estimated) | 144,000 |
| | <hr/> |
| | \$216,000 |

In the Dominion, 4,623 hogs, valued at \$49,607.50, were destroyed as diseased, at a cost of \$30,497.98 in compensation.

Nova Scotia.—\$130 was paid for hogs slaughtered the previous fiscal year.

New Brunswick.—One owner's premises were quarantined on suspicion, involving the control of 1 hog.

Quebec.—Thirty-five outbreaks of hog cholera occurred, in which 1,570 hogs, valued at \$21,160, were destroyed in the undermentioned districts, at a cost of \$14,030.59 in compensation; 148 premises were also quarantined on suspicion, involving the control of 606 hogs; 4 hogs, valued at \$54, were destroyed for purposes of examination, but no evidence of hog cholera was found.

| District. | No. outbreaks. | Hogs destroyed. | District. | No. outbreaks. | Hogs destroyed. |
|---------------------------|----------------|-----------------|--|----------------|-----------------|
| Jacques Cartier | 2 | 84 | Lévis | 2 | 7 |
| Laval | 4 | 317 | Champlain | 1 | 57 |
| Montmorency | 3 | 59 | Lotbinière | 1 | 8 |
| Quebec | 4 | 764 | Montcalm | 1 | 5 |
| Terrebonne | 2 | 40 | Portneuf | 1 | 2 |
| Bagot | 2 | 32 | Dorchester | 1 | 6 |
| Two Mountains | 1 | 53 | Beauce | 1 | 2 |
| Compton | 1 | 4 | Richelieu | 1 | 42 |
| Rouville | 3 | 31 | Three Rivers and St. Maurice | 1 | 8 |
| Argenteuil | 1 | 10 | | | |
| Nicolet | 1 | 35 | | | |
| Bellechasse | 1 | 13 | | | |
| | | | | <hr/> | <hr/> |
| | | | | 35 | 1,570 |

Ontario.—Forty-five outbreaks of hog cholera occurred in Ontario, in which 2,887 hogs, valued at \$26,980.50, were destroyed in the undermentioned districts, at a cost of \$15,489.40 in compensation; 439 premises were also quarantined on suspicion, involving the control of 6,603 hogs; 45 hogs, valued at \$349.50, were destroyed for purposes of examination, but no evidence of hog cholera was found.

| District. | No. outbreaks. | Hogs destroyed. | District. | No. outbreaks. | Hogs destroyed. |
|-----------------------|----------------|-----------------|------------------------|----------------|-----------------|
| Welland | 3 | 148 | Simcoe, S.R. | 2 | 105 |
| Middlesex | 1 | 59 | Simcoe, N.R. | 2 | 140 |
| Essex, N.R. | 1 | 46 | Lincoln | 2 | 215 |
| Essex, S.R. | 3 | 125 | Nipissing | 3 | 173 |
| Kent, E.R. | 1 | 183 | Parry Sound | 1 | 115 |
| Kent, W.R. | 1 | 203 | Lambton, E.R. | 2 | 44 |
| Peel | 1 | 149 | Lambton, W.R. | 2 | 42 |
| York, N.R. | 1 | 62 | Norfolk | 1 | 216 |
| York, C.R. | 1 | 63 | Waterloo, S.R. | 1 | 85 |
| York, S.R. | 1 | 158 | Hastings, E.R. | 1 | 42 |
| Elgin, E.R. | 1 | 4 | Russell | 3 | 307 |
| Elgin, W.R. | 1 | 41 | Carleton | 1 | 49 |
| Algoma, E.R. | 3 | 37 | Huron, E.R. | 1 | 19 |
| Ontario, S.R. | 1 | 4 | Brockville | 1 | 47 |
| Glengarry | 1 | 4 | | | |
| Wentworth | 1 | 2 | | | |
| | | | | <hr/> | <hr/> |
| | | | | 45 | 2,887 |

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Manitoba.—One outbreak of hog cholera occurred in Manitoba, in which 17 hogs, valued at \$198, were destroyed without compensation.

Saskatchewan.—No outbreak of hog cholera occurred in Saskatchewan during the year 1916-17; 5 premises were quarantined on suspicion, involving the control of 218 hogs; 9 hogs, valued at \$77, were destroyed for purposes of examination, but no evidence of hog cholera was found.

Alberta.—Eight outbreaks of hog cholera occurred in Alberta, in which 145 hogs, valued at \$1,424, were slaughtered in the undermentioned districts at a cost of \$949.33 in compensation; 8 premises were quarantined on suspicion, involving the control of 396 hogs; 11 hogs, valued at \$127.50, were destroyed for purposes of examination, but no evidence of hog cholera was found.

| District. | No. Outbreaks. | No. Hogs destroyed. |
|----------------|----------------|---------------------|
| Edmonton | 1 | 140 |
| Macleod | 1 | 5 |
| | 2 | 145 |

British Columbia.—One outbreak of hog cholera occurred in British Columbia, in which 5 hogs, valued at \$43 were slaughtered at a cost of \$28.66 in compensation. The above mentioned premises were in the electoral district of Nanaimo.

One owner's premises were also quarantined on suspicion, involving the control of 73 hogs. One of these hogs was destroyed for purposes of examination, at owner's request, but no evidence of hog cholera was found.

DOURINE.

A total of 48 animals, valued at \$4,924, were slaughtered as being affected with this disease, at a cost of \$3,222.63, distributed as follows:—

| Province. | Electoral District. | Animals | |
|-------------------|---------------------|--------------|--------------|
| | | Quarantined. | Slaughtered. |
| Saskatchewan..... | Battleford..... | 6 | |
| | Moose Jaw..... | 2 | 1 |
| Alberta..... | Medicine Hat..... | 8 | 1 |
| | Macleod..... | 40 | 11 |
| | Red Deer..... | 79 | 35 |
| | Calgary..... | 15 | 1 |
| | Stratheona..... | 4 | |
| | Victoria..... | 1 | |
| Manitoba..... | Dauphin..... | 140 | 47 |
| | | 1 | |
| | | 141 | |

In the electoral district of Medicine Hat there was one animal, valued at \$30, taken over for experimental purposes at a cost of \$20 in compensation.

SESSIONAL PAPER No. 15b

HORSE MANGE.

| Province. | Outbreaks. | Animals Affected. | Animals Quarantined. |
|-------------------|------------|-------------------|----------------------|
| Saskatchewan..... | 6 | 62 | 376 |
| Alberta..... | 5 | 122 | 172 |

In the province of Quebec, electoral district of Beauce, one animal, valued at \$200, was slaughtered, \$133 being paid in compensation.

Some 16,194 horses and 95 mules were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

CATTLE MANGE.

This disease remains confined to certain portions of southern Alberta and southwestern Saskatchewan, the infected district comprising what is known as the mange area. The movement of cattle from this area is under strict regulation, all cattle requiring veterinary inspection and dipping, unless destined to an abattoir for immediate slaughter. Within the area, continual efforts are being made to eradicate the disease by systematic dipping. Progress in this direction is fairly satisfactory, and, as a result, the number of infected herds is being reduced, and from time to time, as conditions warrant, the mange area is reduced in size.

| Province. | Outbreaks. | Animals Affected. | Animals Quarantined. |
|-------------------|------------|-------------------|----------------------|
| Saskatchewan..... | 12 | 892 | 10,799 |
| Alberta..... | 40 | 628 | 38,613 |
| | 52 | 1,520 | 49,412 |

Some 33,082 cattle were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan, and 158,868 cattle were inspected in Winnipeg on arrival from points west thereof.

RABIES.

Alberta.—In Calgary, Alta., one owner's premises were quarantined.

Ontario.—In Ontario, 51 premises were quarantined distributed as follows:—

| District. | Premises quarantined. | District. | Premises quarantined. |
|----------------------|-----------------------|-----------------------|-----------------------|
| Dufferin | 2 | Toronto Centre | 1 |
| Durham | 1 | Welland | 6 |
| Elgin, W.R. | 5 | Waterloo, S.R. | 1 |
| Halton | 3 | Wellington, S.R. | 1 |
| Middlesex, N.R. | 1 | York, C.R. | 4 |
| “ E.R. | 1 | “ N.R. | 3 |
| Peel | 3 | “ S.R. | 5 |
| Perth, S.R. | 6 | | |
| Oxford, S.R. | 1 | | |
| Toronto South | 7 | | |
| | | | 51 |

SHEEP SCAB.

In Quebec, one sheep was quarantined in the electoral district of Montmorency, on suspicion of sheep scab.

In Manitoba, 54 animals on four premises were found to be affected with sheep scab, involving the control of 226 animals on 10 premises as follows:—

| District. | Affected. | Quarantined. |
|-------------------------|-----------|--------------|
| Dauphin | 54 | 214 |
| Portage la Prairie..... | 0 | 12 |
| | 54 | 226 |

In accordance with the quarantine regulations, 49,802 sheep, imported into Canada, were quarantined for the prescribed period of thirty days.

TUBERCULOSIS.

Our further experience in the operation of the new regulations shows that a step in the right direction has been taken. The absence of friction between our officers and the dairymen, whose herds have come under our regulations, is an indication that they are receiving fair treatment. It is also gratifying to note the comparatively small expense that has been incurred in removing tuberculous cows from the herds supplying milk to the two cities which have accepted federal aid. The experience of these cities will be likely to induce other municipalities to follow their example and thus protect their citizens from the danger of consuming raw milk from suspicious and perhaps diseased cows.

Some 444 cattle were tested on being imported into Canada, 13 of which reacted, 8 were classed as suspicious, and 423 proved healthy.

There were 1,802 cattle tested for export, 53 of which reacted, 6 were classed as suspicious, and 1,743 proved healthy.

A total of 2,991 cattle were tested, some being for shipment to different provinces of the Dominion, and others in herds under the supervision of the department, 207 reacted, 12 were classed as suspicious and 2,772 proved healthy.

There were 5,741 cattle tested by private practitioners, 481 of which reacted, 69 were classed as suspicious and 5,191 proved healthy.

All reactors were permanently earmarked by a veterinary inspector, in cases where the owner did not voluntarily destroy them.

MUNICIPAL TESTING.

Saskatoon Statistics.—Of 954 cattle submitted to first test, 13 were reactors, or 1.36 per cent; 1,058 submitted to second test, 16 were reactors, or 1.5 per cent; 435 submitted to third test, 5 were reactors, or 1.1 per cent; 129 submitted to fourth test, no reactors; 24 submitted to fifth test, no reactors; 14 submitted to sixth test, no reactors.

Seven reactors slaughtered; value, \$1,605; compensation, \$534.30. Four reactors, purchased subject to test, were returned to previous owners. Three reactors not yet slaughtered.

In addition to the above, 9 animals which reacted during 1915-16 were slaughtered this year; value, \$960; compensation, \$202.95.

Regina.—Testing commenced March, 1916, and was continued until September, 1916.

SESSIONAL PAPER No. 15b

Of 2,253 cattle submitted to first test, 117 were reactors, or 5.19 per cent; 443 submitted to second test, 4 were reactors, or 0.9 per cent; 120 submitted to third test, no reactors.

Eighty-five reactors slaughtered, value, \$5,140, compensation, \$1,624.77.

ANTHRAX.

The following outbreaks were reported and dealt with during the year:—

| Province. | Outbreaks. | Animals Quarantined. |
|---------------|------------|-------------------------|
| Quebec | 4 | 103 |
| Ontario | 6 | 246 |
| Alberta | 1 | 120 |
| | 11 | 469 |

SCABIES IN FOXES.

In Prince Edward Island, four foxes were quarantined on suspicion.

IMPORT INSPECTIONS.

Import inspections from United States and Newfoundland were: 63,624 horses, 10,694 mules, 6,146 cattle, 70,848 sheep, 223 swine, 147 goats, 19 asses, 3 foxes, 9 bears, 1 buffalo, 11 ponies, 2 deer, 2 donkeys, 9 camels, 2 wild horses, 2 burros, 72 elk.

Import inspections from Europe and elsewhere were: 80 horses, 299 cattle, 389 sheep, 10 swine, 1 jackass, 2 dogs.

A total of 3,673 horses were tested on arrival from the United States and allowed to proceed to their destination.

PURE BRED IMPORTS.

HORSES.

| Breed. | Great Britain. | United States. | Elsewhere. | Total. |
|--------------------|----------------|----------------|------------|--------|
| Belgian ..... | ..... | 13 | ..... | 13 |
| Clydesdale | 68 | 3 | ..... | 71 |
| Hackney | 1 | 3 | ..... | 4 |
| Percheron ..... | ..... | 154 | ..... | 154 |
| Shetland ..... | ..... | 7 | ..... | 7 |
| Shire | 1 | ..... | ..... | 1 |
| Standardbred ..... | ..... | 84 | ..... | 84 |
| Thoroughbred | 9 | 12 | ..... | 21 |
| Welsh Pony ..... | ..... | 3 | ..... | 3 |
| Total | 79 | 279 | ..... | 358 |

CATTLE.

| Breed. | Great Britain. | United States. | Elsewhere. | Total. |
|----------------------|----------------|----------------|------------|--------|
| Aberdeen Angus ..... | ..... | 37 | ..... | 37 |
| Ayrshire | 18 | 4 | ..... | 22 |
| Brown Swiss ..... | ..... | 13 | ..... | 13 |
| Dutch Belted ..... | ..... | 1 | ..... | 1 |
| Guernsey ..... | ..... | 10 | ..... | 10 |
| Hereford ..... | ..... | 25 | ..... | 25 |
| Holstein ..... | ..... | 21 | ..... | 21 |
| Jersey ..... | ..... | 60 | 25 | 85 |
| Polled Angus | 15 | 27 | ..... | 42 |
| Polled Durham ..... | ..... | 3 | ..... | 3 |
| Shorthorn | 308 | 1 | ..... | 309 |
| Total | 341 | 202 | 25 | 568 |

SHEEP.

| Breed. | Great Britain. | United States. | Elsewhere. | Total. |
|------------------|----------------|----------------|------------|--------|
| Cotswold | 15 | ..... | ..... | 15 |
| Dorset ..... | ..... | 7 | ..... | 7 |
| Hampshire ..... | ..... | 59 | ..... | 59 |
| Karakul ..... | ..... | ..... | 117 | 117 |
| Lincoln | 102 | 3 | ..... | 105 |
| Leicester | 2 | ..... | ..... | 2 |
| Oxford | 12 | ..... | ..... | 12 |
| Shropshire | 266 | 70 | ..... | 336 |
| Southdown | 6 | 44 | ..... | 50 |
| Suffolk | 4 | ..... | ..... | 4 |
| Total | 407 | 183 | 117 | 707 |

SWINE.

| Breed. | Great Britain. | United States. | Elsewhere. | Total. |
|-----------------------------|----------------|----------------|------------|--------|
| Berkshire | 3 | 4 | ..... | 7 |
| Chester White ..... | ..... | 8 | ..... | 8 |
| Duroc Jersey ..... | ..... | 11 | ..... | 11 |
| Large Black | 5 | ..... | ..... | 5 |
| Ohio Improved Chester ..... | ..... | 2 | ..... | 2 |
| Poland China ..... | ..... | 1 | ..... | 1 |
| Tamworth ..... | ..... | 2 | ..... | 2 |
| Yorkshire | 2 | ..... | ..... | 2 |
| Total | 10 | 28 | ..... | 38 |

GOATS.

| Breed. | Great Britain. | United States. | Elsewhere. | Total. |
|--------------------|----------------|----------------|------------|--------|
| Anglo Nubian | | 11 | | 11 |
| Toggenburg | | 1 | | 1 |
| Total | | 12 | | 12 |

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DISEASED IMPORTS.

| Port. | No. animals in infected shipments. | No. of shipments. | No. of animals infected. | Origin. | Action. |
|-------------------------------|--|----------------------|--------------------------------|---------------|--------------------|
| Cornwall, Ont.—Horses | 2 | 1 | 1 | United States | Reactor destroyed. |
| Big Muddy, Sask.—Horses . . | 2 | 1 | 1 | " " | Both returned. |
| Kingsgate, B.C.—Horses . . . | 2 | 1 | 1 | " " | Both returned. |
| Grand Forks, B.C.—Horses | 4 | 1 | 1 | " " | All returned. |
| Bridenville, B.C.—Goats . . . | 1 | 1 | 1 | " " | Returned. |
| Huntingdon, B.C.—Cattle . . | 7 | 1 | 1 | " " | Returned. |
| Total | 18 | 6 | 6 | | |

ANIMALS INSPECTED FOR EXPORT.

| Port. | Horses. | Cattle. | Sheep. | Swine. | Dogs. | Cats. |
|---|---------|---------|--------|--------|-------|-------|
| Charlottetown to Newfoundland | 50 | 238 | 245 | 166 | .. | .. |
| Summerside | 4 | 3 | 65 | .. | .. | .. |
| " " United States | .. | .. | 11 | .. | .. | .. |
| Halifax to Newfoundland | 6 | 1 | .. | 1 | .. | .. |
| " " Great Britain | 2,796 | .. | .. | .. | .. | .. |
| " " St. Pierre and Miquelon | .. | 48 | 32 | 6 | .. | .. |
| " " Bermuda | 18 | 24 | 2 | 3 | .. | .. |
| " " Jamaica | .. | 2 | .. | .. | .. | .. |
| " " United States | .. | .. | .. | .. | 2 | 1 |
| " " * New Zealand | .. | .. | .. | .. | .. | .. |
| Sydney to Newfoundland | 200 | 1,205 | 223 | 80 | .. | .. |
| St. John to destination unknown | 2,053 | .. | .. | .. | .. | .. |
| " " United States | .. | 1 | .. | .. | .. | .. |
| Toronto to | .. | 10,095 | 2,091 | .. | .. | .. |
| " " Bermuda | .. | 42 | .. | .. | .. | .. |
| Totals | 5,127 | 11,689 | 2,669 | 256 | 2 | 1 |

* 1 monkey.

LABORATORIES.

The biological laboratory at Ottawa has continued to supply the mallein and tuberculin used by our officers in the diagnosis of glanders and tuberculosis, and has furnished an immense amount of black-leg vaccine, which is sold to farmers at a nominal price, and used for the protection of their herds against that disease. Other biological products, such as strangles and influenza bacterins have been produced in limited quantities, much of it supplied to the British Remount Commission for use in Canadian remount depots. Anti-abortion vaccine has also been prepared for use by our officers in experimental work in this disease. The staff of this laboratory has also done much useful work in examining morbid specimens sent in for diagnosis, in research work on diseases of poultry, and in the mounting and preparation of specimens for exhibition.

The branch laboratories at Lethbridge and Agassiz have done useful work in dealing with local problems affecting the live stock of southern Alberta and British Columbia, respectively. Dourine has chiefly occupied the attention of our acting pathologist at Lethbridge, his work in the serum diagnosis of that disease being of inestimable value in its eradication. At the Agassiz laboratory, the careful research work of Dr. Hadwen has already added much to our knowledge of the life-history of some important parasites of cattle and sheep. The value of such information is very great, as, without it, it would be difficult, if not impossible, to devise means for dealing with these parasites. A technical bulletin on the subject has been published.

MEAT INSPECTION DIVISION.

Owing to the heavy demand for meat foods, for the Allied armies as well as the peoples of Great Britain, France and Italy, the Meat Inspection Division has experienced its busiest year since the inception of its work and the beginning of the war.

This greatly increased amount of work has not only involved added responsibilities, but has been performed under what in ordinary times would have been considered hardship and a handicap, owing to a shortage of experienced help. Yet your responsible officers met and handled the unusual situation cheerfully and no less effectively, thanks largely to the capability of the inspectors in charge of the various plants.

The question of overtime work by our officers in establishments had been under consideration, and finally special reports were called for in connection with it. These contained conclusive evidence that, in many instances, overtime work had not been warranted. While, perhaps, it may be impracticable, if not impossible, to entirely eliminate the practice of overtime work in establishments generally, it has been reduced materially in some of them, while in others it has ceased altogether.

This change has been brought about through a plan adopted in October, and agreed to by the packers without demur, whereby the management of an inspected establishment shall pay for the services, after 6.30 p.m. o'clock, of an inspector; veterinarians at the rate of 75 cents, and lay inspectors at the rate of 50 cents per hour.

The department's annual qualifying examination for veterinarians was held at various points in Canada on April 22, 1916. Fifty candidates wrote on the papers of this examination, which was passed by thirty-three, ten of whom have been appointed to positions in the Meat Inspection service.

The regular increases in salary were given at the beginning of the year, and they were, I need hardly say, much appreciated.

During the year many improvements were made in establishments under inspection. Owing to the greatly increased amount of business in such establishments, some large additions were made to several of them. These additions being up to date in construction and equipment, a great and economic step forward has been made, as such additions are naturally much more readily maintained in a proper sanitary condition. This stands for the conservation of meat foods, and lessens materially the condemnation of foods because of contamination.

Legal action was taken by the department during the year in two cases of violation of the Meat and Canned Foods Act. One violation was an illegal shipment at Moose Creek, Ont. The other was by a railway in Quebec, which broke a seal on a car of meats. In each case a conviction was secured and a fine imposed.

The new Union abattoir in Winnipeg was completed in 1916, and began operations under inspection on December 14, 1916. It is officially known as Establishment No. 8.

The following statistics are respectfully submitted:—

A. Total slaughter:—

| | | | | |
|--------|---------------------------|----------|-----------------|-----------------|
| Cattle | 648,859, Increase over | 1915-16, | 106,705 head or | 19.68 per cent. |
| Sheep | 416,575, | “ | 1915-16, | 13,428 “ 3.33 “ |
| Swine | 2,245,511, Decrease under | 1915-16, | 118,182 “ | 5.00 “ |

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B. The provinces show increases or decreases as follows:—

| Province. | Cattle. | | Sheep. | | Swine. | |
|-----------------------|---------|----------|--------|----------|---------|----------|
| | Head | Per cent | Head | Per cent | Head | Per cent |
| Ontario..... | +48,557 | 19.43 | +1,291 | 0.77 | -79,165 | 5.54 |
| Quebec..... | + 8,497 | 4.77 | -2,448 | 1.90 | -48,611 | 12.56 |
| Manitoba..... | +26,300 | 53.58 | +5,072 | 19.78 | -13,868 | 6.76 |
| Saskatchewan..... | + 3,717 | 78.73 | -2,661 | 34.93 | -11,196 | 25.06 |
| Alberta..... | +17,394 | 37.88 | +4,970 | 14.18 | +29,567 | 12.58 |
| British Columbia..... | + 2,461 | 15.59 | + 138 | 0.67 | +10,879 | 27.01 |
| New Brunswick..... | + 380 | 100.00 | +1,490 | 21.74 | | |
| Nova Scotia..... | | | | | | |
| P.E.I..... | - 601 | 22.16 | +3,576 | 44.15 | - 5,788 | 24.90 |

C. The percentage of slaughter for each province for the total for all Canada:—

| Province. | Cattle. | Sheep. | Swine. |
|---------------------------|----------|----------|----------|
| | Per cent | Per cent | Per cent |
| Ontario..... | 45.99 | 40.21 | 60.10 |
| Quebec..... | 28.79 | 30.32 | 15.07 |
| Manitoba..... | 10.97 | 7.37 | 8.50 |
| Saskatchewan..... | 1.30 | 1.18 | 1.49 |
| Alberta..... | 9.76 | 9.64 | 11.78 |
| British Columbia..... | 2.81 | 4.91 | 2.28 |
| New Brunswick..... | 0.06 | 2.00 | |
| Nova Scotia..... | | | |
| Prince Edward Island..... | 0.32 | 4.37 | 0.78 |

SLAUGHTERINGS.

Cattle.—With the exception of a decrease in Prince Edward Island, all the provinces showed an increase in cattle killed.

Sheep.—In sheep killings, we find Quebec and Saskatchewan behind last year, while other provinces are ahead.

Swine.—In swine, we find all provinces showing a decrease, with the exception of Alberta and British Columbia.

Provincial percentage to total kill (see table C).—Ontario still holds the highest percentage to total kill in the three species, although slightly lower than last year. Quebec shows a larger decrease than Ontario, while Manitoba, Saskatchewan, and Alberta show increases in cattle. Only Manitoba and Alberta improve their position in sheep, Saskatchewan being lower than last year, Alberta and British Columbia being the only western provinces to show an increase in percentage of hogs killed to total.

CARCASS CONDEMNATIONS.

Cattle.—The percentage of carcass condemnations this year is 1.68 per cent against 1.95 per cent last year. This of itself is very satisfactory, but the proportion condemned for tuberculosis is much higher than last year, namely, 39.90 per cent against 31.20 per cent previous year. This is probably due to the large number of canner stock killed.

Those condemned for bruises, cripples, and imperfect bleeding are slightly under last year, 3.41 per cent against 3.89 per cent.

Calves condemned for immaturity are considerably lower than previous year, 37.75 per cent against 48.03 per cent.

Emaciated cattle are a little lower than last year, 5.61 per cent against 6.58 per cent.

The proportion of calves killed to total kill is a little lower than last year, 14.83 per cent against 17.20 last year.

Sheep.—The slightly lower percentage of sheep carcasses condemned, 12 per cent against 14 per cent calls for little or no comment.

Swine.—Comparatively, there is no difference between the number of swine carcasses condemned this year and last, the percentages being 0.27 per cent and 0.28 per cent, respectively, while the total percentage is about the same. We find that those condemned for tuberculosis are a little higher than last year, 62.22 per cent against 61.76, while those condemned for *cyst. cellulose* are a little lower, 8.10 per cent against 8.28 per cent.

The condemnations for hog cholera amounted to only 72 carcasses, which is very satisfactory. Other condemnations run around the same per cent as in the previous year, and call for no comment.

In looking over our imports we find that Canada brought in from U.S.A. points over 153,000,000 pounds of pork. The greater proportion of this was in the shape of singed sides to make Wiltshire bacon to enable the packer to fill war orders.

These singed sides equalled 1,040,000 singed hogs, and weighed about 119,000,000 pounds, the balance, 34,000,000 pounds, being hams, backs, other cuts, and barrelled pork.

This 34,000,000 pounds is equal to about 260,000 hogs which, added to 1,040,000 singed, bring the American hog import to an equivalent of 1,300,000 hogs, or around 58 per cent of what was killed in Canadian houses under Government inspection.

It seems strange that with the unprecedented high prices of the past year that the Canadian farmers do not produce more hogs. Of course we are not alone in this respect, our neighbours have the same condition to report. It makes one ask the question: Is Canada, with all its possibilities, producing all the hogs she can?

In the face of the increasing population and the ever-increasing demands from England and her allies for hog meats and fats, the situation is looking very serious, for at present the United States and Canada are the only countries to whom England and her allies can look to for increased supplies of this kind.

In looking over our exports, it is satisfactory to note that we only exported 166,236 head of cattle (about 33 per cent of which were under one year), against 241,578 last year. There is also a reduction in sheep, 59,340 (73 per cent of which might be classed as lambs), against 94,588 the previous year.

Our bacon exports increased 64 million pounds over last year.

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Below you will find a comparison between hog killing of Canada, Denmark, and Ireland for calendar years:—

| Year. | Canada. | Denmark. | Ireland. |
|---------------------------------------|-----------|-----------|-----------|
| 1912..... | 1,650,966 | 2,084,786 | 1,416,490 |
| 1913..... | 1,564,246 | 2,215,850 | 1,181,285 |
| 1914..... | 2,255,479 | 2,654,041 | 1,266,620 |
| 1915..... | 2,616,461 | 1,960,965 | 1,376,063 |
| 1916..... | 2,313,389 | 1,534,011 | 1,277,050 |
| 1917 (Jan. to Sept., inc.) 9 mos..... | 1,358,646 | 950,000* | 697,900 |

*Estimated.

DISEASES FOUND AT ESTABLISHMENTS UNDER INSPECTION.

| Diseases. | Cattle. | | Sheep. | | Swine. | | Poultry. |
|---------------------------|------------|-----------|--------|------------|-----------|---------|----------|
| | Carcasses. | Portions. | Lb. | Carcasses. | Portions. | Lb. | |
| | | | | | | | |
| Abscess..... | 23 | 29,834 | 15 | 301 | 34 | 4,713 | |
| Actinomycosis..... | 21 | 28,901 | 1 | 1 | 2,318 | 2,318 | |
| Adhesions..... | | 12,749 | 4 | 533 | 13,541 | 13,541 | |
| Arthritis..... | | 1,575 | | | 59 | 57 | |
| Angiomatosis..... | | 63,791 | 20 | 1,955 | 29 | 19,691 | 66,698 |
| Bruises..... | 13 | 163 | 2 | 43 | 6 | 7,555 | |
| Cripples..... | | 144 | | | | 3,658 | |
| Cysts..... | 258 | 2,307 | | | | 191 | |
| Cysticercus bovis..... | | | | | | | |
| " cellulosae..... | | | 3 | 208 | | 497 | |
| " ovis..... | | | 1 | 313 | | | |
| " tenuicollis..... | | | 30 | 48 | 2 | 2,908 | |
| Cirrhosis..... | 81 | | | | | 5,663 | |
| Decomposed..... | | 190,259 | 6 | | 8,224 | 81,670 | |
| Dirty..... | 2 | 356,318 | | 49 | 2,150 | 761 | 168,134 |
| Emaciation..... | 612 | | 180 | | | 60 | |
| Enteritis..... | 14 | | | | | 57 | |
| Euphysema..... | 2 | | 2 | | | 371 | |
| Hernia..... | | | 1 | 3 | 6 | 107 | |
| Hydræmia..... | 106 | | 70 | | | | |
| Hog Cholera..... | | | | | | | |
| Immaturity..... | 4,116 | | | | | 72 | |
| Improper bleeding..... | 244 | | | | | 165 | |
| Inflammation..... | 22 | | 58 | | | 45 | 257 |
| Icterus..... | 9 | | 13 | | | 28 | |
| Induration..... | | | 19 | | | 2 | |
| Metritis..... | 16 | | 8 | | | 16 | |
| Mucoid degeneration..... | 290 | | | | | | |
| Melanosis..... | 2 | | | | | | |
| " Necrosis..... | | 12 | | | | | |
| " Necrosis..... | | 35 | | 3,388 | | 11,325 | |
| Nephritis..... | 22 | | | | 10 | | |
| Parasites..... | | 43,352 | | 115,062 | | 130,042 | |
| Pericarditis..... | 54 | | 2 | | | 11 | |
| Peritonitis..... | 69 | | 8 | | | 154 | |
| Pleuritis..... | 19 | | 7 | | | 93 | |
| Pneumonia..... | 96 | | 56 | | | 254 | |
| Pyæmia or septicæmia..... | 221 | | 30 | | | 556 | |
| Sexual smell..... | | | | | | 57 | 904 |
| Skin disease..... | | | | | | 1,834 | |
| Sarcooma..... | 2 | | 1 | | | 8 | |
| Sour..... | | 147,453 | | | 4,819 | | 174,759 |

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| | | | | | | | | | | | | | |
|-----------------------|--------|---------|-----|---------|--------|--|--|--|--|--|--|-----------|--------------------------------|
| Septic infection..... | 128 | | | | | | | | | | | | |
| Tuberculosis..... | 4,351 | 29,033 | 2 | | | | | | | | | | |
| Tumours..... | 11 | 11 | | | | | | | | | | | |
| Uraemia..... | | | 2 | | | | | | | | | | |
| Various..... | 65 | 2,829 | 8 | 314 | 28 | | | | | | | 6,875 | |
| Total..... | 10,903 | 215,072 | 518 | 122,218 | 15,266 | | | | | | | 1,031,942 | 498,136 |
| Found dead..... | 353 | | 380 | | | | | | | | | | 1,517 and 302 carcasses. |

8 GEORGE V, A. 1918

The following summary shows the results of post-mortem inspections of cattle, sheep, and swine from April 1, 1916, to March 31, 1917:—

| | |
|--|-----------|
| Cattle marked "Canada Approved"..... | 637,956 |
| Carcasses of cattle "Condemned"..... | 10,903 |
| Percentage of cattle "Condemned"..... | 1.68 |
| Portions of cattle "Condemned"..... | 215,072 |
| Sheep marked "Canada Approved"..... | 416,057 |
| Carcasses of sheep "Condemned"..... | 518 |
| Percentage of sheep "Condemned"..... | .12 |
| Portions of sheep "Condemned"..... | 122,218 |
| Swine marked "Canada Approved"..... | 2,239,375 |
| Carcasses of swine "Condemned"..... | 6,136 |
| Percentage of swine "Condemned"..... | .27 |
| Portions of swine "Condemned"..... | 1,031,942 |
| Total number of carcasses "Passed"..... | 3,293,388 |
| Total number of carcasses "Condemned"..... | 17,557 |
| Percentage of carcasses "Condemned"..... | .53 |
| Total number of portions "Condemned"..... | 1,369,232 |

In addition to the animals slaughtered at inspected establishments, the following amounts of dressed and cured meats and lard, etc., were received during the fiscal year from foreign countries:—

| | Lb. |
|--------------|-------------|
| Beef, | 11,542,163 |
| Mutton | 762,164 |
| Pork | 140,966,449 |
| Lard | 1,424,712 |

During the course of reinspection the following meats were condemned:—

| — | Cattle. | Sheep. | Swine. | Poultry. |
|-----------------|---------|--------|---------|----------|
| | lb. | lb. | lb. | lb. |
| Bruised..... | 7,866 | 45 | 66,698 | ..... |
| Decomposed..... | 190,259 | 8,224 | 81,670 | ..... |
| Dirty..... | 356,318 | 2,150 | 168,134 | ..... |
| Sour..... | 147,453 | 4,819 | 174,759 | ..... |
| Various..... | 10,487 | 28 | 6,875 | 1,517 |
| Total..... | 712,383 | 15,266 | 498,136 | 1,517 |

Total amount condemned on re-inspection, 1,225,785 pounds.

FRUIT AND VEGETABLES.

Owing to labour conditions, the plants engaged in canning fruits and vegetables have been under a severe handicap. A number of them did not operate at all. As a result, the total of the pack was much less, and the prices were much higher than would otherwise doubtless have been the case.

Sanitary conditions are well maintained. Their improvement during the past four years has been very marked.

Samples of all canned fruits and vegetables in Canada have been examined, and a record made. This record constitutes convincing evidence that, for the protection of the trade and the consumer, standards of quantity and quality should be established, promulgated, and enforced. The first steps are now being taken to that end.

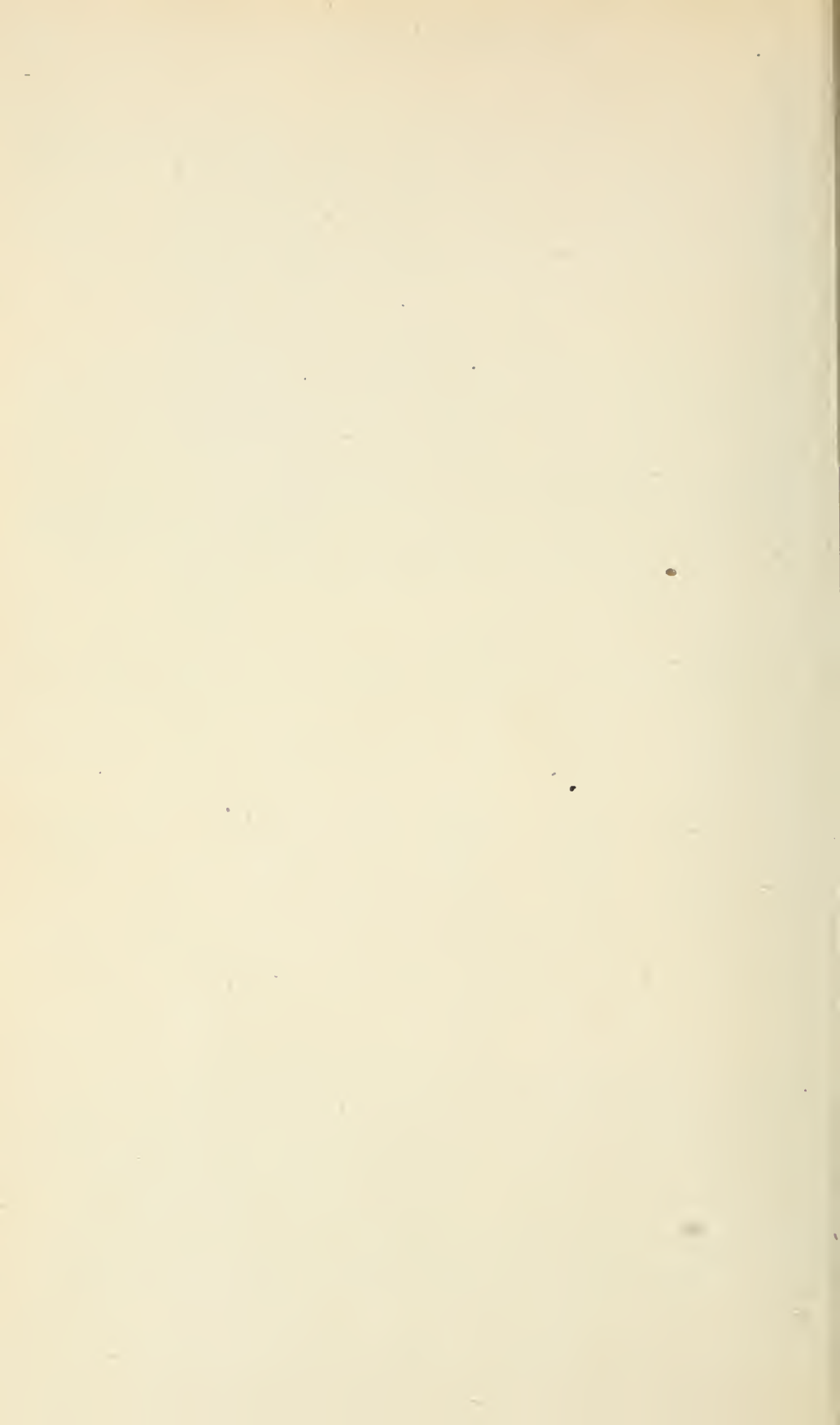
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The evaporators have been reported by our inspectors to be in good condition. Owing to the scarcity of apples, but about 40 per cent of the evaporators were operated during the year. However, the quality of the output was a decided improvement upon that of previous years. There has been quality if not quantity this year. Our supervision of the manufacture of evaporated apples, and our insistence upon the moisture-content being not more than 25 per cent, have been the primary causes of that improvement in quality shown in the high grade of evaporated apples now on sale.

EVAPORATED AND CONDENSED MILK.

The establishments manufacturing evaporated and condensed milk have had an exceptionally heavy year, but nevertheless the plants have been well maintained.

During the year, sediment tests were made of all milk supplied by the various patrons. The results of these tests were compared with those of tests made of milk supplied to the retail trade in cities and towns, to butter factories and to cheese factories. The comparison has shown that a capital quality of clean milk was being supplied to the manufacturers of evaporated and condensed milk. The favourable nature of this comparison reflects credit not only upon the patrons, but also upon the manufacturers of evaporated and condensed milk. It demonstrates that the manufacturers' campaign among their suppliers has been effective and therefore a success.



REPORT
ON THE
AGRICULTURAL INSTRUCTION ACT
1916-1917

PRINTED BY ORDER OF PARLIAMENT



OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918



OTTAWA, December 15, 1917.

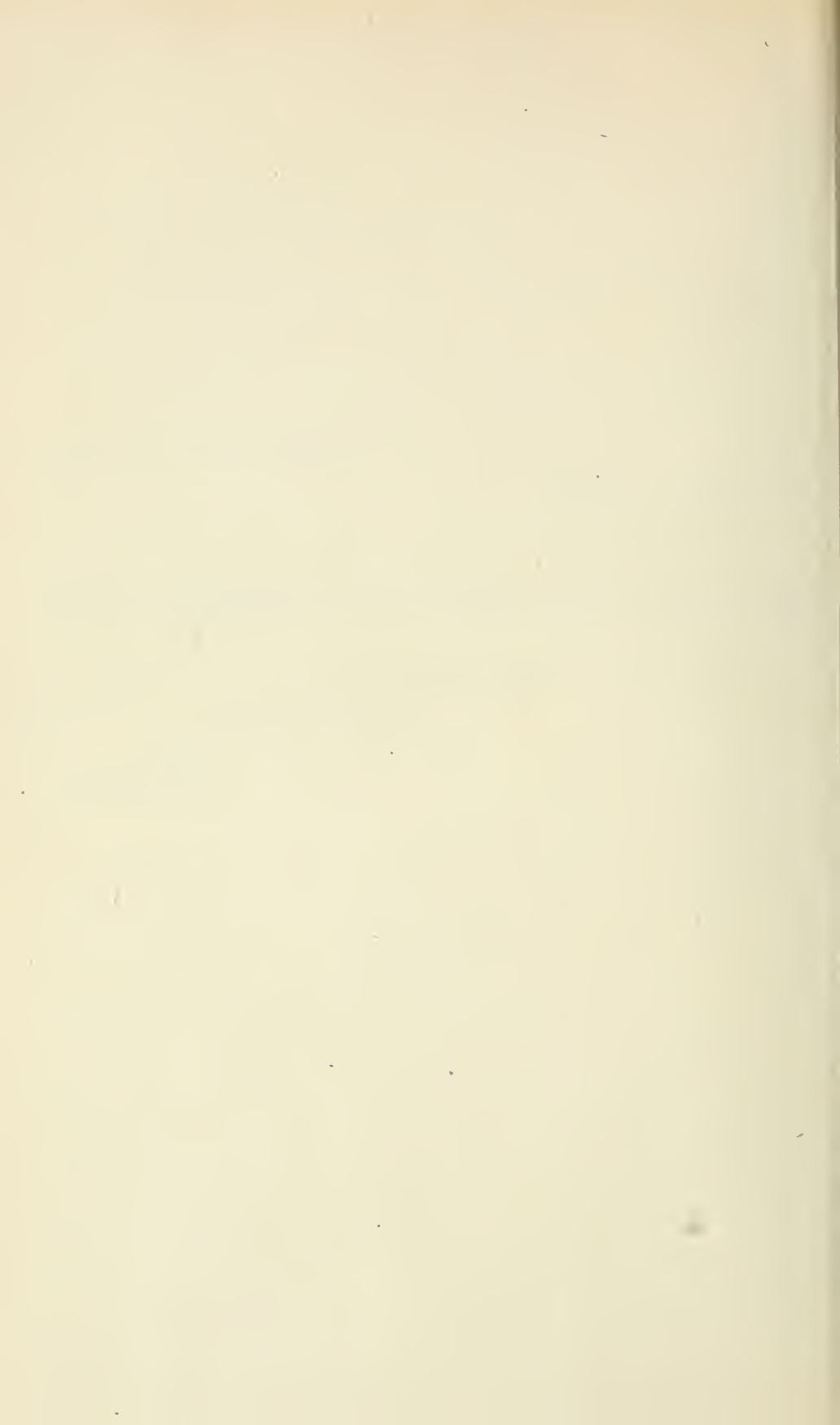
To the Hon. T. A. CRERAR,
Minister of Agriculture,
Ottawa.

SIR,—I have the honour to present herewith my report for the fiscal year ending March 31, 1917, as Commissioner under the Agricultural Instruction Act.

I have the honour to be, sir,

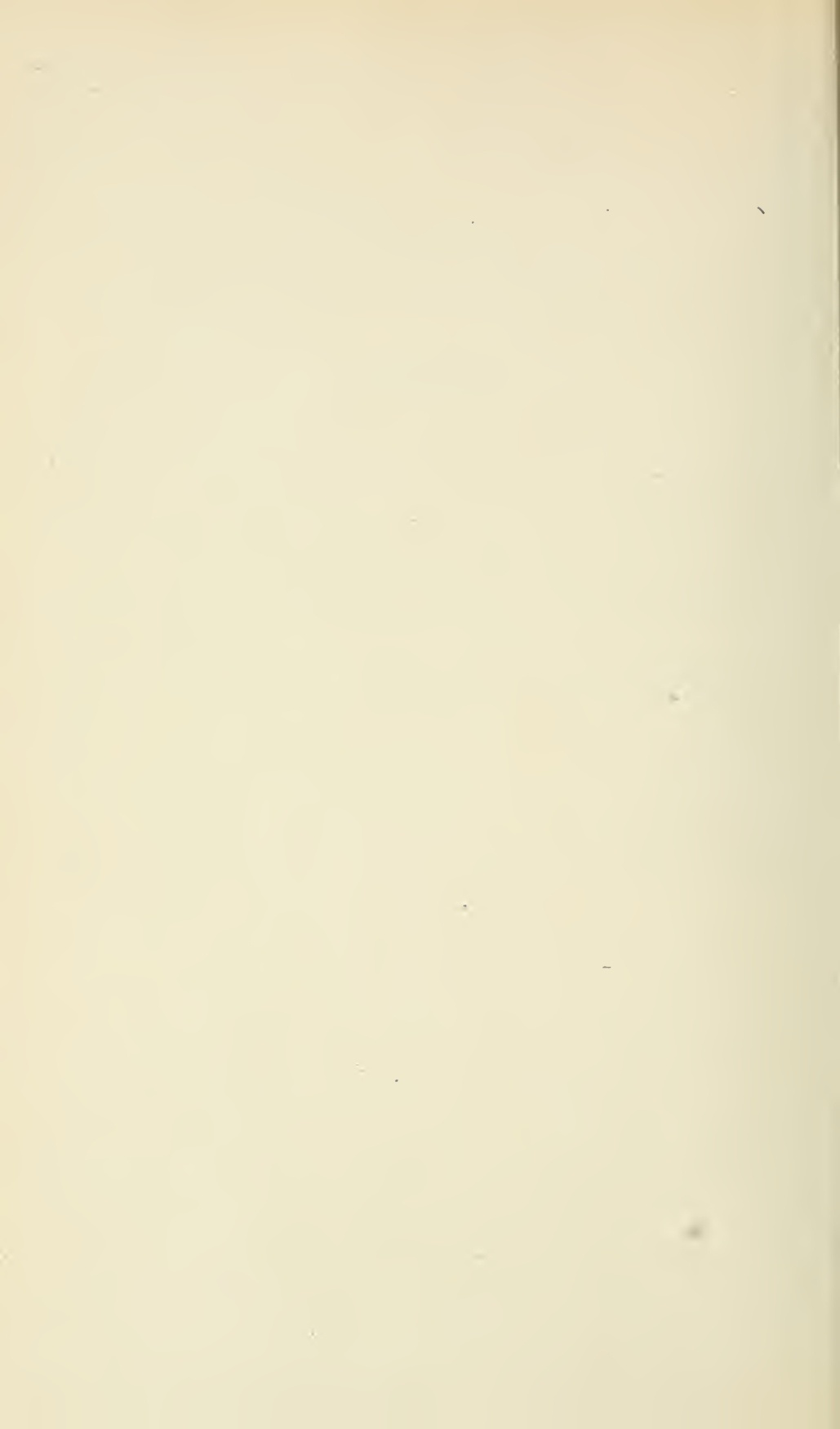
Your obedient servant,

W. J. BLACK,
Commissioner.



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REPORT

ON THE

AGRICULTURAL INSTRUCTION ACT

FOR THE FISCAL YEAR 1916-17.

Tabled in pursuance of Section 8 of the above named Act.

DOMINION GRANT OF 1916-17.

DATES OF PAYMENTS AND AMOUNTS PAID TO PROVINCES.

| Province. | Date. | 1st Half. | Date. | 2nd Half. |
|---------------------------|-----------------|------------|----------------|------------|
| | | \$ cts. | | \$ cts. |
| Nova Scotia..... | June 23, '16. | 37,429 64 | Sept. 8, '16.. | 37,429 64 |
| Saskatchewan..... | Sept. 18, '16.. | 37,434 88 | Aug. 28, '17.. | 37,434 88 |
| New Brunswick..... | June 15, '16.. | 29,604 80 | Oct. 23, '16.. | 29,604 80 |
| British Columbia..... | July 20, '16.. | 31,866 25 | Jan. 12, '17.. | 31,866 25 |
| Manitoba..... | Aug. 17, '16.. | 29,383 60 | Nov. 22, '16.. | 29,383 60 |
| Alberta..... | June 24, '16.. | 30,873 61 | Dec. 13, '16.. | 30,873 61 |
| Prince Edward Island..... | June 17, '16.. | 15,221 87 | Nov. 22, '16.. | 15,221 88 |
| Quebec..... | June 29, '16.. | 121,606 12 | Nov. 22, '16.. | 121,606 12 |
| Ontario..... | June 8, '16.. | 125,579 22 | Jan. 12, '17.. | 150,579 23 |
| | Oct. 6, '16.. | 25,000 00 | | |

VETERINARY COLLEGES.

Ecole de Médecin et de Science Vétérinaire de Montréal \$ 5,714.28
 • (Paid on 4th January, 1917.)

ONTARIO.

AGREEMENT 1916-17.

| | | |
|--|-------------|---------------------|
| 1. District Representative work including clerical or other assistance in connection with the administration..... | | \$120,000 00 |
| 2. Agricultural College:— | | |
| (a) Capital expenditure..... | \$55,000 00 | |
| (b) Salaries and expenses of additions to staff and maintenance..... | 14,000 00 | |
| | | 69,000 00 |
| 3. O.A.C. Short Courses, travelling and living expenses of winners of Acre Profit and Live Stock competitions..... | | 1,800 00 |
| 4. To encourage agriculture, manual training as applied to work on the farm and Domestic Science in High, Public, Separate and Continuation Schools, and in Universities, to be available for grants and for travelling and living expenses of teachers and others in attendance at Short Courses or other educational gatherings, in addition to services, expenses and equipment, and to be paid out on the recommendation of the Department of Education..... | | 26,000 00 |
| 5. Educational work in connection with the marketing of farm products, including organization of co-operative societies, collection, printing and distribution of information on current prices and systems of marketing..... | 5,000 00 | |
| 6. Stock and Seed judging Short Courses and Institute Lecture Work..... | 2,000 00 | |
| 7. Drainage Work..... | 10,000 00 | |
| 8. Demonstration and instruction in vegetable growing..... | 4,000 00 | |
| 9. Demonstration work on soils..... | 4,200 00 | |
| 10. Work in Beekeeping..... | 1,500 00 | |
| 11. Dairy Demonstrations..... | | 1,658 45 |
| 12. Fruit Work:— | | |
| (a) Experimental work at Vineland Horticultural Experimental Station..... | \$2,500 00 | |
| (b) Demonstrations with vegetables and hardy fruits in New Ontario..... | 3,500 00 | |
| | | 6,000 00 |
| 13. To provide for Agricultural School, including purchase of land, construction of buildings, purchase of equipment, and other services and expenses pertaining thereto, including operation and maintenance of the same..... | | 50,000 00 |
| | | <u>\$301,158 45</u> |

DISTRICT REPRESENTATIVE WORK.

The work of the District Representatives has developed into the most important branch of the work of the Agricultural Department. During the past year there were 45 offices in as many different counties or districts. Formerly it was the policy of the Department to have the offices in charge of a graduate of the Ontario Agricultural College with either an undergraduate or graduate as Assistant. In view of the large number of enlistments, 25 of the men engaged in this work having responded to the call to the colours, it was decided that it would be impossible to attempt to continue Assistants in all of the offices. Hence it was decided that Assistants would be supplied only in the larger counties and that, in the other counties the work of the District Representatives might be supplemented by local help. In most cases some young farmers who have taken a Short Course at the College or at a District Representative Agricultural Class were utilized in plot inspection, helping at School Fairs or the other phases where extra help was needed for short periods. Necessarily a great deal of attention has been devoted to the campaign for increased production so necessary under war conditions. In addition to giving information on all kinds of subjects, they have rendered special assistance in the matter of distribution of seed and distribution of labour. The offices of the District Representatives have been designated as branches of the Labour Bureau so that farmers might apply locally, and if their requests could not be filled locally, they would be passed on to the central office. In addition to this special work, the regular work of the District Representatives has been well maintained. One of the important features of this work has been that devoted to interesting the boys and girls on the farm in

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farm matters and imparting information as to better methods. One of the most effective means of accomplishing this has been the School Fair, and the following figures will show that the School Fair movement has developed in spite of the shortage of help and the difficulties incidental to war conditions:—

| | 1915 | 1916 |
|-------------------------------------|---------|---------|
| Number of fairs held..... | 234 | 275 |
| Number of schools included..... | 2,291 | 2,620 |
| Number of children taking part..... | 48,386 | 60,262 |
| Attendance at fairs..... | 157,266 | 178,246 |
| Number of entries..... | 116,236 | 113,263 |
| Number of home plots..... | 51,243 | 55,947 |

In the matter of Agricultural Classes the War has had a greater effect, as a considerable number of those who would otherwise attend have volunteered for active service or have been required to stay at home on account of the shortage of labour. The total attendance last winter at these Classes extending over four weeks was in the neighbourhood of 800. Out of these Classes have grown the Junior Farmers' Improvement Associations, an organization to maintain and carry on the interest developed in the Classes by a series of experiments and the Inter-County Live Stock Judging Competitions. In connection with the latter it may be explained that a Team comprising three chosen from the Classes represents the County at the Winter Fair at Guelph for Western Ontario to compete for a cup donated by the late Hon. J. S. Duff, and Teams similarly chosen from the Counties in Eastern Ontario meet at Ottawa to compete for a cup donated by Peter White, K.C. The winners, which last year were York and Dundas Counties respectively, met in Toronto early in February during the meeting of the Live Stock Associations and competed for a Provincial Championship Cup donated by the Union Stock Yards. This was won by Dundas County, which has the honour of holding the first Provincial Championship.

Other work carried on by District Representatives included Home Vegetable Garden Contests, Acre Profit and Live Stock Competitions, campaign against the smut menace, drainage surveys, demonstration orchards, alfalfa experiments, addressing educational and co-operative gatherings of various kinds, and a large variety of other very useful work.

WOMEN'S INSTITUTES.

Although no appropriation was included in last year's Federal Grant for Women's Institutes, considerable work was done with the balance left from the previous agreement. This was very largely spent in providing speakers for Women's Institute meetings held throughout the Province. The special feature being developed in this connection is a two weeks' domestic science course for girls carried on much the same as the four weeks' courses in agriculture for boys. Very frequently, but not always, this is held at the same time and place as the boys' course, and the community of interest adds to the success of both courses. Last winter one of the girls' classes joined the boys' class in an excursion to Toronto where they visited the offices of the Department of Agriculture, after which the girls visited the Technical School and places for domestic science training, while the boys visited the Stock Yards and other similar points of agricultural interest. Last winter some 80 of these Classes were held throughout the Province with an attendance of over 2,500.

DRAINAGE WORK.

Two distinct lines of drainage work have been carried on. The availability of additional funds has greatly increased the usefulness of the work directed from the Ontario Agricultural College, which consists in making surveys,

supplying blue prints and holding demonstrations to give instruction as to the laying of tile. The demand for this class of work has shown a great increase, and the fact that over 150 ditching machines have been brought into the Province has made possible the laying of a great deal of tile in spite of the labour shortage, which would otherwise be a great handicap.

The other phase of the drainage work has been that carried on in the Algoma and Rainy River Districts. Labour for digging seemed to be one of the chief obstacles in the newer districts and the work did not appear to be sufficient to warrant the purchasing of a ditching machine or tile outfit on a commercial basis. In 1915, it was decided that practical assistance could be rendered by purchasing an outfit and demonstrating the possibilities of drainage in this way, doing the work on a basis of cost. This proved so successful that it was extended by the purchase of a machine for the Rainy River District in 1916, both machines being kept busy last season much to the advantage of the respective districts.

DAIRY DEMONSTRATIONS.

In view of the importance of improving the market quality of Ontario dairy products, it was decided that certain work should be undertaken in 1916 with a view to laying the foundation for a system of grading. A special man was employed and was engaged in making tests of samples of butter accessible in a number of the cold storages. The information he obtained in this way as to methods of marketing was utilized in giving instructions to the different creamerymen as to how improvements could be effected. It also placed the Department in possession of information as to the points of strength and weakness in the Ontario product, and as a consequence, it was decided to adopt a system of butter grading for the Province. This preliminary educational work having accomplished its purpose, the cost of butter grading will in future be carried under the regular appropriations of the Department.

KEMPTVILLE AGRICULTURAL SCHOOL.

During the past year an announcement was made by the Minister of Agriculture for Ontario to the effect that the Department had decided to establish an Agricultural School in Eastern Ontario and that the village of Kemptville had been selected as the site. It is the intention that this School shall offer short courses and a two year course in Agriculture, and shall serve the eastern section of the Province, which is not now so served. The work of the Department in connection with School Fairs and Agricultural Classes has apparently created a demand for an institution of this character. Some 200 acres of land were purchased at Kemptville, a town well located on the railway and convenient to several Eastern Ontario Counties. This land will be operated as part of the School in order to give practical emphasis to the principles taught. Purchases of live stock and equipment have also been made, but the main building will not be constructed until the conclusion of the war.

SHORT COURSES, ONTARIO AGRICULTURAL COLLEGE.

In pursuance of the policy of former years, the District Representatives conducted Acre Profit Competitions and Live Stock Profit Competitions. The idea is to not only demonstrate the possibilities of an acre of land or a few head of stock, but also to interest the boys in this practical way. It has not been thought sufficient to award a prize merely for the largest yields unless the largest yields were accompanied by a careful accounting which meant also the largest

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profits. The prize awarded to the winner in these competitions in the different counties is free travelling and living expenses to Guelph for the two weeks' Short Course in Live Stock and Seed Judging. The prize is, therefore, equally as educational as the competition.

VEGETABLE WORK.

It is now recognized by those engaged in the vegetable growing industry that the appointment of a Vegetable Specialist under The Agricultural Instruction Act a few years ago has proven one of the best steps in the interests of the vegetable industry in the Province. During the past year the Vegetable Specialist carried on further work in connection with the control of celery and onion blight and the cabbage root maggot. This work consisted both of making practical experiments and conveying the information to the growers. During the winter months conferences were held in the different vegetable growing centres. These were made very practical and helpful and have been an important educational factor. During the past summer about 1,500 feet of film showing various phases of the work was prepared, and its display proved a most helpful feature of the conferences referred to.

DEMONSTRATION WORK ON SOILS.

This work is carried on under the Professor of Chemistry at the Ontario Agricultural College who directs a field staff during the summer months, visiting various sections of the Province and charting the different soil formations. Analysis of a large number of samples is also made and practical growing tests are carried on. The work with reference to Western Ontario has been practically completed, and a publication is being issued giving this information to the public. The work will be continued in Eastern Ontario.

FRUIT DEMONSTRATIONS IN UPPER ONTARIO.

In 1915 it was decided that it would be good work to demonstrate the usefulness of certain varieties of tender or semi-tender fruits in Upper Ontario. In order to accomplish this with a minimum outlay, arrangements were made with the Provincial Secretary's Department of the Government by which a portion of the Farm owned by them and operated as a Prison Farm near Fort William should be at the disposal of the Department. The Department appointed a competent man to take charge of the work, and preliminary efforts have laid the foundation for most useful work in the newer sections.

CO-OPERATION AND MARKETING.

The work of the Branch devoted to co-operation and marketing has been entirely of an educational nature. The efforts of the Director and his assistants, who so far are only temporarily employed, have been confined very largely to giving instruction on the marketing of different products. A number of new associations have been organized, but considerable time has been spent in placing organizations already in existence on a proper footing.

AGRICULTURAL EDUCATION.

The Inspector of Elementary Agricultural Classes, Dr. J. B. Dandeno, reports that in 1916, 752 Public and Separate Schools qualified for grants for the teaching of Agriculture. The requirements are, teaching in class for at

least one hour a week throughout the school year and home or school gardens. The equipment needed is paid for in the form of grants to the Boards.

The teaching of Agriculture is recognized only in Forms III, IV, and V, and in these classes there were, in 1916, over 13,000 pupils. The cost is about 75 cents a pupil per year. The Inspectors are required to pay special attention to the teaching of Agriculture, and an allowance is made them for the work. Though much of the teaching is as yet by no means what might be desired, yet most of the work is very creditable and some exceedingly good.

Twenty-one Secondary Schools conducted classes in Agriculture in 1916 with about 600 pupils. Allowances are made to Boards for equipment and to teachers for conducting the work.

The cost of instruction in Agriculture in the Normal Schools is met mainly from Provincial funds, but the Federal grant is drawn upon to provide special equipment. In 1916, 196 teachers attended the Summer School courses at the Ontario Agricultural College. Of these 153 attended the course leading to an Elementary certificate, and 43 attended the Intermediate certificate course. Students are allowed \$25 for maintenance and travelling expenses, conditional on their teaching Agriculture throughout the year following the course. In 1917 and thereafter, a short course in Farm Mechanics, of at least four weeks, will be given to teachers who are qualifying to teach Agriculture in the High Schools.

OFFICERS PROVIDED BY THE DOMINION GRANT.

(a) Officers, regularly employed, whose salaries are paid wholly from the Agricultural Instruction Grant:—

Ontario Agricultural College, Guelph—

Lecturer in Poultry, F. N. Marcellus, B.S.A.

Lecturer in Farm Management, A. Leitch, B.S.A.

Lecturer in Rural Sociology, A. Maclaren, B.S.A.

Lecturer in Geology and Soils, John Woodward.

Lecturer in Physics, J. R. Spry, B.S.A.

Soil Analyst, S. R. Curzon, B.S.A.

Demonstrator in Horticulture, H. S. Fry, B.S.A.

Lecturer in Chemistry, C. W. Stanley.

Lecturer in Animal Husbandry, J. P. Sackville, B.S.A.

Poultry Specialist, G. R. Wilson.

*Horticulturist, G. J. Culham, B.S.A.

*Assistant in Soil Work, F. Bryant.

Assistant in Soil Work, D. Johns.

Department of Agriculture, Toronto—

Stenographers, four.

Director, Co-operation and Markets Branch, F. C. Hart, B.S.A.

Assistant, Co-operation and Markets Branch, J. B. Fairbairn, B.S.A.

District Representative Supervisor, R. S. Duncan, B.S.A.

Assistants in Vegetable Work, Frank F. Reeves, Geo. Madden, Richard Aymer.

Department of Agriculture, Outside Service—

Corn Specialist, P. L. Fancher, B.S.A., Chatham.

Plant Breeding Specialist, W. R. Leslie, Fort William.

Horticultural Experiment Station, Vineland, Ont.—

Assistant Experimentalist, P. E. Culverhouse, B.S.A.

In charge of Fruit Extension Work, O. J. Robb.

*On Active Service.

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Department of Education, Toronto—

Director of Elementary Agricultural Education, Dr. J. B. Dandeno.

Teacher of Domestic Art, Miss A. E. Robertson.

(b). Officers regularly employed, whose salaries are paid in part from the Grant.

Department of Agriculture, Outside Service—

Forty-five District Representatives.

ONTARIO.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| Classification. | Balance, April 1, 1916. | Grant. | Refunds. | Total Credits. | Expendi- ture. | Cr. Balance. |
|---|-------------------------------|------------|----------|-------------------|-------------------|-----------------|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1 District Representatives..... | 3,847 10 | 120,000 00 | 101 50 | 123,948 60 | 123,101 53 | 847 07 |
| 2. Ontario Agricultural College— | | | | | | |
| (a) Capital expenditure..... | 27,677 73 | 55,000 00 | 1,000 00 | 83,677 73 | 28,338 01 | 55,339 72 |
| (b) Salaries and expenses of addi- tions to staff and maintenance | 2,378 68 | 14,000 00 | ..... | 16,378 68 | 13,022 82 | 3,355 86 |
| 3. O.A.C. Short Courses for winners of Acre Profit and Live Stock Com- petitions..... | 115 23 | 1,800 00 | ..... | 1,915 23 | 1,890 75 | 24 48 |
| 4. To encourage Agriculture, Manual Training and Domestic Science in Schools..... | 11,608 01 | 26,000 00 | ..... | 37,608 01 | 14,844 67 | 22,763 34 |
| 5. Marketing of Farm Products..... | 2,233 67 | 5,000 00 | ..... | 7,233 67 | 4,615 12 | 2,618 55 |
| 6. Stock and Seed Judging, Short Courses, etc..... | 4,530 59 | 2,000 00 | 411 05 | 6,941 64 | 3,800 85 | 3,140 79 |
| 7. Drainage Work..... | 10 34 | 10,000 00 | 2,085 00 | 12,095 34 | 10,439 73 | 1,655 61 |
| 8. Demonstrations in vegetable grow- ing..... | 38 37 | 4,000 00 | ..... | 4,038 37 | 3,943 76 | 94 61 |
| 9. Demonstration work on soils..... | ..... | 4,200 00 | ..... | 4,200 00 | 3,685 60 | 514 40 |
| 10. Bee-keeping..... | 52 31 | 1,500 00 | ..... | 1,552 31 | 878 24 | 674 07 |
| 11. Dairy Demonstrations..... | ..... | 1,658 45 | ..... | 1,658 45 | 1,519 87 | 138 58 |
| 12. Fruit Work— | | | | | | |
| (a) Experimental Work, Vineland Station..... | 868 23 | 2,500 00 | ..... | 3,368 23 | 2,107 00 | 1,261 23 |
| (b) Demonstrations with veget- ables and fruits in New Ont- ario..... | ..... | 3,500 00 | ..... | 3,500 00 | 1,138 25 | 2,361 75 |
| 13. To provide for Agricultural school.. | ..... | 50,000 00 | 185 00 | 50,185 00 | 21,603 66 | 28,581 34 |
| | 53,360 26 | 301,158 45 | 3,782 55 | 358,301 26 | 234,929 86 | 123,371 40 |
| ADDITIONAL FROM 1915-16. | | | | | | |
| Women's Institutes..... | 5,045 27 | ..... | 132 81 | 5,178 08 | 5,007 32 | 170 76 |
| Short Courses, Fall Fair Judges..... | 427 59 | ..... | ..... | 427 59 | 59 85 | 367 74 |
| Demonstrations in Live Stock and Poul- try..... | 2,070 60 | ..... | 368 50 | 2,443 49 | 1,541 60 | 901 89 |
| Transferred from Agric'l Aid account... | ..... | ..... | 4 39 | ..... | ..... | ..... |
| Demonstrations in Fruit Growing..... | 4,297 42 | ..... | ..... | 4,297 42 | 1,100 00 | 3,197 42 |
| Lectures on Horticulture..... | 224 20 | ..... | ..... | 224 20 | 213 18 | 11 02 |
| Miscellaneous..... | 3,663 00 | ..... | ..... | 3,663 00 | 2,401 77 | 1,261 23 |
| | 69,088 34 | 301,158 45 | 4,288 25 | 374,535 04 | 245,253 58 | 129,281 46 |

1.—DISTRICT REPRESENTATIVES.

| | | | | | | | | |
|--|----|----------|----|-----------------------|----|--------|---------|----|
| Balance April 1, 1916..... | | | \$ | 3,847 | 10 | | | |
| Grant 1916-17, \$169,000.00, by transfer, \$20,000.00..... | | | | 120,000 | 00 | | | |
| Refunds credited to appropriation..... | | | | 101 | 50 | | | |
| | | | | 123,948 | 60 | | | |
| Expenditure to March 31, 1917..... | | | | 123,101 | 53 | | | |
| Balance March 31, 1917..... | | | | 847 | 07 | | | |
| | | | | | | | | |
| Brant..... | \$ | 2,717 | 19 | Lennox..... | \$ | 2,498 | 82 | |
| Bruce..... | | 2,444 | 03 | Muskoka..... | | 2,057 | 28 | |
| Carleton..... | | 2,358 | 60 | Miscellaneous..... | | 17,553 | 70 | |
| Dufferin..... | | 4,366 | 36 | New Liskeard..... | | 2,045 | 34 | |
| Dundas..... | | 2,432 | 57 | Northumberland..... | | 1,986 | 14 | |
| Durham..... | | 2,975 | 50 | Norfolk..... | | 2,168 | 72 | |
| Elgin..... | | 2,761 | 05 | Ontario..... | | 3,042 | 43 | |
| Essex..... | | 2,162 | 60 | Oxford..... | | 2,523 | 36 | |
| Frontenac..... | | 2,309 | 71 | Prince Edward..... | | 2,744 | 39 | |
| Fort William..... | | 1,270 | 83 | Port Arthur..... | | 1,261 | 71 | |
| Grenville..... | | 3,502 | 62 | Peterboro..... | | 2,127 | 07 | |
| Glengarry..... | | 3,181 | 32 | Peel..... | | 3,868 | 12 | |
| Gore Bay..... | | 2,158 | 53 | Rainy River..... | | 2,153 | 66 | |
| Grey..... | | 2,729 | 26 | Renfrew..... | | 2,044 | 75 | |
| Halton..... | | 1,666 | 71 | Sault Ste. Marie..... | | 1,826 | 58 | |
| Hastings..... | | 1,739 | 77 | Simcoe..... | | 2,781 | 08 | |
| Haldimand..... | | 1,785 | 59 | Sudbury..... | | 1,910 | 89 | |
| Kenora..... | | 1,661 | 21 | Victoria..... | | 2,232 | 24 | |
| Kent..... | | 2,806 | 07 | Waterloo..... | | 2,123 | 01 | |
| Lambton..... | | 2,339 | 66 | Welland..... | | 2,408 | 27 | |
| Lanark..... | | 2,180 | 38 | Wentworth..... | | 2,026 | 51 | |
| Leeds..... | | 2,638 | 56 | York..... | | 2,494 | 14 | |
| Middlesex..... | | 2,733 | 53 | Cochrane..... | | 301 | 67 | |
| | | | | | | | | |
| | | \$56,921 | 65 | | | \$ | 66,179 | 88 |
| | | | | | | | 56,921 | 65 |
| | | | | | | \$ | 123,101 | 53 |

2.—ONTARIO AGRICULTURAL COLLEGE.

(a) CAPITAL EXPENDITURE.

| | | | | | |
|--|----|--------|----|---------|--------|
| Balance April 1, 1916..... | | | \$ | 27,677 | 73 |
| Grant, 1916-17..... | | | | 75,000 | 00 |
| Refund credited to appropriation..... | | | | 1,000 | 00 |
| | | | | 103,677 | 73 |
| By transfer to District Representatives..... | | | | 20,000 | 00 |
| | | | | 83,677 | 73 |
| Expenditure to March 31, 1917..... | | | | 28,338 | 01 |
| Balance, March 31, 1917..... | | | \$ | 55,339 | 72 |
| | | | | | |
| Poultry Building,— | | | | | |
| Labour..... | \$ | 599 | 60 | | |
| Material..... | | 299 | 42 | \$ | 899 |
| Physics Buildings,— | | | | | |
| Labour..... | | 673 | 48 | | |
| Material..... | | 1,123 | 91 | | |
| Furnishings..... | | 1,498 | 93 | | |
| Incidentals..... | | 37 | 59 | | 3,333 |
| Chemistry Building,— | | | | | |
| Labour..... | | 899 | 30 | | |
| Materials..... | | 2,497 | 33 | | |
| Contracts..... | | 20,485 | 01 | | |
| Incidentals..... | | 233 | 44 | | 24,105 |
| | | | | \$ | 28,338 |

In addition to finishing up work in connection with the Poultry Building and Physics Building, the main work carried on was the addition of a new wing to the Chemistry Building.

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(b) SALARIES AND EXPENSES OF ADDITIONS TO STAFF.

| | | |
|--|----|-----------|
| Balance, April 1, 1916..... | \$ | 2,378 68 |
| Grant, 1916-17..... | | 14,000 00 |
| | \$ | 16,378 68 |
| Expenditure to March 31, 1917..... | | 13,022 82 |
| Balance, March 31, 1917..... | \$ | 3,355 86 |
| | | |
| R. Bryant, Assist. in Drainage Work, services..... | \$ | 720 00 |
| G. J. Culham, Lecturer in Horticulture, services and expenses..... | | 835 00 |
| S. R. Curzon, services..... | | 166 00 |
| H. S. Fry, Lecturer in Horticulture, services and expenses..... | | 1,548 05 |
| A. Leitch, Lecturer in Farm Management, services..... | | 1,841 00 |
| J. P. Hales, Lecturer in Poultry, services..... | | 1,200 00 |
| C. M. Laidlaw, Assist. in Drainage Work, services..... | | 93 95 |
| F. N. Marcellus, Lecturer in Poultry, services..... | | 1,641 00 |
| J. R. Spry, Lecturer, services and expenses..... | | 1,601 40 |
| C. W. Stanley, services..... | | 200 00 |
| J. P. Sackville, Lecturer in Animal Husbandry, services..... | | 1,241 00 |
| J. Woodward, Lecturer in Chemistry, services and expenses..... | | 1,935 42 |
| | \$ | 13,022 82 |

3.—SHORT COURSES, O.A.C.

| | | |
|--|----|----------|
| Balance, April 1, 1916..... | \$ | 115 23 |
| Grant, 1916-17..... | | 1,800 00 |
| | \$ | 1,915 23 |
| Expenditure to March 31, 1917..... | | 1,890 75 |
| Balance, March 31, 1917..... | \$ | 24 48 |
| | | |
| Travelling and living expenses of winners of competitions..... | \$ | 1,835 75 |
| Printing and Stationery..... | | 55 00 |
| | \$ | 1,890 75 |

4.—TO ENCOURAGE AGRICULTURE IN PUBLIC SCHOOLS.

| | | |
|--|----|-----------|
| Balance April 1, 1916..... | \$ | 11,608 01 |
| Grant, 1916-17..... | | 26,000 00 |
| | \$ | 37,608 01 |
| Expenditure to March 31, 1917..... | | 14,844 67 |
| Balance March 31, 1917..... | \$ | 22,763 34 |
| | | |
| J. B. Dandeno, services as inspector..... | \$ | 2,499 96 |
| A. F. Robertson, services as Instructor in Domestic Art..... | | 1,500 00 |
| Instructors and students, services and expenses..... | | 4,601 03 |
| Grants..... | | 5,405 50 |
| Printing, advertising, contingencies..... | | 378 18 |
| | \$ | 14,844 67 |

5.—EDUCATIONAL WORK RE MARKETING.

| | | |
|--|----|----------|
| Balance, April 1, 1916..... | \$ | 2,233 67 |
| Grant, 1916-17..... | | 5,000 00 |
| | \$ | 7,233 67 |
| Expenditure to March 31, 1917..... | | 4,615 12 |
| Balance, March 31, 1917..... | \$ | 2,618 55 |
| | | |
| F. C. Hart, Director, services and expenses..... | \$ | 2,614 04 |
| J. B. Fairbairn, Assistant, services and expenses..... | \$ | 1,040 90 |
| Stenographer..... | | 618 75 |
| Printing, stationery, contingencies..... | | 341 43 |
| | \$ | 4,615 12 |

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6.—STOCK AND SEED JUDGING.

| | |
|--|-------------|
| Balance, April 1, 1916..... | \$ 4,530 59 |
| Grant, 1916-17..... | 2,000 00 |
| Refunds credited to appropriation..... | 411 05 |
| | <hr/> |
| | \$ 6,941 64 |
| Expenditure to March 31, 1917..... | 3,800 85 |
| | <hr/> |
| Balance, March 31, 1917..... | \$ 3,140 79 |

Services and expenses of Instructors,—

| | | | |
|----------------------|-------------|-----------------------------|-------------|
| G. Browne..... | \$119 10 | G. R. Green..... | \$ 50 00 |
| C. E. Bain..... | 19 10 | H. G. Reed..... | 267 90 |
| G. A. Brethen..... | 4 20 | F. H. Silcox..... | 15 90 |
| W. J. Bell..... | 150 00 | R. S. Stevenson..... | 315 15 |
| W. E. Baker..... | 361 50 | D. M. Winter..... | 50 00 |
| R. H. Harding..... | 238 25 | F. R. Mallory..... | 96 12 |
| J. Gardhouse..... | 14 30 | J. P. Sackville..... | 37 20 |
| W. J. Gardhouse..... | 25 25 | D. MacVannel..... | 6 25 |
| H. M. King..... | 24 30 | C. Schuyler..... | 77 25 |
| W. Leitch..... | 93 55 | R. M. Tipper..... | 21 24 |
| J. M. McCallum..... | 115 15 | A. W. Sirett..... | 50 00 |
| G. E. Day..... | 33 55 | Forward..... | 1,564 81 |
| | | | <hr/> |
| A. R. Ness..... | 98 61 | | \$ 2,561 82 |
| E. P. Bradt..... | 99 80 | Labour, cartage, etc..... | 359 31 |
| G. A. Putnam..... | 100 00 | Rent of stock..... | 395 91 |
| W. G. Orvis..... | 17 25 | Print. and Advertising..... | 372 31 |
| E. Gordon..... | 50 90 | Rent of halls, etc..... | 102 50 |
| | | Livery hire..... | 19 00 |
| | | | <hr/> |
| | \$ 1,564 81 | | \$ 3,800 85 |

This expenditure was largely for lecturers who did Educational work throughout the country in short courses in Stock and Seed Judging, carried on under the Institutes Branch of the Department.

7.—DRAINAGE WORK.

| | |
|---|--------------|
| Balance, April 1, 1916..... | \$ 10 34 |
| Grant, 1916-17..... | 10,000 00 |
| Refunds credited to appropriation..... | 2,085 00 |
| | <hr/> |
| | \$ 12,095 34 |
| Expenditure to March 31, 1917..... | 10,439 73 |
| | <hr/> |
| Balance, March 31, 1917..... | \$ 1,655 61 |
| W. Dunn, Demonstrator, services and expenses..... | \$ 557 49 |
| E. Murdock, Demonstrator, services and expenses..... | 291 00 |
| I. B. Martin, Demonstrator, services and expenses..... | 411 10 |
| J. W. Wadsworth, Demonstrator, services and expenses..... | 335 43 |
| W. H. Scott, Soil Analyst, services and expenses..... | 709 88 |
| A. M. Morton, Laboratory Assistant, services..... | 360 00 |
| C. M. Laidlaw, expenses..... | 79 35 |
| Stenographer..... | 129 50 |
| Fieldmen, services and expenses..... | 685 88 |
| Draftsmen, services and expenses..... | 126 34 |
| Tile layers..... | 250 71 |
| Machine operators..... | 321 13 |
| Surveyors..... | 136 54 |
| Concrete mixer..... | 870 54 |
| Ditching machine..... | 2,390 41 |
| Tile, supplies, repairs, etc..... | 2,008 06 |
| Printing, postage, stationery, cartage..... | 776 36 |
| | <hr/> |
| | \$ 10,439 73 |

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8.—DEMONSTRATION IN VEGETABLE GROWING.

| | \$ | cts. |
|--|-------|-------|
| Balance, April 1, 1916..... | | 38 37 |
| Grant 1916-17..... | 4,000 | 00 |
| | 4,038 | 37 |
| Expenditure to March 31, 1917..... | 3,943 | 76 |
| Balance, March 31, 1917..... | | 94 61 |
| S. C. Johnston, Vegetable Specialist, services and expenses..... | 2,196 | 69 |
| Sundry persons lecturing, services and expenses..... | 510 | 35 |
| Livery and incidentals..... | 479 | 80 |
| Furnishings and equipment..... | 700 | 39 |
| Printing, stationery, etc..... | 56 | 53 |
| | 3,943 | 76 |

9.—DEMONSTRATION WORK ON SOILS.

| | \$ | cts. |
|--|-------|--------|
| Grant, 1916-17..... | 4,200 | 00 |
| Expenditure to March 31, 1917..... | 3,685 | 60 |
| Balance, March 31, 1917..... | | 514 40 |
| R. A. Brink, services and expenses..... | 315 | 70 |
| S. R. Curzon, services and expenses..... | 700 | 00 |
| H. L. Fulmer, services and expenses..... | 26 | 80 |
| A. L. Gibson, services and expenses..... | 177 | 46 |
| R. Harcourt, services and expenses..... | 177 | 55 |
| W. L. Iveson, services and expenses..... | 282 | 99 |
| D. Johns, services and expenses..... | 540 | 00 |
| C. Stanley, services and expenses..... | 824 | 58 |
| J. Woodward, services and expenses..... | 170 | 40 |
| Supplies, equipment, repairs..... | 357 | 75 |
| Sundry persons, services and expenses..... | 96 | 50 |
| Freight and cartage..... | 13 | 07 |
| Incidentals..... | 2 | 80 |
| | 3,685 | 06 |

10.—DEMONSTRATIONS IN BEE-KEEPING.

| | \$ | cts. |
|--|-------|--------|
| Balance, April 1, 1916..... | | 52 31 |
| Grant, 1916-17..... | 1,500 | 00 |
| | 1,552 | 31 |
| Expenditure to March 31, 1917..... | 878 | 24 |
| Balance, March 31, 1917..... | | 674 07 |
| Students and Instructors, services and expenses— | \$ | cts. |
| C. E. Arnold..... | 61 | 85 |
| J. Armstrong..... | 50 | 25 |
| A. Denison..... | 102 | 26 |
| A. E. Hutchison..... | 34 | 00 |
| G. F. Kingsmill..... | 137 | 12 |
| M. Pettit..... | 205 | 84 |
| S. A. Stewart..... | 64 | 00 |
| Stenographer..... | | 655 32 |
| Supplies, etc..... | | 150 00 |
| | | 72 92 |
| | | 878 24 |

A number of short courses and demonstrations were given at fall fairs and other centres.

11.—DAIRY DEMONSTRATIONS.

| | \$ | cts. |
|--|-------|--------|
| Grant, 1916-17..... | 1,658 | 45 |
| Expenditure to March 31, 1917..... | 1,519 | 87 |
| Balance, March 31, 1917..... | | 138 58 |
| J. H. Scott, services and expenses as official grader of butter..... | 1,504 | 42 |
| Contingencies..... | | 15 45 |
| | 1,519 | 87 |

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12 (a).—HORTICULTURAL EXPERIMENT STATION.

| | \$ | cts. |
|--|----|----------|
| Balance, April 1, 1916..... | | 868 23 |
| Grant, 1916..... | | 2,500 00 |
| | | 3,368 23 |
| Expenditure to March 31, 1917..... | | 2,107 00 |
| | | 1,261 23 |
| | \$ | cts. |
| P. E. Culverhouse, Special Hyptatics, services and expenses..... | | 1,256 06 |
| E. Culp, assistant, services and expenses..... | | 161 15 |
| Supplies, equipment, incidentals..... | | 689 79 |
| | | 2,107 00 |

12 (b).—FRUIT DEMONSTRATIONS IN NEW ONTARIO.

| | \$ | cts. |
|--|----|----------|
| Grant, 1916-17..... | | 3,500 00 |
| Expenditure to March 31, 1917..... | | 1,138 25 |
| | | 2,361 75 |
| E. M. Ricker, services and expenses..... | | 125 51 |
| W. R. Leslie, services and expenses..... | | 100 00 |
| Trees and equipment..... | | 79 72 |
| Contingencies..... | | 136 39 |
| Fuel..... | | 647 13 |
| | | 1,138 75 |

13.—AGRICULTURAL SCHOOL.

| | \$ | cts. |
|--|----|-----------|
| Grant, 1916-17..... | | 50,000 00 |
| Refunds credited to appropriation..... | | 185 00 |
| | | 50,185 00 |
| Expenditure to March 31, 1917..... | | 21,603 66 |
| | | 28,581 34 |
| | \$ | cts. |
| Purchase of land..... | | 14,500 00 |
| Purchase of live stock and implements..... | | 5,337 77 |
| Equipment..... | | 263 55 |
| Labour..... | | 792 18 |
| Seed grain..... | | 624 88 |
| Sundries..... | | 85 28 |
| | | 21,603 66 |

WOMEN'S INSTITUTES.

| | \$ | cts. |
|--|----|----------|
| Balance, April 1, 1916..... | | 5,045 27 |
| Refunds credited to appropriation..... | | 132 81 |
| | | 5,178 08 |
| Expenditure to March 31, 1917..... | | 5,007 32 |
| | | 170 76 |
| <i>Lectures—Services and Expenses—</i> | \$ | cts. |
| E. Broughton..... | | 34 90 |
| R. M. Black..... | | 120 35 |
| C. Brown..... | | 108 30 |
| E. G. Conover..... | | 11 40 |
| E. B. Chapman..... | | 80 50 |
| E. D. Campbell..... | | 20 48 |
| E. Collins..... | | 609 50 |
| B. A. Duncan..... | | 178 97 |
| M. I. M. Foote..... | | 281 04 |
| G. Gray..... | | 680 45 |
| H. E. Graydon..... | | 78 60 |
| O. E. Hayes..... | | 255 13 |
| I. Hobbs..... | | 124 90 |
| E. McKay..... | | 187 90 |
| B. McDermand..... | | 75 00 |
| A. McEwen..... | | 218 65 |
| D. Pirie..... | | 66 20 |

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WOMEN'S INSTITUTES—*Concluded.*

| <i>Lectures—Services and Expenses—Concluded.</i> | \$ cts. | \$ cts. |
|--|---------|----------|
| J. D. Ross..... | 375 21 | |
| A. P. Scott..... | 75 00 | |
| L. K. Sirrs..... | 139 65 | |
| M. L. Woelard..... | 250 02 | |
| A. H. Willett..... | 71 40 | |
| M. H. Williams..... | 75 00 | |
| M. M. Steele..... | 116 85 | |
| M. M. Smith..... | 66 60 | |
| M. Yates..... | 182 85 | |
| | <hr/> | 4,485 15 |
| Printing, advertising, contingencies..... | | 522 17 |
| | | <hr/> |
| | | 5,007 32 |

SHORT COURSES FOR FALL FAIR JUDGES.

| | \$ cts. |
|--|---------|
| Balance April 1, 1916..... | 427 59 |
| Expenditure to March 31, 1917..... | 59 85 |
| | <hr/> |
| Balance March 31st, 1917..... | 367 74 |
| | <hr/> |
| | \$ cts. |
| Sundry persons, services and expenses..... | 59 85 |

DEMONSTRATIONS IN LIVE STOCK AND POULTRY..

| | \$ cts. |
|--|----------|
| Balance, April 1, 1916..... | 2,070 60 |
| By transfer from Poultry Work, Agricultural Aid..... | 4 39 |
| Revenue credited to appropriation..... | 368 50 |
| | <hr/> |
| | 2,443 49 |
| Expenditure to March 31, 1917..... | 1,541 60 |
| | <hr/> |
| Balance, March 31, 1917..... | 901 89 |

| <i>Lectures Services and Expenses—</i> | \$ cts. | \$ cts. |
|---|---------|----------|
| H. Barton..... | 50 00 | |
| S. K. Burden..... | 15 00 | |
| E. S. Bates..... | 25 00 | |
| W. Barrie..... | 15 00 | |
| L. N. Clark..... | 25 00 | |
| G. E. Day..... | 35 00 | |
| W. F. Elliott..... | 15 00 | |
| J. M. Gardhouse..... | 30 00 | |
| J. Gardhouse..... | 60 00 | |
| L. R. Guilds..... | 30 00 | |
| E. A. Hales..... | 49 50 | |
| W. A. Leitch..... | 35 00 | |
| R. Miller..... | 55 00 | |
| R. McEwen..... | 40 00 | |
| E. L. Richardson..... | 30 00 | |
| | <hr/> | 509 50 |
| Reporting conventions..... | | 230 00 |
| Printing..... | | 165 51 |
| Purchase of animals for demonstrations..... | | 592 34 |
| Sundries..... | | 44 25 |
| | | <hr/> |
| | | 1,541 60 |

This expenditure was mainly for educational work, carried on in connection with the winter fairs at Ottawa and Guelph.

