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Ontario Legislative Assembly

SESSIONAL PAPERS

VOL. LVI—PART IV

FIRST SESSION

OF THE

SIXTEENTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO

SESSION 1924

199258
7/12/25

TORONTO

Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty
1924

PRODUCED BY
The
United Press
LIMITED
TORONTO
CANADA

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*Not bound in Sessional Volumes.

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- No. 1 Public Accounts of the Province for the year ending 31st October, 1923. Presented to the Legislature, February 19th, 1924. *Printed.*
- No. 2 Estimates—Supplementary, for the service of the Province for the year ending 31st October, 1923. Presented to the Legislature, February 19th, 1924. *Printed.* Further Supplementary Estimates for the year ending October 31st, 1924. Presented to the Legislature, March 19th, 1924. *Printed.* Estimates for the year ending 31st October, 1925. Presented to the Legislature, March 25th, 1924. *Printed.*

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- No. 3 Report of the Department of Lands and Forests for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 4 Report of the Department of Mines for the year 1923. Presented to the Legislature, April 3rd, 1924. *Printed.*
- No. 5 Report of the Inspector of Division Courts for the year 1923. Presented to the Legislature, March 5th, 1924. *Printed.*
- No. 6 Report of the Inspector of Legal Offices for the year 1923. Presented to the Legislature, April 3rd, 1924. *Printed.*
- No. 7 Report of the Inspector of Registry Offices for the year 1923. Presented to the Legislature, March 21st, 1924. *Printed.*
- No. 8 Report of the Provincial Municipal Auditor for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*

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- No. 9 Report of the Commissioners for the Queen Victoria Niagara Falls Park for the year 1923. Presented to the Legislature, April 4th, 1924. *Not Printed.*
- No. 10 Report of the Superintendent of Insurance and Registrar of Friendly Societies for the year 1923. Presented to the Legislature, March 26th, 1924. *Printed.*

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- No. 11 Friendly Societies:—See *No. 10*.
- No. 12 Report of the Registrar of Loan Corporations for the year 1923. Presented to the Legislature, March 26th, 1924. *Not Printed*.
- No. 13 Report of the Department of Public Works for the year 1923. Presented to the Legislature, March 10th, 1924. *Printed*.
- No. 14 Report of the Department of Game and Fisheries for the year 1923. Presented to the Legislature, April 3rd, 1924. *Printed*.
- No. 15 Statement showing all sums credited to the Highway Improvement Fund and all sums chargeable thereto for the year 1923. Presented to the Legislature, March 3rd, 1924. *Not Printed*.
- No. 16 Report of the Department of Labour for the year 1923. Presented to the Legislature, March 4th, 1924. *Printed*.
- No. 17 Report of the Department of Education for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed*.

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- No. 18 Report of the Board of Governors of the University of Toronto for the year 1923. Presented to the Legislature, February 20th, 1924. *Printed*.
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- No. 20 Report relating to the Registration of Births, Marriages and Deaths for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed*.
- No. 21 Report of the Provincial Board of Health for the year 1923. Presented to the Legislature, March 3rd, 1924. *Printed*.

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- No. 23 Report upon the Hospitals for the Insane, Feeble-Minded and Epileptic for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed*.
- No. 24 Report of the Ontario Board of Parole for the year 1923. Presented to the Legislature, March 3rd, 1924. *Printed*.
- No. 25 Report upon the Hospitals and Charitable Institutions for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed*.

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- No. 26 Report upon the Prisons and Reformatories of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 27 Report of the Superintendent of Neglected and Dependent Children of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Not printed.*
- No. 28 Report upon the operation of the Ontario Temperance Act for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 29 Report of the Department of Agriculture for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 30 Report of the Ontario Agricultural College for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 31 Report of the Agricultural and Experimental Union for the year 1923. Presented to the Legislature, March 13th, 1924. *Printed.*
- No. 32 Report of the Ontario Vegetable Growers' Association for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 33 Report of the Entomological Society of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 34 Report of the Beekeepers' Association of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 35 Report of the Dairymen's Association of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Not Printed.*
- No. 36 Report of the Live Stock Branch of the Department of Agriculture for the year 1923. Presented to the Legislature, April 17th, 1924. *Not Printed.*
- No. 37 Report *re* Housing of the Bureau of Municipal Affairs for the year 1923. Presented to the Legislature, March 18th, 1924. *Printed.*
- No. 38 Report of the Women's Institutes of the Department of Agriculture for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 39 Report of the Statistics Branch of the Department of Agriculture for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 40 Report of the Horticultural Societies of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 41 Report of the Fruit Growers' Association of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*

- No. 42 Report of the Agricultural Societies and of the Convention of the Association of Fairs and Exhibitions for the year 1923. Presented to the Legislature, March 5th, 1924. *Printed.*
- No. 43 Reports of the Municipal Water Works and Gas Systems of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 44 Report of the Temiskaming and N.O. Railway Commission for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 45 Report upon the state of the Library for the year 1923. Presented to the Legislature, April 2nd, 1924. *Not printed.*
- No. 46 Report of the Ontario Railway and Municipal Board. Presented to the Legislature April 3rd, 1924. *Printed.*

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- No. 47 Return from the Records of the General Elections to the Legislative Assembly held on the 14th and 25th days of June, 1923, showing:— (1) The number of Votes Polled for each Candidate in each Electoral District in which there was a contest; (2) The majority whereby each successful Candidate was returned; (3) The total number of Votes Polled; (4) The number of Votes remaining Unpolled; (5) The number of names on the Polling Lists; (6) The number of Ballot Papers sent out to each Polling Place; (7) The Used Ballot Papers; (8) The unused Ballot Papers; (9) The Rejected Ballot Papers; (10) The Cancelled Ballot Papers; (11) The Declined Ballot Papers; (12) The Ballot Papers taken from Polling Places; (13) A General Summary of Votes cast in each Electoral District. Also, Supplementary Return from the Records of the By-election held subsequently to the General Elections. Presented to the Legislature, February 6th, 1924. *Printed.*
- No. 48 Report of the Department of Public Records and Archives for the Province for the year 1923. Presented to the Legislature, April 8th, 1924. *Not Printed.*
- No. 49 Report of the Hydro-Electric Power Commission of the Province for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 50 Report of the Provincial Auditor for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 51 Report of the Workmen's Compensation Board for the year 1923. Presented to the Legislature, April 3rd, 1924. *Printed.*

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- No. 52 Report of the Ontario Veterinary College for the year 1923. Presented to the Legislature, March 5th, 1924. *Printed.*
- No. 53 Report of Probation Officers of the County of York, including the City of Toronto, for the year 1923. Presented to the Legislature, April 17th, 1924. *Printed.*
- No. 54 Regulations and Orders-in-Council made since May 5th, 1923, under the authority of the Department of Education Act, or of the Acts relating to Public Schools, Separate Schools or High Schools. Presented to the Legislature, February 11th, 13th, March 17th, and April 8th, 1924. *Not Printed.*
- No. 55 Statement of the Legislative Grants for the year 1923 paid to the Rural Public and Separate Schools in the Counties and Districts and to the Urban Public and Separate Schools in the Counties and Districts which, in accordance with the provisions of the Amendment to the Schools Act, passed in 1922, were classed as Rural Schools and received grants as such. Presented to the Legislature, February 13th, 1924. *Not Printed.*
- No. 56 Report of Public Service Superannuation Board for the year 1923. Presented to the Legislature, February 18th, 1924. *Not Printed.*
- No. 57 Report of the Commissioner of the Ontario Provincial Police for the year 1923. Presented to the Legislature, February 22nd, 1924. *Printed.*
- No. 58 Report of the Agricultural Development Board for the year 1923. Presented to the Legislature, March 13th, 1924. *Printed.*
- No. 59 Report of the Ontario Athletic Commission and of the Auditor thereof, for the year 1923. Presented to the Legislature, February 22nd, 1924. *Not Printed.*
- No. 60 Report of the Commission under the Extra-mural Employment of Sentenced Persons Act, for the year 1923. Presented to the Legislature, March 3rd, 1924. *Printed.*
- No. 61 Report on the Mining Industry in that part of the Province served by the Temiskaming and Northern Ontario Railway Commission, for the years 1922 and 1923. Presented to the Legislature, March 3rd, 1924. *Printed.*
- No. 62 Reports of Walter I ymond Gregory Michael John Haney and others appointed under Royal Commission bearing date the 13th day of April, 1922, to inquire into and report upon all estimates submitted from time to time to the Hydro-Electric Power Commission of Ontario for the Queenston-Chippawa Power Development, and also all estimates for the said work submitted by the said Commission to the Government of Ontario, etc., etc. Presented to the Legislature, March 13th, 1924. *Not Printed.*

- No. 63 Return to an Order of the House of February 22nd, 1924, that there be laid before House a Return showing (a) all correspondence between the Government, or any Member of it and Mr. J. G. Ramsden since the 15th of July last and (b) for a similar return of all correspondence (if any) since the said date between the Hydro-Electric Power Commission of Ontario or the Chairman thereof and Mr. J. G. Ramsden. Presented to the Legislature, March 17th, 1924. *Mr. Raney. Not Printed.*
- No. 64 Report of the Department of Public Highways for the year 1923. Presented to the Legislature, March 18th, 1924. *Not Printed.*
- No. 65 Report of the Mothers' Allowance Commission for the year 1922-23. Presented to the Legislature, March 24th, 1924. *Printed.*
- No. 66 Report of the Civil Service Commission for the year 1923. Presented to the Legislature, March 26th, 1924. *Not Printed.*
- No. 67 Statement of Distribution of the Statutes for 1923. Presented to the Legislature, March 31st, 1924. *Not Printed.*
- No. 68 Return to an Order of the House, dated 14th March, 1924, That there be laid before this House, a Return of all correspondence and papers relative to the appointment of the following inspectors under the Ontario Temperance Act: W. W. Forsythe, L. W. Roach, E. E. Orser, J. H. Bell, F. A. Jennings, James A. Costello. Presented to the Legislature, April 4th, 1924. *Mr. Raney. Not Printed.*
- No. 69 Return to an Order of the House, dated 14th March, 1924, That there be laid before this House, a Return of copies of: 1. All correspondence between the present Government, or any member thereof, and A. E. Browning, K.C., lately Deputy Attorney-General of the Province of Saskatchewan. 2. All correspondence between the Attorney-General in the late Government and Mr. Browning. Presented to the Legislature, April 4th, 1924. *Mr. Raney. Not Printed.*
- No. 70 Return to an Order of the House, dated 2nd April, 1924, That there be laid before this House, a Return of copies of all correspondence relative to a provincial loan or loans placed during the fiscal year ending 31st of October, 1919, with or through the Home Bank of Canada or any officer thereof. Presented to the Legislature, April 4th, 1924. *Mr. Lethbridge. Not Printed.*
- No. 71 Return to an Order of the House of the Eleventh day of April, 1924, that there be laid before the House a Return, showing in detail (by Counties) the Estates from which Succession Duties came in the fiscal year ending October 31st, 1923. *Mr. Raney. Presented to the Legislature, April 17th, 1924. Not Printed.*

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- No. 72 Report on the Adoption Act, 1921, for the year 1923. Presented to the Legislature, April 17th, 1924. *Not Printed.*
- No. 73 Return to an Order of the House of the 22nd day of February, 1924, that there be laid before the House a Return showing:—1. The number of motor vehicles purchased by the Government in each year since the first of such purchasing, giving (a) the name of each vehicle; (b) the price paid for the same; (c) the date of purchase; (d) the name of the person for whom purchased or who used the same; (e) the uses to which the same are put; and (f) the ultimate disposition of the motor vehicle. 2. The names of the chauffeurs appointed by the Province of Ontario since the first such employment, showing in each case (a) the duties of the chauffeur; (b) the hours of labour; (c) the salary paid to him; and (d) the amount allowed to him, in each year, for personal expenses. Presented to the Legislature, April 17th, 1924. *Mr. Jamieson (Grey). Not Printed.*
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UNIVERSITY OF TORONTO

REPORT OF THE

BOARD OF GOVERNORS

FOR THE

YEAR ENDING 30th JUNE

1923

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO



TORONTO

Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty

1924



UNIVERSITY OF TORONTO

REPORT OF THE BOARD OF GOVERNORS

For the year ending 30th June, 1923

To His Honour the Lieutenant-Governor in Council:

The Governors of the University of Toronto have the honour to submit their seventeenth annual report, with which is included the President's report upon the academic work of the University and its Colleges for the Session 1922-23, and the reports of various departments. They also append the customary statements in detail of the receipts and expenditures of the Board for the fiscal year which closed on 30th June, 1923, which have been duly audited in accordance with the provisions of the statute.

During the year the erection of the new Anatomical building was completed and it is now in use. The amount expended thereon to 30th June was \$474,646, and while some of the final payments to contractors have yet to be adjusted it is hoped to keep the total cost within the \$500,000 voted for the purpose.

Progress was also made with the new wing of the Ontario College of Education buildings, \$109,394 having been expended out of the sum of \$200,000 received during the year on account of the total estimated cost of \$365,000.

Work on the new Administration building, which the Governors have decided to designate "Simcoe Hall," was begun early in the winter and has been prosecuted with as much speed as possible. The cost will be approximately \$400,000, and the Legislative grant of that sum was received during the year, there being expended therefrom to 30th June, \$116,464.

Upon the University College Women's Union at No. 79 St. George Street the amount spent to 30th June was \$96,546, which sum includes the purchase price of the property. A few items remain to be adjusted, but will fall within the total of \$100,000 appropriated for this work.

The Board were fortunate in being able to acquire in May last the property at the corner of College and St. George Streets known as the Beardmore house. This site has an area of 77,972 sq. ft., and its purchase at a cost of \$210,000 was made possible by an agreement arrived at with the Government whereby a Provincial grant of this sum was made to the University in return for a conveyance to the Crown by the Board of an equivalent area of land on the east side of the Queen's Park, being lots 29 and 30 and part of lot 31. The ultimate disposition to be made of this property has not yet been determined, but the site will be of great value for university purposes.

The gross revenue for the year was \$1,076,140. The deduction of interest written to scholarship and other trust funds, \$14,955, left a net revenue of \$1,061,185. This figure, while exceeding that of the previous year by upwards of \$26,000, was less than had been estimated at the opening of the year (\$1,093,000), due mainly to a shortage in the item of fees which had been estimated at \$400,000 but which reached only \$380,327. There was also a decrease in the estimated receipts of the Central Power Plant and in those of the University College Women's Union, both more than met by reductions in the anticipated expenditure. In addition to the ordinary revenue of the year there was credited the special Legislative grant of \$880,000 voted for 1922-23, making total available receipts of \$1,941,185.

The expenditure under the appropriations for salaries and maintenance was \$1,887,924. This total exceeded that of the previous year, which was \$1,805,545, by \$82,379; but it is less by \$96,002 than the anticipated expenditure shown by the estimates prepared before the beginning of the fiscal year; and it is evident, therefore, that the expenditure of the various sums appropriated has been carefully supervised. The principal item of increase is that of salaries which, including pensions and retiring allowances, amounted to \$1,085,331, or \$63,281 more than the previous year. The Central Power Plant operating account cost \$115,755 which, while almost \$30,000 less than had been appropriated for the service, was an increase of \$19,454 over 1921-22, largely due to the installation of a new generator. Other items of increase are unimportant and are balanced by savings elsewhere.

The above figures do not include the salaries and maintenance of the Ontario College of Education which are met by a special vote of the Legislature in the estimates of the Provincial Department of Education. The details are, however, given in a separate appendix (VI) to this report.

Without the special grant of \$880,000 the excess of expenditures over receipts totals \$826,739. With the addition of the special grant there results a credit balance of \$53,261, which, subject to the approval of Your Honour in Council, the Board are carrying forward, together with last year's balance of \$111,219, as a Contingent Fund to meet the needs of the present and subsequent years.

All of which is respectfully submitted.

B. E. WALKER,
Chairman.

Toronto, 25th October, 1923.

PRESIDENT'S REPORT

1922-23

To the Governors of the University of Toronto:

GENTLEMEN:—

I beg to submit the following report on the academic work of the University and University College during the twelve months ended June 30th, 1923.

The total staff of the University and University College numbered 580, of whom 67 were professors, 59 associate professors, 51 assistant professors, 98 lecturers, associates (in medicine) and instructors in the College of Education, 1 director, 2 directors of field work, 302 demonstrators, fellows and instructors with sessional appointments. They were distributed as follows:

	Professors.	Associate Professors.	Assistant Professors.	Associates.	Lecturers.	Director.	Director of Field Work.	Assistant Instructors.	Other Sessional Appointments.
University (Faculty of Arts).....	25	15	17	..	30	..	..	..	71
University College.....	11	10	6	..	5	..	..	..	9
Faculty of Medicine.....	17	16*	14	21	7†	..	..	..	146
Faculty of Applied Science.....	10	11	9	..	14‡	..	..	..	**52
Faculty of Household Science.....	..	2	..	..	3	..	..	..	5
Faculty of Forestry.....	1	3	..	..	..	..	..	..	..
Faculty of Music.....	..	..	..	..	4	..	..	..	..
Social Service Courses.....	1	..	..	..	..	..	1	..	††12
Public Health Nursing.....	..	..	..	..	..	1	1	..	‡‡16
Ontario College of Education.....	2	3	5	..	4	..	..	14	..

*One also in University.

†Two also in Ontario College of Education.

‡Two also in University.

**One also in Medicine.

††One also in Medicine.

‡‡One also in Social Service; six also in Medicine.

In Victoria College there were:

Professors.....	13
Associate Professors.....	3
Lecturers.....	6
Special Instructors.....	2

In Trinity College there were:

Professors.....	10
Lecturers.....	8

In St. Michael's College there were:

Professors.....	8
Lecturers.....	18

The following retired from active service at the end of the session:

H. H. Langton, Esq., M.A., Librarian; A. Carruthers, Esq., M.A., Professor of Greek Archæology; James Mavor, Esq., Ph.D., Professor of Political Economy; and S. M. Hay, Esq., M.D., Associate Professor of Surgery.

Mr. Langton served the University for thirty-six years, five years as Registrar and thirty-one years as Librarian, with great fidelity. His accurate scholarship, wide knowledge and literary gifts were combined with a high degree of administrative efficiency, and out of the comparatively small funds at his disposal he created a well balanced library affording excellent opportunities for undergraduate and graduate work in many departments. We regret that physical disability led to his retirement while his general powers would still have been of great advantage to the University.

Professor Carruthers was a most accurate and conscientious scholar whose interests lay in Archæology as well as in the literary and language fields of Greek culture. Modest as to his own attainments he is one whose intellectual resources have been best appraised by the generations of students who look back to him with high respect, and by his colleagues who hold him in sincere regard. Professor Carruthers served the University faithfully for twenty-nine years.

Professor Mavor retired after thirty-one years of service. It is difficult to think of the University without him, so closely has he been identified with some of its most important departments of work. In the range of his interests, the variety of his accomplishments, and the breadth of his acquaintance in the world at large, he has stood out as one of the leading figures of the University, and by his writings also has made it known in wide circles of European society.

Dr. Hay, well known as a surgeon in this city, gave excellent service to the University for ten years through the Western Hospital.

To our regret three younger men have resigned: Mr. Hodder Williams, who has given up a fine future as a teacher to enter the publishing business of his family, Dr. Woodhead to take a position in McGill University, and Dr. Sharpe to do work with the Board of Health.

I regret to announce the death of the following members of the staff: H. J. Crawford, B.A., Professor of Classics in Ontario College of Education and Headmaster of University Schools; J. J. Mackenzie, B.A., M.B., Professor of Pathology and Bacteriology; Adrian Berrington, Associate Professor of Architecture; J. F. Uren, M.D., C.M., Associate in Surgery and Clinical Surgery and Dr. L. Bruce Robertson, Demonstrator in Surgery.

Reference was made in my last report to the great loss sustained by the University in the deaths of Principal Crawford of the University Schools and of Dr. J. J. Mackenzie, Professor of Pathology. Dr. Uren had long served as Associate in Surgery and Clinical Surgery. Mr. Adrian Berrington, Associate Professor of Architecture, came from England shortly after the war and gave promise of being a distinct acquisition to the staff by reason of his artistic gifts and his experience. Lingering disease carried him away last spring. Dr. Bruce Robertson's sudden death at the height of his power has deprived the University of a surgeon of exceptional promise and has grieved a wide circle of friends.

Leave of absence was granted to the following:

J. G. Fitzgerald, M.D., Professor of Hygiene, to undertake important work in the University of California; Adrian Berrington, Associate Professor of Architecture; and A. W. McConnell, B.A.Sc., Associate Professor of Architecture.

The following new appointments and promotions were made during the year:

In the Faculty of Arts—Appointments:—Elwood S. Moore, M.A., Ph.D., Chicago, formerly Dean of State College, Pennsylvania, professor of Economic Geology; Herbert John Davis, M.A., Oxon., associate professor of English; Louis Allen, Ph.D., Chicago, assistant professor of French; Sealey Patrick Dobbs, B.A., Cantab., lecturer in Political Economy; W. P. M. Kennedy, M.A., Dublin, Oxon., Litt.D., Dublin, special lecturer in Political Economy; Anton Frederick Robinson, B.A., lecturer in Mathematics; Arthur Francis Chesterfield Stevenson, B.A., Cantab., lecturer in Mathematics.

Promotions:—James Winfred Bridges, B.A., McGill, A.M., Ph.D., Harvard, from an assistant-professorship to an associate-professorship in Psychology; Ernest Abell Dale, M.A., Oxon., from an assistant-professorship to an associate-professorship in Latin; William Howard Martin, Ph.D., from a lectureship to an assistant-professorship in Chemistry; Vincent Wheeler Bladen, B.A., Oxon., from an instructorship to a lectureship in Political Economy.

In the Faculty of Medicine—Appointments and Promotions:—Perry Goldsmith, M.D., C.M., to the head professorship in Oto-Laryngology; William Belfry Hendry, B.A., M.B., to the head professorship in Obstetrics and Gynæcology; Robert Davies Defries, M.D., D.P.H., associate professor in Hygiene; Frederick Adam Cleland, B.A., M.B., assistant professor of Obstetrics and Gynæcology; William Herbert Lowry, M.D., C.M., assistant professor of Ophthalmology; Duncan Neil Maclennan, M.D., C.M., assistant professor of Ophthalmology; George Hunter, M.A., B.Sc., Glasgow, lecturer in Pathological Chemistry; George Dana Porter, M.B., director of University Health Service and lecturer in Hygiene; William Edward Gallie, M.D., assistant professor in Surgery; William Warner Jones, B.A., M.B., assistant professor in Surgery; Goldwin Howland, B.A., M.B., assistant professor in Medicine; John Allan Oille, M.D., assistant professor in Medicine; D. King Smith, M.B., assistant professor in Medicine; Norman Burke Taylor, M.B., assistant professor in Physiology.

In the Faculty of Applied Science—Appointments:—Howell Alfred Tuttle, B.A.Sc., lecturer in Thermodynamics.

Promotions:—Ernest Waldemar Banting, B.A.Sc., from a lectureship to an assistant-professorship in Surveying; Owen William Ellis, M.Sc., Birmingham, from a lectureship to an assistant-professorship in Metallurgical Engineering; Ross Taylor, B.A.Sc., from a lectureship to an assistant-professorship in Hydraulics.

In the Faculty of Household Science—Appointments:—Miss Helen Robertson Coatsworth, B.A., and Miss Eva Myrtle McMillan, lecturers in Household Science.

In the Faculty of Forestry—Appointments:—Theodore Woolsey Dwight, B.Sc.F., M.F., Yale, associate professor in Forestry.

In the Ontario College of Education and University Schools—Appointments:—John George Althouse, M.A., headmaster, University Schools.

Promotions:—George Augustus Cornish, B.A., from an assistant-professorship to an associate-professorship in Science; John Thomas Crawford, B.A.,

from an assistant-professorship to an associate-professorship in Mathematics; William Chalmers Ferguson, B.A., from an assistant-professorship to an associate-professorship in Modern Languages; Douglas Ewart Hamilton, M.A., D.Pæd., from an instructorship to an assistant-professorship in Classics.

The total number of students registered in the University in 1922-1923 was 5,044, or apart from occasionals in Social Service, 4,743, distributed as follows:

				Men.	Women.	Total
Faculty of Arts.....				1,182	1,105	2,287
University of Toronto.....	143	105	248			
University College.....	616	562	1,178			
Victoria College.....	260	286	546			
Trinity College.....	70	53	123			
St. Michael's College.....	106	107	213			
Registered twice.....	13	8	21			
Faculty of Medicine.....				911	75	986
Faculty of Applied Science.....				740	1	741
Ontario College of Education.....				140	159	299
Faculty of Forestry.....				50	..	50
Faculty of Music.....				21	26	47
School of Graduate Studies.....				219	81	300
Department of Social Service.....				18	329	347
Department of Public Health Nursing.....				..	47	47
Registered twice.....				49	11	60
				3,232	1,812	5,044

The figures may be further analyzed as follows:—

FACULTY OF ARTS.

University of Toronto.

	Men.	Women.	Total.
Teachers' Courses and Summer Session.....	113	90	203
Occasional Arts students.....	30	15	45
	143	105	248

University College.

	Men.	Women.	Total.
First year undergraduates.....	231	166	397
Second year undergraduates.....	156	152	308
Third year undergraduates.....	113	116	229
Fourth year undergraduates.....	78	99	177
Occasional students.....	39	33	72
Registered twice.....	1	4	5
	616	562	1,178

Victoria College.

	Men.	Women.	Total.
First year undergraduates.....	78	92	170
Second year undergraduates.....	73	72	145
Third year undergraduates.....	48	54	102
Fourth year undergraduates.....	44	59	103
Occasional students.....	17	10	27
Registered twice.....	..	1	1
	260	286	546

Trinity College.

	Men.	Women.	Total.
First year undergraduates.....	24	22	46
Second year undergraduates.....	18	13	31
Third year undergraduates.....	14	8	22
Fourth year undergraduates.....	11	9	20
Occasional students.....	3	1	4
	70	53	123

St. Michael's College.

	Men.	Women.	Total.
First year undergraduates.....	33	36	69
Second year undergraduates.....	32	35	67
Third year undergraduates.....	19	17	36
Fourth year undergraduates.....	18	17	35
Occasional students.....	4	2	6
	106	107	213

FACULTY OF MEDICINE.

	Men.	Women.	Total.
First year undergraduates.....	79	13	92
Second year undergraduates.....	124	10	134
Third year undergraduates.....	181	9	190
Fourth year undergraduates (six years' course).....	118	11	129
Fourth year undergraduates (five years' course).....	204	16	220
Fifth year undergraduates.....	194	14	208
Occasional students.....	3	..	3
Candidates for D.P.H.....	5	1	6
B.Sc.(Med.) undergraduates.....	3	1	4
	911	75	986

FACULTY OF APPLIED SCIENCE AND ENGINEERING.

	Men.	Women.	Total.
First year undergraduates.....	139	..	139
Second year undergraduates.....	167	..	167
Third year undergraduates.....	180	..	180
Fourth year undergraduates.....	254	1	255
	740	1	741

ONTARIO COLLEGE OF EDUCATION.

	Men.	Women.	Total.
Students in attendance.....	91	133	224
Extra-Mural students.....	28	22	50
Students in B.Paed. course.....	21	4	25
	140	159	299

FACULTY OF FORESTRY.

	Men.	Women.	Total.
First year undergraduates.....	11	..	11
Second year undergraduates.....	14	..	14
Third year undergraduates.....	13	..	13
Fourth year undergraduates.....	12	..	12
	50	..	50

FACULTY OF MUSIC.

	Men.	Women.	Total.
First year undergraduates.....	9	19	28
Second year undergraduates.....	10	4	14
Third year undergraduates.....	1	2	3
Occasional students.....	1	1	2
	21	26	47

SCHOOL OF GRADUATE STUDIES.

	Men.	Women.	Total.
Candidates for Ph.D.....	48	9	57
Candidates for M.A.....	101	46	147
Candidates for M.D.....	2	..	2
Candidates for M.A.Sc.....	12	..	12
Candidates for M.Arch.....	..	1	1
Candidates for C.E.....	4	..	4
Candidates for M.E.....	1	..	1
Candidates for E.E.....	2	..	2
Candidates for D.Paed.....	34	4	38
Graduate students.....	19	21	40
Duplicates.....	4	..	4
	219	81	300

DEPARTMENT OF SOCIAL SERVICE.

	Men.	Women.	Total.
First year full-time students.....	4	34	38
Second year full-time students.....	1	7	8
Part-time students.....	13	288	301
	18	329	347

DEPARTMENT OF PUBLIC HEALTH NURSING.

	Men.	Women.	Total.
Full-time students.....	..	45	45
Part-time students.....	..	2	2
	..	47	47

The numbers examined in the different departments of the University, including those persons granted standing for Military Studies, were as follows:

Arts:

Fourth year.....	393
Third year.....	504
Second year.....	749
First year.....	997
Teachers' Course.....	255
	<hr/> 2,898

Medicine:

Fifth year.....	206
Fourth year (five years' course).....	218
Fourth year (six years' course).....	128
Third year.....	163
Second year.....	116
First year.....	93
B.Sc.(Med.).....	4
	<hr/> 928

Applied Science and Engineering:

Fourth year.....	255
Third year.....	173
Second year.....	164
First year.....	137
	<hr/> 729

Education.....	347
Forestry.....	49
Music.....	30
Graduate Studies.....	161
Social Service.....	282
Public Health Nursing.....	45
Law.....	18
Dentistry.....	821
Pharmacy.....	115
Agriculture.....	145
Veterinary Science.....	35
Local examinations in Music.....	10,457

The degrees conferred were:

LL.D. (Honorary).....	11
D.Litt. (Honorary).....	1
M.D. (Honorary).....	1
D.Sc. (Honorary).....	5
Mus.Doc. (Honorary).....	1
Ph.D.....	11
M.A.....	66
M.D.....	1
M.A.Sc.....	9
C.E.....	3
M.E.....	1
E.E.....	1
D.Paed.....	2
B.A.....	328
M.B.....	197
B.Sc.(Med.).....	3
B.A.Sc.....	231

B.Arch.....	11
B.Pæd.....	17
B.Sc.F.....	10
Mus.Bac.....	2
LL.B.....	6
D.D.S.....	309
B.S.A.....	106
B.V.Sc.....	33
Phm.B.....	91
D.P.H.....	2
	1,459

The number of degrees conferred during the academic year was 1 459, by far the largest in the history of the University. This great increase was due to the number of returned soldiers in the graduating years, of whom there will be rapidly decreasing numbers in each succeeding year. It is therefore to be expected that the attendance at the University will soon return to the normal condition, which it had reached several years before the outbreak of the war. With the population of the Province not increasing rapidly, and other institutions providing for certain local demands, it may be expected that the University of Toronto will, after it has returned to its normal attendance, see but a gradual increase from year to year. This should be easily dealt with.

Standards of entrance have slowly been raised, but as in the past every gradual and reasonable rise in standards has been met by the schools of the Province, we are justified in expecting that these higher standards will not reduce the numbers of those who are really interested in securing a university education.

The University has to steer a difficult course between the Scylla of too severe standards of entrance and the Charybdis of academic examinations in which many undergraduates disappear. There is a danger of students, especially in Arts, looking to the university as a pleasant place in which to spend four years with just enough of a spurt at work in the spring to carry them through. If the idea were to get abroad that students can waste their time and do not need to take their work seriously the people of the Province would hold us to account. Also, if failures were too numerous the University would be criticised for bad teaching or for allowing ill-prepared students to enter. Well considered efforts have therefore been made to adjust standards slowly so as to bring in those who must and will work reasonably well in order to attain success. The results of the past year have shown that we are justified. In the examinations of the spring of 1922 a little over 23% of those who were entered as matriculated students in Arts failed, whereas the percentage of failures for the same class of student in 1923 fell to 16%.

The average student is not rejected on a triviality or on a regulation which has not a basis in experience. The system of supplemental examinations is more generous than in many other universities and the student who will work need not fail if he possesses ordinary ability. I am glad to say that the reports reaching me from the staff indicate that on the whole earnest work is being done and that there is distinct improvement in the undergraduate. The professional faculties with their full programme of work make continued demands upon the student throughout the session and they report very little delinquency.

The cost of an education to-day is a most serious fact that deserves the attention of all who realize that for the welfare of the people the finest quality

of mind and character should be available for the professions. This is often found in quarters where money is very scarce. While it is true that character may be strengthened by the struggle for existence, and if so it is a pity that the sons of the wealthy should be denied this privilege, there is a reasonable limit, and if the barrier is too high and looms too early in the youth's career he may turn off to some path leading to more attainable ends. The accessibility of a university education is a theme to be pondered upon. It is not to be provided by lowering standards; as, for example, for doctors of medicine who may look forward to driving on the concession roads in sparsely settled districts, whereas a more exacting curriculum, equal to the best anywhere, will be necessary for those who are to enter into city practices. The degree requirements must be the same for all. In Ontario we must have nothing less than the best in education. We cannot fall below our neighbours. We cannot become second class people. But all this means an advance in the cost of education for the student. Especially has it been so since the war. An inquiry made by the Secretary of the Alumni Federation has resulted in an estimate of the average expense in the academic year for a student in Arts of about \$650, and in Medicine and Applied Science of \$750. These figures are probably low. The struggle is indicated by the fact that during the year loans have been continued by the Alumni Federation to the returned soldier students, the Board of Governors having also continued the deferred payment of fees to such returned soldiers as have shown their need. At the end of the year the total number of students from the beginning who had received loans was 519, many of these for more than one year. The average loan for last year was \$162, and the total amount paid out to date was over \$154,000. Of this amount \$40,000 had been repaid, and it is coming in at the rate of \$2,500 a month. In addition the Board of Governors have allowed the payment of fees amounting to \$126,000 to be deferred. The magnitude of the benefit that has been conferred upon students by the Alumni Federation Fund has probably not been realized even by those who were its most ardent supporters.

The need of the returned soldier has been met, but of course there are many others who would have been glad to avail themselves of such a fund had they been eligible. In the Faculty of Arts some help comes through scholarships, but not enough. I have already brought it to the attention of the Governors and of the Province at large that a system of scholarships should be established, if possible through Boards in different school localities, and that the award should be made not merely on the basis of ability to pass an examination, but on proved need of help, and on the recommendation of some reliable committee.

One of the important events of the year was the opening in January of the new Union for the women of University College. Even in one term its privileges became apparent, and there is every reason to believe that the possession of this Union will serve to create a firm and common spirit among the women of University College. In fact this Union offers them many of the advantages that are received in colleges of other universities by complete residential life. From it further development may now gradually proceed satisfactorily.

The men of University College have to-day less unified life than the women, and I can only repeat what I have often stated in previous reports that a residential nucleus for the students of University College is greatly needed, if the College is to preserve and strengthen its own distinctive character.

The Governors and the Senate will, I am sure, be gratified by the reports of Dr. Porter and Dr. Edith Gordon as to their health work among the students, testifying as they do to their general physical fitness and to the results which have already been obtained through correction of defects, and to improvement in the health of students who have been under their supervision.

The various student organizations, especially the Administrative Council and the Athletic Directorate, have continued to give effective expression and direction to the activities of the undergraduates. It is gratifying also to have the assurance of the Warden of Hart House that its members appreciate increasingly what it offers and that good traditions are being created. His report indicates something of the range of activities which are conducted in Hart House and of the opportunities of academic life outside the class room which it affords.

For the general progress in the various Faculties and Departments of the University I would refer to the reports appended to my report. I may merely remark that I have had uniform testimony as to the high standard of average work done in the University during the year.

In the Faculty of Medicine the recent reorganization of Surgery under Dr. Clarence L. Starr has made it possible to co-ordinate and systematize the work in the various hospitals so that the students receive a course of instruction which is well balanced and uniform. By conference in fortnightly meetings and by correspondence the members of the department in the various hospitals are kept in touch with one another and discuss the material for their instruction and investigation. In Obstetrics and Gynæcology Dr. Hendry has carried on the work mainly on the lines of his predecessor, Dr. Watson, and reports that he has received most loyal help from his staff. Also, Dr. Perry Goldsmith has undertaken with much energy the conduct of the department of Oto-Laryngology to which he was appointed on the retirement of Dr. Wishart. The action of the Rockefeller Foundation in choosing our Department of Hygiene as one of those in which it will support fellowships for graduate study is a recognition of the work that is being carried on in this department.

The Faculty of Applied Science this year sent out the largest number of students in its history, and by organized effort through the faculty and the alumni an unusually large proportion of these graduates have found employment. Instruction is now being given in radio-telegraphy; and the housing of the wind tunnel, which has been completed, will make it possible to carry on further work in Aeronautics. The offer of graduate courses for the new degree of Master of Science is proving attractive to students, many of whom may be expected in the future to do much to develop the engineering profession both on its theoretical and practical sides.

It will be observed that the number of graduate students has increased rapidly, and the new School has already become a most important centre for advanced and research work. The generous donors of our graduate fellowships have conferred a real benefit upon the University and through the University on the national life of Canada, as they are drawing some of the best talent from other parts of the Dominion to undertake post-graduate work in a home university, thereby in a measure uniting more closely our national interests. It is interesting to observe by the report of the Dean from what widely distributed parts of the country our graduate students are being drawn.

Unusually good results have been reached in research, which is being conducted with both energy and success in very many departments of the University. A full account of the work done is given in the appended reports on Research and Publications. World-wide interest has been excited by the discovery of Insulin, to which I referred in my last report, and well deserved honours have been showered upon Dr. Banting, who in his addresses has constantly referred in generous terms to his indebtedness to the University of Toronto. Dr. Banting has always made special mention of the large share his collaborator, Mr. Best, had in the work. Through the action of the Legislature, the Governors, to their great pleasure, were able to create a Research Professorship in Medicine for Dr. Banting, and it is hoped that he is only at the beginning of a career of brilliant and beneficent discovery. Mr. Best, while continuing his medical course, has taken charge of the manufacture of Insulin. The Faculty of Medicine also has shown its high appreciation of this work by awarding to Dr. Banting the Charles Mickle Fellowship, being the annual income from an endowment of \$25,000, which by the terms of the gift is "to be awarded annually to that member of the medical profession who is considered by the Council of the Faculty of Medicine of the University of Toronto to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science." Only two previous awards have been made, one to Dr. Pavlow, of Russia, and the other to Dr. Cushing, of Boston. Also the Reeve Prize of \$50, for the best published report of work done in the laboratories by a research fellow or junior member of the staff in any department in medicine, was divided between Dr. Banting and Mr. Best.

The work of the Insulin Committee in its oversight of the world-wide distribution of the product has been continuous and very heavy, but public recognition has been given outside Canada to the original and effective way in which it has been dealt with so as to make possible the wide distribution of pure Insulin at the lowest cost to sufferers. While all the members of the Committee have shown patient and self-sacrificing labour, special mention should be made of C. H. Riches, Esq., who has given unsparingly of his time and experience for the securing of the patents.

Professor J. J. R. MacLeod has secured some remarkable physiological results in connection with Insulin, and his work in general has received expert approval as shown by his election to a Fellowship in the Royal Society and by his appointment to the Cameron Lectureship in Edinburgh University. Excellent clinical results in the treatment of diabetes through Insulin and otherwise have been brought about by the co-operation under Professor Graham of a group of young clinicians, Dr. F. G. Banting, Dr. W. R. Campbell and Dr. A. A. Fletcher, in the Toronto General Hospital. Through the generosity of the Trustees of the Hospital and help given by Mr. Rockefeller, a special diabetic clinic was established for the treatment of the disease and for the education of practitioners in the use of Insulin. These came in large numbers, not only from every part of the Province, but from every Province of the Dominion. In this work Dr. Graham and his associates have at the cost of great personal exertion rendered signal service to the public, and they have the gratification of knowing that through their work the treatment has become much more widespread and has brought relief to many sufferers for whom despair has been replaced with hope. It may be remarked that the recent organization of the department of Medicine has made possible this rapid

development of Insulin on its clinical side. The results both as regards its discovery and its further development are due to the splendid co-operation of various departments in the University.

A fine spirit of scientific investigation pervades the departments in the Faculty of Medicine, a large number of young men being actively engaged on research problems. An evidence of what has been done in the past is to be found in the high honour conferred upon Dr. W. E. Gallie, through the invitation to him to become Hunterian Professor in the Royal College of Surgeons in London next year. It was also a matter of gratification that Dr. C. K. Clarke, former Dean of the Faculty of Medicine, was asked to deliver the Maudsley Lecture during the last summer, a high distinction in which his long services in Psychiatry were honourably recognized. In Professor Henderson's laboratory a notable piece of research was done by Dr. William Eason Brown on Ethylene as a new anæsthetic, which has attracted favourable attention.

A striking piece of work was done in the department of Physics when helium was liquefied by Professor McLennan and his associates in such quantity that experiments may hereafter be conducted at the lowest possible temperatures. In the Fisheries Laboratory Dr. Clemens has obtained some data which may be of great commercial value in connection with the fresh-water fisheries of Ontario. Dr. Chant conducted a small expedition, along with that of Dr. Campbell of the Lick Observatory, to West Australia to observe the eclipse of the sun in September, 1922. Of the several expeditions, sent to different parts of the world this was by far the most successful, and results were obtained in confirmation of the Einstein theory.

In the department of Mining Engineering, Professor H. E. T. Haultain and Professor F. C. Dyer have secured excellent results from their researches in the crushing of ore in tube mills. These researches have attracted widespread attention among mining engineers in Canada and the United States. Professor Victor J. Harding, of the department of Pathological Chemistry, has completed a very valuable research which is described in detail in the report of the Dean of the Faculty of Medicine. A valuable research in the kiln-drying of lumber, recently completed by Professor Peter Gillespie, will have an important bearing on the manufacture of furniture.

Unfortunately the expected fulfilment of the long deferred hope for a new building for the Faculty of Forestry and department of Botany has not been realized. The building should not be delayed. Students, both graduate and undergraduate, have been quite in excess of accommodation, but the tale has been told so often in my reports that I need only add that the urgency is greater than ever.

The Department of Italian and Spanish made an experiment of bringing four gentlemen, natives of Spain, to give a short course of lectures on the language and literature, and excellent results have been reported to me from this course.

Sir Bertram Windle, who has been appointed University lecturer in Ethnology, continued his very illuminating and popular lectures, taking as his subject during the past winter, "The Ethnology and Early Art of Europe." We are fortunate that a beginning in the department of Ethnology has been made in the University under such competent direction as that of Sir Bertram Windle.

The following special lectures were given: Professor H. J. Hamburger, Director of the Physiological Institute of Groningen, delivered two lectures

on "The Permeability of the Kidneys to Sugar"; Professor Legouis, French exchange Professor at Harvard University, delivered two lectures, one in English on "William Wordsworth," and one in French on "Jules Tellier"; Monsieur Louis Hourticq one on "Contemporary French Art"; Mr. Henry Higgs, C.B., a British financial expert, delivered two lectures on "British Post-War Finance" and "The Financial Problems of Europe"; Professor F. L. Schoell, French exchange professor at the University of Chicago, lectured on "French Homes of the Renaissance"; Miss Italia A. Garibaldi on the "Fascisti"; Sir Henry Newbolt gave several addresses to the staff and students during his visit to Toronto in connection with the National Conference on Education and Citizenship.

The extension work of the University has developed very rapidly and during the academic year nearly 2,200 students have been enrolled in various courses, such as Workers' Educational classes, a short course for Farmers, a course on Export Trade arranged in co-operation with the Director of the Commercial Intelligence Service of Ottawa, a course on Journalism, a course on Town Planning and on Household Science. In addition to these courses Rural Tutorial Classes have been conducted in various centres in the Province, and members of the University have delivered many lectures in towns large and small.

Dr. F. A. Mouré, the University organist, gave during the year a successful series of organ recitals beginning in October and continuing with a short break until the middle of March.

A special convocation was held on April 6th in connection with the National Conference on Education and Citizenship, when the degree of Doctor of Laws was conferred upon the following: Sir Robert Baden-Powell, Monsieur Henri Hauser, Sir Henry Newbolt and Sir Michael Sadler, and the degree of Doctor of Science upon Monsieur Emmanuel Margerie.

The following benefactions have been received during the year: Rockefeller Foundation, \$55,735.96; Eaton Endowment, \$25,000; Carnegie Corporation, for research covering two years in physiological results of Insulin, \$16,238.75; Dr. H. R. Geyelin, for distribution of Insulin, \$10,000; S. Ubukata, Esq., for Ubukata Fund from which scholarships may be granted to Japanese students, \$10,000; Air Board, for scientific research in connection with the Wind Channel, which has been erected, \$5,000; Graham Campbell, Esq., for Fellowship in memory of the late Professor J. J. Mackenzie, \$5,000; Canadian Red Cross, for the maintenance of the department of Public Health Nursing, \$4,850; Graduate Fellowships again provided by Sir Edmund Osler, \$500; Sir Edward Kemp, \$500, Colonel R. W. Leonard, \$500, Imperial Oil Company, \$500, Canadian Pacific Railway, \$1,500; Sir Edmund Osler, for research in Pathology, \$600; Canadian Oral Prophylactic Association, for research in Dentistry, \$2,775; H. A. Aggett, Esq., to found Harvey Aggett Memorial Scholarship in Applied Science, \$1,500; Dr. R. A. Reeve Bequest, \$1,150; Dr. R. A. Reeve Prize in Medicine, \$50; Sir John Gibson, to endow the McCaul Medal, \$500; Honourable Wallace Nesbitt, K.C., for Nesbitt Medals in the University Schools, \$500; final payment from friends for the William Hardie Scholarship in Classics, \$240; Professor G. M. Wrong, for History Scholarship, \$200; Boiler Inspection and Insurance Company, for Scholarship in Mechanical Engineering, \$170; Professors Beatty and Pounder, for Mathematics Scholarship, \$100; for the McCaul Scholarship in Classics, G. A. H. Fraser, Esq., Principal Hutton and A. M. Stewart, Esq., \$75; University College Alumnæ, for Alumnæ Prize in

English, \$10; a piece of sculpture representing Youth, given by G. W. Booth, Esq., has been placed in the Quadrangle of Hart House.

All of which is respectfully submitted.

ROBT. A. FALCONER,
President.

November 8th, 1923.

APPENDIX A.

- (1) Report of the Principal of University College.
- (2) Report of the Dean of the Faculty of Medicine.
- (3) Report of the Dean of the Faculty of Applied Science.
- (4) Report of the Dean of the Faculty of Forestry.
- (5) Report of the Dean of the Ontario College of Education.
- (6) Report of the Dean of the Faculty of Music.
- (7) Report of the Dean of the School of Graduate Studies.
- (8) Report on Research.
- (9) Publications.
- (10) Report of the Librarian.
- (11) Report of the Director of the Department of Social Service.
- (12) Report of the Director of Public Health Nursing.
- (13) Report of the Director of University Extension and Publicity.
- (14) Report of the Director of the Department of Military Studies.
- (15) Report of the Health Services.
- (16) Report of the Warden of Hart House.
- (17) Report of the Director of the Connaught Antitoxin Laboratories.
- (18) Statement regarding the Biological Museum.
- (19) Statement regarding the Museum of Geology.
- (20) Statement regarding the Museum of Mineralogy.
- (21) Statement regarding the Museum of Archaeology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE.

(Principal Maurice Hutton.)

The events of the Session for University College are (1) the beginning of the Administration building; University College will still share its lecture rooms with Mathematics, History, Philosophy, Spanish and Italian, and even larger lectures, with Political Science, but it will regain a large lecture room from the Registrar and another from the Bursar, besides other and smaller rooms from these officers and from the Superintendent; (2) the opening of 79 St. George Street as the new Women's Union and the conversion of the old Union at 85 St. George Street into a small residence which will hold ultimately some two dozen students.

The new Union is a great addition to the College's equipment and has an admirable lecture room (or theatre) which came into use at once for class-societies, student conventions and other bodies, for whom it was difficult before to find adequate accommodation: Convocation Hall and even Hart House Theatre and the East and West Halls are often too large for a lecture, while the Dining Hall and *a fortiori* Room 37 is too small; the new Theatre in 79 St. George Street is a happy medium.

Further, the addition of a Theatre to the new Women's Union tends to raise it to the scale of Hart House, which is the ultimate goal.

The Alumni of the College have again organized this Session a course of popular lectures in Convocation Hall, under the energetic direction of Mr.

Percy Brown; they have also conducted a vigorous campaign for bringing into the Alumni Federation graduates of the College who have hitherto been content to drop the College and the University upon graduation; a similar stimulation of interest in the College and the University on the part of their Alumnae has been involved in the Parliamentary Committee of Inquiry into academic affairs which has been sitting during this Session; in fact, that indirect result is likely, as is usual with indirect results, to be the best result and the largest result of the appointment of that Committee.

The registration of students in University College will be found on Page 4 of this report.

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE.

(Professor A. Primrose.)

Four years have elapsed since the curriculum in medicine demanded a course of study extending over six years. We are still in the transition period between the old five and the new six-year requirements but the session 1923-24, upon which we are about to enter, will see the completion of the studies of the last group of students eligible to graduate under the terms of the old curriculum. In the final years we are at present handicapped by the two groups of students. The difficulties are further increased by the fact that the number of students in the final years is excessive owing to the circumstance that they constitute a group who began their studies in the year immediately succeeding the war at a time when an abnormally large number entered upon the study of Medicine.

For the past two sessions a regulation was in force limiting the number of students in the entering class. The opinion was expressed in the Dean's report a year ago that the requirements of Honour Matriculation, which were about to come in force, would result in confining the entering class within reasonable limits. This hope has, thus far, been realized as indicated by the fact that the number of students entering last session was only 92 compared with 143 for the previous session. The facilities available in hospital for teaching purposes are necessarily limited and the wisdom of restricting the number of students in medicine is clearly demonstrated by the difficulties which at present exist in attempting to provide efficient instruction for the large classes which crowd the clinical departments.

Professor J. J. Mackenzie, the head of the Department of Pathology and Bacteriology, died on August 2nd, 1922, and Dr. L. B. Robertson, of the staff in Surgery, died on the 24th day of February, 1923. Professor Mackenzie first lectured to medical students in 1890, when he was Fellow in Biology in the University; in 1900 he was appointed head of the Department of Pathology and Bacteriology in the Faculty of Medicine. His connection with the teaching staff in medicine therefore dates almost as far back as the time of the re-establishment of the Faculty which occurred in 1887. During his long period of office he performed his duties with great ability and distinction. His fine personality, his success as an administrator, his high standing as a teacher and his valuable contributions to scientific medicine, both in various learned societies and in literature, are fully recorded in the resolutions inscribed upon the minute books of the Faculty and the Senate, at the time of his death. The loss caused by his death will not only be felt in the Faculty of Medicine but in the University as a

whole, and among a wider circle of scientists at home and abroad who knew him as a friend and set great value upon his high attainments. Dr. L. Bruce Robertson was thirty-eight years of age at the time of his death. As one of our younger surgeons he attracted much attention because of the exceptional character of the work which he accomplished both as a teacher of clinical surgery and in his research work. The latter is more particularly evident in the contribution he made to surgical practice in connection with the transfusion of blood. He was a pioneer in introducing this life-saving measure at the front during the war. Later, in civil practice, he extended his methods to the treatment of toxæmies in a manner which will remain as a permanent memorial of his work. The University has suffered severe loss in the death of this brilliant young surgeon.

Dr. Oskar Klotz has been appointed Professor of Pathology and Bacteriology. He graduated from the University of Toronto in 1902 and subsequently spent five years in the Department of Pathology at McGill University and in the Royal Victoria Hospital, Montreal. In 1910 he became Professor of Pathology and Bacteriology at the University of Pittsburg. Two years ago he resigned the position at Pittsburg on being appointed by the Rockefeller Foundation to carry out work of an administrative and organizing character in South America. He had completed this task when he was appointed by the University of Toronto as successor to the late Professor J. J. Mackenzie. Dr. Klotz has attained a reputation in Pathology of the highest order. His contributions to medical science in his department have received wide recognition and he has attained a position in the front rank of the leading Pathologists of this Continent. The University may well consider itself fortunate in having secured the services of one who has such a brilliant record.

Honours have been bestowed upon certain members of the staff in recognition of valuable contributions to scientific medicine, of which the following may be cited:—

Professor J. J. R. Macleod has been created a Fellow of the Royal Society and Cameron Lecturer in the University of Edinburgh.

Dr. F. G. Banting has been awarded the Charles Mickle Fellowship for 1923 by the University of Toronto and appointed Professor of Medical Research in this University. He was also voted a life annuity by the Canadian House of Commons.

Professor C. K. Clarke was chosen to deliver the Maudsley lecture on Psychiatry before the Congress of the British Medico-Psychological Association.

Dr. W. E. Gallie has been appointed Hunterian Professor in the Royal College of Surgeons of England.

A generous donation of \$5,000 has been made by Graham Campbell, B.A., M.B., C.M., for the purpose of instituting a memorial in memory of the late J. J. Mackenzie. It has been determined to use the annual income from this as a prize to be awarded to the student in the final year who has done the best work in Pathology and Bacteriology.

The organization of the clinical Departments as at present constituted is eminently satisfactory. It is well known that the enviable position in which these departments find themselves has been made possible by the endowment of the department of Medicine by the late Sir John Eaton and Lady Eaton, and by the annual donation of \$50,000 provided by the Rockefeller Foundation. The

latter made it possible to reorganize the Department of Surgery. The existing organization has attracted widespread attention, many prominent teachers from abroad have visited our clinics and laboratories for the purpose of learning our methods and have been most favourably impressed. Eulogistic references have appeared in the medical press in England and it becomes quite obvious that our present status in clinical teaching is regarded as a model of excellence and efficiency.

The best evidence of the success of the reorganization of the clinical departments is found in the remarkable activity and enthusiasm displayed within these departments. The clinical teaching is co-ordinated and systematized and has reached a high standard of efficiency such as has not hitherto been attained. The students respond in a manner highly satisfactory, their work is more thorough and comprehensive, they evince an interest and concentration of effort in their work which is admirable. One of the striking features of our present organization is noted in connection with the activities of the staff. They have shown remarkable interest in their staff meeting which has proved one of the most valuable innovations under the present system. The most noteworthy feature of the results attained, however, is in the extraordinarily large number of problems of research which have been successfully undertaken by members of the staff and which have added valuable contributions to the practice of scientific medicine. The present organization of the clinical departments has further resulted in marked increase in efficiency in the standard of service rendered to the hospital patients.

In the Department of Medicine, Doctors F. G. Banting, W. R. Campbell and A. A. Fletcher have conducted investigations in the clinical use of Insulin. The fact that it relieves the cardinal symptoms in severe cases of diabetes mellitus has been confirmed in over one hundred cases. A series of papers has been published in scientific journals by these workers collectively and individually, which have placed on record the results of their investigations as to the direct therapeutic value of Insulin, including its specific action in coma. They have also established the important fact that overdosage of Insulin is followed by a typical reaction which is relieved by the administration of glucose. Other problems of research are in progress in the department of Medicine.

The gift of Mrs. A. R. Clarke made it possible to establish and equip two of the clinical laboratories in the medical wards. These have been completed and a technician has been appointed by the hospital to take charge of one of them. The laboratory equipped for clinical chemical investigation has been of the greatest service to the staff in investigations carried out on the Insulin treatment of diabetes mellitus.

In the sub-department of Pediatrics, it is noted that important problems of research have been conducted in the nutritional research laboratory of the Hospital for Sick Children by members of the staff under Dr. Alan Brown.

In the Department of Surgery, after the completion of two years, it is found that the reorganization under one departmental head is eminently satisfactory. Of the special features of the present system one may note the success obtained by the teaching of surgical pathology as an introduction to surgery in the fourth year of the six-year course. In this class the student has the opportunity of observing in the laboratory for himself various pathological

processes in actual operation. There are also a series of demonstrations of surgically applied anatomy on the cadaver and a special class in minor surgery.

A number of valuable contributions of an original character have been made to surgery by members of the staff. Of these we may mention the work of Gallie and LeMesurier in fascial transplantation; the metabolism of fractures by R. A. Harris and (in collaboration with Dr. Tisdall) results in Heliotherapy; the elimination of toxins by the thoracic duct in intestinal obstructions, by Dr. W. A. Costain, and investigation on paralytic ileus by C. B. Parker and E. E. Shouldice.

In the Department of Obstetrics and Gynæcology the plan of teaching of former years has been continued. This has proved an unqualified success. There, as elsewhere, the department has been handicapped by the large size of the clinical class, but this will be rectified in the near future. The staff has been slightly increased by the addition of an assistant professor and a junior full-time demonstrator, the latter doing special work in connection with the Department of Pathological Chemistry. A metabolic unit has recently been established to aid in the investigation regarding the toxæmias of pregnancy.

There have been no changes in the teaching staff of the Department of Ophthalmology. In Oto-Laryngology, Dr. D. E. Staunton Wishart has been appointed a full-time demonstrator and is conducting research work in addition to his duties on the teaching staff. In both these departments instruction has been carried on as hitherto to limited classes; the lectures in Oto-Laryngology have been reduced to about one-half the former number.

In the Department of Therapeutics, Dr. F. M. R. Bulmer as full-time fellow has continued to make satisfactory progress in special research work. In the Department of Psychiatry, important progress has been made in that optional classes were conducted for the first time. These optional classes promise to be of the highest value in providing students with a thorough grounding in a difficult subject. The establishment of a Psychiatric Hospital at Surrey Place in the immediate future will greatly enhance opportunities for work of the most comprehensive character and, in future, students who have had these advantages will graduate with qualifications in Psychiatry and Psychology which will fit them admirably for appointments, in the Province and elsewhere, leading to the intelligent development of psychiatric medicine.

The new building which has been completed for the Department of Anatomy constitutes the most important addition to our laboratory equipment which has been made in recent years. The formal opening has been arranged to take place early next session, but it was found possible to transfer the work of the department to the new premises for the Easter term of last session. The facilities thus provided for undergraduate study and for research work are excellent and will prove to be of the highest value in the conduct of the varied activities of the department.

The teaching in the Department of Physiology, as conducted under the requirements of the six-year curriculum whereby the student covers the whole field of human physiology in one session, is proving decidedly superior to the old method of extending the course over two years. This is of special value in view of the fact that the student is, at the same time, studying Biochemistry. The student who thus acquires a thorough grounding in the subject in one year is in a position in subsequent years, if he selects Physiology as an option, to devote time to advanced practical work in those parts of the subject which

have a high clinical value. The staff has been subject to considerable change during the year, particularly in the junior positions and in general each member has devoted one-half of his time to teaching duties and the other half to research. Research has covered a wide field, particularly in connection with the various physiological problems arising out of the discovery of Insulin. The research has been greatly assisted by financial aid received from the Carnegie Corporation.

The staff in the Department of Biochemistry has, for the past session, and for the first time in its history, been constituted solely of full-time teachers. This has resulted in a notable improvement in the quality of instruction in the elementary laboratory courses. The Department, however, is still understaffed and will never be wholly satisfactory until provision is made for the addition of an assistant professor. Under the terms of the new curriculum a course in advanced biochemistry is given only to those who select it as an option. The class in advanced work is in consequence smaller but a larger amount of time is devoted to their instruction. The results attained indicate a distinct improvement.

Work in the Department of Pharmacology was seriously interrupted by a fire which occurred on February 10th and which resulted in a considerable amount of destruction to the equipment employed for research. Undergraduate teaching was little affected by this incident. The staff has never been more complete or efficient and the results attained have been of the most satisfactory kind. During the year a number of research problems have been in progress. There has been some congestion in the laboratories and an increase in detail in the administrative requirements, due to the fact that facilities were provided for Dr. F. G. Banting in connection with his work on Insulin.

The Department of Pathology and Bacteriology since the death of Professor J. J. Mackenzie has been efficiently administered by Dr. H. B. Maitland who, with the co-operation of all members of the staff, has succeeded in continuing the work of the department throughout the past session in a manner highly satisfactory. During the year an optional class in Immunology was inaugurated. Valuable work has been done, under the direction of Dr. W. L. Robinson, assisted by members of the clinical staff, in cataloguing and organizing the museum for teaching purposes. Various problems of research have been in progress which have yielded results of considerable practical value.

A change in the staff in the Department of Pathological Chemistry was made when Dr. J. B. Collip resigned and Mr. G. Hunter was appointed as lecturer. The new work initiated last year and referred to in the Dean's report in the method of carrying out clinical laboratory work has been continued and has proved satisfactory. Professor Harding has completed a research on the etiology and treatment of nausea and vomiting in pregnancy, which has now resulted in a valuable clinical application of his findings in the care of such patients. Other problems of research are in progress in the department.

In Hygiene and Preventive Medicine undergraduate training has been provided both to medical students and to those of other faculties. Six candidates were enrolled for the Diploma of Public Health. Extension lectures and demonstrations have been conducted by members of the staff and the exceptional facilities available in the Connaught Laboratories have been effectively utilized by members of the staff in conducting research. Professor J. G. Fitzgerald, having been granted leave of absence, has spent the academic year in the Depart-

ment of Bacteriology in the University of California. The department, in his absence, has been conducted by Dr. R. D. Defries.

In the preliminary science departments we may note the continued efficiency of the instruction given to medical students in the Department of Biology, Chemistry and Physics.

A Department of Radiology has now been organized with Dr. G. E. Richards as administrative head. A series of ten lectures are given in the fifth year and the students of the sixth year are to receive twenty lectures and demonstrations.

Graduate Study:—The Faculty have made provision for graduates who wish to refresh their knowledge of modern medicine, by permitting them to attend the courses given in the senior undergraduate years. A special committee has been appointed for the specific purpose of assisting the graduate to obtain full advantage of the facilities which are thus offered. Several special short graduate courses have also been provided. These cover the subjects of Medicine, Surgery and Obstetrics. A summer course of a month's duration is given in Pædiatrics to graduates at the Hospital for Sick Children. Short courses in Radiology have been arranged. Each course will be of one month's duration. In addition to this the Faculty of Medicine has recently instituted a graduate course leading to a Diploma in Radiology. The course of study will be comprehensive, including a special course in Physics as well as the clinical applications of X-ray and Radium. The course extends over a period of one winter session of eight months.

Extension Lectures:—In conjunction with the Ontario Medical Association lectures, demonstrations and clinics were provided by the Faculty staff in different parts of the Province. This work has grown in importance. Some idea of its magnitude may be estimated when it is stated that last session no fewer than one hundred and fifty papers were read before local Medical Societies outside of Toronto by members of our teaching staff.

Research:—During the past session a large amount of Research work has been undertaken in the different departments of the Faculty of Medicine. Certain of the problems solved have been of purely scientific value, while others have had an immediate application in the practice of medicine and surgery. An account of this research work will appear, in detail, in another portion of the President's Report, but it may be noted here that improved organization of staff, co-ordination of effort and increased laboratory facilities have recently contributed in large measure to stimulate effort in scientific research and thus have made possible the excellent results achieved.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING.

(C. H. Mitchell, Esq., LL.D., D. Eng.)

The Session now concluded has been notably successful in various respects. The application and effective work of staff and students has been the best since the war and the volume of work done in the various departments has been much greater than usual.

The very large fourth year, 253 graduating, has been unprecedented not only in numbers but in type, quality and ability generally. The average age is

over twenty-five years and about 60 per cent. have seen war service. It is interesting to note that these are distributed, 40 in Civil Engineering, 20 in Mining, 56 in Mechanical, 54 in Chemical, 63 in Electrical, 8 in Metallurgical and 12 in Architecture. A departure was made this year in holding the Convocation for conferring degrees in this Faculty as soon after the examination as possible, the first of May. This change was very satisfactory and appeared fully warranted as there were nearly twice as many present to receive degrees as has been usual at the June Convocation.

The curriculum changes effected last year are now well established and the year's work appears to have justified them. In some directions these have entailed much extra work, especially in laboratories, due not only to larger groups but to more diverse work by the different departments. This has brought increased burdens on the staff both in work and time, as indicated in student-hours. It is interesting to observe the growth and extent of some departments in this respect. For instance in the laboratories of the Electrical Engineering Department there have been 2,528 student-hours per week being 16 per cent. more than last year. The new course in Radio Telegraphy, as an option in the fourth year, has proved very satisfactory but has contributed slightly to this increase. In the two laboratories of the Mechanical Engineering, Thermodynamic and Hydraulic Departments, there have been 1,101 and 1,580 student-hours per week respectively, while in Machine Design there have been 1,085 hours per week. In each of these departments instruction has been given to students of all other departments in the Faculty except Architecture. In the Department of Mining Engineering, with about the same number of students as ten years ago, there were during the past year, from two to three times the number of classes and class hours; this means, among other requirements, more space necessary for the laboratories. In the Department of Chemical Engineering the very large fourth year made a difficult situation both as to staff and space, and though large classes will continue and this department will still be very crowded for space, the temporary expedients that have been employed will not now be required. The Department of Architecture has also had a difficult year with its staff depleted by illness and the absence on leave of one of its professors.

The post-graduate work done by the various departments of this Faculty has been more extensive this year and has been carried out in connection with the School of Graduate Studies. There has been considerable diversity in the nature of the instruction and research work in the laboratories. This is the first year of operation under these arrangements and they give indications of working out on a sound and satisfactory basis.

Conferences were again carried out this year, one in Water Power and one in Town-Planning and Civics. A very useful exchange of lectures was also effected in Metallurgy between professors of this University, Queen's and McGill. It is gratifying to observe that members of the staff of this Faculty are taking an increased part in the activities of the Engineering profession and professional organizations concerned with the various branches as represented in the several departments of the Faculty. It is also to be noted that there is an increasing co-operation between the Faculty and the Engineering Alumni, evinced not only in the annual reunions but in the recent interest of the graduates in encouraging the movement to establish post-graduate work in hydro-electric power.

The necessity for retrenchment the past several years has been recognized but it is pointed out that the requirements of a Faculty of this nature are large and appropriations must be well maintained if the efficiency is to be kept up. While it is desirable that the salaries in the lower grades be gradually increased as an incentive to good service, it is quite as desirable that there be similar increments for good work and endeavour on the part of professors and associate professors. This Faculty has taken its part in the retrenchment in apparatus and supplies and will willingly continue if necessary, but there must shortly come a time when there will have to be generous expenditures for much needed apparatus and additional space in various departments. An example is the new large testing machine awaited now for many years in Applied Mechanics. Other requirements are additional staff in the Electrical Department and the establishment of work in Ceramics in connection with the Department of Metallurgical Engineering.

The research work has gone well in the School of Engineering Research of this Faculty. The researches have been of a character that are of genuine use to the many industries concerned and the complimentary references to this work and the contents of No. 3 Research Bulletin recently issued are a great encouragement to extend and improve this portion of the activities of the Faculty.

A new feature has been the revival of effort to assist the graduating class of this Faculty in obtaining positions. For this purpose a special organization was arranged in the spring months to get graduates in touch with possible employees. The funds required, though a small amount, have been derived from the University, the Alumni and other sources. This has been a marked success and it is most desirable that it be continued, not only for the benefit of the graduates themselves but as a valuable process of University publicity, extension and service to the country.

Appreciation is felt regarding the establishment of a new scholarship for the Second Year, to be known as the "Harvey Aggett Memorial Scholarship," the gift of Mr. J. T. Aggett, of Toronto, in memory of his son, the late Lieutenant W. H. Aggett, a student of that year in 1915, who was killed at Passchendaele in November, 1917.

The members of the Faculty deeply regret the untimely death during the Session of Professor Adrian Berrington, Associate Professor of Architecture, who was held in high regard by staff and students alike.

(4) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY.

(Dr. C. D. Howe.)

The Session just completed is the first since the entrance requirements to our Faculty have been raised from Junior to Senior Matriculation. Last year our registration was the highest in the history of the school, namely, 62 students in attendance, of whom 59 took examinations. This year the more advanced standing is reflected in the smaller number of students in the entering class, and also in the total registration, which is 50 students, of whom 49 were examined at the final examinations. That the higher entrance requirements have brought to us a more mature type of young man, who is a more earnest student, is shown by the results of the year's work. Of the 21 members of last year's freshman class, of whom 16 were newcomers, 7 passed, 5 had honours

deferred, 6 failed, and 3 did not finish the year because of illness or for other reasons. This year the freshman class numbers 12, of whom 7 were newcomers. The results of the examinations show only one failure, 3 have supplemental examinations to write, one dropped out before examinations, and 6 passed with good standing.

The Forestry Branch of the Province still continues the enlargement of its technical staff for the care of its forests. Ten of the 12 members of this year's graduating class have gone to the employ of the Provincial Government service, one has gone with the Dominion Forestry Branch, and one with a private pulp and paper company. Continuing the work of making a survey of the forests of the northern part of the Province, begun two years ago, the Ontario Forestry Branch is this summer employing 22 of our undergraduates on this work, parties having gone out from Biscotasing shortly after the completion of the college year, on a survey of the Mississauga Reserve. Eight undergraduates are working through vacation on the forest reserves in the West under the jurisdiction of the Dominion Forestry Branch, and 6 are with private pulp and paper or lumber companies.

It is with a feeling of sadness that I make record in this annual report of the death in February last of Dr. Bernard E. Fernow, the first dean of the Faculty, who was highly honoured and much loved by both the members of his staff and the many students who received from him instruction in the science which he spent his life in developing and extending, having well earned the title so often applied to him, that of "the father of forestry in America." But it is with pleasure that I record that some months prior to his death the new building for instruction in forestry at the University of Cornell, where Dr. Fernow established the first forest school on this continent, was dedicated to him as "Fernow Hall."

Upon Dean Fernow's retirement in 1919 no additional member was added to the staff, his three colleagues having carried on the teaching work since then, but this session the appointment of a new associate professor brings the staff up again to the number of four instructors. Mr. Theodore W. Dwight is the new appointee. He graduated from our school in 1910, took the degree of M.F. from Yale Forest School in 1911, and since that time has been employed by the Dominion Forestry Branch, having risen to the position of assistant director of the service.

I feel that I cannot close this report without once more urging the necessity of a new building, with more convenient and modern facilities, to enable the teaching staff to give the students better instruction in the subjects which are to be the basis for their life work, a work which is essentially patriotic in the results it seeks to bring about, namely the care and development for the people of the country of one of the country's greatest natural resources—the forests.

(5) REPORT OF THE ONTARIO COLLEGE OF EDUCATION.

(Dr. W. Pakenham).

The total registration for the session was 422 against 353 for the previous session. The most marked difference appears in the courses for high school assistants and specialists where the attendance has increased by 50 per cent. Improvement in high school salaries and the admission of graduates in Commerce,

Agriculture and Applied Science to high school teaching posts go far to explain the increased attendance, but the chief explanation is the abnormal demand for high school teachers. High school attendance in Ontario is increasing by leaps and bounds.

The new buildings and equipment of the College of Education, including the gymnasium, and the art, household science, and manual training rooms, so urgently needed for the last four years, will be ready for occupancy during the early autumn of the session of 1923-24.

During the session just closed two important changes were made in the staff. Mr. J. G. Althouse, M.A., headmaster of Oshawa High School, was appointed headmaster of the University Schools. As it has been found that the duties of the headmastership are heavy enough to demand the undivided attention of one man, the instructorship in Methods in Classics, which has hitherto been combined with the headmastership, was separated from it, and Mr. D. E. Hamilton, M.A., D.Pæd., instructor in the University Schools, was promoted to an assistant-professorship in Methods in Classics. The records of Mr. Althouse and Dr. Hamilton give no reason to doubt that these are happy appointments.

The School, the educational journal published by the College of Education under the editorial management of Professor W. E. Macpherson, the librarian of the College of Education, continues to prosper. It is now the most influential educational journal in Canada. For its success Professor Macpherson and his chief co-workers, Professors J. T. Crawford, G. A. Cornish, and G. M. Jones, should receive the thanks of the College of Education and the University.

With the appropriation of available ground space by the new buildings, the question of playfields for the University Schools now demands anxious consideration. Difficult and expensive as the provision of grounds may be, further delay has now become impossible. Some action must be taken immediately.

(6) REPORT OF THE DEAN OF THE FACULTY OF MUSIC.

(*Dr. A. S. Vogt*).

The number of students enrolled in connection with the courses leading to the degree of Bachelor of Music again shows an increase over any previous season, the total being 46 as compared with 44 in 1920-21. Of this number, 27 registered in the first year, 14 in the second, 3 in the third and two were occasional students. A most important feature of the registration for the year lies in the fact that 27 first-year students were registered as compared with 18 for the first year in 1920-21. It is also worthy of note that only two of the registrants this year were occasional students as compared with 15 last season.

The special series of 18 lectures delivered by members of the Faculty of Music during January, February and March were as follows:

Healey Willan, Esq., Mus.Doc., F.R.C.O.:

- 11 a.m.—Lecture Hall, Toronto Conservatory of Music.
- January 15—"The Laws of Part Writing."
- January 29—"Modulation."
- February 12—"Harmonization of Melodies."
- February 26—"Counterpoint in two and three Parts."
- March 12—"Counterpoint in combined species."
- March 26—"Double Counterpoint and Canon."

Albert Ham, Esq. Mus.Doc., F.R.C.O.:

4.30 p.m.—Room 37, University Main Building.

January 12 } "A short Review of the 'Passion' Music by Graun (*The Death of Jesus*)
 January 26 } and J. S. Bach (*St. Matthew and St. John*)."
 February 8 } "Historic Hymn-Tunes, both ancient and modern."
 February 15 }

F. A. Mouré, Esq., Mus.Doc.:

4.30 p.m.—Room 37, University Main Building.

January 22—"French Composers between Rameau and Berlioz."
 February 5—"The Neo-Russians—Glinka, Moussorgsky and Rimsky-Korsakoff."
 February 19—"The Later Russians—Skryabin, Stravinsky, etc."
 March 5—"Lutes and Viols."

H. A. Fricker, Esq., M.A., Mus.Bac., F.R.C.O.:

4.30 p.m.—Room 37, University Main Building.

January 19—"Tudor Music."
 February 2—"The Madrigal."
 February 23—"The Requiem"—Brahms.
 March 9—"The Early Symphony."

The year witnessed a remarkable growth in the local examinations in Music, which, since the acquirement of the Toronto Conservatory of Music by the University, have been conducted by the former institution. The number of candidates in connection with these examinations during the season totalled 10,457. These were distributed as follows: piano, 7,562; organ, 19; singing, 357; violin, 367; sight-singing, 96; theory of music (rudiments, harmony, counterpoint, etc.), 2,056. The continued development of interest in these examinations, due in great measure to their practical endorsement by a preponderating number of the foremost teachers of music throughout Canada, combined with the value which is being attached to the Conservatory's certificates of proficiency by students, parents and the profession generally, testify to the national prestige and influence of the Conservatory, which more and more is maintaining its pre-eminent position as an outstanding factor in the musical educational life of Canada.

The eight organ recitals given in Convocation Hall during the winter months by the University organist, Dr. F. A. Mouré, which again proved to be of a very high order, were attended by large audiences who were deeply impressed by the artistic quality of Dr. Mouré's performances, and by the remarkably wide range of compositions embraced in the season's programmes. The following composers were represented:—Bach, Handel, Schubert, Mendelssohn, Karg-Elert, Reger, César Franck, Widor, Boellman, Guilman, Arensky, Elgar, Tchaikowsky, Debussy, Sibelius and others. In the unavoidable absence of Dr. Mouré, through illness, the sixth recital of the series was given by Dr. H. A. Fricker, of the Faculty of Music, who played works by Samuel Wesley, Brahms, Rheinberger, Schubert, Liszt and others. These recitals formed a most important and attractive feature of the season's musical life of the University.

(7) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES.

(*Professor J. Playfair McMurrich, LL.D.*)

The first year of the School of Graduate Studies has been a most successful one and has shown a broadened interest of the teaching staff in graduate studies and a marked increase in the number of graduate students. The total number of students registered in the School amounted to exactly 300 as compared with

198 in the session 1921-1922. Of this number 280 were in residence at the University and 20 were studying *in absentia*. The increase in the registrations is partly accounted for by the inclusion of 58 candidates for degrees which were not under the jurisdiction of the Board of Graduate Studies, but are now under that of the Graduate School; nevertheless, deducting these there is still a notable increase in the registrations for the past year, 242 as compared with 198 in 1921-1922. According to their geographical distribution the students may be classified as follows:

Residents of the Province of Ontario.....	260
Residents of other Provinces.....	26
Residents of other countries.....	14

As compared with the preceding year the principal increase has been from students resident in the Province of Ontario, although the number from other Provinces has decidedly increased. The number of students from other countries remains the same.

Of the 300 students registered for the past year 232 had received their undergraduate training in the University of Toronto and 68 in other universities; last year 49 students were trained in other universities. Eighty-one students were members of the teaching staff of the University and 9 others were holders of fellowships, but not engaged in teaching.

The distribution of the students in the various departments, according to the subject chosen as the major subject, was as follows:—Anatomy, 1; Architecture, 1; Astronomy, 1; Biochemistry, 6; Biology, 6; Botany, 12; Chemical Engineering, 6; Chemistry, 27; Civil Engineering, 1; Classics, 8; Educational Theory, 5; English, 32; Food Chemistry, 3; Geology, 3; German, 2; History, 13; Hygiene, 2; Mathematics, 9; Metallurgical Engineering, 1; Mineralogy, 1; Mining Engineering, 4; Oriental Languages, 7; Pathology and Bacteriology, 2; Pathological Chemistry, 3; Philosophy, 29; Physics, 20; Physiology, 3; Political Science, 30; Psychology, 3; Romance Languages, 14; Zymology, 4. In addition there were 35 students registered in the Department of Education and 7 for the professional Engineering degrees.

The degrees sought are shown in the following table:

Candidates for the degree Ph.D.....	57
Candidates for the degree M.A.....	147
Candidates for the degree M.D.....	2
Candidates for the degree M.A.Sc.....	12
Candidates for the degree M.Arch.....	1
Candidates for the degree C.E.....	4
Candidates for the degree M.E.....	1
Candidates for the degree E.E.....	2
Candidates for the degree D.Pæd.....	38

During the session 10 students completed the requirements for the degree Ph.D.; 65 those for the degree M.A.; 1 those for the degree M.D.; 9 those for the degree M.A.Sc.; 3 those for the degree C.E.; 1 those for the degree M.E.; 1 those for the degree E.E.; and 2 those for the degree D.Pæd.

The titles of the theses submitted for the degree Ph.D. were as follows:

W. S. DYER: "Stratigraphy and Palæontology of the Credit River Section of the Upper Cincinnati Series of Ontario."

MISS N. H. C. FORD: "A Comparative study of the Abdominal Musculature of Orthopteroid Insects."

- G. F. KINGSTON: "The Nature of Belief."
 H. G. W. LUCAS: "A Chemical Study of Bios."
 C. C. MACKLIN: "The Skull of a Human Fetus of 43 Millimeters Greatest Length."
 H. G. ODDY: "The Friedel and Crafts' Reaction:—Some Preparations from Maleic and Fumaric Acids."
 H. B. SIFTON: "Some Characters of Xylem Tissue in Cycads. The Bar of Sanio and Primordial Pit in the Gymnosperms."
 W. E. STAPLES: "The Elihu Speeches in the Book of Job."
 MISS J. G. WRIGHT: "The Pit-closing Membrane in the Wood of the Lower Gymnosperms."
 J. F. T. YOUNG: "Studies in Spectroscopy and Magnetism."

The fellowships for graduate students that were provided last year by the generosity of the Canadian Pacific Railway, the Imperial Oil Company, Sir Edmund Osler, Sir Edward Kemp and Colonel R. W. Leonard, have been renewed for the session 1923-24. The following are the appointments to these fellowships for the coming year, together with the Universities from which the appointees graduated and the departments in which they will pursue their studies:

- Miss K. S. Murphy, B.A., British Columbia, English.
 Miss Ethel Harris, A.B., British Columbia, Romance Languages.
 E. A. Hill, B.A., Manitoba, History.
 Miss J. E. Murray, M.A., Saskatchewan, History.
 C. K. Ganong, B.A., Acadia, Political Science.
 Miss D. H. Walsh, B.A., British Columbia, Educational Theory.
 Miss V. E. Dunbar, M.A., British Columbia, Biochemistry.

The Alexander Mackenzie Fellowships in Political Science and History have been awarded to:

- S. J. Dempsey, B.A., Manitoba, Political Science.
 Miss Ethel MacFarlane, B.A., Saskatchewan, History.

The James H. Richardson Research Fellowship in Anatomy has been awarded to:

- W. C. M. Scott.

The George Brown Memorial Fellowship has been awarded to:

- L. T. Colvin.

The Ellen Mickle Fellowship has been awarded to:

- J. Markowitz.

(8) REPORT ON RESEARCH.

Anatomy, under Direction of Professor J. P. McMurrich.

I beg to report as follows upon the researches carried out in the Department of Anatomy during last session. Professor McMurrich has continued his study of the Anatomy of the Renaissance period, especially that of Leonardo da Vinci, and has made considerable progress, so that there is an expectation that the work may be completed before the close of 1924. Dr. J. C. Watt completed his studies of the Precipitation of Calcium Salts in Colloid Media and has published a paper containing his results in a recent number of the *Biological Bulletin*. He has latterly been engaged upon a study of two very early human embryos which present certain features of interest. Dr. H. G. Willson continued the studies previously carried on upon the Terminal Branchings in the Human Lung by investigating these branchings in the lung of the opossum and the armadillo. This work is almost completed, and greatly enlarged reproductions of the conditions found in these two animals have been made. It is hoped that he will be able to extend these studies to other forms at the base of the mammalian series, and for that reason the results which he has obtained will be reserved from publication until the study may be made complete. Mr. W. C. M. Scott has been carrying on a comparative study of the distribution and histological structures of the Islands of Langerhans in various fishes. During the summer he continued this work at the Marine Biological Station at St. Andrews, N.B., and has gathered together a considerable amount of material upon this question and also on the embryological development of the islands in a number of fishes. It is to be hoped that this latter part of the work at least will be ready for publication before the close of the session. Dr. Mary I. Tom has begun a study of the development of the knee joint in the human embryo. Her other duties did not allow of very great progress, but the work will be continued during the present session.

Biochemistry, under Direction of Professor A. Hunter.

(1) Professor Hunter has continued his investigation of the rate of liberation of amino acids in tryptic digestion. The application of the butyl alcohol method to this problem has been improved so as to yield a quantitative recovery of amino groups, and it is hoped that the perfected method will yield interesting information.

(2) Mr. Morrell has made a very thorough study of the effect of hydrogen ion concentration upon the activity of arginase. The study has yielded very anomalous results, the explanation of which will require further inquiry.

(3) Mr. Hutchison has investigated the rate of liberation of ammonia in the ereptic digestion of protein.

(4) Mr. Borsook has completed an examination of the distribution of nitrogen in globin.

(5) Professor Wasteneys and Mr. Borsook have elaborated methods for the separate determination of proteoses, peptones and free amino acids; and are applying these methods to the problem of the enzymatic synthesis of protein.

(6) Mr. Berkeley has completed his work on the biochemical activity of various strains of botrytis.

(7) Mr. Lucas has investigated the proteins of yeast and has made in this connection certain new observations that may prove to be of importance.

(8) Dr. Eadie is engaged on an important study of the nature of the blood sugar in normal and diabetic animals.

(9) Mr. Biehn has measured the rate of the mutual transformation of creatine and creatinine at different hydrogen ion concentrations.

Three papers dealing with the research work of the Department have been issued during the year, and others are in preparation.

Biology, under Direction of Professor B. A. Bensley.

The following investigations were conducted and results prepared for publication as indicated below: B. A. Bensley, determination of post-glacial musk ox material, in press, growth stages of marsipobranchs. E. M. Walker, entomology, cutaneous myiasis of infants, published, life-histories of sarcophagid flies, sub-arctic dragon-flies; in collaboration with Miss N. H. C. Ford, studies on the primitive insect "Grylloblatta." Miss Ford, musculature of orthoperoid insects, completed, new parasitic wasp, published. A. F. Coventry, embryology, abnormalities, interdependence of defects, predisposing conditions of mechanical type. W. H. T. Baillie, blood flow in capillaries, reactions of protozoa, penetration of living tissue by reagents under influence of electric currents. E. H. Craigie, neurology, artificial shrinkage in grey and white matter, critique of Weigert method, changes in form of grey matter in different parts of the spinal cord, changes in vascularity of the brain from birth to maturity. J. W. MacArthur, genetics, analysis of non-mendelizing fixed hybrids experimental material for species and variety crosses. In collaboration with E. C. Eidt, Ontario Agricultural College, Guelph, inheritance and selection of shape in bulbs and roots, analysis of breeding results in poultry and field crops; experimental biology, effects of lithium salts on embryonic development, in press; in collaboration with J. D. Olmsted, experimental effects with organic acids.

Marine biology: supervision, A. G. Huntsman; oceanic circulation; in collaboration with A. H. Leim, range of tolerance of eggs of various fishes to temperature, salinity and acidity. A. H. Leim, fauna of Shubenacadie River and Minas Basin, life-history of shad; M. I. Sparks, spawning of mackerel on Atlantic coast of Nova Scotia.

Ontario fisheries research; supervision, W. A. Clemens; physical features of Lake Nipigon, food, rates of growth and economic phases of fresh water fishes. J. R. Dymond, Lake Nipigon fishes and spawning conditions; N. K. Bigelow, plankton organisms; H. H. MacKay, ecology, shallow water organisms. F. B. Adamstone, quantitative studies of bottom organisms. W. J. K. Harkness, lake sturgeon in Nipigon waters, preliminary study looking to experiments in artificial propagation. Completed for publication six technical papers on topics above-mentioned, including study of the vertical movement of organisms by A. E. Berry, Provincial Board of Health. A field party of six workers was maintained for a portion of the summer of 1922 at Lake Nipigon.

Botany, under Direction of Professor J. H. Faull.

The Department of Botany has just closed an active year in research in which staff and graduate students have participated. The latter represent seven different institutions. The subjects under investigation have been for

the main part fundamental, though many of them are of immediate interest in connection with practical human interests. Research activity has been greatly encouraged and supported by financial aids such as the special research fund, and the studentships of the Advisory Council of Scientific and Industrial Research. Among such aids mention should be made of a fellowship provided by the Texas Gulf Sulphur Company for investigations on sulphur in relation to agriculture, a fellowship awarded to Miss Catharine Graham, B.Sc.Agr. (Ont. Agr. Col.). During the year three research students received important appointments in agricultural experiment stations in Canada, and one in the Seed Branch.

The following is a summary of the researches completed during the year or in progress; the publications from the Department appear in another part of this report:

1. CRYPTOGAMIC BOTANY, MYCOLOGY AND PATHOLOGY, UNDER THE DIRECTION
OF PROFESSOR J. H. FAULL.

Faull, J. H.

- (1) Studies on the diseases of pulpwoods. These have been especially concerned with "red branch" of conifers, the rusts of the balsam, and butt and heat rots with regard to causes and a basis applicable to a rotation system of harvesting based on sustained yield.
- (2) A continuation of studies on the biology of the true tinder fungus.

Bell, H. P.

- (3) Morphological and cultural studies on balsam rusts. Three new species have been discovered, and various interesting features bearing on the life histories, hosts and classification of these rusts. The work has been completed and a detailed paper is in press.

Berkeley, G. H.

- (4) Cultural studies of a group of parasitic molds of the genus *Botrytis*. Biochemical studies under the direction of Professor A. Hunter have been carried on simultaneously. Two papers are now ready for publication.

Fritz, Miss C. W.

- (5) A fundamental study of seventeen timber-destroying fungi has been carried on, employing bacteriological cultural technique. An exhaustive memoir has been completed. This work was supported by an Advisory Council Fellowship.
- (6) Studies are in progress on *Coniophora*, an interesting fungus genus.

Walker, A. R.

- (7) Further work on *Keithia thujinis*—a fungus parasite of arbor vitae.
- (8) Morphological and cultural studies of the hemp *Botrytis*.

McLeod, C. H.

- (9) A study of the anatomy of balsam wood from trees injured by the spruce bud worm. Some very definite and constant structural changes have been found.

Darker, G. D.

- (10) Morphological, cultural and taxonomic studies on the genus *Lophodermium*, a group of fungi largely parasitic on conifers.

Mounce, Miss Irene

- (11) A study of the timber-destroying fungus *Fomes pinicola*.
 (12) Studies on *Pholiota* in relation to its sexuality and parasitism.

2. PATHOLOGY AND PLANT PHYSIOLOGY UNDER THE DIRECTION OF DR. G. H. DUFF AND PROFESSOR J. H. FAULL.

Graham, Miss Catharine

- (13) The utilization of inoculated and uninoculated sulphur in the control of *Actinomyces scabies*. This work, supported by a fellowship from the Texas Gulf Sulphur Company, is being prosecuted in three chief directions:
- (a) Field tests of the effectiveness of the treatment upon different soil types in widely separated localities in Canada.
 - (b) Greenhouse experiments to determine the nature and limits of the "after effect" of treatment upon succeeding crop plants.
 - (c) Laboratory investigation of the H-ion concentration tolerance of *Actinomyces scabies*.

Racicot, H. N.

- (14) The effect of injury to the crown of a plant upon the health and development of the root system.

3. PLANT PHYSIOLOGY UNDER THE DIRECTION OF MR. G. H. DUFF.

Duff, G. H.

- (15) Carbohydrate metabolism in *Phaseolus*.
 (16) The effect of the removal of leaf tissue upon assimilation, metabolism and transpiration in *Phaseolus*. (In collaboration with H. N. Racicot).

Racicot, H. N.

- (17) Growth correlations in *Phaseolus*. An investigation of a fundamental nature arising out of the first problem. In this, a quantitative study is being made of the correlation between the mass of leaf tissue and of stem, root and fruit tissue produced in *Phaseolus*.

4. PHANEROGAMIC BOTANY, GENETICS AND PLANT BREEDING UNDER THE DIRECTION OF PROFESSOR R. B. THOMSON.

Poisonous Plants.

Sifton, H. B.

- (18) Poison canals in *Cicuta maculata* (Cowbane). Anatomical studies have shown that in addition to the canals of the primary cortex there are others produced in the secondary tissues of the root. The development of these canals is being investigated. Chemical and anatomical work indicates that considerable portions of the plant are devoid of

poison. Feeding tests are in progress to check these results and to ascertain the effect of temperature on the poison.

Seeds.

- (19) A comprehensive seed collection is being made for comparative studies.
- (20) Effects of heat, cold and oxygen supply on seed germination. Seed of *Spinacia oleracea* (spinach) has been found to give stronger plants and a greater per cent. germination at temperatures of 1°-5°C. than at ordinary temperatures. Removal of the pericarp from the seed has the same effect as the low temperature in aiding germination. Equally good results are obtained by germinating the seeds under increased oxygen pressure and by the use of temperatures regularly alternating between 1°C. and 16°-20°C. Investigations are being continued to discover the fundamental basis of these phenomena.
- (21) In collaboration with Dr. T. C. McMullen, Albert College, Belleville. Chemical and anatomical investigations on certain poisonous and oil-producing weed seeds are in progress, in particular at present on the French weed (*Thlaspi arvense*).

Wood Structure.

Thomson, R. B.

- (22) A comparative study of the wood structure of conifers is being made dealing chiefly with the variations of the structure in different regions of the same plant and in different plants grown under various ecological conditions.

Wright, Miss J. Gertrude

- (23) An article is nearly ready for publication on "The Pit-closing Membrane in the Wood of the Lower Gymnosperms" and the work is being continued in the conifers.

Resin Tissue.

Hart, N. C.

- (24) The origin of resin tissue in the secondary wood of the pines.