DEMONSTRATION IN FRUIT GROWING.

| | \$ cts. |
|---|----------|
| Balance, April 1, 1917..... | 4,297 42 |
| Expenditure to March 31, 1917..... | 1,100 00 |
| | <hr/> |
| Balance, March 31, 1917..... | 3,197 42 |
| | <hr/> |
| O. J. Robb, services as fruit specialist..... | 1,100 00 |

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The expenditure under this head consisted in maintaining a fruit specialist in the field, working with Vineland as his headquarters.

LECTURES IN HORTICULTURE.

| | \$ cts. |
|---|---------|
| Balance, April 1, 1916..... | 224 20 |
| Expenditure to March 31, 1917..... | 213 18 |
| Balance, March 31, 1917..... | 11 02 |
| Instructors, services and expenses..... | 213 18 |

This covers the services and expenses of a few lecturers who were sent out to give information on horticultural work in towns and cities.

MISCELLANEOUS.

| | \$ cts. |
|---|-----------|
| Balance, April 1, 1916..... | 3,663 00 |
| Expenditure to March 31, 1917..... | 2,401 77 |
| Balance, March 31, 1917..... | -1,261 23 |
| R. A. Moore, services lecturing..... | 80 00 |
| A. Maclaren as lecturer on rural sociology..... | 1,590 81 |
| Seed..... | 730 96 |
| | 2,401 77 |

AGRICULTURAL AID GRANT, 1912.

STATEMENT, April 1, 1916, to March 31, 1917.

| | Balance, April 1, 1916. | Balance on hand March 31, 1917. |
|---|----------------------------|------------------------------------|
| | \$ cts. | \$ cts. |
| Milking Shorthorns..... | 1,856 11 | 1,856 11 |
| Dairy Survey..... | 215 51 | 215 51 |
| Ontario Veterinary College Additional land..... | 13,494 93 | 13,494 93 |
| Western Ontario Creamery work..... | 1,131 90 | 1,131 90 |
| Total..... | 16,698 45 | 16,698 45 |
| Live stock, Northern Ontario—Refund..... | 3,427 84 | 3,427 84 |
| Total..... | 20,126 29 | 20,126 29 |

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COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the years 1913, 1914, 1915, and 1916, and estimated Expenditure for 1917.

| Service. | 1913 To Oct. 31. | 1914 To Oct. 31. | 1915 To Oct. 31. | 1916 To Oct. 31. | 1917 To Oct. 31. Appropriations. |
|--|------------------------|------------------------|------------------------|------------------------|---|
| Department of Agriculture— | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Salaries, contingencies, incidentals and miscellaneous..... | 98,306 79 | 109,973 95 | 98,021 72 | 87,137 90 | 119,031 00 |
| County representatives..... | 40,596 68 | 39,668 93 | 35,917 01 | 82,299 36 | 80,600 00 |
| Live Stock Interests— | | | | | |
| Grants and Winter Fairs, Grants to Poultry Association and Horse Shows, Stallion Registration, Sheep Experiments, etc., Spring Shows. | 38,793 66 | 38,563 78 | 43,079 35 | 37,314 11 | 46,450 00 |
| Dairy Interests— | | | | | |
| Grants: Instruction and Inspection, Dairy School, Miscellaneous..... | 58,574 35 | 58,701 09 | 54,601 40 | 56,698 72 | 142,297 00 |
| Agricultural and Horticultural Societies— | | | | | |
| Insurance, Field Crop Competitions and Judges, Exhibitions Special Grants..... | 129,473 98 | 125,548 19 | 123,867 11 | 158,216 36 | 154,750 00 |
| Institute—Farmers' and Women's..... | 32,932 25 | 27,323 52 | 23,187 08 | 27,305 31 | 30,800 00 |
| Fruit Interests— | | | | | |
| Grants, Spraying Assistance, Special Crop Experiments, Cold Storage experiments, San Jose Seale, Horticultural Experiment station, Apiary Inspection Demonstration Work..... | 45,454 87 | 54,934 72 | 49,515 68 | 46,949 41 | 55,100 00 |
| Ontario Veterinary College— | | | | | |
| Salaries and Expenses..... | 32,929 74 | 33,589 22 | 28,989 05 | 23,231 08 | 31,229 00 |
| Ontario Agricultural College, Macdonald Institute and Ontario Experimental Farm..... | | | | | |
| Salaries and Expenses..... | 264,458 55 | 284,507 65 | 289,315 94 | 290,405 04 | 322,092 00 |
| Demonstration Farm, Northern Ontario..... | | | | 15,500 41 | 8,000 00 |
| Total..... | 741,520 87 | 771,811 05 | 755,494 34 | 825,057 70 | 990,449 00 |
| Revenue..... | 177,131 50 | 157,141 80 | 138,906 62 | 130,577 30 | ..... |
| Net Total..... | 564,389 37 | 614,669 25 | 616,587 72 | 694,480 40 | ..... |

NOTE.—The above statement does not include expenditure under colonization, factory inspection and stationary engineers' branches.

QUEBEC.

AGREEMENT, 1916-17.

| | \$ cts. |
|--|------------|
| 1. Poultry..... | 15,000 00 |
| 2. Horticulture—Fruit growing..... | 33,000 00 |
| 3. Bacon..... | 8,000 00 |
| 4. Schools of Agriculture..... | 60,000 00 |
| 5. Agricultural teaching in Aeademies, Rural Schools and Normal Schools..... | 14,000 00 |
| 6. District Representatives, Agricultural Teachers—Agronomies..... | 25,000 00 |
| 7. Experimental Union..... | 2,000 00 |
| 8. Alfalfa and clover..... | 5,000 00 |
| 9. Seed selection..... | 4,500 00 |
| 10. Bee-keeping..... | 9,000 00 |
| 11. School of Veterinary Science..... | 5,000 00 |
| 12. Dairying..... | 29,000 00 |
| 13. Drainage..... | 8,000 00 |
| 14. Domestic Science..... | 10,000 00 |
| 15. Maple sugar..... | 4,000 00 |
| 16. Conferences, Publications, etc..... | 11,712 23 |
| Total..... | 243,212 23 |

The report of Dr. J. C. Chapais, Assistant Commissioner for Quebec, contains the following particulars as to the work performed during the year:—

POULTRY REARING.

Twenty-five poultry rearing, breeding or feeding stations were in operation. These stations are operated by their owners and leased to the Department for ten dollars per month. Five stations conducted customs incubators. Twenty-thousand eggs were distributed to school children.

HORTICULTURE.

The staff of the Horticultural Division of the Quebec Department of Agriculture comprises twenty-eight officers, of whom two are permanent, ten are instructors employed during the whole year, and sixteen are instructors employed for eight months. The work of the service is spread over twenty-one demonstration fields, twenty-nine fruit growing stations and six demonstration orchards. During the winter of 1916-17, lectures and demonstrations were delivered in twenty-two counties. Assistance was also given at short courses and in connection with school exhibits.

BACON INDUSTRY.

In 1916 the direction of the St. Valier abattoir, built and equipped to demonstrate bacon curing and general abattoir work, was placed in the hands of the Quebec Cheesemakers' Co-operative Association, which will continue to operate it for instruction purposes under the management of Mr. A. Hansen, a Danish expert brought to this country in 1912.

SCHOOLS OF AGRICULTURE.

Two visits were paid to the Schools of Agriculture at Oka and Ste. Anne de la Pocatière. It was feared that the disastrous fire which destroyed the Trappist Monastery at Oka would interfere with the running of the Institute, but such proved not to be the case.

Following are statements of expenditure of these institutions to March 31, 1917.

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OKA AGRICULTURAL INSTITUTE.

EXPENDITURE OF FEDERAL GRANT, JULY, 1916 TO MARCH 31, 1917.

| | \$ | cts. |
|---|--------|------|
| Enlargement of College Building, annual payment..... | 5,000 | 00 |
| Teaching Staff, salaries and allowances..... | 5,098 | 47 |
| Expenses of various branches..... | 375 | 00 |
| Administration, salaries and wages..... | 2,775 | 00 |
| Insurance, heating and lighting..... | 1,763 | 42 |
| Allowance for maintenance of students at \$9 per month..... | 1,200 | 00 |
| Demonstration plots, maintenance during recess..... | 202 | 00 |
| | 16,413 | 89 |

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE.

EXPENDITURE OF FEDERAL GRANT, JULY 1916 TO MARCH 31, 1917.

| | \$ | cts. |
|--|--------|------|
| Building Extension, annual payment..... | 6,000 | 00 |
| Salaries and allowances, Teaching Staff..... | 5,330 | 00 |
| Administration, wages..... | 1,563 | 00 |
| Insurance, heating and lighting..... | 2,112 | 96 |
| Allowance for maintenance of students..... | 1,486 | 58 |
| Demonstration plots..... | 500 | 00 |
| Library..... | 256 | 19 |
| Milk investigation work..... | 225 | 00 |
| Poultry-keeping..... | 100 | 00 |
| Incidentals..... | 57 | 00 |
| | 17,630 | 73 |

AGRICULTURAL TEACHING IN ACADEMIES AND SCHOOLS.

Short courses for School Inspectors were provided both at Oka and at Ste. Anne de la Pocatière. The subjects dealt with included horticulture, poultry and bee-keeping as well as general agriculture. The lecture staff of the Quebec Department of Agriculture delivered lectures on agricultural topics in the various classical colleges and in some of the primary schools and institutions. Lectures in domestic science, agricultural economics, co-operation, etc., were prominent in the programme.

School gardens to the number of 759 were carried on in 59 counties during 1916, and 37 school fairs were held in the French counties, to which 5,749 children contributed 10,900 exhibits. In addition, there were thirteen school fairs held in the English counties with 2,493 children contributing.

DISTRICT REPRESENTATIVES.

The following representatives and assistant representatives carried on work in the districts named:—

| Representative. | District. |
|----------------------------|----------------------------------|
| Albert, J. N..... | Bonaventure and Gaspé. |
| Belanger, M. A. J..... | Chicoutimi and Lake St. John. |
| Cloutier, Henri..... | Iberville and Rouville. |
| Desilets, Alphonse..... | Quebec and Montmorency. |
| Fortin, J. A..... | Champlain. |
| Husk, R. E..... | Beauharnois and Huntingdon. |
| Leclerc, J. M..... | Abitibi. |
| MacDougall, W. G..... | Compton and Sherbrooke. |
| Magnan, Jean-Chs..... | Portneuf..... |
| Parent, L. V..... | Richmond. |
| Raymond, Abel..... | Bellechasse et Dorchester. |
| Rousseau, R. A..... | Bagot and Drummond. |
| Roy, Alphonse..... | Arthabaska and Megantic. |
| Assistant representatives. | District. |
| Belanger, M. J. A..... | Beauharnois and Chateauguay. |
| Delancy, Wilfrid..... | Quebec and Montmorency. |
| Gagnon, Roger..... | Kamouraska and L'Islet. |
| Gosselin, L. A..... | Bellechasse and Dorchester. |
| Landry, Arthur..... | Bagot, Drummond and Bellechasse. |
| Paquet, J. A..... | Quebec and Montmorency. |
| Saint-Armand R..... | Portneuf..... |

The work embraced the following subjects, viz.:—Dairy husbandry, bee-keeping, poultry husbandry, horticulture, general agriculture and school gardens.

EXPERIMENTAL UNION.

This institution has its headquarters at Belvidere Villa, Ste.-Foye Road, Quebec, where lectures and demonstrations are given to farmers, normal school students and boys from the city who intend to make farming their vocation. In the programme of work for the season, emphasis was placed on greater production.

To promote poultry husbandry, a co-operative incubator is operated, while some twenty poultry houses have been erected in the newer parts of the province and small flocks of birds distributed. Experiments in alfalfa growing are conducted with the assistance of the district representatives.

CLOVER DEMONSTRATIONS.

Thirty-four clover demonstration fields were operated with the object of promoting the growing of clover for seed. The two clover hullers owned by the Department were demonstrated in localities where a beginning was being made. The production of seed clover continues to make rapid expansion, and the demonstrations carried on have been very successful in stimulating production. One hundred and twenty-five hullers are now owned in the province, principally by clubs.

UNDERDRAINAGE.

The policy of encouragement to underdrainage was continued. Nine instructors, French and English, were kept at the disposal of farmers who wished to underdrain their land, and plans were prepared free of charge. During the season, 84,430 feet of trench was dug on nine farms by the two ditching machines operated by the Department.

SHORT COURSES.

Short courses for farmers (*Semaines agricoles*) were held in two divisions, the work of the eastern section from Quebec to Gaspé being performed by the professors of the two schools of agriculture, while in the western section the department's staff of lecturers took charge. In the East courses were held at eight points in five counties. Number of lectures, 245; number of demonstrations, 23; total attendance, 19,204. In the West, one course was held in each of sixteen counties. Number of lectures, 558; number of demonstrations, 46; total number in attendance, 33,670.

MACDONALD COLLEGE.

Animal Husbandry.—The attention of this department during the year was again devoted to sheep husbandry. The demonstration flocks of pure-bred sheep were increased from eight to thirteen. The example of these flocks and the distribution of the pure-bred rams resulting from them is having a marked influence. Co-operative wool grading and marketing was continued through the associations of sheep breeders, and two sales of pure-bred sheep were conducted.

Poultry Husbandry.—This line of extension work included (1) exhibits at Fairs and demonstration and lectures at various centres; (2) demonstration with different types of poultry houses at six points; (3) the maintenance of pure-bred flocks in connection with housing demonstrations, and the distribution of suitable breeding stock to the farmers of the community; (4) the distribution of eggs to rural schools for hatching purposes.

Rural School Department.—Most of the work carried on during the year was in connection with school fairs. The number of schools taking part in

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1916 was 191, and the number of exhibitors 2,493. Seed and eggs were supplied for distribution by the poultry, cereal, and horticultural departments. Some 4,893 samples of seed and settings of eggs were distributed in 325 schools, both French and English. The department has 900 plots to be visited and reported upon. In addition to school fair work, a course of lectures is given to the Macdonald Summer School Students and also at the Summer School for teachers at Lachute. Rural schools are visited, school boards interviewed, school grounds improved, and lectures in agriculture given in the superior schools.

Household Science.—Five Homemakers' Clubs were organized during the year, and much patriotic and food and nutrition work accomplished.

Fifty-seven demonstrations were given to school children on canning and bread-making. Emphasis was laid on canning as a means of preventing waste in war time, and the formation of canning and marketing clubs was assisted. A bulletin on canning was issued.

Short Courses.—The following winter short courses were held:

- (1) At Montreal, suburban gardening; four evenings; attendance 367.
- (2) At Macdonald College; four days; Animal Husbandry; Cereal Husbandry; attendance 56.
- (3) At Macdonald College; two weeks; Poultry Husbandry; attendance 10.

Classes in Veterinary work were given at the College and also at points throughout the Province.

Investigation and Research.—In the department of Biology, the study of the Bud Moth, an important apple insect in Quebec, was completed. In the Horticultural department work in apple pollination was continued, and a test and study of onion and cabbage seed undertaken. Three demonstration orchards are conducted by this department; also experiments in vegetable irrigation. The work of the Cereal Husbandry department consisted mainly in the continued investigation of root crops, experiments with alfalfa and corn at country points and in rendering assistance to school fairs. In the Chemistry department the investigation of maple sap products was continued; while in the Physics department, the investigation of certain aspects of soil fertilization was carried on.

STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR YEAR ENDED
MARCH 31, 1917.

| <i>Receipts</i> — | \$ | cts. |
|------------------------------------|--------|-----------|
| Credit, balance April 1, 1916..... | | 279 29 |
| Grant, 1916-17..... | 20,500 | 00 |
| Dr. balance, March 31, 1917..... | 2,947 | 62 |
| | | 23,726 91 |

| <i>Disbursements</i> — (Including salaries of members of Staff paid wholly or partly from grant).— | \$ | cts. |
|---|-------|-------------|
| Animal Husbandry..... | 4,852 | 73 |
| Biology..... | 1,006 | 54 |
| Cereal Husbandry..... | 2,226 | 57 |
| Chemistry..... | 1,051 | 90 |
| Demonstration..... | 3,111 | 48 |
| Horticulture..... | | 398 14 |
| Household Science..... | 2,205 | 11 |
| Physics..... | | 700 00 |
| Poultry..... | 2,230 | 41 |
| Veterinary Science..... | 1,653 | 40 |
| Rural Schools..... | 3,251 | 47 |
| General..... | | 733 10 |
| Short Courses..... | | 297 06 |
| | | \$23,726 91 |

OFFICERS RECEIVING REMUNERATION FROM THE FEDERAL GRANT.

(A) *Persons, regularly employed, whose salaries are paid wholly from the Agricultural Grant.*

- Instructor L. P. Belzile, Department of Agriculture, Quebec.
 " Raoul Dumaine, St-Guillaume d'Upton, Quebec.
 " J. G. Morgan, Department of Agriculture, Quebec.
 " J. M. Talbot, Department of Agriculture, Quebec.
 " Antonio Mathieu, Department of Agriculture, Quebec.
 " Lucien Dupuis, Department of Agriculture, Quebec.
 " J. E. Grisé, Department of Agriculture, Quebec.
 " Cyrille Vaillancourt, Department of Agriculture, Quebec.
 " J. T. Hamel, Department of Agriculture, Quebec.
 " Wilfrid Delaney, Department of Agriculture, Quebec.
 " Francisque Petraz, 1366 Maple Ave., Montreal.
 " G. Reynaud, Berthierville,
 " Jos. Reddy, Department of Agriculture, Quebec.
 " J. J. Gautreau, Department of Agriculture, Quebec.

Bacon Industry, A. Hansen, St. Valier, Bellechasse county.

Seed Expert, Ls. Lavellée, St. Guillaume d'Upton, Quebec.

Lecturer, Miss Eveline LeBlanc, Bonaventure, Quebec.

" Miss Eva Paré, Causapsal, Quebec.

Entomologist, Georges Maheux, Department of Agriculture, Quebec.

Clerk, J. D. Barbeau, 142 Sauvageau St., Quebec, "Poultry Branch."

" O. Roberge, Ste-Rosalie, Quebec.

" Ros. Carbonneau, Department of Agriculture, " "

District Representatives—

J. N. Albert, Bonaventure, Quebec.

Michel Belanger, Roberval, Quebec.

E. N. Blondin, Huntingdon, Quebec.

Henri Cloutier, Rougement, Quebec.

Alp. Desilets, Quebec, Que.

J. A. Fortin, St. Stanislas, Quebec.

Arthur Landry, St. Charles, Bellechasse Co., Quebec.

J. M. Leclair, Makamik, Abitibi, Quebec.

J. C. Magnan, St. Casimir, Portneuf, Co. Quebec.

W. G. MacDougall, Lennoxville, Quebec.

L. V. Parent, Richmond, Quebec.

Abel Raymond, Plessisville, Quebec.

R. A. Rousseau, Acton Vale, Quebec.

Assistant District Representatives—

Paul Brunelle, Department of Agriculture, Quebec.

Wilfrid Chamberland, Acton Vale, Quebec.

Roger Gagnon, Ste-Anne de la Pocatière, Quebec.

Sauveur Gosselin, Rougement, Quebec.

Gustave Mongeau, Roberval, Quebec.

Denis Ouellet, St-Stanislas, Champlain, Quebec.

J. A. Plante, St. Casimir, Portneuf, Quebec.

Evangeliste Poulin, Richmond, Quebec.

Alex. Rioux, Makimik, Quebec.

X. N. Rodrigue, Bonaventure, Quebec.

L. C. Roy, Plessisville, Quebec.

J. R. St. Arnaud, Lennoxville, Quebec.

St. Hilaire, Pierre, St. Charles, Bellechasse Co., Quebec.

Therrien Lucien, Huntingdon, Quebec.

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(B) *Persons, regularly employed, whose salaries are paid in part from the Agricultural Instruction Grant.*

J. Arthur Paquet, Accountant, Department of Agriculture.

SCHOOL OF AGRICULTURE, SAINTE-ANNE-DE-LA-POCATIÈRE.

- Professor of Chemistry, L'Abbè Geo. Cote;
- “ of Horticulture, L'Abbè P. Levasseur;
- “ “ L'Abbè A. Letourneau;
- “ of English, L'Abbè T. Ennis;
- “ of French, L'Abbè Ed. Beaudoin;
- “ of Mathematics, L'Abbè S. Lord;
- “ de Droit Rural, Notaire Dupuis;
- “ of Botany and Entomology, Geo. Bouchard;
- “ de Genie Rural, Albert Sirois;
- Instructor Bacon Curing, Frs. Dionne, B.S.A.;
- Professor of Horticulture, Albert Jalbert;
- Demonstration in Dairying, P. Boulet;
- Assistant farm foreman, N. Jourdain;
- “ “ N. Sènèchal;
- Assistant Professor and Superintendent of Demonstration Plots, L.-d-G. Fortin, B.S.A.;
- Demonstrator in Dairying, Joseph Verret;
- “ Horticulture, Mederic Chalifour;
- Domestics (4 persons).

THE OKA AGRICULTURAL INSTITUTE, LA TRAPPE, QUE.

The salaries of the following are paid wholly from the Federal Subsidy:—

- Director: Rev. Father Jean de la Croix;
- Chiefs of general practice, Brothers Gerard and Celestin, and other heads of Departments.
- Chaplains: RR. FF. Humbert and Alfred.
- Chief Master: Father Yves.
- Institute Secretary, Donat Fortin and assistant;
- Professor of Chemistry and instructor agricultural engineering: H. Nagant;
- “ of Physics, J. N. Ponton;
- “ of Agricultural and experimental field, Ph. Roý;
- “ of Entomology, Firmin Letourneau;
- “ of Veterinary Medicine, Dr. A. Dauth and Brother Isidore;
- “ of Apiculture: Father Maur;
- “ of Horticulture: Father Athanase;
- “ of Poultry Husbandry: Brother Wilfrid;
- Instructor in horticulture: L. Arscott;
- “ arboriculture: Father Honorè;

The salaries of the following are paid partly from the Federal Subsidy:—

- Professor of English: Rev. Brother Benjamin;
- “ of Arboriculture, Rev. Father Leopold;
- “ of Biology, zoology and zootechny, Rev. Brother Isidore;

MACDONALD COLLEGE.

Officers regularly employed, whose salaries are paid wholly from the Agricultural Instruction grant.

Veterinarian, N. E. McEwan, B.V.S.C., V.S.;
 Sheep Husbandry, A. A. McMillan, B.S.A.;
 Assistant in Biology, E. M. Duporte, B.S.A.;
 " Physics, R. Dougall, B.S.A.;
 " Animal Husbandry, A. E. McLaurin, B.S.A.;
 " Chemistry, J. G. Van Zoeren;
 Crop Investigator, E. A. Lods, B.S.A.;
 Demonstrator Homemakers' Clubs, Mrs. N. C. MacFarlane;
 Assistant Demonstrator Homemakers' Clubs, Miss J. Babb;
 Rural School Demonstrator, J. E. McOuat, B.S.A.;
 Assistant Rural School Demonstrator, J. Harold McOuat, B.S.A.;
 District Demonstrator, C. H. Hodge, B.S.A., Shawville, Quebec.

QUEBEC,

BALANCE OF GRANT OF 1915-16.

STATEMENT from March 31, 1916, to September 26, 1916.

| No. | Classification. | Balance, | Expended to |
|-----|---|---------------|----------------|
| | | April 1, 1916 | Sept. 26, 1916 |
| | | \$ cts. | \$ cts. |
| 1 | Poultry..... | 5,456 02 | 5,456 02 |
| 2 | Fruit..... | 5,759 40 | 5,759 40 |
| 3 | Bacon..... | 575 92 | 575 92 |
| 4 | Schools of Agriculture..... | 18,594 94 | 18,594 94 |
| 5 | Instruction in Academies and schools..... | 383 00 | 383 00 |
| 6 | District representatives..... | 1,319 30 | 1,319 30 |
| 7 | Experimental Union..... | 1,000 00 | 1,000 00 |
| 8 | Clóver and Alfalfa..... | 4 96 | 4 96 |
| 9 | Seed..... | 542 99 | 542 99 |
| 10 | Bee-keeping..... | 3 45 | 3 45 |
| 11 | Tobacco..... | | |
| 12 | Dairying..... | | |
| 13 | Drainage..... | 281 80 | 281 80 |
| 14 | Domestic Science..... | 459 59 | 459 59 |
| 15 | Maple Sugar..... | 1,924 29 | 1,924 29 |
| 16 | Lectures and Publications..... | 0 60 | 0 60 |
| | | \$ 36,306 26 | \$ 36,306 26 |

1.—POULTRY.

| <i>Salary and Expenses, Instructors—</i> | \$ cts. |
|--|----------|
| R. Dumaine..... | 317 98 |
| Rev. J. B. A. Allaire..... | 153 76 |
| A. A. Lapointe..... | 33 50 |
| J. G. Morgan..... | 289 79 |
| Leon Picard..... | 248 11 |
| Rev. Fr. Liguori..... | 389 10 |
| J. D. Barbeau..... | 102 50 |
| Art. Mathiew..... | 215 40 |
| Art. Heroux..... | 50 00 |
| Art. Chabot..... | 31 45 |
| Pascal Fortier, allowance organizing station..... | 60 00 |
| | 1,891 59 |
| Superintendents, Poultry Plants allowance, rental..... | 1,287 60 |
| Printing..... | 1,691 04 |
| Eggs for distribution..... | 98 30 |
| Eggs for Incubation..... | 289 95 |
| Equipment— | |
| Incubators..... | 81 00 |
| Beauceville Poultry Station, allowance for construction of " eleveuse "..... | 116 54 |
| | 5,456 02 |

SESSIONAL PAPER No. 15c

2.—HORTICULTURE.

Fruit Division: salary and expenses—

| | | |
|---|-----------|-------------|
| Solyne Roy, Chief Horticulturist..... | \$ 423 84 | |
| J. H. Lavoie, Assist. Horticulturist..... | 527 42 | |
| Rev. V. A. Huard, Provincial Entomologist..... | 225 00 | |
| P. Reid, Superintendent, Demonstration orchards, expense..... | 34 95 | |
| | | \$ 1,211 21 |

Instructors, Lecturers, Salary and expenses—

| | | |
|-------------------------------|-----------|-------------|
| J. T. Hamel..... | \$ 433 35 | |
| Phil. Hamel..... | 145 90 | |
| J. M. Talbot..... | 360 29 | |
| Alf. LeBel..... | 368 00 | |
| Tel. Roy..... | 55 61 | |
| Jas. Cloutier..... | 210 83 | |
| F. X. Gosselin..... | 205 22 | |
| L. Dupuis..... | 122 50 | |
| G. Renaud..... | 87 50 | |
| Sundry persons, expenses..... | 46 70 | |
| | | \$ 2,035 90 |

| | | |
|----------------------------|--|--------|
| Berthierville Nursery..... | | 712 12 |
|----------------------------|--|--------|

Printing—

| | | |
|--|-------------|-------------|
| J. H. Lavoie, 20,000 copies " Guide to Horticulture "..... | \$ 1,100 00 | |
| 5,000 copies Bulletin No. 21..... | 288 00 | |
| Miscellaneous..... | 88 03 | \$ 1,476 03 |

| | | |
|---------------------------------------|--|--------|
| Equipment, supplies, incidentals..... | | 324 14 |
|---------------------------------------|--|--------|

\$ 5,759 40

3.—BACON.

| | | |
|---|-----------|--|
| A. Hanson, Bacon expert, salary and expenses..... | \$ 272 96 | |
| A. C. St. Pierre, Manager, St. Valier, salary and expenses..... | 148 35 | |

\$ 421 31

| | | |
|-------------------------------|--|-------|
| Insurance, a battoir..... | | 83 50 |
| Printing and incidentals..... | | 71 11 |

\$ 575 92

4.—SCHOOLS OF AGRICULTURE.

| | | |
|---|-------------|--------------|
| School of Agriculture, Ste. Anne de la Pocatière, balance of grant and board of students..... | \$ 7,384 94 | |
| Oka Institute of Agriculture, balance of grant..... | 5,910 00 | |
| Macdonald College, balance of grant..... | 5,000 00 | |
| Orphelinat Agricole a Vauvert..... | 300 00 | |
| | | \$ 18,594 94 |

5.—AGRICULTURAL TEACHING IN ACADEMIES, RURAL AND NORMAL SCHOOLS.

| | | |
|--|-----------|-----------|
| Seeds for distribution to school children..... | \$ 292 30 | |
| Lecturers, services..... | 90 00 | |
| Incidentals..... | 0 70 | |
| | | \$ 383 00 |

6.—DISTRICT REPRESENTATIVES.

General Expenses—

| | | |
|--------------------|-----|------|
| J. W. Leclair..... | \$ | cts. |
| A. Raymond..... | 188 | 47 |
| H. Cloutier..... | 105 | 95 |
| J. A. Fortin..... | 73 | 69 |
| J. N. Albert..... | 110 | 63 |
| A. Paquet..... | 29 | 65 |
| R. A. Rosseau..... | 49 | 70 |
| J. C. Magnan..... | 106 | 50 |
| A. Desilets..... | 111 | 25 |
| A. Landry..... | 218 | 35 |
| | 14 | 50 |

1,008 69

| | | |
|--------------------|-----|----|
| Typewriter..... | 158 | 10 |
| Printing..... | 80 | 38 |
| Miscellaneous..... | 72 | 13 |

1,319 30

7.—EXPERIMENTAL UNION.

| | |
|--|---------------------|
| Balance of grant to Quebec Experimental Union..... | \$ cts. 1,000 00 |
|--|---------------------|

8.—CLOVER AND ALFALFA.

| | |
|--------------|------|
| Postage..... | 4 96 |
|--------------|------|

9.—SEED SELECTION.

Salaries and Expenses—

| | |
|----------------------|------------------|
| J. E. Kronstrom..... | \$ cts. 50 00 |
| Les Brown..... | 116 70 |
| A. Pare..... | 50 00 |
| Ls. Lavellee..... | 62 50 |
| L. Francoeur..... | 119 80 |
| L. P. Belzile..... | 77 70 |
| A. Desmarais..... | 65 75 |
| Incidentals..... | 0 54 |
| | 542 99 |

10.—BEE-KEEPING.

| | |
|------------------|---------|
| Incidentals..... | \$ 3 45 |
|------------------|---------|

13.—DRAINAGE.

Drainage Specialists, Services and Expenses—

| | |
|-------------------|------------------|
| R. Barbin..... | \$ cts. 50 00 |
| L. P. Gauvin..... | 62 25 |
| N. April..... | 64 35 |
| O. Garneau..... | 50 00 |
| W. Giroux..... | 50 00 |
| | 276 60 |
| Incidentals..... | 5 20 |
| | 281 80 |

14.—DOMESTIC SCIENCE.

| | |
|--|-------------------|
| Rev. O. L. Martin, Provincial Inspector, salary and expenses..... | \$ cts. 343 08 |
| Allowance to Domestic Science School, Roberval, for equipment..... | 48 00 |
| Incidentals..... | 68 51 |
| | 459 59 |

15.—MAPLE SUGAR.

| | |
|---|-------------------|
| Beauceville School—Alex. Boulduc, Supt., Allowance and expenses..... | \$ cts. 100 00 |
| Labelle School, J. H. Lefebvre, Supt., rental..... | 350 00 |
| Ste. Louise School, J. L. A. Dupuis, Supt., allowance, expense, rental..... | 331 30 |
| St. Casimir School, A. Tessier, Supt., rental, 1916..... | 400 00 |
| M. Belanger, Instructor, services and expenses..... | 203 60 |
| Alfred Lebrun, services and expenses..... | 96 05 |
| A. Francoeur, services and expenses..... | 127 55 |
| Sundry persons, expenses, sugar-making demonstrations..... | 224 30 |
| Supplies and incidentals..... | 91 49 |
| | 1,924 29 |

16.—LECTURES, PUBLICATIONS.

| | |
|------------------|---------|
| Incidentals..... | \$ 0 60 |
|------------------|---------|

SESSIONAL PAPER No. 15c

QUEBEC.

GRANT OF 1916-1917.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Grant. | | Expenditure. | | Dr. Balance. | | Cr. Balance. | |
|-----|---|---------|------|--------------|------|--------------|------|--------------|------|
| | | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| 1 | Poultry..... | 15,000 | 00 | 15,000 | 00 | | | | |
| 2 | Horticulture..... | 33,000 | 00 | 26,022 | 64 | | | 6,977 | 36 |
| 3 | Bacon..... | 8,000 | 00 | 6,025 | 41 | | | 1,974 | 59 |
| 4 | Schools of Agriculture..... | 60,000 | 00 | 51,556 | 58 | | | 8,443 | 42 |
| 5 | Agricultural teaching in academies, rural and normal schools..... | 14,000 | 00 | 10,176 | 42 | | | 3,823 | 58 |
| 6 | District representatives..... | 25,000 | 00 | 27,964 | 43 | 2,964 | 43 | | |
| 7 | Experimental Union..... | 2,000 | 00 | 2,000 | 00 | | | | |
| 8 | Clover and alfalfa..... | 5,000 | 00 | 5,000 | 00 | | | | |
| 9 | Seed selection..... | 4,500 | 00 | 4,500 | 00 | | | | |
| 10 | Bee-keeping..... | 9,000 | 00 | 9,000 | 00 | | | | |
| 11 | School of Veterinary Science..... | 5,000 | 00 | | | | | 5,000 | 00 |
| 12 | Dairying..... | 29,000 | 00 | 25,000 | 00 | | | 4,000 | 00 |
| 13 | Drainage..... | 8,000 | 00 | 7,850 | 15 | | | 149 | 85 |
| 14 | Domestic Science..... | 10,000 | 00 | 8,481 | 50 | | | 1,518 | 50 |
| 15 | Maple Sugar..... | 4,000 | 00 | 2,343 | 51 | | | 1,656 | 49 |
| 16 | Conferences, publications, etc..... | 11,712 | 23 | 10,645 | 60 | | | 1,066 | 63 |
| | | | | | | | | 34,610 | 42 |
| | | | | | | | | 2,964 | 43 |
| | Total..... | 243,212 | 23 | 211,566 | 24 | 2,964 | 43 | 31,645 | 99 |

1.—POULTRY.

| | | | | |
|-------------------------------|--------|------|--------|------|
| Grant, 1916-17..... | \$ | cts. | \$ | cts. |
| Expended, March 31, 1917..... | 15,000 | 00 | 15,000 | 00 |
| | 15,000 | 00 | 15,000 | 00 |

Salaries and expenses—

| | | |
|--|--------|------|
| Rev. Fr. Liguori..... | \$ | cts. |
| Rev. J. B. A. Allaire..... | 1,250 | 63 |
| J. D. Barbeau..... | 909 | 05 |
| J. G. Morgan..... | 437 | 66 |
| Leon Picard..... | 953 | 57 |
| R. Dumaine..... | 775 | 75 |
| Ant. Mathiew..... | 922 | 13 |
| Tel. Roy..... | 855 | 54 |
| Sundry persons..... | 128 | 30 |
| Superintendents poultry plants..... | 81 | 57 |
| Supplies poultry plants..... | 2,549 | 00 |
| Equipment poultry plants..... | 923 | 44 |
| Special Course, Ste. Anne de la Pocatière..... | 217 | 98 |
| Expenses re Poultry Improvement Oka Institute..... | 214 | 00 |
| Preparing and printing 20,000 copies Poultry Bulletin..... | 101 | 35 |
| | 4,610 | 03 |
| | 15,000 | 00 |

8 GEORGE V, A. 1918

2.—HORTICULTURE.

| | \$ cts. | \$ cts. |
|-------------------------------|-----------------|-----------------|
| Grant, 1916-17..... | 33,000 00 | |
| Expended, March 31, 1917..... | | 26,022 64 |
| Balance forward..... | | 6,977 36 |
| | <hr/> 33,000 00 | <hr/> 33,000 00 |

Fruit Division—

| | \$ cts. |
|--|----------|
| Solyne Roy, salary and expenses..... | 368 45 |
| J. H. Lavoie..... | 1,022 24 |
| Rev. V. A. Huard..... | 97 75 |
| Geo. Maheux..... | 1,092 61 |
| Books, periodicals, office supplies..... | 597 45 |
| Furniture..... | 389 75 |
| Bulletins and printing..... | 1,637 56 |
| Supplies and incidentals..... | 1,157 31 |

Fruit Stations—

| | |
|----------------------------------|----------|
| Superintendents, allowances..... | 2,169 33 |
| Supplies and incidentals..... | 1,196 22 |
| Fruit trees and implements..... | 474 52 |
| Nursery Berthierville..... | 1,140 97 |

Instructors, lecturers, etc., salaries and expenses—

| | |
|---------------------------------------|----------|
| Peter Reid..... | 1,369 09 |
| A. Label..... | 1,130 05 |
| L. Dupuis..... | 1,987 65 |
| Phil. Hamel..... | 957 12 |
| G. Raynaud..... | 1,389 80 |
| J. M. Talbot..... | 1,346 94 |
| J. T. Hamel..... | 1,055 80 |
| J. H. Grise..... | 991 04 |
| Jos. Cloutier..... | 726 70 |
| Et. Paradis..... | 242 67 |
| A. Pearson..... | 370 60 |
| O. Gauvin..... | 157 78 |
| T. E. Tremblay..... | 164 95 |
| Arm. St. Pierre..... | 164 98 |
| Sundry persons..... | 1,401 31 |
| Equipment— | |
| Stereopticon..... | 80 90 |
| Canning machinery, Oka Institute..... | 1,141 10 |

26,022 64

3.—BACON.

| | \$ cts. | \$ cts. |
|-------------------------------|-----------------|-----------------|
| Grant, 1916-17..... | 12,000 00 | |
| Expended, March 31, 1917..... | | 6,025 41 |
| Balance forward..... | | 5,974 59 |
| | <hr/> 12,000 00 | <hr/> 12,000 00 |

| | \$ cts. |
|---|----------------|
| A. Hansen, salary and expenses..... | 2,238 99 |
| Sundry persons, salary and expenses..... | 86 67 |
| Insurance, abattoir..... | 289 88 |
| St. Valier abattoir, repairs..... | 99 22 |
| Bulletins and printing..... | 1,683 20 |
| Pork and bacon meetings, services and expenses, sundry persons..... | 1,427 45 |
| Incidentals..... | 200 00 |
| | <hr/> 6,025 41 |

SESSIONAL PAPER No. 15c

4.—SCHOOLS OF AGRICULTURE.

| | | |
|-------------------------------------|--------------|--------------|
| Grant, 1916-17..... | \$ 60,000 00 | |
| Expended, March 31, 1917..... | | \$ 51,556 58 |
| Balance forward..... | | 8,443 42 |
| | <hr/> | |
| | \$ 60,000 00 | \$ 60,000 00 |
| | <hr/> | |
| Ste. Anne de la Pocatière..... | \$ 16,000 00 | |
| Allowance for students' board..... | 1,256 58 | |
| | <hr/> | \$ 17,256 58 |
| Oka Agricultural Institute..... | | 17,000 00 |
| Macdonald Agricultural College..... | | 17,000 00 |
| Orphelinat Agricole à Vauvert..... | | 300 00 |
| | | <hr/> |
| | | \$ 51,556 58 |

5.—AGRICULTURAL TEACHING IN ACADEMIES, RURAL AND NORMAL SCHOOLS.

| | | |
|-------------------------------|--------------|--------------|
| Grant, 1916-17..... | \$ 14,000 00 | |
| Expended, March 31, 1917..... | | \$ 10,176 42 |
| Balance forward..... | | 3,823 58 |
| | <hr/> | |
| | \$ 14,000 00 | \$ 14,000 00 |

Services and Expenses—

| | | |
|---|-----------|--------------|
| J. G. Magnan..... | \$ 753 35 | |
| Lecturers, sundry persons..... | 3,816 95 | |
| | <hr/> | \$ 4,570 30 |
| Printing..... | | 280 89 |
| Incidentals..... | | 413 00 |
| School fairs expenses..... | | 484 28 |
| Ste. Anne de la Pocatière, allowances to Short Course students..... | | 1,459 85 |
| Oka Institute, allowances to Short Course students..... | | 1,834 37 |
| Macdonald College, Special Course allowance..... | | 1,113 73 |
| | | <hr/> |
| | | \$ 10,176 42 |

6.—DISTRICT REPRESENTATIVES.

| | | |
|-------------------------------|--------------|--------------|
| Grant, 1916-17..... | \$ 25,000 00 | |
| Expended, March 31, 1917..... | | \$ 27,964 43 |
| Balance forward..... | | 2,964 43 |
| | <hr/> | |
| | \$ 27,964 43 | \$ 27,964 43 |

Salaries and Expenses—

| | | |
|--|-------------|--------------|
| J. M. Leclair..... | \$ 1,962 54 | |
| R. A. Rosseau..... | 2,069 18 | |
| A. Raymond..... | 1,237 68 | |
| J. C. Magnan..... | 1,963 39 | |
| J. B. & H. Cloutier..... | 1,978 78 | |
| J. A. Fortin..... | 1,757 59 | |
| W. Delaney..... | 849 88 | |
| J. A. Desilets..... | 856 54 | |
| Ray Husk..... | 1,666 54 | |
| J. R. St. Arnaud..... | 745 50 | |
| Art. Landry..... | 1,076 30 | |
| Alp. Roy..... | 1,120 57 | |
| W. G. Macdougall..... | 1,252 96 | |
| L. V. Parent..... | 1,144 26 | |
| M. Belanger..... | 766 02 | |
| J. N. Albert..... | 1,877 42 | |
| L. A. Gosselin..... | 1,486 00 | |
| Alp. Paquet..... | 681 25 | |
| Alp. Desilets..... | 841 22 | |
| Stationery and Incidentals..... | 1,165 81 | |
| Macdonald College, supplies and furnishings for seven representatives..... | 1,505 00 | |
| | <hr/> | |
| | | \$ 27,964 43 |

8 GEORGE V, A. 1918

7.—EXPERIMENTAL UNION.

Grant to Experimental Union of the Province of Quebec.....\$ 2,000 00

8.—CLOVER AND ALFALFA.

Salaries and Expenses—

| | |
|---|-------------|
| L. P. Belzile..... | \$ 913 20 |
| L. Francoeur..... | 588 16 |
| L. Brown..... | 100 00 |
| O. Garneau..... | 135 30 |
| E. Francoeur..... | 101 95 |
| Sundry persons..... | 524 94 |
| Demonstration plots, rental and expenses..... | 1,126 38 |
| Allowances rental, etc., of plots..... | 723 12 |
| Supplies and seed..... | 224 92 |
| Gas engine..... | 500 00 |
| Incidentals..... | 62 03 |
| | <hr/> |
| | \$ 5,000 00 |

9.—SEED SELECTION.

Salaries and Expenses—

| | |
|------------------------|-------------|
| Ls. Lavallee..... | \$ 1,207 01 |
| O. Roberge..... | 486 45 |
| L. E. Kronstrom..... | 482 81 |
| J. A. Paquet..... | 450 00 |
| L. P. Belzile..... | 691 09 |
| A. Raymond..... | 447 77 |
| O. Garneau..... | 163 20 |
| M. Francoeur..... | 241 55 |
| Sundry persons..... | 30 62 |
| Supplies and seed..... | 255 82 |
| Incidentals..... | 43 68 |
| | <hr/> |
| | \$ 4,500 00 |

10.—APICULTURE.

Salaries and Expenses—

| | |
|--|-------------|
| C. Vaillancourt..... | \$ 1,234 02 |
| Hector Beland..... | 874 40 |
| A. A. Comire..... | 736 28 |
| H. Comire..... | 784 00 |
| L. J. A. Dupuis..... | 757 25 |
| Luc Dupuis..... | 774 00 |
| Elz. Girard..... | 751 60 |
| D. Rochefort..... | 390 65 |
| Henri Beland..... | 331 30 |
| W. J. Comire..... | 414 50 |
| O. Comire..... | 589 65 |
| P. A. Dupuis..... | 461 50 |
| B. Brissette..... | 500 00 |
| E. Brissette..... | 227 25 |
| | <hr/> |
| | \$ 8,826 40 |
| Young Women's Club supplies..... | 60 00 |
| Supplies and Incidentals..... | 63 15 |
| Orphelinat Agricole St. Damien, honey extractor..... | 25 00 |
| Beauceville College, hives..... | 25 45 |
| | <hr/> |
| | \$ 9,000 00 |

12.—DAIRYING.

To September 30, 1916.....\$ 25,000 00

Towards salaries and expenses of inspectors of cheese and butter factories.....\$ 25,000 00

SESSIONAL PAPER No. 15c

13.—DRAINAGE.

| | | |
|-------------------------------|--------------------|-------------------|
| Grant, 1916-17..... | \$ 8,000 00 | |
| Expended, March 31, 1917..... | | \$7,850 15 |
| Balance forward..... | | 149 85 |
| | <u>\$ 8,000 00</u> | <u>\$8,000 00</u> |

Ste. Anne de la Pocatière, salaries and expenses—

| | | |
|-------------------|-----------|-------------------|
| Ulric Jean..... | \$ 622 10 | |
| R. Barbin..... | 835 85 | |
| O. Garneau..... | 659 69 | |
| F. N. Savoie..... | 171 50 | |
| N. April..... | 482 73 | |
| L. P. Garvin..... | 442 97 | |
| | | <u>\$3,214 84</u> |

Macdonald College, salaries and expenses—

| | | |
|-------------------------|-----------|--------------------|
| G. E. Emberley..... | \$ 437 02 | |
| L. C. Hawke..... | 332 95 | |
| F. G. Hetherington..... | 323 36 | |
| J. W. Sutherland..... | 153 49 | |
| C. M. Ewart..... | 279 00 | |
| | | <u>\$ 1,525 82</u> |

| | | |
|---|----------|-------------------|
| John Drolet, services and expenses..... | 848 24 | |
| W. Giroux, " "..... | 1,140 83 | |
| J. Delaney, " "..... | 50 00 | |
| Renewals, repairs, supplies..... | 679 65 | |
| Incidentals and postage..... | 390 77 | |
| | | <u>\$7,850 15</u> |

14.—DOMESTIC SCIENCE.

| | | |
|-------------------------------|--------------------|--------------------|
| Grant, 1916-17..... | \$10,000 00 | |
| Expended, March 31, 1917..... | | \$8,481 50 |
| Balance forward..... | | 1,518 50 |
| | <u>\$10,000 00</u> | <u>\$10,000 00</u> |

Salaries and Expenses—

| | | |
|--|-----------|--------------------|
| Rev. O. L. Martin..... | \$ 751 90 | |
| Miss E. Leblanc..... | 458 62 | |
| Miss Eva Paré..... | 461 58 | |
| Miss J. Anctil..... | 121 20 | |
| Grants to Domestic Science Schools..... | 5,529 42 | |
| Macdonald College, grant special course..... | 500 00 | |
| Domestic Science Schools' Exhibit, Quebec..... | 342 85 | |
| Printing and stationery..... | 315 93 | |
| | | <u>\$ 8,481 50</u> |

15.—MAPLE SUGAR.

| | | |
|-------------------------------|-------------------|-------------------|
| Grant, 1916-17..... | \$4,000 00 | |
| Expended, March 31, 1917..... | | \$2,343 51 |
| Balance forward..... | | 1,656 49 |
| | <u>\$4,000 00</u> | <u>\$4,000 00</u> |

Allowances, Sugar Schools—

| | | |
|--|-----------|--------------------|
| St. Louise..... | \$ 992 54 | |
| St. Casimir..... | 330 00 | |
| Beauceville..... | 500 00 | |
| A. Francoeur, travelling expenses..... | 50 00 | |
| Printing..... | 304 37 | |
| Supplies..... | 166 60 | |
| | | <u>\$ 2,343 51</u> |

16.—SHORT COURSES AND LECTURES.

| | | |
|-------------------------------|--------------------|--------------------|
| Grant 1916-17..... | \$11,712 23 | |
| Expended, March 31, 1917..... | | \$10,645 60 |
| Balance forward..... | | 1,066 63 |
| | <u>\$11,712 23</u> | <u>\$11,712 23</u> |

16.—SHORT COURSES AND LECTURES—*Concluded.**Salaries and Expenses—*

| | | |
|---|----|-----------|
| Rev. A. Michaud..... | \$ | 664 95 |
| Jos. Pasquet..... | | 603 75 |
| Rev. H. Bois..... | | 409 65 |
| Rev. J. B. A. Allaire..... | | 460 20 |
| J. G. Bouchard..... | | 719 31 |
| J. D. Leclair..... | | 150 00 |
| O. Gauvin..... | | 185 75 |
| Jean Masson..... | | 400 00 |
| Jos. Moren..... | | 751 65 |
| A. Desilets..... | | 312 91 |
| J. Masson..... | | 362 40 |
| R. Gagnon..... | | 362 90 |
| G. St. Pierre..... | | 451 36 |
| J. Art. Paquet..... | | 150 00 |
| J. L. A. Dupuis..... | | 505 40 |
| Sundry persons, services, and expenses..... | | 2,367 39 |
| Supplies and incidentals..... | | 279 23 |
| Grant for Farmers' Special Course, St. Anne de la Pocatière..... | | 576 00 |
| Oka Institute allowances for expenses..... | | 710 75 |
| College of Agriculture, St. Thomas d'Aquin, grant for special course..... | | 222 00 |
| | \$ | 10,645 60 |

QUEBEC.

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, 1916, and Estimated Expenditure for 1917 and 1918.

| Service. | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 |
|---|-------------|-------------|-------------|-------------|-------------|--------------------------|
| | to June 30. | to June 30. | to June 30. | to June 30. | to June 30. | to June 30 Estimated. |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Civil Government Salaries and Contingencies..... | 41,533 34 | 45,220 96 | 45,500 00 | 45,424 05 | 45,800 00 | 46,500 00 |
| Agricultural Schools..... | 20,208 39 | 18,534 99 | 29,863 09 | 30,000 00 | 30,000 00 | 30,000 00 |
| Housekeeping Schools..... | 10,000 00 | 18,500 00 | 10,290 29 | 8,518 00 | 12,000 00 | 10,000 00 |
| Agricultural Societies..... | 120,614 08 | 164,551 98 | 146,296 56 | 105,061 96 | 115,000 00 | 100,000 00 |
| Farmers' Clubs or Agricultural Circles, including grant to S. Shore Railway.. | 90,851 82 | 99,650 00 | 97,000 00 | 148,020 10 | 85,000 00 | 100,000 00 |
| Council of Agriculture..... | 4,529 03 | 3,665 83 | 2,787 99 | 2,272 68 | 3,000 00 | 3,000 00 |
| Horticultural and Agricultural Societies, Montreal and Provincial..... | 1,000 00 | 1,000 00 | 1,000 00 | 1,000 00 | 1,500 00 | 1,500 00 |
| Veterinary Instruction..... | 5,994 96 | 5,500 00 | 4,772 68 | 6,500 00 | 5,500 00 | 5,500 00 |
| Dairying..... | 74,441 50 | 76,000 00 | 67,676 14 | 94,451 64 | 97,000 00 | 99,000 00 |
| Dairy Factories Inspection..... | | | | | 20,000 00 | |
| Provincial Laboratory..... | 2,000 00 | 1,540 24 | 2,000 00 | 4,000 00 | 2,000 00 | 2,000 00 |
| Lectures on Agriculture..... | 6,537 56 | 7,029 44 | 5,406 09 | 3,927 21 | 9,000 00 | 9,000 00 |
| Fruit Growing..... | 11,856 29 | 10,865 48 | 6,580 36 | 4,605 33 | 5,000 00 | 5,000 00 |
| Poultry Raising..... | 3,000 00 | 3,000 00 | 2,099 14 | 2,126 47 | 3,000 00 | 3,000 00 |
| Journal of Agriculture..... | 29,000 00 | 29,000 00 | 27,000 00 | 26,624 30 | 27,000 00 | 27,000 00 |
| Agricultural Merit..... | 4,000 00 | 2,607 65 | 3,270 38 | 3,298 40 | 3,500 00 | 3,500 00 |
| Exhibitions..... | 32,000 00 | 32,000 00 | 31,000 00 | 30,500 00 | 32,000 00 | 30,000 00 |
| Miscellaneous..... | 100 00 | 100 00 | 100 00 | 35 00 | 100 00 | 100 00 |
| School of Agriculture, Ste. Anne de la Pocatière— | | | | | | |
| Towards construction..... | 10,000 00 | | | | | |
| Towards maintenance..... | 10,000 00 | 10,000 00 | | | | |
| Totals..... | 477,666 98 | 528,766 57 | 482,642 72 | 516,365 14 | 496,400 00 | 475,100 00 |

MANITOBA.

AGREEMENT, 1916-17.

| | |
|--|--------------|
| 1 Instructors and Representatives..... | \$ 17,668 19 |
| 2 Instruction and demonstration..... | 16,197 03 |
| 3 Women's Work..... | 16,634 78 |
| 4 Boys' and Girls' Clubs..... | 12,950 18 |
| 5 Bulletins and Printing..... | 5,649 82 |
| 6 Miscellaneous..... | 1,667 20 |
| | \$ 70,767 20 |

EXTENSION SERVICE.

The work of the Extension Service is carried on in close co-operation with Agricultural Societies, Home Economics Societies, the Agricultural College and the Departments of Agriculture and Education, and is included under the following headings:—

1. Short Course Schools;
2. District Representatives;
3. Boys' and Girls' Clubs;
4. Agricultural Society Activities;
5. Home Economics Work;
6. Farmers' Week;
7. Institute Lectures.

SHORT COURSES.

Greater attention was paid to the short course schools than in any previous year. Altogether 217 courses were held, these being divided as follows:—

- A. Agricultural and Home Economics—17 courses, each of two weeks' duration.
- B. Dressmaking, Millinery, Cooking, Canning and Home Nursing—169 courses, each of four or five days, for members of Home Economics societies.
- C. Agricultural Woodworking—18 courses, each of two weeks' duration for the older members of Boys' and Girls' Clubs; given during the summer vacation.
- D. 10 weeks short courses in Sewing and Cooking for the older girls who were enrolled in Boys' and Girls' Club work; held during the summer vacation.

The sessions at these courses ranged from 2½ to 3 hours each and the attendance was as follows:—

| | | | |
|----|-------------------|---------------------------|-----------|
| A. | 836 men enrolled. | Aggregate attendance..... | \$ 15,158 |
| | 745 women | “ “ “ “ | 12,838 |
| B. | 4,187 “ “ | “ “ “ “ | 37,702 |
| | 8,108 “ “ | “ “ “ “ | 16,216 |
| C. | 360 boys | “ “ “ “ | 5,250 |
| | 230 girls | “ “ “ “ | 2,115 |
| | | Grand aggregate..... | \$ 83,309 |

NORMAL SCHOOL AGRICULTURAL COURSE.

In co-operation with the Field Husbandry and Poultry Husbandry Departments of the College, and the Dairy Branch of the Department of Agriculture, lectures were given at the Brandon Normal School. Later in the term a three weeks short course in Field Husbandry was carried on. At the close of the course an examination was held and most of those in attendance received first year standing in their subject at the Agricultural College.

DISTRICT REPRESENTATIVES.

Enlistments and retirements reduced the number of representatives from seven at the beginning to three at the end of the year. The work performed is similar to that carried on in other provinces, emphasis being placed on Short Course Schools, Boys' and Girls' Clubs, Field Demonstrations, Dairy and Poultry Improvement work, Live Stock judging, Plot Inspection, and toward the end of the year, the promotion of Rural Credits Associations among the farmers. In the short course work each representative took charge of a series of schools commencing about the end of November and continuing until March.

BOYS' AND GIRLS' CLUBS.

In Boys' and Girls' Club work the Extension Service aided teachers and public school inspectors in encouraging all phases of agricultural and home economics work, and as a further assistance, the help of bankers, merchants, farmers, and various other organizations was sought and secured. Over 13,000 boys and girls were enrolled as members. The most popular lines of work were chicken raising, gardening, pig and calf raising, cookery and sewing. During the season 110 fairs were held at which over 11,000 members exhibited and fully 38,900 people attended. Two judges were supplied for practically all the fairs, one for girls' work and the other for boys' work. At the close of each fair, the exhibits were discussed and instructions given as to the best lines to adopt in making the following year's work a success.

AGRICULTURAL SOCIETY ACTIVITIES.

While the Agricultural Societies give valuable assistance to all phases of extension work, special mention should be made of the standing crop and good farming competitions, seed grain fairs, dressed poultry shows, and ploughing matches. About thirty of each of the above were held. Judges were supplied for all of these competitions, and advantage was taken of the occasion to discuss farming problems. The judges supplied were either members of the Agricultural College staff or men who had a wide farming experience. During 1917 summer-fallow competitions will be conducted.

There are 72 Agricultural Societies in the province, with a membership of about 8,000; all of the societies held either a summer or a fall fair and from three to ten judges were supplied for each fair, mainly for the live stock classes. An increasing number are asking for extension service judges for women's work.

HOME ECONOMICS SOCIETIES.

There are now over 100 societies in the province, with a membership of 4,000. While the energies of the members are being devoted mainly to Red Cross work, sufficient time was spared for attendance at short courses, as well as

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individual lectures and demonstrations. During the greater part of the year, from six to eight members of the staff devoted all their attention to the Home Economics Societies, mainly in giving demonstration lectures, and in conducting short courses.

During July three district Home Economics Conventions were held, at Dauphin, Boissevain, and Portage la Prairie, respectively. The programme for each of these Conventions was supplied for the most part by members of societies living within the district, which proved to be a splendid means of developing the latent talent of a large number of members

FARMERS' WEEK.

During the Winnipeg Bonspiel, held in February, the various farmers' organizations hold their annual conventions. The Provincial Seed Grain Fair is also held at this time, and the Extension Department co-operates in making these meetings as practical and helpful as possible. The attendance was between 1,400 and 1,500.

EDUCATIONAL EXHIBITS.

The Extension Service in co-operation with the College placed Educational Exhibits at a number of Agricultural Society Fairs as well as at the Brandon Exhibition and the International Soil Products Exhibition at Peoria, Illinois.

DAIRY PRODUCE GRADING.

This work is rapidly increasing each year. During the season of 1914 2,223 samples of creamery butter were examined and graded, representing 26,676 fifty-six pound boxes; 1915, 3,780 samples, representing 45,360 boxes; 1916, 4,518 samples, representing 67,770 boxes. Defects are pointed out and suggestions made for improving the quality. Sixty-eight car loads of creamery butter were exported during the year and a government grade certificate accompanied practically every car. The grading of cream and butter has been the means of greatly improving the standard of the creamery output.

To encourage and to further stimulate their best efforts in cream grading, pasteurization, and all other essentials necessary for the production of as large a percentage of "First Grade Butter" and "Specials" as possible, premiums were paid to creameries on the basis of quality of product.

Dairy instruction was continued in the northern part of the province, chiefly among the Ruthenians. About one hundred meetings were held, and over a thousand farm homes visited.

PUBLICATIONS.

The Publications Branch edited and supervised the printing and, to a large extent, the distribution of all agricultural literature published under the auspices of the Manitoba Department of Agriculture, whether the expense of publication was borne by the Dominion grant or paid for by Provincial moneys.

During the year 1916 from March 31 to December 31, the following publications were issued:—

| | No. of Copies. |
|---|----------------|
| Bulletins..... | 46,000 |
| Circulars..... | 30,000 |
| Posters and Placards..... | 15,000 |
| Printed Programmes and folders..... | 23,000 |
| Printed forms..... | 23,000 |
| Circular letters and news letters, very many thousands. | |

Early in the year 1916 a mailing machine was installed and mailing lists have been compiled and kept revised. The use of this machine enabled this Branch to conduct a great deal of mailing with expedition.

Very free use was made of circular letters, both in the way of collecting information and also of disseminating it. Conspicuously useful in this direction was a news service, by means of which every newspaper in Manitoba interested in agricultural progress was kept supplied with news on timely subjects. The news items supplied in these letters were very widely published. The effort to supply information was not confined to the English papers, but arrangements were made whereby a series of specially prepared agricultural articles were published in leading papers printed in the Swedish, Norwegian, French, Icelandic, German, Ruthenian, and Polish languages.

DEMONSTRATION FARMS.

In the report on the Agricultural Instruction Act for 1915-16 there appeared a statement showing the returns for the year from the fourteen demonstration farms established in 1913. One of these, situated at Killarney, consisting of approximately seventy-five acres, was purchased to be developed as a permanent Demonstration Station in the interests of horticultural work. Each of the other thirteen consisted of forty acres, secured under a ten-year lease, to be used for demonstrating the value of good cultivation, careful selection of seed, and the suitability of certain crop rotations as a means of increasing production in the province. Early in the year 1916 the Provincial Minister of Agriculture cancelled the agreements with the owners and operators of these farms, and hence their use as demonstration plots was discontinued.

Work on the Killarney Provincial Demonstration Farm is still in its early stages and not sufficiently advanced to report definite results. An eight-year rotation and a small amount of cultural work is all the cereal work that is being carried on, besides the production of feed for the live stock. Owing to the bad season, the crops were below the average. The grain in many cases was so poor that it was not threshed, and some that was threshed yielded very poorly. The early sown grain in every case was fairly good, the wheat yielding as high as 27 bushels and 20 pounds, oats 54 bushels, and barley 50. The late grain yielded: Wheat, 2½ bushels; oats, 22; barley, 24, spring rye, 30 bushels and 20 pounds. The crop of fodder corn was a success, yields running approximately 12 tons per acre.

POULTRY WORK.

A great deal of the work of this department consists of lectures to Boys' and Girls' Clubs, Dressed Poultry Fairs, Short Courses, and Normal Schools. Ten lectures were given to Boys' and Girls' Clubs during September and October; ten to Dressed Poultry Shows during November and December; sixty-one lectures at Short Course meetings, and eleven lectures to teachers at the Brandon and Portage la Prairie Normal Schools.

OFFICERS PROVIDED BY DOMINION GRANT.

| | |
|------------------------------|------------------|
| Instructor, Gas Engines..... | A. C. Campbell. |
| “ Bee-keeping..... | R. M. Muckle. |
| “ Poultry..... | J. E. Bergey. |
| “ Dairying..... | W. J. Crow. |
| “ “..... | D. E. Mackenzie. |
| “ “..... | C. S. Prodan. |

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Superintendent Killarney Demonstration Farm, Nelson S. Smith.
 District Representative J. H. Kiteley.
 " " Fred F. Parkinson.
 " " W. R. Roberts.
 Home Economics Lecturer Margaret Smith.
 " " E. Crawford.
 " " Lillian Clarke.
 " " Caroline G. Senior.
 " " R. M. Atkinson.
 Stenographer, College Extension Division
 Accountant J. P. Grant (part salary).

MANITOBA.

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Balances April 1, 1916. | Grant 2nd Variation. | Refunds. | Total Credits. | Ex- penditure. | Cr. Balance. |
|-----|--|-------------------------------|----------------------------|----------|-------------------|-------------------|-----------------|
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1 | Instructors and Representatives... | 6,831 81 | 17,668 19 | | 24,500 00 | 24,272 37 | 227 63 |
| 2 | Instruction and Demonstration.... | 13,904 01 | | | | | |
| | (\$12,000.00 for subsequent agree- ment)..... | * 2,500 00 | 16,197 03 | 489 75 | 33,090 79 | 19,607 75 | 1,483 04 |
| | | | | | 21,090 79 | | |
| 3 | Women's Work..... | 765 22 | 16,634 78 | | 17,400 00 | 17,254 46 | 145 54 |
| 4 | Boys' and Girls' Clubs..... | 533 60 | 12,950 18 | | 13,483 78 | 13,450 83 | 32 95 |
| 5 | Bulletins and printing..... | 850 18 | 5,649 82 | | 6,500 00 | 6,320 59 | 179 41 |
| 6 | Miscellaneous..... | 1,603 56 | 1,667 20 | | 3,270 76 | 2,574 18 | 696 58 |
| | | 26,988 38 | 70,767 20 | 489 75 | 86,245 33 | 83,480 18 | 2,765 15 |
| | | | | Plus.... | 12,000 00 | Plus.... | 12,000 00 |
| | | | | | 98,245 33 | | 14,765 15 |

(*From School Agriculture 1915-16.)

I. INSTRUCTORS AND REPRESENTATIVES.

| | | |
|------------------------------|--------------|--------------|
| Grant 1916-17..... | \$ 17,668 19 | |
| Balance April 1..... | 6,831 81 | |
| Expended March 31, 1917..... | | \$ 24,272 37 |
| Balance forward..... | | 227 63 |
| Salaries and Expenses..... | \$ 24,500 00 | \$ 24,500 00 |

8 GEORGE V, A. 1918

1. INSTRUCTORS AND REPRESENTATIVES—*Concluded.*

| | | | |
|--|----|----------|--------------|
| F. S. Jacobs, Prof. Animal Husbandry..... | \$ | 249 96 | |
| A. J. Galbraith, Instructor in Chemistry..... | | 1,283 31 | |
| Miss C. L. Groff, Instructor in Household Arts..... | | 866 64 | |
| J. A. Neilson, Secretary, Horticulture and Forestry..... | | 777 30 | |
| R. M. Muckle, Provincial Apiarist..... | | 1,462 51 | |
| J. E. Bergey, Demonstrator Poultry..... | | 533 32 | |
| L. A. Gibson, Dairy Instructor..... | | 1,587 34 | |
| W. J. Crowe, Dairy Instructor..... | | 2,348 35 | |
| W. J. G. Weiner, District Representative..... | | 2,064 61 | |
| L. V. Lohr, District Representative..... | | 1,195 46 | |
| N. S. Smith, Provincial Apiarist..... | | 2,118 87 | |
| W. R. Roberts, Secretary, Horticulture and Forestry..... | | 2,053 89 | |
| F. J. Hudson, District Representative..... | | 1,277 48 | |
| J. R. Bell, " " " "..... | | 1,743 13 | |
| J. H. Kitlecy, " " " "..... | | 882 50 | |
| F. F. Parkinson, " " " "..... | | 1,302 12 | |
| A. Skorobohocy, " " " "..... | | 514 58 | |
| F. F. Boresky, " " " "..... | | 462 04 | |
| S. J. Sigfuson, " " " "..... | | 598 34 | |
| J. E. Sirett, " " " "..... | | 263 82 | |
| A. C. Campbell, " " " "..... | | 375 00 | |
| R. W. Murchie, " " " "..... | | 300 00 | |
| Incidentals..... | | 11 80 | |
| | | | \$ 24,272 37 |

2. INSTRUCTION AND DEMONSTRATION.

| | | | |
|--|----|-----------|--------------|
| Grant 1916-17 (\$12,000.00 for subsequent agreement)..... | \$ | 16,197 03 | |
| Balances April 1, 1916, Instruction and Demonstration..... | | 13,904 01 | |
| School Agriculture, 1915-16..... | | 2,500 00 | |
| Refunds..... | | 459 75 | |
| Expended March 31, 1917..... | \$ | 19,607 75 | |
| Balance forward..... | | 1,483 04 | |
| Balance forward (subsequent agreement)..... | | 12,000 00 | |
| | \$ | 33,090 79 | \$ 33,090 79 |

Killarney Farm—

| | | | |
|--|----|----------|--------------|
| Buildings..... | \$ | 2,197 73 | |
| Live Stock..... | | 387 18 | |
| Equipment..... | | 1,267 56 | |
| Maintenance and Supplies, Labour..... | | 2,892 57 | |
| | | | \$ 6,745 04 |
| Short Courses..... | | 6,428 39 | |
| Tile drainage M. A. C..... | | 2,192 12 | |
| District Representatives Expenses..... | | 1,388 18 | |
| Expenses special judges and lecturers..... | | 514 80 | |
| Equipment..... | | 130 13 | |
| Printing, stationery, incidentals..... | | 601 59 | |
| Baldur Farm..... | | 40 70 | |
| Grant Brandon Poultry Show..... | | 300 00 | |
| Prizes, Dressed Poultry..... | | 685 20 | |
| Seed Grain Prizes..... | | 84 05 | |
| Farmers' Week Prizes..... | | 64 00 | |
| Boys' and Girls' Club Prizes..... | | 25 00 | |
| Butter Contest Prizes..... | | 237 12 | |
| Wool Marketing..... | | 120 43 | |
| Incidentals..... | | 51 00 | |
| | | | \$ 19,607 75 |

3. WOMEN'S WORK.

| | | | |
|------------------------------|----|-----------|--------------|
| Grant, 1916-17..... | \$ | 16,634 78 | |
| Balance April 1, 1916..... | | 765 22 | |
| Expended March 31, 1917..... | \$ | 17,254 46 | |
| Balance forward..... | | 145 54 | |
| | \$ | 17,400 00 | \$ 17,400 00 |

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3. WOMEN'S WORK—*Concluded.*

Salaries and expenses—

| | | |
|-------------------------|----|----------|
| Miss E. Crawford..... | \$ | 2,338 41 |
| Hattie M. Gowsell..... | | 892 85 |
| Margaret Smith..... | | 2,205 36 |
| Caroline G. Senior..... | | 1,716 31 |
| L. Clark..... | | 1,695 00 |
| R. M. Atkinson..... | | 861 32 |
| Mrs. C. Graham..... | | 1,296 88 |
| A. Hay..... | | 925 00 |
| Mildred Tew..... | | 514 75 |

Lecturers and Demonstrators—

| | | |
|---|--|----------|
| Sundry persons..... | | 3,025 00 |
| Supplies and Incidentals..... | | 214 09 |
| Grants to Home Economics Societies..... | | 1,239 07 |
| Grants Exchange Libraries..... | | 75 00 |
| Prizes, Farm-house plans..... | | 117 90 |
| Printing, etc..... | | 137 52 |

\$ 17,254 46

4. BOYS' AND GIRLS' CLUBS.

| | | | |
|------------------------------|----|-----------|--------------|
| Grant, 1916-17..... | \$ | 12,950 18 | |
| Balance April 1, 1916..... | | 533 60 | |
| Expended March 31, 1917..... | | | \$ 13,450 83 |
| Balance forward..... | | | 32 95 |
| | \$ | 13,483 78 | \$ 13,483 78 |

| | | |
|---|----|-----------|
| <i>Services and Expenses, Sundry persons, judges, lecturers, etc.</i> | \$ | 8,999 09 |
| Grants..... | | 838 70 |
| Prizes..... | | 2,445 95 |
| Printing..... | | 184 50 |
| Supplies and incidentals..... | | 982 59 |
| | \$ | 13,450 83 |

5. BULLETINS AND PRINTING.

| | | | |
|-------------------------------|----|----------|-------------|
| Grant, 1916-17..... | \$ | 5,649 82 | |
| Balance, April 1, 1916..... | | 850 18 | |
| Expended, March 31, 1917..... | | | \$ 6,320 59 |
| Balance forward..... | | | 179 41 |
| | \$ | 6,500 00 | \$ 6,500 00 |

| | | |
|---|----|----------|
| Geo. Batho, salary..... | \$ | 1,874 97 |
| Printing bulletins, circulars, and posters..... | | 4,303 18 |
| Advertising..... | | 142 44 |
| | \$ | 6,320 59 |

6. MISCELLANEOUS.

| | | | |
|-------------------------------|----|----------|-------------|
| Grant, 1916-17..... | \$ | 1,667 20 | |
| Balance, April 1, 1916..... | | 1,603 56 | |
| Expended, March 31, 1917..... | | | \$ 2,574 18 |
| Balance forward..... | | | 696 58 |
| | \$ | 3,270 76 | \$ 3,270 76 |

Equipment—

| | | |
|--|----|----------|
| Addressograph and plates..... | \$ | 1,185 66 |
| Miscellaneous, including postage..... | | 1,088 52 |
| Salary, part, Jas. P. Grant, Accountant..... | | 300 00 |
| | \$ | 2,574 18 |

AGRICULTURAL AID GRANT 1912-1913.

EXPENDITURE TO MAY 31, 1916.

| | |
|---------------------------------------|--------------|
| Demonstration Farms..... | \$ 5,425 90 |
| Demonstration Trains..... | 3,278 45 |
| Agricultural meetings, lectures..... | 1,046 10 |
| Ploughing matches..... | 230 98 |
| Poultry Industry..... | 985 20 |
| Grants to Agricultural Societies..... | 18,001 65 |
| | <hr/> |
| | \$ 28,968 28 |
| Balance unexpended..... | 2,901 33 |
| | <hr/> |
| | \$ 31,869 61 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914, 1915 and 1916 and Appropriations for 1917.

| Service. | 1913 | 1914 | 1915 | 1916 |
|--|------------|-------------|-------------|-------------|
| | To Nov. 30 | To Nov. 30. | To Nov. 30. | To Nov. 30. |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Department—Salaries..... | 14,729 97 | 14,700 00 | 14,555 00 | 12,522 26 |
| Office expenses..... | 1,675 28 | 1,496 07 | 1,727 81 | 1,990 39 |
| Agricultural Societies and Farmers' Institutes..... | 41,937 40 | 39,426 53 | 48,145 78 | 45,787 69 |
| General Agriculture..... | 7,309 06 | 8,315 60 | 9,799 69 | 23,429 90 |
| Grants to Live Stock Associations, Winter Fairs, Exhibitions, and Societies (Dom. Fair, \$20,000.00, special in 1913)..... | 36,473 00 | 19,229 00 | 5,707 72 | 12,895 82 |
| Manitoba Agricultural College— | | | | |
| Salaries..... | 68,393 02 | 76,190 00 | 103,709 95 | 101,369 45 |
| Maintenance..... | 36,461 85 | 52,172 71 | 65,791 83 | 75,246 52 |
| Fuel..... | 12,537 55 | 40,342 06 | 35,337 25 | 69,804 15 |
| Totals..... | 220,517 13 | 251,872 08 | 284,775 03 | 343,046 19 |
| Revenue— | | | | |
| Agricultural College fees, etc..... | 16,509 91 | 18,175 77 | 42,876 10 | 63,146 01 |
| Net total..... | 204,007 22 | 233,696 31 | 241,898 93 | 279,900 18 |

SASKATCHEWAN.

AGREEMENT, 1916-17.

| | |
|---|--------------|
| 1. College of Agriculture..... | \$ 22,800 00 |
| 2. Instructors, Directors, Superintendents and District Representatives—Salaries and Expenses..... | 30,700 00 |
| 3. Instruction and Demonstration in live stock, dairying, soils, crops, etc., including Short Courses..... | 7,000 00 |
| 4. Women's Work..... | 4,500 00 |
| 5. Bulletins and Miscellaneous printing..... | 3,900 00 |
| 6. Agricultural instruction in Public, High, and Normal Schools—Nature Study, School Gardens, Domestic Science, Training of Teachers..... | 4,500 00 |
| 7. Contingencies and miscellaneous..... | 1,469 76 |
| Total..... | \$ 74,869 76 |

BETTER FARMING TRAIN.

The number of places visited by the "Better Farming Train" in 1916 was 56, the distance travelled was 810 miles over Canadian Northern lines; the attendance was 22,673, made up of 8,245 men, 13,392 women and 5,455 children. The total cost was \$4,787. As in previous years, the college furnished the live stock for demonstration purposes as well as many other exhibits, and also supplied several members of its regular staff, who acted as lecturers and demonstrators. The railway company supplied the rolling stock and operated the train free of charge.

SHORT COURSES.

Under the Extension Division of the College of Agriculture, 59 Short Courses in Agriculture were held at 51 points. The aggregate attendance was 7,311. At a number of leading points separate classes were held for Normal School students with a view to awakening greater interest in Agriculture in the minds of those who intend entering the teaching profession. At the College of Agriculture, a two-weeks' course in traction engineering was held, with a regular attendance of 195 students. Apart from this, no short courses in agriculture were provided at the college during the year, the week usually devoted to this object being given over to the annual convention of live-stock breeders. Women's Institute courses were held during the winter at fifteen points, the total attendance being 756.

AGRICULTURAL AND HOUSEHOLD SCIENCE EDUCATION.

The policy of the Department of Education to extend and encourage instruction in Agriculture and Household Science in the Schools was continued under the direction of the Agricultural Instruction Committee. The Director of Household Science, Miss F. A. Twiss, was given the assistance of Miss H. McMurtry, who will instruct in Household Science at the Normal School at Regina. At the Saskatoon Normal School, the Director of Women's Work, Miss A. Delury will undertake similar duties.

Ninety-eight teachers took the course in Agriculture, conducted at the University, and twenty-one took the Household Science Course. The railway fares of teachers who satisfactorily complete a course are paid, and living accommodation is provided.

Seventy-five per cent of the schools of the province this year attempted garden work, and increased interest is being shown in the planting of school grounds. A bulletin of 70 pages entitled "The School Garden" was issued and distributed.

The number of School Fairs held during the year was 84, being exactly double that of the year previous. Many of these fairs were organized by Rural Education Associations. About 40 of these associations have been organized since 1915, with the object of promoting school fairs, contests for boys and girls and young people's clubs.

CO-OPERATION AND MARKETING.

The work of the Co-operation division of the Department of Agriculture is financed by the grant. During the year, 91 co-operative producing, marketing and purchasing associations were registered under the Agricultural Co-operative Associations Act, making a total of 352 since the Act first came into effect in December 1913. Throughout the year speakers were supplied to assist groups of farmers in organizing.

Continuing the co-operative wool marketing work begun in 1914, the division proceeded to act as a marketing agency for producers. Under arrangement with the Dominion Live Stock Branch expert graders were supplied. Poultry marketing stations at Regina and Saskatoon were operated from November to January, as in previous years, the project being advertised by posters and leaflets.

The division again undertook the work of supplying flower and vegetable seed for school and home gardens at a nominal cost. Upwards of 400 schools were supplied with seeds of varieties known to be suited to Saskatchewan conditions.

UNIVERSITY OF SASKATCHEWAN.

The work performed by the College of Agriculture of the University of Saskatchewan comprising College Extension, investigation and research, was outlined somewhat fully in the report of 1915-16, pp. 71-72. In the fields of investigation and research the work was continued in 1916-17 on the lines indicated in that report, and it is unnecessary to again refer to it in detail. The nature of the Extension work carried on is indicated in the summary that follows:—

SUMMARY OF ACTIVITIES.

During the year ended June 30, 1917, there were held at the Agricultural College of the University of Saskatchewan and at various points in the Province the following:—

| | Attendance. | |
|---|-------------|--------|
| At the University— | | |
| Summer School..... | 123 | |
| Agricultural Societies' Convention..... | 200 | |
| Live Stock Convention..... | 120 | |
| Dairymen's Convention..... | 100 | |
| Short Course in Traction Engineering..... | 195 | |
| Veterinary Short Course..... | 50 | |
| Short Courses for Returned Soldiers..... | 76 | |
| Short Course for Young Girls..... | 80 | |
| Home-makers' Convention in 1917..... | 300 | |
| Excursions to the College..... | 3,000 | |
| | <hr/> | 4,244 |
| At various points in the Province— | | |
| 13 Spring Shows..... | 250 | |
| 62 Ploughing matches..... | 7,000 | |
| 100 Junior exhibitions for children..... | 15,000 | |
| 60 Seed Fairs..... | 5,500 | |
| 15 Conferences with home-makers..... | 756 | |
| 59 Short Courses for farmers..... | 7,300 | |
| 1 Better Farming Special, in 1917..... | 40,000 | |
| 124 Exhibitions (excluding those at Regina, Saskatoon, Battleford, Prince Albert, and Weyburn)..... | 12,000 | |
| | <hr/> | 87,806 |
| | | 92,050 |

SESSIONAL PAPER No. 15c

OFFICERS PROVIDED BY THE DOMINION GRANT.

(A) Officers, regularly employed, whose salaries are paid from the Agricultural Instruction Grant.

Field Representative, J. W. Hunter, Live Stock Branch, Department of Agriculture, Regina.

Dairy Inspector, J. A. McDonald, Department of Agriculture, Regina.

Dairy Inspector, P. E. Reed, Department of Agriculture, Regina.

Field Representative, L. C. Wirtz, Dairy Branch, Department of Agriculture, Wadena.

District Representative, J. G. Rayner, North Battleford.

Professor of Cereal Husbandry, G. H. Cutler, Saskatoon.

Professor of Animal Husbandry, A. M. Shaw, Saskatoon.

Assistant Professor of Animal Husbandry, W. H. J. Tisdale, Saskatoon.

Assistant Professor of Agricultural Engineering, J. MacGregor Smith, Saskatoon.

Professor of Poultry Husbandry, R. K. Baker, Saskatoon.

Assistant Professor of Dairying, K. G. MacKay, Saskatoon.

Assistant Professor of Physics, A. E. Hennings, Saskatoon.

Assistant Professor of Chemistry, T. Thorvaldson, Saskatoon.

Director of Women's Work, Miss A. Delury.

Lecturer for Homemakers' Clubs, Miss Daisy Harrison.

Director, School Agriculture, F. W. Bates, Department of Education, Saskatoon.

Director, School Agriculture, A. W. Cocks, Department of Education, Regina.

Director, Household Science, Miss F. A. Twiss, Department of Education, Regina.

Assistant Household Science, Miss Helen McMurtry, Department of Education, Regina.

(B) Officers, regularly employed, whose salaries are paid in part from the Agricultural Instruction Grant.

Director, Co-operative Work, W. W. Thompson, Department of Agriculture, Regina.

Assistant Director, Co-operative Work, *W. G. Mawhinney, Department of Agriculture, Regina.

(C) Officers employed a part of each year whose salaries are paid from the Agricultural Instruction Grant.

Field Representative, J. S. Fulton, Live Stock Branch, Department of Agriculture, Regina.

Field Representative, M. P. Tullis, Weeds Branch, Department of Agriculture, Saskatoon.

Field Representative, Wm. Thomson, Weeds Branch, Department of Agriculture, Verigin, Sask.

Field Representative, R. J. Lewis, Weeds Branch, Department of Agriculture, Vandura, Sask.

Field Representative, W. E. Walker, Weeds Branch, Department of Agriculture.

Field Representative, J. S. Naylor, Weeds Branch, Department of Agriculture.

Field Representative, A. J. McPhail, Live Stock Branch, Department of Agriculture.

*Enlisted

SASKATCHEWAN.

GRANT OF 1915-16.

SUMMARY STATEMENT, April 1, 1916, to September 30, 1916.

| No. | Classification. | April 1, 1916, Balances. | | Transfer. | Total Credits. | | Expenditure. | | Cr. Balance, Sept. 30, 1916. | |
|-----|---|--------------------------|------|-----------|----------------|------|--------------|------|------------------------------|-----------|
| | | \$ | cts. | | \$ | cts. | \$ | cts. | \$ | cts. |
| 1 | College of Agriculture..... | | | | | | | | | |
| 4 | Women's Work..... | 13,614 | 43 | | 13,614 | 43 | 13,473 | 85 | | 140 58 |
| 2 | Instructors, directors, superintendents and district representatives, salaries and expenses..... | 19,686 | 37 | | 19,686 | 37 | 11,251 | 35 | | 8,435 02 |
| 3 | Instruction and demonstration in live stock, dairying, soils, crops, etc., including short courses..... | 5,592 | 02 | | 5,592 | 02 | 2,111 | 92 | | 3,480 10 |
| 5 | Boy's and Girl's work..... | 1,100 | 00 | | 1,100 | 00 | 1,100 | 00 | | |
| 6 | Bulletins and miscellaneous payments..... | 1,746 | 97 | | 1,746 | 97 | 1,608 | 89 | | 138 08 |
| 7 | Instruction in public, high and normal schools in agriculture, nature study and domestic science, school gardens, training of teachers..... | 878 | 30 | 1,100 | 1,978 | 30 | 1,282 | 02 | | 696 28 |
| 8 | Contingencies and miscellaneous..... | 849 | 01 | | 849 | 01 | 722 | 61 | | 126 40 |
| | Interest accrued..... | 114 | 24 | | 114 | 24 | | | | 114 24 |
| | | 43,581 | 34 | 1,100 | 44,681 | 34 | 31,350 | 64 | | 13,130 70 |

1. and 4.—COLLEGE OF AGRICULTURE.

| | | |
|--|--------------|--------------|
| Balance, brought forward, April 1, 1916..... | \$ 13,614 43 | |
| Expended to September 30, 1916..... | | \$ 13,473 85 |
| Balance on hand, September 30, 1916..... | | 140 58 |
| | \$ 13,614 43 | \$ 13,614 43 |

DETAILS.