Thomson, R. B., and Sifton, H. B.

- (25) The occurrence of resin canals in seedlings and various regions of adult conifers is under investigation, especially those of the tamarack, spruce and pine. The effects of wounding and of chemical stimulation on the production of resin are also being studied.

Garden and Greenhouse Work.

- (26) The main lines of work being carried on are the testing of plants for laboratory and class purposes and for hardiness and adaptability to local conditions, as well as work on methods of propagation. An article on the Iris, by Mr. A. Simpson, F.R.H.S., was published in *The Canadian Florist*, March 29th, 1923.

Genetics and Plant Breeding.

This work has been greatly handicapped through lack of space and assistance. The same may be said for fossil botany.

Chemistry, under Direction of Professor W. Lash Miller.

During the past winter, in addition to the members of the staff, twenty-two students have been engaged in research in this department. Of these, eleven were graduates of the University of Toronto, five were graduates of other universities, and six were undergraduate students of the fourth year. Two held studentships and one a bursary from the Honorary Advisory Council.

The degree of Doctor of Philosophy was awarded to Mr. G. H. W. Lucas (*Chemical Study of Bios*, Prof. W. Lash Miller), and to Mr. H. G. Oddy (*Some Preparations from Maleic and Fumaric Acids*, Prof. F. B. Allan). Ten students obtained the degree of Master of Arts, viz.: Mrs. A. Attack, Miss E. V. Eastcott, Messrs. F. I. Eldon, E. Forsyth, A. R. Gordon, A. H. Heatley, G. I. Hoover, S. Lehrman, E. W. McHenry and L. J. Rogers.

Of the researches enumerated below, those on yeast were under the general direction of Professor W. Lash Miller; organic synthesis, Professor F. B. Allan; light scattering, Professor F. B. Kenrick and Professor W. H. Martin; chemical equilibrium, Professor J. B. Ferguson; electrochemistry, Professor J. T. Burt-Gerrans; analytical chemistry, Professor L. J. Rogers.

W. J. Clapson:—The characteristics of electric arcs.

S. Comey:—Oxidation of naphthols at room temperature.

S. W. Davidson, B.A.:—The preparation of Bios I and Bios II.

E. V. Eastcott, B.A.:—The natural distribution of the constituents of Bios.

Professor J. B. Ferguson:—Specific heats of aqueous solutions of phenol.

E. Forsyth, B.A.:—The reaction between arsenious acid and potassium permanganate in acid solutions.

Professor W. S. Funnell:—Partial vapour-pressure of binary solutions.

C. S. Gilbert, M.A.:—Solubilities of crystal faces.

A. R. Gordon, B.A.:—Cathodic polarization.

A. H. Heatley, B.A.Sc.:—“Throw” in electroplating baths.

G. A. Hoover, B.A.:—Adaptation of the interferometer to the determination of vapour composition.

C. Jephcott:—The reaction of phthalic acid, pyridine and aluminium chloride.

J. W. Johnston:—Determination of alkali in wood digestion liquors.

W. B. Leaf, M.A.:—Factors affecting the rate of fermentation.

S. Lehrman, B.A.:—Effect of temperature on light scattering by liquids.

F. Lorrigan, B.A.:—The reaction of phthalic anhydride on acenaphthene in presence of aluminium chloride.

G. H. W. Lucas, M.A.:—The fractionation of Bios.

Professor J. W. Martin:—Determination of light scattering by liquids up to the critical temperature.

M. J. Mulligan:—Electrometric titration of ferrous solutions with bichromate.

H. G. Oddy, M.A.:—Derivatives of maleic and fumaric acids.

J. W. Rebbeck, M.A.:—Behaviour of glass on electrolysis.

Professor L. J. Rogers:—Method for the determination of halogens in certain organic compounds.

C. W. Sweitzer:—Preparation of optically empty solutions of non-volatile salts.

E. M. Taylor, M.A.:—The toxicity of acids towards yeast.

- A. E. R. Westman, M.A.:—Relation between current, voltage and length of carbon arcs.
- G. A. Williams, M.A.:—The solubility of helium and of hydrogen in silica glass.

Geology, under the Direction of Professor W. A. Parks.

A. Researches by Professor A. P. Coleman (Professor Emeritus):

- (1) Investigation of the boulder conglomerates in the Maritime Provinces and Gaspé.
- (2) Investigation of the extent and thickness of the Cordilleran Ice Sheet.
- (3) During the winter Professor Coleman has been engaged in the preparation of a monographic account of ancient ice ages.

B. Researches under the immediate direction of Professor W. A. Parks.

- (4) During the summer an expedition under the direction of Mr. L. Sternberg was conducted in the bad lands of Alberta in search of vertebrate fossils. Excellent results were obtained.
- (5) Two heads of a new species of trachodont dinosaur were mounted and a description thereof prepared for publication. The skeleton of an armoured dinosaur was prepared and the description is now being written.
- (6) Miss Madeleine Fritz has completed the description of the fossils of the Toronto district. Her contribution will appear as *Part IV, Stratigraphy and Palæontology of the Toronto District*.
- (7) Mr. W. S. Dyer has completed his work on the geology and palæontology of the Ordovician section on the Credit River, Ont.

C. Researches under the direction of Professor E. S. Moore.

- (8) Investigation of the silica refractories of Pennsylvania.
- (9) Mr. W. P. Mackle has worked on the correlation of Cretaceous coal seams by organic evidence.

D. Researches by Professor MacLean.

- (10) Investigation on the difference between the natural and the artificial weathering of stone and the relation of weathering to geological time.

History, under the Direction of Professor G. M. Wrong.

The following students were engaged in research work in the Department of History during the session 1922-23:

1. Wilfred Brenton Kerr, B.A., Oxon, "The Reign of Terror." (Degree conferred).
2. Arthur Reginald Marsden Lower, B.A., 1914, "Canadian Timber and Lumber Trade." (Degree conferred).
3. Miss Jean Victoria McClenaghan, B.A., 1922, "The Administration in Canada of Lord Dalhousie."
4. Jesse Henry Arnup, B.A., 1909, "History of the Missionary Society of the Methodist Church in Canada."
5. Harold James Bell, B.A., 1922, "The Period of the Tudor Navy."
6. Alexander Brady, B.A., 1919, Oxon., 1921, "The British Commonwealth and the Problem of Sovereignty."
7. Miss Emma M. Doran, B.A., 1922, "The Reign of Terror."

8. Arthur Garrett Dorland, B.A., 1910, M.A., 1911, "History of the Society of Friends in Canada."
9. Ernest Otto Gallagher, B.A., 1921, "English Political Philosophy: The Failure of Utilitarianism to Meet the Social Needs of England."
10. William Jackson Little, B.A., 1913, "John Wesley's Views on Economics and Politics."
11. Miss Ethel MacFarlane, B.A., 1922, "The Creation of Self-Government and the Settlement of Boundaries in the Prairie Provinces."

Mineralogy, under Direction of Professor T. L. Walker.

During the summer of 1922 Professors T. L. Walker and A. L. Parsons spent some weeks in Nova Scotia investigating the history of the North Mountain basalt and the zeolites associated with it. The material gathered has been studied in the laboratories, the result being published in *University Studies, Geological Series*. Towards the end of the summer vacation Professor Parsons spent some time in an examination of the feldspar quarries of Ontario and Quebec in order to make observations on the occurrence of rare minerals in the pegmatites, which at present are valuable principally for the feldspar which they contain. In the material gathered we have found several minerals not previously observed in Canada, two of which are of great interest because they contain uranium and radium in such quantities as to suggest possible economic importance. An account of some of these rare minerals is given in the publication above mentioned. Professor Ellis Thomson has continued his examination of the tellurides of Ontario. H. C. Rickaby made a study of the minerals associated with rock salt at Malagash, N.S. The chemical study of Canadian minerals by E. W. Todd, research assistant, has led to valuable contributions on the methods of analysis of minerals containing some of the rare elements.

Physics, under Direction of Professor McLennan.

A. *Under direction of Professor McLennan:*

- (1) The Liquefaction of Helium.

By Professor McLennan and Mr. G. M. Shrum.

This research had as its immediate object the liquefaction of helium. This object was attained on January 10th, 1923, and two weeks later the Cryogenic Division of the Physical Laboratory was formally opened. On this occasion demonstrations were given of the liquefaction of air, hydrogen and helium.

- (2) On the Fluorescence and Channelled Absorption Spectra of Cæsium and Other Alkali Elements.

By Professor McLennan and Mr. D. S. Ainslie, M.A.

In this research cæsium was shown to exhibit a fluorescence and channelled absorption spectrum that had not been observed hitherto.

- (3) An Investigation of the Crystal Structure of Hensler Alloys by the Use of X-rays.

By J. F. T. Young, M.A.

This research was completed on March, 1923.

- (4) On the Explosion Pressures generated by Mixtures of Various Gases and Vapours (in progress).

By Mr. H. J. C. Ireton, M.A.

- (5) On Methods of Purifying and Testing Helium (completed).
By Mr. R. J. Lang, M.A.
- (6) On a Study of the Extreme Ultra-Violet Spectra of Various Elements by the Use of a Vacuum Grating.
By Mr. R. J. Lang, M.A.

The spectra of silicon, vanadium, chromium and manganese have been obtained and attempts are now being made to obtain the spectra of phosphorus, sulphur, chlorine and other elements.

- (7) On the Tracks of Alpha Rays in Helium and Other Gases.
By W. C. McQuarrie, M.A.

Some thousands of alpha ray tracks in helium have been photographed by the use of a modification of the C. T. R. Wilson method. A smaller number of pictures have been taken using other gases. In general these photographs support the view that in the collision between an alpha particle and an atomic nucleus there is a conservation of momentum and energy. Certain apparent exceptions to this have been recorded.

- (8) On the Compressibilities of Solids by an Interferometer Method.
By H. C. Bates, M.A.

In this research the compressibilities of such crystals as fluorite, rock salt, quartz and sylvin are being investigated. Satisfactory results have already been obtained with fluorite and quartz.

- (9) On the Fluorescence of Æsculin Solutions.
By Miss M. B. Kearney, B.A.

The loss of fluorescing power of æsculin under the action of light or of ozone has been investigated when the substance was dissolved in water, ethyl alcohol, methyl alcohol, glycerine, pentane, acetone and in a number of other liquids. With solutions in glycerine it was found the fluorescent power could be destroyed by ultra-violet light but not by ozone. In all other cases both agents destroyed the fluorescent power of the æsculin.

- (1) Some Treboluminescent Spectra.
By Carlyle S. Beals, B.A.

An investigation was made of the spectra of several substances which showed the property of luminescence when rubbed or broken. Spectra were obtained for four different substances, manganese cerium, quartz, and the mineral, wurzite. The first two, manganese and cerium, showed a few faint lines superimposed on a continuous spectrum while the spectra due to quartz and wurzite were continuous with no lines appearing.

- (11) Changes in the refractivity of excited atoms and molecules.
By H. Grayson Smith, M.A.

The change in refractivity produced by excitation by ultra-violet light has been studied in the case of hydrogen, nitrogen and mercury vapour. This change is believed to be due to the formation of atomic hydrogen and nitrogen and diatomic molecules of mercury. Some information has been obtained on the rate of recombination of dissociated hydrogen and nitrogen.

- (12) The Structure of the Lines of the Balmer Series of the Hydrogen Spectrum.

By Mr. G. M. Shrum, M.A.

The structure of the Balmer lines was studied with a Summer Plate using liquid air and liquid hydrogen to cool the discharge and thus reduce the Doppler effect. The separations have been determined for the first six members of the series.

- (13) On the Extreme Ultra-violet Spectrum of Carbon Produced by a Vacuum Arc.

By Mr. W. W. Shaver, M.A.

The vacuum arc spectrum of carbon has been photographed with a fluorite spectograph to about $\lambda=1320\text{\AA}$. The strong line of wave length, $\lambda=1656\text{\AA}$, hitherto recorded as a single line was found to be a triplet and the wave lengths 1335\AA and 1329\AA have been shown to be doublets.

- (14) On the Characteristic X-rays from Light Elements.

By Miss M. Levi, M.A.

The purpose of this work was to throw light on the extra nuclear structure of atoms of the elements by extending the Moseley graphs for the K L and M series into the region of low atomic numbers. The difficulties in the way of producing and detecting the radiation were overcome by seeming excellent vacuum conditions. Results have been obtained so far for the critical absorption wave lengths of the K and L series of lithium beryllium boron and carbon of the L series of fluorine and of the M and N series of nickel and cobalt.

B. Under direction of Professor Burton.

- (1) Experiments on the Mobilities of Ions and Colloidal Particles in Media of Different Viscosities.

By Professor Burton and Mr. J. E. Currie, B.A.

- (2) The Influence of Agar-Agar in Changing the Sign of the Charge of Copper Colloidal Particles.

By Professor Burton and Mr. J. E. Currie, B.A.

- (3) On the Use of Copper Colloidal Solutions in Place of Gold Solutions in Testing Cerebro-spinal Fluids.

By Professor Burton and Mr. J. E. Currie, B.A.

- (4) Method of Measuring the Mobility of Single Colloidal Particles and Determining Their Mass by Motion Up and Down in a Vertical Electric Field.

By Professor Burton and Mr. J. E. Currie, B.A.

- (5) Preparation of a Paper to Be Given at the Svedberg Symposium, University of Wisconsin, Madison, Wis., June 12-15. To be published in a monograph of the Symposium.

Title: "The Forces Determining the Limiting Sizes of Colloidal Particles."

By Professor Burton.

- (6) Preparation of a Chapter for Treatise on Colloidal Solutions now in Preparation for the International Chemical Series under the Editorship of Jerome Alexander, New York.

Title: "The Determination of the Mass and Charge of Colloidal Particles."

By Professor Burton.

C. *Under the direction of Professor Satterly.*

- (1) The Viscosity of a Gas and the Use of a Gas Meter for Measuring Gas Streams.

By Professor Satterly.

In this research the viscosity of a gas was measured by sending a metered quantity of gas through a capillary tube. The actual pressures at different points were measured as well as the drops of pressure over the capillary tube and over the gas meter itself. The meter may be inserted on the single side or on the low side of the capillary tube and the accuracy of its readings in the two positions is considered. The accuracy of a capillary flow working under different total pressures is also considered. When the gas stream is gradually increased the stream line flow breaks down. The point at which it breaks down with air has been studied at different temperatures.

- (2) Stirling's Theorem.

By Professor Satterly.

A simple approximate proof of a well known approximate form of Stirling's Theorem for very large values of n has been worked out.

D. *Under the direction of Professor McTaggart.*

- (1) A Study of the Variation of the Electric Charge on Small Bubbles of Gas in Very Dilute Aqueous Solutions.

By Professor McTaggart.

- (2) A Study of the Rate of Absorption of Very Small Bubbles of Gas by Solutions.

By Professor McTaggart.

E. *Under the direction of Mr. J. F. T. Young.*

- (1) The Investigation of a Method of Increasing the Dispersion of Constant Deviation Spectrographs.

By Mr. J. F. T. Young, M.A.

It has been shown that by the addition of trains of direct vision prisms it is feasible to increase the dispersion quite easily from three to four times without experiencing an inconvenient loss of light intensity.

- (2) The Ultra-violet Spectrum of Chromium.

By A. B. McLay, B.A.

The spark spectrum of chromium in the ultra-violet has been studied with a Helger Quartz Spectrograph. The wave lengths and relative intensities of about 110 lines between $\lambda=1825$ A and $\lambda=2200$ A have now been determined.

F. The Ionization Potentials of Metallic Vapours.

By Mr. A. G. Shenstone, Ph.D.

Physiology, under Direction of Professor J. J. R. Macleod.

Most of the research conducted in the Department of Physiology is related to the physiological action of Insulin. By the discovery of this hormone the physiologist is provided with a new instrument by the use of which it is possible to investigate problems in metabolism which previously could only be done by indirect methods. Besides those on the regular teaching staff of the Department, namely, Dr. J. M. D. Olmsted and Dr. H. D. Logan, several research fellows have been engaged in this work (Dr. F. N. Allan, Dr. G. S. Eadie, N. A. McCormick, E. C. Noble and Miss M. K. O'Brien) and many results of great interest were obtained during the year. It was found, for example, that the mechanism by which Insulin causes the sugar of the blood to disappear in normal animals is different from that obtaining in diabetic animals and it is now fairly evident, largely through work in which two students for the B. Sc. (Med.) degree were engaged (B. R. Dickson and F. R. Pember) that the sugar, under the action of Insulin, must become converted into some form of carbohydrate or related substance which by our present chemical methods we fail to identify. In other words, the work on Insulin indicates the possible existence of some new form of carbohydrate in the animal body. A large amount of work, particularly by E. C. Noble and N. A. McCormick, has also been done in association with the Biological Board of Canada on the source of Insulin. These two investigators have found that large amounts of Insulin are obtainable from the principal islets of such common fish as the cod and pollock, making it, therefore, altogether likely that in maritime countries, at least, fish should be an important source for Insulin. The scientific value of these observations is also of interest since it shows that the islet tissue is definitely the source of this hormone. Dr. Allan has been engaged particularly on the sugar balance of completely depancreatised (diabetic) dogs kept alive by injections of Insulin. He has made the interesting discovery that a unit of Insulin has the power to cause much more sugar to be burned in the animal body when only a small dose is given than when a large dose is given. In other words, "the glucose equivalent" of Insulin varies indirectly with the dose, which makes it futile to attempt in the clinic to assay Insulin in terms of the number of grams of sugar which it can cause to be metabolised unless this relationship is taken into consideration. Certain of the animals used by Dr. Allan lived for several months, but ultimately succumbed to symptoms of a peculiar nature, the cause of which is being thoroughly investigated at present. Dr. Olmsted and Dr. Logan contributed valuable information regarding the cause of hypoglycemic symptoms and Dr. Eadie, working under the immediate direction of Professor Hunter, was engaged in the difficult work of trying to see whether Insulin causes any changes in the stereoisomeric structure of glucose. The outcome of the year's work was extremely gratifying and has carried us a decided step forward in the investigation of the action of Insulin.

Research work in other fields was not neglected in the laboratory. Dr. M. J. Wilson was engaged in an investigation of the movements of the stomach and first portion of the intestine. This work is being done so as to acquire experience and sound knowledge of the physiology of the digestive organs.

Through sad family bereavement, Dr. N. B. Taylor was prevented from doing his usual share of work on his problem on the spread of temperature changes through the tissues.

Department of Political Economy, under Direction of Professor R. M. MacIver.

I append, as requested, a statement showing the subjects of graduate research completed within the Department during the session 1922-23, together with those at present in progress:

Researches completed, 1922-23:

- The Marketing of Canadian Live Stock.—Abbott, H. J. E.
- The History of the Welland Canal to 1840.—Macdougall, J. L.
- The Urban Transportation Problem.—Topping, V.
- Provincial Revenue in Canada.—McKague, W. A.

Researches in progress, 1922-23:

- History of Labour since 1900.—Halliday, C. P.
- The Concept of Sovereignty as Revealed in the Evolution of the British Empire.—Brady, Alexander.
- The Range and Character of Legislation as a Criterion of Political Evolution.—Home, Miss R.
- Principles of Railway Rate-making in Canada.—Dempsey, S. J.
- Occupations and Economic Status of Immigrants in Toronto and District.—Hamilton, Miss B.
- The Clergy Reserves.—Macdonald, Miss A.
- The Canadian Mercantile Marine.—Taylor, Miss N. C.
- The Winnipeg Strike.—Wilson, H. A.

Psychology, under Direction of Professor G. S. Brett.

The members of the staff in Psychology have been engaged in research on a number of problems which they have individually selected and studied. The nature of these problems and of the work done is shown in the following reports drawn up by each member of the staff.

A. *Dr. J. W. Bridges.*—Prognosis of Student Achievement: an investigation on the correlation between the results of various psychological tests and the achievement of college students as indicated by marks earned in their courses. Since achievement depends upon a combination of many mental factors, part of the problem consists in devising methods of evaluating the traits in question. The following kinds of tests are being used:

- (a) Intelligence tests;
- (b) Tests of emotional idiosyncrasy.
- (c) Tests of emotional stability.
- (d) Association tests to determine community or eccentricity in the sequence of ideas.

B. *Professor E. A. Bott.*—Research has been conducted on the following topics:

1. Characteristics of reciprocal wrist action.
(A first paper (26 pp.) upon the results of this investigation was forwarded to the Brit. Journ. of Psychology, on April 1, 1923. The work is being continued upon supplementary points.)
2. Thresholds of auditory phase differentiation for various pitches and intensities.
3. The predictive value of examination results from the Junior Matriculation to graduation.

(The correlations in marks for an entire medical class of 130 students has been worked out by yearly standing and by separate subjects for the period 1917-22. The results show clearly what value may be attached to the relative standing of a student in his class at each point during his undergraduate course, assuming the standing in the final year to be a legitimate criterion of academic ability. The information from this inquiry is essential when comparing students' scores upon psychological tests with academic marks as a basis of estimating ability.)

- C. *Miss K. M. Banham*.—The Measurement of Emotional Reactions. This work includes researches on:
1. (a) The reliability of the psycho-galvanic reflex as a measure of emotion;
 - (b) The effect of various kinds of emotion on the psycho-galvanic reflex.
 2. An attempt is also being made to formulate a test for emotional disposition for the purpose of augmenting the information derived from general intelligence tests as a factor in the prognosis of human achievement.

Zymology, under Direction of Dr. H. B. Speakman.

- H. B. Speakman: Relation of the molecular configuration of the sugars to the mechanism of their fermentation by *B. Granulobacter pectinovorum*.
- H. B. Speakman and J. F. Phillips: Continuation of the study of a bacterial association, *B. Granulobacter pectinovorum* with *B. volutans*.
- H. B. Speakman and D. H. Howell: Continuation of the investigation of the effects of X-rays on the morphology and physiology of some of the common molds.
- H. B. Speakman and A. H. Gee: Study of the influence of sodium chloride on the fermentation of maltose by yeast.
- A. M. Wynne: Continuation of the study of the influence of the initial H-ion concentration of the fermentation of carbohydrates by *B. Granulobacter pectinovorum*, with special attention to the mechanism of the formation of the neutral products.

The following studies were carried out in collaboration with H. B. Speakman and A. M. Wynne:

- L. J. Bonham and Robert Low: A preliminary investigation of the amylase of *B. Granulobacter pectinovorum*.
- B. I. Williams: Utilization of protein by *Proteus vulgaris* and by *B. subtilis*, as influenced by the presence of carbohydrate.
- H. Reynolds: Preliminary study of the utilization by micro-organisms of the products of the acid hydrolysis of wood waste.
- J. C. Harston: The hydrolysis of gelatin by *B. subtilis*.
- W. C. Henry: Nitrogen metabolism of *B. Granulobacter pectinovorum*, with special attention to urea and asparagine as nitrogen sources.

Report of the Committee of Experimental Research in Medicine—Dr. D. E. Robertson, Secretary.

During the year the following researches were being followed in the Laboratory of the Committee of Experimental Research, or were receiving help from the Committee and its funds:

- "A Study of Transplantation of Fascia."
By Dr. W. E. Gallie and Dr. A. B. LeMesurier.
- "A Study of Intestinal Obstruction."
By Dr. W. A. Costain.
- "A Research on the Distribution and Elimination of Organic Arsenic Compounds after Intravenous Administration."
By Dr. F. M. R. Bulmer.
- "A Study of Specific Gravity of Tissues under Conditions of Acute Ileus and Intestinal Obstruction."
By Drs. C. B. Parker and Shouldice.
- "A Study of Rickets in Puppies."
By Dr. F. F. Tisdale.
- "Research in Psychiatry."
By Dr. C. K. Clarke.
- "A Study of Infection in Gall Bladders."
By Dr. Bates and Dr. R. V. B. Shier.
- "Experiments in the Anaesthetic Properties of Ethylene."
By Dr. Easson Brown.
- "A Study of Intra-Thoracic Pressure."
By Dr. A. W. Caulfeild.

School of Engineering Research, M. C. Boswell, Ph. D., Secretary.

The School of Engineering Research of this Faculty showed a steady development during the past academic year. The increasing interest in research among the students was demonstrated by the larger number of graduates who returned for a fifth year of research. Many of these held research assistantships in the School of Engineering Research. Also Bulletin No. 3, consisting of fourteen papers from four departments of the Faculty, and containing the results of original research work done in the School, was published during the year, and is now being given a wide circulation.

The following subjects of investigation, dealt with in this Bulletin, indicate the variety and importance of the research problems undertaken:

- Section No. 1.—The Constitution of Rubber.
Maitland C. Boswell.
- Section 2.—The Mechanism of the Catalysis of Hydrogenation by Nickel.
Maitland C. Boswell.
- Section No. 3.—The Preparation of Anhydrous Formic Acid.
Maitland C. Boswell and H. E. Corman.
- Section No. 4.—The Relative Lowering of Vapour Pressure of Aqueous Solutions.
Maitland C. Boswell and R. C. Cantelo.
- Section No. 5.—The Determination of Carbon in Graphite.
J. T. King.
- Section No. 6.—Ball Paths in Tube Mills.
H. E. T. Haultain and F. C. Dyer.
- Section No. 7.—An Investigation of the Kiln-Drying of Lumber.
Peter Gillespie and A. R. Duff.
- An Investigation of the Opening Up or Loosening of Glue Joints.
A. R. Duff.

The Drying of Varnish on Furniture.

A. R. Duff.

Section No. 8.—A Machine for Making Magnetic Assays.

F. C. Dyer.

Section No. 9.—Torsional Strength of Rectangular Sections of Concrete, Plain and Reinforced.

C. R. Young, W. L. Sagar and C. A. Hughes.

Section No. 10.—An Attempt to Cheapen the Production of Zirconium Dioxide.

J. W. Bain and Geo. E. Gollop.

Section No. 11.—A Study of Heat Efficiency in the Manufacture of Potassium Nitrate.

F. P. Downey and J. W. Bain.

Section No. 12.—Wing Tip Research: Part 2, Warped Tips; Part 3, Pin Tips; Part 4, Blade Tips.

J. H. Parkin, H. C. Crane and J. S. E. MacAllister.

Researches are now in progress and also papers in preparation for Bulletin No. 4, which, it is hoped, will be published during the coming academic year.

Dental Research—A. E. Webster, D.D.S., M.D., Secretary.

The work done in this department during the past year has included:

1. A review of the literature published between 1918 and 1922 on diet in relation to teeth. A pamphlet, comprised of extracts from the more important articles on this subject, has been published.

2. Further work has been done on the efficiency of dental cements, especially in regard to their germicidal properties and permeability. As well as carrying along the cements which had been used before and were for the most part copper cements, similar work has been done on alloys, silicate cement and gutta percha. A complete report on this work is now ready for publication.

3. Research on a method of classification of streptococcus viridans. This is in progress and is not near completion, but it is hoped that a preliminary report may be made on it in a short time.

4. A number of cultures and slides have been made and examined for dentists in practice.

(9) PUBLICATIONS.

FACULTY OF ARTS.

DEPARTMENT OF ANTHROPOLOGY.

Windle, Sir Bertram—*The Romans in Britain*. (Methuen and Co.)

DEPARTMENT OF ARCHÆOLOGY.

Harcum, Miss C. G.—*The Art of Dining Two Thousand Years Ago*. (The Canadian Magazine, Vol. LXI, No. 1, May, 1923).

DEPARTMENT OF ASTRONOMY.

Chant, C. A.—*How the Einstein Theory Was Put to Test by World's Astronomers*. (The New York Herald, Sunday, April 15th, 1923.)

DEPARTMENT OF BIOLOGY.

- Adamstone, F. B.—*Rates of Growth of the Blue and Yellow Pike Perch (Stizostedion vitreum) in Lake Erie.* (University Studies, Fisheries Research Series).
- The Distribution and Economic Importance of Mollusca in Lake Nipigon.* (University Studies, Fisheries Research Series).
- Myxomycetes of the Lake Nipigon District.* (Can. Field Nat., Vol. XXXVI, No. 7).
- Adamstone, F. B., and Harkness, W. J. K.—*The Bottom Organisms of Lake Nipigon.* (University Studies, Fisheries Research Series).
- Baillie, W. H. T.—*Case of Unilateral Absence of Kidney, Ureter and Distal Part of Uterine Tube in the Rabbit.* (Anatomical Record, Vol. 23, No. 7, July, 1922).
- Bensley, B. A.—*A Musk-ox Skull from the Toronto Post-glacial.* (University of Toronto Studies).
- Bigelow, N. K.—*The Plankton of Lake Nipigon and Environs.* (University Studies, Fisheries Research Series).
- Clemens, W. A.—*The Limnology of Lake Nipigon.* (University Studies, Fisheries Research Series).
- Clemens, W. A., Dymond, J. R., Bigelow, N. K., Adamstone, F. B., and Harkness, W. J. K.—*The Food of Lake Nipigon Fishes.* (University Studies, Fisheries Research Series).
- Dymond, J. R.—*A Provisional List of the Fishes of Lake Nipigon.* (University of Toronto Studies). (Ontario Fisheries Research Laboratories, No. 12).
- The European Hare in Ontario.* (The Canadian Field-Naturalist, Vol. XXXVI).
- Ford, Miss N.—*An Undescribed Planidium of Perilampus from Conocephalus (Hym).* (Canadian Entomologist, Vol. LIV, pp. 199-204, Fig. I).
- Huntsman, A. G.—*Results of the Hudson Bay Expedition, 1920. IV. The Ascidiacea.* (Contrib. Canad. Biol. New Series, Vol. 1, pp. 27-38).
- The Ascidian Family Cæsiridæ.* (Trans. Royal Soc. Can., Ser. III, Vol. XVI, Sect. V, pp. 211-234).
- The Quill Lakes of Saskatchewan and their Fishery Possibilities.* (Contrib. Canad. Biol. N.S., Vol. 1, pp. 125-141).
- Is Winter Mackerel Fishery Possible?* (Canadian Fisherman, Vol. IX, No. 5, pp. 88-89, 101).
- Ascidiacea.* (Report of Canad. Arctic Exped., 1913-18, Vol. VI, pp. 1-16B).
- MacArthur, Dr. J. W.—*Genetics in Fur-farming.* (Ont. Agr. College Review, March, 1923).
- Walker, E. M.—*Some Cases of Cutaneous Myiasis, with Notes on the Larvæ of Wohlfahrtia Vigil (Walker).* Journal of Parasitology, Sept., 1922, Vol. 9, pp. 1-5, Pl. 1).
- Notes on the Odonata of Godbout, Quebec.* (Canad. Entom., Jan., 1923, Vol. LL, pp. 5-12).

DEPARTMENT OF BOTANY.

- Faull, J. H.—*"Red Branch" of Balsam, Pine and Arbor Vitæ, and "Spike Branch" of Spruce.* (Report of the Department of Lands and Forests, Ontario, 1922).
- Butt and Heart Rots of Balsam.* (Report of the Department of Lands and Forests, Ontario, 1922).

- Balsam Rusts.* (Report of the Department of Lands and Forests, Ontario, 1922).
- The Life History of Mildew.* (Seventeenth Annual Report of the Horticultural Societies for Ontario, 1922).
- Duff, G. H.—*The Development of the Geoglossaceæ.* (Botanical Gazette, LXXIV: 3, Nov., 1922).
- The Occurrence and Frequency of Species of Ribes and Grossularia in Northern Ontario.* (Report of the Department of Lands and Forests, Ontario, 1922).
- Moss, E. H.—*Developmental Studies in the Genus Collybia.* (Trans. Roy. Can. Inst., Vol. XIV, Pt. 2, 1923).
- Moss, E. H.—*Observations on Two Poplar Cankers in Ontario.* (Phytopathology, Vol. 12, 1922).
- Simpson, A.—*The Poor Man's Orchid.* (The Canadian Florist, March, 1923).

DEPARTMENT OF CHEMISTRY.

- McMullen, T. C.—*The Friedel and Crafts Reaction with Phthalic Anhydride.*
- Martin, W. H.—*Light-scattering; Bibliography.* (Trans. Roy. Soc. Canada, 16, III, 276, 1922).
- Martin, W. H., and Lehrman, S.—*Light-scattering in Liquids—Effect of Temperature.* (Journal of Physical Chemistry, 27, June, 1923).

DEPARTMENT OF FRENCH.

- Cameron, J. H.—Editor of the original French text in the following: *The Works of Samuel de Champlain, in six volumes, reprinted, translated and annotated by six Canadian scholars under the general editorship of H. P. Biggar, Volume I (1599-1607). Translated and edited by H. H. Langton and W. F. Ganong, the French text collated by J. Home Cameron. (With separate portfolio of plates and maps) pp. xviii + 469.* (Toronto, The Champlain Society, 1922).

DEPARTMENT OF GERMAN.

- Young, A. H.—*The War Memorial Volume of Trinity College.* In collaboration with Professor W. A. Kirkwood, M.A., Ph.D.
The War Book of Upper Canada College, Toronto, 1923.

DEPARTMENT OF GEOLOGY.

- Coleman, A. P.—*Physiography and Glacial Geology of Gaspe Peninsula, Quebec.* (Geol. Surv., Canada, Mus. Bull. 34, 1922).
- Glacial and Post-glacial Lakes in Ontario.* (Univ. of Toronto Studies, Biological Series, No. 21, 1922).
- Geology and the Nebular Theory.* (Nature, No. 2746, Vol. 109, 1922).
- Parks, W. A.—*Palæontology and Stratigraphy of the Toronto District, Part III.* (Assisted by Miss M. Fritz). (Ont. Dept. Mines, Vol. XXXII, 1923).
- The Development of Stratigraphic Geology and Palæontology in Canada.* (Presidential Address, Sect. IV, Royal Soc. Can., Vol. XVI, 1923).
- Parasaurolophus Walkeri—A New Genus and Species of Trachodont Dinosaur.* (Univ. Tor. Studies, Geol. Series No. 13, 1922).
- The Royal Ontario Museum.* (Museum's Journal, 1922).

- Moore, E. S.—*Report on Meeting of Section "E," Am. Assoc. Ad. Sci., 1922.* (Science, Special Ed., Boston Meeting, A.A.A.S., 1922).
Discussion on the Coal Problem. (Can. Inst. Min. and Met., May Bulletin, 1923).

DEPARTMENT OF GREEK.

- Hutton, M.—*National Nomenclature.*
Greece During the Great War (revised and rewritten),
The Fragments that Remain.
The Poetry of Gilbert—the English Aristophanes.
The Age Products of Democracy.
Conventions.
The Teaching of History. (N. C. of E.)
The Folly of the Wise.
St. George's Day.
The Conspiracies of Literature.
- Robertson, J. C.—*Selections from Cicero: Passages from the Orations Adapted for Rapid Reading.* (University of Toronto Press).

DEPARTMENT OF HISTORY.

- Kennedy, W. P. M.—*The Constitution of Canada: an Introduction to Its Development and Law.* (Milford: Oxford University Press, 1923, pp. xxi, 520)
Social and Economic Conditions in the Dominion of Canada. (Ed. Concord: The Rumford Press, 1923, pp. v, 331).
Canada's National Status—A Last Word. (The North American Review, February, 1923).
The Imperial Embassy of 1553-54 and Wyatt's Rebellion, with an unpublished Bodleian Mss. (English Historical Review, April, 1923).
Select Bibliography of Social and Industrial Conditions in Canada. (The Annals of the American Academy of Political and Social Science, May, 1923).
The Problem of Sovereignty and the British Commonwealth. (The New Republic, June, 1923).
- Wrong, H. H.—*The Government of the West Indies.* (The Clarendon Press.)
- Wrong, G. M.—*The British Nation. A History, new and enlarged edition.* (Toronto, The Macmillan Co. of Canada, 1922, pp. XVI, 624).
- Milner, W. S.—*Review of Franks' Economic History of Rome to the End of the Republic.* (Classical Philology, Jan., 1923, pp. 85-90).
Observations on the Teaching of History and Civics in the Primary and Secondary Schools of Canada. (National Council of Education, April, 1923).
- Cochrane, C. N.—*Observations on the Teaching of History and Civics in the Primary and Secondary Schools of Canada.* (National Council of Education, April, 1923).

DEPARTMENT OF ITALIAN AND SPANISH.

- Goggio, E.—*Dante Interests in XIX-Century America.* (The Philological Quarterly, Vol. I, No. 3, July, 1922).

DEPARTMENT OF LATIN.

- DeWitt, N. W.—*Virgil's Biographia Litteraria.* (Oxford University Press).

DEPARTMENT OF MATHEMATICS.

- Synge, J. L.—*Principal Directions in a Riemannian Space*. (Proceedings of the National Academy of Sciences, Vol. 8, No. 7, p. 198, July, 1922).
Principal Directions in the Einstein Solar Field. (Ibid, p. 204).

DEPARTMENT OF MINERALOGY.

- Parsons, A. L.—*The Formation of Kaolin at Moderate Depths*. (American Mineralogist, Vol. VIII, 1923).
- Walker, T. L.—*Schoepite, a New Uranium Mineral from Kasolo, Belgian Congo*. (American Mineralogist, Vol. VIII, p. 67).
The Development of Mineralogical Methods. (American Mineralogist, Vol. VIII, p. 41).
Huronite from Gowganda, Ontario. (University of Toronto Studies, Geological Series).
Trevorite, a Distinct Mineral Species. (University of Toronto Studies, Geological Series).
- Walker, T. L., and Parsons, A. L.—*The North Mountain Basalt of Nova Scotia—Glaciation, Tubular Amygdaloid, Mordenite and Louisite*. (University of Toronto Studies, Geological Series).
Ellsworthite and Associated Minerals from Hybla, Ontario. (University of Toronto Studies, Geological Series).
Hatchettolite and Associated Minerals from Hybla, Ontario. (University of Toronto Studies, Geological Series).
Shattering of Minerals and Rocks about Inclusions. (University of Toronto Studies, Geological Series).
Notes on Canadian Minerals—Allanite, Axinite, Columbite and Sillimanite. (University of Toronto Studies, Geological Series).
- Thomson, E.—*Some New Occurrences of Tellurides in Ontario*. (University of Toronto Studies, Geological Series).
Mineralography as an Aid to Milling. (American Mineralogist, Vol. VIII).
Goudreau-Dog Lake Area. (Canadian Geological Survey, 1923).
- Todd, E. W.—*The Estimation of Niobium, Tantalum and Titanium in Minerals*. (University of Toronto Studies, Geological Series).
- Rickaby, H. C.—*The Mineral Association of the Salt Deposits at Malagash, N.S.* (University of Toronto Studies, Geological Series).

DEPARTMENT OF PHILOSOPHY.

- Bott, E. A.—*Criticism and Ways of Inquiry*. (The Journal of Philosophy, Vol. 20, No. 10, May, 1923.).
- Brett, G. S.—*Some Reflections on Aristotle's View of Tragedy*. (Contributed to Philosophical Essays presented to John Watson).
Higher Education. (Annals of the American Academy of Political and Social Sciences, CVII, May, 1923).
- Bridges, J. W.—*Theories of Temperament: an Attempt at Reconciliation*. (Psychological Review, Vol. 30, Jan., 1923).
Psychoanalysis, a Contribution to the New Psychology. (Public Health Journal, May, 1923).
- Hume, J. G.—*English as a World Language*. (O.E.A. Proceedings, 1922).
Evolution and Personality. (Philosophical Essays Presented to John Watson).
- Tracy, F.—*What is Human Nature?* (Religious Education for Feb., 1923).

DEPARTMENT OF PHYSICS.

- McLennan, J. C., and Ainslie, D. S.—*On the Structure of the Line 6708 λ of the Isotopes of Lithium.* (Proc. Roy. Soc. A., Vol. 101, 1922, and Proc. Roy. Soc. of Canada, 1922).
- McLennan, J. C., Ainslie, D. S., and Cale, Miss F. M.—*On the Absorption of λ 5460.97 A by Luminous Mercury Vapour.* (Proc. Roy. Soc. A., Vol. 102, 1922 and Proc. Roy. Soc. of Canada, 1922).
- McTaggart, H. A.—*On the Electrification of the Boundary between a Liquid and a Gas.* (Phil. Mag., Aug., 1922).
- McLennan, J. C., and Cale, Miss F. M.—*On the Fluorescence of Æsculin .* (Proc. Roy. Soc. A., Vol. 102, 1922).
- McLennan, J. C., and Clark, Miss M. L.—*On the Excitation of Characteristic X-rays from Light Elements.* (Proc. Roy. Soc. A., Vol. 102, 1922, and Proc. Roy. Soc. of Canada, 1922).
- McLennan, J. C.—*Atomic Nuclei.* (Radium, Vol. I, New Series, No. 4, Jan., 1923).
- McLennan, J. C., and Ainslie, D. S.—*On the Fluorescence and Channelled Absorption Spectra of Caesium and other Alkali Elements.* (Proc. Roy. Soc. A., Vol. 103, p. 304, 1923).
- McLennan, J. C., and Shrum, G. M.—*On the Liquefaction of Hydrogen and Helium (II Communication).* (Proc. Roy. Soc. of Canada, 1922).
- Young, J. F. T.—*On a Method of Increasing the Dispersion of a Constant Deviation Spectrograph.* (Journal of the Optical Society of America, May, 1923).
- Smith, H. G.—*On a Prism Method of Determining the Refractive Indices of Metallic Vapours.* (Proc. Roy. Soc. of Canada, 1922).
- Lubovich, V. P., and Pearen, Miss E. M.—*On the Photography of Infra-Red Spectra.* (Proc. Roy. Soc. of Canada, 1922).
- Young, J. F. T.—*On the Application of the Theory of Magnetism to the Calculation of Atomic Diameters.* (Proc. Roy. Soc. of Canada, 1922).
- Cale, Miss F. M.—*The Destruction by Ultra-Violet Light of the Fluorescing Power of Dilute Solutions of Æsculin .* (Proc. Roy. Soc. of Canada, 1922).
- Levi, Miss M.—*On the Photo-Electric Conductivity of Diamond and other Phosphorescent Crystals.* (Proc. Roy. Soc. of Canada, 1922).
- Shaver, W. W.—*On the Absorption Spectrum of Argon.* (Proc. Roy. Soc. of Canada, 1922).
- On the Low Voltage Arc Spectrum of Argon.* (Proc. Roy. Soc. of Canada, 1922).
- Satterly, J.—*Surface Tension.* (Proc. Roy. Soc. of Canada, 1922).
- The Crookes' Radiometer as a Measuring Instrument.* (Proc. Roy. Soc. of Canada, 1922).
- Eadie, Miss H. I., and Satterly, J.—*The Variation of the Refractive Index of Oxygen with Pressure and the Absorption of Light by Oxygen at High Pressures.* (Proc. Roy. Soc. of Canada, 1922).
- Burton, E. F., and Currie, J. E.—*A Centrifuge Test of the Coagulating Power of an Electrolyte for Colloidal Solutions.* (Proc. Roy. Soc. of Canada, 1922).
- The Variation of the Mobilities of Ions and Colloidal Particles with the Viscosity of the Medium.* (Proc. Roy. Soc. of Canada, 1922).
- Burton, E. F.—*Article on "Cataphoresis"—Motion of Colloidal Particles in an Electric Field.* (Fourth Report on Colloidal Chemistry, British Association for the Advancement of Science, pp. 22-23, 1922).

- Review of Professor Bancroft's "Applied Colloid Chemistry: General Theory."* (Science, Nov. 10, 1922, pp. 539-540).
- The Use of the Centrifuge in Coagulation of Colloidal Solutions by Electrolytes* (Coll. with Currie, J. E.). (Proc. Roy. Soc. of Canada, Vol. XVI, Sec. III, pp. 109-112, 1922).
- Satterly, J.—*Stirling's Theorem*. (Nature, Feb. 17th, 1923, p. 220).
- Shenstone, A. G.—*The Effect of Current on the Photo-Electric Sensitivity of Metals*. (Phil. Mag., May, 1923, p. 218).
- McLay, A. B.—*The Ultra-Violet Spectrum of Chromium*. (Royal Society of Canada).

DEPARTMENT OF POLITICAL ECONOMY.

- Innis, H. A.—*A History of the Canadian Pacific Railway*.
- Jackman, W. T.—*What is Rural Economics?* (Scientific Agriculture, August, 1922).
- The Proper Adjustment of the Rural and Urban Industry*. (Scientific Agriculture, August, 1922).
- Conditions of Stability or Permanence of the Agricultural Population*. (Scientific Agriculture, August, 1922).
- The Effects of Borrowed Capital*. (Scientific Agriculture, August, 1922).
- Rural Credits in Canada during 1922*. (Monetary Times Annual, 1923).
- Canadian Railway Affairs in 1922*. (Monetary Times Annual, 1923).
- Report to the Manitoba Government on the Operation and Administration of the System of Rural Credits*. (Winnipeg, 1923).
- Railway Regulation in the United States and Canada*. (The Traffic World, April 7, 1923).
- Jackson, G. E.—*Wheat and the Trade Cycle: a Footnote to Canadian Economic History*. (Canadian Historical Review, Vol. 3, No. 3).
- Emigration of Canadians to the United States*. (Annals of the American Academy of Political and Social Science, May, 1923).
- Kemp, H. R.—*Provincial and Dominion Taxation in Canada*. (May issue of the Annals of the American Academy of Political Science).
- Dominion Taxation*. (Proceedings of the Canadian National Tax Conference, Toronto, May, 1923).

FACULTY OF MEDICINE.

DEPARTMENT OF ANATOMY.

- Watt, J. C.—*The Behaviour of Calcium Phosphate and Calcium Carbonate (Bone Salts) Precipitated in Various Media, with Applications to Bone Formation*. (Biological Bulletin, April, 1923).

DEPARTMENT OF BIOCHEMISTRY.