Instruction and Research—

Salaries—

| | |
|--|-------------|
| Seven professors, and assistants, part time..... | \$ 3,903 72 |
| Two professors, full time..... | 2,050 00 |
| Four assistants in Field Husbandry Work..... | 1,619 14 |

Extension Work—

Salaries—

| | |
|---|----------|
| Six professors and assistants, part time..... | 2,888 74 |
| Director and lecturer in Women's work..... | 1,435 12 |
| Expenses, women's work..... | 1,577 13 |

\$ 13,473 85

2.—INSTRUCTORS, DIRECTORS, SUPERINTENDENTS AND DISTRICT REPRESENTATIVES—SALARIES AND EXPENSES.

| | | |
|--|--------------|--------------|
| Balance on hand, March 31, 1916..... | \$ 19,686 37 | \$ |
| Expended to September 30, 1916..... | | 11,251 35 |
| Balance on hand, September 30, 1916..... | | 8,435 02 |
| | \$ 19,686 37 | \$ 19,686 37 |

SESSIONAL PAPER No. 15c

DEPARTMENT OF AGRICULTURE.

| | Salary. | Expenses. | |
|---|-----------|-----------|-------------|
| <i>Live Stock—</i> | | | |
| J. W. Hunter, Field Representative..... | \$ 600 00 | \$ 644 45 | |
| J. S. Fulton, Field Representative..... | 493 33 | 621 80 | \$ 2,359 58 |
| <i>Weeds—</i> | | | |
| W. W. Thomson..... | \$..... | \$ 110 34 | |
| W. E. Walker..... | | 30 00 | |
| M. P. Tullis..... | | 97 80 | |
| J. S. Naylor..... | 400 00 | 326 60 | |
| R. E. Lewis..... | 203 23 | 254 35 | |
| | | | 1,422 32 |
| <i>Dairying—</i> | | | |
| J. A. McDonald..... | \$ 650 00 | | |
| P. Reed..... | 750 00 | \$ 234 55 | |
| L. C. Wirtz..... | 500 00 | | |
| Dairy Special..... | | 159 40 | |
| Dairy Branch (Butter)..... | | 17 36 | |
| | | | 2,311 31 |
| <i>Co-operative Work—</i> | | | |
| W. W. Thomson..... | \$..... | \$ 8 04 | |
| W. G. Mawhinney..... | 466 67 | | 474 71 |
| <i>District Representative—</i> | | | |
| J. G. Rayner..... | \$ 533 32 | \$..... | 533 32 |

EDUCATION DEPARTMENT.

| | | | |
|-----------------------|-----------|-----------|--------------|
| Miss F. A. Twiss..... | \$ 833 36 | \$ 206 45 | |
| A. W. Cocks..... | 1,200 00 | 346 65 | |
| F. W. Bates..... | 1,200 00 | 263 65 | |
| H. McMurtry..... | 100 00 | | 4,150 11 |
| | | | \$ 11,251 35 |

3.—INSTRUCTION AND DEMONSTRATION.

| | | | |
|-------------------------------|-------------|-------------|--|
| Balance, April 1, 1916..... | \$ 5,592 02 | | |
| Expended..... | | \$ 2,111 92 | |
| Balance, October 1, 1916..... | | 3,480 10 | |
| | \$ 5,592 02 | \$ 5,592 02 | |

| | | | |
|---------------------------------|-------------|-------------|--|
| <i>Better Farming Train—</i> | | | |
| Salaries..... | \$ 1,119 50 | \$ | |
| Maintenance..... | 571 96 | | |
| Equipment..... | 85 26 | 1,776 72 | |
| <i>District Representative—</i> | | | |
| J. G. Rayner, expenses..... | | 335 20 | |
| | | \$ 2,111 92 | |

6.—BULLETINS AND PRINTING.

| | | | |
|--|-------------|-------------|--|
| Balance on hand, March 31, 1916..... | \$ 1,746 97 | | |
| Expended to September 30, 1916..... | | \$ 1,608 89 | |
| Balance..... | | 138 08 | |
| | \$ 1,746 97 | \$ 1,746 97 | |
| <i>Department of Agriculture—</i> | | | |
| Co-operative Work..... | \$ 287 24 | | |
| Better Farming Train..... | 651 14 | | |
| Dairying..... | 257 23 | \$ 1,195 61 | |
| <i>Education Department—</i> | | | |
| Office supplies..... | \$ 30 98 | | |
| Etching and half tone..... | 6 50 | | |
| Multigraphing circular letters..... | 121 59 | | |
| Postage for distribution..... | 175 00 | | |
| Bulletin No. 6, The School Garden..... | 566 00 | | |
| Bulletin No. 5, School Fairs..... | 76 01 | 976 08 | |
| | | \$ 2,171 69 | |
| Less interest..... | | 562 80 | |
| | | \$ 1,608 89 | |

8 GEORGE V, A. 1918

7.—SCHOOL INSTRUCTION IN AGRICULTURE.

| | | |
|-------------------------------------|--------------------|--------------------|
| Balance, March 30, 1916..... | \$ - 878 30 | |
| Boys' and girls' work..... | 1,100 00 | |
| Expended to September 30, 1916..... | | \$ 1,282 02 |
| Balance, October 1, 1916..... | | 696 28 |
| | <u>\$ 1,978 30</u> | <u>\$ 1,978 30</u> |

INSTRUCTION IN PUBLIC HIGH AND NORMAL SCHOOLS IN AGRICULTURE, NATURE STUDY AND DOMESTIC SCIENCE, SCHOOL GARDENS, TRAINING FOR TEACHERS.

| | | |
|---|---------|-------------|
| Seeds for Normal School..... | \$ 8 06 | |
| Normal School Garden (Labour)..... | 188 02 | |
| R. F. Meadows, Special Lecturer..... | 7 55 | |
| D. P. McColl, Special Lecturer..... | 4 85 | |
| J. H. H. Davies, Demonstrator..... | 6 10 | |
| David Swan, Demonstrator Teachers' Convention, Prince Albert..... | 38 80 | |
| <i>Summer Schools—</i> | | |
| Regina (1915)..... | 11 38 | |
| Saskatoon (1916)— | | |
| Fares, etc. to teachers attending..... | 680 10 | |
| Supplies..... | 42 71 | |
| Isabel Shaw, teacher, Household Science..... | 121 15 | |
| Helen McMurtry, teacher, Household Science..... | 125 50 | |
| Fannie Twiss, Director Household Science..... | 47 80 | \$ 1,282 02 |

8.—CONTINGENCIES AND MISCELLANEOUS.

| | | |
|--------------------------------|------------------|------------------|
| Balance, April 1, 1916..... | \$ 849 01 | |
| Expended to April 1, 1916..... | | \$ 722 61 |
| Balance, October 1, 1916..... | | 126 40 |
| | <u>\$ 849 01</u> | <u>\$ 849 01</u> |

Agricultural Department—

| | | |
|--|----------|------------------|
| Co-operative work..... | \$ 53 76 | |
| Dairy..... | 62 90 | |
| Better Farming Train..... | 25 18 | |
| Saskatchewan Veterinary Association..... | 500 00 | |
| | | <u>\$ 641 84</u> |

Education Department—

| | | |
|--|----------|-----------------|
| School Garden Model..... | \$ 12 96 | |
| Lantern slides..... | 37 06 | |
| Apparatus for Domestic Science, etc..... | 22 55 | |
| Agricultural Instruction Committee..... | 8 20 | |
| | | <u>80 77</u> |
| | | <u>\$722 61</u> |

SASKATCHEWAN.

GRANT OF 1916-17.

SUMMARY STATEMENT, October 1, 1916, to March 31, 1917.

| Classification. | Balances, October 1, 1916. | Grant. | Refunds | Total Credits. | Expendi- - ture. | Cr. Balances. |
|--|----------------------------------|-----------|---------|-------------------|---------------------|------------------|
| No. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1. College of Agriculture..... | | 22,800 00 | } | 27,440 58 | 13,796 01 | 13,644 57 |
| 4. Women's work..... | 140 58 | 4,500 00 | | | | |
| 2. Instructors, directors, superintendents, and district representatives: salaries and expenses..... | 8,435 02 | 30,700 00 | | 39,135 02 | 14,311 39 | 24,823 63 |
| 3. Instruction and demonstration in live stock, dairying, soils, crops, etc., including short courses..... | 3,480 10 | 7,000 00 | | 10,480 10 | 3,145 26 | 7,334 84 |
| 5. Bulletins and miscellaneous printing..... | 138 08 | 3,900 00 | | 4,038 08 | 591 45 | 3,446 63 |
| 6. Instruction in public, high, and normal schools in agriculture, nature study, and domestic science, school gardens, training of teachers... | 696 28 | 4,500 00 | 20 40 | 5,216 68 | 131 50 | 5,085 18 |
| 7. Contingencies and miscellaneous..... | 126 40 | 1,469 76 | | 1,596 16 | 174 12 | 1,422 04 |
| Interest accrued..... | 114 24 | | 104 72 | 218 96 | | 218 96 |
| | 13,130 70 | 74,869 76 | 125 12 | 88,125 58 | 32,149 73 | 55,975 85 |

DETAILED STATEMENT of Expenditures, October 1, 1916 to March 31, 1917.

1 AND 4. COLLEGE OF AGRICULTURE.

| | | |
|---|-------------|-------------|
| Grant, 1916-17—College of Agriculture..... | \$22,800 00 | |
| Women's Work..... | 4,500 00 | |
| Balance brought forward, October 1, 1916..... | 140 58 | |
| Expended to March 31, 1917..... | | \$13,796 01 |
| Balance on hand, March 31, 1917..... | | 13,644 57 |
| | \$27,440 58 | \$27,440 58 |

DETAILS.

| | | |
|---|--|-------------|
| <i>Instruction and Research—</i> | | \$ cts. |
| Salaries— | | |
| Seven Professors and assistants, part time..... | | 4,374 90 |
| Two professors, full time..... | | 2,099 94 |
| Four assistants in Field Husbandry work..... | | 1,141 12 |
| Four assistants in Soil analysis..... | | 735 00 |
| <i>Extension Work—</i> | | |
| Salaries and expenses— | | |
| Six Professors and assistants, part time..... | | 2,974 98 |
| Director and Lecturer in Women's Work..... | | 1,215 00 |
| Expenses, Women's Work..... | | 1,255 07 |
| | | \$13,796 01 |

8 GEORGE V, A. 1918

2. INSTRUCTORS, DIRECTORS, SUPERINTENDENTS, AND DISTRICT REPRESENTATIVES—SALARIES AND EXPENSES.

| | \$ | cts. | \$ | cts. |
|---------------------------------------|--------|------|--------|------|
| Grant, 1916-17..... | 30,700 | 00 | | |
| Balance on hand, October 1, 1917..... | 8,435 | 02 | | |
| Expended, March 31, 1917..... | | | 14,311 | 39 |
| Balance on hand, March 31, 1917..... | | | 24,823 | 62 |
| | 39,135 | 02 | 39,135 | 02 |

DEPARTMENT OF AGRICULTURE.

| | Salary. | Expenses. | |
|---------------------------------|---------|-----------|-------|
| | \$ | cts. | \$ |
| | | | cts. |
| <i>Live Stock—</i> | | | |
| J. W. Hunter..... | 600 | 00 | 439 |
| A. J. McPhail..... | 375 | 00 | |
| J. S. Fulton..... | 100 | 00 | 36 |
| M. P. Revanal..... | | | 6 |
| J. W. Leedy..... | | | 76 |
| | | | 1,687 |
| <i>Weeds—</i> | | | |
| W. E. Walker..... | 100 | 00 | 118 |
| M. P. Tullis..... | 200 | 00 | 87 |
| Wm. Thompson..... | 400 | 00 | 394 |
| J. S. Naylor..... | | | 228 |
| Incidentals..... | | | 20 |
| | | | 1,549 |
| <i>Dairying—</i> | | | |
| J. A. McDonald..... | 700 | 00 | 282 |
| P. E. Reed..... | 875 | 00 | 260 |
| L. C. Wirtz..... | 700 | 00 | 126 |
| F. M. Logan..... | 450 | 00 | |
| D. McLeod..... | 349 | 98 | 153 |
| H. J. Crowe..... | 300 | 00 | |
| | | | 4,198 |
| <i>Co-operative Work—</i> | | | |
| W. W. Thomson..... | 774 | 42 | 148 |
| Incidentals..... | | | 106 |
| | | | 1,031 |
| <i>District Representative—</i> | | | |
| J. G. Rayner..... | 933 | 31 | 117 |
| | | | 1,051 |

EDUCATION DEPARTMENT.

| | | | | |
|-----------------------|-------|----|--------|----|
| Miss F. A. Twiss..... | 900 | 02 | 301 | 14 |
| A. W. Cocks..... | 1,200 | 00 | 173 | 81 |
| F. W. Bates..... | 1,200 | 00 | 382 | 85 |
| Miss H. McMurtry..... | 635 | 48 | | |
| | | | 4,793 | 30 |
| | | | 14,311 | 39 |

3. INSTRUCTION AND DEMONSTRATION.

| | \$ | cts. | \$ | cts. |
|---|--------|------|--------|------|
| Grant 1916-17..... | 7,000 | 00 | | |
| Balance on hand, April 1, 1916..... | 3,480 | 10 | | |
| Expended, April 1, 1917..... | | | 3,145 | 26 |
| Balance on hand, April 1, 1917..... | | | 7,334 | 84 |
| | 10,480 | 10 | 10,480 | 10 |
| <i>Better Farming Train—</i> | | | | |
| Sustenance and travelling expenses..... | | | 2,353 | 96 |
| Equipment..... | | | 791 | 30 |
| | | | 3,145 | 26 |

5. BULLETINS AND PRINTING.

| | | | | |
|-------------------------------|-------|----|-------|----|
| Grant, 1916-17..... | 3,900 | 00 | | |
| Balance, October 1, 1916..... | 138 | 08 | | |
| Expenditure..... | | | 591 | 45 |
| Balance, April 1, 1917..... | | | 3,446 | 63 |
| | 4,038 | 08 | 4,038 | 08 |

SESSIONAL PAPER No. 15c

5. BULLETINS AND PRINTING—*Concluded.*

| DEPARTMENT OF AGRICULTURE. | | \$ | cts. | \$ | cts. |
|--|--|-------|------|-------|------|
| <i>Printing Bulletins and Circulars for Co-operative Work—</i> | | | | | |
| King's Printer..... | | 295 | 55 | | |
| Saturday Press and Prairie Farm..... | | 36 | 25 | | |
| | | <hr/> | | 351 | 80 |
| | | | | | |
| EDUCATION DEPARTMENT. | | \$ | cts. | \$ | cts. |
| <i>Bulletins and Miscellaneous Printing—</i> | | | | | |
| Office supplies..... | | 72 | 35 | | |
| Multigraphing circular letters..... | | 5 | 35 | | |
| Postage on publications..... | | 100 | 00 | | |
| Rural Educational Monthly (Jan.)..... | | 46 | 00 | | |
| Report forms, Director of Household Science..... | | 15 | 95 | | |
| | | <hr/> | | 239 | 65 |
| | | | | <hr/> | |
| | | | | 591 | 45 |

6.—SCHOOL INSTRUCTION IN AGRICULTURE.

| | \$ | cts. | \$ | cts. |
|-------------------------------|-------|------|-------|----------|
| Grant, 1916-17..... | 4,500 | 00 | | |
| Balance, Oct. 1, 1916..... | 696 | 28 | | |
| Expended, March 31, 1917..... | | | | 111 10 |
| Balance, April 1, 1917..... | | | | 5,085 18 |
| | <hr/> | | 5,196 | 28 |
| | | | <hr/> | |
| | | | 5,196 | 28 |

INSTRUCTION IN PUBLIC, HIGH AND NORMAL SCHOOLS IN AGRICULTURE, NATURE STUDY, AND DOMESTIC SCIENCE, SCHOOL GARDENS, TRAINING OF TEACHERS.

Summer School, Saskatoon, 1916—

| | \$ | cts. | \$ | cts. |
|---|-------|------|-----|--------|
| Janitor, Victoria School, Saskatoon..... | 25 | 00 | | |
| Railway fares of Normal students to Indian Head to visit Experimental Farm..... | 106 | 50 | 131 | 50 |
| Less refunds..... | | | 20 | 40 |
| | <hr/> | | | 111 10 |

7.—CONTINGENCIES AND MISCELLANEOUS.

| | \$ | cts. | \$ | cts. |
|---------------------------------|-------|------|-------|------|
| Grant, 1916-17..... | 1,469 | 76 | | |
| Balance, Oct. 1, 1916..... | 126 | 40 | | |
| Expenditure, Mar. 31, 1917..... | | | 174 | 12 |
| Balance, April 1, 1917..... | | | 1,422 | 04 |
| | <hr/> | | 1,596 | 16 |
| | | | <hr/> | |
| | | | 1,596 | 16 |

Education Department—

| | \$ | cts. | \$ | cts. |
|---------------------------------------|-------|------|-----|--------|
| School Garden Model..... | 0 | 50 | | |
| Lantern Slides..... | 4 | 25 | | |
| Agricultural Institute Committee..... | 41 | 30 | | |
| Chemical supplies..... | 1 | 50 | | |
| Express..... | 4 | 35 | | |
| Periodicals and books..... | 22 | 92 | | |
| Telephone rental, Miss Twiss..... | 20 | 50 | | |
| School Fairs..... | | | | |
| Detail..... | 78 | 80 | 174 | 12 |
| | <hr/> | | | 174 12 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, and estimated for 1916 and 1917

| Service. | 1913-14. To April 30. | 1914-15. To April 30. | 1915-16. To April 30. | 1916-17. To April 30 (estimated) | 1917-18. To April 30 (estimated) |
|---|-----------------------------|-----------------------------|-----------------------------|---|---|
| | 14 mths. \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Department—Salaries and general expense..... | 41,186 38 | 39,536 09 | 66,347 93 | 40,795 00 | 34,830 00 |
| General Agricultural Interests, Agricultural Societies, Provincial Organization, Grants, Contingencies..... | 56,148 90 | 67,739 52 | 68,549 34 | 67,600 00 | 67,600 00 |
| Live Stock Industry..... | 68,575 84 | 23,593 85 | 35,636 95 | 30,300 00 | 32,700 00 |
| Dairy and Poultry Industries..... | 471,272 25 | 84,600 63 | 87,986 43 | 71,100 00 | **16,300 00 |
| Agricultural Statistics and Publicity..... | 33,413 43 | 36,404 16 | 26,635 82 | 26,900 00 | 21,600 00 |
| Bacteriological Laboratory..... | 8,111 11 | 8,443 74 | 8,040 88 | 8,400 00 | ..... |
| Weed Control and Game Protection..... | 18,398 52 | 19,588 94 | 18,272 69 | 8,900 00 Weeds 10,100 00 Game | 10,400 00 11,200 00 |
| <i>Bureau of Labour—</i> | | | | | |
| Farm and Domestic labour and factory inspection..... | 55,542 00 | 8,968 35 | 7,594 60 | 9,600 00 | 10,100 00 |
| Miscellaneous Service — | | | | | |
| *Vital statistics, Natural History Scholarships, Brands, etc..... | 27,892 19 | 24,352 72 | 21,235 31 | 9,100 00 | 1,100 00 |
| Totals..... | 780,540 62 | 337,228 00 | 340,299 95 | 282,795 00 | 205,830 00 |
| Less Revenue..... | 552,340 78 | 179,291 51 | 104,283 41 | 95,500 00 | 37,000 00 |
| | 228,199 84 | 175,936 49 | 236,016 54 | 187,295 00 | 168,830 00 |

*Note.—Vital Statistics transferred to Bureau of Public Health at beginning of fiscal year 1914-15.

**Advances to creameries, \$60,000 for purchase of milk and cream not included in 1917-18.

ALBERTA

AGREEMENT, 1916-17.

| | \$ cts. | \$ cts. |
|--|-----------|-----------|
| 1. Schools of Agriculture— | | |
| Maintenance..... | 34,000 00 | |
| Equipment..... | 1,200 00 | |
| | 35,200 00 | 35,200 00 |
| 2. Instructors, Demonstrators and District Agents..... | | 7,500 00 |
| 3. Instruction and Demonstration— | | |
| Demonstration Farms..... | 6,500 00 | |
| Demonstration Trains..... | 5,000 00 | |
| Dairying..... | 2,000 00 | |
| | 13,500 00 | 13,500 00 |
| 4. Women's Work..... | | 3,000 00 |
| 5. Bulletins, Publications, Printing..... | | 2,500 00 |
| 6. Miscellaneous..... | | 47 22 |
| | | 61,747 22 |

SCHOOLS OF AGRICULTURE.

The three schools located at Claresholm, Olds and Vermilion respectively, have continued to have a good attendance of both boys and girls in spite of the fact that many young men have enlisted. The actual attendance in 1916-17 was as follows:—

| | | |
|-----------------|----------|-----------|
| Claresholm..... | 70 boys. | 40 girls. |
| Olds..... | 64 boys. | 55 girls. |
| Vermilion..... | 47 boys. | 19 girls. |

The staffs from each of the schools were engaged during the summer in extension work of various kinds. Five of the men acted as District Agents, carrying on club work particularly. The instructors acted as judges at fairs, addressed meetings over the country and carried on different kinds of investigational work including experimental work in the field husbandry at each of the schools. The female teachers were employed in addressing women's institute meetings.

INSTRUCTION AND DEMONSTRATION.

Under the heading of Demonstration Farms, the full amount of this vote was spent in the purchase of live stock, especially in securing good bulls as herd headers for the different farms. Some of the choicest male animals that it was possible to buy were secured including the dairy shorthorn bull "Director", now located at the Olds Demonstration Farm, and the Holstein bull, "King Segis Pontiac Alcartra 11th", located at the Stony Plain Farm. Some good females were purchased also.

DEMONSTRATION TRAIN.

This train was operated during July and August and covered about 65 places. The three lines of railway furnished the equipment including coaches, engine, diner and sleeper, each railway hauling the train free of charge. The heads of the various branches of the Department, including the principals of the Schools of Agriculture, prepared the exhibits. Either the head of each branch or an assistant accompanied the train through the entire period, giving demonstrations and lectures. A large number of people visited the train and very encouraging comments were made by those who attended, respecting the exhibits and the kind of information given.

DAIRYING.

The District Agents carried on cow testing work during the summer, encouraging people to weigh and test the milk of their cows. The work consisted principally of actually gathering the samples, checking the weights and making the tests.

WOMEN'S WORK.

The Women's Institute branch of the Department engaged actively in organizing institutes, in holding short courses and in giving lectures and demonstrations. This work has progressed very rapidly and is providing valuable education, particularly to those who live some distance from centres.

OFFICERS WHOSE SALARIES ARE PROVIDED BY THE DOMINION GRANT.

(A) *Officials whose salaries are paid wholly from the Agricultural Instruction Grant:—*

Instructor in Dairying and Dairy Farming, S. G. Carlyle, Department of Agriculture, Edmonton.

Editor of Publications, Jas. McCaig.
Stenographer.

(B) *Officials whose salaries are paid in part from the Agricultural Instruction Grant:—*

Vermilion School—

Principal, F. S. Gridale.

Stenographer.

Instructor in Science.

Plotman, Robt. Pilkie.

Instructor in Domestic Science.

Assistant Instructor in Domestic Science, A. M. Lavalee.

Laborer.

Olds School—

Principal, W. J. Elliott.

Agricultural Mechanics, G. R. Holeton.

Instructor in Science, Jas. G. Taggart.

Agronomist, H. Saville.

English Instructor, J. J. Loughlin.

Instructor, Household Science, Miss Elizabeth Cumming.

Assistant Instructor, Household Science, Miss Marion E. Storey.

Stenographer.

Claresholm School—

Principal, W. J. Stephen.

Instructor in English and Elementary Science, J. C. Hooper.

“ Animal Husbandry.

“ Domestic Science, Myrtle A. Hayward.

“ Assistant Instructor, Domestic Science, Grace Robertson.

Stenographer.

Teamster.

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Women's Institutes—

Superintendent, Miss Mary McIsaacs, Department of Agriculture, Edmonton.

Stenographer.

Assistant Superintendent, Mrs. Jean Muldrew.

Demonstrator, Miss Bessie McDermand.

Instructress in Nursing, Miss Annie McKenzie.

“ Miss L. Bessie Sargent.

District Agents—

H. H. McIntyre, Stony Plain.

H. W. Scott, Claresholm.

W. Geo. Payne, Vermilion.

ALBERTA

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Balances April 1, 1916. | Grant. | Total Credits. | Expendi- ture. | Dr. Balance. | Cr. Balance. |
|-----|-----------------------------------|-------------------------------|-----------|-------------------|-------------------|-----------------|-----------------|
| 1 | Schools of Agriculture— | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| | (a) Maintenance..... | 6,429 63 | 34,000 00 | 40,429 63 | 30,164 12 | | 10,265 51 |
| | (b) Equipment..... | 326 27 | 1,200 00 | 1,526 27 | 2,653 86 | 1,127 59 | |
| 2 | Provinciale Instructors—Dairying— | 152 56 | 3,500 00 | 3,652 56 | 3,040 69 | | 611 87 |
| 3 | Instruction and Demonstration— | | | | | | |
| | (a) Demonstration Farms..Dr. | 2,406 52 | 6,500 00 | 4,093 48 | 3,484 86 | | 608 62 |
| | (b) Demonstration Trains..... | 42 88 | 5,000 00 | 5,042 88 | 5,233 63 | 190 75 | |
| | (c) Dairying..... | 2,119 19 | 2,000 00 | 4,119 19 | 2,212 16 | | 1,907 03 |
| | (d) District Agents..... | | 4,000 00 | 4,000 00 | 4,293 59 | 293 59 | |
| 4 | Women's Work..... | 27 61 | 3,000 00 | 3,027 61 | 2,209 75 | | 817 86 |
| 5 | Bulletins and Publications..... | 1,024 01 | 2,500 00 | 3,524 01 | 2,121 00 | | 1,403 01 |
| 6 | Miscellaneous..... | 806 63 | 47 22 | 853 85 | | | 853 85 |
| | Interest accrued..... | 642 85 | | 642 85 | | | |
| | Interest, 1916-17..... | | | 555 05 | | | 1,197 90 |
| | | 9,165 11 | 61,747 22 | 71,467 38 | 55,413 66 | 1,611 93 | 17,665 65 |

1.—SCHOOLS OF AGRICULTURE.

(a) MAINTENANCE.

| | | |
|-------------------------------|---------|--------------------|
| Salaries and wages..... | \$ cts. | 13,423 34 |
| Travelling expenses..... | | 1,196 30 |
| Maintenance and Supplies..... | | 13,956 26 |
| Printing and advertising..... | | 1,548 22 |
| Incidentals..... | | 40 00 |
| | | <u>\$30,164 12</u> |

(b) EQUIPMENT.

| | | |
|---|---------|-----------------|
| Apparatus, appliances, implements, etc..... | \$ cts. | 2,273 47 |
| Books and magazines for Libraries..... | | 380 39 |
| | | <u>2,653 86</u> |

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2.—INSTRUCTION IN DAIRYING.

| | |
|----------------------------|-------------|
| S. G. Carlyle, salary..... | \$ 3,000 00 |
| Printing..... | 40 69 |
| | <hr/> |
| | 3,040 69 |

3. INSTRUCTION AND DEMONSTRATION.

(a) DEMONSTRATION FARMS.

| | |
|---|-------------|
| Purchase of Breeding Stock and Incidental Expenses..... | \$ 6,120 05 |
| Refund—Sale of animals..... | 2,644 19 |
| | <hr/> |
| | \$ 3,484 86 |

The above includes the purchase price of the Holstein bull "King Pontiac Segis Alcarta 11th," No. 26692, and of 10 head of pure-bred Hereford cattle.

(b) DEMONSTRATION TRAIN.

| | |
|-------------------------------|-------------|
| Wages..... | \$ 70 13 |
| Travelling..... | 560 88 |
| Supplies and Maintenance..... | 3,702 70 |
| Printing and Advertising..... | 832 42 |
| Incidentals..... | 67 50 |
| | <hr/> |
| | \$ 5,233 63 |

(c) DAIRY COMPETITIONS.

| | |
|-------------------------------|-------------|
| Travelling..... | \$ 297 00 |
| Supplies and Maintenance..... | 1,307 16 |
| Premiums—Live Stock..... | 587 00 |
| Printing and Advertising..... | 21 00 |
| | <hr/> |
| | \$ 2,212 16 |

(d) DISTRICT AGENTS.

| | |
|--|-------------|
| Travelling..... | \$ 1,287 31 |
| Supplies and Maintenance..... | 2,423 44 |
| Prizes, Schools of Agriculture Competitions..... | 274 50 |
| Printing and Advertising..... | 308 34 |
| | <hr/> |
| | \$ 4,293 59 |

4. WOMEN'S WORK.

| | |
|---|-------------|
| Salaries—Miss Mary McIsaacs, Superintendent, and Staff..... | \$ 1,000 00 |
| Travelling..... | 678 43 |
| Printing, Advertising and Stationery..... | 520 82 |
| Incidentals..... | 10 50 |
| | <hr/> |
| | \$ 2,209 75 |

5. BULLETINS AND PUBLICATIONS.

| | |
|--|-------------|
| Salaries—Jas. McCaig, Editor of Publications, and Staff..... | \$ 2,059 67 |
| Supplies and Printing..... | 61 33 |
| | <hr/> |
| | \$ 2,121 00 |

SESSIONAL PAPER No. 15c

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the years 1913, 1914, 1915, and Appropriations for 1916 and 1917.

| Service. | 1913. | | 1914. | | 1915. | | 1916 | 1917 |
|---|---------|------|---------|------|---------|------|-----------------|-----------------|
| | \$ | cts. | \$ | cts. | \$ | cts. | Appropriations. | Appropriations. |
| Civil Government..... | 30,329 | 30 | 36,911 | 29 | 48,329 | 94 | 49,520 | 00 |
| Live Stock— | | | | | | | | |
| Live Stock and Agricultural Institutes and Associations: Fat Stock Shows; Destruction of Wolves; Stock Inspection; Brands and Brand Book; Grants to Live Stock Associations; Spring Stock Show..... | 44,789 | 38 | 60,981 | 07 | 47,736 | 83 | 46,100 | 00 |
| Fairs and Exhibitions— | | | | | | | | |
| Official Judges, Production of Pure Seed Grain, and Seed Fair, Fairs Association, etc..... | 95,826 | 51 | 107,365 | 49 | 117,226 | 18 | 121,500 | 00 |
| Poultry— | | | | | | | | |
| To encourage Poultry Industry; Grant to Poultry Association..... | 8,972 | 65 | 8,547 | 83 | 8,300 | 37 | 8,200 | 00 |
| Dairying— | | | | | | | | |
| Advances to Creameries; to encourage dairy work..... | 111,710 | 36 | 175,024 | 84 | 249,851 | 53 | 19,500 | 00 |
| Demonstration Farms— | | | | | | | | |
| Administration and Operation..... | 73,620 | 58 | 66,840 | 44 | 70,231 | 95 | 65,000 | 00 |
| Schools of Agriculture— | | | | | | | | |
| Operation; Agricultural Instruction, Scholarships..... | 3,605 | 95 | 1,375 | 40 | 20,503 | 11 | 20,500 | 00 |
| Statistics, Protection of Game, Prairie Fires..... | 34,270 | 19 | 48,373 | 26 | 45,371 | 79 | 32,500 | 00 |
| Grants— | | | | | | | | |
| United Farmers Irrigation Association, Women's Institutes, Destruction of Noxious Weeds, Natural History Society..... | 30,591 | 45 | 31,708 | 08 | 27,640 | 66 | 30,000 | 00 |
| Bacteriological and Pathological Work.. | 7,705 | 80 | 9,000 | 00 | 9,000 | 00 | | |
| Sundries and Contingencies..... | 1,003 | 51 | 500 | 00 | 1,694 | 19 | 1,000 | 00 |
| | 442,425 | 68 | 546,627 | 70 | 645,786 | 55 | 393,820 | 00 |
| LESS Revenue..... | 202,268 | 00 | 272,318 | 00 | 342,086 | 00 | | |
| | 240,157 | 68 | 274,309 | 70 | 303,700 | 55 | | |

BRITISH COLUMBIA

AGREEMENT OF 1916-1917.

| | |
|---|--------------|
| 1 Towards appointment of Inspectors, Instructors, Directors, Superintendents and District Representatives..... | \$ 19,000 00 |
| 2 Farm demonstration and experimental work, field crop competitions, boys' and girls' clubs, crop and stock competitions, cow-testing associations, poultry demonstration stations, co-operative variety tests..... | 16,000 00 |
| 3 Horticulture demonstration stations, experimental work in vegetable growing and greenhouse work, pathological and entomological investigation work, demonstration and experimental work in various cultural practices in fruits and vegetables..... | 7,000 00 |
| 4 Agricultural Journal, bulletins, reports, circulars and miscellaneous printing..... | 5,000 00 |
| 5 Department of Education, towards agricultural instruction in Public, Normal and High Schools..... | 15,000 00 |
| 6 Contingencies and miscellaneous..... | 1,732 50 |
| Total..... | \$ 63,732 50 |

During the year the following lines of work were carried out under the Agricultural Instruction Grant:—

Poultry Breeding Stations.—A number of these stations have been established in the more remote sections. A flock consisting of 20 hens and 2 male birds, is supplied to each individual who is selected to carry on the work. In addition to experimental or demonstration work, the operator is required to sell at least 15 settings of eggs at not more than \$1 per setting. At the end of the year the flock becomes the property of the man in charge. This work has proved very valuable in supplying suitable foundation stock in new districts.

Egg-laying Competition.—Forty pens of poultry, consisting of six birds each, are included in this competition. Not only are records kept of the number and weight of eggs produced by each pen, but, in addition, valuable information has been secured regarding the cost of production and the relative value of various foods.

Silos.—The building of the first silo in a district is supervised and silo-filling demonstrations conducted. Two small silo-filling outfits have been used. The results have exceeded the most optimistic expectations. There are now 500 silos in the Province, as compared with ten when the work started.

Boys' and Girls' Clubs.—Boys' and Girls' Clubs have been organized in various parts of the province. Under the auspices of these clubs, competitions are conducted in poultry raising, potato growing, grain growing, pig raising, and calf raising.

Seed Fairs.—Two Provincial Seed Fairs, one at Armstrong and the other at New Westminster, were conducted, while assistance was given to a number of local Seed Fairs. These Fairs are for the purpose of encouraging the planting of better seed, and to stimulate the home production of such seed.

Clover Huller.—To carry out the policy of encouraging the production of better seed, a clover huller was purchased and operated by the Department for educational purposes.

Drainage.—For the purpose of giving instruction in regard to the value of drainage, two ditching machines have been purchased and operated on experimental and demonstration work.

Field Crop Competitions.—Under the auspices of the Farmers' Institutes a number of competitions in the growing of staple field crops were conducted. In this work, however, most of the prize-money was provided from Provincial funds.

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Cow Testing Associations.—A small amount of money was used to give assistance to various cow-testing associations, which now are four in number.

Demonstration Stations.—Demonstration stations, varying in size from one to twenty acres, are located at Armstrong, Chilliwack, Rosehill, Edgewood, Grand Forks, Rock Creek, Courtenay, Errington, Pitt Meadows, Fort George, Aldermere, and North Nechaco. A number of these plots are used as seed production centres, in addition to demonstrating methods of cultivation and the growing of crops. The three plots located along the line of the Grand Trunk Pacific are proving very valuable in crop and variety tests.

Coast Markets Commissioner.—Office and travelling expenses in connection with the Coast Markets Commissioner's work, together with salary of Mr. R. C. Abbott, Commissioner, and his stenographer, were paid from the grant. This office is very largely devoted to the study of coast marketing conditions for British Columbia products, especially fruit, vegetable and poultry products. A weekly report is issued from the period June to December. There is an extensive correspondence with British Columbia producers in connection with the finding of markets for their products. Information is given on marketing conditions; and reports are made on the quality of the products.

In addition to these duties, Mr. Abbott has been Inspector in charge of Potato Exports and, in this connection, has inspected and issued certificates on potato shipments of the Province. In conjunction with the inspection work, he carried on actively a campaign to develop outside markets for potatoes and has done a very great deal to raise the standard of commercial shipments. Total expenditures for this work amounted, roughly, to \$2,700.

District Horticulturist in Grand Forks.—The salary and expenses of Mr. E. C. Hunt, representing the Horticultural Branch in the Boundary district, with headquarters at Grand Forks, were paid from the grant, and totalled \$1,706.03. The duties of this officer are very largely those of a district representative, except that he has official powers as an Inspector for the control of plant diseases and insect pests. Mr. Hunt has been largely engaged in the supervision of the control of Fire Blight; has conducted numerous Pruning Schools; has done a good deal of judging of horticultural exhibits at fairs; lecture work at Farmers' Institutes; has judged numerous crop competitions, and conducted general educational work for the advancement of fruit and vegetable growing.

Assistant Horticulturist, Prince Rupert.—The salary and expenses of Mr. A. R. Neal, Acting Assistant Horticulturist, Prince Rupert, were paid, totalling \$2,908.63. Mr. Neal's duties include the supervision of the Experimental Plots at Terrace, Lawn Hill and Bella Coola, lecturing at farmers' meetings, and farm-to-farm instruction visits. His work relates more particularly to field crops than to fruits and vegetables.

Pathological Laboratory, Vernon—

The work of this Laboratory has been continued, it being devoted to investigation and advisory work on plant diseases and pests for the interior districts. Mr. M. H. Ruhmann's salary and expenses, totalling \$1,400, have been paid from the grant. A great deal of Mr. Ruhmann's work and time is devoted to Codling Moth investigation work, in co-operation with the local staff of the Dominion Entomologist.

Terrace Experimental Plot—

The 5-acre Experimental Plot at Terrace, in the Similkameen district, has been continued for the year at an expense of, approximately, \$1,300. The variety tests of various cereals, fodder crops, vegetables and fruits, have been

continued. An extensive report has been submitted. The plot has done a great deal to demonstrate the relative merits of the different crops and the varieties of each for that district.

Lawn Hill Experimental Plot—

The Experimental Plot at Lawn Hill, on the Queen Charlotte Islands, has been carried on during the year at a total cost of \$735. The work is very similar to that at Terrace and is intended to serve the Queen Charlotte Islands. There are especial problems in this district in connection with muskeg lands, and the annual report on the Plot shows what is being done on a typical soil of the Islands.

Bella Coola Experimental Plot—

The Experimental Plot at Bella Coola has been operated during the year at a total expense of about \$861. This plot is very similar to the Terrace Plot in its general methods. There is evidence that this plot has done a good deal to influence the agriculture of the district.

Summerland Small-Fruit and Vegetable Experiment Station—

This Station at Summerland, with Mr. J. L. Hilborn in charge, has been continued, the cost for the year being \$1,000. An extensive report submitted to the Department showed in detail the results secured with the various tender vegetables and small fruits to which this station is devoted. As a result of this plot there has been a considerable development in fruit and vegetable growing in the district.

Various Experimental Plots—

A certain portion of the Telkwa Experimental Plot, operated under the direction of the Live Stock Branch, was planted out to fruit trees, the value of which for this district required testing. Similarly, on the Plot at Prince George, an experimental area was set aside for fruit trees of types likely to do well in the district.

Hatzic Strawberry Plot—

The work being carried on consists of testing varieties of strawberries on a commercial basis. Shipping tests were continued and valuable information was gained.

Agricultural Journal—

This journal is the official organ of the Department of Agriculture, and is educational in its object. The material is supplied by members of the Department's staff, officials of the Provincial University, Dominion officials and by prominent farmers. No advertising is carried on and the cost is provided by the grant.

AGRICULTURAL EDUCATION IN BRITISH COLUMBIA.

During 1916, two additional District Supervisors of School Agriculture were appointed, making three in all. The new appointees were J. E. Britton, B.S.A. for Upper Okanagan, and E. L. Small, B.S.A. for the lower Fraser. The Supervisors' duties include instruction in Agriculture in the high schools and in the high school extension classes, together with supervision of rural science work in the public schools tributary to high schools where Agriculture is being

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taught. Regular visits are made to the public schools, and the supervision thus given is leading to much better work in nature study and school gardening. Regular high school agricultural classes were conducted at the high schools at Chilliwack, Vernon, Armstrong, Murrayville and Cloverdale. The number of students was 120 in 1916. Great interest was shown in the work and encouraging progress was made.

Four high school extension classes were held in three districts during the winter months. Owing to the fact that the majority of the young men from these districts are on active service, the classes were thrown open to men generally. The average attendance was 36. The Supervisors provide their own motor cars, but receive a monthly allowance from the school board.

During the year, school gardening was carried on systematically in 145 schools and home gardening in 25 schools. The movement towards the improvement of school grounds, inaugurated two years ago, has made considerable progress, sixty school grounds have already been included under the scheme.

For reasons connected with the province's finances, the Summer School for Teachers, held in 1914 and 1915, was omitted in 1916.

Early in the year a general appeal was made to teachers and pupils of public and high schools to join in the Food Production campaign. The Director of Elementary Agricultural Education, Mr. J. W. Gibson, reports that the response was excellent and demonstrated the ability and enterprise as well as the unfailing loyalty of the boys and girls of the province. "To have done ever so little in this practical way to help the nation in the supreme hour of her trial will stand to the credit of all young Canadians in future years, and will remain to them and to their children's children a thing of blessed memory."

OFFICERS PROVIDED BY THE GRANT.

(A) *Officers, regularly employed, whose salaries are paid wholly from the Agricultural Instruction grant.*

J. W. Gibson, M.A., Director Elementary Agricultural Education, Victoria.
 J. C. Readey, B.S.A., District Supervisor Agricultural Education, Chilliwack.
 E. L. Small, B.S.A., District Supervisor Agricultural Instruction, Cloverdale.
 J. E. Britton, B.S.A., District Supervisor Agricultural Instruction, Armstrong.
 Abbott, R. C., Coast Markets Commissioner, Vancouver.
 Brookland, E., Caretaker, Dry Farming Station, Quilchena.
 Elliott, W., 105 Mile Dry Farming Station, 105 Mile, B.C.
 Fahrni, W., Mechanical Expert, Victoria.
 Ferris, J., Silo Operator, Victoria.
 Hay, Geo. C., B.S.A., District Agriculturist, Telkwa.
 Hunt, E. C., Assistant Horticulturist, Grand Forks.
 Lawson, F. M., Stenographer, for Coast Markets Commissioner, Vancouver.
 McLennan, Roy, Editor, Publications Branch, Victoria.
 Philips, E. L., Stenographer for Acct., Dept. of Agriculture, Victoria.
 Ruhman, M. H., Asst. Plant Pathologist, Vernon.
 Stroyan, W. H., Caretaker, Egglaying contest, Victoria.

(B) *Officers, regularly employed, whose salaries are paid partly from the Agricultural Instruction grant.*

Bekker, B., Caretaker, Errington Demonstration Plot, Errington.
 Clarke, N., Cow-tester, Chilliwack.
 Mansell, R. K., Cow-tester, Cloverdale.
 Thornberry, G. H., Cow-tester, Courtenay.
 Tucker, F. W., Cow-tester, New Westminster.

BRITISH COLUMBIA.

GRANT-OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Balances April 1. | | Grant. | | Refunds. | | Total Credits | | Expenditure. | | Cr. Balance. | |
|-----|---|----------------------|------|--------|------|----------|------|------------------|------|--------------|------|-----------------|------|
| | | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| 1 | Instructors, Inspectors, Directors, Superintendents and District Representatives..... | | | | | | | | | | | | |
| 2 | Farm demonstration and experimental work, field crop competitions, boys' and girls' clubs, crop and stock competitions, cow-testing associations, poultry stations and variety tests..... | 2,024 | 28 | 19,000 | 00 | 976 | 75 | 22,001 | 03 | 20,164 | 04 | 1,836 | 99 |
| 3 | Horticultural Demonstration Stations, Experimental work in vegetable growing and greenhouse work, pathological and entomological investigation, etc..... | 3,786 | 23 | 16,000 | 00 | | | 19,786 | 23 | 12,461 | 69 | 7,324 | 54 |
| 4 | Agricultural Journal, bulletins, etc..... | 1,934 | 36 | 7,000 | 00 | | | 8,934 | 36 | 3,950 | 61 | 4,983 | 75 |
| 5 | Department of Education, towards Agricultural Instruction in Public, High and Normal Schools..... | 1,880 | 81 | 5,000 | 00 | | | 6,880 | 81 | 2,429 | 51 | 4,451 | 30 |
| 6 | Contingencies and Miscellaneous..... | | 42 | 15,000 | 00 | | | 15,000 | 00 | 15,000 | 00 | | 83 |
| | | | | 1,732 | 50 | | | 1,732 | 92 | | | | |
| | | 9,626 | 10 | 63,732 | 50 | 976 | 75 | 74,335 | 35 | 54,813 | 94 | 19,521 | 41 |

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BRITISH COLUMBIA.

1. INSTRUCTORS AND INSPECTORS.

| | \$ cts. | \$ cts. |
|------------------------------|-----------|-----------|
| Balance April 1, 1917..... | 2,024 28 | |
| Grant, 1916-17..... | 19,000 00 | |
| Refund for cattle..... | 976 75 | |
| Expended March 31, 1917..... | | 20,164 04 |
| Balance forward..... | | 1,836 99 |
| | 22,001 03 | 22,001 03 |

Salaries and Expenses—

| | |
|---|-----------|
| E. C. Hunt, Assistant Horticulturist..... | 1,699 78 |
| R. C. Abbott, Coast Markets Commissioner..... | 2,750 29 |
| M. H. Ruhmann, Assistant Plant Pathologist..... | 1,378 19 |
| A. R. Neale, Assistant Horticulturist..... | 2,505 89 |
| J. H. McCulloch, District Agriculturist..... | 2,504 05 |
| W. E. Hogan, Soils and Crops..... | 2,411 70 |
| G. C. Hay, District Agriculturist..... | 2,104 31 |
| W. H. Stroyan, Caretaker, egg-laying contest..... | 825 00 |
| R. J. Ferris, Silo Operator..... | 1,234 91 |
| B. Bekker..... | 360 00 |
| H. C. Bunt..... | 474 65 |
| W. Gibson..... | 164 45 |
| Sundry persons..... | 399 92 |
| Incidentals..... | 30 90 |
| Cow-testers..... | 1,320 00 |
| | 20,164 04 |

2. DEMONSTRATIONS AND EXPERIMENTAL PLOTS.

| | \$ cts. | \$ cts. |
|-----------------------------|-----------|-----------|
| Balance April 1, 1916..... | 3,786 23 | |
| Grant, 1916-17..... | 16,000 00 | |
| Expended Mar. 31, 1917..... | | 12,461 69 |
| Balance forward..... | | 7,324 54 |
| | 19,786 23 | 19,786 23 |

| | | |
|--|----------|----------|
| Demonstration Plots..... | | 1,614 38 |
| Demonstration Farm, rental..... | 150 00 | |
| Demonstration Farm, labour, etc..... | 604 74 | |
| | | 754 74 |
| Wages, (pay sheets), October and November..... | | 274 52 |
| Wages—miscellaneous service..... | | 275 90 |
| 2 pure bred heifers..... | | 218 44 |
| Drainage, materials, etc..... | | 392 55 |
| Silo Demonstrations..... | | 654 32 |
| Poultry for stations..... | | 1,172 55 |
| Egg-laying contest..... | | 1,100 23 |
| Prizes for Egg-laying contest..... | | 370 00 |
| Poultry Building repairs..... | | 39 90 |
| Milk testing..... | | 285 63 |
| Seed grain purchase..... | | 837 89 |
| Incidentals..... | | 350 32 |
| Freight, threshing machine..... | | 75 75 |
| Equipment— | | |
| Clover huller..... | 1,738 55 | |
| Grain separator..... | 141 75 | |
| Grader and ditcher..... | 329 40 | |
| Seed cleaner..... | 17 62 | |
| Miscellaneous equipment..... | 15 00 | |
| | | 2,242 32 |
| Cost of Production bonuses..... | | 195 00 |
| Crop competition Prizes..... | | 1,450 00 |
| Seed Fairs— | | |
| Prizes..... | 462 00 | |
| Grants (two)..... | 100 00 | |
| Expenses..... | 114 17 | |
| | | 676 17 |

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SALARIES AND EXPENSES.

| | \$ | cts. |
|--|-------|-----------|
| S. F. Dunlop..... | 160 | 51 |
| B. Bekker..... | 85 | 28 |
| J. H. McCullock, District Agriculturist..... | 25 | 50 |
| W. Gibson..... | 359 | 05 |
| R. H. Martin..... | 1,010 | 37 |
| S. Milne..... | 300 | 00 |
| H. C. Brant..... | 18 | 65 |
| J. E. Millington..... | 42 | 00 |
| G. C. Hay, District Agriculturist..... | 300 | 67 |
| W. Elliott..... | 285 | 00 |
| E. Brookland..... | 285 | 00 |
| | <hr/> | <hr/> |
| | | 15,852 74 |

REFUND ACCOUNT.

| | \$ | cts. |
|-----------------------------------|-------|-----------|
| Eggs, Boys' and Girls' Clubs..... | 331 | 32 |
| Eggs sold..... | 991 | 20 |
| | <hr/> | <hr/> |
| | 1,322 | 52 |
| Sale of Crops from plots..... | 314 | 98 |
| Sale of Seed grain..... | 175 | 45 |
| Field competitions..... | 1,500 | 00 |
| Miscellaneous..... | 78 | 00 |
| | <hr/> | <hr/> |
| | | 3,390 95 |
| Net expenditure..... | | <hr/> |
| | | 12,461 69 |

3. DEMONSTRATIONS IN HORTICULTURE.

| | \$ | cts. | \$ | cts. |
|-----------------------------------|-------|-------|-------|-------|
| Balance, April 1, 1917..... | 1,934 | 36 | | |
| Grant, 1916-17..... | 7,000 | 00 | | |
| Expenditure, Mar. 31, 1917..... | | | 3,950 | 61 |
| Balance forward..... | | | 4,983 | 75 |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| | 8,934 | 36 | 8,934 | 36 |
| Salaries and wages..... | 2,786 | 61 | | |
| Travelling expenses..... | 306 | 74 | | |
| | <hr/> | <hr/> | 3,093 | 35 |
| Materials, supplies, rentals..... | | | 578 | 60 |
| Equipment..... | | | 180 | 21 |
| Trees for Experimental plots..... | | | 125 | 23 |
| | | | <hr/> | <hr/> |
| | | | 3,977 | 39 |
| Less sale of produce..... | | | 26 | 78 |
| | | | <hr/> | <hr/> |
| | | | 3,950 | 61 |

4. PRINTING AND PREPARING BULLETINS.

| | \$ | cts. | \$ | cts. |
|---|-------|-------|-------|-------|
| Balance, April 1, 1917..... | 1,880 | 81 | | |
| Grant, 1916-17..... | 5,000 | 00 | | |
| Expended, Mar. 31, 1917..... | | | 2,429 | 51 |
| Balance forward..... | | | 4,451 | 30 |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| | 6,880 | 81 | 6,880 | 81 |
| Salaries and wages..... | | | 1,001 | 66 |
| Supplies, materials, etc..... | | | 14 | 48 |
| Printing..... | | | 1,742 | 83 |
| | | | <hr/> | <hr/> |
| | | | 2,758 | 97 |
| Less subscriptions to Agricultural Journal..... | | | 329 | 46 |
| | | | <hr/> | <hr/> |
| | | | 2,429 | 51 |

SESSIONAL PAPER No. 15c

6. MISCELLANEOUS.

| | \$ | cts. | \$ | cts. |
|--|-------|------|-------|------|
| Balance, April 1, 1917..... | | 0 | | 42 |
| Grant 1916-17..... | 1,732 | 50 | | |
| Expenditure, Mar. 31, 1917..... | | | 808 | 09 |
| Balance forward..... | | | 924 | 83 |
| | 1,732 | 92 | 1,732 | 92 |
| Salaries and wages..... | | | 217 | 58 |
| Travelling expenses..... | | | 222 | 10 |
| Prizes, Boys' and Girls' Poultry, Pig and Potato Competitions..... | | | 253 | 00 |
| Grant, Farmers' Institutes..... | | | 25 | 50 |
| Supplies and materials..... | | | 115 | 70 |
| | | | 833 | 88 |
| Refund, seed grain..... | | | 25 | 79 |
| | | | 808 | 09 |

DEPARTMENT OF EDUCATION.

| | \$ | cts. |
|--|--------|------|
| Agricultural Instruction in High Schools, with district supervision at five centres..... | 5,163 | 13 |
| Grants to Public-school teachers of Rural Science..... | 3,408 | 00 |
| Salary, travelling and office expenses of Director of Elementary Agricultural Education..... | 4,319 | 84 |
| Special school courses in fruit packing..... | 869 | 18 |
| Expenditures for seeds, etc. in connection with home gardens..... | 239 | 85 |
| Grants towards expenditures made by School Boards in operating school gardens..... | 1,000 | 00 |
| | 15,000 | 00 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914 and 1915 and Appropriations for 1916 and 1917.

| Service. | 1913 | 1914 | 1915 | 1916 | 1916-17 to | 1917-18 to |
|---|-----------------|-----------------|-----------------|-----------------|-------------------------------|-------------------------------|
| | to March 31. | to March 31. | to March 31. | to March 31. | March 31 (Esti- mated). | March 31 (Esti- mated). |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Salaries—Agricultural Branch, Dept. of Finance and Agriculture..... | 37,851 78 | 53,755 12 | 67,288 62 | 62,919 70 | 73,496 00 | 65,752 00 |
| Agricultural associations..... | 88,823 65 | 67,311 11 | 41,041 45 | 16,709 33 | 30,000 00 | 20,000 00 |
| Board of Horticulture..... | 2,556 65 | 1,078 25 | 217 70 | 318 85 | 500 00 | 500 00 |
| Grants of various associations..... | 4,633 42 | 2,717 68 | 1,278 04 | | 2,500 00 | |
| “ “..... | 250 00 | 250 00 | 250 00 | 1,757 85 | 250 00 | 5,750 00 |
| “ “..... | 3,062 51 | 2,999 55 | 2,096 46 | 2,564 78 | 2,500 00 | |
| Department of Agriculture..... | 30,160 87 | 19,340 31 | | | | |
| Grants to students; Compensation for Cattle; Services and expenses, outside; Miscellaneous, weed suppression..... | | 24,985 50 | 104,021 88 | 77,336 31 | 67,000 00 | 58,000 00 |
| Panama Exposition..... | | | | 7,322 92 | | |
| Fruit Work— | | | | | | |
| Fruit cooling and storage..... | 871 01 | 2,992 51 | | | | |
| Fruit exhibitions..... | 43,110 28 | 36,059 28 | | | | |
| Fruit packing schools..... | 4,567 49 | 4,043 15 | 68,335 25 | 36,649 76 | 43,750 00 | 33,500 00 |
| Inspection nursery stock..... | 11,681 58 | 41,216 74 | | | | |
| Fruit growers' associations..... | 4,211 42 | 6,251 66 | | | | |
| Demonstration orchards..... | 18,071 23 | 2,242 13 | | | | |
| Farmers' institutes and importation of pure bred stock in 1913..... | 58,577 05 | 17,575 75 | 5,704 60 | 18,108 45 | 20,000 00 | 15,000 00 |
| Women's institutes..... | 4,640 01 | | 4,993 85 | | 7,500 00 | 7,500 00 |
| Poultry Association Grant..... | 2,934 64 | 3,870 86 | 1,879 91 | 5,213 60 | 2,500 00 | |
| Poultry shows..... | 3,100 00 | 4,000 00 | 4,000 00 | | | |
| Dry farming experimental plots..... | | | | | | 2,000 00 |
| Totals..... | 318,103 59 | 290,789 60 | 303,107 26 | 233,898 34 | 249,996 00 | 208,002 00 |

NOVA SCOTIA.

AGREEMENT 1916-17.

| | \$ | cts. | \$ | cts. |
|--|--------|------|--------|------|
| 1. Agricultural College and Agricultural Schools:— | | | | |
| (a) Capital expenditure to pay interest and sinking fund for cost of construction of and furnishing for Science Building..... | 7,500 | 00 | | |
| (b) Salaries and maintenance..... | 23,000 | 00 | | |
| | | | 30,500 | 00 |
| 2. Instructors, Directors, Superintendents and District representatives—salaries and expenses..... | | | 7,500 | 00 |
| 3. Instruction and Demonstration:— | | | | |
| Dairying..... | 3,500 | 00 | | |
| Poultry..... | 1,600 | 00 | | |
| Beekeeping..... | 800 | 00 | | |
| Soils (including drainage and field crops)..... | 3,000 | 00 | | |
| Horticultural and entomological instruction and investigation..... | 8,000 | 00 | | |
| Fruit growing..... | 1,000 | 00 | | |
| Short courses..... | 3,000 | 00 | | |
| | | | 20,900 | 00 |
| 4. Women's work (Women's Institutes, Homemakers' Clubs, Domestic Science, etc.)..... | | | 3,000 | 00 |
| 5. Bulletins, reports, circulars and miscellaneous printing..... | | | 800 | 00 |
| 6. Instruction in Public and High Schools and in Normal Schools in Agriculture. Nature Study, Training of Teachers and School Gardens..... | | | 11,000 | 00 |
| 7. Contingencies and miscellaneous..... | | | 1,159 | 28 |
| Total..... | | | 74,859 | 28 |

DISTRICT REPRESENTATIVES.

In six out of eighteen counties, District Representatives have been employed for part or all of the year, and to some extent the work has been carried into a few other counties. The Demonstration work performed by them included the operation of the clover huller purchased in 1915. This machine threshed 14,000 lb. of clover during 1916. Two years previous, no clover seed was being produced in the province. Four grain separators were purchased and sent to parts of the province where farmers did not own separators and had not access to them. These machines enabled the District Representatives to complete the instruction given in seed selection. In the Cape Breton counties a further effort was made to encourage the growing of turnips on account of the importance of the crop in relation to the feeding of live stock in that section. Other forms of work included demonstrations with improved seed—potato, oat, wheat and turnip—demonstrations with fertilizers, lime and marl, and demonstrations in the use of spraying machinery and in the dipping of sheep.

POULTRY HUSBANDRY.

Poultry meetings were held in many parts of the province. A successful demonstration was given in the preservation of eggs in silicate of soda on a large scale to encourage groups of farmers to co-operate in such an undertaking. The policy inaugurated three years ago of helping farmers to erect and conduct improved poultry houses was continued and two additional houses were built. A poultry convention was held at Truro, and a model poultry plant demonstrated at Sydney Exhibition. Some 400 settings of eggs were distributed to school children in connection with school fair work.

BEE-KEEPING.

A provincial Apiarist was appointed to give instruction and promote the industry generally. Part of his time is devoted to Entomological work.

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SOIL SURVEY AND DRAINAGE.

An assistant in soil physics was appointed in connection with the general soil survey now being made. Already valuable information has been secured which will form the basis for future recommendations as to methods of soil cultivation and fertilization. All the men connected with the work having enlisted, practically no drainage work was carried out.

ENTOMOLOGICAL WORK.

Two orchards badly infected with the "green apple bug," a newly discovered insect pest, were taken over for demonstration. Hundreds of farmers inspected the work. Similar work was done with the "apple maggot." Bulletins were issued relating to these insects.

SHORT COURSES.

All the expenses of the Short Courses held at Bridgewater, Lawrencetown, Yarmouth and Musquodoboit were paid by the grant. A short course was provided at the Agricultural College for farmers living in the outlying counties and each person attending was allowed \$10.00 to assist in meeting expenses.

WOMEN'S INSTITUTES.

Five Institutes were organized during the year, bringing the total up to 49. A two weeks' Short Course for women was held at the Agricultural College, and a one week's course at Lawrencetown. An annual convention is also held at the College. An attractive exhibit in which every phase of the work was presented, including "old time" industries, was made at the provincial exhibition.

SCHOOL AGRICULTURE.

As a result of the gardening propaganda, home gardening in particular has been very much extended. It is planned to use the school children in a campaign for greater production and to increase the quantity of seed distributed. One hundred and ninety-five teachers attended the Rural Science School, Truro.

OFFICERS RECEIVING REMUNERATION FROM THE FEDERAL GRANT.

(a) *Persons, regularly employed, whose salaries are paid wholly from the Agricultural Instruction Grant.*

| | | |
|--|------------------------|---|
| County Representative, | H. McPherson, | Antigonish County. |
| " | " | H. S. Cunninham, Cape Breton Counties. |
| " | " | H. B. Langille, Cape Breton and Richmond County. |
| " | " | T. C. Munn, Inverness County. |
| " | " | A. B. MacDonald, Guysboro County. |
| " | " | Father J. E. Robitaille, Isle Madam, Richmond Co. |
| Entomological Field Work Superintendent, | H. G. Payne, | Department of Agriculture, Truro. |
| Assistant Provincial Entomologist, | C. A. Good, | Truro (now Captain in Expeditionary Force and not on salary). |
| Soil Analyst, | J. G. Archibald, | Department of Agriculture, Truro. |
| Women's Institute Superintendent, | Miss Jennie A. Fraser, | New Glasgow. |
| Director Rural Science Education, | L. A. DeWolfe, | Truro. |
| Dean Rural Science School, | C. L. Moore, | Halifax. |
| Fruit and Vegetable Growing Instructor, | W. N. Byers, | Truro. |
| " | " | " |
| " | " | F. B. Kinsman, Truro. |

(b) Persons receiving part salary from Federal grant.

Dairy Superintendent, W. A. MacKay, Department of Agriculture, Truro.
 Stenographer to Dairy Superintendent, Truro.

Accountant, C. R. B. Bryan, Truro.

Professor of Agriculture, J. M. Trueman, Agricultural College, Truro.

Professor of Horticulture, P. J. Shaw, Agricultural College, Truro.

“ Zoology, W. H. Brittain, Agricultural College, Truro.

“ Botany, H. W. Smith, Agricultural College, Truro.

“ Chemistry, L. C. Harlow, Agricultural College, Truro.

“ “ J. M. Scott, Normal College, Truro.

“ Physics, J. A. Benoit, Normal College, Truro.

“ Manual Training, F. G. Mathews, Normal College, Truro.

Principal Truro Academy, E. C. Allen.

(The above nine persons give special instruction at the Summer Rural Science school).

Entomological Inspector, J. P. Spittal, Department of Agriculture, Truro.

“ “ W. W. Whitehead, Department of Agriculture, Truro

“ “ L. G. Saunders, Truro.

“ “ C. F. U. Whitman, Department of Agriculture,
 Truro.

“ “ W. Delong, Truro, Department of Agriculture.

NOVA SCOTIA.

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Grant. | Balances, April 1, 1916. | Total Credits. | Expendi- ture. | Credit Balance. |
|-----|---|-----------|--------------------------------|-------------------|-------------------|--------------------|
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1 | Agricultural Colleges and Schools, \$30,500.00— | | | | | |
| | (a) Capital expenditure..... | 7,500 00 | 3,673 01 | 11,173 01 | 8,678 74 | 2,494 27 |
| | (b) Salaries and maintenance..... | 23,000 00 | | 23,000 00 | 22,868 93 | 131 07 |
| 2 | Instructors, Directors, etc..... | 7,500 00 | 20 12 | 7,520 12 | 6,653 61 | 866 51 |
| 3 | Instruction and Demonstration, \$50,900.00— | | | | | |
| | (a) Dairying..... | 3,500 00 | 0 59 | 3,500 59 | 3,040 10 | 460 49 |
| | (b) Poultry..... | 1,600 00 | 66 50 | 1,666 50 | 1,262 13 | 404 37 |
| | (c) Bee-keeping..... | 800 00 | 26 87 | 826 87 | 777 49 | 49 38 |
| | (d) Soils (drainage and field crops).... | 3,000 00 | 6 70 | 3,006 70 | 2,428 67 | 578 03 |
| | (e) Horticultural and Entomological Investigation..... | 8,000 00 | | 8,000 00 | 7,998 66 | 1 34 |
| | (f) Fruit-growing..... | 1,000 00 | 225 75 | 1,225 75 | 1,225 57 | 0 18 |
| | (g) Short courses..... | 3,000 00 | 56 04 | 3,056 04 | 2,795 49 | 260 55 |
| 4 | Women's work..... | 3,000 00 | 1,350 41 | 4,350 41 | 3,513 36 | 837 05 |
| 5 | Bulletins and miscellaneous printing.... | 800 00 | 0 28 | 800 28 | 800 28 | |
| 6 | Agricultural Instruction in School..... | 11,000 00 | 972 41 | 11,972 41 | 9,634 42 | 2,337 99 |
| 7 | Contingencies and miscellaneous..... | 1,159 28 | 8 72 | 1,168 00 | 965 53 | 202 47 |
| | | 74,859 28 | 6,407 40 | 81,266 68 | 72,642 98 | 8,623 60 |

1. AGRICULTURAL COLLEGES AND SCHOOLS.

(a) INTEREST AND SINKING FUND, SCIENCE BUILDING.

| | \$ cts. | \$ cts. |
|--------------------------------------|------------|-----------|
| Grant, 1916-17..... | 7,500 00 | |
| Balance, April 1, 1916..... | 3,673 01 | |
| Expended, Mar. 31, 1917..... | | 8,678 74 |
| Balance forward..... | | 2,494 27 |
| | 11,173 01 | 11,173 01 |
| Eastern Trust Company, interest..... | 6,680 26 | |
| Payment on loan..... | 1,998 48 | |
| | \$8,678 74 | |

(b) SALARIES AND MAINTENANCE.

| | | |
|------------------------------|-------------|-------------|
| Grant, 1916-17..... | \$23,000 00 | |
| Expended, Mar. 31, 1917..... | | \$22,868 93 |
| Balance forward..... | | 131 07 |
| | \$23,000 00 | \$23,000 00 |

The Agricultural College expenditure is not presented in detail. The grant was expended for additional men and services at the college. The public accounts of the province show that \$23,000.00 more was expended on the college and farm for 1915-16 than for 1912-13.

8 GEORGE V, A. 1918

2. DISTRICT REPRESENTATIVES.

| | \$ cts. | \$ cts. |
|-------------------------------|----------------|----------------|
| Grant, 1916-17..... | 7,500 00 | |
| Balance, April, 1916..... | 20 12 | |
| Expended, March 31, 1917..... | | 6,653 61 |
| Balance forward..... | | 866 51 |
| | <hr/> 7,520 12 | <hr/> 7,520 12 |

SALARIES AND EXPENSES.

| | Salary. | Expense. |
|---|----------------|----------------|
| H. S. Cunningham, Cape Breton..... | 450 00 | 531 97 |
| H. B. Langille, Assistant, Cape Breton..... | 471 15 | 642 85 |
| T. C. Munn, Assistant, Cape Breton..... | 225 00 | 372 80 |
| H. McPherson, Antigonish..... | 1,083 33 | 217 90 |
| A. B. McDonald, Guysboro..... | 326 92 | 704 31 |
| Rev. J. E. Robitaille, Richmond..... | 230 00 | 353 10 |
| | <hr/> 2,786 40 | <hr/> 2,822 93 |
| | | <hr/> 2,786 40 |
| | | <hr/> 5,609 33 |

EQUIPMENT.

| | | |
|--|--|------------------|
| Grain separators, spraying machines, bicycle, etc..... | | 207 15 |
| Supplies and repairs..... | | 752 34 |
| Incidentals..... | | 38 39 |
| Prizes..... | | 46 40 |
| | | <hr/> \$6,653 61 |

3. INSTRUCTION AND DEMONSTRATION.

(a) DAIRYING.

| | \$ cts. | \$ cts. |
|------------------------------|----------------|----------------|
| Grant, 1916-17..... | 3,500 00 | |
| Balance, April 1, 1916..... | 0 59 | |
| Expended, Mar. 31, 1917..... | | 3,040 10 |
| Balance forward..... | | 460 49 |
| | <hr/> 3,500 59 | <hr/> 3,500 59 |

| | | |
|---|--|------------------|
| W. A. McKay, salary (one-half)..... | | 666 66 |
| “ expenses..... | | 841 27 |
| Assistants, services and expenses..... | | 1,097 27 |
| Advertising and printing..... | | 49 75 |
| Supplies and incidentals..... | | 176 45 |
| Expenses, delegates Dairy Convention..... | | 58 70 |
| Dairy competition, awards..... | | 150 00 |
| | | <hr/> \$3,040 10 |

Assistants were engaged in extending co-operative dairying, either addressing a series of meetings or attending dairy conventions.

4. WOMEN'S INSTITUTES.

| | \$ cts. | \$ cts. |
|-----------------------------|------------------|------------------|
| Grant, 1916-17..... | 3,000 00 | |
| Balance, April 1, 1916..... | 1,350 41 | |
| Expended..... | | 3,513 36 |
| Balance..... | | 837 05 |
| | <hr/> \$4,350 41 | <hr/> \$4,350 41 |

| | | |
|--|--|------------------|
| Miss Jennie A. Fraser, salary \$683.35, expenses \$367.86..... | | 1,051 20 |
| Assistants and lecturers, services and expenses..... | | 1,313 38 |
| Printing and advertising..... | | 339 80 |
| Supplies and incidentals..... | | 69 51 |
| Equipment..... | | 104 47 |
| Badge pins (to be refunded)..... | | 270 00 |
| Grants (45)..... | | 245 00 |
| Instructors' board..... | | 120 00 |
| | | <hr/> \$3,513 36 |

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5.—BULLETINS AND PRINTING.

| | \$ cts. | \$ cts. |
|--|---------|---------|
| Grant, 1916-17..... | 800 00 | |
| Balance, April 1, 1916..... | 0 28 | |
| Expended, March 31, 1917..... | | 800 28 |
| | 800 28 | 800 28 |
| Fruit Growers Association reports..... | | 300 00 |
| Entomological Society Reports..... | | 372 95 |
| Dairy Bulletin..... | | 20 00 |
| Leaflets..... | | 49 75 |
| Incidentals..... | | 57 58 |
| | | 800 28 |

6.—RURAL SCIENCE SCHOOLS.

| | \$ cts. | \$ cts. |
|--|-----------|-----------|
| Grant, 1916-17..... | 11,000 00 | |
| Balance, April 1, 1916..... | 972 41 | |
| Expended, March 31, 1917..... | | 9,634 42 |
| Balance forward..... | | 2,337 99 |
| | 11,972 41 | 11,972 41 |
| L. A. DeWolfe, Director Rural Science— | | |
| Salary..... | 2,166 69 | |
| Expenses..... | 329 83 | |
| | | 2,496 52 |
| C. L. Moore, Principal Rural Science School, salary..... | | 1,000 00 |
| Dora M. Baker, stenographer, salary..... | | 405 00 |
| Eight instructors..... | | 820 00 |
| | | 4,721 52 |
| Schools for seed plants, eggs and exhibition prizes..... | | 605 03 |
| Equipment..... | | 318 41 |
| Books and Stationery..... | | 257 27 |
| Printing..... | | 80 85 |
| Teacher grants..... | | 2,237 50 |
| Students' bonuses..... | | 710 00 |
| Students' travelling expenses..... | | 461 80 |
| Miscellaneous..... | | 242 04 |
| | | 9,634 42 |

(b) POULTRY.

| | | |
|--|----------|----------|
| Grant, 1916-17..... | 1,600 00 | |
| Balance, April 1, 1916..... | 66 50 | |
| Expended, March 31, 1917..... | | 1,262 13 |
| Balance forward..... | | 404 37 |
| | 1,666 50 | 1,666 50 |
| J. P. Landry, Superintendent, expenses..... | | 657 18 |
| Material demonstration house, equipment..... | | 281 60 |
| Eggs supplied to schools..... | | 190 83 |
| Supplies and incidentals..... | | 84 09 |
| Poultry Convention expenses..... | | 48 43 |
| | | 1,262 13 |

(c) BEE-KEEPING.

| | | |
|--|--------|--------|
| Grant, 1916-17..... | 800 00 | |
| Balance, April 1, 1916..... | 26 87 | |
| Expended, March 31, 1917..... | | 777 49 |
| Balance forward..... | | 49 38 |
| | 826 87 | 826 87 |
| C. B. Gooderham: salary, \$529.88; expenses, \$202.84..... | | 732 72 |
| Equipment..... | | 34 27 |
| Printing and advertising..... | | 10 50 |
| | | 777 49 |

8 GEORGE V, A. 1918

(d) SOIL, DRAINAGE, FIELD CROPS.

| | \$ cts. | \$ cts. |
|---|----------|----------|
| Grant, 1916-17..... | 3,000 00 | |
| Balance, April 1, 1916..... | 6 70 | |
| Expended, March 31, 1917..... | | 2,428 67 |
| Balance forward..... | | 578 03 |
| | <hr/> | <hr/> |
| | 3,006 70 | 3,006 70 |
| L. C. Harlow, chemist, services, \$100; expenses, \$96.54..... | | 196 54 |
| J. G. Archibald, assistant: salary, \$833.30; expenses, \$6.50..... | | 839 80 |
| Sundry persons, services and expenses..... | | 502 51 |
| | | <hr/> |
| | | 1,538 85 |
| Equipment..... | | 52 50 |
| Supplies and incidentals..... | | 737 32 |
| Halifax Agricultural Society, Ragwort Campaign..... | | 100 00 |
| | | <hr/> |
| | | 2,428 67 |

Demonstrations in the use of ground limestone have been conducted in various parts of the province. Chemists devoted their time to soil survey work: The item for services and expenses includes judges of Field Crop Competitions.

(e) HORTICULTURAL AND ENTOMOLOGICAL INVESTIGATION.

| | \$ cts. | \$ cts. |
|---|----------|----------|
| Grant, 1916-17..... | 8,000 00 | |
| Expended, March 31, 1917..... | | 7,998 66 |
| Balance forward..... | | 1 34 |
| | <hr/> | <hr/> |
| | 8,000 00 | 8,000 00 |
| W. H. Brittain, entomologist, expenses..... | | 564 14 |
| C. A. Good, assistant: salary, \$365; expenses, \$31.45..... | | 396 45 |
| C. B. Gooderham, assistant, salary..... | | 166 66 |
| H. G. Payne, chief inspector: salary, \$1,166.62; expenses, \$592.70..... | | 1,759 32 |
| Salaries and expenses, eleven inspectors..... | | 4,068 37 |
| | | <hr/> |
| | | 6,954 94 |
| Rent of Field Laboratories in fruit counties..... | | 60 00 |
| Equipment, motor-cycle..... | | 338 60 |
| Supplies for spraying demonstrations and incidentals..... | | 645 12 |
| | | <hr/> |
| | | 7,998 66 |

(f) FRUIT GROWING.

| | \$ cts. | \$ cts. |
|-------------------------------|----------|----------|
| Grant, 1916-17..... | 1,000 00 | |
| Balances, April 1, 1916..... | 225 75 | |
| Expended, March 31, 1917..... | | 1,225 57 |
| Balance forward..... | | 0 18 |
| | <hr/> | <hr/> |
| | 1,225 75 | 1,225 75 |

Salary and Expenses—

| | | |
|--|--|----------|
| P. J. Shaw, expense..... | | 47 44 |
| F. B. Kinsman: expenses, \$321.48; salary, \$208.35..... | | 529 83 |
| Wm. Byers, expenses, \$270.22; salary, \$165.38..... | | 435 60 |
| | | <hr/> |
| | | 1,012 87 |
| Supplies and incidentals..... | | 212 70 |
| | | <hr/> |
| | | 1,225 57 |

(g) SHORT COURSES.

| | \$ cts. | \$ cts. |
|-------------------------------|----------|----------|
| Grant, 1916-17..... | 3,000 00 | |
| Balance, April, 1916..... | 56 04 | |
| Expended, March 31, 1917..... | | 2,795 49 |
| Balance forward..... | | 260 55 |
| | <hr/> | <hr/> |
| | 3,056 04 | 3,056 04 |

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(g) SHORT COURSES—Concluded.

\$ cts.

| | |
|---|----------|
| J. A. Sinclair, V.S.; services, \$200; expenses, \$34.45..... | 234 45 |
| L. H. Trueman; services, \$65; expenses, \$92.02..... | 157 02 |
| Printing and advertising..... | 59 75 |
| Supplies and incidentals..... | 165 27 |
| Delegates expenses..... | 539 00 |
| | 1,155 49 |

Demonstration Buildings—

| | |
|----------------------------------|----------|
| Grant Bridgewater Building..... | 800 00 |
| Repairs Antigonish Building..... | 240 00 |
| Grant Lawrencetown Building..... | 600 00 |
| | 2,795 49 |

7.—CONTINGENCIES.

| | | |
|-------------------------------|----------|----------|
| Grant, 1916-17..... | \$ cts. | \$ cts. |
| Balance, April 1, 1916..... | 1,159 28 | |
| Expended, March 31, 1917..... | 8 72 | |
| Balance forward..... | | 965 53 |
| | | 202 47 |
| | 1,168 00 | 1,168 00 |

| | |
|---|--------|
| W. M. Blair, services..... | 240 00 |
| C. R. B. Bryan, services as accountant..... | 300 00 |
| Postage..... | 80 00 |
| Pictou County Survey..... | 100 00 |
| Electro-types..... | 234 43 |
| Incidentals..... | 11 10 |
| | 965 53 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, 1916, and estimated for 1917.

| Service. | 1913 to Sept. 30. | | 1914 to Sept. 30. | | 1915 to Sept. 30. | | 1916 to Sept. 30. | | 1917 to Sept. 30,— Appropriations. | |
|--|----------------------|------|----------------------|------|----------------------|------|----------------------|------|--|-----------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| <i>General Agriculture—</i> | | | | | | | | | | |
| Department salaries and expenses..... | 7,672 | 08 | 5,449 | 77 | 14,415 | 64 | 14,747 | 58 | } | 36,000 00 |
| Assistance in dairying..... | 926 | 16 | 1,257 | 34 | 1,849 | 69 | 1,783 | 87 | | |
| Entomological inspection..... | 3,582 | 27 | 2,744 | 15 | 2,938 | 06 | 3,910 | 31 | | |
| Drainage..... | 1,534 | 01 | 903 | 19 | 400 | 93 | 12 | 39 | | |
| Exhibitions..... | 12,457 | 84 | 18,222 | 13 | 10,484 | 08 | 5,540 | 17 | | |
| Field crop competitions..... | 870 | 18 | 939 | 18 | 936 | 07 | 1,022 | 71 | | |
| Live stock improvement..... | 898 | 57 | | | | | | | | |
| Meetings..... | 621 | 84 | 69 | 77 | 406 | 50 | 89 | 40 | | |
| Model orchards..... | 983 | 31 | 832 | 15 | 596 | 45 | 500 | 01 | | |
| Printing and advertising..... | 134 | 35 | 306 | 81 | 212 | 60 | 490 | 92 | | |
| Miscellaneous..... | 397 | 06 | 228 | 20 | 448 | 45 | 616 | 58 | | |
| Fruit growers and county associations..... | 1,032 | 75 | 1,150 | 00 | 1,200 | 00 | 1,450 | 00 | | |
| Stallion enrolment..... | 84 | 75 | 518 | 91 | 142 | 23 | 240 | 95 | | |
| Assistance to poultry..... | 100 | 35 | 565 | 13 | 423 | 20 | 632 | 65 | | |
| Advertising fruit in Great Britain..... | | | | | | | 781 | 95 | | |
| Agricultural college..... | 19,607 | 25 | 22,000 | 00 | 18,300 | 00 | 19,000 | 00 | | |
| College farm..... | 14,317 | 41 | 14,000 | 00 | 14,700 | 00 | 15,000 | 00 | | |
| Agricultural societies..... | 13,282 | 32 | 15,787 | 05 | 14,710 | 76 | 14,490 | 00 | | |
| Total..... | 78,502 | 50 | 84,973 | 78 | 82,164 | 66 | 84,309 | 95 | 85,000 | 00 |
| Revenue..... | 9,498 | 41 | 6,677 | 26 | 10,018 | 82 | 9,539 | 75 | 1,000 | 00 |
| | 69,004 | 09 | 78,296 | 52 | 72,145 | 84 | 74,770 | 20 | 84,000 | 00 |

NEW BRUNSWICK

AGREEMENT—1916-17.

| | \$ | cts. | \$ | cts. |
|---|--------|------|--------|-------|
| 1. Agricultural Schools— | | | | |
| (a) Capital expenditure..... | 17,000 | 00 | | |
| (b) Salaries and maintenance..... | 4,000 | 00 | 21,000 | 00 |
| 2. Instructors, directors, superintendents and district representatives—salaries and expenses..... | | | 13,500 | 00 |
| 3. Instruction and Demonstration— | | | | |
| (a) Bee-keeping..... | | 500 | | |
| (b) Soils and drainage..... | 4,000 | 00 | | |
| (c) Horticulture..... | 1,500 | 00 | | |
| (d) Short courses..... | 1,500 | 00 | 7,500 | 00 |
| 4. Women's work..... | | | | 3,500 |
| 5. Bulletins, reports, circulars and miscellaneous printing..... | | | | 500 |
| 6. Instruction in Public, High and Normal Schools in Agriculture, Nature Study and Domestic Science, Training of Teachers and School Gardens..... | | | 12,000 | 00 |
| 7. Contingencies and miscellaneous..... | | | 1,209 | 60 |
| Total..... | | | 59,209 | 60 |

DEMONSTRATION WORK.

Practical demonstrations were carried on during the year in soil drainage, cultivation, and crop production, limestone pulverizing, the home-mixing of commercial fertilizers and the operation of a clover huller. The traction ditcher operated chiefly in the counties of Carleton and Kings, digging 1,626 rods of ditch. The limestone pulverizer operated in Charlotte and Carleton counties. Instruction in the mixing and application of fertilizers was given at a number of agricultural society gatherings, and also formed a part of the short course programme at Sussex, Woodstock, and Bathurst. The clover huller, purchased and operated, did much towards demonstrating the value to farmers of red clover and the production of seed. In addition to the short courses already mentioned, a four-day general course was given at the Dairy School at Ste. Hilaire. Standing crop competitions were conducted in ten counties. Seven seed fairs were held, including Provincial Seed Exhibition at Fredericton and six county fairs.

HORTICULTURE.

The work of the Horticultural Division includes the supervision of demonstration orchards, instruction in pruning, spraying, etc., and the holding of short courses. As in previous years, the examining of orchards and orchard sites and the giving of instruction to operators in orchard management constituted a large portion of the work.

A course in apple-packing, lasting for four days, was held in February at Fredericton. Fifty students attended. Lectures were given on insect and fungous enemies and their control, and many growers were convinced of the necessity for using power spraying outfits.

WOMEN'S INSTITUTES.

At the present time there are 92 Women's Institutes in the province. During the winter months two ten-day courses in home economics were held at each of the Agricultural Schools. One hundred and fifty-six registered for the four courses.

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Twenty-two institutes made creditable displays of canned and preserved fruits and vegetables at the New Brunswick Apple Exhibition held in St. John. This year a tour will be made of the province, giving demonstrations in canning and lectures on food economics. An institute convention is held annually. The entire outlay for Women's Institute work, including an annual grant of five dollars to each institute qualifying, is met by the grant.

ELEMENTARY AGRICULTURE.

The Director of Elementary Agricultural Education reports an increase of over one thousand in the number of pupils receiving instruction in elementary agriculture during the year. The number of home plots was nearly doubled, being 727 as against 378 in the year previous. Other home project work was also undertaken, chiefly in connection with poultry, a subject that lends itself to general adoption by pupils of both sexes. The number of eggs distributed was large. Twelve school fairs were held in the autumn of 1916, with encouraging results.

Summer schools of rural science for teachers were again held at Sussex and Woodstock, with an enrolment of 81 at the former place and 42 at the latter. A teachers' winter course was held in January at the same points, with an attendance of 63 at Woodstock and 58 at Sussex.

The publication of the "Rural Education Monthly" was begun by the Division in June, to be a medium of communication between teachers and the department, and to educate public opinion as to the importance of the school in the satisfactory solution of rural problems.

OFFICERS PROVIDED BY DOMINION GRANT.

Horticulturist, A. G. Turney, B.S.A., Fredericton.
 Dairy Superintendent, C. W. McDougall, Sussex.
 Poultry Superintendent, Seth Jones, Sussex.
 Entomologist, William McIntosh, St. John.
 Director Elementary Agricultural Education, R. P. Steeves, M.A., Sussex.
 Assistant Director Elementary Agricultural Education, F. A. Dixon, Sussex.
 Superintendent Agricultural Societies, M.A. McLeod.
 Livestock Instructor, Thomas Hetherington, B.S.A.
 Instructor in Soils and Crops, O. C. Hicks, B.S.A.
 Instructor in Drainage, John Woods.
 Assistant in Livestock, William Kerr.
 Supervisor of Women's Institutes, Hazel E. Winter, Fredericton.
 Instructor in Household Science, Ada B. Saunders, Fredericton.
 District Representative, A. C. Belliveau, Richibucto, (Kent County).
 District Representative, E. M. Taylor, Gagetown, (Sunbury and Queens Counties).

NEW BRUNSWICK.

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916 to March 31, 1917.

| | Balances April 1, 1916. | | Grant. | | Total Credits. | | Expenditure. | | Cr. Balance. | |
|---|-------------------------------|------|--------|------|-------------------|------|--------------|------|-----------------|------|
| | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. | \$ | cts. |
| 1. Agricultural Schools— | | | | | | | | | | |
| (a) Capital..... | | | 17,000 | 00 | 21,000 | 00 | 18,635 | 51 | 2,364 | 49 |
| (b) Salaries and maintenance..... | | | 4,000 | 00 | | | | | | |
| 2. Instructors, directors, etc..... | 1,347 | 66 | 13,500 | 00 | 14,847 | 66 | 14,847 | 66 | | |
| 3. Instruction and Demonstration— | | | | | | | | | | |
| \$ cts. | | | | | | | | | | |
| (a) Bee-keeping..... | 500 | 00 | | | | | | | | |
| (b) Soils and drainage..... | 4,000 | 00 | | | | | | | | |
| (c) Horticulture..... | 1,500 | 00 | | | | | | | | |
| (d) Short courses..... | 1,500 | 00 | 7,500 | 00 | 7,500 | 00 | 7,500 | 00 | | |
| 4. Women's institutes..... | 593 | 86 | 3,500 | 00 | 4,093 | 86 | 3,810 | 91 | 282 | 95 |
| 5. Bulletins and printing..... | 159 | 32 | 500 | 00 | 659 | 32 | 659 | 32 | | |
| 6. Agricultural instruction in schools..... | 1,154 | 26 | 12,000 | 00 | 13,154 | 26 | 11,406 | 06 | 1,748 | 20 |
| 7. Contingencies and miscellaneous..... | 1,218 | 63 | 1,209 | 60 | 2,428 | 23 | 2,002 | 40 | 425 | 83 |
| | 4,473 | 78 | 59,209 | 60 | 63,683 | 38 | 58,861 | 86 | 4,821 | 52 |

1. AGRICULTURAL SCHOOLS.

| | \$ | cts. | \$ | cts. |
|---|--------|------|--------|-------|
| <i>Grant, 1916-17—</i> | | | | |
| Capital..... | 17,000 | 00 | | |
| Salaries and maintenance..... | 4,000 | 00 | | |
| Balance April 1, 1916..... | | | 15,234 | 79 |
| Expended to Mar. 31, 1917: | | | | |
| Capital..... | | | | 971 |
| Salaries and maintenance..... | | | | 2,429 |
| Balance forward..... | | | | 2,364 |
| | | | 21,000 | 00 |
| | | | 21,000 | 00 |
| <i>Capital—</i> | | | | |
| Equipment..... | | | | 124 |
| Pasteurizer..... | | | | 807 |
| Buildings account..... | | | | 39 |
| | | | | 971 |
| <i>Salaries and maintenance—</i> | | | | |
| Salaries, janitors, Sussex and Woodstock..... | | | 1,000 | 00 |
| Insurance, Woodstock..... | | | 435 | 00 |
| Maintenance and supplies, Sussex and Woodstock..... | | | 994 | 10 |
| | | | 2,429 | 10 |

2. INSTRUCTORS, DIRECTORS, Etc.

| | \$ | cts. | \$ | cts. |
|-------------------------------|--------|------|--------|------|
| Grant, 1916-17..... | 13,500 | 00 | | |
| Balance, April 1, 1916..... | 1,347 | 66 | | |
| Expended, March 31, 1917..... | | | 14,847 | 66 |
| | | | 14,847 | 66 |
| | | | 14,847 | 66 |

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2. INSTRUCTORS' DIRECTORS, ETC.—*Concluded.*

| | Salaries. | Expenses. |
|--|-----------|-----------|
| | \$ cts. | \$ cts. |
| A. G. Turney, Horticulturist..... | 1,800 00 | 408 41 |
| C. W. McDougall, Dairy Superintendent..... | 1,500 00 | 626 41 |
| N. W. Eveleigh..... | 1,400 00 | 602 70 |
| Seth Jones, Poultry Supt..... | 1,200 00 | 375 66 |
| H. B. Durost, Fertilizers and Bee-keeping..... | 1,241 66 | 558 50 |
| J. E. DeGrace, Supt. Agricultural Societies..... | 1,120 84 | 773 19 |
| Wm. McIntosh, Entomologist..... | 600 00 | 92 20 |
| O. C. Hicks, Instructor, Soils and crops..... | 699 16 | 426 55 |
| J. W. Mitchell, Supt. Live Stock and Dairying..... | 1,166 66 | 476 62 |
| R. P. Gorham, Assist. Horticulturist..... | | 21 45 |
| Incidentals..... | | 11 22 |
| | 10,728 32 | 4,372 91 |
| Total..... | | 15,101 23 |
| Less amount transferred to (5) Bulletins and Printing..... | | 253 57 |
| | | 14,847 66 |

3. INSTRUCTION AND DEMONSTRATION.

| | \$ cts. | \$ cts. |
|-------------------------------|----------|----------|
| Grant 1916-17..... | 7,500 00 | |
| Balance April 1, 1916..... | | 629 69 |
| Expended, March 31, 1917..... | | 6,870 31 |
| | 7,500 00 | 7,500 00 |

(a) BEE-KEEPING.

| | |
|-------------------------------|-------|
| Supplies and Incidentals..... | 31 11 |
|-------------------------------|-------|

(b) SOILS AND DRAINAGE.

| | | |
|---|----------|----------|
| Equipment..... | | 1,350 00 |
| Clover Huller and Power..... | | |
| Services and Expenses: | \$ cts. | |
| D. H. Cronkhite, foreman, limestone pulverizer..... | 898 38 | |
| J. Woods foreman ditcher..... | 559 21 | |
| W. B. Dickinson, foreman huller..... | 106 21 | |
| Engineers (two)..... | 524 41 | |
| Jas. Brenner, surveyor..... | 150 50 | |
| | 2,238 71 | |
| Supplies, repairs, transport and incidentals..... | 1,994 54 | |
| | 5,583 25 | |
| Less Refunds..... | 1,157 81 | |
| | | 4,425 44 |

(c) HORTICULTURE.

| | | |
|---|----------|--|
| 4 demonstrators, services and expenses..... | 1,949 32 | |
| Students railway fares to apple-packing school..... | 62 25 | |
| | 2,011 57 | |

(d) SHORT COURSE WORK.

| | | |
|---|----------|----------|
| Services and expenses sundry persons..... | 243 95 | |
| Advertising, printing, postage..... | 617 06 | |
| Supplies and incidentals..... | 156 55 | |
| | 1,017 56 | |
| Total..... | | 7,485 68 |
| Less amount transferred to | | |
| (5) Bulletins and Printing..... | 337 75 | |
| Less amount transferred to | | |
| (7) Miscellaneous..... | 277 62 | |
| | 615 37 | |
| | | 6,870 31 |

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4. WOMEN'S INSTITUTES.

| | \$ cts. | \$ cts. |
|--|-----------------|-----------------|
| Grant, 1916-17..... | 3,500 00 | |
| Balance April 1, 1916..... | 593 86 | |
| Expended, Mar. 31, 1917..... | | 3,810 91 |
| Carried forward..... | | 282 95 |
| | <u>4,093 86</u> | <u>4,093 86</u> |
| Supervisor and Assistant Lecturers, etc., salaries and expenses..... | | 2,256 46 |
| Printing and advertising, hand books, programmes, etc..... | | 329 68 |
| Books and periodicals..... | | 196 53 |
| Supplies and incidentals..... | | 422 23 |
| Short Course and Convention prizes..... | | 95 00 |
| Railway fares, allowance for..... | | 93 60 |
| Grants to 74 Institutes..... | | 380 00 |
| W. I. Pins..... | | 96 60 |
| | | <u>3,870 10</u> |
| Refunds..... | | 59 19 |
| | | <u>3,810 91</u> |

5. BULLETIN AND PRINTING.

| | \$ cts. | \$ cts. |
|--|---------------|---------------|
| Grant, 1916-17..... | 500 00 | |
| Balance, April 1, 1916..... | 159 32 | |
| Expended, March 31, 1917..... | | 659 32 |
| | <u>659 32</u> | <u>659 32</u> |
| Lime Bulletin..... | | 56 00 |
| Fertilizer leaflet..... | | 12 00 |
| | | <u>68 00</u> |
| To transfer from (2) Instructors, Directors, etc..... | | 253 57 |
| To transfer from (3) Instructions and Demonstration..... | | 337 75 |
| | | <u>659 32</u> |

6. INSTRUCTION IN PUBLIC, HIGH AND NORMAL SCHOOLS, ETC.

| | \$ cts. | \$ cts. |
|--|------------------|------------------|
| Grant, 1916-17..... | 12,000 00 | |
| Balance, April 1, 1916..... | 1,154 26 | |
| Expended, March 31, 1917..... | | 11,406 06 |
| Balance forward..... | | 1,748 20 |
| | <u>13,154 26</u> | <u>13,154 26</u> |
| Salaries and Expenses— | | |
| R. P. Steeves, Director..... | 2,399 03 | |
| A. M. McDermot, Assistant..... | 531 30 | |
| Victor B. Robinson, Assistant..... | 1,115 93 | |
| Instructors and others..... | 1,287 65 | |
| | | <u>5,333 91</u> |
| Railway fares and bonuses to teachers, Short Course and Rural Science School.. | 1,060 20 | |
| Grants for school gardens..... | 4,279 18 | |
| Prizes, school fairs..... | 52 90 | |
| Equipment..... | 86 80 | |
| Printing Rural Monthly, etc..... | 115 97 | |
| Supplies and incidentals..... | 638 79 | |
| | | <u>11,567 75</u> |
| Less refunds..... | | 161 69 |
| | | <u>11,406 06</u> |

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7. MISCELLANEOUS.

| | | | | |
|---|-------|------|-------|------|
| Grant, 1916-17..... | \$ | cts. | \$ | cts. |
| Balance, April 1, 1916..... | 1,209 | 60 | | |
| Expended, Mar. 31, 1917..... | 1,218 | 68 | | |
| Balance forward..... | | | 2,002 | 40 |
| | | | 425 | 88 |
| | 2,428 | 28 | 2,428 | 28 |
| Salaries, Stenographers..... | 899 | 50 | | |
| Equipment..... | 428 | 19 | | |
| Refunded railway fares to Agricultural Students..... | 337 | 65 | | |
| Incidentals..... | 59 | 44 | | |
| | | | 1,724 | 78 |
| To amount transferred from (3) Instruction and Demonstration..... | | | 277 | 62 |
| | | | 2,002 | 40 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914, 1915 and 1916 and Appropriations for 1917.

| Service. | 1913 | 1914 | 1915 | 1916 | 1917 to |
|--|-------------------|-------------------|-------------------|-------------------|-------------------------------|
| | to October 31. | to October 31. | to October 31. | to October 31. | October 31 Appropriations. |
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Salaries and Expenses, Department..... | 6,499 68 | 7,019 06 | 7,945 44 | 9,914 76 | 9,558 00 |
| Agricultural Societies..... | 16,867 66 | 17,444 83 | 17,000 00 | 17,000 00 | 18,000 00 |
| Dairying..... | 4,092 28 | 3,039 53 | 6,477 85 | 5,830 96 | 7,200 00 |
| Live Stock Industries..... | 950 45 | 3,611 78 | | | |
| Dairy School..... | 537 03 | 4,067 99 | | | |
| Farmers' Institute..... | 1,048 96 | | 738 05 | 285 42 | 600 00 |
| Horticulture..... | 4,155 67 | 1,999 37 | 1,997 26 | 1,499 32 | 2,500 00 |
| Cold Storage..... | 750 00 | | | | |
| Poultry Raising..... | 1,984 94 | 980 08 | 1,245 57 | 1,417 52 | 2,000 00 |
| Crop Competitions, Seed Fairs..... | 1,809 44 | 2,082 77 | 3,398 16 | 4,878 71 | 4,400 00 |
| Miscellaneous..... | 309 59 | 355 00 | 1,944 11 | 1,389 81 | 2,125 00 |
| Brown Tail Moth, etc..... | 999 51 | 4,481 93 | 3,754 45 | 3,370 79 | 2,912 00 |
| Bonus Mud Dredges..... | | 1,000 00 | 519 90 | | 500 00 |
| Bonus Clover Hullers..... | | | 600 00 | | |
| Limestone crusher and power..... | | | 1,895 00 | 275 40 | 500 00 |
| Bonus to Wheat Mills..... | | | | 2,500 00 | 3,000 00 |
| Total..... | 40,005 21 | 46,082 34 | 47,515 79 | 48,362 69 | 53,295 00 |

PRINCE EDWARD ISLAND

AGREEMENT, 1916-17.

| | \$ | cts. |
|--|--------|------|
| 1. Capital Account..... | 500 | 00 |
| 2. Director of Agricultural Instruction and Instructors—Salaries and expenses..... | 10,300 | 00 |
| 3. Instruction and Demonstration (including Short Courses)—Live Stock, Poultry, Beekeeping, Horticulture, Fruit-growing and Soils..... | 3,000 | 00 |
| 4. Women's Work (Women's Institutes)..... | 3,200 | 00 |
| 5. Agricultural Instruction in Public and High Schools..... | 12,000 | 00 |
| 6. Office assistance..... | 1,200 | 00 |
| 7. Miscellaneous and contingencies..... | 243 | 75 |
| Total..... | 30,443 | 75 |

DAIRYING.

Early in the year steps were taken to bring about an improvement in the dairy industry. A provincial conference of butter and cheese makers was held. The recommendation of this conference for the appointment of an instructor to work among factories was acceded to. A graduate of the Guelph Dairy School was also employed to instruct patrons in the handling and care of milk. Following the recommendation of the conference, a Dairy School was provided at Truro College, Nova Scotia, by the co-operation of the departments of agriculture of the three Maritime Provinces. A number of makers from the island availed themselves of the courses.

To promote the introduction of oats, peas and vetches as a substitute ensilage crop for corn, a demonstration field of six acres was grown, and the crop ensiled and fed with satisfactory results.

DRAINAGE.

Open-ditch work was undertaken in one section to serve as a model for other districts contemplating such work. Drainage surveys were made for upwards of twenty farmers throughout the province. The manufacture of tile is now being conducted on the island as a result of the efforts of those in charge of drainage demonstrations.

WOOL AND LAMB MARKETING.

In co-operation with the Dominion Department of Agriculture, two grading centres for wool were established, and a second co-operative wool sale was held. Thirteen organizations of farmers sold their lambs by tender.

Continuing the plan adopted in 1915, a second carload of pure bred rams was purchased and resold to the farmers at cost. An increase of 12¼ lbs. in the average weight of lambs has resulted from the first purchase.

SHORT COURSES.

During the winter months, a series of short courses similar to those of last year was conducted. The courses were of one week's duration, and were held at points not visited previously. Eighty-one meetings were held at nine points, with an average attendance of 66.

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WOMEN'S INSTITUTES.

There are at present 43 Women's Institutes in the province. Further organization work has been suspended on account of the war. The usual series of lectures and demonstrations in Home Economics was held. The short course in Household Science at Charlottetown was attended by 126 women and girls from the rural sections.

SCHOOL AGRICULTURE.

The equipment of the Rural Science department at Prince of Wales College has now been completed, and teachers are given a course of special training to enable them to teach elementary agriculture. The number in attendance was 272.

At the time of holding the Summer School, a Rural Life Conference was conducted, lasting two days. The attendance varied from 200 to 450.

Four school fairs were held during 1916, and plans are being made for the extension of the work over a wider field. A survey was made by school children to ascertain the number of sheep kept on the island. Much interest was stimulated among the children and valuable training resulted.

OFFICERS PROVIDED BY THE DOMINION GRANT.

- Director of Agricultural Instruction, W. J. Reid, B.S.A.
- District Representative, Queens County, W. R. Shaw, B.S.A.
- “ “ Prince County, Leslie Tennant, B.S.A.
- Director of Rural Science Department, Prince of Wales College, J. E. McLarty, B.S.A.
- Director of Agricultural Instruction in Public Schools, Wm. Cain.
- “ “ “ “ Walter Curtis.
- “ “ “ “ D. S. Fraser.
- “ “ “ “ L. A. Adams.
- Accountant, Miss A. W. Newbery.
- 2 Stenographers.

PRINCE EDWARD ISLAND.

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

| No. | Classification. | Balance April 1, 1916. | Grant. | Ex- penditure. | Cr. Balance. |
|-----|--|------------------------------|-----------|-------------------|-----------------|
| | | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| 1 | Capital account..... | | 500 00 | 470 30 | 29 70 |
| 2 | Instructors, directors, superintendents and representatives..... | | 10,300 00 | 10,300 00 | |
| 3 | Instruction and demonstration..... | 258 07 | 3,000 00 | 3,258 07 | |
| 4 | Women's Institutes..... | 89 47 | 3,200 00 | 3,289 17 | 0 30 |
| 5 | Elementary Agricultural Instruction in Public and High Schools..... | 3 01 | 12,000 00 | 12,003 01 | |
| 6 | Office assistance..... | 17 63 | 1,200 00 | 1,217 63 | |
| 7 | Contingencies..... | | 243 75 | 242 88 | 0 87 |
| | | 368 18 | 30,443 75 | 30,781 06 | 30 87 |

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1.—CAPITAL ACCOUNT.

| | \$ | cts. | \$ | cts. |
|-----------------------------------|----|--------|-------|--------|
| Grant, 1916-17..... | | 500 00 | | |
| Expended to March 31, 1917..... | | | 470 | 30 |
| Balance forward..... | | | | 29 70 |
| | | | <hr/> | <hr/> |
| | | 500 00 | | 500 00 |
| Fencing—labour and materials..... | | | 172 | 01 |
| Furnishing and equipment..... | | | 79 | 40 |
| Ditcher and grader..... | | | 103 | 82 |
| Shearing machine..... | | | 11 | 57 |
| Miscellaneous expense..... | | | 103 | 50 |
| | | | <hr/> | <hr/> |
| | | | 470 | 30 |

The materials, labour, furnishings and equipment charged were incurred in connection with the new office at Montague. The fencing was erected at Prince of Wales College in connection with the Rural Science department.

2.—INSTRUCTORS, DIRECTORS AND DISTRICT REPRESENTATIVES.

| | \$ | cts. |
|-------------------------------|--------|-------|
| Grant, 1916-17..... | 10,300 | 00 |
| <i>Salaries and Expenses—</i> | | |
| J. L. Tennant..... | 1,865 | 46 |
| W. J. Reid..... | 2,091 | 54 |
| W. R. Reek..... | 2,595 | 84 |
| Theo. Ross..... | 125 | 00 |
| M. H. Coughlin..... | 1,376 | 70 |
| Walter Shaw..... | 1,279 | 59 |
| F. T. Morrow..... | 83 | 34 |
| J. E. McLarty..... | 250 | 00 |
| Miscellaneous travelling..... | 359 | 05 |
| Supplies and incidentals..... | 273 | 48 |
| | <hr/> | <hr/> |
| | 10,300 | 00 |

3.—INSTRUCTION AND DEMONSTRATION.

| | \$ | cts. | \$ | cts. |
|-------------------------------------|-------|----------|-------|----------|
| Grant, 1916-17..... | 3,000 | 00 | | |
| Balance forward, April 1, 1916..... | | 258 07 | | |
| Expenses to March 31, 1917..... | | | 3,258 | 07 |
| | | | <hr/> | <hr/> |
| | | 3,258 07 | | 3,258 07 |
| <i>Services and Expenses—</i> | | | | |
| J. T. Morrow..... | 1,162 | 31 | | |
| J. M. Hughes..... | 501 | 00 | | |
| R. B. Hooper..... | 44 | 90 | | |
| J. R. McLean..... | 50 | 00 | | |
| P. C. Gauthier..... | 25 | 00 | | |
| B. Gallant, dairy instructor..... | 77 | 75 | | |
| A. McRae..... | 12 | 00 | | |
| W. R. Reek, travelling..... | 146 | 44 | | |
| Sundry travelling..... | 367 | 25 | | |
| Supplies and incidentals..... | 361 | 20 | | |
| Printing and advertising..... | 60 | 37 | | |
| Rural Conference expenses..... | 77 | 55 | | |
| Investigation expense..... | 98 | 00 | | |
| Rent, Summerside office..... | 180 | 00 | | |
| Insurance on buildings..... | 94 | 30 | | |
| | | | <hr/> | <hr/> |
| | | | | 3,258 07 |

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4.—WOMEN'S INSTITUTES.

| | \$ cts. | \$ cts. |
|---------------------------------|----------|----------|
| Grant, 1916-17..... | 3,200 00 | |
| Balance, April 1, 1916..... | 89 47 | |
| Expended to March 31, 1917..... | | 3,289 17 |
| Balance carried forward..... | | 0 30 |
| | 3,289 47 | 3,289 47 |

| | | |
|---|--|----------|
| Salaries..... | | 1,825 00 |
| Travelling expenses..... | | 387 49 |
| Supplies and incidentals..... | | 347 75 |
| Convention and Short Course expenses..... | | 553 55 |
| Printing and advertising..... | | 126 75 |
| Institute grants..... | | 170 00 |
| | | 3,410 54 |
| Less refunds..... | | 121 37 |
| | | 3,289 17 |

5.—AGRICULTURAL INSTRUCTION IN SCHOOLS.

| | \$ cts. | \$ cts. |
|--------------------------------|-----------|-----------|
| Grant, 1916-17..... | 12,000 00 | |
| Balance, April 1, 1916..... | 3 01 | |
| Expended to Mar. 31, 1917..... | | 12,003 01 |
| | 12,003 01 | 12,003 01 |

Salaries and Expenses—

| | | |
|--|----------|-----------|
| S. B. McCready..... | 1,198 05 | |
| D. S. Fraser, inspector..... | 996 56 | |
| W. Curtis, inspector..... | 1,025 96 | |
| Leslie Adams, inspector..... | 992 51 | |
| Wm. Cain, inspector..... | 1,014 96 | |
| J. E. McLarty, inspector..... | 763 78 | |
| A. T. Houston, inspector..... | 175 00 | |
| Sundry persons, travelling..... | 67 90 | |
| | | 6,234 72 |
| Printing and advertising..... | 250 25 | |
| Equipment and Library..... | 108 50 | |
| Supplies and incidentals..... | 421 61 | |
| Rural Conference—Speakers' expenses..... | 231 60 | |
| Grants to teachers for teaching agriculture..... | 2,609 83 | |
| Summer School of Science—Teachers' bonuses and travelling..... | 1,596 50 | |
| Instructors' salaries..... | 550 00 | |
| | | 12,003 01 |

6.—OFFICE ASSISTANCE.

| | \$ cts. | \$ cts. |
|--------------------------------|----------|----------|
| Grant, 1916-17..... | 1,200 00 | |
| Balance, April 1, 1916..... | 17 63 | |
| Expended to Mar. 31, 1917..... | | 1,217 63 |
| | 1,217 63 | 1,217 63 |

Salaries—

| | |
|-----------------------|----------|
| Adele W. Newbery..... | 560 00 |
| Bessie Alward..... | 300 00 |
| Florence Murdock..... | 250 00 |
| Adele Gordon..... | 50 00 |
| A. McFarlane..... | 50 00 |
| Postage..... | 7 63 |
| | 1,217 63 |

8 GEORGE V, A. 1918

7. CONTINGENCIES.

| | \$ | cts. | \$ | cts. |
|---|----|------|-----|-------|
| Grant, 1916-17..... | | 243 | | |
| Expended to Mar. 31, 1917..... | | 75 | | 242 |
| Balance forward..... | | | | 88 |
| | | | 243 | 75 |
| Sundry travelling expenses..... | | 55 | | |
| Office expenses, supplies, and incidentals..... | | 79 | | |
| | | 193 | | 249 |
| Less—refunds..... | | | | 06 |
| | | | | 6 |
| | | | | 18 |
| | | | | \$242 |
| | | | | 88 |

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agriculture.

| | 1913 to Dec. 31. | 1914 to Dec. 31. | 1915 to Dec. 31. | 1916 to Dec. 31. | 1917 Appropriations. |
|--|------------------------|------------------------|------------------------|------------------------|-------------------------|
| | \$ cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. |
| Farmers' Institutes..... | 1,834 50 | 1,988 35 | 1,653 00 | 2,077 50 | 2,070 00 |
| Field Crops, Horticulture, Dairying, and Poultry..... | 987 86 | 1,148 19 | 939 27 | 2,562 28 | 3,000 00 |
| Exhibitions, Association grants, and live stock judging..... | 7,948 90 | 9,822 21 | 10,558 30 | 8,865 50 | 8,780 00 |
| Miscellaneous, Dept. expenses..... | 3,450 38 | 4,806 72 | 10,785 76 | 2,772 73 | 5,850 00 |
| Totals..... | 14,221 64 | 17,765 47 | 23,936 83 | 16,278 01 | 19,700 00 |

VETERINARY COLLEGES.

The grant to Veterinary Colleges for the year 1916-17, was divided as follows, based on the number of students enrolled in the previous year who were British subjects:—

| | Students, 1915-16. | Grants, 1916-17. |
|---|-----------------------|---------------------|
| Ontario Veterinary College..... | 145 | \$14,285 72 |
| School of Veterinary Science, Montreal..... | 58 | 5,714 28 |

ONTARIO VETERINARY COLLEGE.

In December 1916, the grant of 1914-15, amounting to \$15,607.85, was paid to the Ontario Veterinary College. The financial statement follows, from November 1, 1916 to March 31, 1917:—

| | |
|---|--------------------|
| Balance on hand, October 31, 1916..... | \$ 20 45 |
| Grant..... | 15,607 85 |
| | <hr/> \$ 15,628 30 |
| Contingencies—Postage, Stationery, temporary assistance, etc..... | \$357 18 |
| Equipment—Library supplies, laboratory supplies, etc..... | 450 40 |
| Printing and advertising..... | 291 36 |
| Services of lecturers, demonstrators, etc.— | |
| J. N. Pringle..... | \$257 10 |
| H. G. Wilson..... | 128 52 |
| S. A. Cudmore..... | 107 10 |
| J. E. Keyes..... | 300 00 |
| | <hr/> \$792 72 |
| | <hr/> 1,891 66 |
| Balance on hand..... | <hr/> \$13,736 64 |

STATEMENT OF ENROLMENT, 1916-17.

| | First Year. | Second Year. | Third Year. |
|----------------------------------|----------------|-----------------|----------------|
| Ontario..... | 15 | 21 | 20 |
| Quebec..... | 2 | 3 | 2 |
| Nova Scotia..... | 1 | 3 | 1 |
| New Brunswick..... | 0 | 1 | 0 |
| P. E. Island..... | 0 | 1 | 0 |
| Manitoba..... | 6 | 3 | 4 |
| Saskatchewan..... | 6 | 7 | 2 |
| Alberta..... | 1 | 2 | 1 |
| British Columbia..... | 1 | 0 | 0 |
| South Africa..... | 1 | 0 | 0 |
| United States..... | 8 | 6 | 15 |
| Newfoundland..... | 0 | 1 | 0 |
| | <hr/> 41 | <hr/> 48 | <hr/> 45 |
| British Subjects..... | 105 | | |
| Foreign Countries..... | 29 | | |
| Grand total of all students..... | <hr/> 134 | | |

SCHOOL OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

The grant to the school of Veterinary Science, Montreal, for the year 1916-17 amounted, based on the enrolment of 58 students, to the sum of \$5,714.28.

The following disbursements were charged to the grant:—

| | | |
|--|----|-----------------|
| (1) Practical laboratory work and meat inspection..... | \$ | 664 28 |
| (2) Applied on salaries account..... | | 5,065 00 |
| | \$ | <u>5,729 28</u> |

The financial statement of the institution for the year ended June 30, 1917, was as follows:—

RECEIPTS.

| | \$ | cts. |
|--|--------|--------------------|
| Cash in bank, July 1, 1916..... | | 654 49 |
| Students' fees..... | 2,302 | 50 |
| Provincial grant..... | 3,500 | 00 |
| Federal grant, "Agricultural Instruction Act"..... | 5,729 | 28 |
| Rental of Hospital..... | | 666 60 |
| From Laval University..... | 10,000 | 00 |
| Diplomas..... | | 780 50 |
| Sundry revenue..... | | 268 70 |
| | | <u>\$23,902 07</u> |

DISBURSEMENTS.

| | | |
|---|--------------------|----|
| Salaries of Professors..... | 6,240 | 00 |
| Salaries of Officers..... | 2,178 | 00 |
| Administration expense..... | 456 | 22 |
| Laboratory expense..... | 664 | 10 |
| Rental of hospital..... | 1,002 | 28 |
| Repayment of bank loan..... | 1,000 | 00 |
| To Laval University on land and building account..... | 6,000 | 00 |
| Light, heat, insurance..... | 4,000 | 00 |
| Sundry items..... | 1,251 | 03 |
| | 22,791 | 63 |
| Balance on hand..... | 1,110 | 44 |
| | <u>\$23,902 07</u> | |

STATEMENT OF ENROLMENT, 1916-17.

| | |
|-------------------------------------|-----------|
| First year, number of students..... | 18 |
| Second year, " "..... | 22 |
| Third year, " "..... | 22 |
| Total..... | <u>62</u> |

REPORT

OF THE

DOMINION EXPERIMENTAL FARMS

FOR THE

FISCAL YEAR ENDING MARCH 31, 1917

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

OTTAWA, March 31, 1917.

SIR,—I have the honour to submit herewith, for your approval, the thirtieth annual report of the work carried on at the Dominion Experimental Farms, Stations, and Sub-stations.

The accompanying report is radically different in form and scope from those of previous years. It is intended to furnish a concise but readable account of the year's operations throughout the Farms system; the data of the experimental work in any line to be published, in finished form, when such experiment is complete.

The objects in view in making this change are to further economy and efficiency. The departmental mailing lists have reached such proportions as to make the cost, labour, and time involved in the printing and distribution of a three-volume report prohibitive; moreover, the great amount of experimental work now being carried on, much of it of a complex character, makes it very difficult, if not impossible, to give a yearly detailed report of progress in such a way that the average reader can follow it easily and benefit therefrom. By issuing our findings in bulletin form, these difficulties are in a large measure avoided. I have every reason to believe that this change of plan will receive the unqualified approval of our farmers.

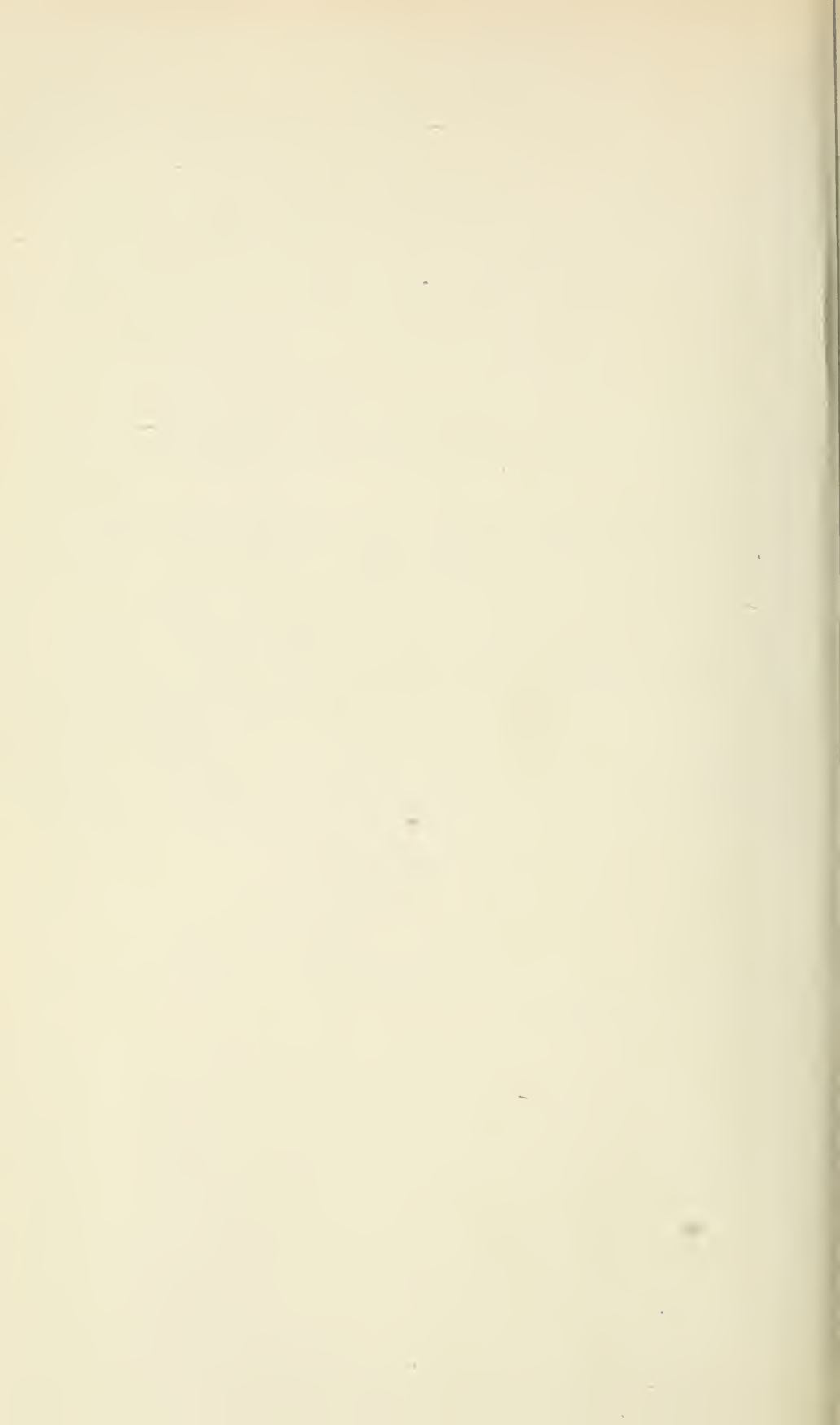
I have the honour to be, sir,

Your obedient servant,

J. H. GRISDALE,

Director, Dominion Experimental Farms.

To the Honourable
The Minister of Agriculture,
Ottawa.



DOMINION EXPERIMENTAL FARMS.

J. H. GRISDALE, B. Agr., Director.

PERSONNEL.

Central Experimental Farm, Ottawa, Ont.—

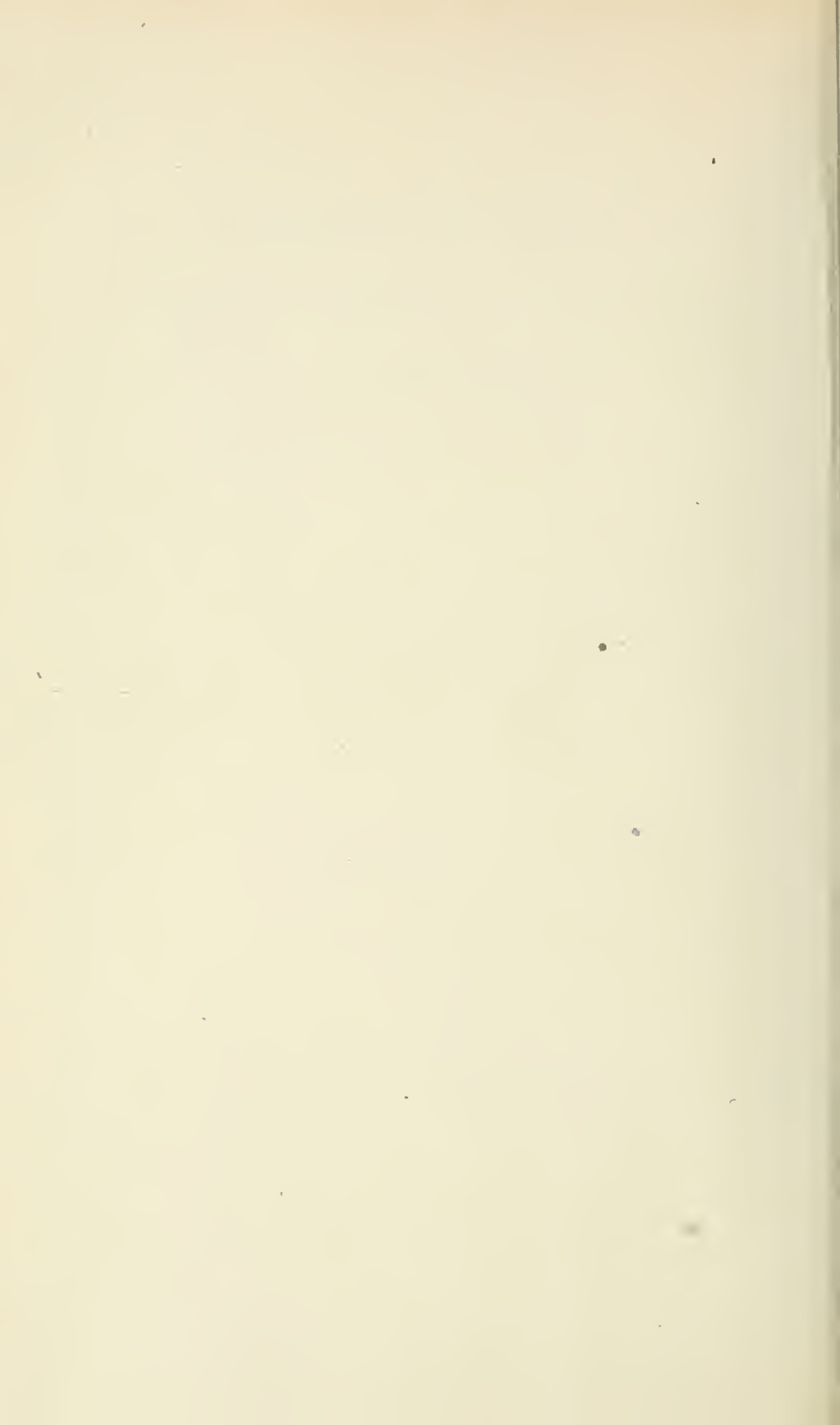
| | |
|--|-------------------------------|
| Dominion Chemist | F. T. Shutt, M.A., D.Sc. |
| Assistant Dominion Field Husbandman | W. L. Graham, B.S.A. |
| Dominion Animal Husbandman | E. S. Archibald, B.A., B.S.A. |
| Dominion Horticulturist | W. T. Macoun. |
| Dominion Cerealist | C. E. Saunders, Ph.D. |
| Division of Botany | H. T. Güssow. |
| Apiarist | F. W. L. Sladen. |
| Dominion Agrostologist | M. O. Malte, Ph.D. |
| Dominion Poultry Husbandman | F. C. Elford. |
| Chief Officer, Tobacco Division | F. Charlan. |
| Chief Officer, Division of Economic Fibre Production | G. G. Bramhill. |
| Supervisor, Division of Illustration Stations | J. Fixter. |
| Officer in Charge, Division of Extension and Publicity | W. A. Lang. |

Branch Farms and Stations—

| | |
|--|----------------------------|
| Superintendent, Experimental Station, Charlottetown, P.E.I. | J. A. Clark, B.S.A. |
| Superintendent, Experimental Station, Kentville, N.S. | W. S. Blair. |
| Superintendent, Experimental Farm, Nappan, N.S. | W. W. Baird. |
| Superintendent, Experimental Station, Fredericton, N.B. | W. W. Hubbard. |
| Superintendent, Experimental Station, Ste. Anne de la Pocatière, Que. | J. Begin. |
| Superintendent, Experimental Station, Cap Rouge, Que. | G. Langelier. |
| Superintendent, Experimental Station, Lennoxville, Que. | J. A. McClary. |
| Foreman-Manager, Experimental Station, Spirit Lake, Que. | P. Fortier. |
| Foreman-Manager, Experimental Station, Kapuskasing, Ont. | S. Ballantyne. |
| Foreman-Manager, Experimental Station, Morden, Man. | C. Boyle. |
| Superintendent, Experimental Farm, Brandon, Man. | W. C. McKillican, B.S.A. |
| Superintendent, Experimental Farm, Indian Head, Sask. | W. H. Gibson, B.S.A. |
| Superintendent, Experimental Station, Rosthern, Sask. | W. A. Munro, B.A., B.S.A. |
| Acting Superintendent, Experimental Station, Scott, Sask. | M. J. Tinline, B.S.A. |
| Superintendent, Experimental Station, Lethbridge, Alta. | W. H. Fairfield, M.S. |
| Superintendent, Experimental Station, Lacombe, Alta. | G. H. Hutton, B.S.A. |
| Superintendent, Experimental Station, Summerland, B.C. | R. H. Helmer. |
| Superintendent, Experimental Station, Invermere, B.C. | G. E. Parham. |
| Officer in Charge, Experimental Farm, Agassiz, B.C. | W. H. Hicks, B.S.A. |
| Superintendent, Experimental Station, Sidney, B.C. | L. Stevenson, B.S.A., M.S. |

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ANNUAL REPORT OF THE EXPERIMENTAL FARMS

FOR THE YEAR ENDING MARCH 31, 1917.

REPORT OF THE DIRECTOR

J. H. GRISDALE, B. Agr.

FIELD CROP AND LIVE STOCK NOTES FOR 1916.

While crop conditions in 1916 were, generally speaking, not so favourable as in the preceding year, the fact that 1915 was a record season for crop yields caused last year's returns to suffer unduly in comparison. The spring was a late one throughout the Dominion, and in the eastern provinces especially, excessive rainfall retarded seeding operations, while considerable low-lying land could not be sown at all.

This rainy period was followed by hot, dry weather in July and August, which, while favourable to heavy crops of well-cured hay, caused a premature ripening of cereals, and consequent reduced yields, especially in Ontario and Quebec.

In Manitoba and Saskatchewan, especially in the southern parts of those provinces, a serious outbreak of rust occurred in August, which destroyed the grain crops on large areas, and reduced the yield and grade still more widely.

In the Maritime Provinces and in British Columbia the season was a favourable one, and good crops of grains, hay, roots, and potatoes were harvested.

The total value of all field crops grown in Canada in 1916 is estimated at \$808,054,000 as compared with \$841,297,500, the revised total for 1915. The total for 1916, although lower than that for 1915, is greater than that for any other previous year.

In the following tables details are given of the yields and values of the principal field crops for the two years.

In table 3 the numbers of the various classes of live stock are given for the period 1912-16.

TABLE 1.—Comparison of Yields and Prices obtained for the Year 1915-16.

| Crop. | Average Yield per acre. | | Average Price per bush. | | Total Production. | |
|----------------------------|-------------------------|--------|-------------------------|---------|-------------------|-------------|
| | 1915. | 1916. | 1915. | 1916. | 1915. | 1916. |
| | bush. | bush. | \$ | \$ | bush. | bush. |
| Fall wheat..... | 28.81 | 21.50 | 0.91 | 1.53 | 32,391,600 | 20,131,000 |
| Spring wheat..... | 29.10 | 16.75 | 0.82 | 1.29 | 394,355,000 | 200,236,000 |
| All wheat..... | 29.03 | 17.00 | 0.83 | 1.31 | 426,746,600 | 220,367,000 |
| Oats..... | 45.81 | 35.75 | 0.34 | 0.53 | 523,684,000 | 351,174,000 |
| Barley..... | 35.55 | 25.00 | 0.49 | 0.82 | 60,699,100 | 41,318,000 |
| Rye..... | 21.32 | 20.00 | 0.79 | 1.11 | 2,394,100 | 2,896,400 |
| Peas..... | 17.73 | 14.46 | 1.66 | 2.22 | 3,478,850 | 2,172,400 |
| Beans..... | 16.70 | 12.70 | 3.05 | 5.40 | 723,400 | 412,600 |
| Buckwheat..... | 22.88 | 17.50 | 0.75 | 1.07 | 7,865,900 | 5,976,000 |
| Mixed grains..... | 37.54 | 25.33 | 0.57 | 0.90 | 17,523,100 | 10,077,000 |
| Flax..... | 13.18 | 11.75 | 1.50 | 2.05 | 10,628,000 | 7,122,300 |
| Corn for husking..... | 56.72 | 36.31 | 0.71 | 1.07 | 14,368,000 | 6,282,000 |
| Potatoes..... | 130.81 | 136.20 | 0.57 | 0.81 | 62,604,000 | 61,128,000 |
| Turnips, mangels, etc..... | 372.21 | 264.24 | 0.26 | 0.41 | 64,281,000 | 41,274,000 |
| | tons | tons | per ton | per ton | tons | tons |
| Hay and clover..... | 1.39 | 1.86 | 14.22 | 11.52 | 10,953,000 | 14,799,000 |
| Fodder corn..... | 10.00 | 6.65 | 4.96 | 4.92 | 3,429,870 | 1,976,700 |
| Sugar beets..... | 7.83 | 4.75 | 5.50 | 6.20 | 141,000 | 71,000 |
| Alfalfa..... | 2.83 | 2.91 | 12.98 | 10.70 | 261,470 | 261,450 |

TABLE 2.—Comparison of Eastern Canada, Prairie Provinces, and British Columbia as to Yields and Prices obtained.

| | EASTERN PROVINCES. | | | | PRAIRIE PROVINCES. | | | | BRITISH COLUMBIA. | | | |
|-------------------|-------------------------|--------|-------------------------|-------|-------------------------|--------|-------------------------|-------|-------------------------|--------|-------------------------|-------|
| | Average Yield per acre. | | Average Price obtained. | | Average Yield per acre. | | Average Price obtained. | | Average Yield per acre. | | Average Price obtained. | |
| | 1915 | 1916. | 1915. | 1916. | 1915. | 1916. | 1915 | 1916 | 1915. | 1916. | 1915. | 1916. |
| | bush. | bush. | \$ | \$ | bush. | bush. | \$ | \$ | bush. | bush. | \$ | \$ |
| Fall wheat..... | 28.34 | 21.25 | 0.93 | 1.55 | 33.83 | 22.33 | 0.80 | 1.40 | 33.44 | 30.75 | 0.91 | 1.53 |
| Spring wheat..... | 20.83 | 16.23 | 1.10 | 1.65 | 29.11 | 16.76 | 0.82 | 1.28 | 32.43 | 31.00 | 0.96 | 1.54 |
| Oats..... | 36.15 | 25.89 | 0.44 | 0.65 | 53.23 | 41.12 | 0.28 | 0.48 | 61.84 | 60.50 | 0.49 | 0.64 |
| Barley..... | 32.87 | 22.56 | 0.60 | 1.01 | 36.71 | 25.79 | 0.45 | 0.77 | 40.36 | 45.75 | 0.64 | 0.83 |
| Peas..... | 17.63 | 14.23 | 1.65 | 2.23 | 21.44 | 26.08 | 1.53 | 2.24 | 29.75 | 33.75 | 1.24 | 1.67 |
| Rye..... | 19.55 | 17.15 | 0.82 | 1.19 | 27.41 | 23.19 | 0.73 | 1.04 | | | | |
| Flax..... | 12.32 | 9.46 | 1.77 | 2.75 | 13.18 | 11.77 | 1.50 | 2.04 | | | | |
| Potatoes..... | 122.01 | 124.73 | 0.62 | 0.89 | 147.69 | 174.31 | 0.44 | 0.59 | 247.28 | 189.00 | 0.45 | 0.70 |
| Turnips, etc..... | 387.59 | 256.14 | 0.24 | 0.37 | 252.27 | 273.56 | 0.45 | 0.56 | 455.61 | 500.00 | 0.39 | 0.50 |
| | tons | tons | | | tons | tons | | | tons | tons | | |
| Hay and clover... | 1.35 | 1.83 | 14.60 | 11.53 | 1.78 | 1.88 | 8.83 | 7.79 | 2.34 | 2.67 | 14.57 | 17.75 |
| Sugar beets..... | 7.83 | 4.75 | 5.50 | 6.20 | | | | | | | | |
| Fodder corn..... | 10.41 | 6.68 | 4.90 | 4.92 | 3.51 | 6.16 | 7.49 | 4.89 | 12.62 | 10.00 | 4.00 | 7.00 |
| Alfalfa..... | 2.72 | 2.99 | 13.33 | 9.75 | 2.70 | 2.71 | 10.07 | 10.93 | 3.52 | 2.88 | 14.84 | 15.00 |

TABLE 3.—Farm Live Stock, 1912-16.

| | 1912. | 1913. | 1914. | 1915 | 1916 |
|---------------------------|-----------|-----------|-----------|-----------|-----------|
| Eastern Provinces— | | | | | |
| Horses..... | 1,335,628 | 1,436,207 | 1,441,381 | 1,442,063 | 1,336,760 |
| Milch cows..... | 2,079,188 | 2,138,824 | 2,097,586 | 2,075,750 | 1,998,318 |
| Other cattle..... | 2,410,671 | 2,479,406 | 1,904,976 | 1,848,504 | 1,727,773 |
| Sheep..... | 1,750,994 | 1,747,108 | 1,630,714 | 1,569,483 | 1,453,065 |
| Swine..... | 2,638,410 | 2,491,564 | 2,357,128 | 2,269,029 | 2,096,832 |
| Western Provinces— | | | | | |
| Horses..... | 1,296,994 | 1,369,283 | 1,445,652 | 1,492,681 | 1,532,563 |
| Milch cows..... | 491,289 | 516,011 | 539,998 | 553,152 | 565,709 |
| Other cattle..... | 1,315,681 | 1,336,098 | 1,359,464 | 1,450,212 | 1,482,645 |
| Sheep..... | 290,685 | 336,423 | 382,331 | 422,770 | 435,767 |
| Swine..... | 806,635 | 922,221 | 1,038,102 | 804,328 | 679,011 |
| British Columbia— | | | | | |
| Horses..... | 59,735 | 60,518 | 60,705 | 61,355 | 61,312 |
| Milch cows..... | 34,011 | 35,599 | 35,702 | 37,944 | 39,318 |
| Other cattle..... | 101,021 | 100,183 | 99,091 | 100,439 | 103,101 |
| Sheep..... | 40,702 | 45,000 | 45,000 | 46,404 | 46,269 |
| Swine..... | 32,485 | 34,541 | 39,031 | 38,543 | 37,829 |

TABLE of Meteorological Observations taken at the Central Experimental Farm, Ottawa, from April 1, 1916, to March 31, 1917, giving maximum, minimum, and mean temperatures for each month, with date of occurrence; also the rainfall, snowfall, and total precipitation.

| Month. | Maximum. | Minimum. | Range. | Mean. | Highest. | Date. | Lowest. | Date. | Rainfall. | | Total Precipitation. | Number of days Precipitation. | Heaviest in 24 hours. | | Date. |
|----------------|----------|----------|--------|-------|----------|---------|---------|--------|-----------|--------|----------------------|-------------------------------|-----------------------|------|-------|
| | ° | ° | | | | | | | Ins. | Ins. | | | Ins. | Ins. | |
| April..... | 51-97 | 34-54 | 17-43 | 43-25 | 73-4 | 30 | 18-0 | 3 | 1-65 | 10-50 | 2-70 | 14 | 0-77 | 7 | |
| May..... | 63-19 | 44-83 | 13-35 | 54-00 | 81-8 | 24 | 33-0 | 3 & 10 | 6-89 | S. | 6-89 | 19 | 2-99 | 17 | |
| June..... | 71-63 | 52-97 | 18-66 | 62-30 | 82-5 | 13 | 41-0 | 1 | 4-24 | ..... | 4-24 | 17 | 0-89 | 16 | |
| July..... | 86-49 | 62-96 | 23-53 | 74-72 | 100-3 | 30 | 52-0 | 9 | 1-50 | ..... | 1-50 | 9 | 0-77 | 2 | |
| August..... | 82-75 | 57-77 | 24-97 | 70-25 | 97-8 | 20 & 22 | 44-0 | 29 | 1-73 | ..... | 1-73 | 13 | 0-45 | 8 | |
| September..... | 68-52 | 49-15 | 19-37 | 58-83 | 83-0 | 13 | 36-0 | 26 | 3-15 | ..... | 3-15 | 17 | 0-89 | 29 | |
| October..... | 55-61 | 35-95 | 19-66 | 45-78 | 76-8 | 5 | 23-6 | 18 | 2-92 | S. | 2-92 | 14 | 0-62 | 17 | |
| November..... | 37-97 | 24-28 | 13-68 | 31-12 | 62-4 | 8 | - 2-0 | 26 | 1-46 | 3-25 | 1-78 | 13 | 0-45 | 1 | |
| December..... | 23-45 | 9-81 | 13-63 | 16-62 | 46-0 | 6 | -20-0 | 30 | 0-60 | 18-75 | 2-47 | 16 | 0-85 | 22 | |
| January..... | 17-74 | 0-84 | 20-12 | 10-90 | 33-0 | 4 | -20-2 | 12 | 0-11 | 39-50 | 4-65 | 18 | 0-77 | 14 | |
| February..... | 16-76 | -4-28 | 21-05 | 6-24 | 37-0 | 18 | -25-2 | 3 & 12 | T. | 19-50 | 1-94 | 12 | 0-42 | 20 | |
| March..... | 32-59 | 15-68 | 16-90 | 24-13 | 50-4 | 26 | - 3-0 | 7 | 0-59 | 32-00 | 3-79 | 17 | 1-10 | 5 | |
| | | | | | | | | | 24-84 | 126-50 | 37-18 | 179 | | | |

Rain or snow fell on 179 days during the 12 months.

Heaviest rainfall in 24 hours, 2-99 inches on May 17.

Heaviest snowfall in 24 hours, 11-00 inches on March 5.

The highest temperature during the 12 months was, 100-3° on July 30.

The lowest temperature during the 12 months was 25-2° on February 3 and 12.

During the growing season rain fell on 14 days in April, 19 days in May, 17 days in June, 9 days in July, 13 days in August, and 17 days in September.

8 GEORGE V, A. 1918

July shows the lowest number of days with precipitation, viz., 9.

Total precipitation during the 12 months, 37.18 inches, as compared with 35.65 inches during 1915-16.

RAINFALL, SNOWFALL, and Total Precipitation from 1890 to 1916-17; also the average annual amount that has fallen.

| Year. | Rainfall. | Snowfall. | Total Precipitation. |
|--------------------------------------|-----------|-----------|-------------------------|
| | In. | In. | In. |
| 1890..... | 24.73 | 64.85 | 31.22 |
| 1891..... | 30.19 | 73.50 | 37.54 |
| 1892..... | 23.78 | 105.00 | 34.28 |
| 1893..... | 31.79 | 72.50 | 39.04 |
| 1894..... | 23.05 | 71.50 | 30.20 |
| 1895..... | 27.01 | 87.50 | 35.76 |
| 1896..... | 21.53 | 99.75 | 31.50 |
| 1897..... | 24.18 | 89.00 | 33.08 |
| 1898..... | 24.75 | 112.25 | 35.97 |
| 1899..... | 33.86 | 77.25 | 41.63 |
| 1900..... | 29.48 | 108.00 | 40.72 |
| 1901..... | 29.21 | 97.25 | 38.91 |
| 1902..... | 25.94 | 101.75 | 36.10 |
| 1903..... | 26.43 | 85.00 | 34.92 |
| 1904..... | 25.95 | 108.75 | 36.79 |
| 1905..... | 23.71 | 87.25 | 32.42 |
| 1906, January 1 to March 31..... | 1.90 | 24.50 | 4.34 |
| 1906-07..... | 24.73 | 72.50 | 28.94 |
| 1907-08..... | 24.70 | 134.75 | 38.18 |
| 1908-09..... | 22.13 | 107.90 | 32.91 |
| 1909-10..... | 28.40 | 61.25 | 34.51 |
| 1910-11..... | 18.94 | 88.25 | 27.72 |
| 1911-12..... | 20.12 | 98.50 | 29.95 |
| 1912-13..... | 32.54 | 106.50 | 43.18 |
| 1913-14..... | 21.51 | 70.25 | 28.51 |
| 1914-15..... | 16.77 | 78.50 | 24.67 |
| 1915-16..... | 22.66 | 120.00 | 35.65 |
| 1916-17..... | 24.84 | 126.50 | 37.18 |
| Total for 27 years and 3 months..... | 681.83 | 2,540.50 | 935.82 |
| Average for 27 years..... | 25.25 | 94.09 | 34.66 |

RECORD of Sunshine at the Central Experimental Farm, Ottawa, from April 1, 1916, to March 31, 1917.

| Month. | Number of days with sunshine. | Number of days without sunshine. | Total hours sunshine. | Average sunshine per day. |
|----------------|-------------------------------------|---|-----------------------------|---------------------------------|
| April..... | 23 | 7 | 176.0 | 5.86 |
| May..... | 24 | 7 | 209.7 | 6.76 |
| June..... | 27 | 3 | 194.2 | 6.47 |
| July..... | 30 | 1 | 312.7 | 10.08 |
| August..... | 29 | 2 | 275.6 | 8.89 |
| September..... | 26 | 4 | 159.2 | 5.30 |
| October..... | 28 | 3 | 166.2 | 5.36 |
| November..... | 23 | 7 | 111.1 | 3.70 |
| December..... | 20 | 11 | 86.0 | 2.77 |
| January..... | 18 | 13 | 76.8 | 2.47 |
| February..... | 22 | 6 | 133.7 | 4.77 |
| March..... | 28 | 3 | 173.8 | 5.60 |

SESSIONAL PAPER No. 16

CORRESPONDENCE.

The following tables show the numbers of letters received and sent by the Divisions at the Central Farm and the branch Farms and Stations. A marked increase over the totals of last year is shown, indicating a still further widening of interest in the work of the Farms.

The number of reports, bulletins, and circulars sent out represents only a very small fraction of the Experimental Farm publications mailed, as the main distribution of these is made by the Publication Branch of the Department.

CENTRAL EXPERIMENTAL FARM.

BRANCH FARMS AND STATIONS.

| Division. | Letters received. | Letters sent. | | Letters received. | Letters sent. |
|-----------------------------------|-------------------|---------------|-------------------------|-------------------|---------------|
| Director | 22,942 | 13,617 | Charlottetown | 1,607 | 1,949 |
| Field Husbandry | 1,548 | 1,627 | Nappan | 2,042 | 2,128 |
| Chemistry | 4,256 | 3,835 | Kentville | 1,817 | 1,843 |
| Horticulture | 7,194 | 9,445 | Fredericton | 1,745 | 1,798 |
| Cereals | 21,005 | 4,926 | Ste. Anne | 2,556 | 2,890 |
| Botany | 3,934 | 4,064 | Cap Rouge | 8,066 | 3,791 |
| Animal Husbandry | 5,361 | 7,436 | Lennoxville | 2,062 | 1,922 |
| Agrostology | 1,082 | 1,798 | Brandon | 3,611 | 3,506 |
| Poultry | 5,339 | 7,219 | Morden | 103 | 103 |
| Tobacco | 4,038 | 3,105 | Indian Head | 8,917 | 8,814 |
| French Correspondent | 8,713 | 8,442 | Rosthern | 1,519 | 2,110 |
| Apiary | 1,526 | 1,457 | Scott | 1,943 | 2,853 |
| Extension and Publicity | 43,370 | 3,178 | Lethbridge | 5,267 | 5,973 |
| Illustration Stations | 2,474 | 3,190 | Lacombe | 4,234 | 3,614 |
| Miscellaneous | 10,559 | 3,991 | Summerland | 1,089 | 862 |
| | | | Invermere | 737 | 758 |
| | | | Agassiz | 3,812 | 3,220 |
| | | | Sidney | 1,577 | 1,322 |
| | <hr/> | <hr/> | | <hr/> | <hr/> |
| | 143,341 | 77,330 | | 47,704 | 49,456 |
| | | | | <hr/> | <hr/> |
| | | | | 47,704 | 49,456 |

Reports and bulletins mailed 115,324
 Circulars 110,223

The total number of letters received at all points in the Farm system will be seen to be 191,045, while 126,786 were sent out.

DISTRIBUTION OF SAMPLES.

The distribution of samples of seed grains and potatoes was again carried on during the past winter. From Ottawa, some 10,500 samples were sent out. The distribution from the branch Farms and Stations is confined to potatoes, of which the following numbers were mailed to applicants from the Farm or Station indicated: Charlottetown 11, Fredericton 315, Nappan 422, Kentville 360, Brandon 497, Indian Head 1,714, Rosthern 215, Scott, 233, Lethbridge 1,142, Lacombe 796, Agassiz, 407.

The total distribution from the Central and branch Farms was 16,639 samples. Some special distributions were also made, such as tobacco from the Central Farm; trees, shrubs, and tree seeds from the prairie Farms; sweet corn, vegetable, and flower seeds from the Stations at Lennoxville and Cap Rouge, Que.; strawberry plants from Nappan, N.S., etc.

PUBLICATIONS ISSUED.

During the year the following publications have been sent to press:—

The Annual Report of the Experimental Farms for the year 1915-16.

Bulletins, Regular Series—

No. 87, The Principles of Poultry House Construction, by F. C. Elford, Dominion Poultry Husbandman.

No. 88, The Preparation of Poultry Produce for Market, by the same author.

No. 89, Poultry Keeping in Town and Country, by the same author.

In the Second Series the following have been issued—

No. 27, Soil Fertility, by Dr. F. T. Shutt, Dominion Chemist.

No. 28, Flax for Fibre, by J. Adams, Assistant Dominion Botanist.

No. 29, Cranberry Culture, by M. B. Davis, Assistant in Horticulture.

No. 30, Feeding for Beef in Alberta, by W. H. Fairfield and G. H. Hutton.

No. 31, Gopher Destruction, compiled by J. H. Grisdale.

Circulars—

No. 12, The Black or Stem Rust of Wheat, by H. T. Güssow.

No. 13, Garden Making on Vacant Lots, by W. T. Macoun, Dominion Horticulturist.

Pamphlets—

No. 14, The Home Vegetable Garden, by W. T. Macoun, Dominion Horticulturist.

Special Circulars—

No. 1, Grain Growing on the Prairies, by J. H. Grisdale, Director, Dominion Experimental Farms.

No. 2, Maximum Crops, 1917, by W. L. Graham, Assistant Field Husbandman.

No. 3, Varieties of Grain Recommended for Use in Canada, by Dr. C. E. Saunders, Dominion Cerealists.

No. 4, Notes on the Cultivation of some Staple Vegetables, by W. S. Blair, Superintendent, Experimental Station, Kentville.

No. 5, Preparing Farm Horses for Summer Work, by E. S. Archibald, Dominion Animal Husbandman.

No. 6, Produce More Poultry Products, by F. C. Elford, Dominion Poultry Husbandman, and Geo. Robertson, Assistant.

No. 7, The Dairy Cow, by E. S. Archibald, Dominion Animal Husbandman.

No. 9, Recommended Varieties of Field Roots, by F. S. Browne, Assistant, Division of Forage Plants.

No. 10, Field Beans, by W. L. Graham, Assistant Field Husbandman.

A number of additional exhibition circulars were issued, together with revised editions of many of those formerly brought out. Altogether, some ninety-five of these circulars are now in print. "Seasonable Hints" Nos. 5, 6, and 7, were brought out and distributed during the year.

ENLISTMENTS AND CASUALTIES.

We record below the enlistments from the Experimental Farms Branch from April 1, 1916, to March 31, 1917:—

Following this is a list of casualties among members of this branch from the beginning of the war up to the close of the fiscal year of 1916-17:—

ENLISTMENTS DURING FISCAL YEAR ENDING MARCH 31, 1917.

| | | |
|---------------|-----------------|-----------------|
| Blair, W. T. | Heatherton, W. | Morley, A. |
| Cannon, A. | Hirsch, R. J. | Paris, R. J. C. |
| Campbell, L. | Hunter, H. | Pollock, A. |
| Campbell, Wm. | Joyce, M. | Ramsay, R. L. |
| Davis, M. B. | Kemp, A. | Ronaldson, B. |
| Fader, R. | King, Wm. | Smith, A. |
| Fahey, T. | Lindsay, C. | Snider, H. |
| Foley, Wm. | Matthews, V. | Verne, B. |
| Fraser, J. | McCready, D. W. | Ward, N. A. |
| Gregory, O. | McDonald, H. | Williams, G. |
| Halfpenny, E. | McDonald, J. | Williams, J. C. |
| Hatherall, F. | | |

CASUALTIES.

| | |
|------------------------------------|---|
| V. Armstrong, killed in action. | C. Harrison, killed in action. |
| J. W. Boston, killed in action. | P. Humbert, killed in action. |
| R. I. Donaldson, killed in action. | H. H. Lindesay, missing, presumed killed. |
| G. Dorgans, wounded. | R. W. Nichols, killed in action. |
| F. L. Drayton, wounded. | H. Neeley, missing, presumed killed. |
| C. F. W. Dreher, wounded. | R. J. C. Paris, killed in action. |
| W. A. Gordon, died. | S. H. Valiant, killed in action. |

SESSIONAL PAPER No. 16

EXPERIMENTS AT FORT VERMILION, ALTA.

The season of 1916 was a very favourable one in all branches of the work at this Substation, and in the Fort Vermilion district. Grain and oats gave excellent crops, hay was plentiful, and potatoes gave a good yield. There was no sign of rust on the wheat, which averaged for the district about 30 bushels per acre, oats 90, and barley 65.

There was ample rainfall throughout the season. The first frost occurred August 28, but was very slight and did little damage. The first killing frost (9 degrees) came September 23. The excellent fall weather allowed of harvesting and fall work in general being completed under favourable conditions.

CEREALS.

Seven varieties of wheat were tested, namely, Prelude, Red Fife, Bishop, Stanley, Huron, Marquis, and Marquis (registered). The yields ranged from 65 bushels per acre for Huron to 49 bushels 30 pounds for Prelude, the average for the seven sorts being 57 bushels per acre. The test plots were one-thirtieth of an acre each.

Seven varieties of oats were sown: Improved Ligowo, Tartar King, Banner, Daubeney, Black Mesdag, and Garton's Regenerated Abundance. Tartar King was highest, with a yield of 108 bushels 18 pounds per acre, and Garton's Regenerated Abundance lowest, 69 bushels 8 pounds. The average yield for the six varieties was 89 bushels 2 pounds.

In barleys, five varieties, Manchurian, Success, Champion, Mensury and Hulless White were tried. Manchurian gave the highest yield 71 bushels 12 pounds. Success and Hulless White were lowest with 61 bushels 12 pounds each. The average of the five varieties was 65 bushels 12 pounds per acre.

Arthur and Prussian Blue peas gave yields of 39 bushels 30 pounds and 39 bushels, respectively.

Spring rye and flax were tried on the Station for the first time.

The flax attained an average length of 26 inches, yielding 17 bushels 8 pounds of seed and 1 ton 400 pounds straw per acre. The spring rye gave a yield of 33 bushels 42 pounds per acre.

In the vegetable garden, lettuce, radish, table beets, carrots, onions, parsnips, cabbage, cauliflower, tomatoes, spinach, cucumbers, asparagus, squash, peas, and beans were successfully grown, and a good yield obtained with almost all varieties tested. Ripe tomatoes were being picked by the end of August.

The results with vegetables at the Fort Vermilion Station have been almost uniformly successful. The method followed is to set aside twice as much land as will be needed each season. Fifteen loads of manure per acre is applied, then the land is ploughed 7 inches deep, and surface cultivation given to keep down weeds and conserve moisture. The land to be planted next spring is not ploughed again, but given surface cultivation to form a good seed-bed. During the growing season sufficient cultivation is given to keep up a loose surface mulch. By following this system most of the preparatory work can be done when other farm work is not pressing.

The potato crop in 1916 was above the average. Six varieties were tested, namely, Rochester Rose, Early Rose, Gold Coin, Carman No. 1, Irish Cobbler and King Edward, the latter being a new variety tried for the first time.

Gold Coin gave the highest yield, 450 bushels 30 pounds per acre, and Early Rose the lowest, 315 bushels 30 pounds. The average yield per acre of the six varieties was 378 bushels 31 pounds per acre.

Five varieties of field corn were grown for ensilage. The warm weather and ample rainfall resulted in good crops of fodder being grown. All varieties when cut

were in good condition for making ensilage. The highest yield per acre weighed was 22 tons 200 pounds per acre from Longfellow, and the lowest, 10 tons 810 pounds from King Philip. The average yield of the five varieties was 17 tons 42 pounds per acre.

In root crops, five varieties of turnips gave an average yield of 23 tons 400 pounds per acre. Five varieties of mangels averaged 22 tons 1,500 pounds per acre. Ontario Champion and White Belgian carrots gave a crop of 17 tons 500 pounds, and 13 tons 1,000 pounds, respectively.

The plots of alfalfa and clover wintered well in 1915-16, and were cut on June 23-24. A second cutting of alfalfa was made on August 18-19. Duplicate plots of timothy, awnless brome, western rye grass, meadow fescue, and Kentucky blue grass were sown on May 26. The first season's growth was satisfactory.

Six varieties of alfalfa gave an average yield, first cutting, of 1 ton 1,650 pounds, and for the second cutting, an average of 1 ton 1,670 pounds per acre. Red clover, one cutting, gave 2 tons 380 pounds per acre. The grasses yielded: timothy, 2 tons 100 pounds; brome grass, 2 tons 1,540 pounds; and western rye, 2 tons 1,600 pounds per acre.

The season was a very favourable one for flowers, which bloomed profusely from June until October.

There was considerable winter injury of the apple and plum trees during the winter of 1915-16, but most of these recovered well and made good growth. Altogether, out of 170 trees set out in 1914, 143 were alive in 1916. Two of the cross-bred varieties of apple, Charles and Silvia, fruited in 1916.

Strawberries, of which six varieties were grown, gave fair yields.

TABLE of Meteorological Observations taken at Fort Vermilion, Peace River District, Alberta, from April 1, 1916, to March 31, 1917, showing maximum, minimum, and mean temperature, the highest and lowest for each month, with date of occurrence; also rainfall, snowfall, and total precipitation.

| Month. | Maximum. | Minimum. | Range. | Mean. | Highest. | Date. | Lowest. | Date. | Rainfall. | Snowfall. | Total Precipitation. | Number of days Precipitation. | Heaviest in 24 hours. | Date. |
|--------------|----------|----------|--------|--------|----------|-------|---------|-------|-----------|-----------|----------------------|-------------------------------|-----------------------|-------|
| | ° | ° | ° | ° | ° | | ° | | Ins. | Ins. | Ins. | | Ins. | |
| April..... | 45.37 | 19.58 | 28.79 | 33.97 | 60.0 | 26 | - 3.0 | 3 | ..... | ..... | ..... | ..... | ..... | ..... |
| May..... | 61.09 | 31.56 | 29.53 | 46.32 | 79.5 | 19 | 22.0 | 2 | 1.90 | ..... | 1.90 | 5 | 1.25 | 7 |
| June..... | 71.66 | 40.75 | 30.91 | 56.20 | 84.0 | 29 | 28.9 | 5 | 1.88 | ..... | 1.98 | 9 | 1.25 | 4 |
| July..... | 71.20 | 43.66 | 27.53 | 57.42 | 87.5 | 1 | 33.2 | 24 | 4.04 | ..... | 4.04 | 13 | 1.50 | 14 |
| August..... | 69.57 | 37.70 | 31.81 | 53.60 | 82.9 | 13 | 24.0 | 31 | 0.42 | ..... | 0.42 | 4 | 0.19 | 7 |
| September.. | 60.50 | 31.87 | 28.62 | 46.18 | 77.5 | 18 | 22.9 | 23 | 1.56 | ..... | 1.56 | 5 | 1.05 | 10 |
| October..... | 43.04 | 20.85 | 22.19 | 31.94 | 66.0 | 10 | 8.9 | 31 | 0.83 | 1.50 | 0.98 | 4 | 0.75 | 13 |
| November... | 23.61 | - 1.62 | 25.23 | 10.99 | 47.9 | 17 | -23.0 | 12 | ..... | 2.75 | 0.27 | 4 | 0.10 | 2 |
| December... | -3.24 | -26.00 | 22.76 | -14.62 | 18.9 | 4 | -55.0 | 11 | ..... | 8.00 | 0.79 | 5 | 0.25 | 11 |
| January..... | -4.80 | -30.64 | 26.16 | -17.56 | 42.0 | 8 | -60.0 | 31 | ..... | 4.50 | 0.44 | 7 | 0.10 | 10 |
| February.... | 1.23 | -24.97 | 26.20 | -11.87 | 29.5 | 15 | -71.0 | 1 | ..... | 2.00 | 0.20 | 2 | 0.15 | 15 |
| March..... | 25.48 | -11.64 | 37.13 | 6.92 | 41.9 | 28 | -39.0 | 2 | ..... | 16.50 | 1.65 | 3 | 0.80 | 30 |
| | | | | | | | | | 10.73 | 35.25 | 14.23 | 61 | | |

SESSIONAL PAPER No. 16

SOME Weather Observations taken at Central Experimental Farm, Ottawa, as compared with those taken at Fort Vermilion, Peace River District, Alberta.

| | Mean Tem- perature. | Highest Tem- perature. | Lowest Tem- perature. | Total Precipi- tation. | Heaviest in 24 hours. | Total hours sunshine. | Average sunshine per day. |
|---------------------|---------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|---------------------------------|
| <i>April.</i> | ° | ° | ° | Ins. | Ins. | | Hrs. |
| Ottawa..... | 43.25 | 73.4 | 18.6 | 2.70 | 0.77 | 176.0 | 5.86 |
| Fort Vermilion..... | 33.97 | 60.0 | -3.0 | | | 247.0 | 8.23 |
| <i>May.</i> | | | | | | | |
| Ottawa..... | 54.00 | 81.8 | 33.0 | 6.89 | 2.99 | 209.7 | 6.76 |
| Fort Vermilion..... | 46.32 | 79.5 | 22.0 | 1.90 | 1.25 | 275.7 | 8.89 |
| <i>June.</i> | | | | | | | |
| Ottawa..... | 62.30 | 82.5 | 41.0 | 4.24 | 0.89 | 194.2 | 6.47 |
| Fort Vermilion..... | 56.20 | 84.0 | 28.9 | 1.98 | 1.25 | 367.9 | 12.26 |
| <i>July.</i> | | | | | | | |
| Ottawa..... | 74.72 | 100.3 | 52.0 | 1.50 | 0.77 | 312.7 | 10.08 |
| Fort Vermilion..... | 57.42 | 87.5 | 33.2 | 4.04 | 1.50 | 280.3 | 9.04 |
| <i>August.</i> | | | | | | | |
| Ottawa..... | 70.25 | 97.8 | 44.0 | 1.73 | 0.45 | 275.6 | 8.89 |
| Fort Vermilion..... | 53.60 | 82.9 | 24.0 | 0.42 | 0.19 | 318.9 | 10.28 |
| <i>September.</i> | | | | | | | |
| Ottawa..... | 58.83 | 83.0 | 36.0 | 3.15 | 0.89 | 159.2 | 5.30 |
| Fort Vermilion..... | 46.18 | 77.5 | 22.9 | 1.56 | 1.05 | 195.9 | 6.53 |
| <i>October.</i> | | | | | | | |
| Ottawa..... | 45.78 | 76.8 | 23.6 | 2.92 | 0.62 | 166.2 | 5.36 |
| Fort Vermilion..... | 31.94 | 66.0 | 8.9 | 0.98 | 0.75 | 111.9 | 3.60 |
| <i>November.</i> | | | | | | | |
| Ottawa..... | 31.12 | 62.4 | -2.0 | 1.78 | 0.45 | 111.1 | 3.70 |
| Fort Vermilion..... | 10.99 | 47.9 | -23.0 | 0.27 | 0.10 | 62.9 | 2.09 |
| <i>December.</i> | | | | | | | |
| Ottawa..... | 16.62 | 46.0 | -20.0 | 2.47 | 0.85 | 86.0 | 2.77 |
| Fort Vermilion..... | -14.62 | 18.9 | -55.0 | 0.79 | 0.25 | 56.9 | 1.83 |
| <i>January.</i> | | | | | | | |
| Ottawa..... | 10.90 | 33.0 | -20.2 | 4.05 | 0.77 | 76.8 | 2.47 |
| Fort Vermilion..... | -17.56 | 42.0 | -60.0 | 0.44 | 0.10 | 89.5 | 2.88 |
| <i>February.</i> | | | | | | | |
| Ottawa..... | 6.24 | 37.0 | -25.2 | 1.94 | 0.42 | 133.7 | 4.77 |
| Fort Vermilion..... | -11.87 | 29.5 | -71.0 | 0.20 | 0.15 | 108.6 | 3.87 |
| <i>March.</i> | | | | | | | |
| Ottawa..... | 24.13 | 50.4 | -3.0 | 3.79 | 1.10 | 173.8 | 5.60 |
| Fort Vermilion..... | 6.92 | 41.9 | -39.0 | 1.65 | 0.80 | 166.0 | 5.35 |

8 GEORGE V, A. 1913

RECORD of Sunshine at Fort Vermilion, Peace River District, Alberta, from April 1, 1916, to March 31, 1917.

| Months. | Number of days with Sunshine. | Number of days without Sunshine. | Total hours Sunshine. | Average Sunshine per day. |
|----------------|-------------------------------|----------------------------------|-----------------------|---------------------------|
| April..... | 28 | 2 | 247.0 | 8.23 |
| May..... | 29 | 2 | 275.7 | 8.89 |
| June..... | 29 | 1 | 367.9 | 12.26 |
| July..... | 29 | 2 | 280.3 | 9.04 |
| August..... | 31 | 0 | 318.9 | 10.28 |
| September..... | 25 | 5 | 195.9 | 6.53 |
| October..... | 20 | 11 | 111.9 | 3.60 |
| November..... | 18 | 12 | 62.9 | 2.09 |
| December..... | 16 | 15 | 56.9 | 1.83 |
| January..... | 22 | 9 | 89.5 | 2.88 |
| February..... | 21 | 7 | 103.6 | 3.87 |
| March..... | 27 | 4 | 166.0 | 5.35 |

EXPERIMENTS AT GROUARD, ALBERTA.

Snow had disappeared from the cultivated land by April 15, and prospects were bright for early seeding. The work was interrupted, however, by wet weather, and seeding was not completed until May 4. By the 13th all grains were up and growing well in spite of rather cold weather.

On June 1, there was a heavy frost, and several farmers had to resow their grains. The weather throughout the month was cool and dry.

There was an abundant rainfall on July 4 and 5, the weather became warmer, and the remainder of the season was favourable to growth, although with some quite cold nights.

On August 10, frost affected the grain slightly in certain districts, but not on the Substation.

Cereals.—Three varieties of oats, two of barley, three of wheat, and one of peas were sown on May 1 in one-twentieth acre plots. The peas were destroyed by frost on August 10. The following results were obtained:—

| | Date of Maturity. | Days Maturing. | Yield per acre. |
|-----------------|-------------------|----------------|-----------------|
| | | | bush. lb. |
| Oats— | | | |
| Daubeney..... | Aug. 18 | 110 | 38 8 |
| Banner..... | Sept. 2 | 125 | 57 2 |
| Ligowo..... | Sept. 2 | 125 | 51 6 |
| Barley— | | | |
| Manchurian..... | Aug. 26 | 118 | 29 28 |
| Success..... | Aug. 8 | 100 | 21 32 |
| Wheat— | | | |
| Prelude..... | Aug. 15 | 107 | 19 20 |
| Marquis..... | Sept. 1 | 124 | 24 20 |
| Huron..... | Sept. 10 | 124 | 25 20 |

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Vegetable Garden.—Six varieties of cabbage and two of cauliflower were sown in the hotbed April 12, and transplanted June 5 and 6. Ready for use, July 13.

The following were sown in the open on May 3: *Beets*, three varieties, ready for use August 15. *Carrots*, three varieties, ready for use July 13. *Onions* all did well and gave good yields. *Lettuce*, five varieties, all did well. *Radish*, three varieties, much injured by white worms. *Peas*, seven varieties, all did well; Alaska, Gradus, and Gregory's Surprise ready for use July 15.

Tomatoes.—Five varieties promised well, but were destroyed by frost August 10. A few ripe fruits had been gathered before that date.

Flowers.—The following annuals grew well and bloomed freely: Aster, chrysanthemum, petunia, nemesia, clarkia, stocks, nicotiana, phlox drummondii, and scabiosa.

Perennials, such as poppy, digitalis, achillaea, campanula, chrysanthemum, leucanthus, gypsophila, and carnations did well.

In flowering shrubs, the lilacs suffered a little from the cold and drought. The spiræas flowered well.

Red currants and strawberries gave excellent crops. Two hybrid apple trees, Charles and Sylvia, yielded some fruit.

EXPERIMENTS AT BEAVERLODGE, ALTA.

Experimental work at this point was carried on, as during the previous year, by Mr. W. D. Albright.

The year 1916 was unfavourable to crops in the Grande Prairie district, the weather at the beginning of the year being extremely cold, a minimum temperature of 43½ degrees below zero being recorded at Beaverlodge. Fall wheat and alfalfa suffered from the cold winter, and were not in a condition to withstand the unfavourable spring and early summer. Spring opened early and dry, not much precipitation being recorded until July. A severe frost on August 9 destroyed about three-quarters of the grain crop, and this was followed by another severe frost about a week later.

Three varieties of wheat were tried, the lowest, Prelude, yielding 5 bushels to the acre, while the highest, Huron, gave 34 bushels.

Victory oats yielded 98 bushels to the acre, and O.A.C. No. 21 barley, 30 bushels per acre, these being the highest yielding varieties of these grains.

Timothy and red clover gave very poor returns, owing to unfavourable weather conditions; the alfalfa gave only a fair crop, but western rye grass gave a very good yield.

Nine varieties of field roots were tried in duplicate plots, but adverse weather conditions delayed their growth, and the yields were low.

The results with garden vegetables were below the average.

Forty Manitoba maples and caraganas were wintered successfully, and transplanted from the nursery row.

A beginning was made with an experimental fruit plantation, consisting of apple trees, currant bushes, and raspberry canes. The apple trees and currant bushes made very promising development, but the raspberries were late in starting.

TABLE of Meteorological Observations taken at Beaverlodge, Alberta, from April 1, 1916, to March 31, 1917, showing maximum, minimum, and mean temperature, the highest and lowest for each month, with date of occurrence; also rainfall, snowfall, and total precipitation.

| Months. | Maximum. | Minimum. | Range. | Mean. | Highest. | Date. | Lowest. | Date. | Rainfall. | Snowfall. | Total Precipitation. | Number of days Precipitation. | Heaviest in 24 hours. | Date. |
|----------------|----------|----------|--------|-------|----------|---------|---------|-------|------------|-----------|----------------------|-------------------------------|-----------------------|---------|
| April..... | 51.46 | 29.30 | 22.16 | 40.38 | 62.0 | 13 & 25 | 21.0 | 15 | Ins. 0.086 | Ins. | Ins. 0.086 | 2 | Ins. 0.85 | 28 |
| May..... | 60.46 | 35.83 | 24.62 | 48.14 | 73.0 | 27 | 24.0 | 23 | 0.215 | ..... | 0.215 | 4 | 0.25 | 19 |
| June..... | 70.05 | 44.51 | 25.53 | 57.27 | 82.0 | 17 | 25.0 | 1 | 0.455 | ..... | 0.455 | 5 | 0.34 | 19 |
| July..... | 66.77 | 44.58 | 22.19 | 55.67 | 79.0 | 1 & 2 | 34.0 | 25 | 5.90 | ..... | 5.90 | 10 | 2.62 | 33 |
| August..... | 68.16 | 43.16 | 25.00 | 55.66 | 83.5 | 27 | 27.0 | 10 | 0.47 | ..... | 0.47 | 3 | 0.50 | 30 |
| September..... | 60.44 | 37.86 | 22.58 | 49.15 | 77.5 | 17 | 27.0 | 13 | 0.52 | ..... | 0.52 | 4 | 0.20 | 26 |
| October..... | 51.50 | 30.74 | 20.75 | 41.11 | 71.0 | 10 | 17.0 | 1 | 0.36 | 2.00 | 0.56 | 4 | 0.27 | 15 |
| November..... | 35.08 | 17.68 | 17.40 | 28.36 | 51.0 | 13 | -12.5 | 11 | ..... | 1.00 | 0.1 | 3 | 0.10 | 22 |
| December..... | 15.18 | -3.45 | 18.63 | 5.86 | 39.0 | 13 | -36.5 | 26 | ..... | 15.00 | 1.50 | 6 | 0.40 | 10 |
| January..... | 11.85 | -7.43 | 19.29 | 2.21 | 45.6 | 7 | -52.0 | 30 | ..... | 25.00 | 2.50 | 9 | 0.60 | 25 & 26 |
| February..... | 15.46 | -6.25 | 21.71 | 4.60 | 47.0 | 15 | -46.0 | 1 | 0.2 | 8.00 | 1.0 | 5 | 0.30 | 1 |
| March..... | 31.82 | 10.90 | 20.91 | 21.35 | 40.5 | 17 | -1.0 | 14 | ..... | 9.50 | 0.95 | 6 | 0.30 | 13 & 29 |
| | | | | | | | | | 9.61 | 61.50 | 15.76 | 61 | | |

NOTE.—Temperatures were not recorded on June 9, September 16, and December 2, therefore the mean temperature for June and September is for twenty-nine days only, and for December it is for thirty days only.

EXPERIMENTS AT FORTS SMITH, RESOLUTION AND PROVIDENCE.

FORT SMITH.

The experimental work was carried on partly at Fort Smith and partly at St. Bruno, about 20 miles distant.

Speaking generally, the season of 1916 was a favourable one, especially for vegetables. The spring opened early, and snow had disappeared by the end of April, and the land was ready for sowing by May 8-12.

Three varieties of carrots, four of onions, five of turnips, three of beets, and four of mangels were grown; also one variety of cabbage and two of tomatoes.

Five varieties of potatoes were tested.

Timely rains throughout the growing season, with a fair amount of warm weather, resulted in good yields of most garden crops. Tomatoes grew to good size, but did not mature, however, owing to lack of really hot weather. Potatoes were an excellent crop, Early Rose, Rochester Rose, and St. Albert Red (a local sort) giving the best returns.

Twelve acres of oats were sown at St. Bruno, and 2 acres at Fort Smith. In the former locality the growth was very rapid but heavy rains, at the time of heading out, destroyed the crop. At Fort Smith, where the oats had been sown earlier, the rain did no damage, and a good crop was obtained.

At the St. Bruno farm a herd of some seventy head of cattle is maintained during the summer. A pure-bred bull has been sent in to head this herd.

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FORT RESOLUTION.

The season of 1916 was not so favourable as the two preceding years. Spring was late in opening, cold weather continuing until the middle of May. Work on the land commenced May 13. A period of dry, cold weather followed seeding up to June 10, and from then on hot weather, with no rainfall, prevailed until July 3.

Under these conditions, germination was very slow, and it was not until after an abundant rainfall on July 17 and 18 that growth was general and vigorous. This was too late to allow many crops to mature before the first frosts of autumn.

Severe damage was done to the cereal crops by field mice. These appeared in myriads during the first half of September and, it is estimated, destroyed nine-tenths of the grain crops. Three varieties of oats were tested, two of wheat, and two of barley. All these were promising a good yield when practically destroyed by the mice. Early potatoes yielded a fair crop. Growth was delayed by drought, so that the tops were still green at the time of the first frost, September 10. Four varieties were tested.

Roots.—These were kept back by drought, and the yield was only average. Mice injured the turnips considerably. Carrots were almost a failure, owing to drought. The yield of prairie hay was not very heavy.

At present the mission has six oxen, a bull, and four cows.

Garden crops gave very light yields, owing to drought in the early part of the season. The young fruit trees made fair growth, but did not fruit.

Flowers bloomed fairly well.

METEOROLOGICAL OBSERVATIONS, 1917.

| Month. | Maximum | Minimum | Rainfall. | Depth of snow. |
|----------------|---------|---------|-----------|----------------|
| | ° | ° | Ins. | Ins. |
| January..... | -15.8 | -20.1 | ..... | 5 |
| February..... | - 8.3 | -19.5 | ..... | 10 |
| March..... | -14.3 | -19.4 | ..... | 5 |
| April..... | 37.4 | 17.3 | ..... | 00 |
| May..... | 54.5 | 31.7 | 0.21 | 2 |
| June..... | 65.5 | 41.4 | 0.28 | |
| July..... | 69.3 | 49 | 1.87 | |
| August..... | 64.5 | 42.5 | 1.13 | |
| September..... | 57.4 | 37 | 0.28 | |
| October..... | 34.7 | 23.4 | ..... | 5 |

FORT PROVIDENCE.

The mission farm at this fort is situated on the right bank of the Mackenzie River, some 40 miles from Great Slave Lake.

The farm dates from 1865, although then it consisted merely of a small garden before a little cabin built to accommodate two people. Two years later, in 1867, the Grey Nuns of Montreal arrived to found a convent. They brought some cattle with them, the land under cultivation was increased, and has grown steadily since. The area under field crops is now over 160 acres, while about 19½ acres is devoted to vegetables, fruits, and flowers.

Among vegetables, cabbage, cauliflower, turnips, beets, onions, carrots, radish, rhubarb, and peas, generally succeed well. In fruits, strawberries, currants, and raspberries are grown. In flowers, there is a profusion of bloom from about the end of May on, from field lilies, violets, roses, poppies, and stocks.

In 1916, potatoes were planted, May 18, 19, and 20. The earlier varieties came into use August 10. The yield of all sorts was an average one.

Other garden crops promised excellent yields, but early in June, vast numbers of grasshoppers appeared, the ground near the buildings being completely covered with them. At first they devoured the tender grass only, but soon invaded the gardens and ate everything except the potatoes and lettuce. They also cut down the young wheat, but it grew up again and gave a rather light yield. The sample, however, was excellent.

EXPERIMENTAL WORK AT SALMON ARM, B.C.

The growing season, and in fact the whole year, in this district was an abnormal one. The rainfall during the growing season was very light, and the summer very cool. The winter temperature showed a great range and, as a result, serious winter damage was done to many orchards where clean cultivation had been followed until late autumn, as this kept the trees growing until winter set in and, as a result, the wood was not sufficiently matured to withstand extreme temperatures.

In the orchards on Mr. Thos. A. Sharp's farm, where the experimental work is being carried on, cultivation ceased in July, the trees suffered very little winter injury, and a very good crop was gathered in 1916. Several varieties of apple fruited for the first time, and some of these seem promising. Of the present well-known commercial varieties, the Duchess, Yellow Transparent, Wealthy, MacIntosh Red, Grimes, and Jonathan appear to be the most satisfactory in the Salmon Arm district.

In pears, the Dr. Jules Guyot produced a fair crop of very fine fruit.

The Greengage and Washington plums did well, and are popular varieties for the market.

Of cherries, the Morello and Duke seem to be the only varieties hardy enough for the district.

Peach trees, some of which had borne a small crop in previous years, were killed back to the snow-line in the winter of 1915-16. Grapevines were also killed back, but made new growth during the summer, and may fruit in 1917.

Raspberries and currants fruited well. Blackberries were killed back.

A supply of home-grown carrot seed, gathered in 1915, was tested last season in comparison with commercial seed of the same variety. The results were strongly in favour of the home-grown seed, which germinated better, and produced more vigorous plants.

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METEOROLOGICAL RECORD, 1916-17.

| 1916. | Date of highest Temperature. | Degree. | Date of Lowest Temperature. | Degree. | Rainfall. | Snowfall. | Sunshine. |
|----------------|------------------------------|---------|-----------------------------|---------|-----------|-----------|-----------|
| | | | | | Ins. | Ins. | Hrs. Min. |
| April..... | 26 | 68 | 22 | 25 | 0.76 | ..... | 164 48 |
| May..... | 3 | 77 | 10 | 28 | 1.09 | ..... | 206 24 |
| June..... | 17 | 94 | 5-10 | 37 | 1.90 | ..... | 214 18 |
| July..... | 30 | 87 | 25 | 41 | 2.87 | ..... | 232 36 |
| August..... | 13 | 94 | 18 | 39 | 1.00 | ..... | 302 24 |
| September..... | 1 | 83 | 30 | 23 | 0.32 | ..... | 200 07 |
| October..... | 16 | 75 | 3 | 20 | 0.19 | ..... | 172 42 |
| November..... | 22 | 56 | 11 | 8 | 1.07 | 5 | 76 12 |
| December..... | 23 | 40 | 8 | -11 | ..... | 22½ | 33 12 |
| 1917. | | | | | | | |
| January..... | 8 | 38 | 30 | -31 | ..... | 36½ | 38 48 |
| February..... | 16 | 50 | 23 | -16 | ..... | 20 | 64 18 |
| March..... | 17-23-29 | 46 | 1 | -4 | ..... | 15½ | 121 24 |
| | | | | | 9.20 | 99½ | 1,825 12 |

DIVISION OF CHEMISTRY.