- Eadie, G. S.—*The Variations of the Blood Sugar of the Rabbit throughout the Day and the Effect of the Subcutaneous Injection of Glucose*. (American Journal of Physiology, 1923, Vol. 63, p. 513).
- Eadie, G. S., and Macleod, J. J. R.—*The Physiological Assay of Insulin Based on Its Effects on the Hyperglycemia Following Glucose Injections and Epinephim*. (American Journal of Physiology, 1923, Vol. 64, p. 285).
- Hunter, A.—*The Progress of Tryptic Digestion of Protein as Studied by the Method of Butyl Alcohol Extraction (Preliminary Communication)*. (Trans. Roy. Soc. Can., Vol. XVI, Sect. V, p. 71, 1922).

- The Physiology of Creatine and Creatinine.* (Physiological Reviews, Vol. II, p. 586, 1922).
- Diet, Dietary Defects and Deficiency Diseases.* (Chapter XVI in *The Practice of Preventive Medicine*, by J. G. Fitzgerald).
- Hunter, A., and Morrell, J. A.—*A Preliminary Study of the Action of Arginase and of Its Possible Use in the Determination of Arginine.* (Trans. Roy. Soc. Can., Vol. XVI, Sect. V, p. 75, 1922).
- Hunter, A., and Borsook, H.—*The Question of the Presence of the Tryptophane Radicle in the Molecule of Hæmoglobin.* (Trans. Roy. Soc. Can., Vol. XVI, Sect. V, p. 79, 1922).

DEPARTMENT OF GYNÆCOLOGY AND OBSTETRICS.

- Cosbie, W. G.—*Puerperal Hæmorrhage.* (The Lincoln and Welland Medical Society).
- The Prolonged First Stage of Labour.* (The University Medical Bulletin.)
- The Obstetrical Causes and Prevention of Stillbirth and Early Infant Mortality.* (The Journal of the Canadian Medical Association).
- Marlow, F. W.—*Cancer of the Uterus.* (Canadian Practitioner, November, 1922).

DEPARTMENT OF HYGIENE.

- Fitzgerald, J. G., and Doyle, Miss D.—*Methods of Producing Agglutinating Sera for B. Diphtheriæ.* (Royal Society of Canada, May 23rd, 1923).
- A Study of the Virulence, Agglutinability and Capacity to Ferment Certain Carbohydrates of a Group of Stains of B. Diphtheriæ.* (Royal Society of Canada, May 23rd, 1923).
- Agglutination Test for the Presence of B. Diphtheriæ in Field (Mixed) Cultures.* (J.A.M.A.).
- Fitzgerald, J. G.—*Pasteur and the Science of Bacteriology.* (Scientific Monthly).
- Fitzgerald, J. G., in collaboration with various authors.—*An Introduction to the Practice of Preventive Medicine.* (C. V. Mosby & Co., 1922).
- Fraser, D. T.—*White Mice and the Assay of Insulin.* (Journal of Laboratory and Clinical Medicine, Vol. VIII, No. 7, 1923).
- Further Observations on the Assay of Insulin, using White Mice.* (Royal Society of Canada, May, 1923).
- Moloney, P. J., and Findlay, D. M.—*Chemical Properties of Insulin.* (Royal Society of Canada, May, 1923).
- Concentration of Insulin by Absorption on Benzoic Acid.*
- Best, C. H., and Scott, D. A.—*Possible Sources of Insulin.* (Journal of Metabolic Research).
- The Preparation of Insulin.* (Journal of Metabolic Research).
- Best, C. H., Scott, D. A., and Banting, F. G.—*An Insulin-like Substance in Blood.* (Royal Society of Canada, May, 1923).
- Best, C. H., and Scott, D. A.—*The Possibility of Insulin in Plants.* (Royal Society of Canada, May, 1923).
- A Method for the Preparation of Insulin.* (Royal Society of Canada, May, 1923).

DEPARTMENT OF MEDICINE.

- Banting, F. G., Best, C. H., Collip, J. B., and MacLeod, J. J. R.—*Effect of Insulin on the Excretion of Ketone Bodies by the Diabetic Dog.* (Trans. Roy. Soc. Canada, Ser. 4, Vol. 16, Sec. 5; 43-44).

- Preparation of Pancreatic Extracts Containing Insulin.* (Trans. Roy. Soc. Canada, Ser. 3, Vol. 16, Sec. 5: 27-29).
- Banting, F. G., Collip, J. B., MacLeod, J. J. R., and Noble, E. C.—*Effects of Insulin on Experimental Hyperglycemia in Rabbits.* (Amer. Journ. Physiol. 62: 559-580).
- Banting, F. G., Collip, J. B., Best, C. H., MacLeod, J. J. R., and Noble, E. C.—*Effect of Insulin on Normal Rabbits and on Rabbits Rendered Hyperglycemic in Various Ways.* (Trans. Roy. Soc. Canada, Ser. 3, Vol. 16, Sec. 5: 31-33).
- Banting, F. G., Best, C. H., Collip, J. B., MacLeod, J. J. R., and Noble, E. C.—*Effect of Insulin on the Percentage Amounts of Fat and Glycogen in the Liver and Other Organs of Diabetic Animals.* (Trans. Roy. Soc. Canada, Ser. 3, Vol. 16: Sec. 5: 39-42).
- Effect of Pancreatic Extract (Insulin) on Normal Rabbits* (Amer. Jour. Physiol. 62: 162-176).
- Banting, F. G., Best, C. H., Collip, J. B., Campbell, W. R., Fletcher, A. A., MacLeod, J. J. R., and Noble, E. C.—*Effect Produced on Diabetes by Extracts of the Pancreas.* (Trans. Assoc. of Amer. Phy., 1922).
- Banting, F. G., Campbell, W. R., and Fletcher, A. A.—*Further Clinical Experiences with Insulin.* (B.M.J., Jan. 6, 1923).
- Insulin in the Treatment of Diabetes Mellitus.* (Journ. Metabolic Research, Nov.-Dec., 1922).
- Boyd, Miss G. L.—*The Etiology of Acute Intestinal Intoxication in Infants.* (Archives of Internal Medicine, Jan., 1923).
- The Value of Colostrum to the New-Born.* (Canadian Med. Ass. Journal, 12: 724, 1922).
- Diabetes.* (Canadian Nurse).
- Boyd, Miss G. L., and Robertson, B.—*Toxemia of Severe Superficial Burns in Children.* (American Journ. Diseases Children, Feb., 1923).
- Etiology of Toxemia in Severe Superficial Burns.* (Jr. Laboratory and Clinical Medicine).
- Boyd, Miss G. L., and Brown, A.—*Acute Intestinal Intoxication.* (Am. Journal Diseases of Children).
- Boyd, Miss G. L.—*Insulin Treatment of Children with Diabetes.* (Can. Med. Assoc. Journal).
- Brown, A.—*The Normal Child, its Care and Feeding.* (F. D. Goodchild, King St. W., Toronto).
- Asthma in Children.* (The Canadian Med. Ass. Journ.).
- A Report of a Case of Acute Hemorrhagic Pancreatitis in a Child.*
- Brown, A., and Courtney, Miss A. M.—*A Clinical and Chemical Study of Butter Soup Feeding in Infants.* (American Journal Diseases of Children).
- The Effect of Special High Protein Diets in the Treatment of Chronic Intestinal Indigestion in Children.* (British Journal Diseases of Children).
- A Critical Study of Two Cases of Rickets Developing in Breast-Fed Infants.* (Archives of Pediatrics).
- Fletcher, A. A.—*Dietetic Treatment of Chronic Arthritis and Its Relationship to the Sugar Tolerance.* (Arch. of Int. Med., Vol. 30, pp. 106-117).
- Chronic Arthritis.* (Can. Med. Journal, Vol. 12, p. 633).
- Banting, F. G., Campbell, W. R., and Fletcher, A. A.—*Further Clinical Experience with Insulin (Pancreatic Extracts) in the Treatment of Diabetes Mellitus.* (Brit. Med. Journ., Jan. 6, 1923).

- Insulin in the Treatment of Diabetes Mellitus.* (Journ. of Metabolic Research, April, 1923).
- Fletcher, A. A., and Campbell, W. R.—*The Blood Sugar Following Insulin Administration and the Symptoms Complex-Hypoclycæmia.* (Journ. of Metabolic Research, April, 1923).
- Gwyn, N. B.—*A Note on the Incubation Period of Encephalitis Lethargica. Report of a Case Developing Within Five Days of Exposure. Early Influences Bearing on a Great Career.* (Sir William Osler).
Some Cerebral Manifestations of General Infection.
- Jamieson, R. A.—*Tuinidine Sulphate in Auricular Fibrillation.* (Can. Med. Assoc. J., May, 1923).
- Loudon, J.—*Hodgkin's Disease or Lymphogranuloma.* (Canadian Journal of Medicine and Surgery, July, 1922).
A Case for Diagnosis. (St. Michael's Hospital Bulletin, August, 1922).
Disseminated Sclerosis. (Annals of Clinical Medicine, published by The American College of Physicians and American Congress on Internal Medicine, February, 1923).
- MacKenzie, A. J.—*Pernicious Anæmia, with Bronze Pigmentation.* (Bulletin of St. Michael's Hospital, No. 1, 1922).
- McPhedran, H.—*Case of Streptococcus Viridans Bacteriemia with Endocarditis with Apparent Recovery.* (The Academy of Medicine).
Some Comments on the Use of Digitalis in Auricular Fibrillation. (The St. Michael's Hospital Bulletin).
- Morgan, E. A.—*The Treatment of Ulcerative Stomatitis by Intravenous Injection of Arsenic.* (American Journal Dis. Child.).
Congenital Syphilis. (Canadian Medical Journal).
- Tisdall, F. F.—*Acidosis in Children.* (University of Toronto Bulletin, Vol. III, Nov., 1922).
The Calcium and Phosphorus Concentration in the Serum of Infants with Mild Rickets or a Condition simulating Mild Rickets. (Amer. Journ. of Diseases of Children, Vol. 24, 382, 1922).
Acute Leukæmia in a Child. (Canadian Medical Assoc. Journ., February, 1923).
The Diagnostic Value of the Age Incidence of Certain Diseases in Children. (Canadian Medical Assoc. Journal, May, 1923).
The Effect of Ultra-Violet Rays on the Calcium and Inorganic Phosphorus Content of the Blood Serum of Rachitic Infants. (Canadian Medical Association Journal, August, 1922).
- Tisdall, F. F., and Kramer, B.—*The Distribution of Sodium Potassium, Calcium and Magnesium between the Corpuscles and Serum of Human Blood.* (Journal of Biological Chemistry, Vol. LIII, 241, 1922).
- Graham, S. G., and Tisdall, F. F.—*Poisoning from the External Use of Resorcin.* (Canadian Medical Association Journal, October, 1922).
- Tisdall, F. F., and Harris, R. I.—*The Calcium and Phosphorus Metabolism in Patients with Fractures.* (J.A.M.A., Vol. 79, 884, 1922).
A Note on the Phosphate Content of the Serum of Cases of Bone Tuberculosis Treated by Heliotherapy. (Canadian Medical Association Journal, March, 1923).

DEPARTMENT OF OTO-LARYNGOLOGY.

- Boyd, E.—*Observations on Some Throat Conditions in Children.* (Canadian Medical Journal).
- The Management of Discharging Ears in Children.* (Canadian Medical Journal).
- Calhoun, J. C.—*Asthma and the Nasal Passages.* (Ontario Medical Association).
- Goldsmith, P. G.—*A Consideration of the Anatomy of the Fauical Tonsils and Their Removal.* (The Saskatchewan Medical Association Report, July, 1922).
- The Pathology and Treatment of Chronic Catarrhal Deafness.* (The Laryngoscope, St. Louis, September, 1922).
- A Consideration of the Various Problems Presented by Hæmorrhage Occurring in Connection with Operations on the Tonsils.* (An Abstract and a Commentary). (The Canadian Practitioner, May, 1922).
- Some Notes on the Management of the Common Complaints of the Ear, Nose and Throat in the Troops on Active Service, with a Consideration of the Relationship which Should Exist Between the Specialist and the Medical Officer.* (The Military Surgeon, United States of America, April, 1923).
- Naso-Pharyngeal Fibroma.* (A Clinical and Pathological Study.). (American Laryngological Association, Atlantic City, May, 1923).
- The Clinical Import of Hoarseness in Relation to General Practice.* (Ontario Medical Association Meeting in Windsor, May 30th, 1923).
- Wishart, D. E. S.—*Neuro-otological Examination in Eleven Verified Cases of Brain Tumour.* (The Journal of Laryngology and Otology, March, 1923).
- Retro-pharyngeal Abscess and Erosion of Internal Carotid Artery, with Pathological Specimen.* (Academy of Medicine, April 9th, 1923).
- The Clinical Significance of Vertigo.* (Ontario Medical Association, May 30th, 1923).
- Neuro-otological Examination in Two Verified Cases of Brain Tumour in Children (with illustrations.)* (Canadian Medical Association, June 13th, 1923).

DEPARTMENT OF PATHOLOGICAL CHEMISTRY.

- Harding, V. J., and Watson, B. P.—*The Use of Carbohydrates in the Nausea and Vomiting of Pregnancy.* (Lancet, 1922, 648).
- Harding, V. J., and Gaebler, D. H.—*The Constancy of Creatine-Creatinine Excretion in Children on a High Protein Diet.* (Journ. Biol. Chem., 1922, LIV, 579).

DEPARTMENT OF PHARMACOLOGY.

- Henderson, V. E.—*On the Action of Atropine and Intestine and Urinary Bladder.* (Arch. Inter. de Pharm. et de Thér., 1922, Vol. 27, p. 205).
- On the Sensitivity of Different Nerve Endings to Atropine.* (J. Pharm. & Exp. Thér., 1923, Vol. 21, p. 99).
- The Relation between Physician and Druggist and Patient from the Viewpoint of Medication.* (C.M.A.J., 1922, Vol. 12, p. 715).
- Sharpe, N. C.—*Some Clinical Aspects of Industrial Poisoning.* (The Public Health Journal, Vol. 14, 1923, p. 110).
- A University Contribution to Lead Poisoning.* (University of Toronto Monthly, 1923, Vol. 23, No. 7).
- The Pathology of Lead Poisoning.* (Ontario Board of Health Bulletin, "Lead Poisoning; a compilation of present knowledge," 1923, p. 12).

- Brown, W. E.—*Preliminary Report Experiments with Ethylene as a General Anæsthetic.* (C.M.A.J., 1923, Vol. 13, p. 210).
- Henderson, V. E.—*Purifico.* (C.M.A.J., 1922, Vol. 12, p. 499).
Standardization of Drugs. (C.M.A.J., 1922, Vol. 12, p. 821).
Specific Protein Therapy. (C.M.A.J., Vol. 12, p. 821).
- Hipwell, F. W. W.—*Acetyl Salicylic Acid.* (C.M.A.J., Vol. 12, p. 667).
- Deas, J.—*Iron and Ammonium Citrate.* (C.M.A.J., Vol. 12, p. 667).
- Sharpe, N. C.—*Some Clinical Aspects of Industrial Poisoning.* (The Public Health Journal, Vol. 14, 1923, p. 110).
A University Contribution to Lead Poisoning. (University of Toronto Monthly, 1923, Vol. 23, No. 7).
The Pathology of Lead Poisoning. (Ontario Board of Health Bulletin, "Lead Poisoning," 1923, p. 12).

DEPARTMENT OF PHYSIOLOGY.

- Macleod, J. J. R.—*Chemical Control of Respiration.* (Pennsylvania Medical Journal, 1923).
Insulin and Diabetes. (British Medical Journal, Nov. 4th, 1922).
The Source of Insulin. (Journal of Metabolic Research, Vol. 2, No. 2, August, 1922).
Further Observations on Fish Insulin. (Trans. Roy. Soc. Can., May, 1923).
- Taylor, N. B.—*Observations upon the Blood-flow in Man. 11. Estimation of the Blood-flow through the Hands in Clinical Cases.* (Journal of Laboratory and Clinical Medicine, Vol. 8, No. 3, Dec., 1922).
The Blood-flow in Man as Estimated by the Calorimetric Method of Stewart. (Journal of Laboratory and Clinical Medicine, Vol. VII, No. 8, May, 1922).
The Effect upon the Superficial and Deep Temperatures of Certain Substances Applied to the Body Surface. (Journal Phar. & Expert. Therapeutics, Vol. XXI, No. 3, April, 1923).
- Olmsted, J. M. D.—*Taste Fibers and the Chorda Tympani Nerve.* (Journal Comp. Neurol., 34 (3): 337-341, June, 1922).
The Role of the Nervous System in the Regeneration of Polyclad Turbellaria. (Journ. Expt. Zool., 36, (1): 49-56, July, 1922).
The Rule of the Nervous System in the Locomotion of Certain Marine Polyclads. (Jour. Expt. Zool., 36 (1): 57-66, July, 1922).
- Eadie, G. S.—*The Variations of the Blood Sugar of the Rabbit throughout the Day, and the Effect of the Subcutaneous Injection of Glucose.* (Am. Journ. Physiol., Vol. 63, No. 3, Feb., 1923).
- Banting, F. G., Best, C. H., Collip, J. B., Campbell, W. R., Fletcher, A. A., Macleod, J. J. R., and Noble, E. C.—*The Effect Produced on Diabetes by Extracts of Pancreas.* (Trans. Assoc. Amer. Physiol., 1922).
- Olmsted, J. M. D., and MacArthur, J. W.—*The Effect of Acid on Ciliary Action as a Class Exercise in Ph. Science.* 55 (1432): June 19, 1922).
- Adrian, E. D., and Olmsted, J. M. D.—*The Refractory Phase in a Reflex Arc.* (Journ. Physiol., 66 (6): October 18, 1922).
- Best, C. H., and Macleod, J. J. R.—*Some Chemical Reactions of Insulin.* (Jour. Biol. Chem., Vol. 55, No. 2, Feb., 1923). (Am. Journ. Physiol., Vol. 63, No. 3, Feb., 1923).
- McCormick, N. A., Macleod, J. J. R., O'Brien, K., and Noble, E. C.—*Experiments on the Mechanism of Action of Insulin.* (Amer. Journ. of Physiol., Vol. 63, No. 3, Feb., 1923).

- Eadie, H. I., Ash, D. H., and Angus, T. C.—*Observations on the Reliability of the Comf-Thermometer (Fresh-Air Gauge) as an Indicator for the Cooling Effect of Air.* (Jour. of Industrial Hygiene, Feb., 1923, Vol. IV, No. 10, 441-447).
- Eadie, G. S., and Macleod, J. J. R.—*Physiological Assay of Insulin Based on its Effects on the Hyperglycæmia Following Glucose Injections and Epinephrin.* (Amer. Jour. Physiol., Vol. 64, No. 2, April, 1923).
- Noble, E. C., and Macleod, J. J. R.—*The Influence of Sugars and other Substances on the Toxic Effects of Insulin.* (Amer. Jour. Physiol., Vol. 64, No. 3, May, 1923).
- McCormick, N. A., Macleod, J. J. R., Noble, E. C., and O'Brien, K.—*The Nutritional Condition of the Animal on the Hypoglycæmia Produced by Insulin.* (Journ. Physiol.).
- Allen, F. N., and Macleod, J. J. R.—*The Metabolism of Normal Dogs under Prolonged Treatment with Insulin.* (Trans. Roy. Soc. Can., May, 1923).
- Dickson, B. R., Macleod, J. J. R., and Pember, F. R.—*The Effect of Insulin on the Respiratory Exchange and on the Alkaline Reserve of the Blood of Normal Animals.* (Trans. Roy. Soc. Can., May, 1923).
- McCormick, N. A., Macleod, J. J. R., and O'Brien, K.—*The Possible Control of the Internal Secretion of Insulin by the Vagus Nerve.* (Trans. Roy. Soc. Can., May, 1923).
- The Effect of Insulin on the Glycogen Content of the Liver and Muscles of Normal Animals.* (Trans. Roy. Soc. Can., May, 1923).
- Hepburn, J., Latchford, J. K., Macleod, J. J. R.—*Comparison of the Sugar Content of the Arterial and Venous Blood of Etherized Animals. Before and After Insulin.* (Trans. Roy. Soc. Can., May, 1923).
- Noble, E. C.—*The Effect of Insulin on Glycogen Formation in the Perfused Liver of Turtle.* (Trans. Roy. Soc. Can., May, 1923).

DEPARTMENT OF SURGERY.

- Bruce, H. A.—*The Surgical Treatment of Cerebral Conditions Causing Intracranial Pressure.* (Academy of Medicine, Toronto, Dec. 19, 1922).
- Tumors of the Kidney.* (Canadian Medical Association Journal, Jan., 1923).
- Some Observations on Diseases of the Gall Bladder and Pancreas.* (Wayne County Medical Society, Detroit, Mich., Feb. 26, 1923).
- Costain, W. A.—*Septic Absorption in Diffuse Septic Peritonitis.* (Canadian Medical Association Journal, November, 1922).
- Lymphaticostomy in Peritonitis.* (Surgery, Gynecology and Obstetrics, March, 1923).
- Gallie, W. E., and LeMesurier, A. B.—*A Clinical and Experimental Study of the Free Transplantation of Fascia and Tendon.* (Journal of Bone and Joint Surgery, July, 1922).
- Harris, R. J.—*Calcium and Phosphorus Metabolism in Patients with Fractures.* (J.A.M.A., Vol. 79, p. 884).
- Heliotherapy in Surgical Tuberculosis.* (C.M.A. Journ., Vol. 12, p. 799).
- A Note on the Phosphate Content of the Serum of Patients with Surgical Tuberculosis undergoing Heliotherapy.* (C.M.A. Journ., Vol. 13, p. 177).
- Graham, R. R.—*Surgical Therapy and Net Results in Gall Bladder Disease.* (The Canadian Medical Association Journal, November, 1922).
- Primrose, A.—*The Secondary Manifestations of Malignant Disease.* (Annals of Surgery, September, 1922).

- Tumors of the Breast—Innocent and Malignant.* (Annals of Surgery, June, 1923).
- The Control of Cancer.* (The Canadian Medical Association Journal, March, 1923).
- Ryerson, E. S.—*The Process of Diagnosis.* (University Press).
- Co-Ordination of the Courses as a Means of Increasing the Efficiency of the Medical Curriculum.*
- Robertson, B., and Boyd, Miss G.—*Toxemia of Severe Superficial Burns in Children.* (The American Journal of Diseases of Children, February, 1923, Vol. 25, pp. 163-167).
- Shier, R. V. B.—*Post-Operative Management.* (The Canadian Medical Association Journal, November, 1923).
- Starr, F. N. G.—*The Goitre Problem—from the Patient's Standpoint.* (The Canadian Medical Association Journal, December, 1922).
- Cancer of the Stomach.* (The Canadian Medical Association Journal, January, 1923).
- Lessons Learned from a Study of the Gall Bladder.* (The Canadian Medical Association Journal, February, 1922).

DEPARTMENT OF THERAPEUTICS.

- Bulmer, F. M. R.—*The Fate of Arsenic after Intravenous or Intrathecal Injection.* Rudolf and Bulmer. (American Journal of the Medical Sciences, 1923, CLXV, 47).
- Experimental Research on the Distribution and Elimination of Organic Arsenic Compounds after Intravenous Administration.* (Journal of Pharmacology and Experimental Therapeutic).
- Rudolf, R. D.—*The Medical Care of Post-operative Abdominal Cases.* (Canadian Med. Association Journal, July, 1922).
- The Use of Circulatory Stimulants in the Care of the Sick.* (Canadian Med. Association Journal, October, 1922).
- The Fate of Arsenic after Intravenous and Intrathecal Injection.* (With F. M. R. Bulmer). (American Journ. of the Med. Sciences, Jan., 1923, and Trans. Association of Amer. Physicians, 1922).
- Medical Treatment of Diseases.* (Second Edition). (University of Toronto Press).

FACULTY OF APPLIED SCIENCE.

DEPARTMENT OF CHEMICAL ENGINEERING.

- Bain, J. W., and Wynne-Roberts, R. I.—*A Study of Chrome Yellow.* (Trans. Royal Society of Canada, 1923).
- Bain, J. W., and Gollop, G. E.—*An Attempt to Cheapen the Production of Zirconium Oxide.* (School of Engineering Research, Bull. No. 3, 1922). (Canadian Chemistry and Metallurgy, Vol. 7, p. 35, 1923).
- Bain, J. W., and Downey, F. P.—*A Study of Heat Efficiency in the Manufacture of Potassium Nitrate by the Conversion Process.* (School of Engineering Research, Bull. No. 3, 1922).

DEPARTMENT OF CIVIL ENGINEERING AND APPLIED MECHANICS.

- Gillespie, P.—*Education of Engineering Students.* (Canadian Engineer, July 11, 1922).

Domestic and Community Sanitation. (Fitzgerald's "Practice of Preventive Medicine").

Gillespie, P., and Duff, A. R.—*An Investigation of the Kiln-Drying of Lumber.* (Bulletin No. 3, School of Engineering Research, University of Toronto, 1922).

Young, C. R.—*Structural Members and Connections.* (Eight chapters (131 pages) in volume 2 of Structural Engineers' Handbook Library, edited by Professors Hool and Kinne, New York: McGraw-Hill Book Co., Inc.).
Structural Problems, Part I. (Second Edition, 96 pages. Toronto: University of Toronto Engineering Society).

Lateral Strength of Columns. Subject to Flexure. (Engineering News-Record, Nov. 9, 1922).

Development in Bridge Design Practice. (Contract-Record, May 30th, 1922).

Young, C. R., Sagar, W. L., and Hughes, C. A.—*Torsional Strength of Reinforced Concrete Beams.* (Canadian Engineer, Oct. 10, 1922).

Torsional Strength of Rectangular Sections of Concrete, Plain and Reinforced. (Bulletin No. 3, School of Engineering Research).

DEPARTMENT OF MECHANICAL ENGINEERING.

Allcut, E. A.—*Materials and Their Application to Engineering Design.* (506 pp., Chas. Griffin & Co., London).

The Inspection of Ferrous Materials. (The Engineering Journal, January, 1923).

Angus, R. W.—*Centrifugal Pump Characteristics.* (Canadian Engineer).

Water Works Intakes. (Canadian Engineer).

Discussion on Hydraulic Turbines. (Amer. Soc. Mechanical Engineers).

Laboratory Course in Hydraulics.

Parkin, J. H., Crane, J. C., and MacAllister, S. E.—*Aeronautical Research Paper No. 5.* (June, 1922). *Wing Tip Research—Part II—Warped Tips.* (School of Engineering Research Bulletin, No. 3, Section No. 12, 1922).

Aeronautical Research Paper No. 6. (June, 1922). *Wing Tip Research—Part III—Pin Tips.* (School of Engineering Research Bulletin No. 3, Section No. 12, 1922).

Aeronautical Research Paper No. 7. (June, 1922). *Wing Tip Research—Part IV—Blade Tips.* (School of Engineering Research Bulletin No. 3, Section No. 12, 1922).

DEPARTMENT OF MINING ENGINEERING.

King, J. T.—*The Determination of Carbon in Graphite.* (Bulletin No. 3, of the School of Engineering Research).

ONTARIO COLLEGE OF EDUCATION.

Sandiford, P.—*The Standardization of Tests and Scales.* (Journal of Educational Research, VII, 1, pp. 14-27).

A Critical Survey of Intelligence Testing. (Canadian Journal of Mental Hygiene, III, 2, pp. 37-46).

The School Programme and Sex Education. (Introductory Studies in Social Hygiene, pp. 18-21).

FACULTY OF FORESTRY.

- Howe, C. D.—*Timber Riches or Idle Wastes—Canada's Choice*. (Illustrated Canadian Forestry Magazine, August, 1922).
- High Trees, Not High Tariff, Is Secret of Trade*. (Illustrated Canadian Forestry Magazine, September, 1922).
- Why the Forest Fire Plague Defies Cure*. (Illustrated Canadian Forestry Magazine, November, 1922).
- The Coming Holocaust—Can We Stop It?* (Illustrated Canadian Forestry Magazine, December, 1922).
- Building Population by Building Forests*. (Illustrated Canadian Forestry Magazine, February, 1923).
- Bernhard Eduard Fernow—An Appreciation*. (Illustrated Canadian Forestry Magazine, March, 1923).
- Is \$500,000,000 a Year Worth Saving?* (Illustrated Canadian Forestry Magazine, May, 1923).
- The Forests and Forest Industries of Canada*. (Annals of the American Academy of Political and Social Sciences, May, 1923).
- White, J. H.—*Forestry Viewed as a Profession*. (Canadian Forestry Magazine, January, 1923, pp. 15-16).
- Interest Charges on Growing Timber*. (Canadian Forestry Magazine, April, 1923, p. 234).

FACULTY OF HOUSEHOLD SCIENCE.

- Coatsworth, Miss H. R.—*Vegetables*. (Book of Popular Science, published by the Grolier Society).
- Graper, Miss F. M.—*House Planning*. (Book of Popular Science, published by the Grolier Society).
- Harris, Miss B. R.—*Starches and Sugars*. (Book of Popular Science, published by The Grolier Society).
- Fruits and Nuts*. (Book of Popular Science, published by The Grolier Society).
- Laird, Miss A. L.—*Food—A Factor in National Progress*. (Book of Popular Science, published by The Grolier Society).
- Milk and Milk Products*. (Book of Popular Science, published by The Grolier Society).
- Flesh Foods and Their Value*. (Book of Popular Science, published by The Grolier Society).
- Park, Miss E. W.—*The Household Budget*. (The Book of Popular Science, published by The Grolier Society).
- Cereals*. (The Book of Popular Science, published by The Grolier Society).

FACULTY OF MUSIC.

- Fricker, H. A.—*Wiegenlied*. Halfdan Kjerulf. Arranged for Organ by H. A. Fricker. (H. W. Gray & Co., New York).
- Ham, A.—*Music, When Soft Voices Die*. (Novello, London).

(10) REPORT OF THE LIBRARIAN)

(W. S. Wallace, Esq., M.A., Associate Librarian).

In the absence of the Librarian I beg to submit the following report on the University Library for the year ending June 30th, 1923.

The number of volumes added to the Library during the year has been 9,568, and the number of pamphlets 6,300, making a total of 187,426 bound volumes and 63,327 pamphlets in the Library.

Of the recent accessions to the Library, a great many of the most interesting and valuable have been secured through the efforts of the Librarian, who has been spending the year in Europe for the purpose of making book purchases. The result of his efforts has been a considerable enrichment of the resources of the Library in English literature, especially of the eighteenth century, in the literature relating to the French Revolution, in Italian literature, and in archæology, besides the filling of gaps in many other subject divisions of the Library.

The statistics of the use of the Library by undergraduates, in comparison with the two previous years, are as follows:

	1920-21	1921-22	1922-23
Number of day books.....	42,483	41,928	51,513
Number of books taken out for the night.....	17,321	18,998	20,508
Number of books taken out for the week.....	4,687	4,792	5,715

As the above figures indicate, there has been this year a large increase in the use of the Library by undergraduates. The increase in the figures has been due in part to the opening of the Library in the evening during the winter term. This experiment, which has been tried once or twice before with indifferent success, would seem at last to have justified itself. Although the numbers using the Library in the evening during January and February averaged only about fifteen, they increased as the examinations approached, and toward the end of April there were several evenings when more than seventy persons were counted in the reading rooms. The increase in the statistics for the use of the Library is not, however, wholly explained by the opening of the Library in the evening, since there was, during the autumn term, when the Library closed at 5.15 p.m., a twenty per cent. increase both in the attendance in the Library, and in the turn-over of books at the delivery desk. This increase suggests that the time is now come when the opening of the reserved book reading room in the basement of the Library is urgently necessary, and it is hoped that next year arrangements may be possible for opening this room, and thus relieving the present congestion both in the upstairs reading rooms and at the delivery desk.

The figures given above, it must be understood, do not include books loaned to members of the University staff or to graduates, since, owing to the fact that there is no time limit on these loans, statistics regarding them are almost impossible to obtain. It is interesting to notice, however, that the increase in the use of the Library by undergraduates is paralleled by a similar increase in the use by graduates. Whereas last year there were 426 names in the graduates' register, at present this number has been increased to 497, an increase of approximately seventeen per cent. Of the 600 odd "officers of instruction" listed in the *Directory of the University Staff and Students*, about 390 have pages in the professors' register, and borrow books from the University Library.

In addition to the service rendered to professors, graduates, and undergraduates of the University, the Library is being called upon more and more to

serve the general public of the Province, and enquiries from outside sources are becoming increasingly numerous. If means could be found for the establishment of an extension department in the Library, it is clear that the Library could perform a direct service to the Province as a whole, which would strengthen the University in popular esteem.

An urgent requirement of the Library in the near future will be additional stack room. It is estimated that within two years the existing stack room will be filled, and in this event an extension of the University Library building will be necessary.

In conclusion, I should like to place on record my deep appreciation of the services of the Library staff during the past year. The task of administration has been greatly lightened by their loyal support. And it may not be out of place for me in this connection to express my sense of the inadequacy of the remuneration and recognition paid them by the University. It is not always remembered that workers in the University Library, and especially trained cataloguers and reference assistants, require a wide knowledge of languages and an almost encyclopædic range of subjects such as even many members of the teaching staff are not expected to possess. In the higher grades at least, their work is educational in the truest sense of the word; and it is to be hoped that the University will see its way to giving to at least the senior Library assistants an academic status such as has been given them in some American universities, together with the salaries and pensions which go with that status.

(11) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF SOCIAL SERVICE.

(Professor J. A. Dale, M.A.).

The past session has been one of satisfactory progress from every point of view. In common with other schools of social work, this Department is facing a change full of interest and promise. Social work is developing fast, both in area and content. It represents a general method which is being more extensively employed, both in the kind of problems to which it is applied, and in the number of communities adopting it. At the same time it is utilizing a rapidly growing volume of knowledge. Both these conditions have the effect of enriching the course of training: but they make it a matter of constant study to preserve flexibility with balance and thoroughness. A good deal of work has been done this session on the consolidation of theory and practice. In this, our growing experience has been aided by the raising of entrance qualifications. It has become clear to us as to other training schools, that a satisfactory course can no longer be planned for less than two years. This necessary change is now, after two years of transition, complete; next session no certificate will be granted on a course of one year.

A training school is dependent on the social work of the community for its instructors in practical subjects, and still more for its field work. At the same time, its presence makes possible a secure advance in policies and practice. We are in the happy position of having our graduates, among others, giving skilled service both to the clients of their agencies, and to the students; to the advantage of all three classes. This interpretation is illustrated in various stages: it is seen in its most developed form in family case work. The field of probation in

connection with the courts is opening up: advantage has already been taken of this opportunity, and closer co-operation is in prospect. Other fields which await development of the same kind are child-placing, and community organization: and in these also we hope that the local situation will allow us to make a beginning.

Thus the work of the Department is doubly bound up with, and vitally related to, the work of the social agencies. Their generous co-operation is an essential factor in working out the right relationship of a training school to its professional field. I cannot speak too highly of the services of Miss McGregor in this regard, keeping as she does so sympathetic and skilful a touch with agencies and students alike. The officers of the Department serve on many committees by which the policies of the agencies are shaped, and give much time to consultation. In addition, the Director has given a large number of addresses on various phases of social work. Lecture courses have been given at Hamilton and Kitchener, and one is to be given in July at the Church of England Summer School at Port Hope. The service of the library, which now contains some 2,000 volumes, has grown in value under the careful oversight of Miss Anderson.

The Department has been actively interested in the starting of a Social Workers' Club, designed to promote intercourse between workers in the different fields, for all purposes of comradeship. Although the Club has only been in existence a few weeks, it numbers over 100 members with good prospects of permanent success. The foundation of the Club is timely, not only on account of the growing sense of solidarity among social workers, but also because next year will see the meeting in Toronto of the great American Conference of Social Work, which has not met in Canada since 1897.

Of the 114 graduates known to be employed in social work at the moment of writing, 75 are employed in the city of Toronto; 15 in Ontario (including very important posts at Ottawa and Hamilton); 3 in Montreal; 1 in Halifax; 7 in British Columbia. There are besides 7 working in the States; 2 in China; 1 in South Africa; 1 in India, and 2 in London (one in immigration service of the Canadian Government). It is hardly possible to summarize the kind of work done by these graduates. A large proportion of them are case workers for various types of institutions; a considerable number are workers for various types of institutions; a considerable number are workers in settlements and in clubs; but short of a complete list it is difficult to give any idea of the variety of service rendered by the graduates of the department.

(12) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH NURSING.

(Miss E. K. Russell, B.A.)

In my report of June, 1923, I would briefly summarize the work of the three years in which the Department has been on probation.

For a new department, the enrolment has been very large, as during the three years we have received one hundred and thirty-nine students. In addition, many applicants have been refused because they were unable to meet the entrance standard.

It has been comparatively easy to organize an extraordinarily good training course for the public health nurse. Taking everything into consideration,

perhaps no city on the continent offers better opportunity for such. The keen interest and sustained enthusiasm of the students are further evidence of the fact that the Department is meeting a deeply felt need.

The majority of the graduates have immediately found public health posts awaiting them; a large number of the posts are with governmental departments, while an interesting minority are with voluntary organizations. At this date of writing, one month after the graduation of the third class, there are more positions being offered than we can fill. To help meet the needs in this new field of Preventive Medicine and make wise adjustments for the work and the worker, the University must be prepared to allow generously from the time of the staff of this Department for what might be considered the duties of an employment service. It is impossible for us to shirk this responsibility in connection with our graduates, and it is a demand that is made upon us continuously throughout the year.

We gratefully acknowledge three years of generous financial help and thoughtful friendship from the president and staff of the Ontario Red Cross Society.

EXTENSION WORK. The first Extension work undertaken by the Department has just been completed. Two courses were conducted: (1) A three weeks' refresher course for public health nurses who have had previous training or experience. Eighteen nurses from widely distant points in the Province enrolled. (2) A two weeks' course for hospital teachers and supervisors. Sixty-two nurses from Toronto and several other towns in Ontario enrolled. The students showed keen interest throughout both courses and expressed a very deep appreciation of the work given. The two weeks' conference provided for hospital teachers was the first of its kind offered in Ontario, and we think the eager response to this opportunity should give us food for thought.

VOLUNTARY ASSISTANCE GIVEN TO THE UNIVERSITY DEPARTMENT. We must emphasize the very great amount of assistance which we are forced to ask from the public health workers and hospital administrators of Toronto, for much of which assistance we can give no remuneration. To organize, co-ordinate, and supervise the teaching given by this large group of voluntary assistants must necessarily be a heavy piece of work, but our students must have this laboratory work if this course is to be of value to them. Possibly we should seek some method by which this department could offer remuneration to those who give so freely of their time for the training of its students. At least we must emphasize this point, that we are at present accepting a very great deal of help.

(13) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY.

(W. J. Dunlop, Esq., B.A.)

It is a pleasure to be able to say that the work of this Department continues to expand. Three years of service to the people of Ontario have now been completed and those who have been served appear to be very cordial in their appreciation of what has been attempted for them. Two thousand one hundred and seventy-seven adult students have been enrolled in the various courses. Thousands of others, of whom no enumeration could be made, have attended

free public lectures and extension lectures arranged for their benefit in all parts of the Province.

UNIVERSITY PUBLICITY.

With the co-operation of Mr. Angus MacMurchy, K.C., President of the Alumni Federation, a bulletin entitled "Commencement, 1922," was published in August and ten thousand copies were distributed to a selected mailing list. This publication was exceedingly well received because it was filled with interesting University news. Plans are already under way for twenty thousand copies of a similar bulletin, "Commencement, 1923," which is to be sent to every living graduate of the University and to any other persons who may wish to have a copy.

An up-to-date addressing machine has been installed in the University Press and stencil address cards have been prepared, bearing the names and addresses of all graduates, so that literature may be sent to them as often as funds will permit. In this way it is hoped that a connection between the University and its own graduates may be maintained throughout the years. The Registrar has co-operated in the work of preparing this addressing system and will be able to make use of it in various phases of his own work. The addressing machine will, of course, be available for the use of any Faculty or Department in the University. In my opinion, the installation of this system means a very decided advance in our scheme of University publicity.

Ten thousand copies of the President's address at the opening of the Session and ten thousand copies of the Memorandum of the Board of Governors with regard to the medical reorganization were printed and distributed. Six thousand copies of a descriptive bulletin on the Royal Ontario Museum of Zoology and five thousand on the Royal Ontario Museum of Archæology, prepared by Professors Bensley and Currelly, were also printed and distributed. Various circulars and folders, and descriptive literature regarding courses and classes, were issued from time to time. Publicity material is going out almost continuously.

I addressed meetings of teachers, workingmen, the general public, and the alumni in different parts of Ontario and once in Montreal. There is a remarkable interest in extension work and many organizations wish to be informed regarding the details of it.

This Department has co-operated with the Faculty of Medicine in distributing the quarterly *Medical Bulletin* and in sending news to papers in Western Canada.

To the daily papers of Toronto and to the Canadian Press news items regarding the University have been supplied almost daily during the twelve months.

Articles have been supplied to the *University of Toronto Monthly* and I have attended regularly the meetings of the Alumni Federation's Committees on publicity, on publication, and on appointments. It has been a great pleasure to co-operate with the Alumni Federation in promoting the welfare of the University.

The University's advertising has been placed as usual. This increases yearly in volume and includes series of lectures, single lectures, conferences, courses, classes, organ recitals, telescope service, and the Royal Ontario Museum.

The University's exhibit at the Canadian National Exhibition was arranged for the second time and seemed to surpass in interest the first venture. This exhibit appears to be very much worth while and attracts thousands of people. To answer the varied questions asked is in itself a formidable task.

The bulletin boards recently erected at the entrances to the University grounds have already served a useful purpose and should be of great value during the autumn and winter.

The publicity work grows largely in volume each year and new media are continually presenting themselves.

UNIVERSITY EXTENSION.

At the end of this academic year there are 228 teachers in the Second, Third and Fourth Years of the Teachers' Course and during the year 556 teachers took correspondence work or classes. The Summer Session grows steadily though not rapidly. The Teachers' Classes held in Toronto and Hamilton show a vigorous growth. Correspondence Courses in Upper School, Middle School, and commercial subjects were taken by more than twice as many teachers as in any previous year. Fifteen teachers received the B.A. degree at the June convocation. The extension work for teachers is in every respect most encouraging and promises immense development.

Extension lectures in different localities in the Province are increasingly popular. Members of the University staff give freely of their time and energy to serve in this way the cities, towns and villages of Ontario. One hundred and thirty-eight of these extension lectures were delivered in the year now closed.

The Workers' Educational Association more than tripled its membership in Toronto largely because of the excellent work and the unflagging energy of Mr. Alfred Macgowan, the Secretary-Treasurer. There were seven classes held weekly in the Social Service building, one in Scarborough Bluffs, one in a school in the township just north of Danforth Avenue, one in Frankland Public School, one in Fairbank, one in New Toronto, three in Hamilton, three in Ottawa, and one each in Brantford, Paris and Galt. Twenty-one classes there were in all, with a membership of 926. The subjects studied were Economics, Psychology, English Literature and Rhetoric, Public Speaking, Social Evolution and History.

Rural tutorial classes were conducted in Brampton, Cooksville, Beeton and Oneida Township. Literature and community singing were the subjects of instruction. The Oneida class was the largest, with an average of 45 for community singing and 60 for English Literature.

Urban tutorial classes in English, in Journalism, and in Italian were conducted at the University and were largely attended. A second class in English was carried on in Runnymede Public School, Toronto. These classes are always attended by thoughtful and appreciative people.

A new departure was a two weeks' extension course in export trade arranged in co-operation with the Director of the Commercial Intelligence Service, Ottawa. Seventy-five men and two women attended. A similar course is already being planned for next January.

The second annual extension course in Journalism had an attendance of ninety-eight. The instruction was of the same general type as in the previous

year. The extension course for Farmers, with an attendance of eighty-four, and the extension course in Civics and Town-Planning, with twenty-one, were each considerably smaller than in previous years.

With the co-operation of the Department of Household Science and under the direction of Miss Laird, a course of lectures on "Diet and Health" was given. There were two afternoon lectures per week during October, November and December.

The telescope service commenced last year was carried on and continues to interest a great many people.

In co-operation with the Department of Public Health Nursing a three weeks' extension course for Public Health Nurses and a two weeks' extension course for Hospital Nurses were conducted in June. These were in every respect successful and an extension course for Private Duty Nurses is being planned for the coming August.

An immense volume of correspondence has been carried on with people, mostly teachers, who desire advice as to the best means of securing more education. Vocational guidance for adults may be considered an integral part of University extension work; in any case, it seems to be in wonderful demand. In every instance no effort is spared by the Extension Office to secure for the enquirer whatever information may be necessary and to advise every applicant with the most scrupulous care. Prompt and cordial replies are without exception supplied; curt answers, either orally or in writing, are banned. It may be that in the large correspondence which this information service involves the Department of University Extension is performing an important function for the University's constituency.

(14) REPORT OF THE DIRECTOR OF DEPARTMENT OF MILITARY STUDIES.

(*Colonel W. R. Lang*).

As requested, I have the honour to report as follows on this Department for the Session 1922-23.

1. The number of Honours and Pass Arts students enrolled in the three courses was fifty-eight, distributed as follows:

Juniors.....	32 (less one withdrawn at Christmas)
Intermediates.....	16 (including 1 student of Dentistry)
Seniors.....	10
	58

In addition to these courses a special one comprising the work of the Third Year had to be given to meet the demands of students who could not attend at the usual hours; there were twenty-three students in this class, making a total of eighty-one taking lectures in Military Studies.

Besides these, 156 took practical instruction in the C.O.T.C.

2. In March, 1922, eighteen candidates successfully passed the War Office examination qualifying them as lieutenants in H.M.'s Auxiliary Forces (Infantry).

In March, 1923, three students of the Fourth Year successfully passed the practical portion of their examination for the Higher Certificates and wrote on the War Office papers; at the same time thirty-four students of the Third Year passed the practical portion of the examination for Certificate "A" and wrote on the papers. The results of these examinations are not yet known.

3. The establishment of the C.O.T.C. has been increased so as to admit of medical students of the senior years forming a company by themselves and receiving instruction in the duties of Army Medical Officers. This course will commence next session and time for it has been allowed in the time-table of the Medical Faculty.

4. Brig.-General G. S. Cartwright, C.B., C.M.G., Retired List R.E., was re-appointed special lecturer (without expense to University funds), and his services have been of great assistance to the department.

(15) REPORT OF THE UNIVERSITY HEALTH SERVICES.

(*Dr. George D. Porter, Director*).

I. MEN STUDENTS.

The University Health Service, which aims at the promotion of health and physical fitness among the students, has now been in operation for two years and the results of the work may be shown as follows: (Dr. Edith Gordon's work among the women students is embodied in a separate report.)

As physical training is now compulsory, it is necessary that the student shall first receive a physical examination which will properly classify him for the work, so that he may take the form and amount of exercise best suited for his needs.

EXAMINATIONS: For this purpose a staff of physicians chosen by the Professor of Medicine have examined the students of the first two years, and the athletic teams, 2,193 in all. 726 men were examined twice. The Professor of Pathological Chemistry had the urinalysis (a very important part of the examination) made for a large number by the medical students in his laboratory under his supervision, and he also did a large number of them himself.

A staff of specialists are also re-examining those referred to them for this purpose (360 re-examinations).

RESULTS: The results of these examinations are most gratifying as regards the general standard of our students, as it has been found that ninety-eight per cent. of them are able to take physical training. We find that there are:

Physically fit and able to take all gymnasium work.....	93%
Men with some disability requiring supervised exercise.....	5%
Physically unfit (some temporarily and a few permanently and exempt from all gymnasium work).....	2%

CLASSIFICATION:

- A-1. Students who are physically fit. May take heavy exercise and athletics.
- A-2. Physically fit. But, owing to light weight, under-development, etc., may take light exercise, but should be instructed what games to play.

- B-1. Students with some defect remediable or otherwise. Must take light exercises and remedial gymnastics.
- B-2. Students with some disability. Temporarily unfit for any exercise. To report later.
- C. Students with some disability not remediable. Exempt from all gymnasium work.

RESULTS:

1921			1922	
Men examined.....	1,450		Men examined.....	1,470
A men, 1,285.....	88%	Physically fit	A men, 1,374.....	93%
B men, 125.....	9%	Supervised Physical Training	B men, 70.....	5%
C men, 40.....	3%	No Physical Training	C men, 26.....	2%

Of the 206 men re-examined this year who were below A-1 last year 127 men (about sixty-one per cent.) have been raised in their physical standing. Improvements due to:

1. General health, weight, etc.....	49
2. Improvements shown by urinalysis.....	28
3. Heart conditions improved.....	18
4. Chest conditions improved.....	5
5. Feet improved.....	4
6. Eyesight improved.....	1
7. Recovered from illness.....	4
8. Scoliosis.....	1
9. Operations.....	18
Appendix.....	2
Hernias.....	3
Tonsils.....	5
Nose.....	2
Mastoid.....	1
Hammer Toes.....	2
Root Abscess.....	3
10. Partial Paralysis.....	1

(Thirty-nine of these men, who were taking supervised exercises last year, are now physically fit, seventeen of these men who were unable to take any P.T. last year, are now taking it.) Of the 640 men re-examined this year who were able to take P.T. last year, twenty-six men (about four per cent.) have been lowered in their physical standing, due to illness or lack of condition generally.

Bronchitis.....	8
Kidney trouble.....	5
Diphtheria.....	1
Loss of weight.....	2
Indigestion.....	1
Eyesight.....	1
Phlebitis.....	1
Painful arches.....	1
Goitre.....	2
Tonsils.....	2
Heart condition.....	2
Total.....	26

While some of this improvement is due to the general environment and healthy conditions of student life, it is evident that some of it is also due directly to the medical advice and care of the Health Service.

VENEREAL DISEASES: It is pleasing to note that no case of syphilis has been found in our examinations of the first three years of the student body. As for other venereal diseases (gonorrhoea), while doubtless here and there cases

have occurred, no evidence of this disease has appeared during our examinations; and when it is realized that the examinations are compulsory, that everyone comes up stripped before us, and that these examinations are all completed in a period of four or five weeks' time, it is evident that we have a remarkable freedom from venereal diseases in our University.

ATHLETICS: We have examined all the athletic teams, track teams and athletes, and in a few cases have prevented students from taking part in athletics and games and gymnasium owing to weak hearts or other conditions making their participation harmful. We have also kept a number with some infection from the swimming pool.

ADVICE: While assuming no responsibility for treatment of those who are ill, we give advice to a large number, and make it our duty to urge proper medical care when needed. A large number of minor injuries, received in the gymnasium or on the campus, have been attended to during the year.

LECTURES: Last year one lecture on personal health was given to the first and second year students in all different faculties.

The co-operation of the men from the different faculties, the students and the Athletic Directorate in the initial work of the University Health Service has been most encouraging.

ILLNESS: Among those able to take physical training last year eighty-five men in the first and second years had exemptions owing to illness from two weeks' duration or over to a whole term, averaging forty days each. (Last year sixty-five men in the Medical Faculty alone made application for exemptions from attendance at classes on account of illness of one week or over.) Based on time lost by these eighty-five men it means an average of two days' loss for each student, and as there were also, without including Dental students, 838 exemptions for shorter periods than one week, the total sickness loss time must amount to a college week per student. This year it will be more, owing to the influenza epidemic.

It is shown also that there are many defects among the students, the great majority of which cannot be corrected by gymnasium work, but require medical treatment. Students with such defects should have advice pointing out where necessary the desirability of proper treatment. The following may be mentioned as examples:

- 17 Serious Heart Lesions.
- 6 Cases of Tuberculosis.
- 31 Hernias.
- 8 Hyperthyroidism.
- 17 Nephritis.

It is clearly recognized that advice only and not treatment by the Health Service is suggested. Certain physical conditions as shown in the Medical Report are known to the students themselves, and are of such a character that they may cause considerable worry and anxiety. A talk with a medical advisor removes such apprehensions and saves these men from seeking the advice of quacks. As an example, there are 275 cases of varicocele which frequently fall under this heading.

Six hundred and forty-three students showed errors of refraction; many of these were unaware of the condition, and these were advised to seek the advice

of an eye specialist. These facts show the importance of medical examination and advice. There are also daily emergencies requiring attention.

Infections are also controlled by proper inspection, and the student body is thus protected.

Graduates of the University become leaders in their community and yet they leave the University at present with no knowledge of health matters whatsoever. The Health Service should be responsible for lectures in health, and spreading such information by private advice at the time of physical examination and when the students come in for exemptions.

In spite of the good showing of our students there are defects of which many are of but little importance, but a large number of them are serious disabilities. That many of them are remediable is one of the reasons for a University Health Service, and as some of the students were, until physically examined, unaware of these defects, their early recognition is of the greatest importance. On the other hand students frequently worry over imaginary ills or fear serious consequences from some slight complaint upon which a little advice and reassurance are of the greatest benefit.

REPORT OF MEDICAL ADVISER OF WOMEN.

(Dr. Edith Gordon, Medical Adviser).

II. WOMEN STUDENTS.

I beg to submit for your approval the report of the Medical Adviser of Women for the year 1922-1923.

There have been 672 physical examinations made. Of these 292 were compulsory. These were the first year students of University College and the Faculty of Medicine, the students of the College of Education taking the physical training option, and students of the Royal College of Dental Surgeons. The remaining 380 examinations represent all Faculties and Colleges of the University and were voluntary on the part of the students. Among these voluntary examinations were 140 who had been examined last year and were anxious to know of any change in their physical condition during the year. I have tabulated these according to improvement or otherwise.

There have been sixty-nine re-examinations throughout the year. These have been made upon students who were taking the corrective classes in the gymnasium, and upon the students who were exempted from the physical training requirement. In this way I have been able to keep in touch with some of the students who are in greatest need of medical supervision.

There have been 588 consultations. The students in increasing numbers have availed themselves of the consultation hours of the Medical Adviser and have brought their various health problems to her for solution. It has been gratifying to note the response on the part of the women to the advice so given, and the benefit derived from it in several instances.

There was a great deal of illness among the women students throughout the winter. The influenza epidemic would account for the increased amount. Fortunately it was not of a serious character, in most instances.

In so far as was possible, an examination of each student who had been ill with influenza was made before allowing her to return to the physical training classes. Thus an endeavour was made to safeguard the students from the after effects of the disease. Reports of illness among the women students were made to the medical office by the heads of residences, and in some cases by the parents of the students. A great deal of illness, however, was unreported, and only came to the notice of the Medical Adviser after the illness was past. I am most anxious that all illness among the women students should be reported to the medical office at the time of the illness. The extent and seriousness of any illness could then be determined, and the well students safeguarded. A considerable number of letters, explaining the physical conditions of various women students, were written to the registrars and professors of their different colleges, to account for the absence from classes, and in some cases, examinations. The files of the Medical Adviser are available for the use of the registrars or professors desiring information regarding any woman student.

Through the courtesy of Dr. C. C. Benson, laboratory space and equipment were given in her laboratories for the use of the Medical Adviser. This made possible the performing of some simple laboratory tests that were deemed necessary to complete the diagnosis in certain examinations.

Six lectures in Personal Hygiene were given to the students in the Department of Public Health Nursing. Through the courtesy of Miss Coventry, one of the compulsory Physical Training periods for the first year women of University College was given over to a lecture on Personal Hygiene by Dr. George Porter. The lecture was open to all women of University College and was well attended, and great interest was shown. It is the hope of the Medical Adviser that five or six lectures on Personal Hygiene may be given each year to all women students of the first year.

The need for more residences for women students has again been emphasized through the reports of several students regarding the conditions under which they were living in rooming houses. The problem of caring for the students who are ill in rooming houses is a serious one. A few rooms in the University College Women's Union are available for infirmary purposes, and have been used a great deal. This applies particularly for the students in residence. Further accommodation should be provided in order that all women who are ill may receive proper care and attention. The most outstanding need for the women is adequate gymnasium accommodation. Smaller rooms with proper equipment are necessary for the proper carrying on of the corrective and remedial classes; a large room for basketball and indoor baseball practices is needed; and larger and more sanitary locker and dressing rooms are required. Miss Coventry, in spite of great difficulties, has carried through a splendid programme of Physical Training with the first year women and others, but it is hoped that she will not long have to work under such a handicap. In planning for the new women's gymnasium it is hoped that due consideration will be made for the need of sufficient grounds near the building to allow for tennis courts, outdoor basketball, a ground hockey field, and in winter a hockey cushion.

PHYSICAL EXAMINATIONS OF WOMEN STUDENTS OF THE UNIVERSITY OF TORONTO
FOR THE YEAR 1922-1923.

University College:		
First year.....	169	
Other years.....	130	
Total.....	—	299
Victoria College.....		54
Trinity College.....		37
St. Michael's College.....		61

Faculty of Medicine:	
First year.....	14
Other years.....	29
Total.....	43
College of Education.....	97
Faculty of Music.....	1
Faculty of Applied Science.....	1
Department of Public Health Nursing.....	33
Department of Social Service.....	4
Royal College of Dental Surgeons.....	12
Occasional and Graduate.....	18
Grand total.....	672

REPORT ON 672 WOMEN STUDENTS OF THE UNIVERSITY OF TORONTO
EXAMINED DURING THE YEAR 1922-1923.

Students physically able to take Physical Training:	
University College.....	75.2%
All Students.....	83.3%
Students requiring supervised or corrective exercise:	
University College.....	20.7%
All Students.....	15.5%
Students unable to take Physical Training (temporarily or permanently):	
University College.....	4.1%
All Students.....	4.2%
Preventable and Correctable Defects (poor nutrition, underweight, overweight, weak feet, functional spinal curvature, constipation, etc.). These could be corrected by remedial exercises and proper personal hygiene:	
University College.....	70.5%
All Students.....	69.9%
Defects that could be corrected by treatment, operation, etc. (diseased tonsils, eye defects, diseased teeth, etc.):	
University College.....	20%
All Students.....	21.9%
Defects that are uncorrectable but that could be prevented from becoming more marked or developing into acute conditions (organic heart lesions, organic spinal curvature, chest conditions, etc.):	
University College.....	9.5%
All Students.....	8.2%

III. REPORT ON ATHLETICS AND PHYSICAL TRAINING.

(*Mr. T. A. Reed, Secretary, Athletic Association.*)

(a) PHYSICAL TRAINING: The work for the academic year 1922-23 shows a distinct advance over that of any previous year, the Compulsory Physical Training in the First and Second Years working more smoothly and with a higher record of attendance.

Twelve hundred students were enrolled in the Gymnasium Classes, and during the session 564 classes were held, the Gymnasium instruction being given by Mr. D. M. Barton, Chief Instructor, and Mr. W. A. Martin, both experienced men.

The Swimming activities were again under the control of Mr. W. W. Winterburn. There were held 217 "Learn to Swim" classes and 163 students were taught how to swim. One hundred and ninety-five Life Saving Classes were held, and 168 students passed the necessary examination for the Royal Life Saving Society. Of these students, 22 attained such high standing that they were competent to assist the instructor in the Swimming and Life Saving Classes.

(b) INTERCOLLEGIATE ATHLETICS: While the Session of 1922-23 was not as productive of as many championships as in the immediately preceding years, nevertheless it can be considered a very satisfactory one in University athletics, the teams representing the University in the various branches of sport measuring up to the high traditions of sportsmanship that have always prevailed.

The University of Toronto won the Hockey Senior and Intermediate Championships, the Swimming and the Harrier, the Senior Rugby going to Queen's University, and the Boxing, Basketball, Track, Tennis and Water Polo and Gymnasium Competition going to McGill.

(c) INTERFACULTY ATHLETICS: A larger number of students participated in the various competitions for Interfaculty Cups, there being over 300 players engaged in the Mulock Cup (Rugby competition), over 180 in the Hockey, 205 in the Basketball and 150 in Indoor Baseball, 47 in the Gymnasium Classes and over 400 students being trained in the elementary instruction in Boxing, Fencing and Wrestling. In Water Polo and Swimming there were 210 men enrolled, and in the Track sports there was a larger number of competitors than in any previous year.

It might be pointed out in passing that this year the experiment was tried of accepting for the requirements in Physical Training, participation in University and Interfaculty sports, the attendance being reported to this office weekly by the managers of the respective teams. This, of course, was only effective during the session that the respective sports were in progress, the students taking up the Gymnasium Classes again as the competitions were closed, and in its results proved very satisfactory.

It is the sad duty to report the untimely death of William Langford Rowell, a student in the Third Year Arts, who was one of the University's outstanding athletes. As a tribute to his worth his fellow students had elected him Captain of the Track Team for the next year, and at the Track Meet held in Montreal last autumn he practically equalled the Intercollegiate record in the 120 yard race. In addition to this he was a valued member of the Senior University Hockey Team, and in all sports connected with the University and with his own College, Victoria, he was a leader among men.

IV. DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN.

(Miss I. Coventry).

I beg to submit the report of the Directress of Physical Education for Women Students for the year 1922-1923.

Compulsory Physical Training Classes were composed of the First Year Women Students of University College, the Faculty of Medicine, the College of Education taking the Physical Training option, and the Royal College of Dental Surgeons. Voluntary students were from University College, Victoria College, Trinity College and St. Michael's College.

The Compulsory Physical Training Class composed of First Year Women students of University College, numbering one hundred and fifty, had to be subdivided into four classes on account of the limited floor space in the small gymnasium. Even this arrangement was not a satisfactory one, as the numbers

could not be equally divided. There were one hundred and seventeen students in one class and thirty-three in another. Each class had two periods per week.

Seven special class periods in corrective and remedial exercises were arranged to accommodate women students required to take this work. These classes, composed of ten or twelve women students requiring individual attention, should be conducted in smaller rooms equipped with the necessary apparatus, thus freeing the gymnasium, which is needed for larger athletic classes.

It was impossible to arrange for the forty-two students who enrolled in the First Year of the Diploma Course in Physical Training for the same reason, *i.e.*, lack of accommodation. It is expected that the enthusiasm and interest shown in this course will be continued next year.

To meet the many appeals of the students and athletic team clubs for organized games, it was necessary to arrange several special periods at hours not convenient to the students. The attached time-table contains a summary of the occupied periods in the gymnasium and swimming pool.

The above statements make clear the pressing needs for larger and more suitable equipment for carrying on the work of the Department. It is to be hoped that the women's new gymnasium will become a reality in the near future.

It has been of great help and benefit to my work to have the advice, help and co-operation of Dr. Edith Gordon. Her keen interest in the promotion of the health and welfare of those students who were advised to attend the corrective and remedial classes, I truly appreciate.

It would have been impossible to conduct the numerous classes successfully without the capable assistance of Miss Mildred Sherrin.

The encouraging results following the skilful and tactful manner in which Mr. Cochrane conducted the swimming classes were evident, for even the most timid were inspired with confidence.

(16) REPORT OF THE WARDEN OF HART HOUSE.

(J. B. Bickersteth, Esq., M.C., M.A.).

The use made of Hart House by all members of the University, Undergraduate, Graduate and Faculty, increases with each succeeding year. During the past winter there has hardly been a day that every part of the House has not been in demand. A mere list of the societies, clubs and University organizations of every description which have met in Hart House throughout the period under review would cover several pages. More important than this, however, is the fact that individual students of all Faculties, Colleges and Years have daily used the House in increased numbers, and thus Hart House is fulfilling its chief function of providing a meeting place for students of all types and interests. To a greater extent than ever before, the Committees of Hart House have included men of every Faculty, and these men have invariably worked for the welfare of the University as a whole.

THE HOUSE COMMITTEE. The House Committee, meeting every two weeks, has given careful consideration to many problems of administration. The hospitality of the House was extended to the delegates of the National

Student Conference, in connection with which a reception for 1,500 people was held, all parts of the House being utilized. Early in December seventeen of the most important Universities of the United States of America each sent a representative to a meeting of the Association of University and College Unions held in Hart House. Every department of the House was shown to these visitors during their three days' visit, and the universal opinion expressed was that Hart House is unique both in its architecture and the variety of activities it fosters under one roof. The privileges of the House were also extended to the American Society of Experimental Biology and to those attending the Extension Course in Export Trade, the Short Course for Farmers, and the Short Course in Civics and Town Planning. In April hospitality was offered to the men delegates of the Conference on Education and Citizenship. On Convocation Day, the House, as in former years, was thrown open for various Class Reunions.

During the winter the usual dances were held. The House Committee again managed the Masquerade, at which some 1,600 students in fancy dress were present. Double tickets were sold at \$1.50 each, and with the profit a picture was purchased for the house.

An innovation this year was the so-called "Faculty Night." The idea originated with the Faculty of Applied Science and Engineering. On a certain night the whole House, including the Theatre, was handed over to this Faculty, every member of which was present with a friend. During the early part of the evening, side-shows and burlesques were put on in various parts of the House, and exhibitions of athletics and swimming took place in the gymnasias and swimming pool. A light supper was served, and about 11 p.m., dancing commenced in the Gymnasias and the Great Hall. The expense incurred by the individual student, which did not exceed twenty-five cents, made it possible for every one to be present, and the whole function was an unqualified success. Later in the year a "Faculty Night" was given by the students of the Royal College of Dental Surgeons.

During the winter several addresses were delivered in the Lecture Room at midday, among the speakers being Mr. Meighen, Mr. Philip Kerr and Dr. V. Stefansson. The number of people from all parts of the world who have visited Hart House during the past twelve months has been very remarkable.

A valuable gift in the shape of a statue of Hermes was presented to the House by Mr. George W. Booth, of Messrs. Borgfeldt & Company, and a sundial of great historical interest was presented by Dr. Alfred Baker. Both these gifts have been placed in the Quadrangle. Two large pictures of the City of Quebec were presented by M. Cyrille Delage, Superintendent of Education in the Province of Quebec.

THE HALL COMMITTEE. Much time and thought has been given by this Committee throughout the year to the affairs of the Great Hall. In addition to the serving of meals at the ordinary rates, a cheaper lunch at twenty cents was provided, which proved extremely popular, and the number of men using the Great Hall for their meals has been very satisfactory.

THE LIBRARY COMMITTEE. A considerable number of new books of wide and general interest have been added, and owing to the careful management and the supervision of the Curator, fewer books have disappeared from the shelves. No part of the House has been more used, and it has been necessary to provide further seating accommodation.

THE MUSIC COMMITTEE. An interesting development in the musical activities of the House has been the inauguration of a series of Sunday evening concerts in the Great Hall. These concerts have been held between 9 and 10 p.m., about every third Sunday evening, and among the leading musicians of the city who have given their services, as friends, are Mr. Campbell McInnes, Mr. Carlos Buhler, Mr. Paul Wells, Mr. F. Fillion, Mr. Leo Smith, Mr. Von. Kunits, Mr. F. S. Welsman, Mr. Arthur Friedheim and Mr. Alberto Guerrero. The demand for tickets, of which five hundred were issued to members of Hart House free, was enormous, and on every occasion the Great Hall has been completely filled with undergraduates and their friends. During fall term-time, recitals were held in the Music Room every Friday afternoon at 5 p.m., when professional musicians of Toronto again lent their services. Throughout the year attendance at these recitals has been very large.

THE BILLIARD COMMITTEE. A new English billiard table was purchased and several successful undergraduate tournaments have been held. There has been steady improvement in the general conduct of those members using the Room.

THE SKETCH COMMITTEE. The past year has been the most successful in the history of the Sketch Club. An exhibition of pictures has been held each month and a lecture has been given every two weeks. There have been exhibitions of Cézanne drawings, Rubens drawings, paintings by Professor C. W. Jefferys, Japanese prints and paintings by Dr. A. P. Coleman. Lectures were given by Mr. Arthur Lismer, Mr. H. Stansfield, Mr. F. Haines, Mr. P. M. Turner (of the Independent Gallery, London), Professor C. W. Jefferys, Sir Edmund Walker, Dr. Coleman, and Sir Michael Sadler. The co-operation of the Ontario College of Art has done much to make the work of the Sketch Club a success. Throughout the winter a loan exhibition of pictures by Toronto artists has been hung on the walls of Hart House. The Sketch Club also organized the arrangements by which the Graduating Year of 1923 presented a picture to Hart House. A number of valuable copies of the *Burlington Magazine* were presented to the Club by Mrs. Gerrans, of Oxford. Some Cézanne drawings were presented by Capt. D. E. Wallace, M.C. (2nd Life Guards), and a series of Rubens drawings were presented by Mr. P. M. Turner. Mr. F. M. Kimbark gave the Club an interesting collection of prints.

CAMERA CLUB COMMITTEE. Under the guidance of Mr. K. B. Jackson, the interest shown in the activities of this Club has greatly increased. The membership has grown, exhibitions have been held, and the dark rooms—now adequately equipped—have been in constant use.

THE SQUASH CLUB COMMITTEE. The number of men playing Squash Racquets during the past year has greatly increased. Mr. A. F. Coventry has given much time and thought to the development of the game, and during the summer various improvements are being made to the courts.

THE GRADUATE COMMITTEE. Great efforts have been made to draw graduates of the University into the activities of the House, and the graduate members of Hart House have increased in number. A monthly dinner has been held, followed in each instance by a programme of varied interest, and the attendance at these dinners has been good. A graduate inter-faculty baseball league was started and the cup, which was presented by Mr. G. P. Meadows for graduate athletics, was won by the graduates of University College. Many

graduate clubs, such as the Diggers, Critics, the Ruskin, and the Young Lawyers' Club, met regularly at Hart House during the winter. Much greater use has been made of the Graduate Dining Room than in former years.

RELIGIOUS ACTIVITIES. An informal Committee met during the earlier part of the year to discuss the best means of bringing the Chapel more into the life of Hart House. Informal services were held there at 1.30 p.m. on certain days, and at midday individual students made use of the Chapel for private prayer. As a result of the National Student conference in December, and of the visit of Dr. Herbert Gray in February, definite steps were taken this spring to reorganize the work of the Young Men's Christian Association and the Student Christian Movement. Many of the meetings held with this in view took place in Hart House, and after long and careful consideration it was decided that these two bodies should be united under the title of the Student Christian Association, and it is hoped that the religious activities of the House in general will be greatly stimulated by the co-ordination of these two organizations.

THE THEATRE. During the past year the Board of Stewards of Hart House and the Board of Syndics of the Theatre arrived at an understanding by which—as far as possible—the Theatre will be put at the disposal of the various Faculties on certain nights. There has been the closest co-operation between the Director of the Theatre (Mr. Bertram Forsyth) and myself.

ATHLETIC ASSOCIATION. The relations between the Board of Stewards and the Athletic Directorate have been of the most cordial character throughout the year.

As Warden of Hart House, it has been my endeavour to make the personal acquaintance of as many undergraduates as possible. During the past year I have used my own rooms to entertain several hundred men, in small groups at a time.

Mr. W. H. Graham is leaving Hart House in July to take up other work. During the two years that he has been Treasurer of Hart House he has given unstinted time and energy, not only to the accounts, but to the other manifold interests of the House. Mr. J. R. Gilley, a Graduate of the Faculty of Applied Science and Engineering of 1921, has been appointed to take his place. Mr. R. D. Stott, a Graduate of the O.A.C., has been appointed as the Warden's Secretary in place of Mr. S. B. Wright.

The Board of Stewards and the Finance Committee, sitting regularly throughout the year, have given much thought and time to the many questions of policy which must constantly arise during the early years of an institution such as Hart House. Owing to the pressure of other duties, Mr. G. M. Smith has resigned from the Board of Stewards on which he has done such valuable work from its inception. The members of Hart House are well aware of the great debt they owe to the Senior and Junior members of these and of all the Committees for the vitality and vigour of the common life, which is fulfilling the ideal of the founders.

(17) REPORT OF THE CONNAUGHT ANTITOXIN LABORATORIES.

(*Dr. J. G. Fitzgerald, Director**).

(*Dr. R. D. Defries, Acting Director*).

During the past year the work of the Laboratories has been greatly extended. This has been largely due to the epoch-making discovery of Insulin by Dr. F. G. Banting and Mr. C. H. Best. As was pointed out in the last report, the Connaught Laboratories set aside a sum of \$5,000 to make possible the production of the extract for use in the Toronto General Hospital and Hospital for Sick Children during the period in which the value of the extract was being determined. This co-operation on the part of the Laboratories was of the greatest value in the development of Insulin. At the conclusion of this period of clinical trial it was decided that the Laboratories should undertake the preparation of Insulin on a large scale sufficient to meet the needs of the clinical investigation which has been commended in several of the hospital centres in Canada, and ultimately, if required, to meet the need for Insulin in Canada. An Insulin division of the Laboratories was organized and Mr. C. H. Best was appointed in charge, with Mr. D. A. Scott as his assistant.

RESEARCH DIVISION. The important investigations in tuberculosis which have been conducted by Dr. Caulfeild and his associates, Miss Cohen, Miss MacLennan, and Mrs. La Rush, during the past four years, have been continued and valuable results have been obtained. The endeavour is being made in this research to ascertain the diagnostic and prognostic value of certain serological methods in tuberculosis by correlation with radiological, clinical and other observations. Further studies on the production of toxin by bacteria have been conducted by Miss Hanna and a number of interesting and important observations have been made which will appear in the next volume of studies published by the Research Division. The work of the Laboratories in connection with Insulin has not been confined to the preparation and distribution of this product. The rapid development of Insulin was made possible by team work of the different departments of the University. The Research Division of the Laboratories undertook the investigation of the chemical nature of Insulin, and Mr. P. J. Moloney has directed and carried out an extensive investigation of the chemical properties and nature of Insulin. Mr. D. M. Findlay was appointed later to assist him in this study. A great deal of valuable research work in connection with the methods of preparation of Insulin has been carried out under the direction of Mr. C. H. Best, in the Insulin Division, assisted by Mr. D. A. Scott, Mr. Wilfred Grant and Miss Ridout. Mr. Best has contributed a number of valuable papers on this subject during the year. Dr. D. T. Fraser has developed an additional method for determining the strength of Insulin, using white mice, which promises to be of considerable importance. The results of a number of these investigations have been published in various scientific journals during the year. A complete list of these papers, totalling fourteen, has been submitted.

ANTITOXIN DIVISION. Distribution of the various public health biological products prepared by the laboratories has been widespread. Requests for products have been received from China, Korea, New Zealand, British Honduras, Trinidad and Newfoundland. The major distribution has been, of course, in Canada, to the various Provincial Boards of Health and Hospitals. The

* Leave of absence from September to May.

biological products distributed included diphtheria antitoxin, tetanus antitoxin, anti-meningitis serum, anti-pneumococcus serum Type I, anti-rabies vaccine, anti-typhoid and paratyphoid vaccine, pertussis vaccine and normal horse serum. The Laboratories received in 1920 a license from the Treasury Department of the United States permitting the distribution of public health biological products in the United States after thorough inspection of the Laboratories. This license has been continued and in the report of the inspecting officer this year special commendation was made of the Laboratories at the University Farm.

INSULIN DIVISION. The preparation of Insulin has been carried out in laboratories in rooms which were made available in the basement of the Medical Building. These laboratories soon proved to be inadequate and quite unsatisfactory for the continued preparation of this product. Many difficulties in connection with large scale production have been met with. Professor Bain, of the Department of Applied Chemistry, has aided the work in many ways, and kindly placed at our disposal equipment, including a large rectifying still in the Mining Building. A gift of \$10,000 from Mr. Bacon, of New York City, conveyed through Dr. F. G. Banting and Dr. Geyelin, of New York, for the special purpose of providing equipment for large scale production of Insulin, was received in August. This generous gift was of the greatest assistance and made possible the rapid extension of the plant and the distribution to eight of the large hospitals in Canada. The price of Insulin was reduced as a result of this new equipment and in every way this munificent gift served the purpose for which it was given. The Laboratories have been fortunate in securing from the Board of Governors the use of the building formerly occupied by the University of Toronto Y.M.C.A., as an Insulin laboratory. A request was made to the Provincial Government of Ontario for \$25,000 to cover the cost of alterations and the purchase and installation of apparatus sufficient to meet the need for Insulin in Canada. The Government endorsed the suggestions and acceded to the request. The building and plant will be in operation early this summer. Insulin is being distributed through the co-operation of the Provincial Medical Associations and the Provincial Governments and the situation is being satisfactorily met.

The loyal and hearty co-operation of all members of the various divisions of these laboratories is gratefully acknowledged, which has made possible this work during the temporary absence of Dr. J. G. Fitzgerald, Director of the Laboratories, who was on leave of absence during the last year.

(18) STATEMENT REGARDING THE BIOLOGICAL MUSEUM.

(Professor B. A. Bensley).

During the year 1922-23, the collections of the Biological Museum and of the Royal Ontario Museum of Zoology were greatly increased by the addition of material collected by the staff, private donations and purchases. The technical staff of the Museum of Zoology completed a number of coloured casts of fishes, some smaller habitat mounts and a large habitat mount illustrating the natural history of the American black bear. Through the action of the Board of Trustees, two of the Heming canvases depicting northern life were obtained, thus completing a set of twelve paintings, of which ten had been previously acquired through the generosity of Sir Joseph Flavelle, Bart. Following is a list of the more important donations:

- A mounted kudu antelope head, from Dr. H. M. East, Toronto.
 An American goshawk, from Mrs. Ross, Toronto.
 Six American woodcock, from Dr. L. H. Langstroth, Norton, N.B., through Professor R. B. Thomson.
 Two blue geese, from Mr. E. R. C. Clarkson, Toronto.
 A red-breasted merganser, from Mr. Stuart Thompson, Toronto.
 An elephant skull, from Mr. Paul Hahn, Toronto.
 A great horned owl, from Mrs. Kinney, Toronto.
 A whistling swan, from Mr. T. McDonell, Toronto.
 A Manchurian eared pheasant, lesser snow and Indian comb geese, from Mr. Geo. Corsan, Toronto.
 Two cases of birds, from Miss Wright, Toronto; specimens obtained at Toronto by Mr. Geo. Wright.
 A set of sixteen coloured lantern slides from Mr. W. H. Robinson, Industrial and Resources Department, Canadian National Railways, Toronto.
 A case of birds, from Mr. W. Robinson, Toronto.
 A Lady Amherst pheasant, from Mr. McLean-Howard, Toronto.
 A collection of birds' eggs, from Dr. P. E. Clarkson, Toronto.
 A snowy owl, from Dr. Paul Helliwell, Dryden, Ont.
 A mounted sturgeon head, from Mr. Aemilius Jarvis, Toronto.
 Many specimens were donated by the Parks Department of the City of Toronto, including a tiger, kangaroo, bear, bison, lioness, dingo and other mammals. Several collections have been acquired by purchase for the most at very nominal prices, including 1,431 bird and mammal skins from Mr. W. R. Campbell, Lobo, Ont; 72 mammal skins, from Mr. Stuart Criddle, Treesbank, Man.; and a large collection of birds' eggs from Mr. A. A. Wood, Coldstream, Ont.

(19) STATEMENT REGARDING THE PALÆONTOLOGICAL MUSEUM.

(Professor W. A. Parks.)

During the year two heads of a new species of trachodont dinosaur have been mounted in the gallery, and the skeletons of two other dinosaurs have been prepared. During the summer of 1922 a successful expedition was conducted in Alberta, resulting in the obtaining of several fine skeletons. The Director spent the summer in Europe, where considerable collections were made from the Upper Ordovician and Silurian of England, and from the Palæozoic, Cretaceous, and Tertiary of Belgium.

The more important acquisitions during the year are as follows:

BY DONATION:

- Collection Tertiary Bryozoa—Dr. Ray S. Bassler, U.S. National Museum.
 Slab with reptile tracks—Benjamin Howell, Esq., Princeton, N.J.
 Devonian trilobites—Miss Evelyn Johnston, Brantford, Ont.
 Two specimens Atikokania—J. E. Marks, Esq., Port Arthur (per Prof. Parsons).
 Opalized wood—Alfred E. Bailey, Esq., 117 Vaughan Road, Toronto.

BY COLLECTION:

- Richmond Fossils from Streetsville, Ont.—Mr. W. S. Dyer.
 Large collection English Fossils—Professor Parks.
 Large collection Belgian fossils—Professor Parks.
 Dinosaurs from Cretaceous of Alberta—Mr. Sternberg.
 Ordovician fossils from Workman's Brook, Ont.—The staff.

BY EXCHANGE:

Collection of Hamilton Bryozoa—R. R. Hibbard, Esq., Buffalo, N.Y.

Collection of Carboniferous fossils—Professor Reynolds, University of Bristol.

Collection of Carboniferous, Cretaceous, and Jurassic fossils from western States—I. A. Keyte, Esq., Colorado Springs, Col.

BY PURCHASE:

Collection of Ostracoda—Dr. Ray S. Bassler, U.S. Nat. Museum.

Collection of insects in amber—D. Dreuckhahn, Germany.

Dapedius politus and Dudley fossils—R. Gregory & Co., London.

Mesozoic fossils from the Rocky mountains—F. P. Laine, Esq., Calgary.

Cretaceous and Tertiary Bryozoa—E. Voigt, Dessau, Germany.

Slab of Carboniferous leaves from Pennsylvania.

(20) STATEMENT REGARDING THE MINERALOGICAL MUSEUM.

(Professor T. L. Walker.)

In the Royal Ontario Museum of Mineralogy, which is under the direction of Professor T. L. Walker, are very extensive collections of minerals and rocks. The most generous benefactors of this section were men connected with the mining industry. To make the collections more useful to visitors the large specimens contained in the high cases are provided with special explanatory labels. In the cases on the east wall of the gallery, a special display of the minerals of Canada is arranged. The Director appeals to friends of the University for contributions of minerals and rocks with a view to making these collections as complete as possible.

During the past year the collections have been increased by donations from a large number of friends, particularly mine owners and mining engineers in the Cobalt, Sudbury, Porcupine and Kirkland Lake Areas.

Notable presentations have been made by the International General Electric Company, the Albert Manufacturing Company, and D. A. Nichols, Esq.,

Important exchanges have been made with the United States National Museum, Harvard University, the Museum of Natural History, Paris, and F. N. Ashcroft, Esq., London, England.

(21) STATEMENT REGARDING THE MUSEUM OF ARCHÆOLOGY.

(Professor C. T. Currelly).

The rapid growth of the Royal Ontario Museum of Archæology has continued throughout the present year. Some hundreds of important gifts have been received. The importance of many of the pieces will make them, for all time to come, great national treasures that will have a marked effect upon the development of the country along all lines in which any artistic judgment is shown.

The phenomenal development of the George Crofts Collection of Chinese art still continues the outstanding feature, though there has been a steady growth in the Classical, Furniture, Japanese, Indian, Costume, Musical Instruments, Ironwork and Faience departments.

Dr. Harcum, of the Museum staff, and Dr. David M. Robinson, of Johns Hopkins University, have continued their work on our publication of the classical vases.

The teaching work in the Museum has increased, and numerous large meetings have taken place. We are glad to see that the use of the Museum is growing steadily.

The routine work of the Museum has proceeded as usual. The list of donations to the Museum is too long to be printed.

APPENDIX B.

- (1) Enrolment in the Colleges.
- (2) Enrolment in University subjects.
- (3) Registration in Courses in the Faculty of Arts.
- (4) Registration for Graduate Courses.

(1) ENROLMENT IN THE COLLEGES.

The students in University College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Oriental	Ethics
First Year—								
Pass.....	11	208	77	212	28	200	120	.....
Honours.....	6	28	43	130	26	106	4	8
Second Year—								
Pass.....	5	44	.....	261	10	162	95	44
Honours.....	4	6	49	84	29	40	3	5
Third Year—								
Pass.....	4	13	.....	171	7	102	63	36
Honours.....	2	8	1	33	15	25	3	8
Fourth Year—								
Pass.....	5	10	.....	103	8	57	56	28
Honours.....	4	3	2	54	7	37	5	11
Totals—								
Pass.....	25	275	77	747	53	577	335	108
Honours.....	16	45	95	301	77	152	15	32

The students in Victoria College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Oriental	Ethics
First Year—								
Pass.....	4	89	23	78	5	83	16	.....
Honours.....	1	8	20	63	30	44	.....	4
Second Year—								
Pass.....	5	21	.....	119	5	78	9	13
Honours.....	3	5	16	25	11	15	1	4
Third Year—								
Pass.....	3	8	.....	55	.....	32	.....	16
Honours.....	3	4	3	15	9	18	1	10
Fourth Year—								
Pass.....	3	8	.....	65	3	32	.....	6
Honours.....	1	2	1	15	1	13	3	6
Totals—								
Pass.....	25	126	23	317	13	225	25	35
Honours.....	5	19	40	118	51	90	5	24

The students in Trinity College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Oriental	Ethics
First Year—								
Pass.....	2	33	.....	28	2	26	5	.....
Honours.....	.....	2	3	9	.....	7	.....	.....
Second Year—								
Pass.....	.....	8	.....	16	.....	14	.....	.....
Honours.....	.....	2	.....	2	4	6	.....	.....
Third Year—								
Pass.....	2	7	1	16	1	10	.....	3
Honours.....	2	2	.....	1	.....	1	.....	.....
Fourth Year—								
Pass.....	1	3	2	13	.....	9	.....	3
Honours.....	2	2	2	2	1	1	.....	1
Totals—								
Pass.....	5	51	3	73	3	59	5	6
Honours.....	4	8	5	14	5	15	.....	1

The students in St. Michael's College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Philosophy	Ethics
First Year—								
Pass.....		52	3	52	5	50		
Honours.....		4	4	12	4	11	1	
Second Year—								
Pass.....		47		58	2	49	19	
Honours.....		1		7	3	9	10	8
Third Year—								
Pass.....		5		20	2	20	18	16
Honours.....	1	2	1	7	1	8	4	4
Fourth Year—								
Pass.....		5		21	3	20	18	9
Honours.....	1	1	1	3		3	4	4
Totals—								
Pass.....		109	3	151	12	99	55	25
Honours.....	2	8	6	29	8	31	19	16

(2) ENROLMENT IN UNIVERSITY SUBJECTS.

The following tables exhibit the numbers attending lectures in University subjects, together with the number of those taking the practical work in the laboratories:—

DEPARTMENT OF MATHEMATICS.

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year.....	382		103
Second Year.....	39		84
Third Year.....	9		48
Fourth Year.....	16		9
Faculty of Medicine—			
First Year.....	19		
Second Year.....	5		
Third Year.....	2		
Faculty of Applied Science—			
First Year.....		137	
Second Year.....		142	
Total.....	472	279	244

DEPARTMENT OF PHYSICS.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year.....	358		86	86
Second Year.....	12		55	62
Third Year.....	6		29	35
Fourth Year.....	3		27	10
Faculty of Medicine—				
First Year.....		95		95
Second Year.....		9		9
Third Year.....		5		5
Faculty of Forestry—				
First Year.....	12			12
Faculty of Household Science—				
First Year.....	27			27
School of Graduate Studies.....			20	16
Total.....	418	109	217	357

DEPARTMENT OF BIOLOGY.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year.....	359		77	77
Second Year.....	32		54	86
Third Year.....	15		21	36
Fourth Year.....	15		11	26
University Extension—				
Y.M.C.A.....	13			13
Hamilton.....	21			21
Faculty of Medicine—				
First Year.....		96		96
Second Year.....		134		134
Faculty of Applied Science—				
Fourth Year.....		17		17
Faculty of Forestry—				
First Year.....		10		10
Fourth Year.....		10		10
School of Graduate Studies.....				10
Ontario Agricultural College:				
Second Year.....		50		50
Third Year.....		32		32
Totals.....	455	349	163	620

DEPARTMENT OF BOTANY.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year.....	359		80	80
Second Year.....	54		32	86
Third Year.....	13		3	16
Fourth Year.....	19		7	26
Faculty of Applied Science.....		25		25
Faculty of Forestry—				
First Year.....		14		14
Fourth Year.....		11		11
School of Graduate Studies.....			13	13
Total.....	445	50	135	271

DEPARTMENT OF CHEMISTRY.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year.....	316		113	113
Second Year.....	89		64	111
Third Year.....	34		11	15
Fourth Year.....	5		7	12
Faculty of Medicine—				
First Year.....		96		96
Second Year.....		116		116
Faculty of Applied Science—				
First Year.....		24		24
Second Year.....		29		34
Third Year.....		99		99
Fourth Year.....		27		27
Faculty of Forestry—				
First Year.....	11			11
Second Year.....	14			14
School of Graduate Studies.....			19	15
Total.....	469	391	214	687

DEPARTMENT OF GEOLOGY.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year.....	317	44	51	.....
Second Year.....	42	.....	12	12
Third Year.....	3	.....	3	5
Fourth Year.....	12	.....	4	16
Occasional Students.....	.....	.....	2	1
University Extension.....	72	.....	.....	72
Faculty of Applied Science—				
Second Year.....	.....	38	.....	5
Third Year.....	.....	45	.....	9
Fourth Year.....	.....	61	.....	20
Faculty of Forestry—				
Second Year.....	.....	14	.....	.....
Third Year.....	.....	11	.....	11
School of Graduate Studies.....	.....	.....	4	3
Total.....	446	213	76	154

DEPARTMENT OF MINERALOGY.

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year.....	96	.....	15	111
Third Year.....	.....	.....	14	10
Fourth Year.....	.....	.....	7	7
Occasional Students.....	.....	.....	2	2
Faculty of Applied Science—				
First Year.....	.....	36	.....	36
Second Year.....	.....	33	.....	33
Third Year.....	.....	8	.....	8
Fourth Year.....	.....	18	.....	18
Faculty of Forestry—				
Second Year.....	.....	14	.....	14
Third Year.....	.....	2	.....	2
School of Graduate Studies.....	.....	.....	2	2
Total.....	96	111	40	243

DEPARTMENT OF PHILOSOPHY.

	Pass	Honours
Faculty of Arts—		
First Year.....		16
Second Year.....	75	18
Third Year.....	76	18
Fourth Year.....	60	16
University Extension.....	73	
Faculty of Medicine—		
Second Year.....	8	
Third Year.....	8	
School of Graduate Studies.....		28
Department of Social Service.....	48	
Totals.....	348	96

DEPARTMENT OF POLITICAL SCIENCE.

	Pass	Honours
Faculty of Arts—		
First Year.....		79
Second Year.....	177	87
Third Year.....	119	49
Fourth Year.....	92	38
University Extension.....	8	
Faculty of Medicine—		
Second Year.....	25	
Third Year.....	25	
Faculty of Applied Science—		
Second Year.....	175	
Faculty of Forestry—		
Third Year.....	15	
School of Graduate Studies.....		14
Department of Social Science.....		
First Year.....	37	
Second Year.....	8	
Department of Public Health Nursing.....	41	
Occasional Students.....		19
Totals.....	722	286

DEPARTMENT OF HISTORY.

	Pass	Honours
Faculty of Arts—		
First Year.....		99
Second Year.....	138	80
Third Year.....	101	49
Fourth Year.....	61	52
University Extension.....	75	.....
Occasional Students.....	8	2
Faculty of Medicine.....	37	.....
School of Graduate Studies.....		11
Totals.....	420	293

DEPARTMENT OF ITALIAN AND SPANISH.

	Italian		Spanish	
	Pass	Honours	Pass	Honours
Faculty of Arts—				
First Year.....	26	7	104	45
Second Year.....	7	1	55	36
Third Year.....		2	32	16
Fourth Year.....	2	2	25	16
School of Graduate Studies.....		3		3
Total.....	35	15	216	116

DEPARTMENT OF HOUSEHOLD SCIENCE.

	Pass	Honours
Faculty of Arts—		
First Year.....		29
Second Year.....		21
Third Year.....	21	12
Fourth Year.....	7	19
University Extension.....	26	.....
Faculty of Medicine—		
Third Year.....	143	.....
School of Graduate Studies.....		1
Department of Public Health Nursing.....	45	.....
Total.....	242	81

(3) REGISTRATION IN COURSES IN THE FACULTY OF ARTS, 1922-1923.