REPORT OF THE DOMINION CHEMIST, FRANK T. SHUTT, M.A., D.Sc.

Correspondence and Publicity.—The correspondence from farmers, dealing with matters relating to the economic improvement of soils, the use of manure and fertilizers, the nutritive value of feeding stuffs, forage crops, etc., has very considerably increased in volume during the past year and has been satisfactorily dealt with, and, as far as may have been possible, the samples of an agricultural nature (over 2,200) submitted by farmers have been examined and reported on. The campaign for greater production has also been assisted by the writing of special articles and bulletins.

SAMPLES received for Examination and Report during the twelve months ending March 31, 1917.

| | British Columbia. | Alberta. | Saskatchewan. | Manitoba. | Ontario. | Quebec. | New Brunswick. | Nova Scotia. | Prince Edward Island. | Total. |
|--|-------------------|----------|---------------|-----------|----------|---------|----------------|--------------|-----------------------|--------|
| Soils..... | 52 | 942 | 13 | 1 | 34 | 60 | 35 | 5 | ..... | 1,142 |
| Muds, mucks, and marls..... | 5 | ..... | ..... | ..... | 12 | 12 | 10 | ..... | 4 | 50 |
| Manures and fertilizers..... | 7 | 1 | 1 | ..... | 35 | 54 | 18 | 25 | ..... | 141 |
| Forage plants and fodders..... | 45 | 21 | 21 | 5 | 212 | 43 | 7 | 12 | 30 | 396 |
| Meat Inspection Division samples..... | ..... | ..... | ..... | ..... | 851 | ..... | ..... | ..... | ..... | 851 |
| Miscellaneous, including War Office supplies, dairy products, fungicides, etc..... | 11 | 11 | 3 | 2 | 776 | 41 | 8 | 8 | 1 | 861 |
| Waters, including rain and snow..... | 8 | 13 | 19 | 2 | 199 | 22 | 14 | 7 | 11 | 295 |
| | | | | | | | | | | 3,736 |

Meat Inspection Work.—The work in the examination of packing-house products submitted for analysis by the Meat Inspection Division, Health of Animals Branch, has increased. Over 800 samples in this connection have been analysed and reported on. Their classification may be given as follows:—

| <i>Nature of Sample.</i> | Number received. |
|--|---------------------|
| Lards, tallows, oils | 36 |
| Preserved meats, sausages, mince meats | 76 |
| Colouring and dye stuffs | 54 |
| Preservatives | 101 |
| Pickling solutions | 21 |
| Spices and condiments | 42 |
| Evaporated apples and waste | 462 |
| Miscellaneous | 29 |
| | 851 |

Agricultural Meteorological Research.—Progress has been made in the investigation dealing with the influence of seasonal conditions on crop growth. This research, now extended through the co-operation of the Meteorological Service, gives promise of results of wide-reaching importance to Canadian agriculture.

Soils from Irrigation Tracts in Alberta.—The examination of typical soils from tracts in southern Alberta about to be placed under irrigation has been proceeded with, 225 samples being submitted to analysis. This work was undertaken with a view to assisting the Department of the Interior in its reclassification of the areas involved into irrigable and non-irrigable lands.

Insecticides and Fungicides.—Analyses of a number of insecticides and fungicides have been made, and their indicated value recorded.

Fertilizing Value of Rain and Snow.—The fertilizing value of rain and snow has been determined throughout the year. This concludes the first decade's work in the investigation. The yearly average for the ten-year period shows that 6.583 pounds of nitrogen per acre, available for crop growth, have been furnished from this source.

Feeding Stuffs and Forage Crops.—Much valuable work has been accomplished by analytical determinations of the composition and relative nutritive value of a large number of mill feeds and forage crops. Directly or indirectly, prices of milling and industrial by-products of feeding value have reached figures hitherto unknown in the Dominion, and there is no immediate prospect of their reduction. Further, while many of the well-known feeds have been kept up to their standard quality, there have appeared on the market not a few that are exceedingly poor—some practically worthless, and these are sold at prices little, if anything, below those of feeds far superior in nutritive value. Under these conditions the economical purchasing of concentrates has become a problem of no small importance, one that it well repays to study closely, and especially will this be true on farms requiring large amounts of bought feed. More than ever before, the farmer must study not merely the relative prices of the various feeds upon the market, but also their composition, especially as to their percentages of protein, fat, and fibre. Price is not invariably and inevitably an indication of nutritive value. This we have repeatedly shown, and the farmer must endeavour to correlate price with composition before making his selection. If in this he needs assistance, we shall be glad to advise, provided he can furnish the necessary information as to prices and the quality of the feeds he has under consideration.

The by-products used as feeds find their value, chiefly: first in their protein content and, secondly, in their percentage of fat or oil. A low percentage of fibre enhances their nutritive value.

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Brans and Shorts.—During the year, examinations were made of samples taken from brans and shorts used in the feeding experiments at the Central Experimental Farm by the Division of Animal Husbandry. The samples fairly represent these products as milled and sold by several of the larger milling companies of Canada.

Bran.—In the brans, protein, the most valuable of the nutrients, ranged from 13.23 per cent to 15.58 per cent, with an average of 14.42 per cent. The average from a series of Canadian brans, analysed by us in 1903, was 14.52 per cent. In fat the members of the series differ from one another merely in fractions of one per cent, the average being 4.74 per cent. In fibre, recent samples show more variation than usual, the range being 7.91 per cent as a minimum and 11.19 per cent as a maximum, with an average of 9.80 per cent. The average for the 1908 samples was slightly higher, 10.40 per cent.

The Commercial Feeding Stuffs Act calls for the following standard for bran: protein not less than 14 per cent, fat not less than 3 per cent, and fibre not more than 10 per cent.

Shorts.—As in 1903, we find the shorts slightly higher than bran in protein content. The limits of these examined during the year are 15.41 per cent and 16.14 per cent, with an average of 15.74 per cent. The average for the 1908 samples was 15.93 per cent.

In fat, the samples now referred to vary from 3.16 per cent to 6.32 per cent, the average being 4.60 per cent, as compared with an average of 5.24 per cent of fat in the 1903 samples.

The fibre-content of shorts should be considerably lower than that of bran. The average of the present samples is 6.47 per cent, decidedly higher than that found in 1903, which was 5.23 per cent.

The standard quality fixed for shorts by the Commercial Feeding Stuffs Act reads: protein not less than 15 per cent, fat not less than 4 per cent, and fibre not more than 8 per cent.

Miscellaneous Mill Feeds.—Of the mill feeds sent in by farmers, many were found to be of exceedingly low nutritive value. Among such may be cited, particularly, laboratory numbers 27455 and 28738, which consisted essentially of fibrous oat hulls.

Effect of Rust on Wheat Straw.—The feeding value of straw from wheat affected with rust has been made the subject of an inquiry. The occurrence of rust in certain districts of Manitoba and Saskatchewan last season (1916) makes the results obtained of considerable importance at this time. Briefly, the data indicated that rust tends to arrest the development of the wheat plant, inducing a premature ripening of the plant and resulting in a straw of presumably greater feeding value than that of normally matured wheat and in a much shrivelled grain slightly higher in protein than the larger, plumper grain from rust-free wheat. The deduction as to the superior feeding quality of the rusted straw was made from the analysis based on its higher percentage of protein and its lower fibre-content, as compared with rust-free straw. It is worthy of note that several farmers reported that straw, more or less rusted, was eaten by cattle with avidity, and that it was taken in preference to fully mature rust-free straw. It, however, should be added that cattle entirely refuse straw that is very seriously affected with rust.

Relative Value of Field Roots.—The investigations regarding the feeding value of field roots—mangels, turnips and carrots—and the quality of sugar beets for factory purposes, as grown on the several Farms and Stations of the system, have been continued.

Yield and keeping quality are usually the two factors chiefly considered by the farmer in making his selection of varieties, and rightly so; but our investigation,

carried on since 1904, has conclusively shown that the several varieties offered for sale—and especially so in the case of mangels—differ considerably in their nutritive value. The nutritive value or feeding qualities of field roots will be measured by their dry-matter content and the percentages of sugar in the dry matter. Since difference in these particulars may in certain cases amount to almost 100 per cent, it will be in the interest of the farmer to consult these records when deciding on the varieties to grow.

Mangels.—Unfortunately, the season of 1916 at Ottawa was most unfavourable for root culture. Owing to an exceedingly wet spring, sowing was very late, and the summer was exceptionally hot and dry. These conditions, coupled with the fact that the roots under experiment were sown on a muck soil which was ill suited to withstand this untoward season, resulted in very poor yields of small roots which, taking the series—twenty-six varieties—as a whole, are decidedly lower in dry matter and sugar than those previously examined at Ottawa.

The variety, Giant Half Sugar White headed the list with 10.37 per cent of dry matter and 5.13 per cent of sugar, while at the bottom of the list appears the Svalof Red with but 6.24 per cent of dry matter and 0.92 per cent of sugar.

Mangels, Source of Seed.—Very interesting data are furnished in this connection, for they permit a comparison of the quality of mangels grown from Canadian seed produced on several of the Experimental Farms and Stations and from seed obtained in commerce, which was probably of United States or European origin.

Three varieties of mangels are represented in the series, and the roots analysed were all grown on the Central Experimental Farm, Ottawa.

In the case of Danish Sludstrup, seed from three Experimental Farms and Stations—Agassiz, B.C.; Charlottetown, P.E.I.; and Kentville, N.S.—and commercial seed was sown. In dry-matter content and sugar the roots from the Canadian-grown seed, in all three instances, have given higher results than those from commercial seed. It must be remarked, however, that the roots from the Kentville seed, though quite satisfactory as to dry matter, are markedly low in sugar, and that the Charlottetown seed produced roots but slightly superior to those from the purchased seed. Seed of Mammoth Long Red was used from three sources—Charlottetown, Ottawa, and commercial. The roots from the Charlottetown and Ottawa seed are practically identical as to composition, and approximately 2 per cent richer in dry matter than the mangels from the commercial seed. Similarly, the mangels from Canadian seed contain about twice as much sugar as those from the commercial.

The sources of seed used for the Yellow Intermediate variety were the same as for the Mammoth Long Red. The differences in dry matter between the roots are not marked, yet, such as they are, favour the mangels from Canadian-grown seed. Of the three, the roots from the Charlottetown seed are decidedly the richer in sugar.

It is very satisfactory to note that, throughout the series, the mangels from the Canadian-grown seed have proved superior to those from the commercial seed.

Sugar Beets for Factory Purposes.—During the season of 1916 three varieties of sugar beets were grown on seventeen Experimental Farms and Stations of the system. This inquiry as to the suitability of soil and climatic conditions in the several provinces for the growth of sugar beets for factory purposes was begun in 1902, and the data so amassed increase in value with each year's results. The work to date has conclusively shown that beets of excellent quality for sugar extraction have been produced in the larger number of provinces, and we are thus in a position to state that in so far as the quality of the raw material—the sugar beet—is concerned, the further development of the beet sugar industry in Canada might be successfully prosecuted at many points.

Hitherto, the seed used in this investigation has been procured from Messrs. Vilmorin, Andrieux et Cie., Paris, France, the noted breeders of sugar beets, the

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varieties being Vilmorin's Improved, Klein Wanzleben, and Très Riche. Owing to war conditions, however, we were unable to obtain a supply of seed from this firm for the season of 1916. This was most unfortunate, as thereby the continuity of the investigation was, in a certain measure, broken. We were, however, able to procure a supply of good, suitable seed through the courtesy of the Dominion Sugar Company, Wallaceburg, Ontario, though particulars as to the "breeding" of the seed and the names of the varieties supplied could not be furnished. The varieties used are designated German, Italian and Ontario, by which it is intended simply to indicate that the three lots of seed were grown in Germany, Italy and Ontario, respectively. Presumably, however, they are from varieties, the value of which for factory purposes has been well established, for the results give ample evidence of the high quality of the produce.

According to the superintendents' notes, the season of 1916 has been unfavourable for sugar-beet culture at a number of the Farms and Stations. Taken as a whole it has been a poor year from the climatic or seasonal standpoint; nevertheless, the data show the results to have been most satisfactory at a majority of the Farms and Stations. The average sugar content in juice of the beets at four of the seventeen localities was over 19 per cent; at six, between 13 and 19 per cent; at one, between 17 and 13 per cent; at two, between 14 and 16 per cent; and at two, between 12 and 14 per cent.

In addition to the foregoing series, in which the beets were grown on the Dominion Experimental Farms and Stations, a number of samples of sugar beets from farmers and others throughout the Dominion have been received and analysed.

Well Waters from Farm Homesteads.—The analysis of well waters from farm homesteads continues an important branch of our work.

It may be desirable to point out again that our work in this connection is restricted to the examination of farm supplies and those of creameries and cheese factories. Analysis cannot be undertaken of mineral waters, waters of alleged medicinal value, and the water supplies of cities and towns.

Farmers desiring an analysis should apply to the Division for the instruction form which gives directions regarding the quantity of water required, the method of collection, shipment, etc. A large number of water samples are received every year, which it is quite impossible to submit to analysis owing to insufficient quantity, dirty containers, etc. Expense and disappointment will be obviated if the "instructions" are first obtained. No fee is charged for the analysis, but the express charges on the sample must be prepaid.

In reporting the results to the sender of the sample, a full, detailed account is given of the nature of the pollution (where such has been found) and the possible means of purification.

The Year's Work in Water Analysis.—Classifying our reports on these waters, we find that 14 per cent were pronounced as of first-class quality; 25 per cent as suspicious and probably dangerous; 32 per cent as seriously polluted; and 19 per cent as too saline to be potable.

Fertilizer Materials.—The continued and ever-increasing interest in the subject of liming and the application of ground limestone has led to the analysis of samples of limestone from many parts of the Dominion. These, for the most part, have been sent in by provincial agricultural authorities or associations of farmers about to install a crushing plant for the manufacture of ground limestone. Limestones are of variable composition, and since their value for the preparation of ground limestone depends on their percentage of lime, it becomes a matter of great importance to know the richness of any particular outcrop or deposit before the work of grinding is undertaken. The carbonate of lime content of the samples examined during the year ranged from

52.18 to 97.75 per cent. Those containing over 90 per cent are considered of first quality.

Marl is a naturally occurring carbonate of lime, which, owing to its generally soft and friable nature when air-dried, can be readily prepared and easily and uniformly applied to the land. The work of the year has included the analysis of marl from deposits occurring in many parts of Canada. Samples that have been air-dried will, as a rule, contain from 50 to 75 per cent of carbonate of lime; those of superior quality may exceed 90 per cent.

The scarcity of potash in the fertilizer markets has made the analysis of wood-ashes, and ashes from various industrial processes, of particular interest. Information has been furnished as to the fertilizing value of city garbage, ashes etc., and analysis made of several other by-products of a similar character considered of no importance agriculturally.

As in previous years, the fertilizing value of a number of natural organic deposits, mucks, muds, etc., both of fresh and salt-water origin, has been determined. Many of these materials are useful amendments, while in others the plant-food constituents may be present in traces only. The use of air-dried peat and muck as an absorbent litter in the cow barn and piggery is extending. In this way much liquid manure is saved that would otherwise be lost, and the bulk or amount of manure available for application largely increased.

INVESTIGATIONAL WORK WITH FERTILIZERS.

The investigational work with fertilizers, under the immediate supervision of Mr. B. Leslie Emslie, C.D.A., F.C.S., has been considerably extended during the year, and is now carried on at nine of the Farms and Stations of the system.

Experiment "A."—This experiment, designed to ascertain the most profitable quantity and proportional composition of a fertilizer as judged by its influence throughout a three-year rotation period, embraces forty-eight fertilized or manured plots. In the year 1915, experiment "A" was commenced on the Experimental Farms and Stations at Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., and Agassiz, B.C.; and, in the year 1916, at Nappan, N.S., Lennoxville, Que., and Sidney, Vancouver Island, B.C.

Experiment "B."—This is an accompaniment of experiment "A," and was introduced at the Farms and Stations already named. Its object is to ascertain the relative efficiency of nitrate of soda and sulphate of ammonia as sources of nitrogen, and of acid phosphate, basic slag, and bone meal as sources of phosphoric acid. Experiment "B" embraces fifteen plots variously fertilized. The duration of the test is a three-year rotation period.

Seaweed-Fertilizer Experiment.—In order to ascertain the fertilizing value of dried, ground seaweed, prepared experimentally at Clarke's Harbour, N.S., during the summer of 1915, experiments with the material were conducted last season (1916) on the Farms and Stations at Charlottetown, P.E.I., Kentville, N.S., Nappan, N.S., Fredericton, N.B., Cap Rouge, Que., Lennoxville, Que., and Ottawa. In addition to these, a large number of co-operative experiments with the ground seaweed were conducted by farmers in the Maritime Provinces and Quebec. Whereas, in many instances, the results indicated no very appreciable influence of the seaweed fertilizer, in others—a large majority—the favourable effects were quite decided. The average results from over forty experiments reported showed that ground seaweed alone produced an appreciable increase, and, when supplemented with a phosphatic fertilizer, a quite notable increase over the yield from the unfertilized check plot. A plot with the phosphatic fertilizer alone yielded similarly to that which received ground seaweed alone.

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Experiments with Lime and Ground Limestone.—At the Experimental Station, Kentville, N.S., remarkable evidence of the beneficial influence of ground limestone—on the growth of clover particularly—has been obtained. It was evident that the ground limestone permitted a more profitable use of the various fertilizers applied in conjunction therewith.

At the Experimental Station, Cap Rouge, Que., an extensive and comprehensive experiment to ascertain the comparative influence of corresponding applications of burnt lime and ground limestone was commenced in the year 1916. The results from the first crop of the rotation have been recorded.

At the Experimental Station, Fredericton, N.B., waste lime, consisting of a mixture of burnt lime, hydrated lime and ground limestone (carbonate of lime) was employed in several experiments.

Miscellaneous Experiments.—Especially noteworthy are the experiments with market garden crops, at Fredericton, N.B. These have been conducted annually since the year 1914, and each year furnishes accumulating evidence of the greater profits which may be expected from the use of 15 tons, per acre, of manure with suitable fertilizers than from that of 30 tons per acre of manure alone.

An experiment designed to ascertain the comparative values of manure and clover in the maintenance of humus in the soil was commenced last year (1916) at Cap Rouge, Que.

Experiments with dog-fish scrap, conducted throughout a three-year rotation period at the Experimental Stations of Kentville, N.S., and Fredericton, N.B., were concluded last year (1916). The data thus secured indicate the fish scrap to have been a valuable source of nitrogen—not greatly inferior in this respect to nitrate of soda and sulphate of ammonia.

Other experiments, not less interesting than those singled out for special mention, are in progress.

DIVISION OF FIELD HUSBANDRY.

REPORT OF THE ASSISTANT DOMINION FIELD HUSBANDMAN, W. L. GRAHAM, B.S.A.

The work of the Field Husbandry Division for the past year was conducted along similar lines to those in former years, and included investigations in soil management, crop management and agricultural engineering. These investigations are being carried on at the several branch Experimental Farms and Stations and, in a limited way, at the Central Farm, Ottawa. With regard to the latter the fact is again emphasized that suitable land is not available for carrying on various important experimental tests that should be included and conducted by this Division.

Notwithstanding this handicap, the following data have been gathered during the season:—

WEATHER CONDITIONS AND CROP YIELDS.

The season was most unfavourable for seeding operations. The weather was excessively wet, making work on the land tedious and discouraging. After repeated interruptions, seeding was completed out of season, some areas being sown two and even three times to secure a stand. However, growth was rapid, with prospects for a fair harvest. Hay grew luxuriantly, and a bumper crop of good quality resulted. Grain also did well but ripened prematurely, thus giving a low yield of inferior quality. Roots, forage corn, and potatoes were only fair, but favourable harvest weather prevailed. Conditions for fall ploughing, which was completed in good season, were also satisfactory.

YIELD of Field Crops, Central Farm, 1916.

| Crop. | Area. | Total Yield. | | Average yield per acre. | |
|----------------|-------|--------------|-----------|-------------------------|-----------|
| | | Ton. lb. | Bush. lb. | Ton. lb. | Bush. lb. |
| Corn..... | 33 | 411 1,045 | | 12 941 | |
| Oats..... | 39 | | 1,534 30 | | 41 14 |
| Oat straw..... | 39 | 46 411 | | 1 370 | |
| Hay..... | 33 | 152 775 | | 4 1,235 | |
| Mangels..... | 3 | 31 735 | 1,254 35 | 10 912 | 413 12 |

Cost of Production of Field Crops.—The following data of the cost of production of corn, oats, and hay have been obtained for the year 1916. These results, as well as those for rotations, are determined from fixed values used from year to year regardless of fluctuations in labour and market prices:—

| Crop. | Area. | Yield per acre. | | Cost to Produce. | | |
|----------------|-------|-----------------|-------|------------------|----------|-------------|
| | | Tons. | Bush. | Per acre. | Per ton. | Per bushel. |
| Corn..... | 33 | 12.46 | | \$ 27.44 | 2 20 | |
| Oats..... | 39 | | 44.4 | 15.98 | | 27.3 |
| Oat straw..... | 39 | 1.19 | | 15.98 | 3 22 | |
| Hay..... | 33 | 4.62 | | 19.97 | 4 32 | |

ROTATION OF CROPS.

For various purposes, fifteen rotations are under way at this Farm. From these tests important conclusions have already been drawn, and the results now being obtained are providing valuable data. The rotations being conducted under regular farm conditions are as follows:—

Rotation "A" (five years' duration).—Hoed crop, manured; seeded down with clovers and grass; clover hay, top dressed with manure in autumn; timothy hay, field ploughed in August, top worked and ribbed up in October; grain, seeded down with red clover to be ploughed under the following spring, when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass, seeds top-dressed with manure in autumn; clover hay, ploughed in autumn; grain seeded down with clovers and grass; clover hay.

Rotation "C" (four years' duration).—Hoed crop, manured; grain seeded down with clover and grass; clover hay; timothy hay, field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay.

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Soiling Crop Rotation "R" (three years' duration).—Corn for early fall feed, manured; peas and oats to cut green, seeded down with clovers and grass; clover hay to cut green.

The records for the past year from the rotations outlined in the foregoing are given herewith.

Cost, Returns, and Net Profits or Losses of Rotations "A," "B," "C," "D," and "R," 1916.

| Rotation. | Cost to operate per acre. | Value of returns per acre. | Profit or loss per acre. |
|--------------------------------|---------------------------|----------------------------|--------------------------|
| | \$ c. | \$ c. | \$ c. |
| A (five years' duration)..... | 17 73 | 19 32 | 1 59 |
| B (five years' duration)..... | 17 58 | 16 75 | -0 83 |
| C (four years' duration)..... | 17 69 | 17 16 | -0 53 |
| D (three years' duration)..... | 20 29 | 19 64 | -0 65 |
| R (three years' duration)..... | 18 73 | 24 66 | 5 93 |

CULTURAL INVESTIGATIONS.

Shallow Ploughing and Subsoiling versus Deep Ploughing.—For this experiment two four-year rotations are used, differing only in the preparation of the sod areas, for roots or corn, as indicated in the foregoing heading. The results to date have failed to show any decided advantage in favour of either method.

Commercial Fertilizer as a Part Substitute for Barnyard Manure.—Four four-year rotations are used in this experiment, which is designed to supply information regarding the fertilizer merits of:—

- (1) No manure or fertilizers, but pastured one year in four.
- (2) Barnyard manure.
- (3) Complete commercial fertilizer.
- (4) Barnyard manure and commercial fertilizer.

Again the results show a distinct advantage in using barnyard manure alone over commercial fertilizers alone for this soil, but indicate a possibility of combining the two when barnyard manure is scarce or high priced.

DRAINAGE.

In the autumn of 1916 the already efficient drainage system of the Farm was extended to drain rotation areas "B," "C," and "D." The main drain is completed, and laterals have been placed in those plots broken this season. It is purposed to drain the remaining areas of these rotations as the plots come under the plough.

MISCELLANEOUS.

During the year, besides attending to the duties of the Division, considerable time was devoted to field crop and fall fair judging. Also, ten weeks during the summer were taken up with agricultural land classification work for the Provincial Government of New Brunswick.

DIVISION OF ANIMAL HUSBANDRY.

REPORT OF THE DOMINION ANIMAL HUSBANDMAN,
E. S. ARCHIBALD, B.A., B.S.A.

A very successful year may be reported for the live stock on the Central Experimental Farm. The conditions as to housing, feeding, and general management of the stock were excellent. The abundant supply of ensilage remaining over from the previous winter, and the generous quantity of green feeds supplied by the Field Husbandry Division, maintained the milk flow of the cows and the growth of the young cattle, in spite of poor pastures and partial crop failures. The pasture areas are still much too limited for progressive work with the sheep and swine.

There are now 528 head of live stock in the stables, made up as follows: 153 dairy cattle, 31 horses, 156 sheep, and 188 swine. All the live stock have made a very good showing during the past year. The amount of experimental work was greater than the previous year, and more satisfactory. The sales of dairy products amounted to \$12,650.16; of dairy cattle, \$4,237; of sheep, of mutton, and wool, \$1,535.99; and of swine, for breeding purposes and for pork, \$4,360.69. These sales, coupled with the increased values of the various herds and flocks, the value of manure and the horse labour supplied to other Divisions, makes a sum total of \$44,204.87, which is an excellent return from the live stock on a 200-acre farm.

HORSES.

The horses do all the labour connected with the various Divisions on this Farm. At present there are thirty-one head of horses, which include twenty-three draught horses and draught colts, four expressers, and four drivers. The heavy draught horses include four imported Clydesdale mares, one Canadian-bred Clydesdale mare, and two grade Clydesdale mares. All the horses are in excellent condition. Breeding operations with horses have been very successful on this Farm during the past year, and the crop of excellent filly foals is making substantial progress. One of the imported Clydesdale mares has, this spring, again dropped a splendid foal, and four other mares give every promise of foaling normally. Experimental work along the lines of feeding, care, and management of pregnant mares and foals is most promising for the future.

The horse labour supplied to the various Divisions for the past year amounted to 7,635 days, which, at the conservative valuation of 70 cents per day, gives a total return of \$5,344.50.

Considerable experimental feeding with work horses has been conducted during the past year, this work being largely an accurate comparison of crushed *versus* whole grains for work horses.

BEEF CATTLE.

During the past fiscal year, some Shorthorn calves were purchased with a view of obtaining figures as to the production and marketing of baby beef.

DAIRY CATTLE.

The pure-bred dairy herds are Ayrshire, French-Canadian, Holstein, and Jersey. All these herds have given satisfactory returns. The total number of pure-bred cattle of the four above-mentioned breeds now amounts to 134 head.

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Dairy Cattle Feeding Experiments.—A number of new phases of dairy cattle feeding experimental work have been undertaken during the year. The four lines of work given greatest prominence were: first, an investigation into the most successful succulent roughages for summer feeding, largely a comparison of ensilage *versus* soiling crops; secondly, the study of the protein values of various concentrated meals on the markets, and the amounts of meals which may be profitably fed the milch cows; thirdly, a study of the comparative values of roots of various classes for feeding of milch cows; and, fourthly, a continuation of the work of investigating the most economical methods of calf rearing, with and without whole milk, skim-milk, and other dairy by-products in conjunction with various calf meals.

Milking Machines.—Another very successful year has been completed in the investigation of the commercial values of mechanical milkers. In addition to the two original machines, namely, the Sharples and Burrell-Lawrence-Kennedy, used for this investigation, there have been added the Empire, Lister, Omega, and Half-way milkers. Although all this work is not being accurately checked bacteriologically, yet many interesting bacteriological analyses have been made to compare these machines as to cleanliness, and also in the study of best methods of cleaning. Valuable data regarding the comparative commercial and pathological values of these machines have been gathered.

Dairy Cow Returns.—Again the quality of the dairy cattle on the Central Experimental Farm has shown marked improvement. The average profit per cow has again increased over \$28.97 per annum, due largely to increased production, but also to an increased value of butter, amounting to 5 cents per pound. Particular attention is drawn to the fact that many of the best cows have not completed their lactation periods at the end of the fiscal year, hence the following table in itself is not a definite criterion in the comparison of the breeds. Following is a brief summary showing the returns of some of the cows, the profits being based on the following valuations: Butter, 35 cents per pound; skim-milk, 20 cents per hundred-weight; pasture, \$1 per head per month; hay, \$7 per ton; meal, \$25 per ton; and other roughages at the usual cost prices. Attention is drawn to the marked increase in both production and profits of the best five animals in each breed.

It should also be noted that butter valued at 35 cents per pound and skim-milk at 20 cents per hundredweight is equivalent to milk at only \$1.80 per hundred pounds, while in reality the manufacture of the fancy cheeses sold in large quantities from this Farm realized \$3 per hundredweight on the milk. However, the butter basis is fair for the comparison of the various breeds in these stables, as well as with the average herds throughout Canada.

SOME Dairy Herd Records, Central Experimental Farm, 1916.

| No. of Head. | Age. | | Breed. | Average Days in Milk. | Average pounds Milk produced. | Average per cent Fat. | Average profit over Feed |
|--------------|--------|-----------|----------------------------|-----------------------|-------------------------------|-----------------------|--|
| | Years. | | | | | | (Labour, manure, and Calf not included). |
| | | | | Days. | Lb. | % | \$ |
| 58 | 2 | and over. | All breeds and grades..... | 353 | 9,303.2 | 3.91 | 105.86 |
| 5 | 2 | " | Ayrshire..... | 416 | 11,609.6 | 3.78 | 127.30 |
| 5 | 2 | " | Canadian..... | 357 | 7,360 | 4.79 | 104.98 |
| 4 | 5 | " | Grade Ayrshires..... | 384 | 10,173 | 4.10 | 124.78 |
| 5 | 4 | " | Grade Holsteins..... | 415 | 13,571 | 3.67 | 154.78 |
| 5 | 2 | " | Holstein..... | 305 | 14,520 | 3.48 | 152.24 |
| 5 | 4 | " | Jersey..... | 394 | 7,861.7 | 5.46 | 135.88 |

SHEEP.

Although the lack of pasture still is a great hindrance in the investigational work with sheep, yet this class of stock made an excellent showing during the past year, due largely to the high market values of lamb, mutton, and wool. Breeding work on a small scale with Shropshires and Leicesters has been most successful. There are now 156 head of breeding stock in the pens.

SWINE.

Considering the shortage of pasture, another very successful year is to be reported for swine husbandry on this Farm. At present there are 188 head of swine in the pens. Three breeds are maintained, namely, Yorkshires, Berkshires, and Tamworths. Many swine experts claim that there are at this Farm some of the finest breeding sows in Canada.

Several lines of investigational work in the feeding of swine have been conducted during the past year. Briefly, these are: (1) the value of tankage and other foodstuffs as milk substitutes for young pigs during and after weaning; (2) the values of soiling crops for the summer feeding of shoats in the dry lot; (3) the most economical methods of feeding, comparing the hopper grinders and self-feeders with regular hand feeding; (4) the best rations for finishing shoats for the market, and the comparative values of the protein contained in various concentrated meals for the feeding of market hogs.

BUILDING PLANS.

The Animal Husbandry Division has again, during the past fiscal year, finished the preparation of plans and brief specifications of live-stock buildings for the branch Farms. These plans have been, in turn, passed on to the Department of Public Works, and have there been used as patterns for the completed plans used in the construction of these buildings.

Many plans and specifications of farm buildings have been sent free of charge to farmers throughout Canada. These plans illustrate the various economical types of farmer's barns best suited to their needs. In all, 550 blue-prints of live-stock buildings have been made and distributed. This number is less than that of last year, which decrease is accounted for largely by the loss of our draughtsman, who enlisted. Undoubtedly, also, fewer farmers are building new or remodelling buildings in these times. Many excellent barns of various sizes and types have been constructed after these plans, to the marked satisfaction of their owners.

MISCELLANEOUS.

The Dominion Animal Husbandman, in addition to his duties at the Central Experimental Farm, has officially visited, at least once during the year, all of the branch Experimental Farms in Canada where live-stock work is being conducted. He and his assistants have also spent a great deal of time attending a large number of meetings in various parts of Canada, judging at numerous exhibitions, assisting at live-stock short courses, and studying live-stock conditions and the needs for experimental and demonstrational work relating to live stock.

DIVISION OF HORTICULTURE.

REPORT OF THE DOMINION HORTICULTURIST, W. T. MACCOUN.

The work of the Division of Horticulture may be divided into six main parts, relating to pomology, vegetable gardening, ornamental gardening, plant breeding, correspondence and office work, and work in connection with the branch Farms and Stations. These naturally overlap, but they indicate the principal lines of effort.

Under pomology is included the study of varieties of fruits for the purpose of getting information in regard to yield, season, quality, and profit. There is also the identification, classification, and description of the fruits, together with their propagation, planting, and care, and also experiments in cultural methods, including spraying. The exhibition and judging of fruits may also be grouped under pomology.

Vegetable gardening includes the testing of varieties to compare different strains of the same variety, and the relative merits of different varieties in regard to yield, quality, season, etc. Cultural methods and spraying are also dealt with, and the study of commercial methods, both in the field and under glass.

Ornamental gardening has to do with the cultivation of ornamental trees, shrubs, and herbaceous plants, with the study of their different characteristics, including height, form, colouring, and season of bloom, so that information will be available to Canadians to enable them to plant their places in such a way that the trees, shrubs, and herbaceous plants will blend or be contrasted with one another to form pleasing landscape effects. The forest belts and windbreaks are also included in this part of the work.

Plant breeding in the Horticultural Division is carried on from year to year in the endeavour to improve fruits, vegetables, and ornamental plants by cross-breeding and selection, and to study the laws of inheritance in different kinds and varieties of horticultural plants.

The correspondence and other office work of the Horticultural Division is growing rapidly. Of the letters received a large proportion require technical information, and it is believed that through the correspondence much assistance is rendered. The person who asks for information by letter is the one most likely to put into practice the advice given.

Much of the time of the writer is devoted to the interests of the branch Farms and Stations, the work having grown rapidly in recent years. It is the aim to help the superintendents develop the horticultural work and so to systematize the work that the results will be made of the greatest value to the people of Canada. Material such as plants, seeds, labels, record books, and other things are furnished the branch Farms and Stations from the Central Farm.

As in previous years, the writer visited the branch Farms and Stations in 1916, and conferred with the superintendents in regard to horticultural matters.

FRUITS.

Notwithstanding the very unfavourable season for apples in the province of Ontario, the crop at the Central Experimental Farm was the best one in its history. Owing to the wet weather of May and June, there was a very serious development of apple scab on both foliage and fruit in unsprayed orchards, resulting in reducing the quantity and quality of the fruit. Trees were thoroughly sprayed on the Central Farm, and the good results from this work were very apparent.

There is now such a large proportion of really hardy varieties of apples in the orchards at Ottawa that good crops are assured on some varieties practically every

year, as the hardiest sorts are more regular bearers than those which, at Ottawa, are nearer the northern limit of their successful culture.

New Varieties of Apples Originated at Ottawa.—Reference has been made in the report from time to time to the new varieties of apples originated in the Horticultural Division. Additional varieties of great merit fruit each year, and it is difficult to decide which to retain, but there are so many places in Canada where the varieties at present on the market are either too tender or do not cover the season well, or are not good enough in quality, that a variety which might not be desirable in one place is very desirable in another, hence more are retained than would otherwise be the case. These new varieties, in addition to being tested at the Central Farm, are sent from year to year to the branch Farms and Stations, and in a few years it will be known whether they are better suited for the districts they are being tested in than are others which have heretofore been grown there. Some of the most promising varieties of these new apples are Ambo, Brock, Diana, Donald, Elmer, Joyce, Melba, Niobe, Pedro, Rocket, Rupert and Thurso.

The very great importance of having more and better varieties of hardy plums is admitted. The European, *Domestica*, or so-called "blue" plums are not quite hardy enough for parts of Canada as cold as at Ottawa, and while there is sometimes a crop of these, they are not reliable bearers. In the native red plum and the native American plum there are two species, however, which furnish many hardy varieties, and while most of these are not quite good enough in quality to compare favourably with the European plums, there are a few which are very desirable. The Cheney is one of these. It is one of the earliest and does well in the colder parts of Ontario and Quebec and in the Prairie Provinces. The Assiniboine is also an early variety which has done well at the Experimental Farm, Indian Head, Sask. From the native plums of Manitoba will, no doubt, be originated new varieties especially suited for conditions there. The American plums cross readily with the Japanese, and the Omaha and Emerald plums, which have been tested at Ottawa for a number of years, are very desirable varieties resulting from this cross. Some cross-breeding work with plums is done each year at Ottawa, and was continued in 1916.

The development of a hardier race of strawberries, with better-flavoured fruit, is being attempted at Ottawa by crossing the cultivated varieties with the wild species from different parts of Canada.

Fruits at the Experimental Station, Summerland, B.C.—The first orchards were planted at the Experimental Station, Summerland, B.C., in 1916, when apples, pears, plums, peaches, cherries, apricots and small fruits were set out. As irrigation is an important factor in the successful cultivation of fruits in this district an extensive series of experiments in irrigating fruit trees was begun there.

Fruits at the Experimental Station, Morden, Man., in 1916.—At the new Experimental Station, Morden, Man., there is no natural protection for fruit trees, so in 1915 caragana hedges for windbreaks were set out in the area where the first orchards were to be planted, so that these would have a start before the fruit trees were set out in 1916. In 1916, the first orchards and bush-fruit plantations were planted. About one thousand trees were set out, mainly apple trees, but a considerable number of plum trees also, and, in addition, some 27,000 seedling apple trees were planted close together in temporary rows. After these have gone through several winters it will be possible to tell which are the hardiest, and from the latter, it is hoped, will be obtained something better than is at present available for the prairies. Plantations of small fruits were also established.

Fruits at the other Branch Farms and Stations.—Good orchards have now been established at most of the branch Farms and Stations, and very useful data are being accumulated. It is in the Prairie Provinces where it is most difficult to grow trees

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fruits, and the orchards there are, from time to time, badly injured by frost. It is at such times that the value of the cross-bred apples originated by the late Dr. Wm. Saunders is demonstrated. For instance, in the winter of 1915-16, apple trees of the ordinary commercial varieties which had been bearing well at the Experimental Station, Lethbridge, Alta., were killed, while certain of the cross-bred varieties remained uninjured.

VEGETABLES.

Vegetables have been given much prominence in the horticultural work of the Experimental Farms ever since they were organized. It is now possible for a settler in almost any part of Canada to learn what varieties are best suited to his district, tests having been made far north at the substations in the Peace River and Mackenzie districts, in addition to those conducted at the many Experimental Farms and Stations scattered throughout Canada. The cultural tests, which were begun in more recent years, are proving very useful also, as, in addition to knowing what to grow, it is very important to know how to grow it, and in a country as large as Canada the same method is not always suitable for each part. An interesting result was obtained at Ottawa in 1916 with garden peas. Brush was used for supporting the vines of nineteen varieties on a certain area, while a similar area was left unbrushed. There was a decidedly greater yield from the area which was unbrushed—quite a surprising result. This experiment will be continued, as the general impression is that brushing peas will ensure a larger yield, and, doubtless, it will in some seasons and some places. The importance of obtaining seed potatoes from sources where vitality of the seed is strong was again demonstrated at Ottawa in 1916, where much larger yields were obtained from seed from other parts of Canada than from Ottawa-grown seed. The value of "sprouting" potatoes before planting was again demonstrated in 1916.

Irrigation of Vegetables.—There was a very heavy precipitation during the spring of 1916, and it was not until late in July that there was any need of irrigation from the overhead irrigation system at Ottawa, but the latter part of the summer was very dry, and marked increases from irrigation were obtained in the crops of cauliflower, cabbage, celery, ripe beans, and corn.

Growing Vegetable Seed.—Experiments were continued in 1916 in the growing of different kinds of vegetable seeds in order to get more information in regard to methods of growing each kind, and the yield which could be obtained. Very good seed of beets, carrots, parsnips, celery, cabbage, onions, spinach, and lettuce was grown.

Comparison of the crops from home-grown and imported seed shows that quite as good, or better, crops can be grown from home-grown as from imported seed if the seed has been obtained from good stock plants.

Developing Early Vegetables.—Experiments are being continued in the selection and cross-breeding of different kinds of vegetables in order to obtain earlier strains. The Alacrity tomato and Early Malcolm corn are two good varieties developed at the Central Experimental Farm, which are now in the trade. Especial attention is being paid to peas, beans, tomatoes, corn, and onions.

Information to Vacant Lot Gardeners.—The Horticultural Division did much work towards the close of the fiscal year in connection with vacant lot gardening and home vegetable gardening. Two pamphlets were published to meet the demand for information, and hundreds of letters coming direct to the Division or through the information bureau were dealt with.

ORNAMENTAL GARDENING.

Although, during the war, special attention is being paid to the economic side of horticulture, the ornamental side has not been neglected. Hence, the testing of varieties of garden plants has been continued, cultural experiments are being tried, and at all the Farms and Stations the endeavour has been made to make the grounds attractive so as to try and induce farmers, especially, to do something more to beautify their homes so that there will be a greater incentive for their sons to come back to the farm when the war is over.

CEREAL DIVISION.

REPORT OF THE DOMINION CEREALIST, CHAS. E. SAUNDERS, B.A., Ph.D.

THE SEASON.

In contrast with the year 1915, the season of 1916 proved exceptionally unfavourable for cereals in many large districts. Indeed it is doubtful whether any year during the past quarter of a century was less favourable. It is true that in some parts of Canada the crops were excellent, but the areas where the crops were poor were very large. In the east, a large section of country suffered from excessive rains in April, May, and June, so that many fields which might have been sown with cereals had to be devoted to other crops; and, in some cases, where cereals were sown the young plants started under very adverse conditions, due to excessive moisture. The prolonged wet weather was followed almost immediately by intense heat, which continued almost up to harvest time, and prevented the grain from filling properly. Such conditions were, of course, particularly hard on cereal crops.

In the central and western provinces—Manitoba, Saskatchewan, and Alberta—there were districts where very large crops were produced, but the total yield of grain in these three provinces was rather low. Unusual damage was caused by rust, frost, and hail. Some fortunate areas, such as southern Alberta, for instance, escaped damage almost entirely, but the loss from rust in southern Manitoba and southern Saskatchewan was very heavy; and there were heavy losses in the northern parts of Saskatchewan and Alberta from an altogether exceptional frost which occurred about the 10th of August, injuring cereals on many of the low-lying fields over a large area of country. Hail caused unusual losses in several districts, the number of severe storms being quite abnormal.

In making comparisons between the crops of 1915 and those of 1916, it should be remembered that the former year was quite extraordinarily favourable. Any comparisons which are to be made should therefore take into account the average crop for a series of years rather than the remarkable crop of 1915.

MARQUIS WHEAT.

As usual, this extraordinary variety has again given remarkable returns. Last season, it created what is probably a world's record for the yield of spring wheat from a large field, when a farmer, in Southern Alberta, harvested 54,395 bushels from 1,000 acres of land. Such a wonderful yield would scarcely be credited were it not properly attested by trustworthy persons.

DISTRIBUTION OF SAMPLES OF SEED.

The annual free distribution of samples of seed grain has again been conducted. Some modifications were made in the manner of carrying it on, the chief of these being that printed application forms were furnished to those who wished to receive samples.

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In this way, it was found possible more readily to secure the desired information as to the conditions on the farms of the applicants, the results obtained from varieties previously tested, etc. As the printed forms facilitated the making of satisfactory applications, and as the announcement of the distribution in the public press was made somewhat earlier than usual, we should doubtless have had a great increase in the number of acceptable applications even without the stimulus which was furnished by high prices and scarcity of seed. As it was, our stocks of nearly all varieties—though larger than the quantities distributed in the previous year—proved quite inadequate. The total distribution this year is more than double that of last year.

The number of samples of seed grain sent out from Ottawa to the various provinces were as follows: Prince Edward Island, 36; Nova Scotia, 312; New Brunswick, 158; Quebec, 2,850; Ontario, 1,176; Manitoba, 544; Saskatchewan, 1,107; Alberta, 1,060; British Columbia, 331. Total, 7,574.

TESTS OF VARIETIES OF CEREALS.

Although the weather at Ottawa was very unfavourable for cereals, and the annual tests were therefore carried out with unusual difficulty, nevertheless some good results were obtained. At most of the branch Experimental Farms and Stations good crops were secured and useful observations were made at all of them, except at Rosthern, Sask., where the crops were entirely destroyed by hail.

Plots of Cereals, etc., at Ottawa.—In 1916, there were sown at Ottawa, 883 very small plots of cross-bred varieties not yet fixed in character, and 498 plots (chiefly small) of new varieties and selections which are now true to type and are being increased for test on a larger scale.

The regular test plots of grain, for the study and comparison of varieties, are one-sixtieth of an acre each. The number of plots of this size, last season, was as follows: Spring wheat, 254; barley, 287; field peas, 64, and flax, 31, making a total of 636 plots, and representing about 600 varieties and selected strains.

The total number of plots of all sizes was 2,017.

New varieties.—In addition to the regular tests made every year at Ottawa, a few extraordinarily promising sorts of cereals and peas are being tried at other localities on the branch Experimental Farms. It is expected that, in the near future, at least one new variety of hulless barley and one of hulless oats and one of early ripening, hard, spring wheat will be introduced to the public. The progress made in this work is necessarily slow, as it is important to avoid the premature introduction of varieties which have not been sufficiently tested.

NEW EXPERIMENTAL FLOUR MILL.

With a view to the resumption, at as early a date as possible, of the important researches in milling and baking, a new and superior experimental flour mill has been purchased, to replace the one which was lost when the cereal building was burned a couple of years ago. The new mill is capable of grinding rapidly and satisfactorily quite small amounts of wheat, thus enabling us to make flour from varieties of which only a few pounds of seed can be spared.

DIVISION OF BOTANY.

REPORT OF THE DOMINION BOTANIST, H. T. GÜSSOW.

The administration of the plant-disease section under the Destructive Insect and Pest Act forms part of the duties of the Dominion Botanist. During the year the work in connection with the investigation into white pine blister rust was continued. In Ontario were begun control measures, such as extermination of diseased vegetation—pines and currants—and the work was placed on a systematic basis with the aim in view to prevent the spreading of this disease, the seriousness of which is now being universally recognized. In New Brunswick and Nova Scotia, we are able to report that this rust has not become established. In the province of Quebec, a careful search is now being conducted, particularly along the Maine border.

Another phase of work carried on under this Act relates to disease elimination in potatoes. Powdery scab is now quite under control. Other potato diseases are also being gradually eliminated, and it would be surprising if the systematic work now conducted according to a standard method of field and yield inspection should not result in a great improvement in the quality, purity of stock, and freedom from disease of seed potatoes, as well as in quantity of yield, since the latter has been found to be affected by the presence of disease to a far greater extent than by any other cause; in fact, this is perhaps one of the most important features of the work done with potatoes, that it has been established beyond any doubt that poor yield, formerly attributed to weak strains, to degeneration and other causes, is frequently due to the presence of diseases conveyed by the seed tuber, particularly leaf-roll and mosaic disease.

A thorough investigation of the severe grain-rust epidemic was carried on during the year. As a result, two field laboratories were established, one at Brandon and one at Indian Head, in charge of trained specialists, who will devote their time to a comprehensive study of the grain rust and related problems affecting the yield of our grain crops. During the year a coloured poster, describing the nature of grain rust, together with a popular account of this disease in bulletin form, was prepared.

In continuation of some work done during the previous year, several plots were sown with flax. As in the previous year, the samples were reported on by Mr. Lockhart, of Parkhill. Although the season was the driest on record in the province of Ontario, Mr. Lockhart pronounced these samples to be the finest flax he had yet seen grown in Canada. It is felt that as there is now a separate Division to deal with fibre plants, further work on flax may safely be left to that Division.

Several plots were also devoted to hemp, both for seed and fibre. The fibre was very favourably reported on by the Doon Twines Company, Limited, and a sample of the twine manufactured from it was sent to the Central Experimental Farm for inspection.

Several plots of soy beans, the seeds of which were obtained from the United States and France, were sown and, in both instances, the seeds ripened satisfactorily. These were analysed for oil content by the Dominion Chemist.

As castor oil is one of the most important commercial oils, the seeds of this plant were obtained from various countries of Europe and also from the United States, and sown after the danger of frost was over. A considerable quantity of ripe seeds with which to carry on work next season was obtained.

Several plots were devoted to black mustard and white mustard, these being the two chief mustards used in commerce. No difficulty was experienced in growing these two crops. Favourable reports on the quality were received from Messrs. Dunn & Co., of Hamilton, Ont.

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Chicory was also experimented with. The Dominion Chicory Company, of Montreal, reported that the sample of roots submitted to them was "excellent in every way."

A considerable area was devoted to the culture of medicinal plants. Opium poppy grew well, anise and dill ripened seeds satisfactorily, belladonna survived the preceding winter, and there were also several other species under observation.

Some miscellaneous crops such as lentil, chick pea, and hyacinth bean were experimented with, and in each case some ripe seeds were obtained.

The reports from the field laboratories at St. Catharines, Fredericton, and Charlottetown indicate that the officers in charge fully realized the importance of getting in close touch with the farmers. The interpretation and demonstration of practical results, the guidance and educational propaganda conducted right on the farmer's own fields, have greatly benefited the various communities. Several interesting observations have been made which will certainly prove of great value in the immediate future. Thus, for instance, it may be remembered that spraying of potatoes has not been a very general practice in some parts of the country. It was held that spraying would eat up all profits from raising potatoes in certain localities. Our experience being the very opposite of this, it was found on investigation that there existed in such localities, very poor yields, and the profits from growing potatoes were so small indeed that additional cost of production—such as spraying—would not have been profitable. The cause of the poor yields having been determined to be due to diseases that are by no means universally recognized by the practical farmers, but which reduce the yield from year to year, efforts were then made to start with a new sound seed supply, and by spraying the crop carefully the usual benefits from spraying were once more demonstrated.

Farmers whose turnips, cabbage, or similar crops were formerly greatly depreciated in value by club root are now being shown the beneficial results from the judicious use of lime. That lime exerts an inhibiting effect on club root has been known for many years, but it was not so much the question of liming as the question of when and how to apply it, which has now been successfully demonstrated.

The free distribution of pure cultures of nodule bacteria has gained in favour, and ten times the amount of cultures formerly sent out were asked for by farmers all over the Dominion. Reports indicate clearly that good stands of alfalfa are being secured by treating seed with cultures, while, in a good many cases, untreated check plots succumbed during the first winter.

DIVISION OF BEES.

REPORT OF THE APIARIST, F. W. L. SLADEN.

The outstanding feature of the year 1916 was the unusually large crop of honey from alsike and white clover produced in Ontario, Quebec, and Manitoba, principally due to the wet spring followed by fine, warm weather when the plants were in flower. The honey was sold at a fractional advance on the prices obtained in the previous year, and was eagerly bought up by housekeepers, sugar for canning fruits being high.

PRODUCTION AT THE EXPERIMENTAL FARMS.

Bees are now being kept on fifteen of the Dominion Experimental Farms. The highest yield of honey per colony in 1916 was obtained at the Central Farm, Ottawa, where thirty-five colonies, spring count, produced 8,269 pounds, an average of 236 pounds, valued at \$34 per colony. Second came Ste. Anne de la Pocatière, with 132 pound per colony; and third, Invermere, with 117 pounds per colony. The average yield

of honey in the fifteen apiaries was 61.9 pounds per colony, spring count, and the average price obtained for the honey was 15½ cents per pound, so that it realized \$9.69 to the colony.

A summary that has been prepared of the average annual yield of honey per colony at the different Experimental Farms during the four years 1913 to 1916, inclusive, shows that Nappan gave the highest yield, amounting to 115 pounds, which came principally from alsike, white clover, and goldenrod; Ottawa came second, producing 106 pounds, principally from alsike, white clover, and sweet clover; Lethbridge, Alta. (1914 to 1916 only) third, with 86 pounds, mainly from alfalfa; and Ste. Anne de la Pocatière, Que., fourth, with 62 pounds from alsike and white clover. While the yields at the other Farms and Stations, namely, Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., Brandon, Man., Indian Head, Sask., Lacombe, Alta., Invermere, B.C., Agassiz, B.C., and Sidney, B.C., were lower for various reasons, ample evidence has been obtained that bee-keeping is profitable at each of these places.

SURVEY WORK.

During the summer of 1916 the Apiarist visited each of the Farms at which bees were kept, and made detours into promising regions in order to study their possibilities for honey production, visiting apiaries and investigating in detail the species of plants from which the honey is gathered, and the weather conditions that are most favourable for abundant production. The conclusion was reached that honey crops that will compare favourably in size and quality with those to be obtained in the best regions in North America may be secured in selected places in the Ottawa River basin, including some of the northern valleys, where raspberry, alsike, and white clover, fireweed, and certain species of goldenrod and aster form successive sources of honey. For the further investigation of this region, a co-operative experiment with bee-keepers having apiaries situated at Montcerf, Que., Lytton, Que., and Thornloe, Ont., was carried out in 1916, and is being continued.

Other promising regions visited were the district east of Winnipeg, certain rich farming and swamp lands in the Maritime Provinces, and the alfalfa districts of southern Alberta. A two days' investigation at Melfort, Sask., showed that bee-keeping is worthy of attention as a side line in this northern district. An extension of the system of co-operative experiments to these and other districts has been organized.

POLLINATION OF ALFALFA.

Further study of the wild bees believed to be instrumental in pollinating alfalfa was made by the Apiarist in the western provinces. *Megachile latimanus* Ckll. was found to be by far the most useful species tripping the flowers in southern Alberta, and *M. perihirta* Ckll. in the dry interior of British Columbia. The honey-bee visits the flowers without tripping them, and the action of bumble-bees is uncertain.

EXPERIMENT WITH BEES FROM THE SOUTH.

Two experimental shipments of bees without combs were received in the spring at the Central Experimental Farm by express from two breeders in Alabama, United States. One of them, consisting of six 1-pound packages, was fourteen days en route, and only 17 ounces of bees were found to be alive on arrival. The other shipment, consisting of three 2-pound packages, with untested queens, costing \$9.75, with \$2.50 express charges, arrived in good condition on May 10, after four day's journey, and, after having been assisted a little with combs and brood from other colonies, produced 435 pounds of honey, and built up into five strong colonies fit for wintering.

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RESULTS FROM OUT-APIARIES.

Two colonies of bees from the Central Farm were placed on the Kazabazua Plains, Quebec, for the spring and summer. Each produced an average honey crop of 260 pounds, consisting of 66½ pounds of amber honey, principally from blueberry, 132 pounds of white honey, principally from white and alsike clover, and 61½ pounds from goldenrod.

A colony was placed in a swamp at Sully, Que., for the same period, and gave 220 pounds of honey, consisting of 34 pounds from blueberry, 132 pounds mainly from clover, and 54 pounds from goldenrod.

WINTERING EXPERIMENTS.

Twenty-eight colonies of bees were wintered in the bee cellar in the new apicultural building at the Central Experimental Farm, and investigations into the ventilation, relative humidity, and temperature of the bee cellar under different weather conditions, and their effects upon the bees were carried on throughout the winter.

Experiment with Winter Stores.—An experiment was made to compare different kinds of food consumed by bees during the winter.

One of the objects of this experiment was to discover the source or sources of the hard, granulated honey, associated with a heavy mortality of bees, that has been found in some winters in several apiaries in the Ottawa valley, including the apiary at the Central Farm in 1914-15 and 1915-16. Another object was to test the value of sugar syrup as a supplementary and also as a sole food for bees in winter.

In four colonies, wintered on stores collected between June 26 and July 13, mainly from alsike and white clover, the bees were found to cover an average of 5.1 combs per colony on April 17, the honey having granulated but little.

Three colonies on stores gathered between July 24 and August 8, largely from white sweet clover (*Melilotus alba*), covered an average of only 3.2 combs, much of the honey having granulated hard. Very significant was the condition of a colony belonging to this set that was wintered outside, this colony having occupied the north corner of one of the wintering cases. When this colony was examined on April 17 the bees covered only 2½ combs and the stores consisted of about one pound of granulated dried-up honey, the cappings having been torn open by the bees in an apparent endeavour to get liquid food. The combs thus presented the same appearance as those of the colonies that died or came through very weak in the two preceding winters.

Three colonies on stores collected after August 14, principally from goldenrod (chiefly *Solidago canadensis*) and buckwheat, covered an average of 3.8 combs, and the honey was not granulated.

Two colonies on undisturbed natural stores gathered at Ottawa throughout the season, chiefly towards its end, covered an average of 4.5 combs.

Eleven colonies on undisturbed natural stores supplemented with an average of 20 pounds sugar syrup each, covered an average of 5.1 combs. (Natural stores supplemented with sugar syrup also produced better results than natural stores alone in the two preceding winters.)

Three colonies on sugar syrup without honey covered 4.3 combs. One of these had all pollen cut out of the combs on October 25, and was found to cover 3.5 combs in spring.

Three colonies on stores gathered at Kazabazua and Sully, Que., consisting largely of honey from two species of goldenrod, *Solidago purberula* and *S. squarrosa*, covered an average of 5.2 combs.

Wintering Outside.—Wintering bees outside, four hives packed in shavings, in a case, in an enclosure sheltered from wind, without attention during the winter, con-

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tinues to prove successful in Ottawa, the average results of the last four years showing that the bees so wintered did better than those wintered in the cellar.

In 1916-17 sixteen colonies were thus wintered in four cases, each containing four colonies placed back to back, with 3 inches of planer shavings between the hives and the sides and bottom of the cases and 10 inches on top. The outside entrances, two facing southeast and two northwest, were reduced during the winter to $1\frac{1}{2}$ inches high by $\frac{3}{8}$ inch wide. The colonies wintered somewhat better than those in the cellar, the average number of combs covered per colony on April 17, 1917, in the fourteen colonies wintered on natural stores supplemented with sugar syrup being 5.4 as against 5.1 combs in eleven colonies in the cellar.

Experiment with sealed covers.—The eight hives in two of the cases were covered with double oilcloth, and the ventilators in the roofs of these cases were covered with pieces of wood, diminishing ventilation and increasing humidity. The eight hives in the other two cases had their oilcloth covers replaced by bran sacks, and the ventilators in the roofs of the cases were left open, thus allowing upward ventilation and reducing humidity. Taking the fourteen colonies on regular stores supplemented with sugar syrup, the result of the comparison was as follows:—

| | Average number of combs per colony on April 17. | Estimated average weight of stores remaining in hive, April 17. Lb. |
|--|--|---|
| Seven colonies, sealed covers | 6.5 | 15.4 |
| Seven colonies, upward ventilation | 4.3 | 8.4 |

WAX MOTH KILLED BY COLD.

A cage containing living wax moths (*Galleria mellonella*), with larvæ, pupæ, and probably eggs, was placed in the honey house in the middle of March, 1917. On the nights of March 18 and 19 the temperature in this house fell to 9°F. Next day all seemed to have been killed by the cold, and on May 30 no sign of life could be found in the cage.

PAPER CONTAINERS FOR HONEY.

In consequence of the high price and scarcity of tin pails and other containers for honey, an experiment in designing paper containers for granulated honey was started during the winter. Promising results were obtained by pouring the honey when commencing to granulate into 2-pound bags made of white bond paper, water-proofed with paraffin wax, the bags having been previously opened out on a wooden block and placed in attractive cartons.

BEE GARDEN.

The frontage between the apiary and the roadway near the apicultural building at the Central Experimental Farm has been laid out into plots in which some of the principal honey plants of Canada are being grown in order to study the effect of soil, weather, and other conditions upon the secretion of nectar.

GENERAL NOTES.

During the year the Apiarist attended and gave addresses by request at a meeting of the Leeds County Bee-keepers' Association, Athens, Ont., July 3; the annual convention of the Bee-keepers' Association of British Columbia at Vancouver, August 17; the annual convention of the Bee-keepers' Association of the Province of Quebec at Montreal, November 15; and the annual convention of the Ontario Bee-keepers' Association at Toronto, December 8 and 9; and he contributed papers to the annual convention of the Quebec County Bee-keepers' Association and the annual convention of the Manitoba Bee-keepers' Association. A number of articles, giving results of experiment and investigations, were contributed by the Apiarist to the bee-keeping and general press.

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DIVISION OF FORAGE PLANTS.

REPORT OF THE DOMINION AGROSTOLOGIST, M. O. MALTE, PH.D.

The work of the Division of Forage Plants is steadily and rather rapidly increasing, new lines of investigation being taken up every year.

VARIETY TESTS.

Variety tests are carried out chiefly with Indian corn and field roots, including mangels, swede and fall turnips, carrots, and sugar beets. Through the variety tests much valuable information is gained about the comparative value of different trade varieties for the different parts of the Dominion. This information, accumulated during a long series of years, is made available to the Canadian farmer through the Experimental Farms' publications.

As the value of the information gained from the variety tests largely depends upon the carefulness exercised in conducting them, and perhaps still more on the carefulness with which conclusions in general are drawn, the Division is endeavouring to take every precaution possible in order to be able to present to the farmers accurate data on the true value of the varieties under test. Thus, in order to eliminate, as far as may be, all errors liable to result from variations in soil conditions in the experimental field, each variety is tested in duplicate plots and the average yield of the two plots taken as an indication of the yielding capacity of the variety. At the Central Experimental Farm, where the Division is favoured with assistance from the chemical laboratory, analysis is made of all varieties of field roots tested. The analytical data thus secured help materially, when combined with the yielding capacity of the varieties, in the calculation of the comparative values of varieties.

With special reference to the results obtained from the variety tests with field roots this year, it must be admitted that they decidedly indicate that the seed available commercially this year was, generally speaking, somewhat inferior to that of previous years. This is, however, a condition that must be considered as a natural consequence of the present scarcity of field-root seed, and the tendency to deterioration thus experienced will quite naturally disappear as soon as the world's supply begins to return to the normal.

BREEDING WORK.

Alfalfa.—The breeding work with alfalfa which was started in 1912 has now progressed to a point that enables the Division to promise, within a short time, several new, distinct varieties. A number of families of alfalfa secured through self-fertilization of promising individual plants, and planted last year, exhibit a remarkable degree of uniformity, thus bearing out the statement made in last year's report that "the expectations of the Division with regards to the development of distinct varieties in the real sense of the word seem to be well founded." As, however, the new varieties still showed some indications of not breeding completely true to type, further selection was made this year from within them. The selected plants were self-fertilized but, owing to the unfavourable weather conditions, only a very small quantity of seed was secured.

Red Clover.—In red clover, the breeding work has chiefly been confined to breeding, through mass-selection, of hardy strains. The results so far obtained not only show that it is practicable to develop varieties carrying hardiness as a hereditary varietal

character, but they also indicate that it may be possible to increase the lasting ability of red clover by evolution of varieties of a perennial type. Special attention has been paid to this question during the last few years.

Grasses.—Since 1911, breeding work with timothy has steadily been progressing. Through repeated self-fertilization of selected individuals within a number of timothy families, a number of new varieties are being developed. Owing, however, to the fact that the plants from which selections first were made were of unknown, and, certainly, of hybrid origin, the breeding work is progressing rather slowly.

In 1912, a number of individual plants of western rye grass were singled out for breeding work. A few of the plants thus selected were used, the following year, as mother plants for new varieties. In the selection of the mother plants special attention was paid to those characters on which early and heavy hay crops of fine quality depend. The breeding work is progressing very satisfactorily and, in fact, at a quicker rate than that with timothy. In order to explain why distinct varieties of western rye grass appear to be comparatively easy to develop, it would be necessary to study in detail the natural propagation of the multitude of wild forms which constitute what is called western rye grass. Suffice it to say, in this connection, that automatic self-pollination has been observed in several wild varieties of western rye. These observations have been made in the Edmonton district, Alberta, where a very great number of varieties grow in the greatest profusion, and may explain, in part at least, why various forms of the western rye grass are comparatively constant, and therefore rather easy to fix by breeding as distinct varieties.

Some work with red top and meadow fescue was also conducted the last year, but, as this work is still in its infancy, no particular reference need be made to it.

Field roots.—With a view of developing improved varieties of field roots, selections were made of two varieties of mangels, and one variety each of swede turnips and carrots. As, however, the process of breeding field roots is of necessity rather slow, any statement as to any indications of the probable outcome would, at the present stage of the work, be premature.

HOME-GROWN VERSUS IMPORTED SEED.

Last year, the Division reported that seed of field roots, especially mangels and turnips, had been produced most successfully, during the year, on several of the Experimental Farms and Stations. Figures were quoted to the effect that experiments in field-root seed raising had given most satisfactory results in the provinces of Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. Results obtained this year confirm the statement that root seed growing can be made, a very profitable business in the Dominion.

Of special interest to the seed-buying farmer is the question whether field-root seed, grown in Canada, is capable of producing as valuable crops as imported seed. Up to the present, practically all the field-root seed used in the Dominion has been imported from European countries, and it is a rather widespread supposition that the European seed is superior to that raised this side of the Atlantic. It is often heard that the climate in the seed-raising countries in Europe is especially favourable to the production of high-class seed, and that, for this reason, Canada would not be able to compete with Europe as a root-seed-producing country.

In order to ascertain the truth of such assertions, *i.e.*, in order to ascertain the crop-producing ability of Canadian-grown seed in comparison with foreign-grown seed, a number of experiments were conducted by the Division of Forage Plants this year. Canadian-grown seed of a number of varieties of field roots was tested, side by side with the best commercial seed of the same varieties, at many of the Experimental Farms and Stations, and also on many private farms in Eastern Canada. Of special interest is the outcome of the experiments with Canadian-grown seed of Mammoth Long Red mangel, tested in comparison with commercial, imported seed.

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The Canadian-grown seed used in these experiments was raised at the Central Experimental Farm, Ottawa, from roots taken from the ordinary farm crop, practically without any selection at all. It was tested in comparison with commercial seed of the same variety. The crop realized from the Ottawa-grown seed was, on an average, over 10 per cent higher than the crop produced by the commercial seed.

Similar results were obtained in experiments with other varieties of mangels, and also with swede turnips, and under the circumstances the Division is in a position to report that Canadian-grown seed of varieties of field roots has proven, on the whole, superior to imported seed of the same varieties.

FORAGE CROP EXPERIMENTS IN THE YUKON TERRITORY.

In order to investigate the agricultural possibilities in the Yukon, especially in regard to production of forage crops, the Dominion Agrostologist was authorized to visit the Dawson district for about two weeks. The visit was prompted by the desire of the department to reduce, if possible, the extraordinarily high prices that must be paid for forage in the Yukon as long as it has to be imported from the outside. If it were possible to raise locally what feed is needed in the territory, many farm products would be available at vastly reduced prices. The successful growing of hay and fodder in general would also tend to lower the price for horse labour considerably.

At present the question of securing hay, for horse feed especially, is of primary importance. A certain quantity of wild hay is used for the purpose, but relying on wild hay is rather unsatisfactory. In the first place, it is not easily available in sufficient quantities and, furthermore, it is not, as a rule, rich enough for hard-working animals. Of special importance is therefore the question whether tame hay, such as timothy, western rye, clover, alfalfa, etc., can be grown successfully in the Yukon.

During the visit of the Dominion Agrostologist to Dawson, arrangements were made to start experiments with various forage plants immediately. It is most fortunate that the Experimental Farms in this work can count on the most whole-hearted and generous assistance from Yukon farmers. In this connection should be mentioned, especially, the name of Mr. J. W. Boyle, manager of the Canadian Klondike Mining Company, whose much-appreciated generosity permits us to start experiments on two locations in the Klondike valley at practically no expense to the department.

POULTRY DIVISION.

REPORT OF THE DOMINION POULTRY HUSBANDMAN, F. C. ELFORD.

The year 1916-17 has been most unusual both as regards production and marketing.

The spring of 1916 was late and conditions unfavourable for production, the early part of the summer cold and wet, the latter part hot and dry.

These conditions were anything but satisfactory for growing chickens. The late spring meant late hatches, the wet, cold weather in the early summer resulted in a heavy mortality, and the hot, dry period following materially retarded the growth of the pullets. When winter came, pullets, instead of being mature and ready to lay, did not commence laying until late in the winter or even towards the spring. Naturally this lessened the egg supply.

The high price of feed also had an influence on the available supply of eggs. The feed required for the chicks during the summer was unusually expensive, which no doubt militated against their growth. Because of the price of feed, many of the laying stock were sold in the fall, which again cut down the possible egg supply and for the same reason, the layers that were retained were not, in some cases, fed as well as they should have been.

Taking, therefore, the backward spring and unfavourable summer combined with the high prices paid for feed, the result was that early winter eggs were extremely scarce, and the sale of layers in the fall, and the continued scarcity of feed meant that even later eggs were not as plentiful as usual. This will also explain the reason, from the producer's standpoint, why eggs were higher in price during the winter of 1916-17 than they have ever been in the history of Canada.

The high prices that prevailed for all foodstuffs naturally raised the price of eggs. Coupled with this was the export of eggs to Great Britain in 1915, which depleted Canada's supply for local demand. To provide for the shortage that existed, eggs were imported early in 1916 from the United States.

During the spring months of 1916 a few eggs were exported to Great Britain, but in the fall a considerable number were sent over, which left the Canadian warehouses comparatively bare, and the supply less than is usually the case. This, combined with the production difficulties and the fact that Canadians were eating more eggs than usual, made the egg more or less of a luxury during the winter of 1916-17.

FEEDS AND FEEDING.

Special attention has been given to experiments on the cost of feeds, cost of production, incubation, brooding, diseases, etc. Experiments along these lines have been conducted at the Central Farm plant and also, to a limited extent, at the various branch Farms.

The exceptional price of all feeds caused many to sell laying stock that should have been retained. For though the cost of production was considerably higher this year than last the product (eggs) was also higher.

To show that the price of feed is not the only factor to be considered the following table is given:—

TABLE showing greater profits over cost of feed for winter 1916-17 in comparison with the same pen in 1915-16

| Year. | No. of eggs laid. | Average price per doz. | Total value of eggs. | Value of feed consumed. | Profit per pen. Labor not considered. | Profit per hen. | Cost to produce 1 doz. eggs. | Average profit on 1 doz. eggs. |
|--------------|-------------------|------------------------|----------------------|-------------------------|---------------------------------------|-----------------|------------------------------|--------------------------------|
| | | cts. | \$ cts. | \$ cts. | \$ cts. | \$ cts. | cts. | cts. |
| 1915-16..... | 4,766 | 39.6 | 157 33 | 58 42 | 98 91 | 0 99 | 15.0 | 24.6 |
| 1916-17..... | 4,806 | 55.2 | 221 17 | 82 49 | 138 68 | 1 67 | 20.6 | 34.6 |

There was an average increase of 56.1 per cent in the price of the scratch feed for the six winter months of 1916-17, and an average increase of 36.8 per cent in the price of mash and an increase of 33.3 per cent in the price of green bone during the same period, but there was an average increase of 75 per cent in the price of eggs, leaving a substantial margin of profit.

It might also be noted here that at the end of April the Toronto quotations for feed were 54.1 per cent higher than the previous year, and eggs 66.6 per cent higher than at the same time in 1915-16.

The age of the layers is a vital factor in the cost of production, as the following table shows. This table gives a summary of average results at several Experimental

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Farms for the past three winters from records of many pens of pullets, yearlings, two-year-olds, and over:—

| Age. | Number of birds. | Average weight per doz. | Average price per doz. | Total value of eggs. | Cost of 1 doz. eggs. |
|-----------------------------|------------------|-------------------------|------------------------|----------------------|----------------------|
| | | ozs. | cts. | \$ cts. | cts. |
| Early pullets..... | 292 | 23.2 | 43.2 | 451 73 | 18.3 |
| Late pullets..... | 152 | 22.7 | 43.1 | 221 88 | 56 |
| Yearling hens..... | 161 | 24.7 | 47 | 176 48 | 78.2 |
| Two years old and over..... | 79 | 24.2 | 44 | 13 94 | \$5.73 |

It would appear from the above that there is considerable loss from late pullets the first winter, and from hens during their second-winter laying, though these prove profitable sometimes. It may be well to point out that some of the above records were obtained during December, January, and February only, a season of low production for hens, and that a number of hens on the Farms system are kept over their profitable period for special breeding purposes, and the egg yield from these would enter into and adversely influence the average.

For winter egg production the early hatched pullet is the most profitable, the yearling seldom as profitable, the late pullet and two-year-old and older hen a loss with but few exceptions.

ALTERATIONS TO CENTRAL FARM PLANT

During the year the central plant has been rearranged to make it more convenient for visitors to see the plant and stock without the danger of having the gates left open and experiments interfered with. A new entrance has been made from the front of the plant connected with a driveway which runs from one end of the plant to the other. This driveway enters at the back of the feed house and runs south parallel with Maple avenue until it reaches the horticultural ground, when it then turns on to Maple avenue. That part of the plant between these drives and Maple avenue is now divided into five yards, which are kept mowed the same as the lawn, and are used for rearing chicks.

The turkey plant has been fenced and two subways placed beneath the sidewalk. These subways connect the original plant with a portion of the forest belt that borders the north side of the Farm.

In order to assist in the turkey experiments, a small, rough farm of 30 acres was rented, upon which the range turkeys were reared. The young turkeys were placed there when out of the incubators, and left there until almost ready to market in the fall.

Houses.—A hot-water-pipe brooder house has been erected and is in use for the early spring chicks. This house was much needed for the early hatches, and, so far, is proving quite satisfactory.

Unfortunately, the waterfowl house on the duck plant was burned in the fall, which necessitated the transferring of the ducks and geese to the upper plant for the winter.

BRANCH FARMS.

The work at those branch Farms upon which poultry is kept has been made more efficient by the completion of most of the buildings and equipment, and the installing of a fuller stock of birds.

STUDY OF DISEASES OF POULTRY.

Through the courtesy of Dr. Torrance, Veterinary Director General, Dr. A. B. Wickware, Assistant Biologist, has been assigned to poultry work. This makes it possible to carry on investigation in poultry diseases that up to this time was not possible.

EXTENSION WORK.

Even more than usual has been the demand this year for poultry lectures, judges, etc. Requests for such have been complied with whenever possible.

The survey work, started over a year ago, is proving of much benefit. It has been the means of improving, to no small extent, poultry conditions in the sections where the work has been conducted. New houses, improved stock, more sanitary conditions, and keener interest all through are apparent. During the year a second block of farmers in the province of Quebec has been selected. This block is in the vicinity of Ste. Anne de la Pocatière Experimental Station. Similar work to that which is carried on at Cap Rouge is being conducted there.

Through the Illustration Stations Division, eggs have been distributed to the farmers operating these farms. The Experimental Farms or Stations in the three provinces, where this illustration work is being conducted, supplied to each of the farms two settings of Barred Rock or White Wyandotte eggs. From these eggs very satisfactory reports have been received.

During the winter and spring there has been a heavier demand for poultry information, through correspondence and through visitors, than has been the case up to the present. This demand comes from all classes, both farmers and townspeople.

TOBACCO DIVISION.

REPORT OF THE TOBACCO HUSBANDMAN, F. CHARLAN.

The tobacco crop of Canada in 1916 gave one of the poorest harvests in this country for many years.

Speaking generally, the season was colder than that of 1915, which itself was regarded as a very unfavourable one.

The chief drawback in 1916 was the almost continual rainfall which, especially in Quebec, took place at the time of transplanting, and rendered impossible, in many cases, the proper preparation of the soil. This forced a number of growers to abandon, in whole or in part, their tobacco crop, although their operations in the seed-beds had been successful. As a rule, the heavy lands of the province of Quebec only produced about half a crop of tobacco.

In Ontario the situation was a little better, especially in the case of the bright flue-cured tobacco, the production of which rose to about a million pounds. This represents the largest harvest of bright tobacco ever obtained in Canada. While the production of bright tobacco increased considerably, that of white Burley decreased to about two million pounds, much below the average, which for some years has been between five and seven million pounds per annum.

The prices paid the growers in 1916 were relatively high, both for the Burleys in Ontario and for the Seed Leafs in Quebec. The exhaustion of tobacco stocks in the United States and resulting increases of prices in the American markets affected Canadian prices as well.

From the economic point of view, the small tobacco harvest of 1916 may have had advantageous results for Canadian growers, since the demand for native tobaccos, especially on the part of those who handle cigar tobaccos (binders and wrappers),

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was very active. This would indicate, to a certain extent, that an increasing number of Canadian manufacturers are endeavouring to use the native products in the place of those tobaccos formerly procured in other countries. When this habit has once been formed, and when the taste of the consumer has become accustomed to our native-grown tobacco, it should find on the Canadian market a regular demand. This is of special interest in the case of the Canadian fillers which, so far, have not been accepted freely by our manufacturers.

CENTRAL EXPERIMENTAL FARM, OTTAWA.

Plantation.—Plantation operations on the Central Experimental Farm were finished in good time (about the 5th of June), but growth was very slow during the whole month. Most of the varieties tested did not reach their normal development. The tobacco was slower than usual in reaching maturity, having been kept back by the cold and wet period during the first half of September. However, a liberal supply of seed was obtained, of which most was distributed in the course of the past winter.

Special attention was devoted to the growing of certain tobaccos recently imported from the Philippine islands, as they may prove suitable for fillers. The first Canadian generation of one of these tobaccos, the "Espada," seems to have become acclimatized fairly well.

Fermentation.—This work was considerably reduced on account of the small quantity of tobacco delivered from the Experimental Station at Farnham, and especially on account of the feeble development of the leaves, which allowed us to mark only four cases of tobacco as of sufficient length to be classed as binders. These, with two cases of fillers, were subjected to forced fermentation in a hot, damp room. All other tobaccos were fermented together in one single bulk.

The latter was re-bulked twice. That in the centre of the pile, therefore, received three active fermentations. No damage was noticed, but a certain quantity of mucor developed on the driest leaves in spite of the fact that they were placed in the centre of the bulk.

EXPERIMENTAL STATION, ST. JACQUES L'ACHIGAN, QUE.

The seed-beds at St. Jacques l'Achigan were particularly successful, but a number of the plants were lost, as they could not be planted out when they were ready. The transplantation was postponed until the 15th of June and was then done by hand on account of the impossibility of getting on the land with machines. After an interval planting was again undertaken by machines and finished June 30, about fifteen days later than usual.

Experience has shown that, in a season like 1916, it is better, after a certain date, the 15th of June for example, to plant, no matter how unfavourable conditions may be, rather than wait longer. The best tobacco grown at St. Jacques was planted by hand when the land was too wet to use the planting machine. After planting, cultivation was a difficult matter, but a crop almost up to the average was obtained. A number of neighbouring tobacco growers, who waited until the beginning of July to plant, harvested only a very immature and poorly developed crop.

EXPERIMENTAL STATION, FARNHAM, QUE.

The tobacco plantation at Farnham suffered considerably from wet weather. The planting was late, first because the seedlings were not as good as usual, but especially because it had been impossible to get the land into good shape. The land remained wet all season, and it was impossible to get the tobacco as mature as usual before harvesting.

Some binder tobacco was fairly successful, but the Marylands, and especially the Warne, a variety of bright tobacco which should be flue cured, were a complete failure. After the results from Warne in 1916 and those of preceding years, which were very unsatisfactory, it would seem clear that it is useless to attempt to grow this type of tobacco in the province of Quebec.

The curing process proceeded normally, without damage from fermentation.

EXPERIMENTAL STATION, HARROW, ONT.

In spite of the unfavourable conditions, the crop of White Burley at Harrow in 1916 was about normal, the colour being a little darker than usual. No definite results were obtained from the experimental work with fertilizers applied to White Burley. Better results were obtained in experimental work on the different plots of bright tobacco of the Virginia type.

On the whole, the tobacco root-rot caused less damage, in Ontario in 1916 than in the present year. However, a larger number of cases of "mosaic" disease were reported. A considerable number of varieties of the Yellow Virginia type were tried at Harrow in 1915. Up to the present, the Warne has proved itself best adapted to the district, but, it may yet be found that, in a normal season, some other variety, especially if grown from Canadian seed, will prove superior for special uses.

The White Burleys grown in Ontario fall into two large classes—the Broad Leaf and the Stand-up Burley. Each of these classes comprises several varieties. Although the Stand-up Burley, on account of its earliness, furnishes a greater proportion of well-coloured leaves, most growers continue to prefer the Broad Leaf on account of its greater weight of crop.

STUDY OF TOBACCO SOILS.

This work began in 1916, and is making good progress. Some fifty samples of soils, mostly from Ontario, were collected. The analysis of these soils has been completed. From this work it is expected that it will be possible to make a rational classification of the tobacco soils of Canada. The question, however, is not a simple one, on account of the intermingling of various types of soil, often within a very limited area. In many cases, several types are found on the one farm, which make it necessary for the Canadian grower to have a much more complete knowledge of tobacco soils than would be the case were the soil of a certain district almost uniform in character.

In certain cases, especially in the soils of Quebec, it has been possible to make close comparison between their physical composition and that of some well-known tobacco soils in the United States. It will be interesting to note the influence of the climate on the crop growing on these soils as compared with the different types of tobacco obtained in the United States on soils almost similar. It has been noted that filler tobaccos (Zimmer Spanish and Aurora) gave products of finer texture than those of similar tobacco grown in Ohio. Unfortunately, however, it is by no means certain that one can find in Canada very large areas of soil comparing with those of which binder tobaccos are produced in the United States.

The difference of texture noted between Canadian tobacco and similar varieties grown in Connecticut and Ohio will probably lead our tobacco manufacturers to adopt processes of fermentation somewhat different from those which obtain in the United States. At the present time good progress has been made in the study of this question.

INSPECTION WORK.

In the course of inspection work in Ontario in 1916, the officer in charge of that work visited about one thousand tobacco growers, and discussed with them the various tobacco problems met with. A record was also made of the area devoted to tobacco. The Tobacco Division was thus enabled to make a very close computation of the production of tobacco in Ontario.

DISEASES OF TOBACCO, SELECTION, STUDY OF VARIETIES, ETC.

This work is carried on by Mr. G. C. Routt. A considerable quantity of material has been collected, and preliminary conclusions have already been drawn from the study of certain "sick" soils in Ontario, made in collaboration with Mr. Freeman. These conclusions will be tested as the work is extended over larger territories.

It seems certain that tobacco root-rot was especially prevalent on clayey soils in 1916. This confirms observations made in Connecticut in 1915. The season there had been wet, and while the lighter sandy soils absorbed the water readily, the heavier land became caked and impervious to moisture. The air supply of the tobacco roots was partly cut off favouring attacks of root-rot. This indicates the necessity of frequent cultivation in wet seasons, to keep the soil open and well aerated.

Although in many sickly tobacco plants examined the trouble did not appear to be caused by root-rot, it seemed only necessary to examine a plant, even of healthy appearance, to discover the bacteria of *Thielavia basicola*. This would seem to indicate its wide spread and the necessity of keeping the resisting powers of the tobacco plant as high as possible. As preventive measures, in addition to the disinfection of the seed beds, drainage, deep ploughing and frequent cultivation are recommended.

As to selection work and study of varieties of tobacco (the latter including cross-breeding and general research work), it may be said that, in North America at least, this line of investigation has only begun. Under Canadian climatic conditions, one cannot expect from an imported variety the same product which it furnished in its native country. In the process of acclimatization, its character changes, either for the better or the worse. It is necessary, therefore, to fix certain types at the point where they are best suited to Canadian market demands, and, afterward, to endeavour to keep them at this point.

DIVISION OF ECONOMIC FIBRE PRODUCTION.

REPORT OF G. G. BRAMHILL, OFFICER-IN-CHARGE.

During the past year a new division was organized in connection with the Experimental Farms Branch, known as the Division of Economic Fibre Production. This division has to do with the investigation of economic fibre plants in Canada, but more especially was established to study the problems connected with flax-fibre production.

At one time the growing of flax was an industry of considerable importance in western Canada, almost every little village having its flax mill. Owing to the scarcity and high price of labour, which was not compensated for by the introduction of labour-saving machinery, flax fibre could not be produced in Canada to compete with that imported from Russia. As a result, the industry declined until, in 1914, there were less than 2,000 acres devoted to this crop. The cutting off of European supplies has changed the whole situation, and flax for fibre once more looms up as an important crop in Canadian agricultural development.

There has been established on the Central Farm at Ottawa a small, but complete, experimental flax mill. It is equipped with the most up-to-date machinery available in the flax trade, and every facility provided for a thorough study of flax retting and manipulation. The practical work is being carried out by a Belgian who has had more than twenty years' experience in flax growing, retting, and manufacturing in the famous Courtrai region of Belgium.

Experiments are under way to determine what areas in Canada are suitable to flax-fibre culture; what fertilizers can be economically applied to flax; the extent to which flax reduces the fertility of the soil; what amount of seed to sow per acre; the proper stage to harvest flax; what varieties give best results; and the efficiency and

practicability of water-retting as compared with dew retting, under Canadian conditions. Details of the experiments are not available for this report, but it is hoped the results will be ready for publication another year.

In the meantime, a considerable effort is being made to foster flax growing in those sections of Canada where the industry is already established. Meetings have been held in flax-producing centres to impress farmers with the importance of increasing the flax acreage. Owners of flax mills have been called together in convention, and ideas exchanged as to how the quality of Canadian flax may be improved. Special inducement has been given to the development of flax-pulling machinery, and every reasonable means employed to encourage the production of flax in Canada.

Attention has also been given to the possibility of utilizing the fibre from the waste flax straw of the prairies. A number of uses have been found for this material, but none has been tested out on a commercial scale in Canada. The transportation costs involved in gathering a sufficient quantity of flax straw together at one point to warrant the establishment of paper or fibre-board mills is one of the greatest difficulties connected with a solution of this problem.

The culture of hemp for fibre has also been taken up. To what extent hemp can be economically grown in Canada has not been established, but that an excellent quality of hemp fibre can be grown in many sections has been demonstrated. The experiments in connection with this plant are being watched with interest.

DIVISION OF ILLUSTRATION STATIONS.

REPORT OF JOHN FIXTER, SUPERVISOR.

This being the second season during which the Illustration Stations have been in operation in the provinces of Alberta and Saskatchewan, results of the work carried on are now noticeable, particularly in the production of good seed. A few notes are given on the work at each Station during 1916.

ILLUSTRATION STATIONS IN SASKATCHEWAN.

Assiniboia.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Percy J. H. Warren, and is situated in the southeast quarter of section 24, township 8, range 1, west of the 3rd meridian, half a mile from the town of Assiniboia, Sask.

Owing to the heavy snowfall of the winter of 1915-16, and the frequent showers in the spring, work on the land was delayed until late in April. The seed, however, was sown the first week in May, and made a very rapid, strong growth until about August 1, when rust set in and lessened both quality and quantity about 35 per cent. It is, however, gratifying to note that the well-selected seed, which had a good strong germ and was sown on well-prepared land, withstood the rust much better than many grain fields sown with ordinary seed and with ordinary cultivation. In fact, many of the latter were scarcely worth cutting.

Corn sown in June on this Station was destroyed by gophers, and was ploughed under. Western rye grass, sown June 15, made a uniform growth but, it being the first season, no crop was harvested.

Alfalfa, sown June 15, made a rather uneven growth on account of heavy rains which washed some of the plants out, necessitating the re-seeding of the spaces.

Biggar.—The farm at this point on which the illustration fields are located is owned and operated by Dr. S. E. Shaw, and is situated in the southeast quarter of section 32, township 35, range 14, west of the 3rd meridian, at the junction of two well-travelled roads, and facing the Grand Trunk railway.

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The area selected in the autumn of 1915 had grown different kinds of crops. In order to have uniformity, all of the area was summer-fallowed in 1916, to be cropped as directed in 1917.

The cost per acre for summer-fallowing was \$4.70.

Cabri.—The farm at this point on which the illustration fields are located is owned and operated by Mr. F. W. Abraham, and is situated in the northeast quarter of section 19, township 19, range 18, west of the 3rd meridian, one mile from the town of Cabri, Sask.

The land on this station was perfectly prepared.

The grain crops, being sown in good condition, made splendid growth up to August 17, when a hail-storm did considerable damage. However, they recovered considerably from this shock but were visited by a second hail-storm, causing altogether a loss of about 75 per cent. While great damage was done to each of the rotations, it is quite noticeable that the fields which received an extra amount of cultivation show increased yields per acre.

Forage crops on this farm have done excellently. Mr. Abraham was much interested in the production of pure seed, and harvested 1,519 pounds of clean seed from 2 acres of western rye grass, the fodder from which was readily eaten by the live stock. Corn made a good growth and, had the season been favourable, some of it would have ripened. Alfalfa also made an excellent growth. The first crop was harvested for fodder; the second was left for seed but, owing to the unfavourable weather, no seed was harvested, but there was a good crop of fodder.

All the seed grown on this Station which could be spared in the autumn of 1915 was sold for seed.

Herbert.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Milton Holmes, and is situated in the northwest quarter of section 18, township 17, range 9, west of the 3rd meridian, bordering a well-travelled road, and one-half mile west of Herbert, Sask.

The soil on the different rotation fields was thoroughly prepared before seeding.

Wheat sown in April and oats sown in May made a very strong, uniform growth up to about August 10, when rust appeared and damaged the crop fully 20 per cent. Frost on the night of August 10 did considerable damage, as well, to the quality and quantity of the grain crop. Hail also struck this section again on August 18 and did about 15 per cent damage.

Corn sown in May made a very poor, weak growth, and was not harvested.

Alfalfa and western rye grass gave good yields. The fodder was well cured, and eaten quite readily by horses and cattle.

The grain grown on the illustration fields was thoroughly screened and, the germinating power being high, it was sold for seed, eleven farmers in the district purchasing.

Kindersley.—The farm at this point on which the illustration fields are located is owned by the Ottawa Farm Development Company, and is operated by Halpenny Bros. for the company. It is situated in the northwest quarter of section 9, township 26, range 22, west of the 3rd meridian, adjoining a public road and quite close to the proposed Canadian Northern station.

The soil on this station is a heavy clay loam. Owing to the late spring, and on account of wet and cold weather, the grain was not sown until May. However, a good seed-bed was made and the wheat and oats made a very strong, uniform growth, until August 10, when a heavy frost struck this section. Rust also appeared about August 1, and continued until harvest. It is estimated that fully 75 per cent damage was done to the crop.

Alfalfa sown in 1915 gave a very heavy crop of excellent fodder.

Western rye grass was one of the heaviest crops seen in Saskatchewan. Had it been weighed it would not have been much short of 4 tons per acre.

Corn did not do well on account of the late, cold spring. It was badly frosted.

The wheat on this farm up to the time of being cut by frost and hail promised at least 50 bushels per acre, and the oats 100 bushels per acre.

Lloydminster.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Hugh Hill, and is situated in the southwest quarter of section 11, township 50, range 28, west of the 3rd meridian, one-half of a mile north of the town.

The area selected on this farm had been cropped several years, and was summer-fallowed in 1915. The grain was sown on a well-prepared seed bed and made a good, uniform growth up to August 10, when a heavy frost struck this section. Rust also appeared and continued until harvest. The grain crop was injured fully 75 per cent, making the grain useless for seed purposes. Fresh seed grain will be supplied this station.

Alfalfa and western rye grass sown in June made an excellent, strong growth before winter set in.

Maple Creek.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Geo. Hammond, and is situated in the southwest quarter of section 12, township 11, range 26, west of the 3rd meridian, one mile east of the town of Maple Creek, Sask.

The area selected for this station is a sandy loam, and, having been cropped several seasons, the rotations were all started in 1915 and crops harvested in 1916.

Wheat and oats were both sown about April 15, and made fairly uniform growth until harvested. There was, however, considerable difference in the yields per acre. Wheat grown after wheat yielded 31 bushels per acre, costing 37.3 cents per bushel; and wheat grown after summer fallow yielded 42 bushels per acre, costing 42½ cents per bushel. Oats yielded 84 bushels per acre, which cost 20.3 cents per bushel to produce.

Corn, sown in June, made a rapid growth to a height of from 5 to 6 feet.

Alfalfa, harvested in July and October, gave two good crops, and seed was harvested from the second crop.

Western rye grass was harvested and gave 2½ tons per acre. It was well cured for fodder and winter feeding.

The wheat and oats grown on this station were shown at some of the leading grain shows, and were prize winners in all cases.

Moosejaw.—The farm at this point on which the illustration fields are located is owned and operated by Mr. John Glassford, and is situated in the southeast quarter of section 12, township 17, range 27, west of the 2nd meridian, 2 miles west of the town of Moosejaw, and borders a well-travelled road, and can be seen from the railway.

The area selected at this station had been cropped several years previous to starting the illustration work, but, unfortunately, wild oats had a very strong hold on the land. The rotation commenced on this farm was the same as on the others, but has now to be changed in order to eradicate the wild oats. It is intended to cultivate one of the fields thoroughly until August 10, then plough from 7 to 8 inches deep, pack, and sow to fall rye, at the rate of 1½ bushels per acre, allow the rye to ripen the following season and harvest for grain crop.

As soon as the above crop is removed, the land is to be cultivated thoroughly until the last week in August, then ploughed and packed thoroughly and again sown to fall rye, at the rate of 1 bushel per acre. Should any trace of wild oats be found then it will be summer-fallowed the third season.

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A second field, summer-fallowed in 1916, is to be sown with oats and harvested early for fodder, then cultivated the balance of the season. If wild oats should still appear, a second crop of fodder will be taken off and the land summer fallowed the third season.

Corn on this station has done exceptionally well, giving a large quantity of choice fodder for winter feeding. Alfalfa and rye grass sown in June made a very strong, uniform growth before winter set in.

Pambrum.—The farm at this point on which the illustration fields are located is owned and operated by Mr. C. W. Appelgren, and is situated in the north half of section 21, township 11, range 11, west of the 3rd meridian, a half mile south of the town of Pambrum.

The area selected for illustration purposes, with the exception of field "A," was summer-fallowed in 1915. The fallow was perfectly worked and put in good condition for sowing in 1916. The spring opened fairly early and, the land being perfectly prepared, the grain was sown on a good seed-bed. Wheat and oats made a rapid, uniform growth, but were struck hard by rust, which caused about 40 per cent damage. Frost also injured both quality and quantity. A noticeable feature on this station is that wheat grown continuously yielded only 18-bushels per acre, while that grown after summer-fallow gave a yield of 36 bushels, just double the quantity. Oats also gave a good yield. Both wheat and oats made choice seed, and a considerable part was sold for that purpose. Corn sown in June did well, and gave a heavy crop of fodder.

Alfalfa and western rye grass, sown June 9, made a very strong, uniform growth, were clipped and left as a mulch, a good strong growth being left as a protection over winter.

Prelate.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wm. Huxtable, and is situated in the southwest quarter of section 15, township 22, range 25, west of the 3rd meridian, one mile north of the town of Prelate.

The area selected for this station was practically new land, being a good, strong, chocolate loam, rather heavy in character. The land was all summer-fallowed in 1914 and in good condition for starting the rotations in 1915. This being the second year, the rotations show a remarkable difference in the yields.

Wheat after wheat gave a yield of 20 bushels per acre, costing 49 cents per bushel, while wheat after summer-fallow yielded 40 bushels per acre, costing 38½ cents per bushel, which charge includes the previous summer-fallow, rent and machinery. The 20 bushels per acre costing 49 cents per bushel would amount to \$9.80. If sold at \$1.50 per bushel the amount would be \$30, leaving a balance of \$20.20. The 40 bushels per acre costing about 39½ cents per bushel, if sold at \$1.50 per bushel, would amount to \$60, leaving a balance of \$44.60. It is here shown that it pays to summer-fallow, and the land is kept much freer from weeds by so doing.

Alfalfa and western rye grass gave good crops of excellent fodder.

Radville.—The farm at this point on which the illustration fields are located is situated in the southeast quarter of section 18, township 6, range 17, west of the 2nd meridian, bordering the main highway and adjoining the town of Radville.

The area selected on this farm is located on what is known as the burned-out lands. As part was cropped in 1915, it had to be summer-fallowed in 1916 in order to arrange the rotations for 1917. The soil on this station is rather uneven on account of large holes where the humus has disappeared: Several seasons must elapse before this land is uniform, unless a great deal of time and labour is spent levelling and cultivating.

Wheat and oats sown in April made a medium growth and promised to yield fair crops up to July 25, when rust set in until harvest. Hail also visited this station on

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August 11, doing about 50 per cent damage. The grain on this farm also appeared to withstand the rust and storms, on account of the stronger growth, more than many fields in the neighbourhood, and at threshing time farmers purchased for seed purposes all that was left after the operator had saved enough for his own seed.

Shaunavon.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Neil McLean, and is situated in the northeast quarter of section 18, township 8, range 18, west of the 3rd meridian, adjoining the town of Shaunavon.

The season of 1916 opened fairly early, the land being thoroughly prepared.

Wheat sown in April and oats early in May both made a very rapid, strong growth until the night of August 10, when 4 degrees of frost occurred in the district, doing a great deal of damage, both to quality and quantity of all grain crops.

The wheat on this station stood from $3\frac{1}{2}$ to 4 feet high and promised from 40 to 50 bushels per acre. The oats stood 4 feet high and promised at least 100 bushels per acre. It is gratifying to note that the injury was not as great on the station fields as on those in the district. The selected grain sown on well-prepared soil appeared to ripen more uniformly and to be nearer maturity when the frost came.

Corn also made a satisfactory growth, but was cut down completely by the frost.

Alfalfa and western rye grass, sown in June, made a very strong, uniform growth and were in excellent condition when winter set in. This being the first season, no crop was harvested.

Weyburn.—The farm at this point on which the illustration fields are located is owned by Mr. E. Meredith, and is situated in the southeast quarter of section 6, township 9, range 14, west of the 2nd meridian, 3 miles north of the town on the junction of two well-travelled roads.

The area chosen on this farm had been cropped several seasons, and was summer fallowed in 1915. Owing to the great depth of snow during the winter of 1915-16 and the heavy rainfall in the spring of 1916, the land could not be worked as early as desirable. However, a good seed bed was prepared and the seed well sown early in May. Fine growing weather set in, and a very strong, uniform growth was made. The wheat crop promised 40 to 50 bushels per acre, and the oats at least 100 bushels per acre. Unfortunately, rust appeared in this section about July 25, and frost August 10, lessening the yields from 40 to 50 per cent, and injuring the quality for seed purposes.

Corn and roots on this farm did exceptionally well.

Western rye grass sown the last of May, and alfalfa sown in June made very strong, uniform growth, and promise to give big yields.

Mangels were also sown, and gave a very heavy crop of choice roots for winter feeding.

ILLUSTRATION STATIONS IN ALBERTA.

Bow Island.—The farm at this point on which the illustration fields are located is owned and operated by Mr. M. Mortensen, and is situated in the northeast quarter of section 2, township 10, range 11, west of the 4th meridian. It is about four and a half miles south of the town, and borders the main road.

The land for the different rotations on this station was well prepared, and the seed sown early in April. Growing conditions were as good as could be desired. Both wheat and oats made a rapid, strong growth until harvested. One noticeable feature in the rotations is on the field sown to wheat continuously, which gave a yield of 27 bushels per acre, costing 41 cents per bushel, while wheat grown after summer-fallow yielded 48 bushels per acre, costing 36 cents. Oats yielded 89 bushels per acre, and the cost of production per bushel was 18 cents.

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Corn sown in May grew to a height of 5 feet, but no cobs formed.

Alfalfa and western rye grass, sown in June, made a uniform growth, were clipped and left on the land as a mulch.

Carmangay.—The farm at this point on which the illustration fields are located is owned and operated by Mr. J. A. Neilson, and is situated in the southwest quarter of section 14, range 23, township 14, west of the 4th meridian, 2 miles east of the town of Carmangay.

The area chosen at this station is a sandy soil, and has been cropped several seasons.

The field of wheat sown continuously shows a marked decrease over the summer-fallow field, yielding less than half. It may be advisable to change this rotation for two reasons, on account of weeds increasing and because of the decrease in yields.

Oats made a medium growth. There was a slight attack of rust, about 2 per cent, and frost also did about 5 per cent damage.

Corn made a medium growth, but no cobs formed.

Alfalfa and western rye grass, sown in June, made a uniform growth and promised to give good crops next season.

Empress.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Frank Barry, and is situated in the northeast quarter of section 28, township 22, range 1, west of the 4th meridian, five and one-half miles south of the town of Empress.

The area selected on this farm was in prairie sod in 1915, and was well worked for cropping in 1916.

Wheat was sown in April, and made an excellent growth until harvested, yielding as high as 55 bushels per acre.

Oats were an exceptionally heavy crop, standing over 5 feet high, and yielding 132 bushels per acre.

The grain took first prize at the local exhibition, and all that could be spared was sold for seed in the neighbourhood.

Corn sown in May made a strong, even growth, standing 5½ to 6 feet high.

Alfalfa and western rye grass, sown in June, made a very strong growth, and was clipped and harvested, yielding about 8 tons of fodder. A good second growth was made and left for protection over winter.

Foremost.—The farm at this point on which the illustration fields are located is owned and operated by Mr. T. H. Frankish, and is situated in the southwest quarter of section 4, township 6, range 11, west of the 4th meridian. It borders a well-travelled road connecting Foremost and Avalon, and is about two miles from the town of Foremost.

The area selected at this station is practically new land, being a good, strong chocolate loam. A summer-fallow having been well worked in 1914, the rotations were all started in 1915.

Wheat continuously shows a marked decrease this season, yielding 33 bushels per acre and costing 35 cents per bushel, while the alternate wheat and summer-fallow rotation yielded 54 bushels per acre, costing 34 cents per bushel. Wheat in the three-year rotation yielded 50 bushels per acre, costing 30 cents per bushel.

Oats made a very uniform, strong growth, yielding 85 bushels per acre, costing 16 cents per bushel.

Corn, sown in May, grew to 4½ feet high, but no cobs formed.

Alfalfa and western rye grass both gave average yields and made excellent fodder for both summer and winter feeding.

The grain grown on this farm was an exceptionally fine sample and was selected for seed and also for exhibition purposes.

Grassy Lake.—The farm at this point on which the illustration fields are located is owned by Mr. F. N. Perry, and is situated in the southeast quarter of section 15, township 10, range 13, west of the 4th meridian, adjoining the town of Grassy Lake.

The grain on this farm made a fairly strong growth until late in August, when a heavy storm crossed this section, flattening down some of the fields, lessening the yields 30 per cent, and making harvesting very difficult.

Alfalfa sown in July also suffered by washing-out, and will have to be re-sown.

Western rye grass sown in July made a uniform growth, but no crop was harvested the first season.

Corn made a growth of from 6 to 7 feet in height, and some cobs were beginning to form.

High River.—The farm at this point on which the illustration fields are located is owned and operated by Mr. B. F. Kiser, and is situated in the southeast quarter of section 5, township 19, range 28, west of the 4th meridian, adjoining the east side of the town.

The area selected for this station had been cropped several years previous to selection for illustration purposes. It was summer-fallowed in 1915 and cropped in 1916. Owing to considerable volunteer grain growing on the area, particularly wild oats, it may be best to change the rotation another season to eradicate the wild oats.

Wheat sown in April and oats sown in May made only a medium growth until harvested. Frost injured these crops, doing about 5 per cent damage.

Corn made a uniform growth, and grew about 5 feet high. No cobs formed, however. It was injured by frost about 50 per cent before being harvested.

Alfalfa and western rye grass sown in July made a uniform growth, but this being the first season, no crop was harvested, and a good, heavy growth was left for a winter covering.

Jenner.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Jerry Fisher, and is situated in the west half of section 2, township 21, range 9, west of the 4th meridian, 1 mile east of the town of Jenner, and bordering a well-travelled road.

The area selected for this station was in prairie sod in 1915. It was well broken and back-set and thoroughly prepared for cropping in 1916.

Wheat and oats, sown early, made a good strong growth until August 10, when rust and frost lessened the yields about 20 per cent. However, fairly good crops were harvested, and all the surplus grain was sold for seed purposes.

Western rye grass sown in May, and alfalfa sown in June, made a strong, uniform growth, but no crop was harvested the first season.

Macleod.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Norman Grier, and is situated in section 33, township 9, range 26, west of the 4th meridian, about six miles from Macleod, and bordering a well-travelled road leading to Calgary.

The area chosen for illustration work was in prairie sod in 1915, was well broken and back-set and thoroughly prepared for the different rotations in 1916. The season opened early and the grain was sown in good condition. Both wheat and oats made a rapid growth and were the first grains ready to cut in the district, escaping both frost and rust. The illustration fields became so noticeable that the operator had requests for large quantities of seed before the grain was cut.

Corn did exceptionally well on this station, growing to a height of 6 feet.

Alfalfa and western rye grass, sown in June, made a strong, uniform growth, but no crop was harvested the first season. A good covering was left for protection over winter.

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Magrath.—The farm at this point on which the illustration fields are located is owned and operated by Mr. J. A. Meldrum, and is situated in the northeast quarter of section 11, township 5, range 22, west of the 4th meridian, 3 miles south of the town of Magrath.

This being the second season, the rotations have been established and a marked difference is noticeable in the yields.

Wheat continuously gave a yield of 36 bushels per acre, while wheat after summer-fallow alternately gave 54 bushels per acre, wheat in the 3-year rotation gave 59 bushels per acre, and wheat after corn 51 bushels per acre.

The oats also gave a heavy yield. All the grain grown on this station would make excellent seed.

Corn, sown in June, made a strong, uniform growth to a height of 6 feet. Some cobs formed, but did not fill.

Alfalfa and western rye grass both gave good crops of fodder and were harvested in good condition.

Manyberries.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Matti Mickelson, and is situated in the northeast quarter of section 25, township 5, range 6, west of the 4th meridian, one mile from Manyberries and about forty miles from Seven Persons railway station.

The season opened up rather late in this section.

Both wheat and oats were sown in May. This is the second season that grain has been grown on this station, and a marked difference is shown in the yields. The wheat on the continuous field gave a yield of 27 bushels per acre, at a cost of 40 cents per bushel, while that grown after summer-fallow yielded 48 bushels per acre, at a cost of 36 cents per bushel.

Corn, sown in May, made a medium growth and was tasseled, but no cobs formed.

Alfalfa and western rye grass, sown in July, made a uniform growth, but this being the first season, no crop was harvested.

Milk River.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wm. Kinder, and is situated in the southwest quarter of section 30, township 2, range 15, west of the 4th meridian, three and a half miles east of the town of Milk River.

The area selected for illustration work was in prairie sod in 1915. All had to be broken and thoroughly prepared for seeding in 1916.

Wheat, sown early in April, made an exceptionally rapid growth until harvested. Very slight traces of rust were noticed, but did no damage. The crop yielded 54 to 61 bushels per acre. Banner oats yielded 86 bushels per acre.

Corn sown in May made a uniform growth, height about 5 feet, with cobs beginning to form.

Alfalfa and western rye grass made a strong, uniform growth, were clipped during the season and left on the surface as a mulch. A good growth was also left standing as a protection over winter.

Munson.—The farm at this point on which the illustration fields are located is owned and operated by Mr. R. R. Fraser, and is situated in the northeast quarter of section 3, township 30, range 20, west of the 4th meridian, 2 miles southeast of the town. It is on a well-travelled road, and can be seen from the town.

This being the first season this station has been in operation, all of the land except field "A" was summer-fallowed.

Wheat, sown on field "A" made a fair growth up until July, when visited by a hail-storm doing about 5 per cent damage. On August 10 and September 14, frost did between 50 and 60 per cent injury to the crop. The grain harvested was so shrunken that it was useless for seed.

The balance of the land was summer-fallowed, costing \$5.97 cents per acre.

Medicine Hat.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. J. Hunt, and is situated in the east half of section 12, township 13, range 5, west of the 4th meridian, about six miles north of the town, and bordering a well-travelled road.

Both wheat and oats were sown in good time and made a uniform growth. This being the second season, a marked difference is shown in the yields on the rotations. Wheat on the continuous cropping yielded 26 bushels per acre; on the two-year rotation after fallow, 44 bushels per acre; on the three-year rotation, 42 bushels per acre; and after corn, 37 bushels per acre, proving altogether to be a choice sample.

Pincher Creek.—The farm at this point on which the illustration fields are located is owned and operated by Messrs. Sandgren and Carlson, and is situated in section 15, township 6, range 20, west of the 4th meridian, 2 miles west of the town of Pincher Creek.

The area on this station was summer-fallowed in 1915 and cropped as directed in 1916.

The land was thoroughly prepared and the grain sown in good condition.

Wheat and oats made a strong, uniform growth until July 1, when a hailstorm visited this section, doing considerable damage. The grain crop recovered some up to August 11, when a frost reduced the quality, making it useless for seed.

Corn, sown in May, was badly frozen, and had to be ploughed under.

Alfalfa and western rye grass made a strong, uniform growth, and were clipped during the summer and left as a mulch.

Whitla.—The farm at this point on which the illustration fields are located is owned and operated by Mr. R. H. Babe, and is situated in section 8, township 11, range 8, west of the 4th meridian, adjacent to the town of Whitla.

The area selected was in prairie sod; in 1915 it was ploughed and thoroughly prepared for cropping in 1916. Wheat and oats sown about the middle of April made a strong, rapid growth until harvested. There was no injury by rust, smut, or hail to any of the crops on this station. The grain was harvested in good condition, and was a choice sample for seed purposes. Wheat yielded from 41 to 46 bushels per acre, costing 41 cents per bushel to produce; and the oats, 112 bushels per acre, costing 14.8 cents per bushel to produce. Alfalfa and western rye grass made a strong, uniform growth, were clipped during the season and left on the land as a mulch. A good, strong growth was left standing as a protection over winter.

ILLUSTRATION STATIONS IN QUEBEC.

Aubrey.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Samuel Reddick, and is situated in the county of Chateauguay, on the main travelled road between Chrysostome village and Aubrey station. The land in this section is mostly all level and of a heavy sandy loam, with a good deal of clay underlaid with a clay subsoil.

The work during the season has been preparatory for a four-year rotation, to be as follows:—

One-quarter in hoed crops, chiefly corn and roots;

One-quarter in grain and seeded with clovers and timothy;

One-quarter in clover hay, two crops the same season, whenever possible;

One-quarter in hay or pasture.

This rotation will be adopted on all the stations in Quebec.

Owing to the cropping system previously carried on, this season's work has been mostly preparatory for the rotation. The heavy snowfall during the winter, and frequent heavy showers in spring-time, kept the land very wet and delayed seeding operations.

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Drummondville.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Amedee Marier, and is situated in the county of Drummond, on the main road between Drummondville and St. Germain. The land is a heavy, sandy loam with a clay subsoil, typical of a large area.

This farm, and many others in the district, would be greatly improved by tile drainage. Frequent showers during the whole season kept the land so wet that it was almost impossible to get the crops sown, and after sowing most of the crops were drowned out. In the autumn, good, large water furrows were made to carry off the surplus water. Many continuous crops of hay had been grown on this land, and it will take another season to get a four-year rotation established.

Lac à la Tortue.—The farm at this point on which the illustration fields are located is owned and operated by Mr. S. T. Lupien, and is situated in the county of Champlain, on the leading road adjoining the town of Lac à la Tortue. The land is a very light and sandy subsoil, with but little humus on the surface. A regular four-year rotation is being carried on, besides five one-acre fields being sown with different leguminous crops with the object of adding humus to the soil. This being the first season, most of the work was preparatory.

Nomining.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. Lamoureux, and is situated in the county of Labelle, on one of the leading roads adjoining the town of Nomining. The land is a very light, sandy loam, almost void of humus. Most of this area had been in hay and required ploughing and thorough cultivating before a rotation could be established. It is proposed to start a four-year rotation on this farm.

The spring of 1916 opened up fairly early; crops of all kinds made a good growth up to about July, when it became very dry, lessening the yields per acre.

New Carlisle.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. M. Legallais, and is situated in the county of Bonaventure, on the main road between Paspebiac West, about two miles from the town of New Carlisle. The land is a red, sandy loam, rather poor in quality. Weeds have got well established, particularly the sow-thistle. Thorough cultivation will have to be adopted to eradicate the weeds, and a short rotation, along with barnyard manure and heavy seeding of clover, to bring up the humus in the soil. Several kinds of crop had been grown on this land the previous year, and during the season of 1916 most of the work was preparatory in order to arrange for a systematic four-year rotation.

The growing season opened up early and crops got a good start, but were afterwards checked by drought.

Rimouski.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Nazaire Begin, and is situated in the county of Rimouski, about one mile from the town of Rimouski. The soil is a light, sandy loam, with a streak of peaty soil in the four-year field. The subsoil is a hard clay mixed with stone, and in some places the shale rock comes quite close to the surface.

The past season has been more of a preparatory one, arranging to establish both a three-year and a four-year rotation.

The spring opened up fairly early, and good growing weather prevailed until about August, when it became rather dry for the balance of the season.

Stanbridge East.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Chas. S. Moore, and is situated in the county of Missisquoi, on the main road leading to Bedford, and adjoining the town of Stanbridge East. The soil is a heavy, sandy loam, with a sandy and stony subsoil. The surface is rolling and full of moisture. Two rotations of four-year duration are to be established on this station, one on tile-drained land, the other on undrained

land adjoining. The work on this station this season was mostly preparatory, however. Clover, wherever sown, made a very strong growth. Heavy rains delayed spring work, and had this land not been tile-drained, some of it would not have been sown until very late.

St. Gédéon.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wilfrid Simard and is situated in the county of Lake St. John, on a well-travelled road leading to the railway station. The soil is a heavy, sandy loam, well supplied with vegetable matter, underlaid with a clay subsoil.

Two rotations are planned for this station, one of three-year duration, as follows:—

1st Year.—Hoed crops and manured.

2nd Year.—Grain seeded with timothy and clovers.

3rd Year.—Clover hay, two cuts if possible.

A four-year rotation is also to be established as on the Aubrey station.

Owing to several kinds of crop being grown on this land for a number of years, most of the work the past season was preparatory.

St. Isidore.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Adelard Bilodeau, and is situated in the county of Dorchester, adjoining one of the leading gravel roads, about one mile from the village of St. Isidore.

The soil is a heavy, sandy loam, mixed with clay underlaid with a clay subsoil. This station would be greatly improved by tile drainage.

Owing to the frequent heavy rains and consequent wet condition of the soil, spring work was very much delayed.

This being the first year, the work on this station has been preparatory for a four-year rotation.

Tile drainage would improve conditions on this property. There is also a very large area in the neighbourhood which would be greatly improved if the land were tile-drained.

Ste. Julie de Verchères.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Adolphe Hebert, and is situated in the county of Verchères, adjoining the village of Ste. Julie, in a fairly thickly-populated district.

The soil is a heavy loam, with considerable clay and a clay subsoil. The land on this station is fairly level, being similar to a very large section of the neighbourhood. The work on the station during the season was preparatory for a four-year rotation.

The work on the illustration stations is attracting the attention of farmers more each year.

The strong, uniform growth, the early and even ripening qualities of the grain fields, with the attractive appearance of the forage crops, make farmers inquire as to varieties of grain, fodder crops, cultivation, and the system of rotation carried on.

It is gratifying to note that so many farmers are availing themselves of the opportunity of purchasing for seed the well-graded grain grown on the stations.

DIVISION OF EXTENSION AND PUBLICITY.

REPORT OF W. A. LANG, OFFICER-IN-CHARGE.

The work of this division was continued during the year along the lines indicated in previous reports, namely:—

- (1) The display at fairs and exhibitions of an Experimental Farms exhibit.
- (2) The issuing and distribution of Exhibition circulars. Forty new circulars were brought out during the year.
- (3) The enlarging of the mailing lists. The total number of names on the departmental lists was increased by about 42,250 names during the year.
- (4) The supervision of the preparation of "Seasonable Hints." Nos. 4, 5, and 6 were distributed during the year to the mailing list, and 60,000 copies of each issue were sent to 3,000 branches of the principal Canadian banks.
- (5) The issuing of press articles. Some forty-five of these were sent out, during the year, to the agricultural press.

In the exhibition work, the plan followed was to make each branch Farm and Station a centre from which an exhibit was sent out over a circuit of fairs in the district. One hundred and thirty-two fairs were covered from the branch Farms in this way, and thirty by exhibits sent out from the Central Farm at Ottawa.

The exhibits sent out, while attractively arranged and staged, were primarily of an educative character. Every effort was made, not only to interest the visitor in the exhibit itself, but to bring to his attention the work of the Experimental Farms system, and its efforts to aid the farmer. The exhibition work is evidently appreciated by the fair authorities and by the public, as is shown by the increased number of requests for the Experimental Farms exhibit.

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT, J. A. CLARK, B.S.A.

THE SEASON.

The winter of 1915-16 was mild and open, with brief periods of cold weather near the middle of both January and February. March had an extraordinary snowfall of 66 inches. It was stormy and wintry, with a mean temperature almost as low as that of the previous months. The snow went away gradually in April. Spring work commenced on May 8, with the first seeding at the Station on May 13. The weather continued so favourable that seeding operations were completed almost two weeks earlier than for several years. June and July were good growing months. August was dry, and an average hay crop was saved, almost without damage from rain. Grain, potatoes, and roots gave full crops, and a greater proportion than usual of garden corn and tomatoes ripened. Fruit gave a well-coloured, medium crop. The autumn pastures remained good, and the live stock were in excellent condition when housed. Fall ploughing, though delayed by the dry weather of September, was generally completed before winter. The winter months were favourable for getting work done, and March, 1917, has been exceptionally fine.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature, Fahrenheit. | | | | Precipitation. | | | | Total. | Bright Sun- shine. Hours. |
|-------------------|--------------------------|------|----------|------|----------------|-------|-----------|------|--------|---------------------------------|
| | Maximum. | | Minimum. | | Rainfall. | | Snowfall. | | | |
| | Date. | Deg. | Date. | Deg. | Days. | In. | Days. | In. | | |
| 1916. | | | | | | | | | | |
| April..... | 26 | 55 | 4 | 24 | 8 | 2.38 | 4 | 9 | 3.28 | 164.2 |
| May..... | 25 & 26 | 65 | 2 | 30 | 11 | 2.08 | | | 2.08 | 269.4 |
| June..... | 28 | 76 | 2 | 33 | 14 | 2.74 | | | 2.74 | 202.7 |
| July..... | 21 | 86 | 6 & 13 | 48 | 15 | 4.14 | | | 4.14 | 233.4 |
| August..... | 18 | 81 | 2 | 42 | 10 | 1.79 | | | 1.79 | 251.7 |
| September..... | 1 & 2 | 79 | 20 | 39 | 9 | 2.02 | | | 2.02 | 188.6 |
| October..... | 1 | 73 | 19 | 28 | 13 | 4.22 | | | 4.22 | 120 |
| November..... | 9 | 55 | 27 | 10 | 8 | 2.29 | 6 | 14.5 | 3.74 | 88.2 |
| December..... | 13 | 50 | 29 | 1 | 14 | 3.4 | 9 | 11.5 | 4.55 | 32.7 |
| 1917. | | | | | | | | | | |
| January..... | 12 | 43 | 26 | -21 | 5 | 1.98 | 12 | 21.5 | 4.13 | 114.3 |
| February..... | 10 | 45 | 3 & 4 | -16 | 4 | 2.52 | 11 | 14.3 | 3.95 | 128.4 |
| March..... | 27 | 51 | 5 & 6 | 4 | 6 | 1.29 | 3 | 13 | 2.59 | 178.2 |
| Total annual..... | | | | | 117 | 30.85 | 45 | 83.8 | 39.23 | 1,912.3 |

LIVE STOCK.

Horses.—There are now on the Station three teams of draught horses and two colts, one of the teams being pure-bred Clydesdale mares. The number of hours horse labour for the year totals 13,330. Valuing hay at \$10 per ton, oats at \$40 per ton, oil cake at \$40, bran at \$25, and roots at \$4, the horses cost 43½ cents per day at heavy work. The average cost of feed per day for a 5-year-old colt was 15½ cents.

Dairy Cattle.—No dairy herd has yet been established at this Station, two Ayrshire cows only being kept this year. During the winter the following daily rations were fed: Dry cow, 1 pound bran, 50 pounds turnips, 18 pounds mixed hay; cow yielding 17 pounds milk daily, oats 3 pounds, bran 3 pounds, oil cake 1 pound, turnips 50 pounds, mixed hay 13 pounds; cow yielding 40 pounds milk daily, cottonseed meal 1 pound, oats 5 pounds, bran 5 pounds, oil cake 2 pounds, turnips 50 pounds, mixed hay 13 pounds. One cow in a lactation period of 384 days gave 8,263 pounds milk, and the other 7,026 pounds in a period of 334 days. The profit on cow No. 1 between calvings amounted to \$112.63, and on cow No. 2, \$92.23. These records surpass those of the previous year.

Steers.—Twenty steers were purchased in the autumn, and turned into good pasture adjoining a field of rape, to which they had access. They were dehorned before stabling, and all the steers made good gains during the following week. The average cost of the steers, including feed up to the time the experiments were started, was \$6.67 per hundred pounds live weight. The total weight of the five pens at the start was 9 tons and 20 pounds. The weight at the time of the sale, after a sixteen-hour fast, was 11 tons, 979 pounds, or a gain of 2 tons 959 pounds. The average price realized at the auction was \$10.55 per hundredweight. The average profit, after adding the total cost of feed, etc., at current prices to the value of the cattle on November 1, was \$31.09 per steer. These gains were made in 135 days. The following comparisons were made:—

Beef versus Dairy Steers.—Pen I, Shorthorn steers under 2 years old, were compared with dairy grade steers in pen II, that were about 80 pounds heavier per head at the start.

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These two pens were fed as nearly alike as possible. The amount fed each pen on the days mentioned, which are taken at random during the period, shows the method of feeding which was used, namely, an abundance of succulent feed, and a gradual increase in the grain fed from the start. On November 17, each steer's share of the feed was 18½ pounds of corn stover that had been run through a cutting box and allowed to warm, 60 pounds turnips, 8½ pounds hay, 1 pound crushed oats and barley, and one-quarter pound bran. On January 1, each steer was fed 40 pounds mangels, 10 pounds hay, 3½ pounds crushed grain, and 2½ pounds bran. The dairy steers gained 728 pounds, while the Shorthorn steers gained 1,043 pounds, or 320 pounds more, on the same feed.

Heavy feeding of Roots throughout the period versus gradually decreasing the Roots fed from the start to the finish.—Pen II were fed as described above. Pen V were fed as follows: They were started the same as the others, and on November 17 were getting the same feed. On January 1, they got 45 pounds roots, 11½ pounds hay, 2½ pounds crushed grain, and 2 pounds bran. On February 10, they were fed 30 pounds roots, 12½ pounds hay, 3½ pounds crushed grain, and 3 pounds bran. Pen II gained, as already stated, 728 pounds, pen V gained 1,195 pounds, or 467 pounds more in 135 days.

Lambs.—Thirty lambs were purchased in November at 9½ cents per pound live weight. Experiments with different roughages were conducted. The lambs were sold at auction March 15, 1917, and brought 14½ cents per pound. The average profit per lamb, over the first cost, after deducting the value of two lambs lost, and the cost of the feed at current prices, was \$2.84.

POULTRY.

The housing equipment consists of one permanent house 16 by 32, for 100 hens, three colony houses 10 by 12, and three colony houses 8 by 12, along with a number of small rearing coops.

The birds kept are the Barred Plymouth Rock and the White Leghorn, there being 74 of the former and 125 of the latter on hand at the close of the year.

A large number of eggs were sold for hatching purposes, and three incubators were run at the Station poultry plant. These were compared with natural incubation. From the incubators 61.7 per cent of fertile eggs hatched; under the hens, 77 per cent.

One shipment of day-old chicks was made to Murray River, reaching its destination in good shape.

The 73 Rock hens laid 120½ dozen eggs, and the 125 White Leghorn hens 316 dozen, from January 1 to March 31, 1917.

BEES.

The bees were prevented from swarming during the summer. They produced a good crop of honey, and one strong colony was wintered in the new bee cellar. It has come through in good condition.

FIELD HUSBANDRY.

Rotations.—The following rotations are being tested at the Charlottetown Station: Rotation "A" (five years' duration)—First year, hoed crop; second year, grain seeded down; third year, clover hay; fourth year, timothy hay or pasture; fifth year, grain seeded down, clover ploughed under in autumn, and light dressing manure applied.

The land under this rotation provides a large quantity per acre of food suitable for live stock.

Rotation "B" (five years)—First year, hoed crop; second year, grain seeded down; third year, clover hay, ploughed in autumn; fourth year, grain seeded down; fifth year, clover hay or pasture, top-dressed and ploughed in autumn. This rotation is similar to "A," but is planned to control perennial weeds.

Rotation "C" (four years), suitable for a stock farm—First year, hoed crop; second year, grain seeded down; third year, clover hay; fourth year, timothy hay or pasture. Manured in fall and ploughed for roots.

Rotation "D" (three years), suitable for stock farm with abundant rough pasture—First year, hoed crop; second, grain; third, clover hay, manure and plough in fall.

Rotation "G" (seven years)—First year, oats, seeded down; second year, hoed crop; third year, grain; fourth year, clover hay; fifth year, timothy hay; sixth and seventh years, pasture. This long rotation is thought to check or destroy diseases affecting hoed crops, and has been very generally followed on the island.

Crop Yields.—The average yields per acre on the Experimental Farm rotations were: Wheat—Four fields gave an average yield of 25 bushels and 3 pounds. The yield was greatly reduced by two blights, one a *fusarium* and the other *cladosporium*, which did much injury to the wheat crop throughout the province. Barley—"Charlottetown No. 80," a deciduous-awned variety, produced 49 bushels and 7 pounds of barley on rotation A1, which has an area of 1 acre. Hay—The average yield from twelve fields of hay was 2 tons, 227 pounds per acre. Mangels—The average yield from three fields of mangels was 882 bushels and 21 pounds per acre. Oats—The average yield from three fields of Banner oats was 64 bushels and 4 pounds. A hot, dry period, just when the grain was filling, greatly reduced the yield of the earliest sown oats. Potatoes—A small field of Irish Cobblers gave a yield at the rate of 247 bushels per acre. One acre of Green Mountains gave a yield of 297 bushels.

Cultural Experiments.—In 1916 an area was laid off into 440 plots of one-fortieth acre each for the purpose of cultural investigation work along the following lines:—

| No. | Experiment to determine best— | Plots. | Rotation. | Total plots. |
|-----|--|--------|-----------|--------------|
| 1 | Rates of seeding clover and timothy..... | 9 | 4 years | 36 |
| 2 | Method of applying barnyard manure..... | 9 | 4 " | 36 |
| 3 | Method of after-harvest cultivation of sod land for grain..... | 9 | 5 " | 45 |
| 4 | Method of seeding nurse crop for yield of hay..... | 5 | 4 " | 20 |
| 5 | Method of seed-bed preparation..... | 11 | 3 " | 33 |
| 6 | Rates of seeding nurse crop of oats..... | 4 | 4 " | 16 |
| 7 | Depths of ploughing sod for roots..... | 6 | 4 " | 24 |
| 8 | Depths of ploughing sod for grain..... | 6 | 5 " | 30 |
| 9 | Rates of seeding nurse crop of barley..... | 4 | 4 " | 16 |
| 10 | Method of treating neglected land..... | 8 | | 8 |
| 11 | Depths for underdrainage..... | 21 | 4 " | 21 |
| 12 | Depths of seeding cereals..... | 4 | 4 " | 16 |

Averages covering a period of years will, of course, be necessary before any reliable conclusions can be drawn.

FERTILIZER EXPERIMENTS.

The investigational work with fertilizers was continued. One experiment is to determine the quantities and proportionate composition of a fertilizer which will yield the greatest profits. Results so far would seem to indicate that phosphoric acid

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is the most important fertilizer constituent. A second experiment endeavours to ascertain the relative efficiency of different sources of nitrogen and phosphoric acid. This year's results showed that nitrate of soda was the best source for nitrogen, and a combination of acid phosphate and basic slag the best source for phosphoric acid. An experiment to determine the value of fertilizer prepared from seaweed was also carried on.

CEREALS.

In the uniform test plots of cereals, ten varieties of wheat were tried, with yields of from 42 bushels 26 pounds to 25 bushels 24 pounds per acre; fifteen varieties of oats, yielding from 93 bushels 20 pounds to 65 bushels 12 pounds per acre; fourteen varieties of barley yielding from 85 bushels 26 pounds to 32 bushels 45 pounds; and four varieties of peas with yields from 19 bushels 34 pounds to 16 bushels 49 pounds per acre.

The best strains of registered seed were again multiplied on the regular rotation area.

Co-Operative Test of Oats.—The five-year co-operative test of the three leading varieties of oats commonly grown in the province was completed. The average yield per acre from fifty plots of each, as tested on the ten farms, was as follows:—

| | |
|----------------------------|----------------------|
| Banner | 42 bushels 8 pounds. |
| Old Island Black | 56 " 6 " |
| Ligowo | 55 " 8 " |

FORAGE CROPS.

Thirteen varieties of Indian corn were tested on 1/100 acre plots. The seed was soaked in arsenate of lead before planting, which prevented any injury from birds. The yields ranged from 7 tons to 13 tons 450 pounds per acre. The crop was shocked and allowed to dry out for corn stover. Before feeding it was run through a cutting box and allowed to warm slightly in the pile. The cattle then ate it with relish.

In field roots, twenty-four varieties of turnips, sixteen of mangels, six sorts of carrots, and four of sugar beets were tested. The turnips were badly injured by the white grub or larvæ of the June bug, the rust fly attacked the carrots, and some general injury was done by cutworms. The yield of turnips was from 24 tons 1,000 pounds to 15 tons 1,500 pounds per acre; mangels, from 21 tons 1,550 pounds to 14 tons 1,950 pounds; carrots, from 13 tons 950 pounds to 7 tons 950 pounds; and sugar beets, from 15 tons 1,000 pounds to 12 tons per acre.

In clovers and grasses the late spring snowstorms protected the former, but the backward spring weather retarded growth. The crop was, however, an average one. Four plots of alfalfa yielded from 2 tons 550 pounds to 2 tons 1,500 pounds per acre.

HORTICULTURE.

Orchards.—The young orchards of apple, plum, and cherry trees made a fair growth during the season, and bore a light crop of fruit. The young pear orchard that was moved the previous winter suffered but very slightly from the transplanting, and grew well. The old apple orchard gave a good crop of clean fruit.

Small Fruits.—The small fruits gave good returns, except the currants, which were apparently injured by frost at flowering time, and later by stem borers.

Vegetables.—Variety tests and cultural experiments were conducted with all the leading vegetables. The season was a most favourable one.

Lawn Trees, Shrubs, and Flowers.—The numerous trees and shrubs on the lawns and along the railway front made good growth during the season, and are very attrac-

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tive. The annual and perennial flowers, including the water-lilies and iris about the lily-pond, add greatly to the appearance of the Station, and attract many visitors during the summer.

BUILDINGS.

Two small houses were built for rearing chickens during the summer. The Station buildings are all in good condition.

ADDITIONAL LAND.

Five acres of land fronting on the Mount Edward road were leased for ten years from Judge Fitzgerald, with an option of purchase any time during the period.

SALE OF SEED GRAIN, AND DISTRIBUTION OF SEED POTATOES.

The many reports received from those who purchased registered grain from the Experimental Station, in the spring of 1916, are most favourable, and demonstrate conclusively that the growing of the most productive strains pays well. This was particularly true in connection with Charlottetown No. 80 barley, a two-row variety that drops most of its awns in the field. One of our prominent C.S.G.A. members wrote: "This is a farmer's barley."

EXHIBITIONS.

Many features were added to the Station exhibits, which made them outstanding in the buildings at the provincial exhibition at Charlottetown, and at the county exhibitions at Summerside and Georgetown. A special exhibit was sent to Souris. A very fine floral exhibit with special poultry and sheep husbandry features, was set up at the annual flower show of the Prince Edward Island Floral Association, August 30 and 31, 1916. The superintendent judged at the various exhibitions, at the Kinkora School Fair, and at the principal seed fairs held in the province.

SHORT COURSES AND AGRICULTURAL MEETINGS.

The superintendent gave a course of lectures on "Field Crops, Tillage, and the Judging of Cereals" at a series of short courses held during the winter months, at the following centres throughout the province: Glenwood, Bridgetown, Mount Herbert, Vernon River, Tracadie, Bonshaw, Mount Stewart, Montague, and Kensington. Much interest was taken by these communities, and many letters indicate that these courses are a connecting link between the Experimental Station and the farmers of the province. The superintendent gave lectures on horticultural subjects, in Prince of Wales College, to the six short courses in domestic science held during the winter; and also gave demonstrations to the boys of the college on splices, knots, and the making of rope halters. The judges of the Standing Fields Competition for the province held a field conference with the superintendent in August at the Station.

The superintendent was elected chairman of the Committee on Production for the National Service League of Prince Edward Island, and assisted in organizing the labour and resources of the province to produce maximum war supplies for the coming year.

FARMERS' PICNICS, VISITORS.

The farmers' picnics were again a great success. Many of the farmers' institutes arranged to come to the Station on the same day. The number of visitors recorded during the year was 6,203.

EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. S. BLAIR.

The weather during April was exceptionally dry, and some of the land was ready to be worked on the 24th; and, as May was an ideal spring month, farming operations were well advanced when that month closed. Heavy precipitation in June, when rain fell on eighteen days, made spraying difficult, and also resulted in poor weed control. Favourable weather in July allowed the hay crop to be harvested in good condition. Unusually bright weather in August was well suited to the completion of the hay harvest, but potatoes and roots suffered greatly. No frost was experienced in September, and continued warm weather in this month made harvesting conditions excellent. October was rainy, but potatoes, roots, apples, and vegetables were harvested in good condition. The early part of November was exceptionally cold, but the weather opened up a little after the 24th, thus allowing the turnip crop to be harvested and much fall ploughing done. December was not a severe month, and the mean average temperature for January was the lowest it has been for the last three years. February was about normal, and March was ideal.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | | Precipitation. | | | | Total Sunshine. |
|-------------------|----------------|---------|--------|----------------|-----------|---------|------------------------|--------------------|
| | Mean. | Highest | Lowest | Rainfall. | Snowfall. | Total. | Heaviest in 24 hrs. | |
| 1916. | ° | ° | ° | Inches. | Inches. | Inches. | Inches. | Hours. |
| April..... | 39.81 | 57 | 21 | 1.85 | 4.9 | 2.34 | 1.32 | 139.9 |
| May..... | 49.07 | 70 | 29 | 1.73 | 0.0 | 1.73 | 0.45 | 186.8 |
| June..... | 58.3 | 79 | 37 | 3.69 | 0.0 | 3.69 | 1.45 | 160.5 |
| July..... | 66.04 | 83 | 41 | 2.66 | 0.0 | 2.66 | 0.88 | 205.7 |
| August..... | 64.9 | 87 | 42 | 0.86 | 0.0 | 0.86 | 0.49 | 221.2 |
| September..... | 58.93 | 84 | 33 | 1.74 | 0.0 | 1.74 | 0.57 | 174.6 |
| October..... | 48.97 | 76 | 24 | 5.38 | 0.0 | 5.38 | 1.30 | 166.0 |
| November..... | 37.5 | 64 | 3 | 2.18 | 13 | 3.48 | 1.05 | 103.7 |
| December..... | 27.83 | 48 | 2 | 3.15 | 13.5 | 4.50 | 0.80 | 50.6 |
| 1917. | | | | | | | | |
| January..... | 18.85 | 45 | -15 | 2.33 | 16.0 | 3.93 | 1.20 | 84.2 |
| February..... | 18.335 | 49 | -7 | 2.59 | 11 | 3.69 | 0.78 | 95.5 |
| March..... | 28.525 | 57 | 9 | 1.56 | 14.5 | 3.01 | 1.2 | 166.3 |
| Total annual..... | | | | 29.77 | 72.9 | 37.06 | | 1,760.0 |

LIVE STOCK.

Horses.—Nine, including seven heavy and two lighter horses, are kept. Records were kept of the cost of feeding heavy horses in summer and in winter, and also of the cost of winter-feeding idle horses. The average cost of feeding heavy horses in winter was found to be 33.6 cents per day, and in summer 45.9 cents per day, while the idle horses, receiving no grain, were carried through the winter at a cost of 12.2 cents a day.

Cattle.—There are twenty-nine head of registered Shorthorn stock on hand. Eleven registered bull calves were sold during the year. Six of these were yearlings and five were sold when between 3 and 6 months old. Eight of the cows are in the Record of Performance test. The herd has made very satisfactory returns during the year, and the heifers raised give promise of being good producers. Twenty-four steers were purchased in the fall and put on a feeding test. They were dehorned in November and divided into two uniform lots of twelve each. Lot 1 was fed 60 pounds of swede turnips each per day for the first three weeks, 55 pounds each per day for the next four weeks, and 50 pounds each per day for the balance of the feeding period. Lot 2 was fed 50 pounds each per day of corn ensilage for the first three weeks, 45 pounds each per day for the next four weeks, and 40 pounds each per day for the balance of the feeding period. Both lots were fed the same amount of a meal mixture composed of 200 pounds crushed oats, 200 pounds bran, 200 pounds cottonseed meal, and 100 pounds corn meal, and 10 pounds of hay each per day.

The results showed that the steers fed on turnips made an average gain of 286.16 pounds in 136 days, or 2.10 pounds per day, at a cost of 10.73 cents per pound gain. The average increase in value per steer in this lot was \$52.95 for the feeding period, and the profit per steer \$22.23.

The steers in the other lot, fed corn ensilage as a succulent, made an average gain of 304.5 pounds in 136 days, or 2.24 pounds per day, at a cost of 10.36 cents per pound gain. The average increase in value per steer in this lot was \$54.71 for the feeding period, and the profit per steer \$23.14.

To sum up, the steers fed corn ensilage as a succulent made greater gains at less cost, and were consequently sold at a greater profit, than those fed turnips.

A comparison was made between the best six and the poorest six in each lot. The best twelve steers were sold at an average profit of \$26.36, and the poorest twelve at an average profit of \$19.02, a difference of \$7.34.

A comparison was also made between the gains during the first and second halves of the feeding period. The steers in the two lots made average gains of 185 pounds and 201 pounds, respectively, in the first half, and 101 pounds and 103 pounds in the second half, of the feeding period.

A record has been kept of the cost of raising a grade steer, and this record shows that the cost of feed for the first year was \$40.23, and for the next 330 days, \$37.54. The value of the steer at the end of that time was \$104.50.

POULTRY.

Three breeds of poultry were carried during the year, namely, Barred Plymouth Rocks, Rhode Island Reds, and White Wyandottes, a total of 238 birds. These are accommodated in two permanent houses, seven colony houses, and two brooder houses.

Three makes of incubator were tested, and out of 2,450 eggs set, 973 chickens were hatched. Of the different breeds, 22.8 per cent of the White Wyandotte eggs were hatched, 45.8 per cent of the Plymouth Rocks, and 52.2 per cent of the Rhode Island Reds. Artificial incubation and natural incubation were compared, 309 eggs being set under twenty-two hens; 17.5 per cent of these proved infertile, and of the remainder, 65.2 per cent were hatched. By artificial incubation, 47.4 per cent of the fertile eggs were hatched.

The total number of chickens hatched was 1,064. Some 300 succumbed to an attack of pneumonia when quite young, but the remainder were raised with little loss.

The winter grain ration for laying hens was made up of equal parts of oats and cracked corn, except in November, when wheat also formed part of the ration. In ad-

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dition to the above, a dry mash was always before the hens in hoppers. The cost to produce a dozen eggs during the winter months ranged, in the different pens, between 23 cents and 61 cents.

Forty-five birds were crate-fed for two weeks at a cost of \$9.67. Each bird increased in value during that period 31 cents, the increase in weight per bird being 1.15 pounds.

Ten capons were fed from November 1 to February 15, being crate fed for the last two weeks. The increase in value over cost of feed for the first four months of the feeding period was 21 cents per bird, and for the last two weeks 8 cents, making a total profit for the whole period of 29 cents per bird.

BEES.

Of the fourteen colonies wintered outside in 1915-16, only ten survived, owing to the fact that some of the colonies were weak, and the weather in February and March was unusually severe. The total production of honey for the season was small, only 24 pounds being extracted. Only one swarm was produced, and in the fall, the eleven colonies were reduced to eight by uniting some of the weaker ones.

FIELD HUSBANDRY.

Rotations.—No crop rotations have yet been started at this Station, but, as clearing proceeds, it is hoped that land may become available for this work.

Crop yields.—Eight acres of Longfellow corn produced a crop of 99 tons 1,837 pounds. Other small areas brought the total ensilage crop to 165 tons 1,898 pounds. Two acres used in the fertilizer experiment were sown to Victory oats, and yielded from 52 bushels to 59 bushels 9 pounds per acre. Three acres of Banner oats gave an average yield of 41 bushels 11 pounds per acre. The seven acres of dyked marsh was sown to oats, seeded down with 8 pounds timothy, 8 pounds red clover, and 2 pounds alsike per acre. The whole area yielded 333½ bushels of oats. The total oat yield was 1,127.4 bushels. Ten acres of hay yielded at the rate of 2 tons 865 pounds per acre. Besides these crops, 32.4 bushels wheat, 31.7 bushels oats, 27.8 bushels peas, and 7 bushels vetch were grown.

FERTILIZER EXPERIMENTS.

Fifteen acres were utilized for the purpose of carrying on investigational work with fertilizers. An experiment to determine the quantity and proportionate composition of a fertilizer which will yield the greatest profit was continued for the second year on a three-year rotation. Another experiment would seem to show, so far, that nitrate of soda is slightly more effective than sulphate of ammonia as a source of nitrogen, and that acid phosphate is the best source of phosphoric acid. Other experiments compare the value of dog-fish scrap, nitrate of soda, and sulphate of ammonia as sources of nitrogen, endeavour to determine the influence of ground limestone in addition to various fertilizers, and the value of manure. The experiment with sea-weed fertilizer was also continued.

CEREALS.

The cereal work is carried on on land broken from green stumps in 1913-14. Three varieties of barley, two of wheat, three of oats, and two of field peas were tested in half-acre plots. Marquis wheat yielded 18 bushels 27 pounds per acre, and Red Fife 17 bushels 36 pounds per acre. Of the three varieties of barley, Charlottetown No. 80 gave higher yields than Manchurian or Canadian Thorpe, the crop being at the rate of 29 bushels 16 pounds per acre. Victory was the best variety of oats, yielding

52 bushels 4 pounds per acre, and Arthur proved superior to Golden Vine peas, yielding 34 bushels 23 pounds per acre. A comparison was made between White Vetch and Black Vetch for seed. The White Vetch was a week earlier, and gave a better yield than the Black.

FORAGE PLANTS.

The land used for the variety tests of roots and corn was in potatoes in 1915. In the spring of 1916, stable manure was applied at the rate of 15 tons per acre, and after the land had been ploughed and disced, 1,000 pounds basic slag per acre was applied and disced in. A fertilizer containing 4 per cent nitrogen and ten per cent phosphoric acid was then applied at the rate of 500 pounds per acre, and the land again harrowed and smoothed.

Indian Corn.—Sixteen varieties of ensilage corn were tested, Essex Dent giving the highest yield, 16 tons 1,200 pounds per acre.

Roots.—Twenty-one varieties of swede turnips and twenty-three varieties of mangels were planted. The turnips varied in yield from 15 tons 100 pounds to 32 tons 700 pounds per acre and the mangels from 14 tons 700 pounds to 25 tons per acre. Of the six varieties of carrots, Improved Short White gave the highest yield, 22 tons 1,650 pounds per acre, and sugar beet seed of Italian origin gave greater returns than Ontario grown or German seed.

Grasses and Clovers.—Six one-twentieth acre plots of Grimm's alfalfa gave a total yield of 8 tons 310 pounds. The results with alfalfa this year would seem to indicate that this crop can be profitably grown by giving good conditions for starting the plants, and using sufficient limestone to correct soil acidity and supply the lime required for the crop. Various kinds of grasses were tested, and turnips, mangels, and carrots were grown for seed.

HORTICULTURE.

Fruits.—The total area in orchard fruits is 46.7 acres. The land, however, actually occupied by the trees is only one-sixth of the above area, as the space not occupied by the growing trees is devoted to other crops. During the past season a space of 3 feet each side of the trees was kept cultivated and free from weeds. The land outside of this was devoted to other crops. Turnips were grown in the peach and cherry orchard, peas in the plum orchard, clover and grain in the main commercial orchard, and potatoes in the orchard where fertilizer experiments are being conducted. The vegetable crops were also grown in the orchard area. By following this system, vigorous growth is maintained in the orchard trees and all available land, other than that actually required by the trees, is used to produce maximum crops.

The total orchard fruits planted are as follows:—

| | Varieties. | Number of Trees |
|------------------------------|------------|-----------------|
| Apples. | 227 | 2,616 |
| Plums. | 92 | 367 |
| Cherries. | 54 | 154 |
| Peaches. | 47 | 106 |
| Pears. | 55 | 223 |
| Apricots and quince. | 12 | 23 |
| Total. | 487 | 3,489 |

Work was continued at the orchards located at Falmouth, Berwick, and Bridgetown. Through the experiments being conducted at these orchards, much information of permanent value is being secured.

Vegetables.—A number of variety tests were conducted with different kinds of vegetables and other experiments to determine the best cultural methods for vegetables

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were carried on. The season was particularly suitable for tomatoes and corn, which made an excellent showing.

The potato work was confined to variety and cultural tests, and the yield per acre ranged in the varieties from 302 bushels to 117 bushels per acre. The Green Mountain strains ranged in yield from 313 to 180½ bushels per acre, a difference of 132½ bushels, all grown under similar conditions. Seventeen lots of Irish Cobbler ranged from 235 bushels to 93 bushels per acre, a difference in favour of the best yielding of 142 bushels per acre. Seed secured in 1916 from fifteen growers of Garnet Chili yielded from 278 to 153 bushels per acre, a difference of 120 bushels per acre. The Garnet Chili seed secured in 1915 and again planted in 1916 gave crops from 212 to 63 bushels per acre, a difference of 144 bushels per acre.

Ornamental Gardening.—Approximately 18 acres at the front of the farm are more or less given up to grounds and buildings. Part of this area is in old apple trees which are growing promiscuously, and the ground is not cultivated around them. These trees have produced some very satisfactory fruit. The grounds outside of this are in lawns and ornamental shrubs, trees, and flowers. The land along the front of the farm is very sandy, consequently the plants growing on these areas suffer very much during dry periods. The lawns during the summer time become brown, and are not as attractive as they otherwise would be. The past season, except during the latter part of August, was exceptionally favourable, and the lawns retained their green for the greater part of the season. The shrubs and trees are making excellent growth, and all annual and perennial flowering plants made an excellent showing.

FARM IMPROVEMENTS.

Buildings.—One poultry house for 100 hens was constructed during the year, and a shed-roof building 16 feet by 40 feet was erected for the wintering of idle horses and steers. Owing to the addition of an extra pair of horses, the stable in the horse barn would not accommodate them, making the erection of this building necessary.

Clearing Land.—Fifteen acres of additional land were broken up during the season, making in all 127 acres cleared since the farm started in 1911, as set forth in the following table.

The expenses in connection with the clearing of the 15 acres amounted to \$3,475.45, or \$231.69 per acre:—

| | Acres. |
|--|--------|
| New land broken to the end of 1912 | 55 |
| “ “ in the year of 1913 | 17 |
| “ “ “ “ 1914 | 20 |
| “ “ “ “ 1915 | 20 |
| “ “ “ “ 1916 | 15 |
| <hr/> | |
| Total new land broken | 127 |
| Land still available for clearing | 10 |
| Front area devoted to buildings and grounds | 13 |
| Area devoted to poultry | 2 |
| Area for picnic grounds, etc. | 2 |
| Dyked area | 9 |
| Marsh pasture area | 3 |
| Ravine pasture | 5 |
| Area in ravine which is too rough for clearing | 125 |
| <hr/> | |
| Total | 301 |

Roads and Bridges.—New roads were built at the rear of the farm, making a satisfactory automobile road to the rear fields. These roads were built of field

stone, covered with earth. The carriage road running through the lower part of the ravine was also improved, and four bridges crossing the brook at different places constructed, making a fairly satisfactory carriage drive.

Overflow Water.—The catch basins put in last season have materially lessened the erosion usually caused by heavy rains and spring floods. By continuing this work it is hoped the usual damage from water will be overcome.

Underdraining.—It has not been possible to do much underdraining, although several of the fields at the rear of the farm will require that this be done. One drain of 1,000 feet of 4-inch tile was put through an area in one of the fields at the rear, and several smaller drains, totalling about 500 feet, were put in in another field. Owing to there being many boulders in the soil, underdraining in these fields is very difficult.

EXHIBITIONS.

Exhibitions were attended at Bridgewater, Yarmouth, and Shelburne, where displays illustrating the work being done by the Experimental Farms' system were arranged. These exhibitions were well attended, and much information given to visitors as to the nature of the work being done.

AGRICULTURAL MEETINGS.

In addition to attending meetings of the Fruit Growers' Association and Farmers' Association of Nova Scotia, most of the winter months were taken up in attending and addressing meetings in the counties of Kings, Hants, Digby, and Annapolis. The short courses at Truro and Lawrencetown were attended, and addresses given.

EXCURSIONS.

A large farmers' picnic from the country bordering on the Dominion Atlantic railway was held during July, and many smaller excursions and picnics were held during the season.

In order to give every facility possible for visitors, ample picnic grounds, with tables and a house for heating water, have been provided.

EXPERIMENTAL FARM, NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT, W. W. BAIRD, B.S.A.

THE SEASON, 1916-17.

During the first part of the winter of 1915-16 the weather was unsettled. The ground remained bare until well on in January. A heavy snowfall was experienced during the latter part of January, February and March, thus providing a protective covering for all crops at the period when most required. The snow disappeared gradually, preventing any excessive washing or flooding of the ploughed fields. Because of light rains and high temperature during April and May, farming operations were started some thirteen days earlier than in the previous season. This was a great help to the farmers, as there was much ploughing to be done, since the exceptionally wet fall of 1915 prevented as much work being accomplished along these lines as usual.

Most grain was seeded by the end of May. Vegetation made fair growth. June was less favourable for planting, having eleven rainy days recording a total precipita-

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tion of 4.74 inches. Excessive moisture in the soil during this period retarded the growth of grain; barley suffered the most. July and August were good growing months, and all crops made excellent progress. Hay was stored in first-class condition, and ideal harvest weather continued during September. The season was exceptionally good for the growth of corn; better than for some seasons past. The temperature was low and the precipitation heavy for October. The rain was beneficial in softening the ground for ploughing operations. November was unfavourable for the harvesting of roots; many experienced much difficulty in getting them stored in good condition. December and January were mild, with light flurries of snow towards the end of the latter month. Heavy snowfalls were experienced in February and March.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature. | | Precipitation. | | | Total Sunshine. |
|---------------------|--------------|--------|----------------|-----------|---------|-----------------|
| | Highest | Lowest | Rainfall. | Snowfall. | Total. | |
| | ° | ° | Inches. | Inches. | Inches. | Hours. |
| 1916. | | | | | | |
| April..... | 57 | 24 | 1.63 | 5.00 | 2.13 | 142.60 |
| May..... | 70 | 26 | 2.42 | ..... | 2.42 | 186.20 |
| June..... | 77 | 32 | 4.74 | ..... | 4.74 | 180.50 |
| July..... | 85 | 39 | 2.60 | ..... | 2.60 | 217.30 |
| August..... | 85 | 37 | 1.70 | ..... | 1.70 | 247.30 |
| September..... | 80 | 31 | 1.64 | ..... | 1.64 | 170.80 |
| October..... | 75 | 20 | 5.55 | ..... | 5.55 | 132.80 |
| November..... | 60 | 3 | 1.22 | 11.00 | 2.32 | 96.80 |
| December..... | 55 | 2 | 2.71 | 12.00 | 3.91 | 61.60 |
| 1917. | | | | | | |
| January..... | 45 | -23 | 1.68 | 17.00 | 3.38 | 98.70 |
| February..... | 41 | -16 | 1.44 | 14.00 | 2.84 | 122.00 |
| March..... | 56 | -7 | 0.90 | 12.00 | 2.10 | 166.30 |
| Total for year..... | | | 28.23 | 71.00 | 35.33 | 1,822.90 |

LIVE STOCK.

Horses.—Thirteen horses are kept on the Nappan Farm at present, made up of ten heavy draught, including four pure-bred Clydesdale mares, and three lighter horses suitable for exports, cultivating, light harrowing, etc.

Experimental work has been commenced on the feeding of horses, while on light and on heavy work, and when idle. Data are also being gathered on the cost of raising colts.

Dairy Cattle.—The “grading-up” experiment has now completed its fifth year. The object of the work is to show the value of using a pure-bred sire on the average dairy stock of the country. The work so far has given satisfactory results, but has not yet been continued long enough for definite conclusions to be drawn, and the low percentage of heifer calves dropped thus far has been a drawback. The great advantage, if not necessity, of the proper and liberal feeding of dairy cattle has been very clearly brought out in connection with this experiment.

Beef Cattle.—Owing to the general decrease in production and finishing of good beef cattle, the work in this line was increased at the Experimental Farm this year.

Thirty-four steers, well-bred Shorthorns of beef type, were purchased locally in November, 1916, at \$6.65 a hundred pounds. They were sold on March 27, 1917, at

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\$10 a hundred. The average profit per steer for the eighty-eight days' test was \$36.14; average weight at beginning, 1,052.7 pounds; at finish, 1,221.6 pounds; an average increase of 168.9 pounds.

The plan of experiment and the comparative results obtained are shown in the following table, in which is a summary of eight lots fed, giving the main points of interest for comparison:—

| | How Housed | | | | | | | |
|--------------------------------------|----------------------|---------------------------|--------------------|------------------------------------|---------------------------|--------------------|-----------------------|-----------------------|
| | Steers tied in barn. | | | Steers loose in box stall in barn. | | | Open Shed. | |
| | Feed. | | | Feed. | | | Feed. | |
| | Lot 1 | Lot 2 | Lot 3 | Lot 5 | Lot 4 | Lot 6 | Lot 7 | Lot 8 |
| | Roots and meal. | Roots, ensilage and meal. | Ensilage and meal. | Roots and meal. | Roots, ensilage and meal. | Ensilage and meal. | Oats, meal in mixture | Corn, meal in mixture |
| Number of steers..... | 4 | 2 | 2 | 2 | 4 | 2 | 9 | 9 |
| Average weight of steer at start lb. | 1,253 | 1,176 | 1,202 | 1,068 | 1,090 | 1,012 | 928 | 1,016 |
| Daily rate of gain per steer.....lb. | 1.96 | 1.46 | 1.56 | 1.61 | 1.84 | 1.64 | 1.90 | 2.158 |
| Cost of one pound gain.....cents | 9.37 | 12.59 | 11.77 | 11.34 | 9.96 | 11.10 | 9.44 | 8.51 |
| Cost of feed per steer per day.cents | 18.39 | 18.39 | 18.39 | 18.30 | 18.39 | 18.30 | 18.01 | 18.37 |
| Profit per steer.....\$ | 43.08 | 36.08 | 37.85 | 33.88 | 36.58 | 32.32 | 32.05 | 36.93 |

Sheep.—A flock of Shropshires is being built up at Nappan, and now consists of eighteen ewes and two rams. The lamb crop of 1916 was a fairly good one. The ewes will be kept in the flock, and the rams sold as breeders.

A grade flock has also been established, with the view of carrying on a grading-up experiment, using a pure-bred Shropshire ram on the grade ewes.

Swine.—Two breeds are kept at Nappan, namely, Berkshires and Yorkshires, the total number on hand March 31, 1917, being fourteen. This year the Yorkshires did better than the Berkshires. In both cases, all suitable young pigs were sold for breeding purposes.

Ten 1-year-old grade Yorkshire and Berkshire sows were purchased in March to start a grade herd. The stock from these will be used for experimental work in feeding, to demonstrate the use of self-feeders vs. hand feeding; also the profit to be realized from pork production.

POULTRY.

The experimental work with poultry was somewhat disorganized this year owing to difficulty in obtaining a competent poultryman.

The cold and backward spring made hatching and rearing very difficult. The obtaining of early-hatched pullets, so necessary to egg-production the following winter, is one of the greatest poultry problems in this district.

Four breeds were kept during the past year, namely, Barred Rocks, 77; White Wyandottes, 70; White Leghorns, 57, and Rhode Island Reds, 27, a total of 231 birds.

Six incubators were used, three Prairie State, two Nonpareil Tamlin, and one Cyphers. The average percentage of fertile eggs for each breed was: Barred Rocks, 85.7 per cent; Wyandottes, 57.9 per cent; Rhode Island Reds, 54.8 per cent; and Leghorns, 84.0 per cent.

In tests for winter egg production, it was found that the cost per dozen eggs was considerably lower for the pullets than for the hens in most cases.

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BEES.

Rainy weather during June and July lessened the honey flow very materially, the average production per colony being only 26.14 pounds, as against 178.6 pounds the previous year.

Fifteen strong colonies were put into the bee cellar in the fall of 1916, and a comparison of different stores for wintering was carried on, using: (1) sugar syrup only; (2) half sugar syrup and half clover honey; (3) half sugar syrup and half golden-rod honey; (4) golden-rod honey; and (5) clover honey. The hives wintered on clover honey came through in the best condition.

A demonstration hive was taken to all the exhibitions and attracted much interest.

FIELD HUSBANDRY.

Rotations.—Three rotations are being operated at the Nappan Farm, namely:—

Rotation "B" (five years): First year, roots, or corn; second year, grain seeded down; third year, clover hay, fall ploughed; fourth year, grain, seeded down; fifth year, clover hay, ploughed in autumn.

Rotation "C" (four years): First year, roots or corn; second year, grain, seeded down; third year, clover hay; fourth year, pasture, fall ploughed.

Rotation "D" (three years): First year, roots or corn; second year, grain, seeded down; third year, clover hay, ploughed in autumn.

Rotations "B" or "D" are most suitable where plenty of rough pasture is available. "C" is an excellent rotation for a dairy farmer or any one keeping a large herd with insufficient pasturage.

Crop Yields.—The total area in grain, including test plots, was 18 acres, of which 3 acres were in wheat, 8 in oats, 5 in mixed grain, and 2 in barley. The average yields were: 26 bushels 56 pounds, 45 bushels 18 pounds, 25 bushels 8 pounds, and 7 bushels 33 pounds, respectively. The barley was practically a failure, due to unfavourable weather conditions during the early part of the season.

In roots and potatoes there were 12½ acres, including test plots; 7¾ acres in turnips; 3 acres in mangels; 1½ acres in potatoes. The average yields were: 696 bushels 3 pounds, 476 bushels 43 pounds, 305 bushels 20 pounds, respectively.

FERTILIZER EXPERIMENTS.

A comparison is being made between plots receiving one or two fertilizing elements and a complete fertilizer, in order to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profits. Another series of experiments seeks to discover the relative efficiency of different sources of nitrogen and phosphoric acid; different plots receiving different rates of nitrate of soda or sulphate of ammonia for the nitrogen and acid phosphate and basic slag, acid phosphate alone, basic slag alone, or bone meal for the phosphoric acid. The experiment with seaweed fertilizer was continued. Four plots to be planted to potatoes were used; two receiving manure alone, the other two manure and seaweed fertilizer. An average increase of 26.8 bushels per acre was noted on the plots receiving the application of seaweed fertilizer.

CEREALS.

Thirteen varieties of spring wheat were tested in duplicate plots of one-sixtieth acre each, the highest yield being obtained from Huron, 39 bushels 53 pounds; the lowest was White Fife, 22 bushels 45 pounds.

In twelve varieties of barley tested, Canadian Thorpe was highest with a yield of 39 bushels 18 pounds per acre, and French Chevalier lowest with a yield of 21 bushels 12 pounds.

Thirteen varieties of oats were tried. Pioneer gave the highest yield, 63 bushels 18 pounds per acre; and Daubeney the lowest, 35 bushels 10 pounds.

Four varieties of buckwheat gave yields ranging from 26 bushels 32 pounds per acre for the Rye variety to 14 bushels 8 pounds for Silverhull.

In six varieties of field peas, Golden Vine yielded best, 11 bushels 20 pounds per acre; and White Marrowfat lowest, 4 bushels.

Field Crops of Seed Grain.—Fourteen acres were sown in one-acre and two-acre lots of wheat, oats and barley, for seed grain. The barley was almost a failure, due to excessive moisture. The wheat yielded from 28 bushels 48 pounds to 23 bushels 10 pounds per acre; the oats from 54 bushels 27 pounds to 37 bushels 13 pounds per acre. The greater portion of the seed obtained was thoroughly cleaned by use of the fanning mill and hand-picking, and was sold in limited quantities to farmers desiring a pure strain of selected seed.

FORAGE PLANTS.

Fifteen varieties of Indian corn were sown in duplicate plots of one one-hundredth acre each. The highest yield was obtained from Salzer's North Dakota, 21 tons 1,000 pounds; and the lowest from Free Press, 11 tons 750 pounds. Over a period of five years, the Longfellow variety, with an average yield of 14 tons 1,559 pounds, has proven as reliable a variety for the Nappan district as any so far tested.

Among twenty varieties of turnips, Best of All gave the highest yield, 30 tons 1,150 pounds per acre; and Lapland the lowest, 22 tons 500 pounds.

Sixteen varieties of mangels ranged in yield from 12 tons 1,000 pounds for Yellow Leviathan to 6 tons 1,700 pounds for Golden Tankard.

Six varieties of carrots were tested, the highest yield being obtained from Improved Short White, 17 tons 450 pounds; and the lowest from Orange Giant, 14 tons 650 pounds.

Three varieties of sugar beets yielded 5 tons 1,650 pounds, 5 tons 600 pounds, and 4 tons 750 pounds, respectively.

An experiment was begun to ascertain the possibility and profit of producing field-root seed. A quantity of turnips and mangels was selected in the fall of 1915 and stored in pits for the winter. The loss through decay was almost negligible. The roots were planted out June 5 and 6. During the season the plantation was injured by sheep breaking in, so no data as to yield are available, but the possibility of producing good-quality seed was established.

Imported seed of mangels and turnips was tested against Canadian-grown seed of the same varieties. The latter gave better yields in all cases. This test will be continued to get the results of several years' tests.

Grasses and clovers.—Three rows of Grimm's alfalfa were sown June 16. Growth was good throughout the season, but it winter-killed about 75 per cent.

HORTICULTURE.

Fruits.—Tree fruits were somewhat below the average, and much more scab was in evidence, owing to weather conditions having interfered with spraying. Small fruits gave fair returns.

Vegetables.—In addition to the tests of varieties carried on each year, the work of endeavouring to improve the strain of a few of the best varieties of potatoes was continued, the same sorts as in previous years being used, namely, Irish Cobbler, Carman No. 1, Wee McGregor, Empire State, Rawlings Kidney and Green Mountain. A marked improvement is being noticed, the yields from the selected seed being considerably heavier than from the unselected.

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Ornamental gardening.—The ornamental trees and shrubs made very good growth. The eighteen hedges of different kinds did well, and are now excellent specimens. The common spruce hedge is undoubtedly a beautiful one, and can be planted at little cost. Nothing adds more to the appearance of the farm home than a well-kept hedge.

The new perennial border was so arranged that the annuals are intermixed with the perennials, giving a continuous and attractive bloom from early spring to late fall.

FARM IMPROVEMENTS.

Buildings.—The old sheep barn was remodelled into an up-to-date bull-and-calf barn, the Rutherford system of ventilation being installed, and more light arranged for. The building is 32 by 63 feet. The old, loose stone wall was replaced by a good cement foundation. Inside, the building was divided into halves with a 5-foot passage through the centre, a floor of cement laid on a good foundation of 6 inches of stone, and the walls and ceiling sheathed with $\frac{1}{2}$ -inch matched lumber.

On the north side, six bull box-stalls were strongly built of 2-inch dressed lumber, with grated fronts and doors opening to the north into the yard, which will later be fenced in specially for bulls. Five of the box stalls are 9 feet 2 inches by 12 feet, and one is 15 feet 2 inches by 13 feet. Partitions between pens are 7 feet high; windows 2 feet by 2 feet light each pen.

On the south are six calf pens, 9 feet 2 inches by 11 feet 6 inches, with partitions 4 feet 6 inches high between. The fronts of pens are finished with calf-pen stanchions. Light is admitted through large windows on the south, thus making ideal pens for young calves. The building has been rewired for electric lights and painted on the outside to match the rest of the stables. This adds greatly to the general appearance of the stables.

A rough shed for feeding steers was erected on the hillside just east of the main barn, 20 feet by 40 feet south. This shed has 7-foot posts in front and 5-foot posts at the back. It was single boarded, battened, and divided into two pens, 20 feet by 20 feet each, by a plank partition. A long trough was built at the back running the full length of the shed, with a shutter opening in from the north side for feeding stock. The roof was single boarded, covered with paroid roofing. One window 2 feet by 3 feet lights each pen from the south. Doors 4 feet by 6 feet 6 inches open into the yard on the south.

Electric Light System.—The system was installed in 1914, and was this year extended up to the new sheep barn, making it much more convenient for looking after the stock. The new bull and calf barn was rewired to suit the remodelling of the building.

Fencing.—All line fences, which have been up for some twenty years, were gone over and repaired. Around the wood lot a roadway of 20 feet was cut out in the winter and spring of 1917 to make way for the erection of a new fence, as the old one had outlived its usefulness. Over 8,000 poles were cut and hauled to place during the winter.

Clearing New Land.—The clearing of new land by prisoners of war was continued during the year, the work starting on the 25th day of April and proceeding throughout the season, as the weather permitted, until the 19th of January. Some 35 acres were chopped out of forest. The brush was piled and burned before stumping started. All timber cut was manufactured into wood and props. A total of 41 acres was stumped, piled, and levelled with pick and shovel, making it ready for the plough.

This ground was very much more difficult to plough than was the first 26 acres, as the stumps were much larger, ranging in size from 3 inches to 36 inches in diameter, were mostly of hemlock, hardwood, spruce, and fir, and were very numerous. Two kinds of stumping machine were used, the Improved Logan stumper and the Kirstin one-man stumper. The latter machine gave us better satisfaction for all stumps up to 12 inches. The former has the greatest power, but will not stand the wear and tear so well and, consequently, it costs more to keep it in repair.

Water System.—The new system laid last year is giving great satisfaction, and has plenty of force. The line branching off from the main pipe to the watering trough in the yard was changed, being run out into the centre of the yard instead of up against the side as it was previously. Here a circular cement trough was built, with an overflow pipe into the drain in the ravine. An underground shut-off was put in the water line in order to prevent freezing during cold weather.

Barnyard.—The old barnyard was cut down about a foot deeper, and the earth thus removed was wheeled over to a ravine just east of the yard, which was some 5 to 6 feet deep. In the ravine a large 18-inch drain was built, mostly of cement tile, making a good drain to carry all surface water from the yards and fields above. Then the ravine was filled level with the main barnyard. Two 6-inch tile drains were laid from the main barn to the large drain in the ravine. This carried off all surplus water from the buildings. Along in front of the cow stable the large stone taken from the wall of the old sheep barn was laid, making a solid stone walk 8 feet wide along the entire front of the stable. The remainder of the yard will be stoned and gravelled next season, thus making a clean yard for the dairy stock, which will be a great improvement over the old yard that was frequently very muddy.

Roadmaking.—As much time as could be spared from farm work was given to improving the public highway north and south of the Farm, more especially with the use of a split-log drag. Likewise the main driveways of the Farm were kept in good condition throughout the year. The main driveway which runs east and west through the centre of the Farm was straightened out and made 20 feet wide back to the second brook, making a good road for either wagons or autos, and a good cement culvert was made over the first ravine, enabling the road to be graded up some 3 feet higher. This road will be continued to the newly cleared area next season.

MEETINGS ATTENDED.

During the year the superintendent attended and gave addresses at the following agricultural meetings: Nappan school, June 21; Cumberland County farmers' picnic held at the Farm, July 19; visited seaweed experiments throughout Cumberland County; August 15; visited flax fields in Pictou County, August 23-29; judged field crops in Cumberland County, September 1 and 2; Halifax exhibition, September 21; judging school gardens, Little River, Mansfield, and Leicester, September 25; Stewiacke exhibition, September 27 and 28; Port Elgin exhibition, October 3 and 4; Sackville exhibition, October 11; Apple show in St. John, November 1; judging at Nappan school exhibition, November 10; Agricultural meeting at Southampton, December 1; Moncton poultry show, December 11-15; Potato show at Woodstock, December 26-28; Truro short course, January 8; Kings County farmers' rally at Kentville, January 10; Nova Scotia Farmers' Association at Amherst, January 23-26; New Brunswick Farmers' and Dairymen's Association at Fredericton, January 29 to February 2; Short course at Sussex, February 5-7; Short course at Woodstock, March 12-15; Chatham short course, March 19-22.

EXHIBITIONS.

An exhibit of farm produce grown at Nappan, also of model, etc., was staged at Halifax, September 13-21; Antigonish, September 19-20; Stewiacke, September 25-27; Sydney, October 3-6; Arichat, October 10-11; Port Elgin, October 3-4. Arrangements were made to put one up at Musquodoboit and Guysborough, but owing to the delay of exhibit by rail it arrived too late at the latter places.

EXCURSIONS AND VISITORS.

Five excursions were held at the Farm during the season; a great many small parties also visited the Farm. The approximate number of visitors during the year was 2,350.

EXPERIMENTAL STATION, FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT, W. W. HUBBARD.

THE SEASON.

After a very mild November and December in 1915, with a heavy rainfall in the latter month, and about two inches of snow on the ground after the 9th, January followed with continued mild weather and only about five inches of snowfall. The fields, in fact, were practically bare, and there was just enough ice on the roads to make passable sleighing. February, however, was colder than the average, with a snowfall of 25.3 inches. Thawing weather took off most of it, and the end of the month saw many bare spots in the fields, with more or less ice over considerable areas. March was a cold month, the mean temperature of 19.8 degrees being 6 degrees below the average. The snowfall was 18.3 inches, with no rain whatever. The ground was thus well protected until, on the 28th of the month, a warm wave took off every vestige of snow. Fortunately, April was cloudy with no severe frost or hot sun to kill the exposed roots. It was also the driest April on record, and there was practically no start in vegetation until May. May was also dry, with a mean temperature of 50.2 degrees and only three slight frosts in the early part of the month. There seemed to be an abundance of moisture in the land, however, and growth was good. The first half of June also gave favourable weather, though more sun and heat would have given more rapid growth, but the latter half brought a deluge, the rainfall being 6.12 inches in thirteen days, and more or less crop was damaged by flooding and washing. Turnip seeding that would otherwise have been finished by the 20th June had to go over into July. This latter month brought very favourable weather, with precipitation and temperature slightly above the average. August, with a mean temperature of 66.1 degrees, was 3.1 degrees warmer than the average and, with only 1.59 inches precipitation, had less than half the average rainfall. September followed warm and dry, and October, while comparatively cool, was a most favourable month for harvesting and farm work generally. So far, therefore, as weather conditions went, the season was, on the whole, very favourable for crop production. Clovers and grasses came through with very little winter-killing, and started strong. August and September were rather warm for the best growth and development of potatoes and root crops, though unusually favourable for corn.

8 GEORGE V, A. 1918

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | Precipitation. | Total Sunshine. |
|---------------------|----------------|---------|----------------|-----------------|
| | Highest. | Lowest. | | |
| 1916. | ° | ° | Inches. | Hours. |
| April..... | 64 | 19 | 1.41 | 169.25 |
| May..... | 76 | 30.5 | 2.91 | 203.6 |
| June..... | 81 | 37 | 6.12 | 139.45 |
| July..... | 93.5 | 40 | 3.96 | 215.6 |
| August..... | 92.5 | 40 | 1.59 | 235.35 |
| September..... | 81.5 | 33.5 | 2.95 | 157.25 |
| October..... | 80 | 22 | 3.6 | 151.85 |
| November..... | 64 | - 4 | 2.52 | 88.6 |
| December..... | 45 | -10 | 3.02 | 77.1 |
| 1917. | | | | |
| January..... | 34 | -22.5 | 4.01 | 119.55 |
| February..... | 38.5 | -19 | 2.9 | 129.2 |
| March..... | 47.5 | - 5 | 2.27 | 159.81 |
| Total for year..... | | | 37.26 | 1,846.6 |

LIVE STOCK.

Horses.—Ten draught mares, two geldings, and two general-purpose mares have been kept busy on the Station work all through the year, with the exception of the geldings which were laid off from December 1 until March 31. One of these, at a food cost of \$10.30, from January 1 to March 31, lost 110 pounds in weight. The other, at a food cost of \$9.35 for the period, lost only 35 pounds in weight. The cost per horse for feed while at hard work during the period December 1 to March 31, was \$32.50. The average daily ration was 9.9 pounds grain, 18 pounds hay, and 3 pounds roots.

Two colts, a grade Clyde gelding and a grade Percheron filly, have been raised to three years old and a weight of 1,400 pounds at a food cost of \$96.95 each. They are thoroughly broken, and are worth, on the present market, from \$200 to \$225 each.

Dairy Cattle.—The three pure-bred herds of Shorthorns, Ayrshires, and Holsteins are gradually increasing, and the grade herd as the young half-bred grade heifers are coming on, is being reduced. Every individual in the grade milking herd made a profit last year over cost of feed, the variation being from \$69.29 down to \$26.08, milk all made into butter, which sold at 35 cents per pound, and no credit given for calf.

Beef Cattle.—Thirty steers were bought in September and October at a cost of 6.17 cents per pound. They were sold on March 17 at 9.5 cents per pound. It was found more profitable to feed 4 pounds of grain per day than 6 pounds, and ensilage alone during the latter part of the feeding period gave greater gains than roots and ensilage combined. A substantial profit was made this year in the feeding operations.

A feeding test, duplicated, with four lots of calves in each test, was conducted to determine the cost of rearing calves. On new milk a pound of gain cost 13.2 cents; on skim-milk and a home-mixed grain ration added, a pound of gain cost 6.7 cents; on calf meal and water, a pound of gain cost 14.8 cents; and on calf meal and skim-milk, a pound of gain cost 8.9 cents.