Courses	First Year			Second Year			Third Year			Fourth Year			Total				
	UC	VC	TC	MC	UC	VC	TC	MC	UC	VC	TC	MC					
	Pass.....	203	76	28	51	147	62	17	47	118	34	15		19	72	42	10	22	963
Classics.....	6	1			4	3	1			3	2	1		2	1	2	28
Greek and Hebrew.....					1	1			1	1				1	3		8
Oriental.....																	
Oriental (Greek Option).....																	
French, Greek and Latin.....																	
Moderns.....	35	23	3	5	37	7	2	5	26	15	1	4	25	12	1	4	205
English and History.....	29	11	3	4	3	8	4	2	12	4	4	4	6	8	1	1	100
Modern History.....	1	2	1		2	4	1		2			1					15
Political Science.....	9	1	1	1	22	15	4	2	13	8			21	4	3		104
Commerce and Finance.....	16	6	1	1	19	8			6	6			4	1			68
Philosophy.....	7	3	2	1	5	4	2	8	4	4		4	1	2		4	40
Philosophy, English and History.....					8	1		2	2	4			8	4	1		45
Mathematics.....	19	6	2	3	4	2											8
Mathematics and Physics.....	34	13	1	1	1	4	1		12	6			5	6			64
Natural and Physical Sciences.....																	49
Physics.....					1				1								2
Biology.....					4	1				2				3			10
Physiology and Biochemistry.....					1	1											2
Biological and Medical Sciences.....					9	12	1	1	9	7	1		12	7	2	1	61
Chemistry and Mineralogy I.....					2	1			4	2							9
Chemistry and Mineralogy II.....									1				2				3
Chemistry.....					4	2			4	4			4	1		1	16
Geology and Mineralogy.....					3				1								4
Household Science.....	1					1			2				2	1			8
Household Economics.....	9	15	1	1	12	7			4	4	1		8	8			70
Science for Teachers.....	31	12	1	1	1	3			6					2			4
Commerce.....					15								1				70
Totals.....	400	171	46	70	308	144	31	67	229	103	20	35	177	103	20	35	1,959

(4) REGISTRATION FOR GRADUATE COURSES.

	Ph.D.	M.A.	M.D.	M.A.Sc.	M.Arch.	C.E.	M.E.	E.E.	D.Paed.	Graduate
Department of										
" Anatomy.....	1									
" Architecture.....					1					
" Astronomy.....		1								
" Biochemistry.....	2	4								
" Biology.....	5	1								
" Botany.....	7	4								1
" Chemical Engineering.....				6						
" Chemistry.....	11	15								1
" Civil Engineering.....				1		4				
" Classics.....		5								3
" Educational Theory.....		4								1
" Electrical Engineering.....								2		
" English.....		17								15
" Food Chemistry.....		3								
" Forestry.....										
" Geology and Palaeontology.....	2	1								1
" German.....		1								1
" History.....	2	10								
" Household Science.....										
" Hygiene and Preventive Medicine.....	2									
" Mathematics.....	1	7								1
" Mechanical Engineering.....										
" Metallurgical Engineering.....				1						1
" Mineralogy.....		1								
" Mining Engineering.....				4						
" Pathology and Bacteriology.....		1	1							
" Pathological Chemistry.....		2	1						38	
" Pedagogy.....										
" Pharmacology.....										
" Philosophy.....	4	20								5
" Physics.....	11	8								1
" Physiology.....		3								
" Political Science.....	3	26								1
" Psychology.....		2								1
" Romance Languages.....	4	2								8
" Semitic Languages.....	2	5								
" Zymology.....		4								
Total.....	57	147	2	12	1	4	1	2	38	40

APPENDIX C.

RESULTS OF EXAMINATIONS.

- (1) Faculty of Arts.
- (2) Faculty of Medicine.
- (3) Faculty of Applied Science and Engineering.
- (4) Faculty of Forestry.
- (5) Ontario College of Education.
- (6) Faculty of Music.

(1) Faculty of Arts.

First Year.

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Agrotat	Deferred	Debarred
Pass.....		206	77	30	51	364	181	115	68	.....	8	.....	66
Supplementals.....		48	20	8	13	89	52	37	.....	.....	.....	.....	.....
Classics.....		6	1	.....	.....	7	6	1	.....	.....	1	.....	.....
French, Greek and Latin.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moderns.....		33	22	3	5	63	44	.....	.....	19	2	.....	1
English and History.....		24	11	2	4	41	30	1	.....	10	.....	.....	2
Modern History.....		1	2	1	.....	4	1	1	.....	2	.....	.....	.....
Political Science.....		8	1	1	1	11	11	.....	.....	.....	.....	.....	.....
Phil., English and History.....		6	3	2	1	12	7	1	.....	4	1	.....	1
Commerce and Finance.....		15	6	1	.....	22	16	.....	.....	6	.....	.....	1
Philosophy.....		.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Mathematics.....		.....	1	.....	1	2	.....	.....	.....	2	.....	.....	.....
Mathematics and Physics.....		18	6	2	3	29	16	4	.....	9	1	.....	2
Natural and Physical Science.....		30	12	1	1	44	28	8	.....	8	.....	.....	4
Household Science.....		1	.....	1	.....	2	2	.....	.....	.....	.....	.....	.....
Household Economics.....		8	15	1	1	25	21	.....	.....	4	1	.....	.....
Commerce.....		31	11	1	1	44	13	21	10	.....	1	.....	10
Occasional Students.....		7	5	2	.....	3	17	.....	4	.....	.....	.....	.....
Total.....	7	440	191	54	85	777	442	189	82	64	15	.....	87

Second Year.

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass.....		136	60	17	41	254	119	92	43	.....	8	.....	65
Supplementals.....		25	20	6	8	59	44	15	.....	.....	.....	.....	.....
Classics.....		5	3	1	.....	9	8	1	.....	.....	.....	.....	.....
Oriental.....		2	.....	.....	.....	2	1	1	.....	.....	.....	.....	.....
French, Greek and Latin.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moderns.....		35	6	2	6	49	42	1	.....	6	.....	.....	.....
English and History.....		3	8	4	2	17	14	1	.....	2	.....	.....	.....
Modern History.....		2	4	1	.....	7	6	.....	.....	1	.....	.....	1
Political Science.....		22	13	4	2	41	28	1	2	10	3	.....	5
Commerce and Finance.....		19	7	.....	.....	26	12	6	2	6	.....	2	5
Philosophy.....		4	5	.....	6	15	12	2	.....	1	.....	.....	.....
Phil., English and History.....		8	1	2	2	13	7	.....	1	5	.....	.....	1
Mathematics.....		6	2	.....	.....	8	7	.....	1	.....	1	.....	.....
Mathematics and Physics.....		2	1	.....	.....	3	3	.....	.....	.....	1	.....	.....
Physics.....		1	.....	.....	.....	1	1	.....	.....	.....	.....	.....	1
Biology.....		4	1	.....	.....	5	3	2	.....	.....	.....	.....	.....
Physiology and Biochemistry.....		1	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Biological and Medical Science.....		8	12	.....	1	21	17	2	1	1	1	1	3
Chemistry and Mineralogy.....		2	1	.....	.....	3	3	.....	.....	.....	.....	.....	.....
Chemistry.....		4	2	.....	.....	6	3	3	.....	.....	.....	.....	1
Geology and Mineralogy.....		3	.....	.....	.....	3	1	2	.....	.....	.....	.....	.....
Household Science.....		.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Household Economics.....		12	8	.....	.....	20	14	4	1	1	2	1	.....
Science for Teachers.....		1	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Commerce.....		15	3	.....	.....	18	14	1	3	.....	.....	.....	2
Occasional Students.....		3	9	1	.....	15	10	1	4	.....	.....	.....	.....
Totals.....	3	329	159	37	70	598	373	134	58	33	16	5	82

Third Year.

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Deferred
Pass.....		111	31	16	19	177	91	65	21	....	3	....	35
Supplementals.....		10	4	3	2	19	14	5	....	....	....	....	....
Classics.....			3	2	1	6	6	....	....	....	....	....	....
Oriental.....		1	1	....	....	2	1	....	1	....	....	....	....
Oriental (Greek Option).....	
Greek and Hebrew.....	
Moderns.....		25	15	1	4	45	42	3	....	....	....	....	....
French, Greek and Latin.....		1	1	....	....	2	2	....	....	....	....	....	....
English and History.....		11	4	....	4	19	18	1	....	....	....	....	....
Modern History.....		2	....	....	1	3	3	....	....	....	....	....	....
Political Science.....		13	8	....	....	21	18	2	....	1	....	....	....
Commerce and Finance.....		6	6	....	....	12	8	4	....	....	1	2	3
Philosophy.....		5	5	....	4	14	12	2	....	....	....	2	2
Philosophy, English & History.....		2	4	....	....	6	5	1	....	....	....	....	....
Mathematics and Physics.....		12	6	....	....	18	16	2	....	....	....	....	1
Physics.....		1	....	....	....	1	1	....	....	....	....	....	....
Biology.....		2	....	....	2	2	....	....	....	....	....	....
Biological and Medical Science.....		10	6	1	....	17	16	1	....	....	....	....	....
Chemistry and Mineralogy I.....		4	2	....	....	6	5	....	1	....	....	....	....
Chemistry and Mineralogy II.....		1	....	....	....	1	....	1	....	....	....	....	....
Chemistry.....		4	....	....	....	4	2	1	....	1	....	....	....
Geology and Mineralogy.....		1	....	....	....	1	1	....	....	....	....	....	....
Household Science.....		2	....	....	....	2	2	....	....	....	....	....	....
Household Economics.....		4	4	1	....	9	8	1	....	....	....	....	1
Science for Teachers.....		1	1	1	....	....	....	....	....	....
Commerce.....		6	....	....	1	7	7	....	....	....	1	....	....
Occasional Students.....		6	....	....	....	6	2	4	....	....	....	....	....
Totals.....		248	102	24	37	401	283	93	23	2	5	4	42

Fourth Year.

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Granted standing on Active Service	Starred	Failed	Aegrotat	Deferred Pass Degree
Pass.....		75	43	13	18	149	113	8	25	3	3	....
Supplementals.....		1	3		1	5	5					
Classics.....		2	1	2	1	6	6					
Oriental.....		1	3			4	4					
Oriental (Greek).....												
Greek and Hebrew.....												
French, Greek and Latin.....			1			1	1					
Moderns.....		24	12	1	4	41	38		3			
English and History.....		6	8	1	1	16	16				1	
Philosophy, English & History.....		9	5	1		15	13	2				
Modern History.....												
Political Science.....		22	6	2		30	23	4	3		1	
Commerce and Finance.....		5	1			6	5	1			1	
Philosophy.....		2	3		4	9	5	2	2			
Mathematics and Physics.....		6	6			12	10	2			1	
Biology.....		3				3	3					
Physiology and Biochemistry.....												
Biological and Medical Science.....		13	7	2	1	23	21	1	1			1
Chemistry and Mineralogy I.....		1				1		1				
Chemistry and Mineralogy II.....		2				2	2					
Chemistry.....		6	1		1	8	6	2				1
Household Science.....		2	1			3	3					2
Household Economics.....		8	8			16	14		1	1		2
Science for Teachers.....			2			2	2					
Occasional Students.....		2	3	2		7	2	5				
Totals.....	2	191	113	22	31	359	292	28	35	4	7	5 1

TEACHERS' CLASSES.

	Passed	Starred	Aegrotat
May Examination.....	116	35	3
September Examination.....	79	25	.....
Total.....	195	60	3

(2) FACULTY OF MEDICINE.

	Passed	Starred	Failed
First Year.....	57	22	14
Second Year.....	89	25	2
Third Year.....	134	22	7
Fourth Year (Six Years' Course).....	98	28	2
Fourth Year (Five Years' Course).....	169	45	4
Fifth Year.....	178	25	3
B. Sc. (Med.).....	3	.....	1
Totals.....	728	167	33

(3) FACULTY OF APPLIED SCIENCE AND ENGINEERING.

	Passed with Honours	Passed	Starred	Failed
First Year:				
Civil Engineering.....	6	19	10	5
Mining Engineering.....	1	6	4	3
Mechanical Engineering.....	3	24	11	3
Architecture.....	1	6	2	.....
Chemical Engineering.....	4	13	7	6
Electrical Engineering.....	8	22	7	5
Metallurgical Engineering.....	.....	1	.....	1
Second Year:				
Civil Engineering.....	3	19	14	5
Mining Engineering.....	1	6	4	.....
Mechanical Engineering.....	3	24	14	3
Architecture.....	1	10	3	1
Chemical Engineering.....	4	22	10	3
Electrical Engineering.....	9	35	15	9
Metallurgical Engineering.....	1	5	2	.....
Third Year:				
Civil Engineering.....	3	27	16	5
Mining Engineering.....	1	7	3	1
Mechanical Engineering.....	6	26	8	3
Architecture.....	1	5	1	.....
Chemical Engineering.....	4	25	11	1
Electrical Engineering.....	8	43	17	6
Metallurgical Engineering.....	.....	1	1	.....
Fourth Year:				
Civil Engineering.....	8	32	3	1
Mining Engineering.....	7	13	.....	.....
Mechanical Engineering.....	6	50	7	1
Architecture.....	3	9	1	.....
Chemical Engineering.....	23	31	2	.....
Electrical Engineering.....	12	50	7	1
Metallurgical Engineering.....	1	7	2	.....

(4) FACULTY OF FORESTRY.

	Passed	Honours Deferred	Failed
First Year.....	6	3	1
Second Year.....	4	9	1
Third Year.....	7	4	2
Fourth Year.....	10	1	1

(5) ONTARIO COLLEGE OF EDUCATION.

	Passed	Failed
*High School Assistants' Course.....	207	.....
Specialists' Course.....	102	.....
First Class Public School Course.....	31	.....
Elementary Art Course.....	25	.....
Elementary Physical Culture Course.....	134	.....
One Year Household Science Course.....	18	.....
Bachelor of Pedagogy Course.....	20	.....
Bachelor of Pedagogy Course (passed in part).....	3	.....
Number who failed in whole or part.....	.....	40

*Many of these are included among those who passed or failed in the other courses in this list.

(6) FACULTY OF MUSIC.

	Passed	Starred	Failed
Bachelor of Music:			
First Year.....	14	2	3
Second Year.....	5	3	1
Third Year.....	2	.....	.....
	21	5	4

APPENDIX D.

GEOGRAPHICAL DISTRIBUTION OF STUDENTS.

The geographical distribution of students is as follows:

FACULTY OF ARTS.

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Total
Ontario: (1) Province..	91	531	313	88	111	1,134
(2) Toronto..	153	579	181	20	91	1,024
Nova Scotia.....		2		1		3
New Brunswick.....		5	2	1	2	10
Prince Edward Island.....		3		1		4
Quebec.....		5	2		1	8
Manitoba.....		5	2	1		8
Saskatchewan.....	1	8	19	1	1	30
Alberta.....		6	3	1		10
British Columbia.....		15	6	4	2	27
Yukon.....		1			1	2
United States.....		6	7	5	4	22
Elsewhere.....	3	17	12		1	33
Duplicate registrations.....		5	1		1	28
Totals.....	248	1,178	546	123	213	2,308

SUMMARY.

	Faculty of Arts	Graduate Studies	Faculty of Medicine	Faculty of Applied Science	College of Education	Faculty of Forestry	Faculty of Music	Department of Social Service	Department of Public Health Nursing	Totals
Ontario:										
(1) Province.....	1,134	107	535	419	196	21	16	168	18	2,614
(2) Toronto.....	1,024	157	342	275	86	17	22	136	20	2,079
Nova Scotia.....	3	3	5	4	2	1		14	1	33
New Brunswick.....	10	2			1	1		6	2	22
Prince Edward Island.....	4	1	2					1	1	9
Quebec.....	8	1	7	1	2	2		3		24
Manitoba.....	8	2	6	4	2	3		1	2	28
Saskatchewan.....	30	2	18	9	1		4	4		68
Alberta.....	10	7	13	9	5	1	2	2	1	50
British Columbia.....	27	8	34	5	2	2	1	4		83
Yukon.....	2		1	1						4
United States.....	22	7	10	3	2		2	1		47
Elsewhere.....	33	7	13	11		2		7	2	75
Duplicates.....	28	4								60
Totals.....	2,287	300	986	741	299	50	47	347	47	5,044

The students from the Province of Ontario are distributed as follows:

County	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science	College of Education	Faculty of Forestry	Faculty of Music	Graduate Studies	Department of Social Service	Department of Public Health Nursing	Totals
Algoma	10	1	8	2	1	1		2		25
Brant	30	24	16	5	1		4	1		81
Bruce	27	14	12	5	1			8		67
Carleton	57	17	15	3	2		5	14	1	114
Dufferin	7	9	3	1	1		1	1		23
Dundas	8	2	1	7			3	1		22
Durham	18	9	5	1		2	3	4	1	43
Elgin	14	11	15	4			1	4		49
Essex	38	12	10	3		1	3	3		70
Frontenac	4	2		9	1		1	1		18
Glengarry	3			5				1	1	10
Grenville	3	3	3	3				2		14
Grey	30	22	8	4	2		4	5	1	76
Haldimand	10	12	7	2			1			32
Haliburton								1		1
Halton	29	13	1	1		2	4	5	1	67
Hastings	24	12	3	5			4	5	1	54
Huron	32	18	11	7	1		9	4		82
Kenora		3		1						4
Kent	27	14	7	3						51
Lambton	21	19	9	5				1		55
Lanark	18	5	1	8	2	1	2	5		42
Leeds	15	6	2	5	1					29
Lennox and Addington	12	2	1	1				2		18
Lincoln	40	15	9	3			5	2		74
Manitoulin	2	3								5
Middlesex	27	11	22	13	1	3	6	7		90
Muskoka	8	2	7					2	1	20
Nipissing	3	6	2				1	3		15
Norfolk	10	8	4	2				1		25
Northumberland	20	6	5	6			1	5		43
Ontario	36	16	12	2			3	4		73
Oxford	30	8	11	4			2	6	3	64
Parry Sound	6	5	2		1			2		16
Peel	24	14	11	1			3	4	1	58
Perth	33	20	16	12			3	8		92
Peterborough	34	6	8	4			4	4		60
Prescott	2	1		2						5
Prince Edward Island	1	3	1	3						8
Rainy River	1									1
Renfrew	14	1	4	3		1	1	3		27
Russell	2	1	1	2						6
Simcoe	50	38	21	9			6	11	3	138
Stormont	12		3							15
Sudbury	3	3	1	1						8
Thunder Bay	9	1	3	2						15
Timiskaming	3	4	4	1				1		13
Victoria	19	12	8	2			1	6		48
Waterloo	37	14	28	2	1		1	1	1	85
Welland	36	21	15	4			3	5	1	85
Wellington	47	19	8	5			8	7		94
Wentworth	118	38	29	11	1	4	5	9	2	217
York	70	29	35	12	4	1	9	7		167
Toronto	1,024	342	275	86	17	22	157	136	20	2,079
Totals	2,158	877	694	282	38	38	264	304	38	4,693

SUPERINTENDENT'S REPORT.

BUILDINGS AND GROUNDS.

The Superintendent's report of 1921-22 referred to prospective buildings. This year this office has been busy on the actual construction, and supervision of the erection of several of these buildings.

ANATOMY BUILDING. This building, started in August, 1921, was not quite completed for the opening of the University in October, 1922. The moving to this building took place gradually through the last months of the year, and the Department of Anatomy finally vacated their old quarters in the Biological Building and occupied the new building during the Christmas vacation. The accommodation has proven most satisfactory. On account of complications, due to alterations at the Central Plant, it has been impossible to completely close this account. We do, however, know that the cost of this building will come well within the money provided. The Superintendent's department did the plumbing, heating and ventilating, electric wiring, painting and furnishings. These contracts amounted to approximately \$120,000.

UNIVERSITY COLLEGE WOMEN'S UNION. Plans were prepared last year for an addition to, and the remodelling of the house at No. 79 St. George Street. Work was started on July 10th, 1922, and the first meal was served on January 4th, 1923. The old house was completely renovated and largely remodelled, and a very substantial addition added. This addition provided dining room and kitchen, a good-sized lecture hall and stage, and maids' sleeping quarters. This accommodation has proven most satisfactory. The accounts for this work are not yet completed but the final cost will come within the estimates. The Superintendent's department did the plumbing, electric wiring, painting and glazing and furnishings. These contracts amounted to approximately \$17,000.

ADDITIONS, ONTARIO COLLEGE OF EDUCATION. These two substantial additions contain laboratories, class and lecture rooms, gymnasium, pool, cafeteria, etc., and auditorium. Work was started here October 6th, 1922. It is hoped to have the use of some of the class rooms and the cafeteria for the opening of the School early in September, 1923. Both additions should be completed during the Christmas holidays, 1923. The Superintendent's department is doing the painting and glazing, electric wiring and furnishings, amounting to approximately \$51,000. With the erection of these additions the already small playground will be very much reduced. This lack of playground will require early attention.

SIMCOE HALL. Actual work on this building started on November 27th, 1922, and the building has progressed satisfactorily. It is hoped that it will be ready for occupation during the Christmas vacation of 1923. The Superintendent's department is doing the electric wiring, heating and ventilating, plumbing and roofing, these contracts amounting to approximately \$50,000.

WIND TUNNEL BUILDING. This building, erected as an addition to the Mechanical Building, was started May 31st, 1923. This work will be completed in time for the opening of the new term in October.

FORESTRY AND BOTANY BUILDING. During the year discussions have taken place in which the departments concerned, the architects and this office

have participated, and plans for a new building, to house both the Forestry and Botany departments were developed in the preliminary stages. This work has not been advanced owing to lack of funds.

INSULIN BUILDING. In April it was decided to allot the old Y.M.C.A. to the Insulin Committee for the manufacture of Insulin. This building is now being remodelled and renovated for this purpose, the work largely being done by the Superintendent's department.

BUILDINGS GENERALLY. The aim of this office has been to maintain the buildings at the lowest possible cost. If our appropriations have been inadequate the structure has been kept sound, perhaps sometimes at the expense of interior repairs and decoration.

The Memorial Tower, the erection of which does not come under this office, was started November 23rd, 1922.

During the year the property at 200 College Street was acquired.

In February, 1922, we had what might have been, but for the prompt response of the Toronto Fire Department, a serious fire in the Medical Building. This loss was satisfactorily adjusted with the insurance companies. The buildings have all been inspected during the year by the Toronto Fire Department, working in co-operation with this office. The fire-fighting appliances are inspected each year by our own staff, and the necessary replacements made.

EMPLOYEES AND WORKSHOPS.

The average number of employees operating under this office was 182, tradesmen accounting for 69 of this number. The merchandise distributed under this heading amounted to approximately \$128,000, while the pay-sheets passed for payment amounted to approximately \$207,000.

PURCHASING.

During the year 6,239 departmental orders and 2,337 merchandise orders were sent out, and a corresponding number of accounts passed for payment. These purchases involved the passing of 789 customs entries handled within the office.

CENTRAL PLANT.

For some time it has been felt that certain changes in the draft arrangements would increase our capacity and give higher efficiencies at full load operation. Plans are now being prepared to improve this condition and it is hoped to proceed with this work this summer.

Although the total cost of operation of the Central Plant shows a slight increase over last year, the unit cost is lower. With the average temperature approximately three degrees lower, and an increase in radiation from 239,061 square feet to 244,235 square feet, the cost of heating, per square foot of radiation, has been reduced from 39.274c to 38.255c.

Comparative tables, showing the operation of the Central Plant and the distribution of charges for the years 1921-1922 and 1922-1923, are appended.

A. D. LEPAN,

Su perintendent.

POWER HOUSE—COAL.

	1921-1922	1922-1923
Maximum daily consumption.....	79 tons	82 tons
Maximum weekly consumption.....	447 "	477 "
Average daily consumption:		
September-October.....	21 "	23 "
November.....	34 "	36 "
December.....	47 "	49 "
January.....	53 "	56 "
February.....	52 "	56 "
March.....	37 "	46 "
April.....	27 "	32 "
May.....	13 "	21 "
Total consumption.....	8655-0590 tons	9706-0260 tons
Total cost of operation.....	\$104,751.15	\$107,103.66
Load in square feet of radiation.....	239,061	244,235
Light and power charges.....	\$10,861.07	\$13,669.91
Cost of heat.....	93,890.08	93,433.75
Cost of heat per square foot of radiation...	39.274c	38.255c

NOTE:—In this distribution of cost, no allowance is made for high pressure steam supplied.

TEMPERATURES.

	1921-1922		1922-1923	
October.....	50.3	3.8 above aver.	49.8	3.2 above aver.
November.....	36.4	0.4 " "	40.7	4.7 " "
December.....	28.3	2.1 " "	28.2	2.2 " "
January.....	23.2	1.4 " "	21.8	0.0
February.....	26.5	4.0 " "	18.8	3.7 below "
March.....	34.2	5.5 " "	27.1	1.6 " "
April.....	45.4	4.2 " "	42.5	1.3 above "
May.....	59.7	7.3 " "	51.6	0.8 below "
Yearly average.....		3.6 above aver.		.7 above aver.

General average of temperatures taken from years 1840-1898.

COMPARATIVE STATEMENT OF DISTRIBUTION OF COST OF OPERATING POWER HOUSE.

Buildings	1921-22		1922-23		1921-22		1922-23	
	Square Feet of Radiation in Buildings	Percentage Charge	Square Feet of Radiation in Buildings	Percentage Charge	Light	Heat	Light	Heat
Main.....	13,844	6.203	13,844	6.670	\$330 18	\$5,824 00	\$352 38	\$6,232 03
Political Science.....					11 96		23 12	
Hart House.....	29,664	12.176	29,664	10.920	2,413 70	11,432 05	2,490 94	10,202 96
Library.....	10,900	3.736	10,900	4.047	167 44	3,507 73	284 96	3,781 26
Medical.....	8,423	4.688	8,423	3.756	909 34	4,401 57	1,802 02	3,509 37
Biological.....	8,407	3.023	8,407	3.072	128 24	2,838 30	141 60	2,870 28
Engineering.....	9,453	3.603	9,453	4.258	350 92	3,382 86	465 28	3,978 41
Mechanical.....	5,236	2.028	5,236	2.441	119 92	1,904 09	96 48	2,280 72
Observatory.....	674	.280	674	.243	186 72	262 89	388 56	227 04
Mining.....	14,083	6.201	14,083	6.705	985 50	5,822 12	1,154 66	6,264 73
Furnace.....					39 22		54 46	
Milling.....					57 20		73 60	
Chemical.....	6,867	2.670	6,867	2.706	281 96	2,506 87	373 28	2,528 32
Physics.....	20,648	6.723	20,462	7.142	690 38	6,312 23	952 52	6,673 04
Convocation Hall.....	7,689	3.220	6,161	2.641	55 08	3,023 26	150 00	2,467 59
Men's Residences.....	9,336	4.719	9,336	4.354	472 14	4,430 67	450 00	4,068 11
Household Science.....	10,137	4.485	10,137	3.691	133 86	4,210 97	113 62	3,448 64
Museum.....	17,231	6.204	17,231	5.977	540 44	5,824 94	201 76	5,584 54
Electrical.....	8,977	3.956	8,977	3.598	540 44	3,714 29	256 04	3,361 75
Elec. Engineering.....					209 34		504 76	
Press.....	2,812	1.044	2,812	.982	275 00	980 21	400 40	917 52
Anatomy.....	1,000	1.132	7,888	3.491		1,062 84	145 40	3,261 77
Wycliffe College.....	12,371	6.218	12,371	5.807	258 00	5,838 09	313 60	5,425 70
Victoria College.....	9,028		9,028		163 52		166 88	
Burwash Hall.....	8,377		8,377		440 78		511 20	
Victoria College Library.....	4,021	8.668	4,021	8.338	44 64	8,138 39	42 44	7,790 51
Burwash Dining Hall.....					125 64		146 16	
Annesley Hall.....	4,481	2.141	4,481	2.221	254 86	2,010 19	276 00	2,075 16
Knox College.....	15,402	6.882	15,402	6.940	339 80	6,461 52	507 40	6,484 30
University College Women's Union.....					35 79		36 20	

COMPARATIVE STATEMENT OF DISTRIBUTION OF COST OF OPERATING POWER HOUSE—Continued.

Buildings	1921-22		1922-23		1921-22		1922-23	
	Square Feet of Radiation in Building	Percentage Charge	Square Feet of Radiation in Building	Percentage Charge	Light	Heat	Light	Heat
No. 4 Queen's Park.....					\$120 66		\$49 22	
Social Service.....					10 88		17 74	
No. 184 College St.....					13 18		16 58	
No. 100 Queen's Park.....					34 73		53 25	
No. 85 St. George St.....							9 24	
Grounds.....					250 00		250 00	
Stadium.....					252 87		398 16	
	239,061	100.000	244,235	100.000	\$10,861 07	\$93,890 08	\$13,669 91	\$93,433 75

AUDITOR'S REPORT.

Toronto, 23rd October, 1923.

To the Governors of the University of Toronto:

GENTLEMEN:—

Herewith I present the Financial Statement of the University for the fiscal year ending 30th June, 1923, Schedules 1 to 10, and beg to report that all the transactions of the year upon Revenue Account and Capital Account have been duly audited and approved of.

Yours faithfully,

(Sgd.) G. T. CLARKSON,
Auditor.

FINANCIAL STATEMENT

APPENDIX I.

BALANCE SHEET, 30TH JUNE, 1923.

Funds and Liabilities.

General Endowments Fund.....	Schedule 1	\$8,001,252	81
Specific Endowment Funds.....	" 2	232,366	73
Retirement Fund.....	" 3	43,079	49
Trust Funds.....	" 4	379,435	55
Annuity Debentures.....	" 5	878,146	60
Contingent Funds, etc.....	" 6	633,569	95
Fees paid in advance.....		1,151	00
		<u>\$10,169,002</u>	<u>13</u>

Assets.

Site Lands, Buildings and Contents.....	Schedule 7	\$7,416,819	27
Unproductive Lands.....	" 8	57,211	85
Leased Properties.....	" 9	776,904	66
Investments, Cash and Accounts Receivable.....	" 10	1,908,482	81
Superintendent's Stores.....	Appendix V	9,583	54
		<u>\$10,169,002</u>	<u>13</u>

SCHEDULE 1.

General Endowments Fund.

Additions for 1922-23:

Capital Grants received from the Legislature:

Administration building.....	\$100,000	00
Ontario College of Education building.....	200,000	00
University College Women's Union.....	100,000	00
For purchase of Beardmore property, No. 200 College Street (in exchange for equivalent area in Queen's Park lots).....	210,000	00
	<u>\$910,000</u>	<u>00</u>

Receipts from Frontage License, College Street, Dr. R. G. McLaughlin.....

6,000 00

Convocation Hall Advance:

Restoration from proceeds of Wild Lands Sales, seventeenth instalment.....	1,076	07
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Annuity Debentures:

Portion of 1922-23 instalments reducing principal:

Fourteenth instalment, issue of July, 1909....	\$8,760	60
Twelfth instalment, issue of January, 1911....	2,108	00
Twelfth instalment, issue of January, 1911....	4,865	00
Eighth instalment, issue of April, 1915.....	1,397	98
	<u>17,131</u>	<u>58</u>

Valuation of property, No. 188 Yonge Street, bequeathed by the late Naomi Bilton, now conveyed to the University, \$200,000, less previously entered, \$1.....

199,999 00

Building, No. 6 Queen's Park, further payment upon purchase..

600 38

Building, No. 8 Queen's Park, eighth of ten instalments paid on purchase.....

750 00

Building, No. 100 Queen's Park, fifth of ten instalments paid on purchase.....

720 00

Building, No. 184 College Street, seventh of ten instalments paid on purchase.....

500 00

Building, No. 86 Queen's Park, second instalment paid on purchase.....

5,000 00

Library proper:

Additions for year, less depreciation (Schedule 7).....	23,343	33
	<u>\$1,165,120</u>	<u>36</u>

Contra.

Capitalized value attached to Lots 29, 30 and part 31, University Park, 77,972 square feet, written off upon sale to Ontario Government	\$44,100 00	
Beardmore lease (parts Lots 1 and 4) surrendered, capitalized value of 5,950 square feet, transferred from Leased Properties to Site Lands account at 40c per square foot, \$2,380, balance written off	2,620 00	
		\$46,720 00
Return of 30th June, 1922		\$1,118,400 36
Return of 30th June, 1923		6,882,852 45
		<u>\$8,001,252 81</u>

NOTE: This statement does not include any assets or liabilities of The Toronto Conservatory of Music.

SCHEDULE 2.

Specific Endowment Funds (Scholarships, Prizes, etc.)

Aggett, Harvey, Memorial (Applied Science)	\$1,506 29
All Souls Historical Essay Prize	2,305 00
A.A.A.S. Scholarship (Physics, etc.)	2,350 00
Balmer, Jean (Science)	1,136 58
Bankers' (Political Science)	1,200 00
Blake (Matriculation)	31,208 72
Blake (Science and Moderns)	3,750 00
Board of Trade (Commerce and Finance)	83 00
Boiler Inspection and Insurance Company (Applied Science)	150 00
Booth (University Schools)	1,000 42
Brown, George, Memorial (Medical Science)	5,391 72
Brown, George (Modern Languages)	1,128 34
Chappell, Walter F., Prize (Medicine or Surgery)	659 01
Cockburn, G. R. R. (Greek)	1,050 00
Dickenson, Marion E. (Household Science)	4,440 00
Fulton, Alexander T. (Mathematics and Science)	3,351 30
Gibson (Pass Matriculation)	4,430 00
Gibson (Matriculation)	2,805 00
Graduate Fellowships (Sundry)	1,625 00
Hardie, William (Matriculation)	2,100 00
Jardine Memorial Prize (English Verse)	100 00
Khaki University Memorial	1,757 97
Lyle Medal (Orientals)	428 95
McCaul Medal (Classics)	486 29
McCaul Scholarship (Classics)	3 65
McCharles, Æneas, Bequest	13,445 46
McCrae, John (Matriculation)	11,382 36
Macdonald, John (Philosophy)	2,080 00
Mackenzie, Alexander, Memorial (Political Science)	17,942 60
Mackenzie, J. J., Fellowship (Pathology)	5,091 67
Marfleet, Pearson Kirkman, Lectureship	6,219 10
Mathematics Scholarship (Beatty and Pounder)	100 00
Menorah Prize (Jewish History, etc.)	50 00
Mickle, Charles, Fellowship	28,075 07
Mickle, Ellen, Fellowship	28,021 01
Moss (Classics)	2,000 00
Mulock, Mary (Classics)	2,838 74
Mulock, William (Classics and Mathematics)	2,000 00
Nesbitt, Wallace, Medals (University Schools)	515 00
Peters, George A. (Surgery)	3,200 00
Porter, T. M. (University Schools)	5,000 00
Prince of Wales (Matriculation)	950 00
Quebec Bonne Entente Prize (French)	1,050 00
Ramsay, William (Physics)	1,065 50
Ramsay, William (Political Economy)	1,009 42
Reading Camp Association Prize	50 00
Reeve, Anna Howe, Prize (Household Science)	675 00
Reeve, R. A., Prize (Medicine)	150 00

Specific Endowment Funds (Scholarships, Prizes, etc.)—Continued.

Reeve, R. A., Scholarship (Medicine).....	\$250 00	
Richardson, James H., Research Fellowship (Anatomy).....	10,000 00	
Rossin, Julius (Modern Languages).....	1,000 00	
Squair French Prose Prize.....	290 00	
Starr Bequest (Medals).....	6,603 61	
Tracy Prize (Ethics).....	20 00	
Wilson, Daniel (Natural Science).....	2,000 00	
Young Memorial (Philosophy).....	4,844 95	
<hr/>		
Ledger balances on 30th June, 1923.....		\$232,366 73
Return of 30th June, 1922.....	\$231,813 08	
Additions to funds during year (including income from investments).....	13,667 01	
Interest written to endowments.....	5,598 46	
<hr/>		
		251,078 55
Expended for scholarships, prizes, etc.....	\$12,711 82	
Portion of Khaki University Memorial Fund trans- ferred to Alumni Federation for administration.....	6,000 00	
<hr/>		
		18,711 82
Return of 30th June, 1923.....		<u>\$232,366 73</u>

SCHEDULE 3.

Retirement Fund Beneficiaries, 30th June, 1923.

W. Lash Miller.....	\$13,539 60	
T. L. Walker.....	12,243 60	
W. A. Parks.....	6,904 08	
J. W. Bain.....	5,574 48	
H. W. Price.....	4,817 73	
<hr/>		
		\$43,079 49
Fund of 30th June, 1922.....	\$39,601 74	
Contributions, 1922-23.....	3,015 00	
Interest written.....	832 53	
Interest from War Loan Bonds.....	1,188 00	
<hr/>		
	\$44,637 27	
Withdrawal, J. Christie.....	1,557 78	
Return of 30th June, 1923.....		<u>\$43,079 49</u>

SCHEDULE 4.

Trust Funds.

Connaught Antitoxin Laboratories:		
Research Fund.....	\$110,000 00	
Health Service.....	2,219 49	
<hr/>		
		\$112,219 49
Library Funds:		
King Alfred Millenary.....	\$10,328 61	
Phillips Stewart.....	1,655 74	
John Squair (French) No. 1.....	1,213 67	
John Squair (French) No. 2.....	1,137 50	
Alex. Edwin Hamilton.....	990 59	
<hr/>		
		15,326 11
Advisory Council, Food Research.....	1,017 01	
Carnegie Corporation Research (Diabetes).....	9,479 76	
Carnegie Corporation Research (Physics).....	801 72	
Dental Research Fund.....	12 97	
Eaton Endowment.....	33,585 33	
Fulford Estate Donation (Base Hospital).....	2,123 46	
Horton, John Hughes, Bequest (not allocated).....	690 28	
Hoskin, John, Bequest (not allocated).....	14,719 01	
Langton, John, Memorial.....	30 00	
Massey Foundation.....	40,282 69	

Trust Funds—Continued.

Massey-Treble Bequest, Household Science.....	\$8,759	81
McLennan, J. C.....	625	00
Medical Research Fund.....	22,388	69
Microscopes Fund, Pathology.....	2,199	10
Ontario Archaeology Special Fund.....	485	00
Reeve, R. A., Bequests (not allocated).....	6,884	46
Rockefeller Fund.....	36,567	84
Rockefeller Institute Grant (Banting).....	5,109	38
Simpson, Mary A., Bequest (not allocated).....	225	31
Special Investigation Fund, Pathology.....	82	50
Ubukata Fund for Japanese Students.....	10,050	00
University Studies.....	837	44
Walker, E. C., Bequest (Residences).....	31,054	30
Walker, J. Harrington, Bequest (Residences).....	16,202	21
Women's Residence.....	50	00
Caput Fines.....	1,916	68
Sundry Security Deposits:		
Residences.....	2,395	00
Summer Session.....	1,165	00
Keys.....	150	00
Hamilton, R. J.....	2,000	00
Ledger balances on 30th June, 1923.....		\$379,435 55
Return of 30th June, 1922.....	\$335,566	97
Additions to funds during year.....	140,225	49
Interest written to endowments.....	10,524	42
	\$486,316	88
Expended during year.....	106,881	33
Return of 30th June, 1923.....		<u>\$379,435 55</u>

SCHEDULE 5.

Annuity Debentures.

Issue of July, 1909, \$500,000, repayable in forty equal annual amounts of \$25,260 each, Value as on 30th June, 1923, of the (twenty-six) outstanding instalments....	\$403,724	57
Issue of January, 1911, under 1 George V, Cap. 80, for construction of Pathological building, \$130,000, repayable in forty equal annual amounts of \$6,568 each, Value as on 30th June, 1923, of the (twenty-eight) outstanding instalments..	109,443	00
Accrued on 30th June, 1923, of thirteenth payment and charged to Revenue, 1922-23.....	3,284	00
Issue of January, 1911, under 1 George V, Cap. 80, as a grant towards construction of Toronto General Hospital, \$300,000, repayable in forty equal annual instalments of \$15,157 each, Value as on 30th June, 1923, of the (twenty-eight) outstanding instalments..	252,558	00
Accrued on 30th June, 1923, of thirteenth payment and charged to Revenue, 1922-23.....	7,578	50
Issue of April, 1915, under R.S.O., 1914, Cap. 279, to provide for the payment of \$100,000 to the Hart A. Massey Estate towards the Gymnasium portion of Hart House, \$110,000, repayable in forty equal annual instalments of \$5,975 each, Value as on 30th June, 1923, of the (thirty-two) outstanding instalments....	100,313	73
Accrued on 30th June, 1923, of ninth payment and charged to Revenue, 1922-23	1,244	80
		<u>\$878,146 60</u>

SCHEDULE 6.

Contingent Funds, etc.

Contingent Fund (Investment Reserve):			
Balance on 30th June, 1922.....	\$24,853	15	
Added thereto, interest on special deposit.....	9,333	55	
			\$34,186 70
Organ Fund:			
Balance on 30th June, 1922.....	\$4,068	12	
Music fees transferred, and other receipts.....	1,410	00	
	\$5,478	12	
Expenditure, 1922-23.....	469	45	5,008 67
Special Grant voted by Legislature for 1922-23.....	\$880,000	00	
Balance brought forward from 1921-22.....	111,219	29	
	\$991,219	29	
Deficit upon ordinary Revenue account for the year as per Schedule 6a.....	826,739	24	164,480 05
Legislative Grant for Electrical Engineering building:			
Balance brought forward from 1921-22.....			3,300 11
Legislative Grant for Anatomical building:			
Balance brought forward from 1921-22.....	\$240,618	05	
Expenditure, 1922-23.....	215,264	29	25,353 76
Legislative Grant for Administration building:			
Balance on hand 30th June, 1923, of grant received during year (\$400,000; less expenditure to date, \$116,464.69).....			283,535 31
Legislative Grant for Ontario College of Education building:			
Balance on hand 30th June, 1923, of grant received during year (\$200,000; less expenditure to date, \$109,129.47).....			90,870 53
Furnishings Account for Ontario College of Education building:			
Balance brought forward from 1921-22.....	\$33,000	00	
Expenditure, 1922-23.....	264	93	32,735 07
Legislative Grant for University College Women's Union building:			
Balance on hand 30th June, 1923, of grant received during year (100,000; less expenditure to date, \$96,546.44).....			3,453 56
Special Insulin Equipment Grant:			
Balance on hand 30th June, 1923, of interim grant of \$10,000 received from Government.....			4,516 43
			\$647,440 19
<i>Contra.</i>			
Sundry Ledger balances (items in suspense):			
Publications Account, University Press.....	\$1,933	44	
Fire premiums paid in advance.....	12,490	21	
Fees advanced to Hospitals.....	1,650	00	
Insulin Committee advances.....	4,252	05	
	\$20,325	70	
Wind Channel, Mechanical building.....	\$4,400	00	
Fire loss, Medical building.....	2,008	96	
Chemical department.....	46	50	
	6,455	46	13,870 24
			\$633,569 95

SCHEDULE 6a.

Revenue, 1922-23.

Receipts.

	Estimate.	Actual.
Legislative Grant, University Act, 1906.....	\$500,000 00	\$500,000 00
Legislative Grant, 60 Vict., Cap. 59.....	7,000 00	7,000 00
Fees, University and College, as detailed in Appendix II.....	400,000 00	380,327 60
Interest:		
On Purchase Moneys.....		1,209 43
On Loans.....		600 05
On Debentures.....		7,143 48
On War Loan Bonds.....		13,177 10
On University Press Advance.....		1,456 74
On Bank Balances.....	55,000 00	2,843 59
Rentals:		
University Park ground leases.....		19,113 63
City of Toronto payment.....		6,000 00
Business properties.....		9,076 23
Sundry houses, etc.....		1,465 70
Sundry Land Earnings.....		300 00
Men's Residence Dues.....	22,000 00	21,084 75
Women's Residence Dues:		
(Queen's Hall group, \$31,622.15; St. George Street, \$6,926.60; Argyll House, \$4,595.80).....	44,500 00	43,144 55
University College Women's Union:		
Membership fees.....	2,000 00	2,137 00
Receipts from rooms and meals.....	27,500 00	21,607 12
Central Power Plant:		
Wycliffe, Victoria and Knox Colleges.....	\$28,976 49	
Royal Ontario Museum.....	5,786 30	
Sundry Accounts.....	2,544 83	
	50,000 00	37,307 62
Casual Revenue.....	5,000 00	1,146 01
	<u>\$1,113,000 00</u>	<u>\$1,076,140 60</u>

Expenditures.

Under appropriations as per Appendix III.....	\$1,983,927 00	\$1,887,924 43
Interest written to Scholarship and other Funds.....	14,000 00	14,955 41
Interest on bank overdraft.....	6,000 00	.....
	<u>\$2,003,927 00</u>	<u>\$1,902,879 84</u>
Receipts as above.....	1,113,000 00	1,076,140 60
Expenditures in excess of receipts carried to Schedule 6....	\$890,927 00	\$826,739 24

SCHEDULE 7.

Site Lands, Buildings and Contents.

Site Lands:		
2,857,945 sq. feet at forty cents per foot.....	\$1,143,178 00	
307,481 sq. feet at cost price.....	409,048 00	
	<u>3,165,426 sq. feet.</u>	<u>\$1,552,226 00</u>
Buildings:		
Anatomical building (estimated).....	500,000 00	
Administration building (estimated).....	400,000 00	
Household Science building.....	455,000 00	
Main Building.....	450,000 00	
Mining Building.....	384,736 89	
Physics Building.....	363,945 85	
Electrical building.....	350,000 00	
Library building.....	327,425 50	
Convocation Hall.....	214,866 22	
Ontario College of Education buildings.....	391,082 10	
Pathological building.....	169,694 38	

Site Lands, Buildings and Contents—Continued.

Medical building.....	\$165,000 00	
Biological building.....	129,745 30	
Mechanical building.....	119,017 21	
Chemical building.....	77,469 88	
Engineering building.....	50,000 00	
Forestry building.....	30,101 65	
Press building.....	10,251 40	
Geodetic Observatory building.....	12,000 27	
Political Science building No. 1.....	11,933 26	
Political Science building No. 2.....	7,400 00	
Military Studies building.....	8,239 47	
Social Service building.....	7,500 00	
No. 1 Queen's Park (Department of Medicine).....	6,075 77	
Men's Residences.....	170,000 00	
Women's Residences.....	99,227 54	
University College Women's Union.....	70,600 00	
Argyll House.....	10,450 00	
Y.M.C.A.....	1 00	
Hart House (not appraised).....		
President's House.....	33,000 00	
		\$5,024,763 69
Less balances of purchase money yet due on Social Service and Military Studies buildings, Argyll House and President's House.....	26,600 00	
Library.....	\$278,215 76	\$4,998,163 69
General Museum Specimens.....	1 00	
Convocation Hall Organ.....	19,603 11	
		297,819 87
Departmental Equipment:		
Anatomy.....	\$1,340 00	
Applied Mechanics.....	10,075 00	
Architecture and Drawing.....	10,830 00	
Astronomy.....	1,635 00	
Biology.....	6,131 25	
Botany.....	5,500 00	
Chemical Engineering and Applied Chemistry.....	10,114 00	
Chemistry.....	14,040 00	
Education.....	10,000 00	
Electrical Engineering.....	30,923 00	
Geology.....	7,505 00	
Household Science.....	19,000 00	
Mathematics.....	500 00	
Mechanical Engineering.....	10,000 00	
Mechanics.....	750 00	
Mineralogy.....	10,145 00	
Mining.....	16,270 00	
Pathology.....	18,440 56	
Pathological Chemistry.....	7,925 74	
Pharmacology.....	2,430 00	
Physics.....	29,250 00	
Engineering—Physics and Photography.....	4,127 00	
Physiology.....	12,500 00	
Psychology.....	2,700 00	
Surveying.....	12,980 00	
		255,111 55
Furniture and Furnishings:		
Men's Residences.....	\$13,198 30	
Women's Residences.....	7,079 95	
University College Women's Union.....	10,950 00	
Education building.....	1,775 91	
General furniture, various buildings.....	11,938 00	
		44,942 16
Athletic Field Stadium and equipment.....	11,817 88	
Gymnasium equipment.....	7,620 19	
Dining Hall equipment.....	1 00	
Printing Plant.....	1 00	
Connaught Laboratories, Farm, buildings and equipment.....	75,000 00	
Antitoxin Laboratory (Medical building).....	1 00	

Site Lands, Buildings and Contents—Continued.

Central Power Plant.....		\$173,514	93
Surveying Practice Camp, Lutterworth Township.....		600	00
Total valuation.....		<u>\$7,416,819</u>	<u>27</u>
Return of 30th June, 1922.....	\$6,514,221	67	
Additions thereto:			
Library Proper:			
Value of additions for 1922-23 as reported			
by the Librarian.....	\$31,947	94	
Less depreciation at 3% on \$286,820.37..	8,604	61	
			23,343,33
Property No. 200 College Street purchased from Beardmore Estate, area 77,972 sq. feet, for.....		210,000	00
Valuation of parts Lots 1 and 4 adjacent transferred to this account upon surrender of lease.....		2,380	00
Property No. 79 St. George Street, purchased from Nicholls Estate, area 19,206 sq. feet, for.....	\$35,000	00	
Additions and alterations to building, estimated cost.....	65,000	00	
(Entered as land \$19,400, building \$70,600, furnishings and equipment \$10,000).....		100,000	00
Administration building:			
Estimated cost of construction.....		400,000	00
Ontario College of Education buildings:			
Additions to valuation.....		200,000	00
Instalments paid on balances due on purchases of houses...		6,970	00
			<u>\$7,456,915 00</u>
	<i>Contra.</i>		
Central Power Plant:			
Repayment from Revenue for 1922-23.....	\$20,208	00	
Press building:			
Repayment from earnings of Press for 1922-23 written off valuation.....		18,883	43
Women's Residences:			
Furniture written off by application of credit from Sales of Wild Lands set apart for Women's Residences..		1,004	30
			<u>40,095 73</u>
Return of 30th June, 1923.....		<u>\$7,416,819</u>	<u>27</u>

SCHEDULE 8.

Unproductive Lands.

Vacant Land in Port Hope.....	\$6,895	00
Endowment Lands unsold in various townships.....	152	00
U.C.C. Block on King Street.....	50,164	85
		<u>\$57,211 85</u>

Transactions, 1922-23.

Upper Canada College Block:		
Local improvement taxes.....	\$26	53
Return of 30th June, 1922.....	57,185	32
Return of 30th June, 1923.....		<u>\$57,211 85</u>

SCHEDULE 9.

Leased Properties.

Land leased to City of Toronto.....	\$120,000	00
Park lots leased.....	357,521	40
Toronto business properties.....	261,400	00
Caradoc Farm.....	2,700	00
		<u>\$741,621 40</u>

Leased Properties—Continued.

House and land, 47 St. George Street.....	\$10,172 95	
Building, No. 719 Spadina Avenue.....	4,000 00	
Building, No. 721 Spadina Avenue.....	4,023 51	
Building, No. 6 Queen's Park.....	4,868 96	
		\$23,065 42
Rentals and City of Toronto payment accrued.....	\$11,704 84	
Rentals, etc., past due.....	513 00	
		12,217 84
		<u>\$776,904 66</u>
Return of 30th June, 1922.....	\$623,854 78	
Further payment upon purchase of No. 6 Queen's Park	600 38	
Business property at No. 188 Yonge Street (Bilton		
bequest) transferred to this account upon convey-		
ance to the University.....	199,999 00	
Increase in rentals outstanding.....	1,550 50	
		\$826,004 66
Leasehold valuation attached to Lots 29, 30 and part 31		
University Park, written off upon sale to Ontario		
Government.....	44,100 00	
Leasehold valuation attached to Beardmore lease, sur-		
rendered, parts Lots 1 and 4.....	5,000 00	
		49,100 00
Return of 30th June, 1923.....		<u>\$776,904 66</u>

SCHEDULE 10.

Investments, Cash and Accounts Receivable.

Debentures and Municipal Bonds.....	\$153,831 31	
Interest accrued.....	2,118 40	
		\$155,949 71
Loans secured by mortgages on real property.....	\$8,157 25	
Interest accrued.....	53 13	
		8,210 38
Unpaid purchase money upon land sales.....	\$18,150 00	
Interest accrued.....	274 35	
		18,424 35
Canadian War Loan and Province of Ontario Bonds.....	\$399,699 84	
Interest accrued.....	2,266 54	
		401,966 38
Home Bank of Canada shares.....		800 00
Dominion Power and Transmission Co. shares.....		2,000 00
Royal Ontario Museum investment.....		251,002 80
Loan to Hart House Committee.....		10,000 00
Advances to Royal Ontario Museum:		
For share of salaries and expenses for the year 1922-23,		
payable by the Provincial Government.....	34,978 67	
Less Museum Special Accounts at credit.....	8,426 52	
		26,552 15
Amount due by Provincial Government for Queen's Park lots sold.....		210,000 00
Accounts Receivable:		
University Press.....	\$10,044 01	
Department of Photography.....	114 05	
Miscellaneous labour and material.....	7,498 75	
		17,656 81
Central Power Plant:		
Victoria College Account.....	\$14,227 07	
Wycliffe College Account.....	6,282 42	
Knox College Account.....	8,467 00	
		28,976 49
Canadian Bank of Commerce, on deposit.....		776,943 74
		<u>\$1,908,482 81</u>

Transactions, 1922-23.

Inwards.

Debentures redeemed.....	\$30,853 09	
Mortgage loans repaid.....	997 84	
Purchase money collections.....	1,000 00	
Withdrawals from Canadian Bank of Commerce.....	3,264,872 65	
Decrease in accrued revenue.....	54 65	
Decrease in accounts outstanding.....	261,248 39	
	<hr/>	\$3,559,026 62

Outwards.

Dominion and Provincial Bonds investments.....	\$99,850 00	
Loan to Hart House Committee.....	10,000 00	
Deposits in Canadian Bank of Commerce.....	3,826,206 33	
	<hr/>	3,936,056 33
		<hr/>
Return of 30th June, 1922.....		\$377,029 71
		<hr/>
Return of 30th June, 1923.....		1,531,453 10
		<hr/>
		<u>\$1,908,482 81</u>

APPENDIX II.

Fees, 1922-23.

Balance brought forward from 1921-22.....		\$1,021 00
Total of fees collected, 1922-23.....		480,250 10
		<hr/>
		\$481,271 10
Distribution thereof:		
Sundry refunds during year.....		\$3,193 00
Paid to Hart House, share of fees.....		22,034 00
Paid to Men's Students' Administrative Council.....		8,148 00
Paid to Women's Students' Administrative Council.....		3,380 00
Paid to Medical Society.....		1,806 00
Paid University College Literary and Athletic Society.....		1,120 00
Paid to University College Women's Undergraduate Association.....		90 00
Paid to Hospitals, fees payable from students in Medicine:		
Toronto General.....	\$8,370 00	
St. Michael's.....	2,775 00	
Sick Children's.....	2,800 00	
Western.....	1,625 00	
		<hr/>
		15,570 00
Transferred to Caput Fines.....		158 00
Transferred to Microscopes Account.....		4,209 50
Transferred to Ontario College of Education.....		34,536 00
Transferred to Organ Fund.....		1,200 00
Transferred to Public Health Nursing.....		2,211 00
Transferred to University College Women's Union.....		2,137 00
Fees paid in advance for 1923-24.....		1,151 00
Balance to Revenue Account (Schedule 6a).....		380,327 60
		<hr/>
		\$481,271 10
		<hr/>

Details of Fees Received.

Faculties	Arts		Medicine		App. Science		Education & Pedagogy		Forestry		Music		Post-Graduate		Total	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Lecture Fees:																
General.....	45,660	00	124,808	00	89,858	00			1,730	00			1,847	00	263,903	00
Special Courses:															2,040	00
Summer.....			1,900	00			140	00								
Paediatrics, \$925, of which \$50 was paid in 1921-22.....			875	00											875	00
Post-Graduate (January).....			170	00											170	00
Radiology.....			100	00											100	00
Review.....			60	00											60	00
Sundry Instruction.....	2,361	00													2,361	00
Teachers in Training.....							6,690	00							6,690	00
University Schools.....							27,242	00							27,242	00
Dispensations from lectures (University College).....	71	00					145	00			222	00	905	00	1,272	00
Registration.....	117	00	11	00											128	00
Honour Certificates.....	6,353	00	30	00	30	00					15	00			6,428	00
Matriculation.....	170	00	120	00	150	00									450	00
Ad Eundem.....	28,470	60	11,725	00	10,070	00	897	00	10	00	1,540	00	950	00	53,772	60
Examinations.....	3,710	00	3,850	00	2,275	00	485	00	120	00	40	00	1,325	00	12,255	00
Degrees.....	2,703	00	5,312	00					570	00					8,383	00
Laboratory Supplies.....	3,811	00	1,868	00					368	00					7,253	00
Library.....	1,721	00	156	00	1,482	00			92	00					1,889	00
Women's Athletics.....	2,105	00	32	00							12	00			2,141	00
Women's Union.....											4	00			90	00
Women's Undergraduate Association.....	1,328	00													1,328	00
Penalties (Univ. Coll.).....	366	00	1,040	00	414	00			57	00					1,901	00
Penalties (University).....	10,912	00	9,559	00	8,085	00	1,190	00	528	00	24	00			30,274	00
Hart House and Men's Students' Council.....	2,850	00	258	00											3,380	00
Women's Students' Council.....	1,128	00	1,808	00					272	00					1,128	00
Literary and Athletic Society.....			4,209	50											1,808	00
Medical Society.....			805	00	1,420	00									4,209	50
Microscopes.....															158	00
Caput Finis.....															158	00
Physical Training.....															85	00
	\$117,111	60	\$168,696	50	\$113,784	00	\$37,061	00	\$3,560	00	\$1,857	00	\$5,027	00	\$447,097	10

Details of Fees Received—Continued.

Departments	University Extension		Social Service		Public Health Nursing		Law		Dentistry		Pharmacy		Veter'y Science		Agriculture		Total	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Lecture Fees.....			3,731	50	2,236	00									5,967	50		
Summer Session: Lecture fees (\$1,455, of which \$851 was paid in 1921-22).....	604	00													604	00		
Lecture fees (in advance for 1923- 24).....	811	00													811	00		
Correspondence Courses.....	2,184	00													2,184	00		
Teachers' Courses.....	4,074	00													4,074	00		
Tutorial Courses.....	1,602	50													1,602	50		
Special Short Courses:																		
Journalism.....	196	00													196	00		
Export Trade.....	395	00													395	00		
Civics and Town Planning.....	42	00													42	00		
Winter Course.....	168	00													168	00		
Nurses' Course (1).....	279	00													279	00		
Nurses' Course (2).....	218	00													218	00		
Nurses' Course (in advance for 1923-24).....	28	00													28	00		
Dramatic Art (in advance for 1923-24).....	312	00													312	00		
Certificates.....							80	00	440	00	5	00			5	00		
Matriculation.....									125	00	575	00			1,095	00		
Ad Eundem.....							210	00	4,480	00	1,380	00			7,545	00		
Examinations.....			15	00			110	00	3,140	00	1,150	00			6,215	00		
Degrees.....									48	00					64	00		
Women's Athletics.....					16	00									32	00		
Penalties.....	9	00	17	00	6	00			1,191	00					1,191	00		
Physical Training.....																		
	\$10,922	50	\$3,763	50	\$2,258	00	400	00	\$9,424	00	\$3,110	00	\$365	00	\$2,910	00	\$33,153	00

Classification of Services.

	Gross Receipts	Refunds and other Deductions	Net Amount
Lecture Fees, etc.:			
Arts.....	\$46,917 00	\$115 00	\$46,802 00
Medicine.....	127,913 00	16,013 00	111,900 00
Applied Science.....	89,858 00	300 00	89,558 00
Education, Teachers in Training.....	6,975 00	375 00	6,600 00
Education, University Schools.....	27,242 00	57 00	27,185 00
Forestry.....	3,754 00	.....	3,754 00
Music.....	222 00	5 00	217 00
Post-Graduate Studies.....	2,752 00	25 00	2,727 00
University Extension.....	10,913 50	542 00	10,371 50
Social Service.....	3,731 50	5 00	3,726 50
Public Health Nursing.....	2,236 00	25 00	2,211 00
Dispensation from Lectures.....	133 00	.....	133 00
Dispensations from Teaching in Ontario (Educ.).....	.....	150 00*	.....
Honour Certificates.....	133 00	1 00	132 00
Matriculation.....	7,523 00	.....	7,523 00
Ad Eundem.....	575 00	.....	575 00
Examinations.....	61,317 60	514 00	60,803 60
Degrees.....	18,010 00	50 00	17,960 00
Laboratory Supplies.....	8,015 00	5 00	8,010 00
Library.....	7,161 00	12 00	7,149 00
Women's Athletics.....	1,953 00	3 00	1,950 00
Women's Union.....	2,141 00	.....	2,141 00
Women's Undergraduate Association.....	90 00	.....	90 00
Penalties.....	3,261 00	459 00	2,802 00
Hart House and Men's Students' Councils.....	30,274 00	92 00	30,182 00
Women's Students' Council.....	3,380 00	.....	3,380 00
Literary and Athletic Society.....	1,128 00	8 00	1,120 00
Medical Society.....	1,808 00	2 00	1,806 00
Microscopes.....	4,209 50	.....	4,209 50
Caput Fines.....	158 00	.....	158 00
Physical Training.....	6,466 00	5 00	6,461 00
	<u>\$480,250 10</u>	<u>\$18,763 00</u>	<u>\$461,637 10</u>

Recapitulation.

University Fees proper.....	\$433,191 10	\$18,194 00	\$414,997 10
University College Fees proper.....	47,059 00	569 00	46,490 00
Balance brought forward from 1921-22.....	1,021 00	.....	1,021 00
	<u>\$481,271 10</u>	<u>\$18,763 00</u>	<u>\$462,508 10</u>

* Refund of amounts paid in former years.

APPENDIX III.

Revenue Expenditures, 1922-1923.

	Appropriation	Supple- mentary	Unused	Total
I. Administration:				
1. Salaries.....	\$134,972 00	.....	\$296 52	\$134,675 48
2. Pensions and Retiring Allow- ances.....	13,500 00	.....	2,858 88	10,641 12
3. President's Office.....	500 00	16 33	.....	516 33
4. Bursar's Office.....	5,000 00	.....	47 76	4,952 24
5. Registrar's Office.....	6,450 00	531 74	.....	6,981 74
6. Superintendent's Office.....	4,000 00	48 32	.....	4,048 32
7. Library.....	36,250 00	.....	275 77	35,974 23
8. Gymnasium, Students' Union and Athletics (Hart House)	18,075 00	.....	492 89	17,582 11
9. Military Studies Building and Department.....	3,210 00	.....	1,271 68	1,938 32
10. Convocation Hall.....	5,375 00	.....	1,092 94	4,282 06
11. Grounds.....	21,500 00	.....	468 11	21,031 89
12. Protective Service.....	7,650 00	.....	732 74	6,917 26
13. Examinations.....	22,000 00	116 93	.....	22,116 93
14. Convocation Expenses.....	2,500 00	.....	143 37	2,356 63
15. Receptions to Societies and University Visitors.....	4,000 00	.....	760 92	3,239 08
16. Telephones.....	6,500 00	.....	1,301 49	5,198 51
17. Insurance.....	14,500 00	.....	142 27	14,357 73
18. Aid to Publications and So- cieties.....	3,950 00	.....	600 00	3,350 00
19. University Studies.....	3,000 00	.....	.....	3,000 00
20. Law Costs.....	1,500 00	1,407 42	.....	2,907 42
21. Travelling Expenses.....	2,750 00	172 44	.....	2,922 44
22. Senate Elections.....	.....	.....	.....	.....
23. Alumni Federation.....	2,000 00	.....	.....	2,000 00
	\$319,182 00	\$2,293 18	\$10,485 34	\$310,989 84
II. Faculty of Arts:				
24. Salaries.....	\$487,345 00	.....	\$12,739 91	\$474,605 09
25. Main Building.....	15,850 00	.....	2,442 99	13,407 01
26. Biological Building and Depart- ment.....	15,875 00	.....	1,613 43	14,261 57
27. Department of Botany.....	8,100 00	686 28	.....	8,786 28
28. Chemical Building and Depart- ment.....	13,3 5 00	.....	1,534 53	11,840 47
29. Physics Building and Depart- ment.....	19,850 00	.....	1,169 73	18,680 27
30. Sub-Department of Astronomy	850 00	.....	439 52	410 48
31. Geological Department.....	1,000 00	305 13	.....	1,305 13
32. Mineralogical Department.....	1,200 00	.....	32 77	1,167 23
33. Philosophical and Psychological Department.....	2,350 00	.....	145 19	2,204 81
34. Mathematical Department.....	150 00	.....	108 33	41 67
35. Sub-Department of Mechanics.	200 00	.....	71 83	128 17
36. Political Science Building and Department.....	4,150 00	.....	1,868 55	2,281 45
37. History.....	700 00	.....	3 28	696 72
38. Ethnology.....	.....	261 39	.....	261 39
39. Italian and Spanish.....	20 00	1 38	.....	21 38
40. University College Departments	330 00	72 70	.....	402 70
41. University College General Ex- penses.....	450 00	.....	146 05	303 95
42. Trinity College Service.....	1,000 00	455 06	.....	1,455 06
	\$572,795 00	\$1,781 94	\$22,316 11	\$552,260 83

Revenue Expenditures, 1922-1923.—Continued.

	Appropriation	Supple- mentary	Unused	Total
III. Faculty of Medicine:				
43. Salaries.....	\$186,505 00	\$1,491 43		\$187,996 43
44. Anatomy.....	3,700 00		1,281 92	2,418 08
45. Pathology and Bacteriology....	5,000 00	780 11		5,780 11
46. Pathological Chemistry.....	2,370 00	306 11		2,676 11
47. Pharmacy & Pharmacology....	1,970 00	406 64		2,376 64
48. Biochemistry.....	3,500 00		44 86	3,455 14
49. Physiology.....	3,500 00		243 21	3,256 79
50. Hygiene.....	1,300 00		88 82	1,211 18
51. Medicine.....	1,945 00		624 70	1,320 30
52. Surgery.....				
53. Obstetrics and Gynaecology....	550 00		474 69	75 31
54. Ophthalmology.....	250 00		250 00	
55. Oto-Laryngology.....	300 00		227 21	72 79
56. Therapeutics.....	150 00		34 14	115 86
57. Medical Jurisprudence.....				
58. Medical Building.....	11,050 00		612 26	10,437 74
59. Pathological Building.....	13,600 00		2,127 36	11,472 64
60. Anatomical Building.....	7,000 00		4,083 03	2,916 97
61. General Expenses.....	3,800 00		152 89	3,647 11
62. Summer Session.....	2,500 00		58 00	2,442 00
63. Post-Graduate Courses.....	2,800 00		1,573 10	1,226 90
	\$251,790 00	\$2,984 29	\$11,876 19	\$242,898 10
IV. Faculty of Applied Science:				
64. Salaries.....	\$227,960 00	\$121 14		\$228,081 14
65. Mining Building.....	9,700 00		\$ 480 81	9,219 19
66. Engineering Building (including old Y.M.C.A. Building)....	7,380 00		970 46	6,409 54
67. Electrical Building (including Mechanical Building)....	12,100 00		3,068 47	9,031 53
68. Geodetic Observatory Building	580 00		305 95	274 05
69. Electrical Engineering.....	8,800 00		46 04	8,753 96
70. Mechanical Engineering.....	9,700 00		93 67	9,606 33
71. Applied Mechanics and Civil Engineering.....	3,600 00		115 20	3,484 80
72. Mining Engineering.....	2,180 00	9 90		2,189 90
73. Metallurgical Engineering.....	1,000 00	320 87		1,320 87
74. Surveying.....	5,900 00		32 46	5,867 54
75. Chemical Engineering and Ap- plied Chemistry.....	9,200 00		337 97	8,862 03
76. Architecture and Drawing.....	2,210 00		741 38	1,468 62
77. Engineering Physics and Photo- graphy.....	2,500 00		1,470 04	1,029 96
78. General Expenses.....	3,600 00	245 41		3,845 41
	\$306,410 00	\$697 32	\$7,662 45	\$299,444 87
V. Faculty of Household Science:				
79. Salaries.....	\$15,840 00			\$15,840 00
80. Household Science Building and Department.....	10,100 00		1,702 54	8,397 46
	\$25,940 00		\$1,702 54	\$24,237 46
VI. Faculty of Forestry:				
81. Salaries.....	\$17,200 00		\$1,458 33	\$15,741 67
82. Forestry Building and Depart- ment.....	8,750 00		665 03	8,084 97
	\$25,950 00		\$2,123 36	\$23,826 64
VII. 83. Faculty of Music.....				
	\$2,000 00		\$420 05	\$1,579 95

Revenue Expenditures, 1922-1923—Continued.

	Appropriation	Supple- mentary	Unused	Total
VIII. 84. School of Graduate Studies...	\$2,800 00	.....	\$52 75	\$2,747 25
IX. Social Service:				
85. Salaries.....	\$10,550 00	.....	\$400 00	\$10,150 00
86. Social Service Building and Department.....	3,225 00	.....	426 00	2,799 00
	\$13,775 00	.....	\$826 00	\$12,949 00
X. University Extension and Publicity:				
87. Salaries.....	\$7,600 00	.....	.....	7,600 00
88. Extension and Publicity De- partments.....	21,400 00	\$1,288 30	.....	22,688 30
	\$29,000 00	\$1,288 30	.....	\$30,288 30
XI. Residences:				
89. Men's Residences.....	\$13,500 00	.....	\$2,103 73	\$11,396 27
90. Women's Residences.....	44,835 00	.....	4,810 31	40,024 69
91. University College Women's Union.....	37,712 00	.....	9,159 67	28,552 33
	\$96,047 00	.....	\$16,073 71	\$79,973 29
XII. 92. Royal Ontario Museum.....	\$35,000 00	.....	\$21 32	\$34,978 68
XIII. 93. Central Light, Heat and Power Plant.....	\$144,900 00	.....	\$29,144 42	\$115,755 58
XIV. 94. Contingencies and Miscellan- eous.....	\$12,500 00	.....	\$3,631 00	\$8,869 00
XV. 95. Capital Account Charges.....	\$70,838 00	\$1,362 88	.....	\$72,200 88
XVI. 96. Special Research.....	\$75,000 00	.....	\$75 24	\$74,924 76

Recapitulation.

I. Administration.....	\$319,182 00	\$2,293 18	\$10,485 34	\$310,989 84
II. Faculty of Arts, University and University College.....	572,795 00	1,781 94	22,316 11	552,260 83
III. Faculty of Medicine.....	251,790 00	2,984 29	11,876 19	242,898 10
IV. Faculty of Applied Science...	306,410 00	697 32	7,662 45	299,444 87
V. Faculty of Household Science.	25,940 00	.....	1,702 54	24,237 46
VI. Faculty of Forestry.....	25,950 00	.....	2,123 36	23,826 64
VII. Faculty of Music.....	2,000 00	.....	420 05	1,579 95
VIII. School of Graduate Studies...	2,800 00	.....	52 75	2,747 25
IX. Social Service.....	13,775 00	.....	826 00	12,949 00
X. University Extension and Pub- licity.....	29,000 00	1,288 30	.....	30,288 30
XI. Residences and Women's Union	96,047 00	.....	16,073 71	79,973 29
XII. Royal Ontario Museum.....	35,000 00	.....	21 32	34,978 68
XIII. Central Power Plant.....	144,900 00	.....	29,144 42	115,755 58
XIV. Contingencies and Miscellan- eous.....	12,500 00	.....	3,631 00	8,869 00
XV. Capital Account Charges.....	70,838 00	1,362 88	.....	72,200 88
XVI. Special Research.....	75,000 00	.....	75 24	74,924 76
	\$1,983,927 00	\$10,407 91	\$106,410 48 10,407 91	\$1,887,924 43
	96,002 57		\$96,002 57	
Total Expenditure under appropria- tions.....	\$1,887,924 43			

I. ADMINISTRATION.

1. SALARIES.

President's Office.

Sir Robert Falconer, K.C.M.G., President, 12 mos. to 30 June (with free house, heat and light).....	\$10,000 00	
Miss A. W. Patterson, President's Secretary, 12 mos. to 30 June (paid also \$200 as Secretary, Faculty of Music).....	2,000 00	
		\$12,000 00

Bursar's Office.

F. A. Mouré, Bursar, 12 mos. to 30 June (paid also \$250 in Faculty of Music).....	\$5,250 00	
Accounts Branch:		
C. E. Higginbottom, Accountant, 12 mos. to 30 June.....	2,600 00	
J. A. Cairns, Assistant, 12 mos. to 30 June, \$1,500; bonus for extra services, \$100.....	1,600 00	
Miss M. Smyth, Appropriations Ledger Clerk, 12 mos. to 30 June.....	1,400 00	
Miss J. H. Branton, Clerk, 12 mos. to 30 June.....	1,200 00	
Miss E. Long, Voucher Clerk, 12 mos. to 30 June.....	1,050 00	
Fees Branch:		
H. J. Bolitho, Fees Clerk, 12 mos. to 30 June.....	2,250 00	
Miss E. B. Goodwin, Assistant Fees Clerk, 12 mos. to 30 June..	1,500 00	
Miss Enid Grew, Record Clerk, 12 mos. to 30 June.....	950 00	
Secretarial Branch:		
Miss A. M. Gall, Chief Clerk, 12 mos. to 30 June.....	1,800 00	
Miss M. Pyper, Assistant, 12 mos. to 30 June.....	1,100 00	
Miss M. Burns, Clerk, 12 mos. to 30 June.....	1,200 00	
		21,900 00

Registrar's Office.

James Brebner, Registrar, 12 mos. to 30 June.....	\$5,000 00	
A. B. Fennell, Assistant Registrar, 12 mos. to 30 June.....	3,100 00	
Assistants:		
A. T. Laidlaw, 12 mos. to 30 June.....	2,750 00	
H. J. Strong, 1 July to 31 October @ \$1,600 per annum.....	533 33	
A. E. T. Gilroy, 10 October to 30 June @ \$1,500 per annum..	1,088 70	
Miss E. Hargreaves, Desk Assistant, @ \$1,400 per annum, 12 mos. less 4½ mos. on leave without salary.....	875 00	
Clerks, each 12 mos. to 30 June:		
Miss M. McMillan.....	1,375 00	
Miss A. S. Meen.....	1,375 00	
Stenographers, each 12 mos. to 30 June:		
Miss E. M. Sharpe.....	1,250 00	
Miss J. R. White.....	1,250 00	
Miss E. M. Fasken.....	1,000 00	
Register Clerks, each 12 mos. to 30 June:		
Miss A. MacGillivray.....	1,400 00	
Miss E. Keys.....	1,200 00	
Miss F. Hahn.....	1,000 00	
Miss A. Sharpe, Filing Clerk, 12 mos. salary.....	700 00	
		23,897 03

Superintendent's Office.

A. D. LePan, Superintendent of Buildings and Grounds, 12 mos. to 30 June.....	\$5,000 00	
W. H. Bonus, Assistant Superintendent, 12 mos. to 30 June.....	3,000 00	
G. D. Maxwell, Assistant, 6 mos. from 1 January @ \$2,200 per annum—transferred from Applied Science—(paid also \$515 in Drawing, and \$165 as Assistant to Applied Science Secretary) ..	1,100 00	
W. L. D. Carnie, Chief Clerk, 12 mos. to 30 June.....	1,700 00	
Miss J. Bell, Clerk, 12 mos. to 30 June.....	1,200 00	
Miss M. Edgar, Stenographer, 12 mos. to 30 June.....	1,200 00	
Clerks:		
Miss A. K. Wynn, 12 mos. to 30 June.....	936 00	
Miss E. Nicklin, 13 September to 30 June, @ \$16 per week....	664 00	
		14,800 00

Library.

H. H. Langton, Librarian (on leave of absence—retired 30 June)....	\$5,000 00	
W. S. Wallace, Associate Librarian, 12 mos. to 30 June (paid also \$1,000 in History; \$200 as Editor, <i>University Studies</i> ; and \$400 as Editor, <i>Canadian Historical Review</i>).....	3,000 00	
Heads of Departments, each 12 mos. to 30 June:		
Miss H. Young.....	1,950 00	
Miss H. Fairbairn.....	1,600 00	
Miss M. L. Newton.....	1,600 00	
Miss H. G. B. Woolryche.....	1,600 00	
Miss L. M. Mason, 3 mos. to 30 September @ \$1,700 per annum (resigned).....	425 00	
First Class Assistants, each 12 mos. to 30 June:		
Miss E. V. Bethune.....	1,525 00	
Miss E. Creighton.....	1,525 00	
Mrs. A. C. Jones.....	1,525 00	
Miss A. E. Stennett.....	1,450 00	
Miss E. Aldridge.....	1,350 00	
Miss M. Skinner, Cataloguer.....	1,200 00	
Second Class Assistants, each 12 mos. to 30 June:		
Miss I. Edwards.....	1,100 00	
Miss J. Jarvis.....	1,100 00	
Miss A. M. Cordingley.....	1,050 00	
Miss H. C. Wrightman.....	1,050 00	
Miss C. B. MacFayden.....	1,050 00	
Miss M. MacFayden.....	1,050 00	
Miss M. Brebner.....	1,000 00	
Miss E. Alexander.....	1,000 00	
Miss H. des Brisay.....	1,000 00	
Miss I. Trowern.....	1,000 00	
Second Class Assistants:		
Miss A. Ewart, 11 mos. from 1 August @ \$1,000 per annum....	916 67	
Miss M. Buchan, 9 mos. from 1 October (half time) @ \$500 per annum.....	375 00	
Miss E. Guest, 1 May to 15 June @ \$80 per month (substituting)	120 00	
Attendants:		
S. H. Fussell (with rooms, heat and light valued at \$420 as caretaker of building), 12 mos. to 30 June.....	1,200 00	
John Willis, 25 weeks, 2 days, @ \$20 per week.....	504 28	
		37,265 95

Gymnasium.

J. W. Barton, Physical Director, 12 mos. to 30 June.....	\$3,600 00
T. A. Reed, Financial Secretary, Athletic Directorate, 12 mos. to 30 June (charged to receipts from Athletic Field).....	3,600 00
D. M. Barton, Gymnasium Director, 10 months' salary.....	2,450 00
W. W. Winterburn, Swimming Instructor, 10 months' salary.....	2,000 00
Part-time Instructors:	
W. H. Martin, Assistant Gymnasium Instructor, 7 months.....	1,400 00
F. Halbus, Track (paid also \$2,625 in Ontario College of Education).....	300 00
H. Freeman, 9 weeks @ \$15; 8 weeks @ \$25.....	335 00
A. Durnan, 6 months.....	300 00
Supervisors, Upper Gymnasium, @ \$15 per week:	
H. A. McLennan, 9 weeks.....	135 00
G. F. Leigh, 13½ weeks.....	202 50
F. Carroll, Gymnasium and Boxing, 1 month.....	140 00
Locker Attendants:	
W. Rimmer, Chief Locker and Attendance Clerk, 12 months' salary.....	1,500 00
G. Hare, 12 months to 30th June.....	1,500 00
C. Apsey, 8 months' salary.....	800 00
B. Durnan, 7 months' salary.....	700 00
Clerks, @ \$50 per month:	
G. Hammond, 3½ months.....	175 00
H. A. Toole, 3 months.....	150 00

Military Studies.

W. R. Lang, Director, 12 months to 30th June.....	\$5,700 00	
Brig.-General G. S. Cartwright, Special Lecturer (Sessional—without salary).....		\$5,700 00

General Service.

S. J. Apted, services as Bedel, 12 months to 30th June (paid also \$825 as caretaker of Convocation Hall, and \$300 for supervising Engineering building).....	\$ 125 00	
A. Bain, Attendant and Messenger, President's Office, 12 months to 30th June.....	1,200 00	
J. Christie, Chief Officer of Discipline, 12 months to 30th June, \$2,000; pension fund allowance for year, \$100 (on leave of absence from 1st January—resigned).....	2,100 00	
		3,425 00
		\$138,275 48
Less charged to Athletic Field receipts.....		3,600 00
		\$134,675 48

2. PENSIONS AND RETIRING ALLOWANCES.

Retiring allowances to Emeritus Professors:

Professor A. P. Coleman.....	\$5,000 00	
Professor D. R. Keys.....	2,440 00	
Professor A. McPhedran.....	500 00	
Professor I. H. Cameron.....	500 00	
Professor D. J. G. Wishart.....	500 00	
Teachers' Insurance and Annuity Association, University's contribution for year ending 30th June, 1923, to fund for retiring allowances.....	1,701 12	
		10,641 12

3. PRESIDENT'S OFFICE.

Office supplies, postage, printing and incidentals (\$516.33):

President Sir Robert Falconer, sundry disbursements.....	\$73 15	
American Physical Society, reports.....	6 01	
Lick Observatory, cable.....	5 85	
Office Specialty Mfg. Co., cases.....	5 52	
Ryerson Press, printing report.....	219 45	
United Typewriter Co., typewriter.....	117 05	
University Press, printing and stationery.....	89 30	
		516 33

4. BURSAR'S OFFICE.

Office supplies, postage, printing and incidentals (\$1,811.79):

Burroughs Adding Machine Co., inspection and ribbons.....	\$ 23 35	
The Bursar, petty disbursements, \$114.35; postage, \$315.....	429 35	
Copeland-Chatterson Ltd., binder, etc.....	37 77	
Gran l & Toy Ltd., cheque books.....	186 25	
W. E. Irons & Co. Ltd., repairing daters.....	3 50	
Might Directories, city directory.....	15 68	
Office Specialty Mfg. Co., cases, trays, folders, etc.....	68 72	
Students' Book Dept., almanacs, etc.....	8 75	
Thomas & Corney Typewriter Service, repairs.....	8 50	
Albert Townsend Auto Livery, taxi.....	5 00	
United Typewriter Co., ribbons and repairs.....	16 50	
University Press, printing and stationery.....	988 50	
Petty items (5).....	9 92	
Superintendent's Dept., freight, 70c.; labour, \$8.45; material, 85c.....	10 00	
Clerical assistance (\$760.45):		
Miss L. M. Dow, 5 months.....	375 00	
Miss M. Austin, 3 months, 13 days.....	313 45	
Jack McLaren, 8 weeks.....	72 00	
Stamp taxes on cheques and receipts (\$1,180.00):		
The Bursar.....	1,180 00	
Auditor's remuneration (\$1,200.00):		
Clarkson, Gordon & Dilworth, for year ending 30th June.....	1,200 00	
		4,952 24

5. REGISTRAR'S OFFICE.

Office supplies and stationery (\$1,313.64):		
Canadian Office Appliance & Supply Co., line-a-time model....	\$23	50
A. S. Hustwitt Co., rental of typewriter.....	15	00
P. E. Hyde, subscriptions to newspapers.....	22	00
McNeill Sales Ltd., roller.....	5	50
Might Directories Ltd., city directory.....	15	68
Office Specialty Mfg. Co., section folders, etc.....	127	83
Students' Book Dept., almanacs, etc.....	9	40
United Typewriter Co., inspections and overhauling machines...	68	67
University Press, stationery and supplies.....	1,023	50
Superintendent's Dept., labour, \$2.44; material, 12c.....	2	56
Postage (\$1,250.00):		
The Bursar, postage supplied.....	1,250	00
Clerical Assistance (\$78.00):		
Miss R. Jones, 8 days.....	24	00
Miss F. Hargreaves, 3 weeks.....	54	00
Printing, other than Calendar (\$43.60):		
University Press.....	43	60
Printing Calendar and Curricula (\$4,321.50):		
University Press.....	4,321	50
		<hr/>
	\$7,006	74
Less credit for Junior Matriculation curricula.....	25	00
		<hr/>
		\$6,981 74

6. SUPERINTENDENT'S OFFICE.

Office supplies, postage, printing and incidentals (\$1,822.39):		
American Society of Mechanical Engineers, book.....	\$6	14
The Bursar, postage and tax stamps.....	210	00
Grand & Toy Ltd., inkstand and books.....	8	50
Chas. W. Mack, daters, bands, etc.....	10	15
Mitchell & McGill, tray.....	3	50
Office Specialty Mfg. Co., cabinet, transfer case, guides.....	95	90
"Power," subscription.....	4	05
Provincial Treasurer, motor license.....	14	00
Students' Book Dept., books.....	8	60
The Superintendent, petty disbursements.....	8	85
United Typewriter Co., adding machine, \$150.00; typewriter, \$138.90; inspection, \$36.50.....	325	40
W. C. Warburton & Co. Ltd., repairs to car.....	35	06
University Press, printing and stationery.....	891	70
Petty items (7).....	6	22
Superintendent's Dept., labour, \$37.58; material, \$156.74.....	194	32
Incidental expenses re work on buildings (\$1,184.26):		
Sundry labour.....	1,184	26
Clerical assistance (\$1,065.75):		
Miss E. L. Linton, 2 days.....	10	00
Mrs. R. Logan, 11 weeks, 10½ days.....	199	75
Miss A. Osborne, 12 months @ \$70.00.....	840	00
Miss Rubin, 4 days @ \$4.00.....	16	00
		<hr/>
	\$4,072	40
Less sundry credits.....	24	08
		<hr/>
		4,048 32

7. LIBRARY.

(a) Maintenance of Building:		
Heat and light (supplied from Central Power Plant)		
Gas (\$63.60):		
Consumers' Gas Co.....	\$63	60
Water (\$143.74):		
City Treasurer.....	143	74
Caretaker's supplies (\$162.15):		
Superintendent's Dept., labour, \$6.17; material, \$155.98...	162	15
Cleaning (\$1,403.29):		
Canadian Cleaning Co., cleaning windows.....	40	00
Superintendent's Dept., labour.....	1,363	29

7. LIBRARY—*Continued*

Repairs and renewals (\$1,163.88):	
Alderson, Hammond & Ritchey Ltd., surfacing floors.....	\$134 10
Baker Carpet Cleaning Co., cleaning rug.....	5 67
City Treasurer, elevator license.....	5 00
Johnson Temperature Regulating Co., repairs to system....	9 14
Photography, Dept. of prints.....	30
Routery Bros., repairs to plaster.....	13 50
Superintendent's Dept., labour, \$774.73; material, \$221.44.	996 17
Caretaker, with rooms, heat and light valued at \$420.00 (paid from salaries as Library Attendant).....	.....
	\$2,936 66
(b) General Library Appropriation:	
Books and Periodicals:	
Academy of Political Science.....	\$5 06
Edw. G. Allen & Son.....	4,164 82
American Academy of Political and Social Science.....	5 13
American Anthropological Association.....	6 07
"American Architect".....	7 18
American Association for the Advancement of Science.....	5 50
American Association for Labour Legislation.....	5 10
American Association of Petroleum Geologists.....	5 10
American Ceramic Society.....	8 16
American Chemical Society.....	30 91
American Concrete Institute.....	8 02
American Economic Association.....	6 22
American Geographical Society.....	7 01
American Institute of Electrical Engineers.....	5 76
American Institute of Mining and Metallurgical Engineers.	8 11
American Journal of Hygiene.....	6 26
American Journal of Physiology.....	20 40
American Library Association.....	7 00
"American Machinist".....	7 14
American Medical Association.....	113 29
American Society of Mechanical Engineers.....	25 59
American Society of Refrigerating Engineers.....	6 15
American Society for Testing Materials.....	13 55
American Statistical Association.....	5 10
American Waterworks Association.....	7 18
Prof. R. W. Argus.....	8 18
"Architecture".....	6 07
Argus South African Newspapers Ltd.....	9 52
L'Art Ancien S.A.....	79 13
Art and Archaeology.....	5 05
Arts and Decoration.....	7 08
Association of Official Agricultural Chemists.....	10 23
Astronomical Journal.....	5 10
Richard G. Badger.....	5 06
Baylor University, Dept. of English.....	5 50
Bloch Publishing Co.....	15 21
Albert Bonnier Publishing House.....	103 99
Boston Medical and Surgical Journal.....	7 64
Botanical Abstracts.....	10 52
R. R. Bowker Co.....	10 70
British Commonwealth Publishers.....	32 65
British Mycological Society.....	14 55
Albert Britnell.....	81 75
John Britnell Son.....	6 65
F. A. Brockhaus.....	738 42
Building Age and Builders' Journal.....	5 08
Bureau of Municipal Research.....	5 00
Cambridge University Press.....	82 40
"Canadian Engineer".....	9 00
Canadian Historical Association.....	5 00
Canadian Review Co.....	7 38
Carnegie Institution of Washington.....	11 21
Carswell Co. Ltd.....	10 00
The Caxton Club.....	20 40
C. D. Cazenove & Son.....	731 88
Chemical, Metallurgical and Mining Society of South Africa	10 00
Cedric Chivers Ltd.....	50 00

7. LIBRARY—Continued.

Citizens' Research Institute of Canada.....	\$10 00
John Clark Co.....	126 45
Commercial Text Book Co.....	16 10
N. O. Cote.....	10 00
Coutts & Co.....	14 36
Wm. B. Dana Co.....	11 62
Davis & Orioli.....	295 24
Egypt Exploration Society.....	21 98
Engineering News-Record.....	8 10
F. W. Faxon Co.....	289 86
Henry George Fiedler.....	66 89
Folia Anatomica Japonica.....	8 12
"Foreign Affairs".....	5 05
Miss Marion Fraser.....	18 00
J. Gamber.....	5 66
Gauthier-Villars et Cie.....	43 07
Genetics.....	12 64
Geological Society of America.....	9 19
Geological Survey of India.....	43 93
Georg et Cie.....	28 28
Paul Geuthner.....	55 83
F. D. Goodchild.....	5 52
W. A. Gough.....	11 95
Grolier Society Ltd.....	64 00
Otto Harrassowitz.....	51 85
J. F. Hartz Co.....	16 00
Harvard Law Review Association.....	10 85
Harvard University Committee on Economic Research.....	30 64
Harvard University Press.....	10 15
Hispanic Society of America.....	9 43
Hodder & Stoughton Ltd. and The Musson Book Co.....	71 49
Ulrico Hoepli.....	150 16
Andr. Fred Host & Son.....	366 66
Houghton Mifflin Co.....	19 97
A. J. Huston.....	10 07
Industrial Australian and Mining Standard.....	16 43
Industrial and Educational Publishing Co.....	5 00
Institution of Structural Engineers.....	14 82
International Art and Science Book Co.....	9 54
Frits Johansen.....	14 25
Johns Hopkins Press.....	24 22
Marshall Jones Co.....	5 53
Journal of Biochemistry.....	5 51
Journal of Industrial Hygiene.....	6 13
Journal of Nervous and Mental Disease.....	10 20
Journal of the Optical Society of America and Review of Scientific Instruments.....	10 25
Journal of the Royal Statistical Society.....	7 42
Otto Lange.....	511 11
Librairie Scientifique, J. Hermann.....	455 05
Librairie Universitaire, Maurice Lamertin.....	8 55
Library Association.....	10 00
Library of Congress.....	40 27
Libreria Naidecchia.....	20 45
Linnean Society of London.....	27 76
B. Login & Son.....	42 75
London and Cambridge Economic Service.....	14 12
Longmans, Green & Co.....	95 71
Mrs. Agnes Kathleen Mackenzie.....	162 25
Hugh C. MacLean Publications.....	5 00
MacLean Publishing Co.....	9 00
MacMillan Co. of Canada.....	2,215 79
Karl Malbaum.....	50 50
Marine Biological Laboratory.....	6 12
A. N. Marquis & Co.....	6 90
Mathematical Association of America, Inc.....	5 06
McClelland & Stewart Ltd.....	22 96
McGraw Hill Book Co. Ltd.....	75 32
Prof. J. P. McMurrich.....	50 00
Methuen & Co. Ltd.....	5 90