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Sheep.—The flock of Shropshire sheep has done very well. They went into winter quarters very fat after fall feeding on rape, received a small grain ration after January 1, and began to drop lambs in February. At six weeks old the lambs are weighing from 30 to 50 pounds each.

POULTRY.

The stock kept includes 80 Barred Rocks, 101 Rhode Island Reds, 90 White Leghorns, and 78 White Wyandottes. The number of eggs laid during the year was 28,056. Breeding pens made up from the best laying pullets were mated to cockerels imported from the leading breeders in the respective breeds. The chicks raised numbered 1,589 from 2,432 eggs set. Early hatched pullets began laying in November.

BEES.

Three colonies of bees came out of winter quarters, and two swarms were taken off, and 38 pounds of honey removed. These five colonies were well fed with syrup in September to bring the weight of the hive up to about 80 pounds, and then packed in planer shavings inside the winter cases. Four colonies are alive this spring.

FIELD HUSBANDRY.

Owing to preliminary work, such as clearing, draining, breaking land, fencing, etc., being necessary, regular work with rotations and field cultural experiments has not yet been begun at Fredericton. Seventy-three acres were in grain and roots in 1916, and 38 acres in hay. The latter yielded at the rate of 2 tons 58 pounds per acre. One and one-quarter acres were sown to a mixture of peas, oats, and barley, and the crop cut green and fed to the cattle in the stable.

Fifty acres were seeded to oats; part of it was rough, newly-broken land where, on account of late seeding and the impossibility of getting a good seed-bed, the yield was only 15 bushels per acre. On well-cultivated land the yield was slightly over 50 bushels. The seed sown on the area was 185½ bushels, and the total yield 1,667½ bushels.

Arthur peas yielded 26 bushels per acre.

The yield of swede turnips averaged 520 bushels per acre, and the white turnips 923 bushels per acre. Four thousand pounds waste lime applied to 1 acre gave an increased yield over the un-limed acre beside it of 113 bushels.

Many varieties of turnips and mangels were tested in plots. The highest yield for swede turnips was 47 tons 640 pounds per acre from home-grown Kangaroo seed, and the average of twenty-three varieties was 33 tons 200 pounds per acre. The yield of twenty-three varieties of mangels averaged 28 tons 180 pounds per acre, and the highest yield was 41 tons 400 pounds per acre from Ottawa-grown Yellow Intermediate seed.

Twelve and three-quarter acres of Indian corn gave a weight, when freshly cut, of 15 tons 818 pounds forage per acre. When hauled to the silo after several dry days, the weight was 10 tons 1,513 pounds per acre.

Peas, oats and vetches gave 10 tons 1,500 pounds per acre of green feed. The crop from 4 acres was put in the silo and fed out during August, September and October.

FERTILIZER EXPERIMENTS.

One hundred and twenty plots of one-twentieth acre each were under fertilizer experiments. In one series where the three-year rotation was completed, it was found, among other data, that where 500 pounds of complete fertilizer per acre was used there was a greater net profit than where 1,000 pounds was used.

In field work, experiments both with fertilizer and with lime were made on corn and turnips. With 900 pounds 4-10 fertilizer per acre on corn for silage, an increase of 4 tons 392 pounds per acre was obtained, not quite sufficient, however, to pay the whole cost of fertilizer. Dried and ground seaweed at the rate of 1,500 pounds per acre gave an increase of 52 bushels and 40 pounds of potatoes when used with 1,000 pounds of 4-10 fertilizer; when used with 18 tons stable manure per acre the increase was 10 bushels and 40 pounds.

The addition of 4,000 pounds lime per acre on turnips gave an increased yield of 113 bushels. On other crops, on plot experiments, and even on alfalfa, lime gave negative results. These results are, of course, not conclusive, and the work must be continued for a series of years before reliable results may be hoped for.

CEREALS.

Five varieties of wheat were tested. Early Red Fife gave the highest yield, 18 bushels 45 pounds; and Red Fife the lowest, 12 bushels 8 pounds. Early Chevalier gave the best yield among the five varieties of barley tried, 24 bushels 3 pounds per acre; and Manehurian the lowest, 6 bushels 42 pounds. Of five varieties of oats, Banner yielded best, 36 bushels 22 pounds; and Daubeney lowest, 28 bushels 23 pounds per acre. Of five varieties of peas, White Marrowfat, the highest, gave a return of 15 bushels 30 pounds per acre; and Brittany, the lowest, 8 bushels.

FORAGE CROPS.

Ten varieties of flint corn, eight of dent, and three of sweet corn were tested. Additional plots of Quebec Yellow, Free Press, and Canada Yellow were grown from seed ripened at this Station in 1915.

The yield of ensilage per acre in tons varied from 14.38 tons for Yellow Flint (unnamed) to 2.38 tons for Bear Island Flint. The highest percentages of ripened ears, 64.9, was given by Free Press, the lowest by King Philip, none. In the dent, or ensilage varieties, Golden Glow gave the highest yield, 15.3 tons per acre, and Northwestern Dent the lowest, 8.9 tons, of ensilage.

The three varieties of sweet corn tried, Brannan Sweet, Golden Bantam, and Fordhook, all ripened fair crops.

Twenty-three varieties and strains of turnips yielded well in all cases, the highest being Kangaroo (Fredericton seed), with a yield of 47 tons 650 pounds per acre, and the lowest, Canadian Gem, 26 tons 700 pounds.

In twenty-two varieties and strains of mangels tested, Yellow Intermediate (Ottawa seed) gave the highest yield, 41 tons 400 pounds per acre, and Danish Sludstrup (commercial seed) the lowest, 21 tons 250 pounds.

Three varieties of sugar beet gave an average yield of 16 tons 1,333 pounds per acre.

Among six varieties of carrots grown, Ontario Champion, the highest, gave a yield of 23 tons 500 pounds, and Orange Giant, the lowest, 16 tons 1,600 pounds.

In the forty-five plots of clovers and grasses, there was considerable winter-killing, especially of meadow fescue, sheeps' fescue, perennial rye grass, and red clover. Alfalfa also winter-killed badly. The value of alfalfa for this district has not yet been proved.

Growing Turnip Seed.—In the autumn of 1915, four thousand roots of the Invicta variety of swede turnips were packed in a cellar with sand, care having been taken not to injure the crown of the turnip nor to remove any of the roots.

While the outside of this pile of roots kept well, it was found in the spring that the roots in the interior had spoiled; consequently, only about 10 per cent of the

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number stored were fit to plant, and these did not all grow. A very good quality of seed was obtained, and in the autumn of 1916 roots from the same variety were stored in crates holding six bushels each. These have apparently kept perfectly, and will be planted for seed production.

HORTICULTURE.

Fruits.—There are now 872 trees in the young orchards, namely, 651 apple, 125 pear, 72 cherry, and 24 plum trees. In the commercial orchard, 30 trees were added during the year.

Winter-killing has so far been severe, 25-17 per cent of the original orchard trees planted having been killed since 1914.

The crop in the old apple orchard was light, but of fair quality.

In small fruits, all varieties did well. Thirty-one sorts of currants, eighteen of gooseberries, eleven of raspberries, and twenty-one of strawberries were under test.

Vegetables.—Variety tests were carried on with asparagus, beans, beets, Brussels sprouts, cabbage, carrots, cauliflower, celery, corn, cucumbers, lettuce, muskmelon, onions, parsnips, peas, radish, squash, tomatoes, and potatoes. Beans were badly attacked by anthracnose, and cauliflower by bacterial soft rot. With these exceptions, all vegetables did well.

Eight and one-half acres of potatoes were grown, all but 1 acre being devoted to varietal, cultural, pathological, or spraying tests. The remaining acre was handled commercially to get data on cost of production. The total cost for the acre was \$89.02, including seed, rent, cultural operations, and depreciation of machinery. The yield was 330 bushels of marketable potatoes and 16½ bushels cull. The total value of the crop, at market prices at harvesting time, was \$333, and the profit \$243.98.

One hundred and sixteen varieties and strains of potatoes were under test. Work in selection of seed was carried on, also cultural tests such as planting at different distances apart, level vs. hill planting, number of eyes to a set, spraying mixtures, etc.

Ornamental Gardening.—Groups of trees and shrubs were set out on the grounds in the fall of 1915. These wintered well. The perennial borders bloomed freely, as did the annuals. The specimen hedges planted in 1915 made excellent growth.

FARM IMPROVEMENTS.

Buildings.—The pumping station, burned in 1915, was replaced by a concrete building, covering the old site with an ell added to include the new well. Concrete blocks, 4 inches thick, were used, placed to leave a dead-air space of 3 inches. It was aimed to make this building as nearly fire-proof as possible, so the roof was covered with asbestos slate shingles. The total cost was \$3,648.36, including repairs to pneumatic tank and necessary shafting, belting, piping, etc., for power plant.

A concrete foundation was placed around the weigh scales, and a house built upon it with boarded and battened walls and steel roof, at a total cost of \$228.52. A colony poultry house 8 feet wide by 19 feet long, and a poultry feed storehouse 12 feet wide by 18 feet long, were also built at an approximate cost of \$150.

Fencing and draining.—No permanent fencing was undertaken during the year. Temporary fencing with both woven wire and barbed wire to keep the stock back as new land was being cleared, did not involve much expenditure, as outside of a few stretching posts only light stakes driven with a maul, were used.

Drainage was proceeded with where most needed. One thousand rods of drains were made, of which 760 rods were laid with tile, 166 rods with stone, and 74 rods of open drains.

The removal of the sides of 60 rods of open ditching was done with team and scraper to form a swale for surface drainage. Wherever possible the underdrains

were filled by horses and scraper. The total expenditure for all this work was: for labour, \$1,744.84; and for tile, \$328. Besides the above, 6 acres of newly broken land, when ploughed the second time, was thrown up into 30-foot ridges, and the dead furrows cleaned out to give surface drainage.

Clearing land.—Stumps were removed from 10 acres, a portion of them burned, and this part well ploughed. Boulders were blown out, broken up, and removed from land previously stumped and cropped. Over one hundred tons per acre of stone were taken off one area of 6 acres, and used to make a driveway across a gulch. A half-mile of road-sides was cleared of stumps and boulders, the land smoothed and seeded. The total expenditure on this work was: for labour, \$1,715.95; and for stumping powder, \$365.98.

Roadmaking and grading.—Some progress was made in preparing the land for lawns and in laying stone foundations for roads through the lawns. Stones and boulders were removed, where necessary, from the 6 acres under preparation, and those that could be broken were placed along the road lines; the other stones were taken to the river bank. The road lines were scraped out to a depth of 15 inches and a width of 15 feet. Stones were placed in these sufficient to give a broken-stone foundation at least 1 foot in depth. Some ditches were cleaned out along highways crossing the Station property, and grading was done both on the highways and on some of the farm roads.

EXHIBITIONS.

As no fall exhibitions were held in the larger centres in New Brunswick, the Experimental Farms' exhibit was not sent out over a circuit of fairs. An exhibit of fruit, potatoes, and seed corn was made in November at the New Brunswick Fruit Growers' Association display at St. John, and a showing of potatoes, seed corn, and seed grain was made at the New Brunswick Potato Growers' Association Exhibit at Woodstock in December. In January at the Provincial Seed Fair at Fredericton, an exhibit of potatoes, corn, and grain was made by the Experimental Station.

At all the above fairs, literature was distributed and names taken for the mailing list.

SHORT COURSES AND MEETINGS.

The superintendent acted as instructor in Animal Husbandry, and some crop-growing subjects at the Short Courses held at Woodstock, Sussex, and Chatham during the winter, and addressed the Potato Growers' Convention at Woodstock in December, as well as attending meetings in conjunction with Prof. J. W. Mitchell of the Provincial Agricultural Department at New Denmark, Andover, Centreville, Hartland, Bathurst, Nappan, and Doaktown.

EXCURSIONS.

Three excursions came to the Station during the year. On the 23rd August the Farmers' and Dairymen's Association of New Brunswick arranged for a summer meeting here, and between twelve and thirteen hundred people came. Arrangements were made to give all, who wished it, a mid-day lunch, and addresses were given by the Director, the Dominion Animal Husbandman, the President of the Farmers' and Dairymen's Association, and the Superintendent of the Station.

In September, between three and four hundred Normal School students visited the Station, and in February three hundred and fifty members of the Farmers' and Dairymen's Association, attending their annual meeting in Fredericton, spent a day at the Station to take live-stock judging work, when a mid-day meal was provided for them, and in addition to the judging work, addresses were given by Messrs. E. S. Archibald, W. W. Baird, G. C. Cunningham, and the superintendent.

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EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUE.

REPORT OF THE SUPERINTENDENT, JOS. BEGIN.

The winter of 1915-16 was colder than the average, with a somewhat lighter snowfall. The snow disappeared early in March. April was dry and cool with high winds, which dried the soil sufficiently to permit of seeding commencing on the 27th. Good seeding weather continued until May 10, but the weather then turned cool, with frequent rains, and continued so during the rest of May and most of June. Seeding was consequently delayed and growth slow until towards the end of June.

July and August were extremely dry, while the next two months were very wet. No damaging frost was recorded from May 1 to September 20, which is unusual for this district.

Hay was a good crop; other crop yields were lessened by the dry weather of July and August. Potatoes were especially affected.

Considerable fall ploughing was done in September and October, in spite of the dry condition of the soil.

Snowfall in 1916-17 has been abundant, and the soil has been well protected.

| Month. | Temperature F. | | | | Precipitation. | Sunshine. |
|----------------|----------------|---------|-------|---------|----------------|-----------|
| | Date. | Maximum | Date. | Minimum | Inches. | Hours. |
| 1916 | | ° | | ° | | |
| April..... | 25 | 61.2 | 3 | 18.4 | 0.94 | 218.1 |
| May..... | 29 | 77.4 | 3 | 30.0 | 3.47 | 186.2 |
| June..... | 14 | 81.0 | 2 | 39.4 | 5.18 | 176.4 |
| July..... | 25 | 91.7 | 3 | 53.0 | 1.89 | 286.4 |
| August..... | 21 | 92.4 | 6 | 43.0 | 0.75 | 237.1 |
| September..... | 9 | 89.4 | 18 | 35.2 | 3.07 | 143.6 |
| October..... | 4 | 73.2 | 12 | 22.2 | 5.66 | 125.2 |
| November..... | 9 | 59.2 | 24 | - 1.1 | 2.43 | 64.2 |
| December..... | 3 | 44.8 | 31 | -14.7 | 4.32 | 71.5 |
| 1917 | | | | | | |
| January..... | | 38.6 | | -28.2 | 3.10 | 278.0 |
| February..... | | 34.4 | | -19.0 | 2.40 | 288.0 |
| March..... | | 44.6 | | 8.2 | 3.88 | 370.0 |
| Totals..... | | | | | 37.09 | 2,438.7 |

LIVE-STOCK.

Horses.—The five teams of draught horses were kept constantly employed on farm work, clearing land, hauling stone, and gravelling roads. A driver is also kept for light work, carrying mail, etc. An experiment in the cheap wintering of horses was carried on.

Cattle.—The herd number sixty head in all, partly pure-bred Ayrshires and the best Ayrshire grades.

Sheep.—A pure-bred flock of Shropshires is kept, and also a flock of common ewes, which are being used in a grading-up experiment. The flock was cheaply wintered, being fed almost entirely on hay, oat straw, and roots; very little grain was

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given until near lambing time, when a little bran and oats were fed and the roots reduced. The lamb crop has been a good one so far, eighteen ewes having dropped twenty-nine vigorous lambs.

Swine.—The Yorkshire is the breed kept, and the bacon hog is the type aimed at.

POULTRY.

Work with poultry was commenced with 100 Wyandottes. The flock has now been increased to 200. Incubation results last spring were fair.

BEES.

The apiary consists of thirty-five hives of common bees and Italians. Experimental work is carried on in wintering inside and outside; fall and spring feeding, increasing honey production, and preventing swarming. The average yield of honey per colony was 120 pounds, with a highest yield of 272 pounds and a lowest of 63 pounds.

FIELD HUSBANDRY.

Rotations.—Three rotations are being tried at the Ste. Anne Station:—

Rotation "D" (three years). First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible.

Rotation "C" (four years): First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible; fourth year, mixed hay; land ploughed in August, well cultivated and ridged up in fall.

Rotation "A" (five years): First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible; fourth year, mixed hay or pasture; fifth year, grain, seeded down. Clover allowed to stand until next spring, when it is ploughed under in preparation for roots.

Crop yields.—The yields in 1916 from field lots of grain, Indian corn, hay, and roots were as follows: Corn for ensilage, 12 tons 1,145 pounds per acre; roots, 19 tons 1,345 pounds; wheat, 40 bushels 27 pounds; peas, 28 bushels 8 pounds; oats, 72 bushels 18 pounds; and hay, 2 tons 1,325 pounds.

Records of cost of production of all field crops grown are carefully compiled each year.

CEREALS.

Comparative tests of varieties have not yet been commenced at the Ste. Anne Station, owing to the necessary preliminary preparation of the land now going on. However, the varieties of wheat, peas, barley, and oats best suited to the district are grown on the Station each season, and a large quantity of pure selected seed was sold or distributed this year.

FORAGE PLANTS.

Fifteen varieties of forage corn were tested this season. In a three-year test, Longfellow and Compton's Early have proved the best suited to the district. Of twenty-five varieties of forage beets, Yellow Intermediate and Long Red gave the highest yields. In sugar beets, Vilnorin's Improved and Klein Wanzleben yielded best. Fifteen varieties of turnips and five of carrots were also tested.

HORTICULTURE.

Orchards and Small Fruits.—The orchards now contain 1,045 trees, namely, 736 apple, 209 plum, 81 cherry, and 19 pear trees. The varieties represented are 122 apple,

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30 plum, 15 cherry, and 8 pear. The small fruit and vegetable tests are carried on between the rows of trees in part of the orchard; and in the remaining part, orchard cover crops and cultural methods are compared.

Among the small fruits under test are: currants, 29 varieties, raspberries 8, gooseberries 7, and strawberries 18 varieties.

In vegetables, variety tests were conducted with beets, beans, peas, corn, cabbage, potatoes, lettuce, parsley, carrots, oyster plant, onions, cauliflower, celery, radish, cucumbers, pumpkins, squash, turnips, tomatoes, and muskmelons.

Twenty-five varieties of potatoes were grown and compared. This will be repeated for five years, when it is hoped that some valuable conclusions can be drawn. Records were kept of the cost of growing an acre of potatoes.

The total cost was \$82.53. The yield was 203 bushels 54 pounds, making the cost of production per bushel, 40½ cents.

The display of flowers during the season was a good one, in spite of the drought. Ornamental trees and shrubs made satisfactory growth.

SPECIAL CROPS.

One one-twentieth acre plot of tobacco was grown; this matured satisfactorily, and was shipped to the Central Farm, Ottawa, for treatment.

FARM IMPROVEMENTS.

Buildings.—One hen-house, 16 by 32 feet, was built, and two colony houses. A number of repairs were made to other buildings.

Draining and Fencing.—Eighteen acres of land were tile drained, and 1,840 loads of stone gathered. Over 100 rods of fencing was put up, and the gravelling of the farm roads was completed.

EXHIBITIONS.

An Experimental Farms' exhibit was shown at Montmagny and at seven county fairs. The display attracted much attention; eighteen hundred applications to be put on the mailing list were received.

MEETINGS.

The superintendent, in addition to being present at eight exhibitions and fairs, took part in the Short Course given at the Ste. Anne College of Agriculture, and spoke at four farmers' conventions.

VISITORS.

Over 3,500 farmers visited the Station during the year.

EXPERIMENTAL STATION, CAP ROUGE, QUE.

REPORT OF THE SUPERINTENDENT, G. A. LANGELIER.

CHARACTER OF SEASON.

The months of May, June, July, August, September, and October were warmer, wetter and duller than the average of the last five years, the mean temperature being, respectively, 57.52 and 65.05° F.; the precipitation, 27.19 and 23.43 inches; the number of hours of sunshine, 1,073.4 and 1,109.7. The season was longer than usual without frost, the last one occurring on May 8 and the first one on October 10. Of the different crops grown in the district, hay was extra good; pastures excellent until the drought of midsummer; grain, poor; silage corn and roots, below the average; potatoes, poor; flax, good; tobacco, extra; apples, above the average; plums, a little below the average; strawberries and raspberries, the best in years; currants and gooseberries, extra; vegetables, about as usual; flowering plants, splendid. The main characteristics of the season were the wet spring, the drought of midsummer, and the fine autumn.

METEOROLOGICAL RECORDS, 1916-17.

| | Temperature F. | | Precipitation. | | | | Total Sunshine. |
|----------------|----------------|---------|----------------|-----------|---------|--------------------|-----------------|
| | Highest. | Lowest. | Rainfall. | Snowfall. | Total. | Heaviest in hours. | |
| 1916. | ° | ° | Inches. | Inches. | Inches. | Inches. | Hours. |
| April..... | 63.0 | 17.2 | 1.12 | 6.00 | 1.72 | 0.80 | 190.8 |
| May..... | 75.0 | 31.2 | 6.36 | ..... | 6.36 | 1.22 | 157.3 |
| June..... | 79.0 | 44.2 | 5.47 | ..... | 5.47 | 1.70 | 165.8 |
| July..... | 91.0 | 45.2 | 3.96 | ..... | 3.96 | 2.00 | 260.0 |
| August..... | 89.0 | 45.2 | 2.76 | ..... | 2.76 | 1.00 | 223.2 |
| September..... | 77.0 | 32.2 | 3.22 | ..... | 3.22 | 1.22 | 142.1 |
| October..... | 72.0 | 24.2 | 5.42 | ..... | 5.42 | 1.05 | 125.0 |
| November..... | 63.0 | - 4.1 | 3.23 | 5.60 | 3.79 | 1.02 | 64.9 |
| December..... | 40.0 | -13.9 | 0.66 | 20.80 | 2.74 | 0.90 | 64.9 |
| 1917. | | | | | | | |
| January..... | 37.0 | -21.8 | 0.50 | 45.70 | 5.07 | 0.90 | 55.1 |
| February..... | 35.0 | -21.8 | ..... | 27.00 | 2.70 | 0.80 | 74.0 |
| March..... | 51.0 | - 6.0 | 1.52 | 26.50 | 4.17 | 1.25 | 125.3 |
| Total..... | | | 34.22 | 131.60 | 47.38 | ..... | 1,648.4 |

LIVE STOCK.

All the live stock kept in very good condition throughout the year.

DAIRY CATTLE.—The herd comprises forty-two head, thirty-six of which are pure-bred, and six grade, French Canadians. These cattle are kept for five purposes: supplying milk to the dairy, experimental breeding, experimental feeding, experimental housing, and to distribute good breeders at reasonable prices.

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Milk production.—Ten cows from 3 to 11 years of age completed a lactation period between April 1, 1916, and March 31, 1917. They averaged 5,304 pounds of milk, testing 4.08, which is equivalent to 255.11 pounds of butter.

Experimental Breeding.—Out of nine grade cows bought for this purpose, only two were profitable producers; and none of their heifers, by a scrub, and also by a registered bull of unknown ancestry was worth keeping. This shows plainly that the scales and Babcock test should be used to find out the good producers, and that these must be bred to bulls out of profitable dams, if any headway is to be made.

Experimental Feeding.—There are two projects: the best quantity of concentrates for dairy cows, and the cost of raising heifers.

Best Quantity of Concentrates for Dairy Cows.—This experiment has now been made four years in succession, during five of the winter months. Animals are chosen of nearly equal weights so that the maintenance ration may be about the same for all, and they receive exactly the same quantity of roughages, such as hay, straw, silage, roots. The bedding is sawdust, and there are divisions in the mangers, so that each cow can only eat what she receives. When the animals are chosen, their previous records are considered, so as to avoid errors due to individual capacity as milk and fat producers. The average for four years shows that the lot receiving as much meal as would be eaten, which was 1 pound per 2.19 pounds of milk, gave a profit over feed of \$16.10 in 148 days, the lot receiving 1 pound of meal per 4 pounds of milk gave a profit of \$14, and the lot receiving 1 pound of meal per 8 pounds of milk gave a profit of \$12.42. Feed was valued as follows: hay, \$7 per ton; roots and silage, \$2 per ton; meal, 1½ cents per pound; whilst butter was calculated at 28 cents per pound, and skim-milk at 20 cents per cwt.

Cost of Raising Heifers.—Feed valuations are given so as to compare results of one year with another, as prices change very often: whole milk, \$1.50, and skim-milk, 20 cents per cwt.; meal, 1½ cents per pound; hay, \$7; green feed, roots, silage, \$3 per ton; pasture, \$1 per month. The results of two years show that it cost, on an average, for feed alone, \$27.44 to bring a heifer to 13 months and 4 days; \$52.39 to bring one to 18 months and 10 days; \$65.05 to bring one to 26 months and 1 day. The three whose feed was weighed until this last-mentioned time received, on an average, 1,028 pounds whole milk, 7,921 pounds skim-milk, 774 pounds meal, 3,774 pounds hay, 6,133 pounds roots, 5,933 pounds silage, 278 pounds green feed, and were 69 days on pasture. Their average weight was 775 pounds. With these figures, a farmer can see, at current prices, what it costs to raise a heifer; and when he does see this, he will no doubt commence to think that only the daughters of heavy producers should be raised if a profit is to be made.

Experimental Housing.—Buildings are non-productive and very costly. If most of the stock can be wintered in single-boarded sheds, profits are sure to be higher, because the extra feed required is more than counterbalanced by the better health of the animals. During the winters of 1915-16 and 1916-17, an aged bull, a 2-year-old, and a yearling have been outside—the first two mentioned during two winters and the latter during one winter—without the least sign of suffering. Cows were bred during the coldest spells, and the old bull certainly was a better server outside than he had been when kept in a box stall. Beginning in the autumn of 1917, all heifers will be kept in a single-boarded shed from the time they are about six months of age until within a few days of calving.

Selling Breeders at a Reasonable Price.—The three bulls used in 1917 are out of cows which have qualified for Record of Performance, and one of them has for dam and dam of his sire two cows which have that distinction. There are more French-Canadian cows, at this Station, that have qualified for the Record of Performance

than in any other herd. Out of such foundation stock it is wellnigh impossible not to breed good stock and it is practically certain that bulls from this Station will improve the herds wherever they may go.

HORSES.—There are now twenty-four horses, including nineteen registered French Canadians, four draughters, and a driver. They are kept for five purposes: work on the farm, experimental breeding, experimental feeding, experimental housing, and to distribute high-class breeders at reasonable cost.

Work.—During the year, each horse averaged about 150 full days of ten hours' work, leaving aside the unbroken colts. One must remember that seven mares dropped and raised foals, which cut down the number of hours of work.

Experimental Breeding.—Three projects are under investigation: raising fall colts, close breeding, work versus no work for brood mares.

Raising Fall Colts: If this is found feasible, the mares will have the full growing season to work. To throw some light on the subject, two mares were served to drop their young in October. At first, the youngsters did not seem to do very well, but they soon picked up, and on March 31, 1917, a colt which was 5 months and 12 days old weighed 680 pounds, the average weight of his sire and dam being 1,285, whilst a filly which was 6 months and 2 days weighed 535 pounds, the average weight of her sire and dam being 1,200.

Close Breeding: A mare served by her son dropped a filly which is not doing as well as two others of about the same age from unrelated parents. A defect which both sire and dam had in common, that is, a rather rough head with a full throat latch, was intensified in the filly. This is a mooted question, and experiments will be continued, always with stock bred at the Station, so that there may be no question about the relationship of animals used.

Work versus no Work for Brood Mares: The same mare was used three years for this experiment. In 1914-15, she was worked carefully but all the time until she foaled; in 1915-16, she was kept idle in a box stall all winter, but worked about a month before foaling in the spring; in 1916-17, she was kept idle but outside, having a single-boarded shed where she could go in at will, and worked about a month before foaling in the spring. In each case, she dropped and raised a strong filly. It is probably better to work a mare carefully all the time before foaling, but a farmer who cannot do so, need not, for this reason alone, abandon horse raising.

Experimental Feeding.—This consisted in recording feed eaten by young animals, and by a team of workers. The following values are arbitrary, and can be changed according to current prices: whole milk, \$1.50, and skim-milk, 20 cents per cwt.; molasses 3, wheat 2, oats 1.5, and bran 1 cent per pound; hay, \$7 per ton.

Cost of Feed in raising Horses: At the above prices for feed, it cost \$19.16 to bring a youngster to 10 months 7 days from the time it was weaned, at five months; \$79.77 to bring one to 1 year, 9 months, 10 days; \$138.89 to bring one to 2 years, 8 months; \$162.05 to bring one to three years. The weights were, respectively, 672, 1,138, 1,125, 1,300, which is much more than French-Canadian colts and fillies of the same age generally weigh. To enable anybody to calculate the cost at present prices it may be said that the 3-year-old received the following quantities of feed: 1,260 pounds of skim-milk, 16 oil meal, 86 wheat, 4,184 bran, 5,393 oats, 9,954 hay. This shows that only good stock must be used for breeding purposes, as it costs a great deal to raise horses.

Cost of Feed of Working Horses: Two mares weighing, respectively, 1,140 and 1,285 pounds ate the following quantities of feed from November 1, 1916, to March 31, 1917: 3,373 pounds of hay, 3,313 pounds of oats, 704 pounds of bran, 180 pounds of molasses. At the above-mentioned prices it cost, for feed per mare, for five months,

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\$36.97. During that time they worked an average of 484 hours each, which brings the cost of work, for feed alone, to 7.6 cents per hour. When interest, depreciation, barn room, shoeing, blanketing, harnessing and care are taken into consideration, horse labour is, of course, much more costly.

Selling breeders at reasonable prices.—The stud of French-Canadian horses at Cap Rouge is, without doubt, the largest and best in existence to-day. About half a dozen youngsters are raised each year, and most of them are for sale at reasonable prices. Some have been shipped to New Brunswick and to Nova Scotia, besides Quebec.

SHEEP.—The flock comprises a 2-year-old ram, six yearling rams, sixteen breeding ewes, five shearling ewes, and twenty lambs, all pure-bred Leicesters. These are kept for experimental feeding, experimental housing and to sell breeders at reasonable prices.

Experimental Feeding.—The work undertaken is to find out how much feed it takes to carry a breeding ewe over the winter. In 1916-17, it took 2.95 pounds of hay, 0.47 pound of pea straw, 2.12 pounds swede turnips, 0.75 pound oats, 0.46 pound bran per ewe per day. The ewes experimented with were Leicesters of about average weight, and fifteen of them raised nineteen lambs. If breedings ewes are fed about 200 days, to give a chance to pastures to start in the spring, it will cost about \$5.85 per head for feed, to winter them, calculating hay at \$7, straw at \$4, swedes at \$2 per ton, oats at 1.5, and bran at 1 cent per pound.

Experimental Housing.—Many farmers are deterred from breeding early lambs because they are under the impression that these have to be kept in warm quarters for a long time. According to experiments made at this Station, a lamb can withstand a great deal of cold when from two to six days old. Every one dropped in March was sent up with its dam, when of the above-mentioned age, to a single-boarded shed; they all grew well, and were always healthy.

Selling breeders at a reasonable price.—The Leicester is very popular in this district, and rams are eagerly picked up as soon as available for sale. Careful records are kept, and poor or shy breeders are sent to the butcher. Moreover, the weight of fleeces is kept, also samples, so that the improvement made by different rams is noted. It is the aim that only good breeders should be bought by farmers who apply to the Cap Rouge Station.

POULTRY.

Barred Rocks are kept; 312 layers were wintered, and 779 chicks were raised. For the latter, 2,617 eggs were used, out of which 505, or 19 per cent, were not fertile, whilst the remainder 1,162 or 55 per cent did not hatch out. Of the 950 chickens placed in the brooders, 779, or 82 per cent, were raised. The percentage of chicks raised from the total number of eggs was 30, and from the fertile eggs, 37. It took 3.3 eggs per marketable chicken.

Experimental Breeding.—This consisted in comparing pullets with hens; also heavy with light layers as producers of hatchable eggs.

Pullets versus Hens as Breeders.—The result of one year shows that 100 eggs from late pullets gave 42.4 strong chicks, whilst early pullets gave 40.5, yearlings 38.6 and 2-year-olds 28.2. This is contrary to expectations, and the experiment will be continued.

Heavy versus Light Layers as Breeders.—Four pens were used. One of them laid 555 eggs in four months and the others 545, 154, 16. The strong chicks hatched from these eggs were, respectively, 390, 231, 59, 5, which shows that the percentage of hatchable eggs was larger from the good layers than from the poor ones. This also, seems surprising, and the experiment will be continued.

Layers of different ages.—The average of two years shows that during November, December, January, February, early pullets produced eggs at a cost of 18 cents, late pullets 56 cents, yearling hens 83 cents, and old hens \$5.59, per dozen. A remarkable thing is that the pen of 25 yearlings used in 1916-17, when each lost 40 cents during the four winter months, was, with two exceptions, composed of the same birds which, as early pullets, had given a profit of 89 cents per bird during the four corresponding months of 1915-16.

Experimental Feeding.—Four experiments were made to compare different kinds of feeds and methods of watering.

Skim-milk versus Beef Scraps: All feed given to two pens of birds was the same, except that one received skim-milk and the other beef scraps. In four months, the 25 birds in the "skim-milk" pen produced \$6.15 worth more of eggs and meat (increase in live weight) than the others.

Roots versus Clover: All feed given to two pens of birds was the same, except that one received dry clover leaves and the other swedes. The latter pen of 25 birds was \$1.81 ahead at the end of the four months.

Commercial Grain versus Separator Screenings: Two pens of 25 birds each were fed alike, except that one received commercial grain and the other separator screenings. The latter were valued at two-thirds the price of the former, and were \$1.97 ahead at the end of the four months.

Water versus Snow: Both lots were fed absolutely the same quantities of feed; one of them received water and the other snow. The pen of 25 birds, which received water, was \$2.19 ahead at the end of the four winter months.

Experimental Housing.—The range of mean temperature, during the winter of 1916-17, was 40.0° F., outside, 19.2° in a colony house 8 feet wide, 16.7° in a laying house 12 feet wide, and 15.1° in a laying house 16 feet wide. All styles of houses were the same, and they only differed in width. It would seem that the widest house had the most equable temperature.

Miscellaneous.—Four different lots of eggs were preserved in as many ways: the two lots in lime-water and in water-glass were in excellent condition and quite good about five months afterwards, whilst the two lots, simply wrapped in paper, one lot of which was turned daily, were decomposed and not fit to be used.

BEES.

The bees kept at Cap Rouge are hybrids between Italians and Blacks. They are kept for commercial and experimental work.

Commercial Work.—The total production of honey from thirteen hives, spring count, was 1,218 pounds, so that the average per colony was 93.69 pounds. The highest yield from a colony was 131 pounds, and the smallest 65. The colonies ranged in weight from 58 to 76 pounds when placed in the cellar on November 13, 1916, and averaged 64.2 pounds, whilst they ranged in weight from 43 to 74 pounds and averaged 55.5 pounds when taken out on April 13, 1917. Most of the loss occurred after the first of March.

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Experimental Work.—This deals specially with feeding and housing.

Experimental Feeding: The bees wintered on early-gathered stores lost an average of 11.5 pounds per colony during the winter, were in good to very good condition in the spring, and covered an average of 7.5 spaces when taken out, whilst the ones wintered on late-gathered stores, on honey and sugar syrup, and on sugar syrup alone, respectively, lost 3.7, 4, 6 pounds, were all in excellent condition, and covered 9.3, 10, 10 spaces in the spring. This is quite the reverse of what was expected, and the experiment will be continued.

Experimental Housing: At the beginning of December, wet sand was placed on the concrete floor of the bee cellar, and sprinkled occasionally. This, however, had to be discontinued about the middle of January, on account of the offensive odour from dead bees. Afterwards, a great deal fewer bees died.

FIELD HUSBANDRY.

The work done in this division comprises crop management and agricultural engineering.

Crop Management.—Under this come crop yields, cost of production of field crops, rotations and experimental work.

Crop Yields.—The yields were lower for oats, corn, and swedes than usual, but much higher for hay. Longfellow corn yielded at the rate of 6 tons 314 pounds per acre; Good Luck swedes, 14 tons 22 pounds, Banner oats, 50 bushels (of 34 pounds) and 19 pounds; clover hay, 2 tons, 1,968 pounds; timothy hay, 2 tons, 1,505 pounds.

Cost of Production of Field Crops.—The results of four years of accurate record keeping show that it cost \$2.29 per ton to grow swedes, \$5.32 per ton for hay, and 30.6 cents per bushel of 34 pounds of oats.

Rotation of Crops.—A three year rotation has been run six years, and during that time a loss of \$5.92 per acre has been transformed into a profit of \$3.42, which is a gain of \$9.34 per acre.

Experimental Work.—Five projects are under investigation, as follows:—

Planting Fodder Corn in Drills vs. Hills: After five years, it has been found that the drills 48 inches apart give 20,819 pounds of green corn, with 1,176 pounds of nutrients per acre; drills 42 inches apart, 19,887 and 1,026 pounds; hills 36 inches apart, 12,402 and 691 pounds; hills 42 inches apart, 12,356 and 644 pounds. When sown thickly, a variety of corn must be used which would bring ears to the glazed stage, were it sown thinly. If the ground is very weedy, hills are better, so that cultivation can be given both ways.

Rates of Seeding Oats: Thirteen different rates from 1 to 4 bushels per acre have been tried for four years. The average for the six rates below $2\frac{1}{2}$ bushels per acre was 1,845.3 pounds of grain per acre, that for the six rates above $2\frac{1}{2}$ bushels was 2,039.3, and that for the rate of $2\frac{1}{2}$ bushels was 2,039, the second highest yield. This was on a sandy loam.

Yield of Hay when Nurse Crop is sown at Different Rates: Oats were sown at thirteen different rates from 1 to 4 bushels per acre for four years, and the hay weighed the next year from each plot. There was more hay when the crop of grain was the heaviest, that is from the seedings above $2\frac{1}{2}$ bushels per acre, contrarily to expectations. The second largest crop of hay was after the standard rate of seeding of $2\frac{1}{2}$ bushels of grain per acre.

Rates of Seeding: Since 1912, inclusive, 100 plots of 1.60 acre each have been used for this experiment, on half of which 12 pounds of timothy, 8 pounds red clover,

and 2 pounds of alsike were sown per acre, with oats as a nurse crop; whilst the others only received half of these quantities. The thick seeding gave 13 per cent more hay.

Yield of Hay with different Nurse Crops: Since 1912, inclusive, all the trial plots of grain, 192 in number, were seeded down to timothy and clover. The soil is a sandy loam not well adapted to hay, but this does not affect comparative results. After barley, the crop of hay averaged 4,144 pounds per acre; after wheat, 3,954; after peas, 3,897; after oats, 3,570.

FERTILIZERS.

Five acres are devoted to experiments with fertilizers on 130 different plots. There are now six projects under investigation.

The most effective formula.—Different combinations of the three main elements, nitrogen, phosphoric acid, and potash, are used in a three-year rotation of potatoes, oats, clover. This experiment has run two years, and the most important finding was that, on a clayey loam such as was used, the least important element was potash.

Comparative values of different forms of nitrogen and phosphoric acid when there is enough potash.—In a three-year rotation of potatoes, oats, clover, nitrate of soda has proved superior to sulphate of ammonia for the two first-mentioned crops, and so has superphosphate shown its superiority over bone meal and basic slag, which were of about equal value.

Manure vs. clover as a source of humus.—The results of one year, for a crop of oats, have shown an increase of 23 per cent grain and 33 per cent straw from the manured plot. This experiment is to run about six years, at the end of which samples of soil will be examined and analysed for their humus content to compare with the ones taken at the beginning.

Comparative value of different elements as supplements to farm manure.—This is to throw some light on the problem of using part manure and part fertilizers. One of the main results, though, after only one year's test on oats, was that the complete fertilizer increased the crop by 50 per cent, whilst nitrogen or potash each only increased it by 25 per cent.

Burnt lime vs. ground limestone.—On oats, ground limestone applied at the rate of 7,500 pounds per acre at seeding time practically gave no increase, whilst burnt lime applied at the same time at the rate of 4,200 pounds per acre increased the grain by 9 per cent and the straw by 16 per cent. It will be interesting to watch the residual effects of the ground limestone on the hay.

Value of ground seaweed as a fertilizer.—The results of two years, on potatoes and oats, show that 100 pounds of nitrate of soda was equal to 930 pounds of ground seaweed, 100 pounds of a 2-2.5 mixture of acid phosphate and basic slag was as good as 736 pounds of ground seaweed, and 100 pounds of muriate of potash gave as good results as 1,920 of ground seaweed. There are yet to be recorded the after-effects on clover hay.

CEREALS.

The work with cereals at this Station comprises tests of varieties, the isolation of good strains, the growing of grain for hay, and the production of seed for sale.

Variety tests.—Nine varieties of spring wheat were tested, and the result of six years places Huron at the head; eight varieties of oats were in the test plots, and Banner shows up on top after five years; five varieties of field peas are led by Arthur at the end of five years; of the eight varieties of barley tried, Manchurian is recommended.

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Selection of best strains.—That some strains are better yielders than others is shown by the fact that the comparative yields of the lowest and highest, for Manchurian barley, was as 100 to 163, for Arthur peas as 100 to 133, for Huron wheat as 100 to 133.

Growing of grain for hay.—The results of two years show that oats alone, or oats and peas, or oats, peas, and vetches not only give a higher tonnage of hay than clover and timothy or timothy alone, but also give more dry matter per acre. The hay from oats and peas, or oats, peas, and vetches contains more protein, and is thus more valuable than that from clover or timothy.

Production of seed for sale.—Huron wheat, Manchurian barley, Arthur peas and Banner oats are the varieties recommended for this district, and are grown for seed. This is cleaned and separated by modern machinery and shipped in sealed bags so as to avoid substitution. Prices are given to inquirers on application. This seed is of a very high grade, and has never yet disappointed a single buyer.

FORAGE CROPS.

Investigations with forage crops consist in testing varieties, selection of good strains, and comparison of different methods of helping the germination of mangel seed.

Variety tests.—Longfellow has been found one of the best corns for silage, whilst the results of six years place Good Luck at the head for swedes, Giant Yellow Intermediate for mangels, and Improved Short White for carrots.

Isolation of best strains.—Work of this description was continued with Indian corn, swedes, Kentucky blue grass, meadow fescue, orchard grass, perennial rye grass, red top, sheep fescue, timothy, western rye grass, alfalfa, and red clover.

Helping the germination of mangel seed.—Fertilizer, also salt, mixed with the soil or sown in the row, did not compare at all favourably with seed soaked for twelve hours in water, or in water and liquid manure. Watering, or even only packing, the soil had nearly as good an effect as soaking the seed. This experiment is only the result of one year, and not yet conclusive.

HORTICULTURE

There are three lines of investigation with flowers, fruit, and vegetables: testing varieties, cultural experiments, propagation of the best kinds. There was, in 1916, over 20 acres used for this purpose.

Testing varieties.—The following numbers were tested in 1916: apples 150, cherries 15, pears 4, plums 40, grapes 24, black currants 16, red currants 12, white currants 3, gooseberries 12, raspberries 11, strawberries 34, potatoes 20, vegetables 221, ornamental plants 1,031. As there are at least four examinations to be made each season, this takes considerable time, just for the records.

Cultural Experiments.—These were made for apples, strawberries, beans, beets, cabbage, carrots, cauliflower, celery, onions, parsnips, peas, rhubarb, tomatoes.

Propagation of the best varieties.—Some of the most promising varieties of apples, plums, grapes, currants, gooseberries, strawberries, raspberries, are being propagated. Seed is grown of all vegetables that do well in the district, with the exception of cauliflower and celery; and in many cases the Cap Rouge strain has proved superior to all commercial ones.

SPECIAL CROPS.

Flax.—An acre of flax was grown for fibre; it was found that pulling the plants is a very long job, and quite costly when done by people who are not used to such work. If the land is at all weedy, it seems impossible to grow this crop with profit.

Tobacco.—Three varieties were grown: Canelle, Comstock, and Petit Havanne. The latter is such a low yielder that it is not recommended for this district, though it is very early.

FARM IMPROVEMENTS.

Buildings.—Building operations were practically suspended during the year, only a couple of sheds for horses and sheep being erected.

Clearing Land.—This consisted mostly in clearing odd places of obstructions such as trees, stumps, stones, so as to facilitate the use of implements.

Draining.—It is practically impossible nowadays to get men to work at this, and only small areas were tiled in 1916, where they interfered with the use of the four-horse machines which are now used at this Station.

Fencing.—This received much attention, and a cross-road behind the orchards was fenced, the intention being to have two other of these roads so that visitors can drive around and see everything without having to get into the fields.

Roadmaking.—Most of the improvement work was done here. Quite a number of concrete silt basins were made to take away surface water from ditches, in hollows, and were connected with the nearest drain.

EXHIBITIONS.

The work for this division consists in distributing literature and in staging exhibits at fairs.

Distributing literature.—This is done from the Station, at fairs, and also by sending to Ottawa the addresses of interested persons. A great many names were thus added to the mailing lists.

Exhibitions.—Exhibits from the Station were sent to the following fairs: Three Rivers, Quebec, Lotbinière, St. Tite, St. Casimir, besides to five different ones in the New England states, the latter through the Department of Interior. Diplomas were secured at four places.

VISITORS.

There were three excursions to the Station during August, 1916, from different counties of Central Quebec, and the total number of visitors was 2,422.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY.

THE SEASON.

The light snowfall, frequent thawing and hard freezing during the winter of 1915 left much frost in the ground, preventing very early seeding.

The first wheat was sown on the 3rd of May and the general grain crops were sown the following week, on land which had been underdrained the previous year.

The heavy rainfalls of the latter half of May and the month of June made it almost impossible to get land in shape for corn. This crop was only planted June 16, and made very slow growth up to September 1, but with the warm sunny days of that month much progress was made, and a fair crop harvested.

The weather during the winter of 1916-17 has been an exception in this district as there has been no thaw to take away the snow, which came the middle of December, until March 24. Steady, cold weather has prevailed throughout the winter, the thermometer registering below zero twenty-two days in the month of February.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperatures. | | | | Precipitation. | | | Total Sunshine. |
|----------------|---------------|------|----------|------|----------------|-----------|--------|--------------------|
| | Maximum. | | Minimum. | | Rainfall. | Snowfall. | Total. | |
| 1916. | Date. | Deg. | Date. | Deg. | * Ins. | Ins. | Ins. | Hours. |
| April..... | 25 | 68 | 3 | 18 | 2.34 | ..... | 2.34 | 174.8 |
| May..... | 29 | 80 | 10 | -23 | 4.20 | ..... | 4.20 | 155.0 |
| June..... | 2 | 79 | 2 | 35 | 4.72 | ..... | 4.72 | 180.1 |
| July..... | 20 | 90 | 15 | 41 | 5.68 | ..... | 5.68 | 250.5 |
| August..... | 19 | 91 | 2 | 40 | 3.91 | ..... | 3.91 | 227.3 |
| September..... | 7 | 80 | 11 | 32 | 5.64 | ..... | 5.64 | 133.2 |
| October..... | 5 | 78 | 12 | 22 | 2.59 | ..... | 2.59 | 149.5 |
| November..... | 9 | 65 | 17 | 0 | 2.67 | ..... | 2.67 | 74.8 |
| December..... | 6 | 49 | 30 | -30 | 0.74 | 15.9 | 2.33 | 72.4 |
| 1917. | | | | | | | | |
| January..... | 14 | 43 | 20 | -40 | 0.86 | 27.3 | 3.59 | 69.5 |
| February..... | 18 | 40 | 13 | -36 | ..... | 8.5 | 0.85 | 105.5 |
| March..... | 26 | 53 | 7 | -20 | 0.85 | 7.5 | 1.60 | 153.4 |
| | | | | | 34.20 | 59.2 | 40.12 | 1,746.0 |

LIVE STOCK.

Horses.—This Station now has twenty horses; six registered Clydesdale mares, eleven well-graded work horses, one driver, one registered Clydesdale stallion two years old and one filly foaled in the fall of 1916.

Four of these horses were wintered in the yard, with a loose box stall to run into. They were fed on a ration of 20 pounds of swedes and 28 pounds of hay per day, which makes a very economical way of wintering idle horses, and at the same time giving them plenty of exercise. The horses held their normal weight throughout this experiment.

These horses were put in the barn on March 23, and received a light grain ration of two parts oats to one part bran. They were given light work to prepare them for seeding operations.

The horses wintered outside cost 13.3 cents per horse per day to feed. Those kept inside, which were fed a light grain ration throughout the winter, cost 19.5 cents per horse per day.

Beef Cattle.—Eighty-nine 2-year-old grade Shorthorn steers were purchased locally in October, 1916, and were put on feed November 9. The year was exceptionally good, the spread between cost and selling price per hundredweight being \$4.83. The average profit per steer was \$39.61. Twenty of the steers were divided into two lots, one being fed loose in box stalls, the other lot being tied. The profit per steer "loose" was \$40.23, and "tied" \$39.62.

Sheep.—There are now at the Lennoxville Station, fifty-eight sheep, nine of which are registered Oxford ewes, three registered Oxford shearlings, one registered Oxford ram, thirty-five grade ewes, and ten shearling ewes.

The wool clip was sold in the spring of 1916, for 43 cents per pound; average weight of fleece, 8.13 pounds.

Surplus lambs were sold, and a sale was also held of registered rams for breeding purposes.

FIELD HUSBANDRY.

Rotations.—Work with rotations has not yet commenced at this Station, owing to the necessity of first working the land into suitable condition.

• *Crop Yields.*—The hay crop was an average one, with a high percentage of clover in meadows seeded the previous year. The seeding mixture used on the Station was 9 pounds red clover, 2 pounds alfalfa, and 10 pounds timothy, per acre. The yield of hay was 250 tons. Clover seed production was given considerable attention, and 200 pounds was saved and threshed in the fall of 1916. This work has aroused considerable interest among the farmers of the district, many of whom are now growing and sowing their own clover seed.

The grain crop was below average, owing to excessive spring rains and extreme heat in August.

Fifty acres were planted to Indian corn on June 20, on old sod land. The heavy rainfall during May and June prevented earlier sowing, and a heavy yield was not hoped for. However, three large silos were filled, furnishing sufficient winter silage for 89 steers, 23 dairy cattle, and 58 sheep.

Two acres were sown July 1 to rape for fall pasture for sheep and lambs. The results were excellent, and every farmer is advised to sow at least a small area for this purpose.

FERTILIZER EXPERIMENTS.

The special work with fertilizers was begun this year on a three-year rotation, consisting of turnips, grain, hay. The objects in view are: (1) to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit; (2) to ascertain the relative efficiency of different sources of nitrogen and phosphoric acid; and (3) to ascertain the fertilizing value of a nitro-potassic fertilizer prepared from seaweed. The work must necessarily continue for a period of years before definite conclusions can be drawn.

FORAGE PLANTS.

Owing to the extremely wet spring, it was impossible to carry on all the experiments with forage plants which had been planned for 1916. Among the experiments dropped were the variety tests of mangels and carrots.

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Thirteen varieties of Indian corn for ensilage were grown. The highest yield was obtained from Wisconsin No. 7, 15 tons 1,600 pounds; and the lowest from Free Press, 5 tons 1,275 pounds.

Eighteen varieties of field turnips were tested. The highest, Good Luck, yielded 20 tons 850 pounds per acre; and the lowest, Corning's Lapland, 12 tons 450 pounds.

Clovers and grasses.—Alfalfa, Grimm's Variegated, was sown in drills 2½ feet apart, and was also sown broadcast with a crop of wheat. There was a marked difference in the growth, the alfalfa sown in drills being much more vigorous and sending its roots down more deeply.

The following plots of grasses and clovers are under test for hardiness and adaptability: Timothy, orchard grass, red top, Kentucky blue grass, meadow fescue, sheep's fescue, western rye grass, perennial rye grass, red clover, Swedish clover, and alsike clover.

All wintered satisfactorily with the exception of the perennial rye grass, which completely winter-killed.

HORTICULTURE.

Fruits.—The fruit trees in the cultural orchard made remarkably good growth in 1916. There was, however, some injury during the previous winter, about 20 per cent of the trees being seriously damaged. Ninety-three trees were replaced.

In the variety apple orchard, the trees wintered fairly well, and made good growth.

The standard plum trees planted in the spring of 1915 have not done very well so far, but the seedling varieties have made strong growth and are developing into good trees.

Some of the seedling pear trees have wintered well; others were badly injured or killed. The pear trees have been moved to another site, where the soil is heavier and more protection from wind is afforded.

The small fruit crops were light in 1916, owing to the plants being young and not sufficiently established.

Vegetables.—Tests were conducted with the following varieties of vegetables: lettuce, radish, garden peas, parsley, beans, parsnips, cucumber, sweet corn, carrots, beets, leeks, onions, cabbages, Brussels sprouts, cauliflower, peppers, watermelon, muskmelon, citron, pumpkin, squash, celery, tomatoes, and potatoes. With some of these, experiments were carried on as to dates of sowing, distances of thinning, protection of plants from insect injury, methods of blanching (celery), methods of training and ripening (tomatoes). With potatoes, trials were made in planting different kinds of sets, at different distances between sets and rows, methods of cultivation, etc., and a commencement was made in potato selection work.

Ornamentals.—The area for the main lawn was graded, smoothed, and seeded, and the lawn fencing erected. The demonstration hedges planted in 1915 made good growth in most cases. Two borders were planted in October, one of perennials, the other part perennials and part shrubs. The annual flowers bloomed fairly through the season, and proved a great attraction to visitors.

FARM IMPROVEMENTS.

Buildings.—The erection of the new dairy barn at this Station was commenced in September, and completed on the 23rd of December. This barn is 37 feet wide by 96 feet in length, with feed room attached, 20 by 30 feet, and one silo, 17 by 30 feet; also a cooling room for milk. The barn will accommodate 46 head, with an abundance of light and the best of ventilation.

Necessary repairs were done on the old buildings in use at this Station.

Fencing.—Two hundred and fifty rods of 48-inch high, No 9 galvanized wire fencing, was erected on the farm roads and other parts of the farm during the summer and fall. There was also erected 1,225 feet of lawn fence around the horticultural area.

Drainage.—The underdrainage system already laid gave satisfaction, as it permitted of raising a good crop of grain on the land which, with the excessive rains this past season, could not otherwise have been cropped.

During the season, 75,000 feet of underdrains were installed, located as follows: 60,000 feet on the R. W. Reid farm; 2,000 feet in the variety orchard; 13,000 feet on the Ed. Read farm. These systems are working satisfactorily, as demonstrated by the fact that this land can now be worked much earlier in the spring.

Roads.—The public roads leading through the farm were kept in good condition during the summer of 1916, and in the winter 1916-17 gravel was drawn and spread on the farm road leading past the new dairy barn for a length of 125 rods. The road leading from the Cock-hire road towards the brick-yard was also gravelled.

EXHIBITIONS.

The Experimental Farms' exhibit was shown at Brome, Ayer's Cliff, and Sherbrooke. Much interest was manifested by visitors at all these fairs, the demand for publications was brisk, and a large number of names were added to the mailing lists.

MEETINGS.

On the 12th of August there was organized a Farmer's Day for this Station, when invitations were sent out to all the farmers and their families in the Eastern Townships. The response was very encouraging; over one thousand people assembled at this meeting, at which were present the Hon. Martin Burrell, Minister of Agriculture; J. H. Grisdale, Director, Dominion Experimental Farms; J. A. Simard, B.S.A., of the Seed Branch; and others, who gave practical addresses on agricultural subjects.

The staff have also attended a number of agricultural meetings in different sections of the Eastern Townships throughout the winter.

VISITORS.

During the past year there has been a marked increase of visitors, who showed much interest in the different lines of work being conducted at the Station.

The farmers are coming more to realize the advantage of adopting more systematic methods in the rotation of their crops, the cultivation of the same, selection of their seeds, the guarding against plant diseases and insects, and the selection, breeding, feeding, and housing of their live stock. Much interest was shown by the ladies and townspeople in the garden work.

EXPERIMENTAL STATION, SPIRIT LAKE, QUE.

REPORT OF THE FOREMAN-MANAGER, P. FORTIER.

ESTABLISHMENT OF THE STATION.

An internment camp for alien enemies was opened at Spirit Lake, on the site of the proposed Experimental Station, in January, 1915. At that time, except for the land belonging to the Transcontinental Railway, what is now the Experimental Station was, like all the Abitibi district, densely wooded, the chief forest trees found there being the spruce, white birch and aspen. The first clearing work was done by the prisoners.

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Some 155 acres have now been cleared, and 150 acres of this area has been prepared for cultivation. The greater part of the wood obtained from this clearing work has been sold as pulp-wood, about 2,500 cords having been cut. In September, 1916, the foreman-manager took charge of the administration of the Station, but it has only been since January, 1917, when the internment camp was removed, that the work has been entirely under the control of the Department of Agriculture.

SITUATION AND AREA.

The Station is situated between the 48th and 49th degrees of latitude and the 78th and 79th degrees of longitude, in the townships of Dalquier and Trecesson. Its altitude is about 1,000 feet.

This land was the property of the Provincial Government of Quebec, which deeded it, for a nominal sum, to the Federal Department of Agriculture, with the understanding that the area is to be used for Experimental Farm purposes. The area so far transferred is about 1,200 acres, which may later be increased to some 1,600 acres in all. Not all of this land is arable, there being a considerable frontage of Lake George included, which will probably be made into a sort of park or forest belt.

SEASONAL NOTES.

It is impossible to give precise temperature records for this Station during the past year, as no meteorological instruments were available. The spring opened early, but excessive rain from May 5 to June 15 made it impossible to do much work on the land. The weather was, however, dry from July 1 to August 15.

LIVE STOCK.

Horses.—There are twenty head of horses on the Station, eighteen of which are work horses, and the other two drivers.

Cattle.—Four cows, two Holsteins and two Ayrshires, are kept at the Station for the purpose of supplying milk to the employees.

POULTRY.

A start has been made with poultry, some seventy Plymouth Rocks being kept, most of which are doing well.

FIELD HUSBANDRY.

Seventy acres were sown to oats, 20 acres of this area being seeded to clover; 2 acres were sown to turnips, and 2 acres to beets. The crop of oats was excellent from one field of 10 acres, one area of one and a half acres yielding 150 bushels. Twenty tons of unthreshed oat straw were used as feed for the live stock.

HORTICULTURE.

Fruits.—Several varieties of apple and plum trees, currant bushes and raspberry canes have been planted during the last eighteen months, but their growth has been feeble. It will be necessary to transplant them, as the soil where they were planted is not deep enough, being very stony; in fact, several trees have died.

Vegetables.—One acre was devoted to vegetables; the yields were very good.

Ornamental Gardening.—Several varieties of annual flowers were sown, and grew very well. There is little doubt that perennials will be able to stand the rigour of the winter at this Station.

BUILDINGS.

All the buildings erected by the military authorities are still available, but as most of them are of only a temporary character, these will have to be torn down and re-built, except the water tank, the barn, the foreman-manager's house, and the five cottages at the edge of Spirit Lake, and even these will need extensive repairs before being of permanent use. During the year, a greenhouse, a small stable at the back of the barn, a pump-house, and a small poultry-house have been constructed, and one of the shacks has been remodelled as a horse barn.

WATER SUPPLY.

The water supply for all the buildings on the Station is obtained from Spirit Lake, and is pumped into a reservoir of 30,000 gallons capacity, by a pump driven by a gasoline engine.

CLEARING OPERATIONS.

During the fall, winter, and spring of 1916-17, 965 cords of pulp-wood were cut and hauled to the railway siding on the Station ready to be shipped. In the same period, 75 acres were cleared.

EXHIBITIONS.

Various farm products, grown at the Spirit Lake Station, were exhibited at the Amos fair, last fall.

EXPERIMENTAL STATION, KAPUSKASING, ONT.

REPORT OF THE FOREMAN-MANAGER, S. BALLANTYNE.

ESTABLISHMENT OF THE STATION.

Just four months after the European war broke out, several colonist cars were shunted into a lonely siding at MacPherson station, New Ontario. All that MacPherson could boast of then was its station and water tank, a shack or two besides, and the deserted camps of the T.C.R. survey party on the banks of the Kapuskasing river. Nothing then could be seen from the station but dense spruce forests rolling away to the sky line in every direction.

This isolated station on the Kapuskasing river was chosen as a camp for the interning of alien prisoners. By an arrangement between the Department of Militia and the Department of Agriculture, it was planned to utilize the prisoners' labour for the purpose of cutting down the timber and clearing the land for a Dominion Experimental Farm and for opening up and starting development in this portion of the great clay belt.

The Kapuskasing camp and the Experimental Farm had its beginning on December 14, 1914, when Lieut. Swain and his men of the 19th regiment of Kingston, with fifty-four prisoners, were shunted into the siding overlooking the turbulent river. On Christmas Day over 100 more prisoners arrived under the escort of the Governor General's Body Guard of Toronto.

With this number of prisoners the camp began to grow by leaps and bounds, trees began to disappear, the land became cleared, buildings began to go up, and MacPherson became the nucleus of a thriving camp; the farm was being slowly carved out. Every week or so numbers of prisoners arrived both from the east and the west, and gave fresh impetus to its growth and development.

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To-day when one steps off the train at MacPherson, south of the track a veritable farm of over 700 acres can be seen, the timber seeming to have disappeared as if brushed away by magic.

On this farm spread along the right bank of the river lies the camp, the buildings being laid out in the form of a military square, while behind the station north of the track lies a little village of mushroom growth, the married quarters of the soldiers in camp.

As one enters the camp south of the track he passes a cluster of buildings belonging to the commissariat, and the regimental institute or soldiers' canteen. On the right side of the square on entering lie the numerous bunk-houses of the prisoners, the barracks of the soldiers, and the hospital buildings, while on the left lies the guard-house, the large recreation building of the soldiers, the blacksmith shop, the tool-house, carpenter shop, the buildings of the sergeants' mess and the administration or office building for the camp; while the officers' bungalow or residence overlooks the intervening space from the extreme end of the square, which is used as a parade ground.

DESCRIPTION OF STATION.

The farm comprises 1,280 acres of land, the whole being comparatively level, with gentle slopes toward the river. There are very few coulees or ridges in the total area.

Since operations began here in the fall of 1914 there have been 700 acres of timber slashed down; of this area, 150 acres have been cleared, and 120 acres roughly stumped. There is practically then only about 250 acres fit for agricultural purposes the coming summer, the remainder of the slashed area needing to be picked up, burned and stumped, while the rest of the farm has still its dense growth of standing timber.

Soil.—The land cleared has a soil of great fertility, being a rich, heavy clay loam, with a top soil of black muck.

Drainage.—The farm has natural drainage, the land being slightly undulating, with a gentle slope towards the river. The system of artificial drainage is not complete as yet, but there has been over 1,000 feet of drains laid down around the farm, while the office and stables have a sewage and drainage system of 3-inch tile laid at a depth of 3 feet, which runs into 6-inch mains that conduct the sewage to the river.

LIVE STOCK.

The live stock at this Station consists, at the end of March, 1917, of fourteen horses. These have been used in the general farm work.

FIELD HUSBANDRY.

Last year about 50 acres of rough land were sown to oats, the yield from which was very favourable, considering the condition of the soil. The crop was cut green and fed as roughage to the stock on the farm.

This coming spring it is hoped to have at least 150 acres prepared for crops.

HORTICULTURE.

The first year the camp was opened, that is during the spring and summer of 1915, several acres of land along the river bank was planted with such vegetables as potatoes, carrots, onions, parsnips, lettuce, and radishes, which reached their maximum growth. In the summer of 1916, several small fruit trees and bushes were planted, some of which should be productive this coming summer.

BUILDINGS.

The farm buildings so far erected comprise the main barn, which in itself includes the cow barn and the horse barn, four other buildings, the office, stableman's house, pump-house, and the carpenters' shed.

The main farm building or barn is equipped with the Rutherford system of ventilation, and in construction throughout is similar in design to the barns at the Central Farm at Ottawa. The cow barn, size 38 by 100 feet, has accommodation for forty head of cattle, is to be finished in concrete, and is equipped with stanchions and truck manure carriers. The horse barn is situated at the south end of the main building, has fifteen single stalls and two box stalls, besides a harness room. Between the cow and horse barns at the north end of the buildings are the feed room and calf stalls. This main building is not completed as yet, but this coming summer should see all building operations on the main barn finished.

WATER SUPPLY.

The water supply to the farm is pumped from the river by a gasoline engine to the large storage tank at the barn, which has a capacity of 35,000 gallons. From this tank the water is distributed to the farm buildings through 2-inch mains.

FARM OPERATIONS.

Eighteen cars of gravel loaded at pit 2, a distance of over 82 miles from the camp, were unloaded at the farm and used in the construction of buildings.

Over 850 cubic yards of rock blasted from an outcropping of rock at the river were hauled and piled at the barn to be used this coming summer.

In the fall of 1916 the mill operations, etc., produced a cut of 60,000 feet of lumber, while the past winter the mill cut 65,000 feet.

During the winter the teams on the farm have drawn over 125 cords of firewood for the farm buildings and the employees, besides drawing wood for the camp: and have also drawn out about 300,000 feet of timber, which will be sawn this spring.

EXPERIMENTAL STATION, MORDEN, MAN.

REPORT OF THE FOREMAN-MANAGER, CHAS. BOYLE.

SEASONAL NOTES.

The ground was not in workable condition until the end of April. The first half of May was cool and stormy, but the weather improved during the remainder of the month. Good growing weather was experienced in June, but hot weather, with scorching south winds, and a few damp days in July favoured the development of wheat rust. August was a month of fairly cool weather and heavy rainfall. The first frost occurred on September 15, and frost was also registered on the following two nights. Several inches of snow fell on October 17, followed by mild weather and bright sunshine until November 12, when the mercury dropped to zero. Real winter did not set in till December 9. The temperature dropped to 33 degrees below zero on December 19, and the first heavy snowfall of winter occurred December 26 and 27.

LIVE STOCK.

Horses.—Most of the horses at the Station are kept solely for farm work. A number of good grade Clydesdale mares are now included, however, and these will be used for breeding purposes. Four idle mares were fed during the winter on a

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daily ration consisting of 4 quarts oats, 1 sheaf corn, 1 sheaf oats, and 7 pounds hay, at a cost of 14½ cents per mare per day.

Cattle.—The work with cattle on this farm has so far been confined to the finishing of steers for market. Twenty steers bought in 1915 were sold in 1916 at \$8.75 per hundredweight. The average gain in weight during a feeding period of 204 days was 301 pounds, the average weight of the steers when sold being 1,321 pounds, and the net profit per head was \$16.28.

Thirty steers of very good quality were purchased in November, 1916, and divided into two lots for a feeding trial to compare the finishing of steers in a barn with those finished in a single-board shed and corral protected by a board fence. This experiment has not yet been completed.

Sheep.—A flock of 50 grade ewes was purchased in the fall of 1915 for breeding purposes. These have all been bred to pure-bred Hampshire rams of good type and quality. The flock at the present time numbers 72 head and is in excellent condition. During the past winter a feeding experiment to demonstrate the value of rusted wheat sheaves was commenced, but has not yet been completed.

FIELD HUSBANDRY.

Crop yields.—Eight acres of the 1915 summer-fallow were seeded down to Marquis wheat before the middle of May. Germination was excellent and the crop outlook very good until July, when the hot weather, combined with a certain amount of rain and dampness, produced a destructive attack of rust in the district. Not only was the grain badly rusted, but the top of each head of wheat was badly shrivelled, so that even without the rust, the crop would have been rather less than average. As it was, the wheat was not fit to thresh, and a quantity was stacked for feed, while some was burned in the field.

The remaining 20 acres of the summer-fallow were seeded to barley, cross-sowed, to eradicate any couch-grass that might be left. The crop was light.

An old brome pasture of 50 acres was seeded to oats. The yield was small, and the growth of straw light.

The 35 acres seeded down to western rye grass and red clover yielded a fairly good first crop. Nine acres of last year's corn and root patch was seeded to alfalfa in June, and gave an excellent catch. The field was cut once, to combat weeds.

About 8 acres were planted to field corn, which grew luxuriantly and yielded a good crop. The season was a very favourable one for corn, and should encourage farmers to grow corn for fodder more generally.

The remaining 60 acres of cultivated land were summer-fallowed. Fifteen acres were kept black all season, and 45 acres seeded to fall rye about September 15. The germination was good, and promises well for a good stand in the spring, especially as the snowfall during the winter has been quite heavy, giving good protection.

HORTICULTURE.

Marked progress in the horticultural work at this Station was made last season. Hot-beds were established, a horticultural area was fenced, and plots laid out. Outside sowing of garden seeds commenced about May 5.

For temporary protection from high winds and from snow drifts, rows of sunflowers were grown round the tree nursery, the young orchard, and the vegetable plots. Permanent protection was also provided for by hedges of Siberian pea tree, *Caragana arborescens*, and laurel-leaved willow.

Fruits.—About 1,000 trees were planted in the orchard area in the spring of 1916. These made a healthy growth, and were in good condition when winter set in. Clean cultivation was followed in the orchard until the middle of July, when rape was sown.

An area was also set aside for small fruits, and a number of varieties of raspberries, gooseberries, currants and strawberries were planted.

Vegetables.—Potatoes were not a heavy crop in the Morden district last year. Other vegetables grown were artichokes, beans, beets, Brussels sprouts, cabbage, cauliflower, carrots, celery, table corn, cucumbers, lettuce, musk melons, onions, parsnips, peas, pumpkins, radish, rhubarb, salsify, squash, turnips, and tomatoes.

The comparison of home-grown versus commercial seed will be conducted with a number of these.

Ornamental Gardening.—Further sowing and planting were done in the nursery, from which it is hoped to obtain most of the varieties of trees and shrubs required for the ornamental grounds at this Station. The season of 1916 was favourable for flowers, and an excellent display was obtained. Seed was collected from a number of varieties, and will be tested in 1917 in comparison with seed obtained from commercial sources.

FARM IMPROVEMENTS.

Buildings.—During the year an open shed and corral were put up for use in experimental work in feeding steers outside. A combined storeroom and tool shed, 12 by 20, was also built, and a small office building erected.

Fencing.—Over three miles of boundary fencing was put up; 8-foot cedar posts and No. 9 Page woven wire fencing, 51 inches high, were used, two strands of barbed wire being above the woven wire.

Machinery.—Some implements were purchased, including a corn harvester, a spraying outfit, and sheep-shearing equipment.

MEETINGS.

Mr. S. A. Bjarnason, Assistant in Horticulture, addressed several agricultural society meetings on horticultural and farming topics. He also took an active part in the work of the local horticultural society, and gave lectures and demonstrations to the pupils of the Morden high school.

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EXPERIMENTAL FARM, BRANDON, MAN.

REPORT OF THE SUPERINTENDENT, W. C. McKILICAN, B.S.A.

The season of 1916 in Manitoba was chiefly noted for the most serious attack of rust in the history of the province. Up to July 20 conditions for crop growth had been rather better than the average, and at that time crop prospects were very good. The rust attack reduced the yield and quality of the wheat crop to the worst in over twenty years. Oats and barley were also seriously damaged. The hay crop was better than usual, and fodder corn was fairly good.

METEOROLOGICAL RECORDS, 1916-17,

| Months | Highest Temperature F. | Lowest Temperature F. | Total Rainfall. | Total Snowfall. | Hours Bright Sunshine. |
|----------------|------------------------|-----------------------|-----------------|-----------------|------------------------|
| 1916. | ° | ° | Inches. | Inches. | |
| April..... | 65.1 | - 1.0 | 0.22 | 7.0 | 175.4 |
| May..... | 78.1 | 20.1 | 1.59 | | 187.5 |
| June..... | 80.0 | 30.0 | 4.33 | | 189.6 |
| July..... | 92.5 | 37.0 | 2.63 | | 259.3 |
| August..... | 97.0 | 33.5 | 2.22 | | 260.6 |
| September..... | 81.5 | 22.0 | 2.39 | | 177.1 |
| October..... | 72.0 | - 3.9 | 1.46 | 9.5 | 108.0 |
| November..... | 60.5 | - 5.8 | | 1.5 | 132.9 |
| December..... | 44.5 | -40.2 | | 9.0 | 115.3 |
| 1917. | | | | | |
| January..... | 38.0 | -49.0 | | 20.0 | 83.7 |
| February..... | 30.0 | -44.0 | | 9.0 | 125.5 |
| March..... | 42.1 | -27.0 | | 1.0 | 123.5 |
| Total..... | | | 14.84 | 57.0 | 1,943.4 |

Reckoning 10 inches of snowfall as equivalent to 1 inch of rainfall, the total precipitation for the year ending March 31, 1917, was 20.54 inches.

LIVE STOCK.

Horses.—Twenty horses are kept on the Brandon Farm. Three colts were born during the year, one dying when a few days old. Three horses were wintered outdoors, being fed all the hay they could eat, and some oats in addition. All gained in weight, and did not appear to suffer from the cold.

Cattle.—A carload of steers was purchased in November. They were divided into two lots, both receiving the same feeds, except that one lot received oat sheaves and the other the same amount of cut straw and chopped oats. The steers fed cut straw and oat chop made average gains of 236½ pounds at a cost of \$7.96 per 100 pounds gain in weight; the lot fed oat sheaves made an average gain of 259 pounds at a cost of \$7.41 per 100 pounds gain.

Thirty-eight Shorthorns and four grades are kept at this Farm. Milk records were kept for all the cows that completed a milking period during the year. It was found that it cost \$41.16 to raise a heifer from birth to one year, and \$33.14 from one year to two years.

Sheep.—The sheep at Brandon are Oxford Downs and grades. The lamb crop of 1916 was rather disappointing, only thirty-two lambs being raised. The sheep grading experiment was continued, and shows good results. The average wool clip was 9.2 pounds per sheep, or 646 pounds in all, and sold for \$214.28.

Swine.—Eighteen Yorkshires and twenty-eight Berkshires were kept. Experiments in feeding showed that the cost of feeding a mature sow for a year was \$26.32. Pasturing tests were also carried on with good results, and the self-feeder was used to good advantage. A comparison between pigs fed grain alone, digester tankage and grain, and buttermilk and grain proved the value of milk as a hog-feed, with digester tankage an excellent substitute.

POULTRY.

The poultry flock consists of birds of the White Wyandotte and Barred Plymouth Rock breeds. The birds are housed in six movable colony houses, each large enough to accommodate 25 to 30 hens. The hens laid moderately well all winter, but the pullets did not start to lay until February. During the winter all the birds were trap-nested, and records of the egg yield per hen kept. Hatching was started on March 30, but did not prove so satisfactory as in previous years. Portable houses were used for brooding chicks, and proved fairly satisfactory. After hatching was over, the cockerels were crate-fattened and killed.

BEEES.

Of four colonies wintered outside, three colonies survived, and of twenty-two colonies wintered in the cellar, twenty-one were found to be strong when the spring examination took place, while the remaining one was queenless and weak. The total yield of extracted honey for the season was 1,350 pounds. Special attention was given to swarm control. The methods employed were very successful, and resulted in the issuing of only one swarm. The 10-frame Langstroth hive was used for the first time in the spring, and gave good satisfaction.

FIELD HUSBANDRY.

The work in field husbandry consists of crop rotations and cultural investigational work.

Rotations.—In connection with the rotations, records are kept as to the cost of production of different crops in the rotation. The following eight rotations were tested:—

“D,” four years’ duration (wheat, wheat manured, oats, summer-fallow): This is purely a grain-growing rotation, manure being applied every four years.

“E,” four years’ duration (wheat, wheat, oats, summer-fallow): This is exactly the same as “D,” except that no manure is applied.

“F,” five years’ duration (wheat, wheat, corn or roots, oats or barley, clover hay): This is a mixed farming rotation suited to conditions where it is desired to grow both a large quantity of wheat and a large amount of fodder for stock.

“G,” six years’ duration (wheat, wheat, oats and barley, clover hay, pasture, corn or roots): This also is a mixed-farming rotation and allows for one-sixth of the land being in pasture.

“H,” six years’ duration (wheat, wheat, summer-fallow, oats, hay, pasture): This rotation is suitable where grain growing is the principal undertaking, but hay and pasture are also required.

“I,” six years’ duration (flax, oats, summer-fallow, wheat, hay, pasture): In this rotation, flax is substituted for the wheat in the first year of “H.”

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"Q," eight years' duration (roots and peas, wheat or oats, hay, hay, pasture, pasture, pasture, green feed and rape): The land used in this rotation is poor, and is used as a sheep farm.

"W," ten years' duration (wheat, wheat, corn or roots, oats, barley, alfalfa five years): This rotation is adapted to a dairy or pure-bred stock farm, where the chief object in crop growing is the production of a large quantity of good fodder.

Crop Yields.—Wheat yielded from 5.1 to 20.3 bushels per acre, the attack of rust, of course, interfering considerably with the yields. The yields of oats varied from 26.5 to 68.3 bushels per acre, and of barley from 30.7 to 45.8 bushels per acre. Arthur peas yielded from 13 to 17 bushels per acre, and flax 14.9 bushels per acre. The yields of hay were fairly good; corn gave from 6.3 to 9.2 tons per acre, and mangels 15.4 tons per acre.

Cultural Experiments.—The following cultural work was under investigation during the year: Depth of ploughing summer-fallow and sod, summer-fallow and stubble treatment, seeding to grass and clover, breaking sod, application of barnyard manure, green manuring, seed-bed preparation, use of soil packers, commercial fertilizers.

CEREALS.

The yields of wheat were materially reduced by the disastrous rust attack, while the hot, dry, windy weather injured the oats and barley, even where they were not rusted; consequently the results from the year's work with cereals are of little value. Of three varieties of spring wheat, Marquis proved the highest yielder, with 32 bushels 30 pounds per acre. Eight of the Dominion Cerealists' varieties were also tested. Seventeen varieties of oats were tested in duplicate plots of one-fortieth of an acre each, Gold Rain giving the highest yield of 101 bushels 33 pounds per acre. This variety has given good results since first introduced, and also heads the five-year averages. Of the barleys, of which eight varieties were tested, Manchurian headed the list with 59 bushels 18 pounds per acre, and of the seven varieties of flax, Golden gave the highest yield of 20 bushels 30 pounds per acre. Mackay peas yielded at the rate of 41 bushels 40 pounds per acre. The experiment on the influence of environment on seed oats, conducted in co-operation with three United States experiment stations, was continued.

FORAGE CROPS.

The season of 1916 was moderately favourable for the production of forage crops. Hay was a good crop, and corn and mangels fairly good.

Indian Corn.—Seventeen varieties of field corn were tested, being planted on May 25 and cut September 9. Longfellow yielded 12 tons 85½ pounds per acre, and the results from Northwestern Dent were also very satisfactory.

Roots.—Nineteen varieties of mangels and sugar beets were tested, and a comparison was also made between Canadian-grown and imported mangel seed, which showed that the home-grown seed was as good as the imported. Nineteen varieties of turnips gave an average yield of 13 tons 1,892 pounds per acre, and of three strains of sugar beets, the Ontario seed gave the highest yield, and also the highest percentage of sugar in the juice. The average yield of five varieties of carrots was 17 tons 140 pounds per acre.

Grasses and Clovers.—Thirteen kinds of grasses, clovers, and alfalfa were tested, and twelve mixtures of these crops were also tested under the same conditions. Baltic alfalfa, as in the previous year, gave the highest yield, 5 tons 1,120 pounds per acre.

Three acres were sown to alfalfa for seed production. For annual hay production, green oats have been most satisfactory. A test was also made of crops suitable for the production of annual pasture, rape and common grain crops such as oats and barley being found to be the best.

HORTICULTURE.

Fruits.—The only kinds of apple tree that have proven themselves reliable at Brandon are the cross-bred varieties originated by the late Dr. Wm. Saunders. Most of these again bore plentifully this year. No standard apple trees of more than six or seven years of age on the Farm are in a healthy condition. A good crop of Manitoba native plums was produced. Ten varieties of currants, two of gooseberries, eight of raspberries, and three of strawberries were grown and compared.

Vegetables.—Variety tests with different vegetables were carried out, and cultural experiments continued. With potatoes, tests of varieties and experiments with various methods of cutting and planting the seed were carried on.

Ornamental Gardening.—The trees and shrubs did well this season, and there was no winter-killing of any consequence. Variety tests with herbaceous perennials, tulips, roses and annuals were also conducted.

BUILDINGS.

A disastrous fire occurred on December 6, 1916, destroying the cattle barn, horse barn, and implement building, together with large quantities of feed, machinery, and equipment of all kinds. This was specially unfortunate in regard to the cattle barn, as operations had just been completed in connection with the overhauling and modernizing of the lower portion of the barn. The stable had been completely altered and made convenient and modern. New concrete walls had been put in instead of the old stone walls, which were crumbling apart and had become dangerous. The new concrete walls stood the fire well, and were used for a temporary stable during the winter, and will be suitable for the support of a new barn. A temporary roof of boards and straw was placed on these walls, and stalls fixed up to provide accommodation for as many as possible of the live stock.

EXHIBITIONS.

Travelling exhibits of an educational nature and illustrating the Experimental Farm work were sent out to a number of agricultural fairs throughout Manitoba. The following fairs were visited during 1916: Carman, Neepawa, Roland, Miami, Morden, Carberry, Hartney, Manitou, Waskada, Deloraine, Souris, Treherne, Minnedosa, Cartwright, Pilot Mound, Crystal City, Melita, Reston, Hamiota, Roblin, Dauphin and Stonewall. A large exhibit of a similar nature, but more comprehensive, was shown at the Manitoba Provincial Exhibition at Brandon on July 17 to 21. A horticultural exhibit was also made at the annual show of the Brandon Horticultural Society.

MEETINGS.

The superintendent addressed the annual meeting of the Manitoba Swine Breeders' Association on "Hog Pastures." No other meetings were addressed this year, war conditions making the holding of farmers' meetings very difficult.

VISITORS.

It is estimated that about 7,500 persons visited the Farm during the year.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT, W. H. GIBSON, B.S.A.

THE SEASON.

The crop season of 1916 was most unsatisfactory for the production of cereal crops, in southern Saskatchewan. Forage and horticultural crops, however, produced large yields. Seeding of grain crops commenced April 24. High winds during the early part of May did considerable damage on the lighter soils, causing many farmers to reseed. Later in the season many sections suffered from the effects of hail and rust, which did inestimable damage to grain crops.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature. | | | | Precipitation. | | | | Total Sun- shine. Hours. |
|---------------------|--------------|----|----------|-----|----------------|-------|-----------|-------|---------------------------------------|
| | Maximum. | | Minimum. | | Rainfall. | | Snowfall. | | |
| | Date. | ° | Date. | ° | Days. | Ins. | Days. | Ins. | |
| April..... | 27 | 77 | 4 | 0 | 1 | 0.22 | 3 | 6 | 120.6 |
| May..... | 20 | 80 | 1 | 14 | 6 | 2.75 | | | 151.8 |
| June..... | 9 | 82 | 19 | 36 | 10 | 3.63 | | | 222.9 |
| July..... | 15 | 90 | 23 | 40 | 5 | 1.52 | | | 292.2 |
| August..... | 8 | 90 | 25 | 33 | 4 | 1.18 | | | 272.2 |
| September..... | 8 | 80 | 27 | 24 | 8 | 3.72 | | | 171.4 |
| October..... | 13 | 70 | 19 | 9 | 5 | 0.25 | 4 | 21 | 102.8 |
| November..... | 5 | 55 | 12 | -15 | | | 2 | 2.25 | 72.5 |
| December..... | 3 | 42 | 20 | -36 | | | 2 | 7.50 | 39.5 |
| January..... | 8 | 40 | 31 | -43 | | | 7 | 14.50 | 39.2 |
| February..... | 6 | 34 | 2 | -50 | | | 4 | 10.0 | 85.6 |
| March..... | 29 | 36 | 3 | -30 | | | 4 | 4.25 | 111.3 |
| Total for year..... | | | | | 39 | 13.27 | 26 | 65.50 | 1,682.5 |

LIVE STOCK.

Horses.—The horses at Indian Head Experimental Farm are pure-bred and grade Clydesdales. In conjunction with the regular farm work considerable attention is given to breeding operations. During the past year three good filly foals were raised. The usual experiments were carried on relative to the cost of keeping work horses, cheap wintering of idle horses, together with the cost of raising 3-year-old fillies. The average cost of maintaining ten work horses from April 1, 1916, to March 31, 1917, was \$103.48 per horse.

Cattle.—The breeding herd at Indian Head consists of Shorthorns, the matrons at the present time conforming principally to the beef type. With the growing demand for dual-purpose cattle in Western Canada, much effort is being devoted to the production of a dual-purpose herd at the Farm, through the constant use of good dual purpose sires, and by paying the strictest attention to the dual-purpose type in the female. During the year a number of young bulls were sold for breeding purposes. Many of the cows, although conforming to beef type, are making very creditable

records as milk producers. The average cost of raising a calf from birth to 1 year old was \$50.49, and of raising a heifer from 1 year old to 2 years old \$21.99 on this farm.

Sixty grade steers were purchased in the fall of 1916, and divided into four lots of 15 each, for the purpose of comparing the relative merits of the straw-stack shelter, open shed, open corral, and stable as winter shelters. Each group was fed the same daily ration, and all the hay they could eat. The grain ration was made up of wheat, barley, and pea screenings, ground into meal, together with a little bran to balance the ration. Notwithstanding the severely cold winter, the steers fed outside made comparatively better gains than those fed inside, and an average profit of \$17.52 per steer was realized on all lots.

Sheep.—The sheep flock at Indian Head Farm now numbers 83 and consists of pure-bred Shropshires and grades. The grading experiment which was commenced two years ago is still in progress. The cost of wintering breeding ewes was found to average \$3.96; the cost of wintering range ewes, \$3.85; and the cost of wintering ewe lambs, \$2.41. Fifteen of the best wethers were sold soon after weaning for 8½ cents a pound, realizing, on the average, \$5.78 each. Twenty poorer ones, for which 7 cents a pound was offered on October 5, were kept and sold for the Christmas market at 9 cents a pound, a profit of \$13.04 over feeding being realized.

Swine.—The swine at Indian Head number 31, Yorkshires, Berkshires, and grades. All the brood sows were wintered outside, and it cost \$8.45 to carry an aged brood sow, and \$7.68 to carry a young sow from December 1 to March 31.

POULTRY.

Work with poultry is increasing, the breeds kept being White Wyandottes and Barred Plymouth Rocks. During the year 444 chicks were hatched by artificial incubation. A Candeë coal brooder was used and gave entire satisfaction; it cost 19 cents a day for fuel while in operation.

The total number of eggs laid during the year was 11,985. Trap-nesting was carried on throughout the winter months. A pen of White Wyandottes laid 3,525 eggs, at an average cost of 15.4 cents a dozen. These were sold at an average price of 24.5 cents a dozen, thus leaving a profit over cost of feed of 9.1 cents a dozen.

A number of birds were caponized and allowed to run with the cockerels for a fattening period of three weeks, when it was found that they weighed from one to one and a half pounds heavier than the cockerels.

Seventy cockerels were crate-fed for three weeks and realized a profit over cost of feed for the fattening period of 43 cents per bird.

BEEES.

The six colonies wintered in the cellar came through in good condition. Two swarms issued during the summer, but, being weak, were united with the parent colonies. The amount of honey extracted during the season was 303 pounds, and this was sold at 22 cents a pound, a profit of \$16.01 being realized.

FIELD HUSBANDRY.

Rotations.—The rotations carried on at Indian Head are as follows:—

Rotation "C, three years' duration (summer-fallow, wheat, wheat). This rotation is the most commonly followed in southern Saskatchewan. The main objections to it are the depletion of soil fertility and the facilitation of the introduction of weeds.

Rotation "J," six years' duration (summer-fallow, wheat, wheat, oats, seeded down, hay, pasture).

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Rotation "P," eight years' duration (summer-fallow, wheat, wheat, summer-fallow, hoed crop, barley, seeded down, hay, pasture).

Rotation "R," nine years' duration (summer-fallow, hoed crop, wheat, oats, summer-fallow, wheat, oats, seeded down, hay, pasture).

Rotations "J" "P," and "R" are all well suited to mixed-farming conditions.

Crop yields.—The yields of wheat varied between 16 bushels 16 pounds and 42 bushels 57 pounds per acre; oats, 47 bushels 23 pounds and 104 bushels 5 pounds per acre; barley, 22 bushels and 61 bushels 43 pounds per acre; and flax, 9 bushels 10 pounds and 12 bushels 29 pounds per acre. Fall rye yielded 30 bushels 20 pounds per acre and field peas 45 bushels 10 pounds per acre.

Cultural experiments.—The cultural investigational work consisted of experiments in the following: depth of ploughing, summer-fallow treatment, stubble treatment, seeding to grass and clover, breaking sod, applying barnyard manure, green manuring, seed-bed preparation, soil packers, depth of seeding, commercial fertilizers, underdrainage.

CEREALS.

The usual work with cereals was conducted on uniform test plots, sixteen sorts of spring wheat, fourteen of oats, sixteen of barley, eight of field peas, and three of flax being tested. In the five-year averages, Marquis heads the list of wheats, with an average yield of 60 bushels 54 pounds per acre; Danish Island was the highest yielding oat, with an average of 129 bushels 20 pounds; Canadian Thorpe, the highest yielding barley, 6 bushels 20 pounds; Mackay peas yielded, during the five years, an average of 49 bushels 38 pounds per acre; and Premost flax an average of 22 bushels 10 pounds per acre.

FORAGE PLANTS.

Indian corn.—Thirteen varieties of corn for ensilage were tested, and it has been found that the varieties most suitable to the Indian Head district are North-Western Dent, Early Longfellow, and Compton's Early. Free Press, Gchu, and Quebec Yellow are earlier but yield less forage. Eleven and a half acres sown to North-Western Dent corn gave an average yield of a little over 7 tons per acre.

Roots.—Twenty-two varieties of turnips, twelve of mangels, five of carrots, and three of sugar beets were grown, and in most cases gave a relatively higher yield than the previous season. An experiment to compare home-grown and commercial seed of mangels was also carried on.

Clovers and Grasses.—A series of experiments was inaugurated during the season to investigate the comparative values of the different hays and pasture grasses, the following, varieties being sown in duplicate plots of one-fortieth acre each: Brome grass, timothy, meadow fescue, tall oat grass, western rye grass, orchard grass, Kentucky blue grass, Canadian blue grass, and perennial rye grass. Three plots of western rye grass were sown for seed production, different methods of seeding being used. Nine plots of red clover were also sown for the same purpose. Experiments have shown that alfalfa is well adapted to climatic and soil conditions of southern Saskatchewan. The most suitable varieties are Grimm's and Baltic.

HORTICULTURE.

Fruits.—The fruit crop was well up to the average. Cross-bred apples gave a fair crop of fruit, and the small-fruit bushes were well loaded. The standard varieties of apples at present under test have not yet fruited, but have made a good growth and promise well.

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Vegetables—The work with vegetables consisted of variety tests and cultural experiments. The potato crop promised exceptionally well, but owing to the extremely wet weather during September and October it was found almost impossible to get the tubers lifted, and a large percentage was undoubtedly lost.

Ornamental Gardening.—Annual and perennial flowers were equal to those of any past season, while the beds of tulips were exceptionally fine, both in size and colour of flowers and the length of time the flowers remained in bloom.

Trees and ornamental shrubs made a strong growth during the season, but, owing to the wet fall, the new wood was not well ripened when winter set in.

BUILDINGS.

A new poultry administration building was erected during the year, with basement suitable for incubation purposes.

EXHIBITIONS.

Two exhibits were sent out from this Farm during the past season, one operating on the Canadian Pacific Railway main line between Moosomin and Regina, and the other on the Weyburn—Estevan line and towns in southern Saskatchewan. Twelve places were visited, namely, Rouleau, Milestone, Estevan, Alameda, Oxbow, Carnduff, Weyburn, Regina, Moosomin, Wapella, Whitewood, and Wolsley.

EXPERIMENTAL STATION, SOUTHERN, SASK.

REPORT OF THE SUPERINTENDENT, W. A. MUNRO, B.A., B.S.A.

THE SEASON.

The season of 1916 may be termed an average one as to weather conditions. The precipitation for the year ending March 31, 1917, was 15.48 inches, and the average precipitation for six years ending the same date was 14.74 inches. The hours of sunshine for the year ending March 31, 1917, was 3,076.7, and the average for six years ending the same date was 2,153.2. There was an average snowfall, and the rain during the summer was well distributed, and the growing crops, including both field and garden, were promising up to August 3.

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METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | | Total Precipitation. | Total Sunshine.. |
|---|----------------|---------|-------|-------------------------|---------------------|
| | Highest. | Lowest. | Mean. | | |
| 1916. | ° | ° | ° | Ins. | Hrs. |
| April..... | 72.3 | - 2.6 | 36.7 | 0.69 | 194.3 |
| May..... | 79.4 | 18.1 | 46.4 | 2.49 | 193.3 |
| June..... | 74.6 | 29.5 | 55.7 | 2.15 | 246.0 |
| July..... | 87.2 | 43.4 | 64.8 | 3.66 | 293.5 |
| August..... | 82.5 | 30.4 | 58.5 | 2.45 | 284.1 |
| September..... | 77.2 | 22.2 | 49.6 | 0.68 | 183.1 |
| October..... | 64.8 | 9.6 | 36.2 | 0.81 | 116.2 |
| November..... | 50.0 | - 5.3 | 23.8 | 0.20 | 108.5 |
| December..... | 37.1 | -32.2 | 2.6 | 0.15 | 94.0 |
| 1917. | | | | | |
| January..... | 34.5 | -38.0 | -9.25 | 0.95 | 75.0 |
| February..... | 34.2 | -44.8 | -6.93 | 0.9 | 140.3 |
| March..... | 36.3 | -34.0 | 14.06 | 0.35 | 148.4 |
| Total..... | | | | 15.48 | 2,076.7 |
| Average for years 1911-12-13-14-15..... | | | | 14.59 | 2,174.5 |
| Total for five growing months, April to August, 1916..... | | | | 11.44 | 1,211.2 |
| Average for five growing months, 1911-12-13-14-15..... | | | | 9.666 | 1,290.56 |

THE HAIL-STORM.

The morning of August 3, 1916, was bright and hot, succeeding several days of very hot, dry weather. About noon heavy clouds began to appear in the west, and later these were rolling in different directions, some from the northwest and some from the southwest, and about 2 o'clock hail fell, driven by a strong northwest wind. The duration of the storm was just ten minutes. The width of the area affected was approximately six miles, and the general trend was ENE. So far as information can be gathered, the storm had its origin somewhere in Alberta, and swept a path all the way across the province of Saskatchewan to an indefinite region in northern Manitoba. Its path was not straight and was not single. It seems to have divided at different places. Nor was the direction of the wind the same in all places. At the Experimental Station the wind was from the northwest, and 2 miles south of the Station there was one large house with all windows broken on all sides, evidently indicating a whirlwind in the storm. This house stands about two miles north of the southern edge of the storm area. One hail stone measured 2 inches across, which was a fair average, and may be described as being the shape of a curling stone, i.e., rather flat than spherical.

At the Experimental Station, all grain crops were completely destroyed. Some of these crops were either driven completely into the ground or broken off and carried away by the wind, leaving only the rows of tops of the grain roots exposed. In other places the grain was broken off below the heads and the straw left in a tangled mass, while in other places there were all stages between these two extremes. Where the grain was completely cut off or driven into the ground there was no trouble experienced in going right on the land with a plough, but where it was left in a tangled mass it had to be raked, then mown and raked again to be either burned or hauled away. It could not be

burned before being cut because of the immediate growth of green stuff underneath, which left the tangled mass too damp for burning.

The potato stalks were killed to the ground, and although the potatoes did not rot, both the yield and the quality were unsatisfactory.

The leaves of all root crops were broken off at the ground. The beets and mangels rotted at the crown in storage, the carrots and turnips developed new tops, but by the time frost came had not started to enlarge at the roots and at harvest time there was no more yield of turnips and carrots than there would have been at the time of the hail-storm.

Much damage was done to shrubs and trees. The northwest sides of the trees were bruised so that the bark was left open in spots to the wood, and sometimes these spots were so close together that the circulation on the exposed side of the trees was altogether stopped. In bad cases it presented a little of the appearance of sun-scald. In this district there are many bluffs of poplar trees, about 40 feet high, and any that were in the path of the storm presented a late-autumn appearance, being very much denuded of leaves.

The damage was not confined to vegetation. Numbers of blackbirds and meadow larks were found dead immediately after the storm, and the next day numbers of the same kinds of birds were hopping about with broken wings, and one dead rabbit, evidently killed by the storm, was found. There was a large number of poultry killed in the district, and wild ducks were found dead on the edges of the ponds. The horses that were in the fields became frantic, and there were two run-aways on the Experimental Station.

LIVE STOCK.

Horses.—The horses include fourteen head of work horses and two drivers. One mare died of colic in September, but all the others have been in good condition throughout the year.

Cattle.—The herd has increased to twelve head, including a Holstein bull sent from the Central Experimental Farm at Ottawa. The cows include two pure-bred Holsteins, one grade Holstein, and two grade Shorthorns. Besides the dairy cattle, seventy-three steers were purchased in October for feeding purposes. These were fed in four lots during the winter, to test the value of hauled-out straw.

Sheep.—From the one hundred ewes and three rams purchased in November, 1915, there was a total of one hundred and seventy-five in the fall of 1916. Out of these, thirty-three wether lambs and twenty-seven old ewes were killed and dressed, leaving a larger and better flock than at the beginning. The sale of the wool through the Co-operative Organization Branch of the Saskatchewan Department of Agriculture was very satisfactory.

FIELD HUSBANDRY.

Besides the regular experimental work, a great deal was done in further bringing into proper condition the land purchased two years previously. The great task is checking the wild oats, and attempting to eradicate them. The quarter section that had been summer-fallowed in 1915 was sown to oats and barley and showed a much-diminished growth of wild oats; the quarter section that was cropped since fallowing was twice ploughed shallow in the spring and sown late to oats, and the third quarter was fallowed. After the hail-storm a tractor was purchased and about one hundred acres ploughed with it.

CEREALS.

There were under test in 1916, seventeen varieties of wheat, twenty of barley, twelve of oats, and thirteen of peas. These were all doing well until destroyed by the hailstorm on August 3. One plot of Marquis wheat sown on November 6, 1915, was doing particularly well.

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FORAGE PLANTS.

All forage crops were promising a good yield in 1916 till the time of the hail-storm on August 3. Some of the hay had been harvested, but the remainder was all destroyed. All root crops were so injured that the yields were unreliable for comparison, and the corn was ruined. Millet was tried for the first time, and was not promising.

HORTICULTURE.

Fruits.—The plums continued to make good growth, but many of the apple trees suffered severely from winter-killing. A few quarts of apples were obtained from some of the trees.

The strawberries and raspberries suffered somewhat from winter-killing, but the currants proved hardy. Some gooseberries bore for the first time since the Station was established.

Vegetables.—The whole vegetable garden was very promising till it was destroyed by hail. The tomatoes especially were a very promising crop.

The results in potatoes were quite different from what they were in previous years, which may be accounted for by the stalks being destroyed by the hail before the potatoes were mature.

Ornamental gardening.—The flower border, and especially the perennial border, is becoming better every year. The display begins with tulips early in May and ends with asters in the autumn. The shrubs planted along the driveway are becoming well enough developed to show the advantage of their massed effect.

BUILDINGS.

When three quarter-sections of land were added to the Experimental Station the buildings were not adequate to the necessary extra live stock and equipment, and during 1916 some additions were made. The barn, which had been arranged to accommodate eight horses and five cattle and allow a driveway and room for several rigs, was rearranged to hold nineteen horses in stalls and two in a box stall.

The old stable that was on the farm at the time of its purchase in 1908 was temporarily arranged to accommodate ten cattle, and equipped with adequate ventilation.

A new implement shed, 24 feet by 80 feet, 7 feet at the back and 10 feet at the front, was built which, together with the former building, 20 feet by 80 feet, affords sufficient accommodation for the implements and machines.

A sheep barn, 20 feet by 68 feet, with 12-foot posts was built. This is large enough to accommodate about a hundred sheep.

EXHIBITIONS.

A large exhibit displaying various phases of the work of the Experimental Station was assembled and shown at thirteen fairs.

EXPERIMENTAL STATION, SCOTT, SASK.

REPORT OF THE ACTING SUPERINTENDENT, M. J. TINLINE, B.S.A.

SEASONAL NOTES.

The season of 1916 was wet and cool. The precipitation of 16.88 inches for the six growing months is much above the average. Cold weather continued up to May 6. Seeding only commenced on April 20, almost a week later than usual, but while crops of all kinds were late starting, they made good progress during the early summer. Hail-storms were more prevalent than usual, and did much damage in some districts. A frost on August 11, followed a few days later by three days of wet weather, did serious damage to the wheat crops, in many districts. Cool, wet weather during the late summer delayed harvest operations, and a number of fields were injured by a frost on September 14; threshing operations were also much delayed, and a considerable percentage of the grain crops was not threshed until November. The ground froze too hard for cultivation on November 4.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | Precipitation. | | | Total Sunshine. Hours. |
|-------------------------|----------------|---------|----------------|-----------|---------|------------------------------|
| | Highest. | Lowest. | Rainfall. | Snowfall. | Total. | |
| | ° | ° | Inches. | Inches. | Inches. | |
| 1916. | | | | | | |
| April..... | 74.2 | 9.1 | 0.25 | 0.27 | 0.52 | 178.8 |
| May..... | 77.8 | 17.8 | 2.54 | | 2.54 | 200.7 |
| June..... | 78.0 | 32.3 | 4.25 | | 4.25 | 254.5 |
| July..... | 87.0 | 38.0 | 4.04 | | 4.04 | 286.8 |
| August..... | 83.0 | 30.2 | 3.87 | | 3.87 | 254.0 |
| September..... | 78.0 | 20.4 | 1.66 | | 1.66 | 138.7 |
| October..... | 49.0 | 23.7 | 0.10 | 0.40 | 0.50 | 123.9 |
| November..... | 63.8 | - 2.2 | | 0.05 | 0.05 | 116.6 |
| December..... | 47.2 | -31.8 | | 2.5 | 2.5 | 104.0 |
| 1917. | | | | | | |
| January..... | 43.2 | -41.0 | | 0.60 | 0.60 | 78.3 |
| February..... | 40.0 | -48.8 | | 0.15 | 0.15 | 127.4 |
| March..... | 37.8 | -31.2 | | 0.03 | 0.03 | 194.3 |
| Total for the year..... | | | 16.71 | 4.00 | 20.71 | 2,058.0 |

LIVE STOCK.

Horses.—There are now seventeen horses on the Scott Station, two colts having been foaled in 1916. Records are kept of the time horses were at work, and the cost of food, etc., for the year. Experiments on wintering idle horses, cost of raising horses, and feeding methods, were continued.

Cattle.—One grade Shorthorn cow and calf are kept at this Station for the purpose of supplying the employees with milk. Two carloads of steers were purchased in the fall for feeding experiments. One lot is being fed in a frame shed, the other lot in a high-board corral.

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The herd of cattalo continued in good condition throughout the summer. Late in December they were shipped to the Buffalo park, Wainwright. No increase in the herd took place during the year.

Sheep.—The lamb crop was lower than usual, and severe losses were also sustained from the depredations of dogs. A good crop of wool was secured, the average weight per fleece amounting to 8½ pounds.

Swine.—Six Berkshire sows and a Berkshire boar were kept at the Station, and were housed in two portable hog cabins. The average cost of feed per sow for the six months ending March 31, 1917, was \$5.98.

FIELD HUSBANDRY.

Rotations.—An investigation into the best kinds and arrangements of crops for rotations suitable to northwestern Saskatchewan continues as one of the most important lines of work at this Station. The following rotations are being tested:—

Rotation "A," wheat continuously: An anthracnose disease appearing in the field taken up by this rotation made the yield unusually low.

Rotation "C," three years' duration (summer-fallow, wheat, wheat).

Rotation "J," six years' duration (summer-fallow, wheat, wheat, oats seeded down, hay, pasture): This rotation has, since its inauguration, produced uniformly substantial revenues, the average profits for the past five years being \$8.18 per acre. It is planned to try this rotation on a more extensive scale, using six 20-acre fields.

Rotation "P," eight years' duration (summer-fallow, wheat, wheat, summer-fallow, peas, barley, hay, pasture): This rotation is intended for a farm where diversified farming is carried on.

Rotation "R," nine years' duration (summer-fallow, peas, wheat, oats, summer-fallow, wheat, oats, hay, pasture): The profit per acre from this rotation in 1916 was \$13.04.

Crop Yields.—Marquis wheat, on breaking, gave a yield of 41 bushels 51 pounds per acre; and Victory oats, on breaking, 113 bushels 7 pounds per acre. O.A.C. No. 21 barley yielded 55 bushels per acre; and Arthur peas, on summer-fallow, 36 bushels 13 pounds per acre. The yield of early potatoes averaged 202 bushels 20 pounds per acre. The yields of hay and field corn were fairly good.

Cultural Experiments.—Experiments in cultural work included the following: Rates of seeding wheat and oats; dates of seeding wheat, oats, barley, and flax; prairie breaking; summer-fallow and stubble treatment; seeding down to grass and clovers; use of barnyard manure; green manuring; depth of seeding; seed-bed preparation.

CEREALS.

The system of making duplicate tests of all varieties of grain was followed. A uniform stand of all kinds of grain was secured. The flax crop was injured by the August frost, while late-maturing varieties of wheat, including Red Fife, were caught by the frost on September 14.

On the seed plots, good crops were secured. A 30-acre field of Marquis yielded 41 bushels 50 pounds per acre. Victory and Banner oats yielded 113 bushels and 111 bushels per acre, respectively. In addition, Ligowo oats, O.A.C. No. 21, Manchurian and Black Japan barleys, and Arthur peas were grown to supply seed for the Station and to sell to farmers in limited quantities. In all, seventy farmers were supplied, and a total of 1,600 bushels sold for seed purposes.

FORAGE CROPS.

Indian Corn.—Variety tests with Indian corn were again conducted. Eleven varieties were tested, the yields ranging from 2 tons 1,633 pounds to 7 tons 1,293 pounds, per acre, Salzer's North Dakota being the heaviest yielder.

Roots.—Of the root crops, turnips gave yields varying from 17 tons 1,975 pounds to 39 tons 550 pounds per acre, twenty-five varieties being tested; the yields of the thirteen varieties of mangels were from 230 bushels to 580 bushels per acre; three varieties of sugar beets yielded, on the average, 177 bushels per acre; and five varieties of carrots ranged in yield from 106 bushels to 253 bushels per acre.

Grasses and Clovers.—Variety and soil cultural tests were carried out with alfalfa, Grimm's proving the best yielder. Variety tests were also carried out with grasses and clovers. Good crops of hay were secured from old hay fields, but the crop from the 1915 seeding was light.

HORTICULTURE.

Owing to the severe winter, loss of shade trees, apple trees and perennial flowers was very heavy. Some 13 degrees of frost was recorded on September 14. Cuttings made from the willows and poplars in November showed frost damage. Many of the more tender kinds failed to grow. Warm weather for two weeks in February, followed by a cold March, may have aggravated the injuries received in the fall. The spring of 1916 was late, and no doubt many of the trees would have survived had the spring been favourable.

From an experimental standpoint, the losses sustained are well worthy of consideration, since hardy varieties came through with little damage, and the more tender kinds were in many instances killed out.

Small Fruits.—The hardy kinds of fruit bushes made a splendid showing during the past season; the cultural experiments with the different kinds of fruits have been continued, and a good crop of black currants, gooseberries, and raspberries was secured, while the yields from the red and white currants and strawberries were not so satisfactory.

Ornamental Gardening.—In the flower garden, flowering bulbs and annual flowers made a splendid showing. Paeonies and iris are two of the hardiest kinds of perennials under test.

FARM IMPROVEMENTS.

Buildings.—A sheep shed, 24 by 67 feet, was built. This building is one story, frame, with a shingle roof; the walls were sheathed with rough lumber, using battens to cover the joints. Ample light was provided for. The importance of dryness, plenty of light, and sufficient ventilation for sheep cannot be overestimated.

Fencing.—Over half a mile of woven wire fencing was erected. The dam in the ravine in the pasture was built higher. Later in the autumn approximately half a mile of roadway was graded up.

EXHIBITIONS.

An exhibit from the Station was displayed at Saskatoon, Plenty, Kerrobert, Kindersley, and Alsask.

MEETINGS.

Changes in the staff on the Station have prevented as much extension work as was done in previous years. During the season, however, the Acting Superintendent

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addressed several meetings held by farmers' organizations. He placed the awards at a school fair held at Cut Knife, and assisted in judging the horticultural exhibit at the Wilkie fair. During the harvest season he inspected numerous fields of wheat in the surrounding district to determine the extent of injury from the frost and wet.

EXCURSIONS.

During the midsummer months the following farmers' organizations held picnics at the Station: Scott Farmers' Club, East Prospect Grain Growers' Association, Wilkie Agricultural Society. In addition, the Narrow Lake Homemaker's Club and two Sunday Schools were entertained. A total of 1,000 persons attended these gatherings.

VISITORS.

It has been estimated that 2,636 persons visited the Station during the year 1916-17.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

REPORT OF THE SUPERINTENDENT, W. H. FAIRFIELD, M.S.

THE SEASON.

The precipitation during the growing season was unusually heavy for southern Alberta. All cereals, roots, and other grains did better than the average; especially was this true of the wheat crop. Coming, as it has, right after 1915, which was in itself a marvellous growing year, 1916 has enabled this part of the country to set a high-water mark for two consecutive seasons' production which, to say the least, have been remarkable.

The months of January and February of 1916 will long be remembered for the severe cold spell which lasted from the 8th of January to the 12th of February, with scarcely a day when the temperature rose above zero. For the month of January the average mean temperature was 9 degrees below zero. Just before the cold spell set in there was a fall of snow all over the country, and this remained without drifting until the "Chinook" came. Then a week's very mild weather melted the snow without taking it all off into the air, and the whole prairie was covered with sloughs and ponds.

Work on the land was commenced as early as March 10 on a few farms in the district, and became quite general by the last of March. The first surface cultivation of the land done on the Station was on March 21, and it was on this date that the first seeding was done.

Heavy winds during April and May caused soil drifting, and the spring was backward and cold right through May, with no rainfall till the 22nd. Up to that time, while most of the crops were up above the ground, they had made little noticeable growth. After May 22, rains of three and four days' duration were quite frequent. The total precipitation for April, May, and June was 7.77-inches. During July and August, seasonably warm weather hastened the crops along to maturity. The last frost in the spring was on May 18, when 31.6 degrees was recorded. The first frost in the fall was September 14, 31.2 degrees being recorded.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | | Precipitation. | Sunshine. |
|----------------|----------------|---------|---------|----------------|-----------|
| | Mean. | Maximum | Minimum | | |
| | ° | ° | ° | Inches. | Hours. |
| 1916. | | | | | |
| April..... | 44.35 | 78.1 | 18.5 | 0.46 | 230.3 |
| May..... | 46.95 | 77.2 | 22.0 | 3.77 | 230.2 |
| June..... | 56.1 | 63.2 | 32.6 | 3.54 | 225.9 |
| July..... | 63.6 | 89.0 | 40.0 | 3.33 | 291.4 |
| August..... | 60.0 | 84.0 | 35.2 | 2.97 | 333.8 |
| September..... | 52.77 | 78.1 | 24.0 | 4.66 | 161.4 |
| October..... | 39.39 | 75.0 | 18.0 | 1.99 | 180.2 |
| November..... | 32.25 | 63.0 | -17.5 | 0.49 | 140.8 |
| December..... | 12.0 | 50.0 | 36.0 | 0.51 | 98.1 |
| 1917. | | | | | |
| January..... | 13.1 | 48.5 | -41.8 | 0.73 | 80.9 |
| February..... | 11.1 | 53.5 | -41.5 | 0.27 | 96.7 |
| March..... | 26.3 | 59.0 | 17.0 | 0.10 | 153.5 |
| | | | | 22.82 | 2,221.2 |

LIVE STOCK.

Cattle.—Twenty-seven 2-year-old steers were purchased locally, divided into three lots, and fed in the open. The two main objects were to compare alfalfa hay as a roughage with a mixture consisting of three-fourths alfalfa and one-fourth green feed, and to compare the profits derived from long and short feeding. The meal ration of the first lot, which, like the second lot, was fed alfalfa hay and green feed as a roughage, was increased more rapidly than the other two lots, the feeding period being 95 days, while for lots 2 and 3, the feeding period was 154 days. The short-feed steers made a net profit per head of \$22.71, sold at \$9.68 per 100 pounds and cost 19 cents to produce 1 pound gain, while the long-feed steers on the same rations made a net profit of \$26.63 per head, sold at \$10.70 per 100 pounds, and cost only 16 cents to produce 1 pound gain. The two lots fed the same length of time on different roughages confirmed the previous findings, that alfalfa hay and green feed gave slightly higher gains and more satisfactory returns than alfalfa hay alone.

Sheep.—Two cars of range lambs were purchased in October, 1915. Half of them were fed until March, and then disposed of at \$9.72 per hundredweight. The remainder were kept for shearing, and sold in May at \$9.75 per hundredweight, \$411.92 being received for the wool, the average weight of each fleece being 5.6 pounds. The net profit on the short-feed lambs was \$1.76 per head, while for those sold in May the net profit was \$3.12 per head.

A flock of one hundred range ewes was purchased in November, with a view to grading up by using pure-bred Shropshire sires, and also to ascertain whether it is possible to maintain grade sheep on pastures of cultivated grasses.

POULTRY.

The flock at Lethbridge is composed of the Barred Rock and White Leghorn breeds, the former appearing to be the more suitable breed for Lethbridge conditions. There were 472 chickens raised to maturity in 1916. Most of them were raised in the Candee coal-stove brooder. In a laying test between 45 Barred Rock pullets and an

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equal number of hens of the same breed, all being fed alike, the pullets laid 589 eggs in three months, and the hens only 85. The pullets are all trap-nested, and those making the poorest returns disposed of, the better ones being retained for breeding purposes.

BEES.

The results from the apiary in 1916, were not quite so satisfactory as the previous summer. Three hives that were wintered in the cellar came through in much better condition than the two wintered in cases outside. One more colony was made by division, and swarming was prevented by cutting away all queen cells formed. The total amount of honey extracted was 172 pounds, and was sold at 17 cents per pound.

FIELD HUSBANDRY.

Rotations.—In connection with the work with rotations, there have been no striking results obtained during the past season. The following rotations are under test:—

Rotation "A": Wheat continuously.

Rotation "B": Two years' duration (wheat, summer-fallow).

Rotation "C": Three years' duration (summer-fallow, wheat, wheat or coarse grain).

Rotation "M": Six years' duration (summer-fallow; wheat; coarse grain, manured in fall; summer-fallow; peas and oats for hay; barley or oats).

Rotation "S": Nine years' duration (summer-fallow; hoed crop; wheat; summer-fallow; wheat; coarse grain; summer-fallow, manured; peas and oats for hay; rye pasture).

Rotation "T": Ten years' duration (summer-fallow; wheat; oats or barley; seeded to alfalfa; alfalfa hay or seed; alfalfa hay or seed; alfalfa hay or seed; summer-fallow; hoed crop; wheat, manured in fall).

The following rotations are irrigated:—

Rotation "U": Ten years' duration (seeding alfalfa; alfalfa for five years; hoed crop; wheat; oats; barley).

Rotation "V": Alfalfa continuously.

Rotation "X": Fifteen years' duration (seeding alfalfa; alfalfa for nine years; barley; corn; wheat; oats; peas).

Crop yields.—The yields of field crops in all cases were particularly high, with the exception of alfalfa hay on the irrigated land, which was distinctly lower than normal, owing, no doubt, to the fact that the large number of cloudy, rainy days interfered with its rapid growth, for on irrigated land, where the moisture is supplied artificially, alfalfa produces the greatest tonnage in seasons which have the greatest number of sunshiny, hot days.

Cultural experiments.—The following is a brief summary of the results obtained from the cultural experiments carried on during the five years just past:—

In the "summer-fallow treatment" 8-inch ploughing in June gave better results than shallower ploughing. The average yields of wheat for five years from 4-inch, 6-inch, and 8-inch ploughing are, respectively, 31.9 bushels, 34.2 bushels, and 36.8 bushels. When a crop of rape was raised on the land and pastured off, in lieu of summer-fallow, the yield was reduced approximately 10 bushels per acre. Of the plots ploughed for fallow May 15, June 15, and July 15, the one ploughed June 15 gave the highest average yield, and July 15 the lowest. In the "applying manure" experiment, applying manure after the crop is sown in the spring has given good results with wheat, oats, and barley. In the "green manure" experiment there is no apparent advantage in ploughing under a green crop. It has reduced the yield in every case. In the

"seed-bed preparation" experiment, the better the preparation given the greater the crop obtained. In the "packing experiment," the subsurface packer gave better results than either the surface or combination packer. In the "depth of seeding" experiment, where the seed is sown 1, 2, 3, and 4 inches deep, that sown 2 inches and 3 inches deep gave better returns than the plots put in either 1 or 4 inches deep. Spring ploughing, on the average, gave better results than fall ploughing.

The results of a five-year experiment in which wheat, oats, barley, and flax were sown at ten days' to two weeks' interval would indicate that, at Lethbridge, the latest date at which it is possible to sow these grains on fallow, with a reasonable assurance that they will ripen before frost, is as follows: Wheat, May 12; oats, May 24; and flax, about May 24 or 25; barley, June 1.

CEREALS.

Excellent crops of all the cereals were obtained. The yields, although not quite so heavy as in 1915, were nevertheless, very much better than normal. Of sixteen varieties of spring wheat tested, Huron yielded 77 bushels 15 pounds per acre, the average yield for the past four years of this variety on irrigated land having been 64 bushels 24 pounds per acre. Danish Island oats yielded 159 bushels 24 pounds per acre, and Invincible barley 99 bushels 3 pounds per acre. Chancellor peas gave 57 bushels per acre; and Montana flax, 20 bushels 20 pounds per acre. Silver Hull buckwheat gave 45 bushels 30 pounds per acre, and spring rye 52 bushels 43 pound per acre.

FORAGE PLANTS.

Indian Corn.—Thirteen varieties of Indian corn gave an average yield of 9 tons 835 pounds per acre; the highest, Salzer's North Dakota, yielding 14 tons per acre.

Roots.—The turnips on the non-irrigated area gave an average crop of 34 tons 1,178 pounds per acre, and on the irrigated area, 25 tons per acre. Eleven varieties of turnips were under test. The irrigated area sown to mangels gave a crop of 19 tons 1,904 pounds per acre, and the non-irrigated area 19 tons 1,965 pounds per acre. Experiments showed that medium-sized mangel seed gave larger returns than either small or large seed. An experiment comparing home-grown and commercial mangel seed was not conclusive. On the irrigated area, five varieties of carrots gave an average yield of 18 tons 1,770 pounds per acre, while on the non-irrigated area only 1 ton 1,630 pounds per acre was obtained. Four varieties of sugar beets were also tested.

Grasses and clovers.—Alfalfa, which is the main hay crop on the irrigated lands in the Lethbridge district, did not yield as well as usual. Winter-killing was observed to a limited extent. The quality of hay obtained was better than in 1915.

HORTICULTURE.

Fruits.—Practically all apple trees old enough to produce, except the crab-apples, winter-killed. Plum trees stood the winter well and bloomed freely, but an untimely frost allowed little fruit to set. Currants, raspberries, and strawberries did not produce as well as usual, and the berries were smaller.

Vegetables.—The usual variety tests with vegetables were continued, and various cultural experiments were also carried on. On the non-irrigated area, Gold Coin potatoes gave a yield of 570 bushels per acre, 530 bushels of which were marketable. In the four-year averages this variety also heads the list.

Ornamental Gardening.—Many varieties of annuals, herbaceous perennials, and bulbs were grown. A number of trees and flowering shrubs were seriously affected by the severe winter.

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NO IRRIGATION NECESSARY.

Again in 1916 as in the season previous, the generous rains that came during the time the crops were growing made irrigation unnecessary for general field crops on the irrigated part of the farm. It is remarkable to have two seasons in succession with the rainfall such that the application of water to the growing crop would not increase the yield. In the last fifteen years there have been only three seasons, 1902, 1915, and 1916, when such has been the case in the Lethbridge district. During the season just past, however, the crops on the hay and grass lands were greatly improved in yield by irrigation in early May.

EXHIBITIONS.

The Lethbridge Experimental Station again sent an exhibit to the following thirteen fairs in southern Alberta: Calgary, High River, Nanton, Claresholm, Stanley, Vulcan, Carmangay, Macleod, Gleichen, Raymond, Cardston, Taber, and Grassy Lake.

EXCURSIONS AND VISITORS.

Three excursions or farmers' picnics were held in July. Arrangements were made with the Canadian Pacific to run special trains to and from the Station on July 18 from Medicine Hat, on the 19th from High River, and on the 20th from Calgary via Alderside. On the first day rain started early in the morning, but on the other two days the weather was fair. In all there were 800 fares collected on the trains. During the year there has been a large number of people visit the Station; over 2,610 have been counted, although there were doubtless many more than this.

EXPERIMENTAL STATION, LACOMBE, ALTA.

REPORT OF THE SUPERINTENDENT, G. H. HUTTON, B.S.A.

THE SEASON.

The spring of 1916 was favourable for an early commencement of work on the land, the first seeding of wheat being done on April 10, and practically all seeding being concluded before the first of May. The temperatures during the growing season were below normal, and this fact, together with an unusually heavy precipitation, delayed the maturity of crops considerably beyond the average date for the commencement of harvest, and also interfered with the harvest operations. A frost on August 10 did damage on certain areas. It seemed to pass over the country in well-defined waves, and those districts which were in the trough of these frost waves, suffered to quite an extent. Fortunately most districts contained areas which escaped, and from these, seed for the coming year has been obtainable. Even where frosted, the grain has been used to excellent advantage for feeding stock, and has been marketed through that channel at a price above the average for No. 1 grades. Because of the difficulty experienced in harvesting crops, little fall ploughing was done. The winter of 1916-17 has been cold and windy, with the result that heavy demands have been made by all classes of live stock on the feed supply. Indications are that work on the land in the spring of 1917 will begin much later than usual.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Max. | Date. | Min. | Date. | Precipitation. | Sunshine. |
|----------------|------|-------|-------|-------|----------------|-----------|
| | ° | | ° | | Ins. | Hours. |
| 1916. | | | | | | |
| April..... | 71.8 | 26 | 17.9 | 22 | 0.600 | 201.1 |
| May..... | 71.8 | 2 | 19.9 | 9 | 2.043 | 179.3 |
| June..... | 77.9 | 17 | 28.8 | 3 | 3.570 | 198.1 |
| July..... | 82.8 | 16 | 36.1 | 5 | 4.311 | 229.5 |
| August..... | 82.8 | 13 | 28.9 | 11 | 5.218 | 253.0 |
| September..... | 76.8 | 17 | 23.4 | 28 | 3.055 | 176.0 |
| October..... | 74.7 | 15 | 16.9 | 28 | 1.013 | 138.6 |
| November..... | 56.3 | 2 | -18.1 | 12 | 0.400 | 122.0 |
| December..... | 44.0 | 2 | -40.2 | 27 | 0.400 | 94.3 |
| 1917. | | | | | | |
| January..... | 42.8 | 8 | -49.8 | 31 | 0.75 | 73.8 |
| February..... | 42.3 | 14 | -45.7 | 1 | 0.52 | 119.1 |
| March..... | 48.3 | 4 | -14.9 | 3 | 0.33 | 184.1 |
| | | | | | 22.21 | 1,963.9 |

LIVE STOCK.

Horses.—The horses at the Lacombe Station number twenty-six, and include five pure-bred Clydesdales and two pure-bred Percheron mares. The cost of carrying three colts, rising 2 years old, for one year, amounted to \$53.06 each, the colts making average gains of 433.3 pounds each during the year. All the horses not required for work were turned out in the fall, and fed straw during the winter. All the horses lost weight, but since straw only was fed, the cost of feed for the winter amounted to only 4 cents a day.

Dairy Cattle.—There are now twenty-three pure-bred Holstein cattle in the dairy herd. The milk flow has been maintained up to a profitable point, and the health of the cattle improved by the use of a succulent ration of ensilage made from peas and oats. During the winter months all the milk was manufactured into Cheddar cheese, the average returns per cow being \$167.12.

Beef Cattle.—The herd of Aberdeen Angus cattle comprises twenty-nine head. An experiment to discover the cost of gains made by young cattle on pasture showed that in eight months these cattle made average gains of 256 pounds each at a cost per pound gain of 3.39 cents.

Twenty-two steers, rising 2 years old, were run on a fenced section from May 24 to October 19, and made an average gain of 318 pounds per head. Two car-loads of 2-year-old steers were fed during the winter. Both received similar rations as regards bulky fodder, but one lot was fed a ration of frosted wheat, while the other was fed a grain ration consisting of equal parts of oats and barley. The group fed on frosted wheat made a net profit per head of \$3.38 more than the group fed oats and barley, thus seeming to show the superiority of the former feed as a grain ration over the latter.

Sheep.—In 1916 seventeen lambs were raised from sixteen common grade ewes, the flock now numbering forty-five. The ewes from the first cross of Shropshire blood on range stock in the grading-up experiment are being bred for the first time in 1917. The first cross weighed, when eighteen months old, an average of 6 pounds each more

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than their dams, and when fully matured will probably show an increase of from 15 to 20 per cent.

The wool yield appears to be improved in that it carried a reduced grease content and increased length of staple. The wool sales for the year amounted to \$107.63.

Swine.—An experiment to determine the relative value of barley, wheat, sweet clover, rape, and alfalfa for hog pastures was carried on during the year. The alfalfa and rape produced the most economical gains, and carried 1,518.9 pounds and 1,786.1 pounds of hogs per acre, respectively. Since there has been considerable inquiry as to the value of whey for hogs, an experiment was carried on for the purpose of securing information covering this point. It was shown that 100 pounds of sweet whey fed to hogs ranging in weight from 50 to 150 pounds, effected a saving of 19.146 pounds of grain.

Hogs on the self feeder versus a group fed a 3 per cent grain ration showed much more rapid gains, though this year gains were made at greater grain cost. The hogs on the self feeder showed tremendous time saving, amounting to 51 days in a 92-day test. Self-fed frosted wheat, valued at \$1 per bushel, produced pork during the winter months at a cost of 7.62 cents per pound, while oats valued at 43 cents and barley at 80 cents per bushel, and fed in equal parts through a self feeder, cost 8.9 cents for 1 pound of pork. The cost of wintering sows has been shown to be \$20.90, and the cost of pigs at weaning time, estimating six pigs to the litter, figures out at \$3.48 for aged sows and \$2.99 for gilts with first litters.

POULTRY.

The stock of poultry at Lacombe consists of 70 hens, 126 pullets, 36 cockerels, 4 cocks, and 8 capons of the Barred Plymouth Rock, White Wyandotte, and S.C. Rhode Island Red breeds, 9 geese, 1 duck, and 4 turkeys. The number of eggs set was 3,257, and from these 1,612 chicks were hatched in a Candee incubator. Satisfactory yields of eggs were secured during the winter, the cost to produce being 17.2 cents per dozen. Trap-nesting showed that a pen of White Wyandotte pullets gave an egg yield of 60.2 per cent during the four winter months. During the year losses were experienced among the ducks, due to foxes, and among the turkeys from blackhead.

BEES.

Of the four colonies put away in November, three were alive and strong when removed from the cellar in April, the three living colonies having consumed an average of 23 pounds of honey during the winter. Two queen bees were imported, and nuclei made to receive them. The honey yield amounted to 70 pounds and sold at 20 cents a pound, the total profit on the apiary for the year being \$10.45. Six colonies were removed to their winter quarters on November 4.

FIELD HUSBANDRY.

Rotations.—The profits from the rotations were lower than usual this year, owing to the frost which reduced the yields.

Rotation "C," three years' duration (wheat, wheat, summer-fallow): The results from this rotation show the folly of depending on one crop, especially in this section of Alberta.

Rotation "L," six years' duration (hay, pasture, pasture, wheat, oats, barley seeded down).

Rotation "K," six years' duration (hoed crop; peas or mixed grain, wheat, oats or barley, seeded down; hay, manured in autumn; pasture; pasture): This mixed-

farming rotation is similar to "L," except that a crop of roots is grown in place of one grain crop.

Rotation "O," seven years' duration (hoed crops, or peas and oats; wheat; oats; summer-fallow; barley, seeded down; hay, manured in fall; pasture).

The main farm rotation is of six years' duration, the rotation years being hay, pasture, pasture, oats, barley seeded down to grass. This rotation is carried on on an area of 215.6 acres.

Cultural Experiments.—The following experiments in cultural investigation work were carried on: Depth of ploughing, summer-fallow treatment, seeding to grass and clover, breaking sod, application of barnyard manure, green manuring, depth of seeding.

The results secured from a number of these experiments were rendered of no value, due to the frost of August 10. In spite of the loss of information along some lines, however, the advisability of deep ploughing, the uselessness of double ploughing of summer-fallows in this section, and the advisability of breaking sod early in the season, were again demonstrated.

CEREALS.

Seventeen varieties of spring wheat were sown in duplicate plots at the rate of 3 bushels per acre, Huron producing the highest yield, 57 bushels per acre. One plot of spring rye gave a crop of 49 bushels 6 pounds per acre, the threshed grain weighing 56 pounds to the measured bushel. Of the fourteen varieties of oats grown, Gold Rain gave the highest yield, 131 bushels 6 pounds per acre; and of the ten barleys, Gold, although taking longer to mature than some of the lower-yielding varieties, gave 70 bushels 20 pounds per acre. Arthur proved the earliest-maturing variety of peas tested, and yielded 28 bushels 50 pounds per acre. No flaxseed matured, as it was caught by the frost of August 10.

FORAGE PLANTS.

Indian Corn.—Twelve varieties of corn were planted, but the crop failed to produce a yield of commercial value.

Roots.—Twenty-four varieties of turnips were tested, the yields ranging from 12 tons 150 pounds to 25 tons 950 pounds per acre. Of the fourteen varieties of mangels, Giant Yellow Globe, the highest yielder, produced 9 tons 550 pounds per acre. In an experiment to compare home-grown and commercial mangel seed, only the seed secured from Agassiz grew. Five varieties of carrots were sown, Giant White Vosges giving a yield of 10 tons 1,650 pounds per acre. A test of sugar-beet seed obtained from different sources was also carried on.

Grasses and Clovers.—In a comparison made between seeding alfalfa broadcast and in drills, it was found the average yield for three years of the alfalfa sown broadcast was 4,547 pounds per acre, while for that sown in drills the yield was only 3,718 pounds per acre.

Thirty-four plots of one-fortieth acre each, were sown to the following varieties of grasses and clovers: red clover, alsike, alfalfa, timothy, awnless blue grass, Kentucky blue grass, meadow fescue, red top, orchard grass, and western rye grass. An acre of unploughed prairie sod was seeded to Kentucky blue grass, and a successful stand secured.

HORTICULTURE.

Fruits.—For the fourth year in succession, a crop of crab-apples was secured. Many of the standard apple seedlings were winter-killed. The currant plantation has not yet reached its maximum productiveness, and consequently the yields were

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light. Gooseberries gave a light crop, Herbert again proved the best variety of raspberries, and strawberries gave a satisfactory yield.

Vegetables.—The usual variety tests with vegetables were again carried on and cultural tests with beets, cabbage, carrots, onions, parsnips and peas were continued. A test of home-grown and commercial peas showed that the home-grown stock can be relied upon to produce results equal to those from commercial seed. Variety tests and cultural experiments were also carried on with potatoes. It was found that to produce 1 acre of potatoes, yielding 233 bushels 45 pounds, the cost was \$42.35.

Ornamental Gardening.—Variety tests were carried out with annuals, herbaceous perennials, and bulbs. The severe winter of 1915-16 caused great loss among the trees and shrubs.

BUILDINGS.

A new wood-and-coal shed 12 feet by 16 feet, with accommodation for the bone cutter and engine, was erected in the poultry plant. No floor was put in except for the coal bin and a closet. The entire cost of this building, including painting, was \$114.23.

EXHIBITIONS.

An educational exhibit was shown by this Station at the following points: Calgary, Provost, Edmonton, Vegreville, Red Deer, Camrose, Three Hills, Wetaskiwin, Swallow, Didsbury, Rocky Mountain House, Innisfail, Sedgewick, Olds.

It is estimated that 18,640 persons were interested directly or indirectly in the work of the farm through this agency.

MEETINGS.

Addresses by the superintendent were delivered at the following places: Calgary, Vermilion, Brandon, Toronto, Ponoka, Penhold, Edmonton, Red Deer.

He acted as judge of sheep and swine at the Red Deer exhibition, and of swine at the Calgary Industrial Exhibition. Mr. B. C. Milne, assistant to the superintendent, addressed meetings at Craigmyle and Calgary.

EXCURSIONS.

A successful excursion was run to the farm on July 21. Special trains from Calgary, Edmonton, and Coronation brought over 1,200 persons. Addresses were delivered by: Dr. J. G. Rutherford, Chief of Agriculture and Animal Industry, C.P.R., Calgary; Alex. Galbraith, Superintendent of Fairs and Institutes, Edmonton; and H. W. Wood, President of the United Farmers of Alberta. Including the excursion day visitors, about 2,290 people visited the farm during the year.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

REPORT OF THE SUPERINTENDENT, R. H. HELMER.

THE SEASON.

The spring of 1916 was very backward, the cold weather lasting right into early summer; and although the days were warm the nights were cold. Very little rain fell during the growing season. It has been a very unsatisfactory year for dry-farming, and the land was too dry to fall plough. Crops were very late maturing, especially vegetables, and low prices prevailed in consequence.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature. | | Rainfall. | Snowfall. |
|----------------|--------------|---------|-----------|-----------|
| | Highest. | Lowest. | | |
| | ° | ° | Inches. | Inches. |
| 1916. | | | | |
| April..... | 72.5 | 30.0 | 0.59 | |
| May..... | 82.0 | 31.0 | 0.415 | |
| June..... | 95.0 | 39.0 | 1.555 | |
| July..... | 87.0 | 45.0 | 1.785 | |
| August..... | 93.0 | 43.0 | 0.16 | |
| September..... | 87.0 | 38.0 | 0.655 | |
| October..... | 69.0 | 28.0 | 0.14 | |
| November..... | 53.0 | 11.0 | 0.51 | 0.50 |
| December..... | 45.0 | 2.0 | 0.03 | 10.00 |
| 1917. | | | | |
| January..... | 47.0 | -10.0 | 0.14 | 2.00 |
| February..... | 43.0 | - 2.0 | 0.03 | 5.50 |
| March..... | 48.0 | 9.0 | 0.15 | 2.40 |
| Total..... | | | 6.210 | 20.4 |

LIVE STOCK.

Horses.—Seven horses are kept at the Station, two of them being 7-year-old Clydesdale mares. The rations which have been fed are as follows: Oats and bran, 5 parts to 1, 15 to 13 pounds per day; chopped hay, 10 to 12 pounds per day. All the horses are in good condition.

Cattle.—Forty-one head of steers are under feeding tests at the close of the year on rations consisting of varying quantities of hay and straw, oat chop, cracked corn, and oil-cake meal.

BEES.

Two colonies of Italians were purchased locally and a start made with bees at Summerland in the spring of 1916. A swarm was cast by each hive, but as both were weak they were united. The total honey crop amounted to 70 pounds, and was sold at 15 cents a pound. The three hives were wintered in outdoor wintering cases.

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FIELD HUSBANDRY.

All the land cleared during the winter of 1915 was well worked up with a spring-tooth cultivator, and harrowed well for seeding to oats and alfalfa. This land is very sandy, and both crops did well, considering the character of the soil. All the fall ploughing was disced and harrowed as soon as possible, to conserve moisture.

Crop Yields.—Oats gave good yields, one field of Banner producing 75 bushels per acre, the best sample weighing 42 pounds to the measured bushel. Corn grew well, and all varieties ripened before frost came. Clover and alfalfa were disced and harrowed early in the spring and re-marked for irrigation. All land newly seeded to hay made satisfactory growth.

CEREALS.

Five varieties of wheat were tested, the yields ranging from 10 bushels 37 pounds to 22 bushels 30 pounds per acre. The oat yields were from 31 bushels to 41 bushels 6 pounds per acre, and the barley from 25 bushels 25 pounds to 29 bushels 20 pounds per acre. On the dry farm, Kharkov wheat yielded 5 bushels 39 pounds per acre, Shirka wheat, 3 bushels 48 pounds per acre; fall rye, 6 bushels 6 pounds per acre; and spring oats, 13 bushels 26 pounds per acre.

FORAGE PLANTS.

Indian Corn.—All varieties of corn matured, the yields varying from 3 tons 1,300 pounds to 10 tons 1,500 pounds per acre, Longfellow giving the latter yield. The land used for the experiments was not able to hold the water applied to it satisfactorily, and this fact would lower the yield.

* *Roots.*—The average yield of the twenty varieties of turnips tested was 7 tons 895 pounds per acre. A spraying and fertilizing experiment with turnips seemed to show that spraying, especially in combination with fertilizers, has a decidedly favourable effect on the yield. Fifteen varieties of mangels gave an average return of 13 tons 1,543 pounds per acre. Experiments in depth of cultivation of mangels showed a marked advantage in deeper cultivation. In the experiment in which home-grown and commercial mangel seed were compared the results were very much in favour of the home-grown seed, both in yield and quality. Five varieties of carrots and three of sugar beets were also tested.

Grasses and Clovers.—The variety tests for hay gave very poor results this year. The only grasses cut were timothy, western rye, meadow fescue, alfalfa, and red clover. Four crops of Soudan grass were added this year, and made strong growth.

HORTICULTURE.

Fruits.—A commercial orchard of twelve varieties of apples was planted, and an experimental orchard containing two trees each of twenty-eight varieties, in all 1,422 trees. The other trees planted were 112 peach, 84 cherry, 66 pear, 107 apricot, and 164 plum and prune. Owing to the lateness of the season the trees did not arrive as early as expected and had suffered more or less from the severe winter in storage, so that the trees that had remained in the ground all winter grew the best. The following numbers of trees died: apple, 107; peach, 42; cherry, 40; pear, 7; apricot, 17, and plum and prune, 25. A number of small fruit bushes were planted in the spring of 1916, and these have made a fairly good start.

Vegetables.—Many varieties of vegetables were tested this year to determine their relative productiveness, earliness, and quality. Two large plots, half an acre

each, of Gold Coin and Irish Cobbler potatoes were grown. The half-acre plot of Gold Coin produced 4 tons 600 pounds of marketable potatoes, the Irish Cobbler plot, 4 tons 400 pounds.

Ornamental gardening.—A system of pipes from the domestic system was installed in the spring for the flower beds, and this will also water the lawns. The flowers made a good showing this summer, the roses being especially good for the first season. Preparations were made during the fall for lawns this year.

FARM IMPROVEMENTS.

Buildings.—Four cattle sheds, 16 feet by 28 feet, with yards 28 feet by 70 feet were built in the fall. Water from the domestic pipe line was brought to troughs in the yards, and roads were built. A root-cellar of logs was built into the bank, and a feed-room put at one corner of the root-house, with chutes leading to the root-pulper boxes; and a shed was put up to house the separator. The stables were lined with shiplap, and have been much more comfortable for the horses this winter.

Irrigation.—Before any water was turned into the system it was examined carefully, and when the water was admitted everything was in good order. Only one leak in the syphon pipe was found, and this was stopped by tightening the joint. Measuring boxes were installed in the flumes serving the orchards and where plot work is to be carried on. These boxes cost from \$25 to \$30 each according to size. Where needed, flumes to the various orchards and vegetable gardens were installed. A lot of work levelling the orchards was done in order that more uniform irrigation might be given. All this work was done by home-made tools; the grader cost \$12, and the float \$5. Cutting off the small hills and filling the hollows in the land pays for itself the first year in ease of irrigation, more uniform distribution of water, and better yields. The water was turned on April 25. A good supply of water was available this season, but more will be needed when all the sandy land comes under cultivation.

The municipal dam was opened for the first time on the 15th of August. All water was turned off on September 22. The syphon pipe, when running full capacity, can supply the amount of water contracted for, and has proved very satisfactory. A system of pipes was run from the main domestic line to the flower garden and lawns. This is laid so that it can be drained in the fall. The pressure on this system is now very good.

Roads.—The new grade from the Penticton road to the benches has been finished and gravelled; also the grades to the upper benches. These have been graded and gravelled, and make a big improvement to the heavy sand hills. Many other grades have been improved and widened, and some new roads made where they were needed.

Machinery.—Machinery to the value of \$1,374.25 was purchased at this Station during the season, and consisted of a gasoline engine and separator, binder, feed grinders, fanning-mill, root pulper, cultivators, and platform scales.

EXHIBITIONS.

This station had an exhibit at the fall fairs at Kamloops, Kelowna, Armstrong, Naramata, Summerland and Penticton Poultry Show.

MEETINGS.

The superintendent attended the following conventions, meetings and shows: The British Columbia Fruit Growers' Association Convention (summer meeting) at Penticton; the Western Canada Irrigation Association convention at Kamloops; the British

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Columbia Fruit Growers' Association convention, Victoria; the British Columbia Stock Breeders' Association convention, Victoria; the United Farmers of British Columbia meeting, Victoria; the Women's Institute flower show; the Armstrong seed fair; Farmers' Institute meetings at Vernon, Armstrong, Naramata and Sumnerland.

EXCURSIONS.

This year a marked increase of visitors to the Station has been noticed, and farmers in towns nearby are organizing picnics for the coming year. One Farmers' Institute across the lake has given notification that they wish to come when land is being prepared for seed, during the growing season, and during the harvest.

EXPERIMENTAL STATION, INVERMERE, B.C.

REPORT OF THE SUPERINTENDENT, G. E. PARHAM.

SEASONAL NOTES.

The season of 1916-17 was on the whole, a favourable one. The spring opened later than usual, and it was not possible to commence ploughing until March 28 and seeding was not begun until the last week in April, a full fortnight later than the previous season.

Much of the clover was winter-killed and had to be reseeded. The spring was cold and backward, with light precipitation until the end of May. During the second week in June there was a very sudden rise in temperature, which was most beneficial to the crops. This sudden change caused a very rapid rise in the mountain streams, and flood conditions caused grave anxiety in the district. The low lands adjacent to the poultry grounds, partly sown to alfalfa and partly devoted to forage-plant test plots, was flooded and destroyed by the swift water. There were no destructive frosts during the growing season, and garden crops and bush fruits did well. The apple orchard was practically destroyed by the severe winter, coupled with high winds which removed the natural snow protection.

The precipitation during June and July was above the average, and aided by the warm weather, hastened the development of crops which, earlier in the season, had been very backward.

The first grain was cut on August 15. The yield in cereals was fair, and the sample good. The fall was favourable for conducting the work of that season, and winter set in on November 10.

During the winter there was a light snowfall and equable temperatures appropriate to the season, but remarkably free from storms so that the snow did not drift to any great extent, and there was a reasonable prospect that fruit trees, clover, etc., would prove to have wintered well. The sun had considerable power in the middle of the day but temperatures at night during the last week of March were close around zero.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Maximum Temperature. | | Minimum Temperature. | | Precipitation. | | | Sunshine. |
|----------------|----------------------|--------|----------------------|---------|----------------|-------|--------|-----------|
| | Date. | Degree | Date. | Degree. | Rain. | Snow. | Total. | Hours. |
| 1916. | | | | | In. | Ins. | Ins. | |
| April..... | 26 | 76 | 23 | 21 | 0.62 | | 0.62 | 182.5 |
| May..... | 4 | 71 | 11 | 26 | 2.89 | | 2.89 | 179.1 |
| June..... | 18 | 88 | 7 | 34 | 2.01 | | 2.01 | 202.0 |
| July..... | 31 | 88 | 23 | 39 | 2.32 | | 2.32 | 271.1 |
| August..... | 27 | 84 | 4 | 37 | 2.01 | | 2.01 | 269.0 |
| September..... | 1 | 77 | 28 | 24 | 1.15 | | 1.15 | 192.2 |
| October..... | 16 | 67 | 4 | 20 | 0.54 | | 0.54 | 159.2 |
| November..... | 1 | 47 | 12 | -12 | 0.08 | 2.5 | 0.33 | 84.6 |
| December..... | 2 | 39 | 27 | -31 | | 3.0 | 0.3 | 84.4 |
| 1917. | | | | | | | | |
| January..... | 9 | 40 | 31 | -25 | | 1.5 | 0.15 | 80.1 |
| February..... | 12 | 44 | 1 | -26 | | 3.6 | 0.36 | 99.8 |
| March..... | 5 | 42 | 1 | -8 | | 1.8 | 0.18 | 143.7 |
| Totals..... | | | | | 11.62 | 12.4 | 12.86 | 1,947.7 |

POULTRY.

The stock at this Station consists of Barred Rocks, Light Sussex, and S. C. Leghorns. Barred Rock and S. C. Leghorn pullets were compared as to egg production and cost of feed consumed, the highest individual records in the two breeds being: Barred Rocks, 178 eggs; S. C. Leghorns, 145 eggs. For artificial incubation three makes of incubator were used. Fattening tests were conducted with six birds each of the Light Sussex and Barred Rock breeds, the six Barred Rocks making an increase of 5 pounds 8 ounces in live weight between November 10 and December 13, while the six Light Sussex birds made an increase of 5 pounds 14½ ounces in the same period. Results obtained from a number of Barred Rocks, each weighing, on the average, 5 pounds live weight, showed that the average loss from live weight to dead weight was 9½ ounces, and the average loss from dead weight to weight when drawn, 14½ ounces.

A great deal of clearing work was done on the slope to the south side of the poultry grounds, and the increased amount of sunlight caused a marked improvement in the health and vigour of the birds.

BEES.

Eleven colonies were placed in winter quarters in 1915, five in the cellar, and six outdoors. Of the five in the cellar one was found to be dead when the spring examination took place. Two hives wintered in double packing cases outside came through in ideal condition, but of the other four wintered outside only two survived, and these in only fair condition.

The season was very favourable, and the bees gathered a large quantity of honey of good quality, averaging nearly 100 pounds to the colony, the strongest colony gathering 262 pounds during July and August. The total honey crop amounted to 935 pounds, and found a ready sale at 20 cents per pound.

The eight colonies were increased to twelve by division during the year, and in the fall of 1916, six of these colonies were put in winter quarters in the cellar, two

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of the others were left in the open protected by a 4-inch packing in a double packing case, while the remaining four hives were placed in a trench dug into a bank 18 inches deep, and covered with straw and earth.

FIELD HUSBANDRY.

Rotations.—The rotations being tested on this Station are as follows:—

Rotation "A," four years' duration (hoed crop, wheat, peas, oats).

Rotation "B," five years' duration (wheat, roots, oats seeded down, clover, clover).

Rotation "C," oats continuously: This rotation has been modified, and it is proposed to grow fields of oats side by side with the following cultural preparation: (1) oats continuously; (2) oats continuously on land treated each fall with a dressing of barnyard manure; (3) oats growing continuously with clover seeded therewith, the same to be ploughed under for the succeeding crop; (4) oats and summer-fallow alternate years.

Rotation "D," six years' duration (summer-fallow, wheat, peas and oats, summer-fallow, roots, barley).

Rotation "T," three years' duration (oats, clover, potatoes).

Crop Yields.—Wheat on rotation "A" yielded 27.7 bushels per acre; on rotation "B," 31.5 bushels per acre; and on rotation "D," 27.4 bushels per acre. Oats on rotation "A" gave 63.5 bushels per acre; on "B," 60.9 bushels; and on "C," 48.8 bushels. Barley yielded 21 bushels per acre, and roots on rotation "B," 13 tons per acre.

CEREALS.

Three varieties of spring wheat, Huron, Marquis, and Pioneer were tested, and gave yields of 38 bushels, 34 bushels 40 pounds, and 22 bushels 20 pounds, respectively. Banner oats proved superior to Victory and Ligowo, giving a yield of 125 bushels 10 pounds per acre; while Gold proved the best of the four barleys tested, yielding 86 bushels 12 pounds per acre, and Chancellor, the best variety of peas, gave 43 bushels per acre.

FORAGE PLANTS.

Indian Corn.—Twelve varieties of corn for ensilage were again tested, but all were frosted before reaching the best stage for cutting. Salzer's North Dakota gave the highest yield, 10 tons 1,200 pounds per acre.

Roots.—Variety tests were continued with mangels, turnips, carrots, and sugar-beets. The mangels were entirely destroyed by cutworms. Of the turnips, Mammoth Imperial Greystone gave a yield of 24 tons 600 pounds per acre, the average yield of the seventeen varieties tested being 13 tons 1,009 pounds. Improved Short White was the best variety of carrot, giving a yield of 7 tons 1,200 pounds per acre, the average for the five varieties being 6 tons 680 pounds. Canadian-grown seed proved superior to two other imported varieties of sugar beets tested.

Grasses and Clovers.—Clover was in many cases winter-killed, and the new crop sown to replace the losses suffered a good deal from cutworms. Alfalfa produced two good crops, and sainfoin also produced two crops and did well on light, dry land which was unsuitable for alfalfa or clover. Alfalfa, alsike, meadow fescue, sainfoin, western rye, red clover, and orchard grass were sown in plots of one-thirtieth of an acre each for seed.

HORTICULTURE.

Fruits.—A large number of apple trees were winter-killed, the only varieties surviving being crabs, and some trees of the Wealthy, Duchess, and Yellow Transparent varieties. Bush fruits suffered considerably from winter injury, particularly

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raspberries and black currants. Of the gooseberries, Oregon Champion, the only variety which has proved immune from mildew, again made good growth and yielded a heavy crop.

Vegetables.—The variety tests and cultural experiments with a number of vegetables were carried on as in previous years.

Ornamental Gardening.—Attractive additions were made to the ornamental grounds by levelling and laying out of further lawns around the house. Annual and perennial flowers were grown, and aster, antirrhinums and sweet peas particularly made a very fine showing.

BUILDINGS.

A new permanent poultry house, 16 feet by 16 feet, on a concrete foundation, was built during the season.

EXHIBITIONS.

An exhibition was again sent out and fairs, besides that of the Windermere district (held on the Station grounds), were attended at Natal, Golden Trail, Nelson, and Needles. There is a continual increase in the correspondence between this Station and farmers in all parts of the Kootenays, who have been brought to a knowledge of the Station and its work by the exhibitions of the past two years.

MEETINGS.

In July the superintendent attended the Irrigation Convention held at Kamloops. In September he attended the Needles Fair, and visited a number of ranchers in the Fire valley. In October he visited many ranches in the Cranbrook district. In February, meetings of the British Columbia Fruit Growers, and British Columbia Live Stock Associations were attended at Victoria, as well as the inaugural meeting of the United Farmers of British Columbia.

VISITORS.

A larger number of visitors were received at the Station than in any previous year, many taking advantage of the fall fair, held on the Station grounds, in September, and manifesting interest in the work being done in the various departments.

EXPERIMENTAL FARM, AGASSIZ, B.C.

REPORT OF W. H. HICKS, B.S.A., OFFICER-IN-CHARGE.

THE SEASON.

The spring of 1916 was one of the most backward since the Farm was established. The weather for May was a continuation of the wet, cool weather experienced in April; and although there was no frost that month, the temperature dropped to two degrees of frost on one occasion in May. The cool, cloudy weather in June was followed by a very wet July. August was almost all that could be desired. It was the brightest month of the year, with less than an inch of rainfall. September was reasonably fine, and, although there was very little precipitation, there was considerable cloudy and foggy weather. October was dry, followed by a fairly normal November and a winter with somewhat more snow than usual.

The cool, wet spring of the past season kept all the crops behind, but the abundant rainfall during the entire growing season resulted in good yields of root, grain, and hay

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crops. The corn was very slow in growth until August, when it made very rapid progress and yielded a fair crop.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Maximum Temperature. | | Minimum Temperature. | | Precipitation. | | | Sunshine Hours. |
|----------------|----------------------|--------|----------------------|--------|----------------|-------|--------|-----------------|
| | Date. | Degree | Date. | Degree | Rain. | Snow. | Total. | |
| 1916. | | | | | Ins. | Ins. | Ins. | |
| April..... | 26 | 69 | 16 | 34 | 6.3 | ..... | 6.3 | 91.8 |
| May..... | 24 | 76 | 7 | 30 | 4.98 | ..... | 4.98 | 164.2 |
| June..... | 17 | 88 | 2 | 42 | 2.68 | ..... | 2.68 | 177.5 |
| July..... | 30 | 86 | 6 | 42 | 4.67 | ..... | 4.67 | 106.3 |
| August..... | 24 | 95 | 23 | 42 | 0.98 | ..... | 0.98 | 227.3 |
| September..... | 16 | 83 | 29 | 35 | 1.68 | ..... | 1.68 | 142.3 |
| October..... | 9 | 73 | 20 | 29 | 1.76 | ..... | 1.76 | 137.1 |
| November..... | 6 | 56 | 12 | 25 | 7.83 | ..... | 7.83 | 79.1 |
| December..... | 1 | 45 | 23 | 16 | 4.32 | 24.0 | 6.72 | 22.0 |
| 1917. | | | | | | | | |
| January..... | 8 | 48 | 31 | -1 | 6.85 | 32.5 | 10.1 | 43.5 |
| February..... | 13 | 52 | 1 | 8 | 2.62 | 23.0 | 4.92 | 81.7 |
| March..... | 26 | 56 | 1 | 12 | 4.7 | 9.0 | 5.6 | 103.3 |
| | | | | | 49.37 | 88.5 | 58.22 | 1,376.1 |

LIVE STOCK.

Horses.—The horses on this Farm are kept only for working purposes, and no breeding or experimental work with them has yet been done. Records are kept of the number of hours' work done by each horse, and the amount of feed consumed. The average feed cost per hour's work done by the heavy-draught horses was 5.04 cents, and of the light-draught horses, 4.5 cents. During the twelve months each horse averaged 190 working days of ten hours each. Two old geldings were disposed of during the year, and a young team of heavy-draught geldings was purchased to replace them.

Cattle.—The Holstein herd of dairy cattle has made a creditable showing during the past year. The breeding work has been continued with the same objects as hitherto. Records are kept of all feeds used, and reports on the production and cost thereof for each cow made. In the experimental feeding of different kinds of silage, clover, and peas and oats have demonstrated their suitability as substitutes for corn in milk and butter production. The health of the cattle has been good. Two tests for tuberculosis failed to detect a reaction. This makes the fourth successive year that the herd has been free from this disease.

An Empire milking machine was installed in November, and is giving good satisfaction. No trouble has been experienced with sore teats. No experimental work has yet been done in comparing this system of milking with the hand method.

During the year approximately eight hundred Stilton cheeses have been manufactured and sold at an average price of 34 cents per pound. A large amount of cream cheese has also been made. Milk testing of composite samples from the Farm herd has been done weekly, also a considerable number of milk and cream samples were tested for farmers in the province.

Sheep.—The flock is considerably larger than it has ever been before. It consists of 67 sheep and 49 lambs, with somewhat more than half of these pure-bred Horned

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Dorsets. The winter just past has been one of the most expensive in the history of the Farm in the maintenance of sheep. They were stabled on November 16, and from then until March 31 obtained very little pasture. The average amount of feed consumed per head during that period cost \$3.46.

A grading experiment is being carried on here, using Dorset Horned rams on smaller, dark-faced, hornless, grade ewes. The Dorset type becomes more pronounced as each cross is made. Seventy per cent of the second-cross animals retained on the Farm have horns, and 80 per cent of them have white faces. Four feeding trials with lambs on fall pasture indicated: First, that it did not pay to feed grain to lambs on good clover or rape pasture; and second, that lambs on rape pasture made more rapid gains than those on clover pasture, both when grain was fed and when the lambs were only allowed pasture.

Swine.—The swine kept on this Farm are of the Yorkshire breed. The breeding herd is housed in A-shaped cabins in the bush on unproductive land. Previous to farrowing, the sows are placed in the piggery, where special attention is given them until the young pigs are strong and active. The best of the young animals are sold for breeding purposes or retained in the herd, while the poorer ones are used for experimental feeding. During the past year eleven males and forty-one females were sold for breeding purposes. The average number of pigs farrowed per sow was 12.07, of which 73.98 per cent were raised. On account of the high price of feed the cost of raising young sows to breeding age was \$6.01, somewhat higher than in previous years.

POULTRY.

The stock kept consists of Barred Plymouth Rocks, Single Comb White Leghorns, White Pekin ducks, and Homer pigeons. Approximately four hundred mature birds, exclusive of pigeons, were carried over the year. During the spring, from 3,362 eggs 1,553 chickens were hatched, or 52.6 per cent of the fertile eggs. Some custom hatching was also done, with moderately successful results. Five makes of incubator were used, and it was found that the Candee coal-burning one cost 42 cents per 100 eggs, and the Cyphers oil-burner, 35.6 cents.

Accurate records were kept of all pens in regard to number of eggs laid and amounts of feed consumed. The pullets of each breed started to lay in September. Experiments conducted in fattening birds for market demonstrated the superiority of the crate over the pen-feeding method.

Thirty White Pekin ducks were kept from 1915, and from these 171 ducklings were raised. The breeding stock was cut down to twelve ducks and five drakes in the spring of 1917.

BEES.

Four colonies were on hand in the spring of 1916. In early summer one of these became queenless, and was united with another weak colony. Three new swarms were hived during the season; and, the whole apiary becoming queenless, six new Italian queens were imported from Kentucky and successfully introduced. The heavy precipitation in June and July rendered the season an unfavourable one for honey production; only 90 pounds of extracted honey being obtained. The receipts from the honey just paid for the sugar fed and the six queens purchased.

FIELD HUSBANDRY.

Rotations.—The four-year rotation carried on at Agassiz has continued to give good results. In the four years of the rotation the following crops are grown: First year, hoed crop, corn or roots; second year, grain seeded down; third year, hay; fourth year, pasture.

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Crop yields.—The following table shows the amounts of each crop grown in 1916:—

| Crop. | Yield. | |
|---|--------|-------|
| | tons | lb. |
| Corn silage..... | 327 | 140 |
| Clover silage..... | 159 | 1,954 |
| Pea and Oat silage..... | 91 | 730 |
| Mangels..... | 178 | 1,330 |
| Carrots..... | 6 | 400 |
| Sugar beets..... | 2 | |
| Potatoes..... | 4 | 800 |
| Clover hay..... | 21 | 780 |
| Pea and Oat hay..... | 28 | 190 |
| Mixed grain (peas, oats, and barley)..... | 20 | 1,600 |
| Oats..... | 3 | 1,200 |
| Peas..... | 1 | 1,720 |
| Barley..... | 1 | |

Cultural experiments.—One hundred and forty-six plots are used for cultural investigation work, the main experiments carried on being to determine: (1) The best method of preparing land for hoed crops; (2) the best seasons for applying barn-yard manure; (3) methods of applying chemical fertilizers to mangels; (4) the best after-harvest cultivation of root land in preparation for a grain crop to be seeded with clover.

FERTILIZER EXPERIMENTS.

Sixty-five permanent plots are set for this work. They were seeded down to a grass-and-clover mixture, using oats as a nurse crop. One experiment endeavours to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit, some plots receiving the fertilizer elements in combinations of two, while others received the complete fertilizer. Another experiment is to find the relative efficiency of nitrate of soda and sulphate of ammonia as sources of nitrogen; and acid phosphate, basic slag and bone meal as sources of phosphoric acid.

CEREALS.

The usual tests of varieties of grain crops were conducted on uniform plots. Among six varieties of wheat, Huron gave the highest yield, but, calculating on a five-year average, Marquis has demonstrated its superiority. Of the sixteen varieties of oats, Banner is still at the top of the list. Eighty Day gave the best yield of the early varieties. Tests of barley show that the two-row varieties are superior to six-row for this district. Beaver is the best average yielder of the two-row varieties for five years. Solo is the heaviest yielding variety of peas grown.

FORAGE CROPS.

Indian Corn.—Eighteen varieties of corn were tested in one-hundredth acre plots. Six varieties which had proven successful in former years were tested in half-acre plots. Of the eighteen varieties first mentioned, Bailey proved the highest yielder, with 20 tons 400 pounds per acre; and of the six varieties tested on half-acre plots, Golden Glow was the highest, with 19 tons 1,650 pounds per acre.

Roots.—Sixteen varieties of mangels, five of carrots, and three of sugar beets were grown in duplicate test plots. Tankard Cream gave the best yield among the mangels, Improved Short White among the carrots, and Italian-grown beet seed proved superior to the other varieties. A number of varieties of turnips were tested, but were so vigorously attacked by flea-beetles that the crop was completely destroyed. Some work in the production of mangel seed was also carried on.

Grasses and Clovers.—Twenty plots sown to different varieties of clover in 1915 gave good results. Six plots were sown, at different rates per acre, to Grimm's alfalfa on limed and inoculated soil, the plot sown at the highest rate, 60 pounds per acre, giving the best returns.

HORTICULTURE.

Fruits.—The young orchard is doing well and should be in condition to bear a fairly good crop in 1917. The small fruits, with the exception of strawberries, all yielded well, and the fruit was of good quality.

Vegetables.—Many useful tests, both as to varieties and cultural methods, were carried on with vegetables, and the experiments in the various ways of planting and cultivating potatoes were carried on as a continuation of last season's work.

Ornamental Gardening.—Among the flowers a number of variety tests were made and seed saved. Roses and sweet peas were excellent, and the perennial border was a brilliant show of colour throughout the summer. Many of the flowering shrubs and trees were severely damaged by cold winds in the winter and early spring, more particularly rhododendrons, which were almost a total failure.

FARM IMPROVEMENTS.

Buildings.—There was considerable work done on buildings this past year. A new foundation was placed under the foreman's house, and new floors and underpinning added. The old piggery building was converted into a bull stable, with three roomy pens and a corresponding number of yards, surrounded by a high board fence. This equipment added greatly to the ease with which cross and quick-tempered bulls may be handled. The feed mixing and weighing room in the dairy barn was remodelled and enlarged. A shed, 14 feet wide, was added to the south side and east end of the sheep barn, and the entire building painted.

Water Supply.—The main water supply for the Farm comes from a cement tank on the side of the mountain, which is filled by a small stream. Occasionally in dry weather during the summer this system fails. Last year a good well was dug on the level, and a wooden tower with tank on top was erected. A centrifugal pump, driven by a gasoline engine, supplies the means of filling the tank. This makes a very complete water system.

Fencing.—Fifty-five rods of wire fence, with square cedar posts, was placed around a triangular piece of ground for use as a permanent calf pasture. One hundred rods of old fence was removed and partially replaced by a new one. Sixty rods of chicken wire fence was erected for the poultry department.

Clearing.—Five acres on the east side of the Farm were cleared at odd times throughout the season. Seven additional acres were underbrushed and seeded to grass and clover for sheep pasture during the approaching summer.

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EXHIBITIONS.

A travelling exhibit from the Agassiz Experimental Farm was staged at the following fairs: Vancouver, Chilliwack, Langley, and Maple Ridge. At each place much interest and appreciation were shown. The exhibit has, no doubt, been the means of causing a great many inquiries for information on agricultural subjects.

MEETINGS.

Besides the four fairs mentioned above, the superintendent, or his representative, attended the following meetings: Poisonous Weed Investigation, Kamloops; Western Canada Irrigation Association, Kamloops; Beekeepers' Convention, Vancouver; Live Stock Conference, Victoria; Dairymen's Convention, Nanaimo.

VISITORS.

It is estimated that about 1,100 persons visited the Farm during the year.

EXPERIMENTAL STATION, SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT, L. STEVENSON, B.S.A., M.S.

SEASONAL NOTES.

The spring of 1916 opened very late, wet, cool weather prevailing until the last day of April, making seeding operations four weeks later than usual. Excessive drought prevailed during June, July, August, and September, creating conditions of soil dryness which hindered the development of spring-sown crops, and made soil tillage difficult. The dry summer conditions again emphasized the necessity of increased attention to autumn-sown crops, crops that will make some growth during the winter and complete development and ripening before the dry period commences in July.

METEOROLOGICAL RECORDS, 1916-17.

| Month. | Temperature F. | | Precipitation. | | | Total Sunshine. Hours. |
|-------------------------|----------------|---------|----------------|-----------|---------|---------------------------|
| | Highest. | Lowest. | Rainfall. | Snowfall. | Total. | |
| | ° | ° | Inches. | Inches. | Inches. | |
| 1916. | | | | | | |
| April..... | 61.0 | 32.0 | 1.52 | | 1.52 | 155.6 |
| May..... | 74.0 | 32.0 | 0.73 | | 0.73 | 251.9 |
| June..... | 83.0 | 40.0 | 0.55 | | 0.55 | 270.5 |
| July..... | 81.0 | 46.0 | 1.72 | | 1.72 | 220.9 |
| August..... | 85.0 | 47.0 | 0.32 | | 0.32 | 306 |
| September..... | 72.0 | 39.0 | 0.66 | | 0.66 | 195.4 |
| October..... | 64.0 | 35.0 | 2.01 | | 2.01 | 145 |
| November..... | 56.0 | 28.0 | 3.18 | | 3.18 | 103.9 |
| December..... | 48.5 | 23.5 | 5.74 | 8.50 | 6.59 | 31.4 |
| 1917. | | | | | | |
| January..... | 49.0 | 9.0 | 2.45 | 16.25 | 4.07 | 57.6 |
| February..... | 48.0 | 19.0 | 1.59 | 13.84 | 2.97 | 41.8 |
| March..... | 49.0 | 24.0 | 2.72 | | 2.72 | 131.6 |
| Total for the year..... | | | 23.19 | 38.50 | 27.04 | 1,911.6 |

LIVE STOCK.

Horses.—Only work geldings are kept at this Station. These received the following daily ration from April 1 to October 31: 1 pound crushed oats, 4 ounces wheat bran, and 1 pound mixed hay per hundred-pound live weight of horse. From November 1 to March 31 the grain ration remained the same, but rye hay was substituted for mixed hay, and, in addition, each horse received 3 pounds of carrots per day.

Cattle.—The Jersey herd from Lacombe, consisting of a bull and nine females of various ages, was established on the Sidney Station in December, 1916. These cattle have now become used to the climatic conditions, and have improved considerably.

POULTRY.

Four flocks of chicks were purchased in April and May. These were fed up to eight weeks old at a cost of 9.5 cents each. Out of 1,050 chicks purchased, 424 died during the first eight weeks. The chicks were raised in a portable brooder house, heated by a Simplex oil burner brooder stove. The cost of heating this house, which accommodated 750 chicks, amounted to 2.9 cents per chick for a period of twenty-eight days. An experiment to determine the value of milk albumen as a substitute for skim-milk in chicken fattening was carried on. The cost of 1 pound gain with birds fed skim-milk was 8.9 cents, while when milk albumen was substituted the cost of 1 pound gain was 15 cents. Thirty cockerels were caponized at three months old, and when eight months old weighed, on an average, 8 pounds 2 ounces each. They were sold at \$2.43 each, realizing a net profit of 91¼ cents per bird.

The average cost to feed a White Wyandotte pullet to five months old was found to be 45¼ cents; and to feed a cockerel to eight months old, \$1.15.

Fifty-two pullets, hatched April 1, in six fall and winter months laid 5,341 eggs at a feed cost of 13.6 cents per dozen; while fifty-three pullets, hatched May 1, in the same period laid 4,020 eggs at a feed cost of 14.5 cents per dozen. All birds were trap-nested.

BEES.

The work with bees has been continued, with no marked improvement in production of honey. Bee pasture is not sufficiently abundant in the forested districts to make bee-keeping a very profitable business. The net return per hive for the past three years has been under 10 pounds per annum.

FIELD HUSBANDRY.

Rotations.—The main farm rotation at this Station is a three-year one and is carried on on two plots of 18 acres each. On one plot the rotation years are wheat, clover, corn; on the other plot, oats and peas, clover, corn. Manure is applied every third year. This rotation ensures an abundance of fodder for the stock, reduces the cost of crop production, maintains soil fertility and checks weeds.

A three-year rotation, consisting of corn or roots, grain, clover or other legume is also carried on in connection with the cereal and fertilizer work.

Crop yields.—Twelve acres were sown to Banner oats, and yielded 52 bushels per acre at a cost of 46 cents per bushel. Five acres under fertilizer experiment, sown to Garton oats, gave a yield of 47 bushels per acre at a cost of 48 cents per bushel. This high cost was largely due to the cost of removing stones and roots from the fields before seeding.

Six acres of Canada white field peas yielded at the rate of 22 bushels per acre, and one and a half acres of Solo peas, 29 bushels per acre, the cost of production of the

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Canada White peas being \$1.25 per bushel, and of the Solo variety, 94 cents per bushel.

Rye, oat, and pea and clover hay gave a total yield of 70 tons 700 pounds.

FERTILIZER EXPERIMENTS.

In an experiment to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit, different plots received applications of fertilizing elements singly or in combinations of two, while other plots received a complete fertilizer. Another experiment was carried on to discover the most efficient sources of nitrogen and phosphoric acid. Here different plots received applications of various amounts of nitrate of soda or sulphate of ammonia as sources of nitrogen, and of acid phosphate, basic slag, or bone meal as sources of phosphoric acid.

CEREALS.

Twelve varieties of winter wheat were sown on September 16. Saanich gave the best yield of 59 bushels 30 pounds per acre. Four varieties of autumn rye, also sown September 16, gave yields varying from 1,845 pounds to 2,160 pounds per acre, Thousandfold giving the latter. Tapp's Winter gave better returns than Arlington Awnless, the other winter barley tested. Two of the four varieties of winter oats under test winter-killed and, of the remaining two, Winter Turf gave a greater yield than Fulghum. Of the seven varieties of spring wheat, Wild Goose gave the highest yield; and of the eight varieties of spring barley, O.A.C. No. 21 was the best. Three varieties of field beans and three of lupins were also grown. Two varieties of tares and three of vetches were seeded, and all made satisfactory growth. Of the eleven varieties of peas tried, Solo proved the heaviest yielder, and of the nine varieties of oats, several of these being new varieties obtained from New Zealand, Banner again headed the list.

FORAGE PLANTS.

Indian Corn.—Nineteen varieties of corn were tested for fodder production, and gave an average yield of 5 tons 1,885 pounds per acre. Stowell's Evergreen heading the list with 11 tons 1,725 pounds per acre. All flint varieties and four of the dent varieties ripened.

A number of crosses were made with a view to obtaining an early-maturing, heavy, grain-yielding ensilage corn and a heavy-yielding high-quality fodder corn.

Roots.—Five varieties of swede turnips gave an average yield of 17 tons 880 pounds per acre, the highest yielder, Mammoth Clyde, giving 18 tons 1,550 pounds per acre. Of the twelve varieties of mangels, Giant Yellow Globe, the highest yielder, gave 15 tons 300 pounds per acre, the average yield per acre being 12 tons 1,767 pounds. Ontario Champion proved the best of the five varieties of carrots tested, yielding 21 tons 1,050 pounds per acre. Three varieties of sugar beets were tested, and a comparison between home-grown and commercial mangel seed showed the superiority of the former.

Grasses and Clovers.—Three cuttings were taken from the Canadian Variegated alfalfa. Four varieties of millet and three varieties of feeding kale were also tested.

HORTICULTURE.

Fruits.—The orchards established during the past three years have developed very satisfactorily. Small quantities of apples, plums, pears, cherries, filberts, quinces, and medlars were obtained. Various spraying experiments were carried on, and a test of

a home-made tobacco solution made. The experimental nut orchard occupies 6 acres, but all the trees are young.

The production of small fruits was below the average of previous years; white, black, and red currants, raspberries, gooseberries, blackberries, strawberries, and grapes being grown. A number of trees were imported from foreign countries, and tested.

Vegetables.—A number of variety and cultural tests were carried on with vegetables, and considerable work was accomplished during the season in vegetable seed production.

Ornamental Gardening.—Variety tests with annual and perennial flowers and bulbs were carried on, and considerable attention was given to an investigation of the possibilities of flower seed and bulb growing. The arboretum area, consisting of 7½ acres, now contains some four thousand five hundred trees.

BUILDINGS.

A dairy barn 58 feet by 28 feet in size, and of a design suited to Vancouver Island conditions, was erected during the autumn. A silo, 10 feet in diameter and 20 feet high, was built of fir staves. A bull pen, 14 feet by 14 feet, and a manure shed, 14 feet by 20 feet, were built in suitable design and at very small cost. Two permanent hen houses and five small colony houses for poultry completed the building operations for the year.

FARM IMPROVEMENTS.

A 4-ton weight scale was installed on a suitable cement foundation.

Electric light and power lines were erected to convey electric current to the dairy barn and poultry buildings.

The roads have been improved by gravel, and short additions have been added where needed.

Wire fencing to enclose cattle and poultry areas has been erected.

A great deal of landscape planting was done during the winter and spring.

EXHIBITIONS.

The following exhibitions were attended, and an educational exhibit set up at each: South Saanich Women's Institute flower show, West Saanich Women's Institute flower show, Parksville Agricultural Society autumn fair, Alberni Agricultural Society autumn fair, Ladysmith Agricultural Society autumn fair, Cowichan Agricultural Society autumn fair, North and South Saanich Agricultural Society autumn fair, and the provincial seed fair at New Westminster. A permanent exhibit has been maintained in Victoria.

MEETINGS.

The superintendent attended the South Saanich Flower Show and the West Saanich Flower Show as judge of flower exhibits, the Vancouver Exhibition, the Cowichan Agricultural Society fair at Duncan, the Alberni, the Parksville, and the Ladysmith fairs as judge of live stock.

The following Institutes, Growers' Associations, Boards of Trade, and Agricultural Associations held meetings to be addressed by the superintendent of this Station: Metchosin Farmers' Institute, Saanich Farmers' Institute, Sidney Board of Trade and the Seed Growers' Association at Duncan and at Victoria, also at the Provincial Seed Fair held at New Westminster, and the Women's Institutes of West Saanich and South Saanich. All addresses were on some phase of agriculture and production.