7. LIBRARY—Continued.

Mines Handbook and Copper Handbook.....	\$15 29
Modern Language Association of America.....	6 00
C. L. Moore.....	20 00
Noah Farnham Morrison.....	22 00
National Academy of Sciences.....	23 53
National Municipal League.....	5 06
National Tax Association.....	5 01
Thos. Nelson & Sons.....	20 06
Nervous and Mental Diseases Publishing Co.....	13 22
George Newnes Ltd.....	6 04
News Publishing Co. Ltd.....	5 35
New York Times Index.....	8 20
N. V. Martinus Nijhoff.....	312 88
Leo S. Olschki.....	40 79
Ontario Library Association.....	5 00
John Orr.....	11 87
Oxford University Press.....	363 94
Pedagogical Seminary.....	5 10
Philippine Journal of Science.....	10 10
Physiological Reviews.....	6 07
"Psychopathology".....	5 30
Psychological Review Co.....	19 08
Public School Publishing Co.....	12 92
C. E. Rappaport.....	147 93
Albert Raustein.....	274 48
Rockefeller Institute for Medical Research.....	27 08
Ronald Press Co.....	5 13
Russell Sage Foundation.....	7 45
Science Press.....	16 57
Leonard Scott Publication Co.....	30 50
Scottish Text Society.....	19 76
Society of American Foresters.....	8 09
Society of Automotive Engineers.....	5 10
Society of Chemical Industry.....	11 97
Society of Comparative Legislation.....	39 96
Southern Historical Society.....	46 38
G. E. Stechert Co.....	19 41
Students' Book Dept.....	1,192 50
Victoriano Suarez.....	142 35
Surgical Publishing Co. of Chicago.....	12 14
"The Survey".....	5 62
J. Terquem.....	1,224 57
Tientsin Press Ltd.....	16 40
Torrey Botanical Club.....	40 11
University of Chicago, Dept. of Education.....	9 80
University of Chicago Press.....	38 56
University of Illinois.....	39 83
Frank Walters.....	12 71
Warwick & York, Inc.....	11 01
Washington Academy of Sciences.....	6 12
M. Weissenbruch.....	17 60
Western Society of Engineers.....	15 02
John Wiley & Sons, Inc.....	25 86
Williams & Wilkins.....	119 00
H. W. Wilson Co.....	34 78
Sir Bertram Windle.....	34 35
Wistar Institute of Anatomy and Biology.....	91 51
Yale University Press.....	34 91
Items under \$5.00 (77).....	216 43
	<hr/>
	\$17,442 94
Binding and office supplies, etc.:	
Allen Manufacturing Co., laundry.....	13 58
Art Metropole, brushes.....	10 64
Lawrence Barraud Studios, decorating Staff Common Room	106 85
Brown Bros. Ltd., binding record.....	24 00
The Bursar, postage supplied.....	428 88
Copeland-Chatterson Ltd., ledger.....	84 56
Gaylord Bros., binding materials.....	44 89
Grand & Toy Ltd., ink and stencil.....	30 00

7. LIBRARY—Continued.

High Commissioner for India, freight, etc.....	\$15 74	
The Librarian, disbursements:		
Book deposits refunded, \$252.75; sundries, \$10.80; to be accounted for in 1923-24, \$34.84 = \$298.39 less charged to previous year, \$63.66.....	234 73	
Lowe-Martin Co., guides and cards.....	132 75	
Might Directories Ltd., city directory.....	15 68	
Office Specialty Mfg. Co., cabinets, etc.....	126 28	
Photography, Dept. of, prints.....	13 60	
Miss J. Rathbun, clerical assistance, 12 months to 30th June	960 00	
United Typewriter Co., stationery and inspection.....	268 83	
John Willis, expenses incurred in connection with injuries received at Library.....	19 50	
University Press, binding, \$5,598.15; printing and stationery, \$738.41.....	6,336 56	
Petty items (5).....	8 59	
Superintendent's Dept., freight, etc., \$1,505.92; labour, \$86.28; material, \$86.95.....	1,679 15	
		\$27,997 75
Less graduates' deposits, \$373.75; fines, \$392.70; replacement of books lost, \$121.64; subscriptions and sale of books, \$105.69; miscellaneous receipts, \$1.45	995 23	
		\$27,002 52
(c) Special Appropriation for purchases in Europe:		
Edw. G. Allen & Son Ltd.....	\$3,249 75	
F. A. Brockhaus.....	7 73	
Honore Champion.....	284 20	
Davis & Orioli.....	197 37	
J. Gamber.....	996 67	
John Grant.....	242 99	
H. H. Langton.....	21 29	
		5,000 00
(d) Opening Library in Evenings:		
W. F. Barfoot, supervision, 456 hours @ 75c.....	\$342 00	
Assistants @ 50c an hour:		
J. Alexander.....	19 50	
R. Finch.....	153 00	
Miss K. Fisher.....	135 00	
E. O. Gallagher.....	54 00	
A. Holmes.....	77 00	
Miss A. B. Hunter.....	9 00	
Henry H. Marsh.....	68 00	
Mrs. E. McVickar.....	12 25	
Miss M. Sewell.....	19 50	
S. H. Fussell, attendance.....	69 00	
Superintendent's Dept., labour.....	76 80	
		1,035 05
		\$35,974 23

8. GYMNASIUM, STUDENTS' UNION AND ATHLETICS.

(a) Maintenance of Building (Hart House):		
Cleaning, etc., of Gymnasium Wing (\$1,873.27):		
Secretary-Treasurer, Hart House, one-half of expenses of maintenance for 1921-22.....	\$1,873 27	
Repairs and renewals (\$5,995.28):		
City Treasurer, elevator license.....	15 00	
Hart House, meals for men working overtime.....	5 80	
John Inglis Co., repairs to tank.....	49 56	
Murray Kay Co., laying linoleum.....	4 50	
George Oakley & Son Ltd., repairs to shower room.....	14 89	
Vulcan Asphalt & Supply Co. Ltd., installing Asphalt Mastic in rowing room.....	144 00	
Superintendents' Dept., freight, etc., \$4.91; labour, \$3,326.34; material, \$2,430.28.....	5,761 53	
		\$7,868 55

8. GYMNASIUM, STUDENTS' UNION AND ATHLETICS—Continued.

(b) Athletics:

Gymnasium appliances (\$599.99):	
J. F. Hartz Co., medical supplies.....	\$15 56
Rice Lewis & Son, boxing gloves, etc.....	139 58
Harold A. Wilson Co., spring boards, etc.....	438 66
Superintendent's Dept., labour, \$5.69; material, 50c.....	6 19
Attendance records and card system (\$269.65):	
I. E. Francis, clerical assistance, 14 3/10 weeks @ \$10.....	143 00
G. F. Leigh, clerical assistance, 54 hours @ 50c.....	27 00
W. H. Martin, carfares.....	5 75
University Press, cards and printing.....	82 95
Superintendent's Dept., labour.....	10 95
New lockers and ventilation (\$122.63):	
Superintendent's Dept., labour, \$56.55; material, \$66.08..	122 63
Pianist's services (\$440.00):	
F. Pettus, 22 weeks @ \$20.....	440 00
Report on Physical Training (\$180.77):	
University of Toronto Athletic Association, one-half of expenses connected with survey and report.....	180 77
Physical instruction to Women Students (\$4,172.06):	
Miss I. Coventry, instructress, \$1,600.00; rental of piano, \$48.00; petty disbursements, \$8.07.....	1,656 07
Miss M. H. Sherrin, assistant.....	750 00
A. L. Cochrane, instructor in swimming.....	1,050 00
Miss A. E. M. Parkes, Secretary-Treasurer, Women's Athletic Directorate.....	300 00
Miss M. W. Conner, pianist.....	138 00
American Tent & Awning Co., curtain.....	10 45
Miss M. Hilliard, tennis balls.....	12 50
Miss F. N. Robinson, head traction apparatus.....	8 00
University of Toronto Women's Athletic Association, printing in handbook.....	10 00
Harold A. Wilson Co., hockey sticks, balls, etc.....	50 22
University Press, printing.....	4 60
Superintendent's Dept., labour, \$146.04; material, \$36.18..	182 22

\$5,785 10

(c) Health Service (Men):—

Director, G. D. Porter.....	\$5,000 00
Physicians services:—	
A. G. McPhedran.....	210 00
H. G. Armstrong.....	100 00
C. H. M. Black.....	100 00
H. M. Harrison.....	100 00
F. Hassard.....	100 00
G. Loughheed.....	100 00
S. J. Magwood.....	100 00
F. S. Park.....	100 00
W. E. L. Sparks.....	100 00
V. F. Stock.....	100 00
Addison Taylor.....	100 00
R. Jamieson.....	30 00
J. A. Oille.....	20 00
D. E. Robertson.....	20 00
R. G. Armour.....	10 00
A. H. Caulfeild.....	10 00
E. A. Cleaver.....	10 00
Clerical Assistant, Miss M. T. Allen.....	100 00
Sundry expenses.....	46 19

\$6,456 19

Less paid by Connaught Laboratories..... 5,956 19

500 00

(d) Health Service (Women):—

Physician for women, Dr. Edith Gordon.....	\$2,500 00
Sundry expenses of Women's Physician (\$334.46):	
Allen Mfg. Co., laundry.....	8 76
T. Eaton Co. Ltd., hardware.....	6 23
General Typewriter & Appliance Co. Ltd., typewriter.....	110 00
J. F. Hartz Co. Ltd., corks.....	5 50
Ingram & Bell, chemicals and supplies.....	12 54
Jones Bros. & Co. Ltd., mirror frames.....	25 08

8. GYMNASIUM, STUDENTS' UNION AND ATHLETICS—*Continued.*

Mitchell & McGill, folders.....	\$15 00	
Robt. Simpson Co., Ltd. rugs.....	41 40	
Toronto Plate Glass Importing Co., glass.....	40 75	
University of Toronto Women's Athletic Association, advertising.....	10 00	
University Press, printing and stationery.....	52 70	
Superintendent's Dept., labour, 60c.; material, \$5.90.....	6 50	
Clerical assistance under Women's Physician (\$594.00): Miss M. Jackes, 33 weeks @ \$18.....	594 00	
		\$3,428 46
		<u>\$17,582 11</u>

9. MILITARY STUDIES BUILDING AND DEPARTMENT.

(a) Maintenance of Building (\$1,127.55): Heat and light (\$606.54): Consumers' Gas Co., gas.....		\$38 94	
Britnell & Co. Ltd., teaming.....		59 97	
W. H. Cox Coal Co. Ltd., fuel.....		191 00	
Wm. McGill & Co., fuel.....		316 63	
Water (\$18.56): City Treasurer.....		18 56	
Caretaker's supplies (\$46.83): Superintendent's Dept., labour, 32c.; material, \$46.51.....		46 83	
Cleaning (\$303.28): Canadian Cleaning Co., cleaning windows.....		3 28	
Superintendent's Dept., labour.....		300 00	
Repairs and renewals (\$152.34): Superintendent's Dept., labour, \$120.10; material, \$32.24..		152 34	
(b) Maintenance of Department (\$810.77): Office and general expenses (\$293.87): Aitchison & Co., compasses.....		10 43	
Art Metropole, protractors.....		13 23	
Canadian Military Gazette, subscription.....		10 00	
Wm. Clowes & Son Ltd., subscriptions.....		6 86	
Mrs. S. Hunt, window curtains.....		4 90	
Col. W. R. Lang, petty disbursements.....		22 82	
McKay School Equipment, blackboard.....		48 26	
Photography, Dept. of, slides.....		34 40	
Hugh Rees, books.....		14 10	
United Typewriter Co., stencils and repairs.....		14 82	
University Press, maps, stationery and printing.....		80 15	
Superintendent's Dept., freight, 84c.; labour, \$20.07; material, \$12.99.....		33 90	
Clerical assistance (\$500.00): W. A. Baughurst, 4 months, 3 weeks.....		500 00	
Use of Old Gymnasium as Drill Hall (\$16.90): Superintendent's Dept., labour, \$13.88; material, \$3.02....		16 90	
			1,938 32

10. CONVOCATION HALL.

Heat and light (supplied from Central Power Plant)			
Water (\$166.82): City Treasurer.....		\$166 82	
Caretaker's supplies (\$204.27): Superintendent's Dept., labour, \$2.57; material, \$201.70.....		204 27	
Cleaning (\$1,589.20): Canadian Cleaning Co., cleaning windows.....		34 00	
Superintendent's Dept., labour.....		1,555 20	
Repairs and renewals (\$1,984.01): Photography, Dept. of, blue-prints.....		35	
R. Robertson & Sons, cutting window opening.....		20 25	
Superintendent's Dept., labour, \$827.72; material, \$1,135.69....		1,963 41	
Caretaker, S. J. Apte, 12 months to 30th June (with house, heat and light valued at \$300.00); paid also for supervision of En- gineering building and as Bedel.....		825 00	
			<u>\$4,769 30</u>
Less sundry credits: Cleaning, \$477.00; repairs, \$10.24.....		487 24	
			4,282 06

11. GROUNDS.

Labour, gravel, roadways, granolithic walks, flowers, shrubs, etc.
(\$19,531.89):

Archibald & Holmes, moving shed.....	\$8 00
Asphaltic Concrete Co. of Toronto Ltd., repairing roads.....	4,123 06
Auto Tire Steam Vulcanizing Co., repairs.....	17 10
Britnell & Co. Ltd., teaming.....	28 75
Canada Crushed Stone Corporation Ltd., stone.....	86 25
City Storage, cartage.....	9 00
City Treasurer, water, \$59.41; repairs to road, \$97.24; permit for sidewalk, \$8.40.....	165 05
W. H. Cox Coal Co., fuel.....	31 00
T. Eaton Co. Ltd., blankets.....	7 35
Fowler's Veterinary Infirmary, horse.....	177 50
Gutta Percha Rubber Co., tire.....	11 67
J. T. W. Low, repairing harness.....	4 28
Geo. Lugsdin & Co., boots.....	27 00
J. H. McCabe, fodder.....	86 95
McFarlane Mfg. Co., ladder.....	33 34
B. W. Miller, geraniums.....	106 34
Ontario Lime Co., sand.....	55 91
Packard Ontario Motor Co., work on truck.....	6 50
Provincial Treasurer, motor license.....	19 00
Hugh Reid, shoes, \$31.25; repairing wheel, \$9.50.....	40 75
E. Seager, hay.....	25 92
Steele Briggs Seed Co., plants, grass seed, etc.....	110 60
W. H. Thomson, teaming.....	138 60
Toronto Nurseries, poplars.....	4 00
Toronto Pattern Works, patterns.....	8 70
J. E. Tulloch, repairs to truck.....	38 10
W. C. Warburton & Co. Ltd., truck, \$501.63; repairs, \$26.73....	528 36
Roy Woods, hay.....	24 57
Petty items (7).....	8 21
Superintendent's Dept., labour, \$12,927.05; material, \$1,041.90.	13,968 95
	<hr/>
	\$19,900 81

Less received from sale of wood, \$110.65; cartage, \$134.15;
horse, \$80.00; sundry credits, \$41.12.....

368 92

\$19,531 89

Foreman Gardener, G. Trotter, 12 months to 30th June.....

1,500 00

\$21,031 89

12. PROTECTIVE SERVICE.

Pay of Constables and nightwatchmen (\$6,671.69):

Constables:	
R. D'Arcy, 12 months to 30th June.....	\$1,200 00
W. J. Scott, 12 months to 30th June.....	1,200 00
Nightwatchmen:	
H. Diwell, 12 months to 30th June.....	1,200 00
J. Patterson, 48 weeks, 5 nights.....	1,121 11
J. Hogarth, 30 weeks, 4 nights.....	729 62
C. Fairbrass, 27 weeks, 5 nights.....	637 71
Leo Cole, 20 weeks, 4 nights.....	473 55
J. Banford, 10 nights.....	32 87
T. Scott, 5 nights.....	20 89
George Allen, 1 night.....	23 01
J. Palmer, 3 nights.....	13 20
T. Powers, 4 nights.....	13 15
J. Watson, 2 nights.....	6 58

Uniforms, clock dials and other expenses (\$245.57):

Eco Clock Co., dials.....	9 37
Hardinge Bros. of Canada, dials.....	3 68
International Business Machines Co., time slips and report book	3 98
Ontario Tailoring Co., uniforms.....	96 00
Superintendent's Dept., freight, etc., \$3.46; labour, \$18.57; material, \$110.51.....	132 54

\$6,917 26

13. EXAMINATIONS—Continued.

	Remuner- ation as Examiner	Ex- penses	Presiding Examiner	Attendance	Totals
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Clutterbuck, H. E.	45 00				45 00
Cochrane, C. N.	5 75		45 00		50 75
Cockburn, J. R.	11 50		9 00		20 50
Coke, J.	22 75				22 75
Cole, C. E. C.	50 00				50 00
Coombs, F. E.				67 50	67 50
Cosgrave, Rev. F. H.	10 50				10 50
Costain, W. A.	45 00				45 00
Cowan, Miss K. S.			12 00		12 00
Craigie, E. H.			45 00		45 00
Crane, H. C.			15 00		15 00
Crawford, J. J.			15 00		15 00
Crerar, S. R.	6 75		21 00		27 75
Currelly, C. T.	10 25				10 25
Dale, E. A.			57 00		57 00
Daniher, E. L.	4 00				4 00
Davey, A.	7 75				7 75
Davidson, S. W.				16 50	16 50
Davis, H. H.	24 75				24 75
de Beaumont, V.	5 25				5 25
Defries, R. D.	15 75				15 75
De Lury, A. T.	19 75				19 75
Detweiler, H. K.	55 00				55 00
De Witt, N. W.	5 00				5 00
Dickson, W. L.			18 00		18 00
Dilworth, H. M.			15 00		15 00
Dorsey, W. E.				27 00	27 00
Downey, F. P.			9 00		9 00
Duff, David.	9 50		51 00		60 50
Duff, G. H.			3 00		3 00
Dunbar, W. B.			36 00		36 00
Dwight, T. W.			15 00		15 00
Dyer, F. C.			18 00		18 00
Dymond, J. R.			3 00		3 00
Eastcott, Miss E. V.				1 50	1 50
Edgecombe, J. F.				9 00	9 00
Eidt, C. C.	11 75				11 75
Elliott, J. H.	45 00				45 00
Ellis, O. W.	10 75		18 00		28 75
Faull, J. H.	22 67				22 67
Fay, C. R.	8 50				8 50
Ferguson, F. L.	11 50				11 50
Ferguson, W. S.	5 25				5 25
Flenley, R.	11 75				11 75
Fletcher, A. A.	45 00				45 00
Foster, H. W. A.	5 50				5 50
Fowler, W. J. R.	13 50				13 50
Franklin, H. J.			111 00		111 00
Frawley, N. D.	45 00				45 00
Fricker, A. H.	25 00				25 00
Fulmer, H. L.	40 75				40 75
Funnell, W. S.	11 75		3 00		14 75
Gaby, R. E.	45 00				45 00
Gallie, J. G.	50 00				50 00
Gallie, W. E.	45 00				45 00
Gibson, A. L.	19 50				19 50
Gillespie, P.	30 00				30 00
Glover, C.				3 00	3 00
Goggio, E.	16 00				16 00
Goldie, Wm.	120 50				120 50
Goldsmith, P.G.	60 00				60 00
Graham, D.	10 00				10 00
Graham, R. R.	35 00				35 00

13. EXAMINATIONS—Continued.

	Remuner- ation as Examiner		Ex- penses		Presiding Examiner		Attendance		Totals	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Graham, Roscoe R.....	50	00							50	00
Graham, W. R.....	59	50							59	50
Green, W. F.....					18	00			18	00
Guess, G. A.....	19	75							19	75
Guest, W. S.....	7	00			15	00			22	00
Gwatkin, R.....	27	00							27	00
Gwyn, N.....	65	00							65	00
Ham, A.....	44	50							44	50
Hamilton, A. E.....					15	00			15	00
Hampson, A.....							49	50	49	50
Hannah, B.....	7	00							7	00
Harcourt, R.....	44	25							44	25
Harding, V. J.....	13	00							13	00
Hargreaves, Miss F.....							45	00	45	00
Harris, Miss E.....	28	50							28	50
Harris, R. I.....	45	00							45	00
Hart, A. P.....	17	25							17	25
Hay, S. M.....	45	00							45	00
Hedman, T.....	5	50							5	50
Heebner, C. F.....	135	00	124	02					259	02
Henderson, V. E.....	9	25							9	25
Hendry, W. B.....	81	75							81	75
Hodgins, L. C. A.....	28	75			48	00			76	75
Holland, U. C.....					24	00			24	00
Hooke, S. H.....	12	50							12	50
Horning, L. E.....	7	25							7	25
Howe, C. D.....					15	00			15	00
Howitt, J. E.....	104	00							104	00
Howland, G. W.....	45	00							45	00
Hughes, C. A.....					18	00			18	00
Hume, A. G.....							103	50	103	50
Hume, J. G.....	5	25							5	25
Hunter, A.....	5	75							5	75
Hunter, R. S.....							18	00	18	00
Huntsman, A. G.....	2	00							2	00
Hurst, R. O.....	67	50							67	50
Hutchison, H. S.....	65	00							65	00
Hutton, M.....	5	25							5	25
Ireton, H. J. C.....					18	00			18	00
Irwin, J. A.....							76	50	76	50
Irwin, W. A.....	6	25			84	00	49	50	139	75
Jackman, W.....	6	00							6	00
Jackson, G. E.....	23	25							23	25
Jackson, K. B.....					18	00			18	00
Jamieson, R. A.....	45	00							45	00
Janes, R. M.....	50	00							50	00
Jeanneret, F. C. A.....	29	25							29	25
Jermyn, P. V.....					18	00			18	00
Jones, D. H.....	57	50							57	50
Kennedy, W. P. M.....	10	75			36	00			46	75
Kenrick, F. B.....	40	67							40	67
Keys, N. W.....	36	00							36	00
King, J. T.....	5	50			18	00			23	50
Kinnear, J. A.....	45	00							45	00
Kirkwood, W. A.....	9	50			21	00			30	50
Kittredge, R. E. L.....					18	00			18	00
Knox, R. G.....	135	25							135	25
Knox, R. S.....	6	25							6	25
Lacey, A.....	36	00			24	00			60	00
Laing, Miss J. C.....					27	00			27	00
Laird, Miss A. L.....	5	25							5	25
Lang, W. R.....	5	00							5	00
Langford, A. L.....	5	75			36	00			41	75

13. EXAMINATIONS—Continued.

	Remuneration as Examiner		Ex-penses		Presiding Examiner		Attendance		Totals		
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.	
Nicholson, J. A.					69	00				69	00
Noble, W. G.							22	50		22	50
Norton, A. A.	26	25			30	00				56	25
Oille, J. A.	115	75								115	75
Oliver, Rev. M. J.	2	63								2	63
Owen, E. T.	5	25								5	25
Pageau, Rev. J. E.	5	75								5	75
Parker, C. B.	45	00								45	00
Parkin, J. H.	29	75								29	75
Parks, W. A.	23	17								23	17
Parsons, A. L.	16	75								16	75
Partridge, B. O.							1	50		1	50
Patterson, G. C.	51	75					54	00		105	75
Patterson, W. R.							1	50		1	50
Perkins, I. G.							1	50		1	50
Philip, E. B.					15	00				15	00
Piersol, W. H.	8	75								8	75
Pirie, G.	7	00								7	00
Porter, A. M.					75	00				75	00
Potter, W. A.	15	50								15	50
Poynder, I. R.	56	25			120	00				176	25
Powell, M. V.					15	00				15	00
Pratt, E. J.	5	50								5	50
Pratt, Mrs. E. J.					9	00				9	00
Price, H. W.	18	25								18	25
Pringle, J. N.	13	50								13	50
Raithby, G. E.	45	25			69	00				114	25
Ramsay, W. B.					18	00	22	50		40	50
Reid, Miss M. G.					60	00				60	00
Richards, H. C.							4	50		4	50
Richardson, A. K.							13	50		13	50
Roach, Rev. W. J.	5	25								5	25
Robertson, D. E.	45	00								45	00
Robertson, G. H.							7	50		7	50
Robinson, T. A.	45	00								45	00
Robinson, W. L.	131	75								131	75
Robins, J. D.	28	50								28	50
Rolfson, O.					30	00				30	00
Rowell, Miss M. C.	5	50								5	50
Royal College of Dental Surgeons.	1,953	62	421	59	316	25	98	25		2,789	71
Royce, G.	45	00								45	00
Rudolf, R. D.	111	25								111	25
Ryerson, E. S.	55	00								55	00
Sagar, W. L.					18	00				18	00
Satterly, J.	5	25								5	25
Scadding, S. C.					15	00				15	00
Scarraw, A. N.					24	00				24	00
Scharff, R. L.							3	00		3	00
Schofield, F. W.	13	50								13	50
Scott, Miss L. C.	14	00								14	00
Scott, P. L.	67	50	14	00						81	50
Scott, S. M.							40	50		40	50
Scott, W. A.	45	00								45	00
Scott, Wm. A.	36	25								36	25
Shaver, W. W.					18	00				18	00
Shaw, J. E.	10	00								10	00
Shenstone, N. S.	64	25								64	25
Shepherd, A. L.					27	00				27	00
Sheppard, N. E.	12	50			3	00				15	50
Shuttleworth, C. B.	52	75								52	75
Silverthorn, G.	110	50								110	50
Simester, J. H.	5	75								5	75
Simpson, Miss N. W.					90	00				90	00

13. EXAMINATIONS—Continued.

	Remuner- ation as Examiner	Ex- penses	Presiding Examiner	Attendance	Totals
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Sissons, C. B.	11 00				11 00
Smallfield, H. A.	39 00				39 00
Smillie, S. S.			15 00		15 00
Smith, G. E.	7 00				7 00
Smither, W. J.			93 00		93 00
Spencer, G. J.	51 50				51 50
Sproule, W. H.	39 00				39 00
Squirrell, W. J.	45 50				45 50
Starr, C. L.	12 00				12 00
Starr, F. N. G.	45 00				45 00
Steckley, J. C.	46 00				46 00
Stevenson, H. J.				31 50	31 50
Stevenson, O. J.	46 00				46 00
Stewart, L. B.	19 00				19 00
Stone, R. E.	16 25				16 25
Strathy, G. S.	45 00				45 00
Synge, J. L.	19 75				19 75
Taylor, F. H.			36 00		36 00
Taylor, R.			15 00		15 00
Taylor, W. R.	18 25				18 25
Thompson, R. J.			15 00		15 00
Thomson, E.	5 25				5 25
Tilby, A. E.			69 00		69 00
Tomlinson, A. H.	23 50				23 50
Toole, W.	45 25				45 25
Toomer, J. E.			15 00		15 00
Towner, C. J.				28 50	28 50
Tracy, H. L.			3 00	18 00	21 00
Tracy, F.	5 00				5 00
Treadgold, W. M.	11 25		21 00		32 25
Turnbull, A. G.			15 00		15 00
Unwin, G. H.	56 00				56 00
Van Every, J. F.	4 50				4 50
Vogt, A. S.	2 00				2 00
Waddell, Miss M. E. G.	39 00		30 00		69 00
Waddington, Miss M. M.	8 50				8 50
Walker, A. R.	16 75		57 00	45 00	118 75
Walker, E. M.	5 75				5 75
Walker, T. L.	5 25				5 25
Wallace, M. W.	5 00				5 00
Walton, Miss H.			6 00		6 00
Ward, A. L.			15 00		15 00
Wasteneys, H.	1 00				1 00
Waterman, S.	42 50				42 50
Watson, O. P.	67 50				67 50
Watson, W. V.	50 00				50 00
Watt, J. C.	7 50		90 00		97 50
Weicker, J. J.			15 00		15 00
Wheatley, A. C.	18 00				18 00
White, A. W.			6 00		6 00
White, J. H.			24 00		24 00
Willan, H.	32 25				32 25
Williams, R. Hodder	16 75				16 75
Williamson, R. J.			15 00		15 00
Wilson, A. C.			33 00		33 00
Wilson, G. E.	99 00				99 00
Windle, Sir Bertram	2 63				2 63
Woodcock, J. N.	29 50		27 00		56 50
Woodhead, W. D.	38 75		22 50		61 25
Wookey, Miss G. E.	5 75				5 75
Wookey, H. W.	45 00				45 00
Workman, G. R.			21 00		21 00
Wright, Miss J. G.	17 50				17 50

13. EXAMINATIONS—*Continued.*

	Remuneration as Examiner		Expenses		Presiding Examiner		Attendance		Totals	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Wright, W. J. T.....					33	00			33	00
Wrong, G. M.....	4	25							4	25
Wrong, H. H.....	5	75							5	75
Young, C. R.....	15	50							15	50
Young, G. S.....	55	00							55	00
Zimmer, A. R.....	14	75			33	00			47	75
	\$9,567	06	\$559	61	\$3,740	75	\$1,365	75	\$15,233	17

Apportionment.

Arts.....	1,167	94			978	00	300	00	2,445	94
Medicine.....	4,010	00			318	00	100	50	4,428	50
Applied Science.....	401	75			1,173	00			1,574	75
Pedagogy.....					24	00			24	00
Forestry.....	49	25			66	00			115	25
Law.....	68	00			9	00			77	00
Dentistry.....	1,953	62	421	59	316	25	98	25	2,789	71
Pharmacy.....	337	50	138	02	163	50			639	02
Music.....	133	25			39	00			172	25
Agriculture.....	1,313	25			210	00			1,523	25
Veterinary Science.....	121	50			27	00			148	50
Social Service.....					27	00			27	00
Public Health Nursing.....					18	00	3	00	21	00
Junior Matriculation.....	11	00			372	00	864	00	1,247	00
	\$9,567	06	\$559	61	\$3,740	75	\$1,365	75	\$15,233	17

Remuneration to Examiners (as detailed above).....	\$9,567	06
Presiding and Attendance (as detailed above).....	5,106	50
Examination Supplies and Sundries, including incidental expenses of Examiners (\$3,308.58):		
Examiners' expenses (as detailed above).....	\$559	61
Filling in diplomas: E. Awde, \$278.50; Robt. M. Williams, \$173.10.....	451	60
Business Systems, Ltd., cards.....	23	38
Pathology, Dept. of, methylated spirits.....	1	00
Students' Book Dept., paper, etc.....	11	10
University of Toronto Engineering Society, paper.....	14	00
University Press, printing and stationery.....	2,128	60
Superintendent's Dept., labour, \$111.28; freight, \$8.01.....	119	29
	3,308	58
Printing Examination papers and class lists, University Press.....	4,366	14
	\$22,348	28
Less Sundry Credits.....	231	35
	\$22,116	93

14. CONVOCATION EXPENSES.

Geo. Coles, Ltd., catering.....	\$1,270	00
48th Highlanders' Band, services.....	90	00
Harcourt & Son, Ltd., hoods and gowns.....	669	00
University Press, invitations, tickets, etc.....	251	50
Superintendent's Dept., labour, \$70.01; material, \$6.12.....	76	13
	\$2,356	63

15. RECEPTIONS TO SOCIETIES AND UNIVERSITY VISITORS.

Expenses *re* sundry public lectures:

By Prof. Wm. Bateson, 1921-22 (\$4.00):	
Lantern operator, Miss Hines.....	\$4 00
By Dr. Chamberlain (\$67.39):	
Railway and hotel expenses.....	55 89
Lantern operator, Miss Hines.....	7 00
Attendant, E. A. Bishop.....	4 50
By Signorina Italia Garibaldi (\$27.00):	
Honorarium.....	25 00
Attendant, S. J. Apted.....	2 00
By Prof. H. J. Hamburger (\$150.00):	
Honorarium.....	150 00
By Henry Higgs, Esq. (\$118.45):	
Honorarium.....	100 00
York Club, accommodation.....	18 45
By Prof. Emile Legouis (\$108.00):	
Honorarium.....	100 00
Secretary-Treasurer, Hart House, room rent.....	5 00
Attendant, J. Wicksey.....	3 00
By S. A. B. Mercer (\$25.00):	
Honorarium.....	25 00
By Sir Henry Newbolt (\$552.66):	
Grant towards Lecture Fund.....	500 00
York Club, entertainment.....	46 16
Alumni Federation, University of Toronto, ushers.....	4 00
Attendants, S. J. Apted and J. Wicksey.....	2 50
By Prof. F. L. Schoell (\$27.00):	
Honorarium.....	25 00
Lantern operator, Miss Hines.....	1 50
Attendant, D. Forbes.....	50
By Prof. The Soedberg (\$83.00):	
Honorarium.....	75 00
King Edward Hotel, entertainment.....	8 00
By Francis M. Turner (\$100.00):	
Honorarium.....	100 00
By Sir Bertram Windle (\$618.00):	
Honorarium.....	600 00
Lantern operator, Miss Hines.....	12 00
Attendant, J. Wicksey.....	6 00
Conference of National Council of Education (\$714.00):	
Contribution towards Conference expenses.....	500 00
Hart House, entertainment of guests.....	184 00
Registration fee for University delegates (15).....	30 00
S. G. Bennett, grant towards Engineering Alumni Reception.....	50 00
Geo. Coles, Ltd., catering at Public Health Nursing closing exercises (one-half expenses).....	75 00
Secretary-Treasurer, Hart House:	
Entertainment of delegates to Convention of Association of College and University Unions, \$363.21; dinner for Ministers of Education and their deputies, \$70.80; accommodation for sundry guests, \$54.10.....	488 11
Miss N. Mackenzie, afternoon tea for Graduate Students' Union....	11 35
Townsend's Livery, Ltd., taxi service.....	3 00
York Club, luncheon for Dr. George Vincent.....	17 12

3,239 08

16. TELEPHONES.

Bell Telephone Co., telephone service to 30th June.....	\$4,623 11
G. Lynne, half cost of phone at house (Anatomical Dept.).....	18 48
	<hr/>
	\$4,641 59
Less receipts from sub-services.....	\$791 56
And from slot machines.....	49 35
	<hr/>
	840 91
	<hr/>
	\$3,800 68
Switchboard operators (\$1,397.83):	
Miss N. Patterson, 26 weeks, 3 days, @ \$18.00 per week.....	945 00
Miss J. Scott, 49 weeks, 2 days, @ \$7.00 per week, \$345.33; 3 weeks, 5 days, @ \$18.00 per week, \$69.00.....	414 33

16. TELEPHONES—*Continued.*

Miss N. d'Esterre, 2 weeks @ \$7.00 per week.....	\$14 00	
Miss G. Malloy, 3 weeks, 3 days, @ \$7.00 per week.....	24 50	
		\$5,198 51

17. INSURANCE.

Balance of premiums on general schedule brought forward from 1921-22.....	\$24,980 42	
Carried forward to 1923-24.....	12,490 21	
		\$12,490 21
Charged to Revenue, 1922-23.....		\$12,490 21
Casual Premiums:		
Anatomy Building:		
North British & Mercantile Insurance Co.....	116 25	
Addition to Ontario College of Education:		
North British & Mercantile Insurance Co.....	105 00	
Women's Union Building, 79 St. George St.:		
British America Assurance Co.....	55 00	
Canada Accident & Fire Assurance Co.....	28 00	
Insurance Company of North America.....	206 05	
Palatine Insurance Co. Ltd.....	32 00	
Beardmore House:		
Royal Trust Co., premiums on policies taken over.....	206 04	
Connaught Laboratories Farm Buildings and Equipment:		
Commercial Union Assurance Co.....	407 95	
Gull Lake Buildings (Surveying Practice Camp):		
Aetna Insurance Co. Ltd.....	187 50	
Home Insurance Co. Ltd.....	187 50	
Storage Sheds:		
North British & Mercantile Insurance Co.....	110 00	
Automobile Insurance:		
Dominion of Canada Guarantee & Accident Insurance Co., Geology, \$33.78; Mineralogy, \$35.20; Superintendent, \$45.52; Grounds truck, \$61.73.....	176 23	
Hydro-Electric Power Commission, electrical inspection.....	50 00	
		14,357 73

18. AID TO PUBLICATIONS AND SOCIETIES.

Alumni Federation, University of Toronto Monthly.....	\$3,000 00	
American School of Oriental Research in Jerusalem.....	100 00	
Royal Astronomical Society of Canada.....	100 00	
University of Toronto Engineering Society.....	150 00	
		3,350 00

19. UNIVERSITY STUDIES.

General Expenses (\$2,795.32):		
W. S. Wallace, remuneration as General Editor, 12 months to 30th June.....	\$ 200 00	
University Press, printing and binding.....	2,263 91	
The Bursar, postage supplied.....	67 00	
Sundry reprints:		
American Chemical Society.....	5 73	
Carranza & Co. Inc.....	17 06	
Chemistry, Dept. of.....	7 50	
C. F. Clay.....	11 68	
Wm. J. Dornan.....	8 04	
Eschenbach Printing Co.....	14 47	
Jamaica Printing Co.....	7 03	
Journal of Physical Chemistry.....	67 27	
C. V. Mosby Co.....	56 16	
Williams & Wilkins.....	69 47	
Royalties (\$17.96):		
Sundry persons.....	17 96	
Publication of Canadian Historical Review (\$3,088.34):		
W. J. Dunlop, remuneration as business manager.....	100 00	
W. S. Wallace, editorial fee.....	400 00	
The Bursar, postage supplied.....	75 00	

19. UNIVERSITY STUDIES—Continued.

W. J. Dunlop, disbursements:		
Stenographer's salary @ \$7.00 per week, \$315.00; payments to contributors, \$185.50; advertising commission, \$25.10; multigraphing and engraving, \$22.75; bulk postage, \$21.04.....	\$569 39	
University Press, printing.....	1,943 95	
Grant voted by Board of Governors towards Canadian Historical Review, transferred to Trust Account.....	1,000 00	
	<hr/>	\$6,901 62
Less expenditure in excess of appropriations from Revenue charged to Trust Funds Account.....	3,901 62	
	<hr/>	\$3,000 00

20. LAW COSTS.

A. W. Anglin, K.C., taxed costs re Craig.....	\$752 30	
John A. Paterson, K.C., taxed costs:		
Re Craig.....	\$644 11	
Re Beardmore purchase.....	1,434 02	
Re Sundries.....	183 99	
	<hr/>	2,262 12
		\$3,014 42
Less credit.....	107 00	
	<hr/>	2,907 42

21. TRAVELLING EXPENSES.

Travelling expenses of the President and Academic Staff (\$2,549.25):	
Sir Robert Falconer.....	\$154 29
G. B. Affleck.....	52 63
W. J. Alexander.....	55 00
L. Allen.....	20 00
R. W. Angus.....	50 00
E. G. R. Ardagh.....	25 00
J. W. Bain.....	97 40
W. A. Bell.....	19 50
E. A. Bott.....	40 00
J. W. Bridges.....	40 00
W. H. Clawson.....	40 00
E. A. Dale.....	40 00
J. A. Dale.....	75 00
H. J. Davis.....	40 00
A. T. DeLury.....	25 65
F. C. Dyer.....	40 00
J. H. Faull.....	119 50
P. Gillespie.....	23 45
E. Goggio.....	40 00
C. D. Howe.....	74 50
W. B. Hendry.....	36 00
H. A. Innis.....	30 00
F. C. A. Jeanneret.....	40 00
H. R. Kemp.....	30 00
F. B. Kendrick.....	30 00
A. Krogh.....	50 00
J. J. R. Macleod.....	27 75
H. H. Madill.....	50 00
W. H. Martin.....	30 00
J. Maynard.....	48 00
J. P. McMurrich.....	18 20
T. J. Meek.....	33 59
W. Lash Miller.....	30 00
C. H. Mitchell.....	33 25
E. S. Moore.....	29 70
M. Moraud.....	40 00
J. M. D. Olmsted.....	40 00
W. Pakenham.....	20 00
W. A. Parks.....	83 30
A. L. Parsons.....	40 00
A. Primrose.....	100 06

21. TRAVELLING EXPENSES—*Continued.*

E. S. Ryerson.....	\$70 00	
J. E. Shaw.....	40 00	
C. L. Starr.....	19 75	
A. F. Stevenson.....	244 35	
E. Thomson.....	35 25	
T. L. Walker.....	40 00	
W. S. Wallace.....	50 00	
J. S. Will.....	15 70	
C. H. C. Wright.....	84 33	
A. R. Zimmer.....	38 10	
Travelling expenses of Members of the Senate (\$373.19):		
E. W. Baker.....	7 20	
E. R. Cameron.....	293 50	
J. H. Coyne.....	43 79	
W. C. Good.....	12 00	
A. P. Gundy.....	16 70	
		\$2,922 44

22. SENATE ELECTIONS.

(Nothing spent.)

23. ALUMNI FEDERATION.

Alumni Federation, grant towards administration of Student Loans.	\$2,000 00	
		2,000 00
		\$310,989 84

II. FACULTY OF ARTS.

24. SALARIES.

(1) DEPARTMENTS IN UNIVERSITY OF TORONTO (\$337,495.09).

Mathematics.

Professors, each 12 months to 30th June:

A. T. DeLury, also Dean of Faculty (paid also \$5 for Local Lecture).....	\$5,700 00	
M. A. Mackenzie.....	5,400 00	
J. C. Fields.....	5,400 00	
S. Beatty, Associate Professor, 12 months to 30th June.....	3,875 00	
Assistant Professors, each 12 months to 30th June:		
I. R. Pounder (paid also \$300 for Summer Session).....	3,300 00	
J. L. Synge.....	3,000 00	
Lecturers (Sessional):		
A. F. C. Stevenson (with travelling expenses from England, \$244.35).....	2,000 00	
A. F. Robinson.....	1,900 00	
Miss M. E. G. Waddell, Instructor (Sessional).....	1,000 00	
Fellows (Sessional):		
Miss M. McLean.....	700 00	
Miss A. K. Rehder.....	700 00	
J. H. Simester.....	700 00	
W. S. Ferguson, Lecturer in Accounting (Sessional—paid also \$200 in Applied Science).....	800 00	
		\$34,475 00

Mechanics.

W. J. Loudon, Professor, 12 months to 30th June.....	\$5,700 00	
N. E. Sheppard, Lecturer (Sessional).....	1,950 00	
		7,650 00

Physics.

J. C. McLennan, Professor, 12 months to 30th June (on leave of absence from 1st January).....	\$6,000 00	
Associate Professors, each 12 months to 30th June:		
E. F. Burton, \$4,320; honorarium for extra services, \$200.....	4,520 00	
J. Satterly, \$4,200; honorarium for extra services, \$200.....	4,400 00	
Assistant Professors, each 12 months to 30th June:		
L. Gilchrist.....	3,560 00	
H. A. McTaggart.....	3,275 00	
Demonstrators (Sessional):		
A. G. Shenstone.....	2,000 00	
Miss F. M. Quinlan.....	1,300 00	
Miss F. M. Cale.....	1,200 00	
Miss K. M. Crossley.....	1,200 00	
Miss E. M. Pearen.....	1,200 00	
J. E. Currie.....	1,000 00	
H. J. C. Ireton.....	1,000 00	
J. F. T. Young (paid also \$1,000 in Special Research).....	1,000 00	
A. B. McLay.....	750 00	
Miss H. C. Millar, Class Assistant (Sessional).....	250 00	
Miss A. T. Reed, Class Assistant and Secretary, 12 months' salary..	1,600 00	
Miss M. Swonnell, Clerical Assistant, 12 months to 30th June.....	1,000 00	
Mechanicians, each 12 months to 30th June:		
T. S. Plaskett.....	2,400 00	
E. R. Slade, Assistant.....	1,800 00	
J. Ward, Assistant.....	1,800 00	
J. Young, Assistant.....	1,800 00	
J. R. Dowdell, Assistant.....	1,500 00	
R. H. Chappell, Glass-Blower, 12 months to 30th June.....	2,400 00	
P. Blackman, Lecture and Laboratory Assistant, 12 months' salary..	1,400 00	
		\$48,355 00

Astronomy.

C. A. Chant, Professor, 12 months to 30th June (paid also \$500 for expedition to Australia; and \$10 for Local Lectures).....	\$4,920 00	
J. H. Horning, Demonstrator (Sessional—paid also \$5 for Local Lecture).....	900 00	
Assistants (Sessional):		
F. L. Blake.....	150 00	
H. F. Balmer.....	75 00	
J. P. Dandy.....	75 00	
		6,120 00

Geology.

Professors, each 12 months to 30th June:		
W. A. Parks (paid also \$5 for Local Lecture).....	\$5,500 00	
E. S. Moore, Economic Geology.....	4,500 00	
A. MacLean, Assistant Professor, 12 months to 30th June.....	3,275 00	
Class Assistants (Sessional):		
W. S. Dyer.....	1,000 00	
G. B. Langford.....	200 00	
W. E. Taylor.....	200 00	
J. Rickett, Laboratory Attendant, 7 months, 26 days, to 12th May, @ \$75 per month (paid also \$127.04 in Special Research)..	588 20	
		15,263 20

Mineralogy.

T. L. Walker, Professor, 12 months to 30th June.....	\$6,000 00	
A. L. Parsons, Associate Professor, 12 months to 30th June.....	3,840 00	
Ellis Thomson, Assistant Professor, 12 months to 30th June.....	2,850 00	
H. C. Rickaby, Demonstrator (Sessional).....	1,000 00	
W. Allingham, Laboratory Attendant, 8 months' salary.....	720 00	
		14,410 00

Chemistry.

Professors, each 12 months to 30th June:		
W. Lash Miller, Physical Chemistry.....	\$5,700	00
F. B. Kenrick.....	4,800	00
F. B. Allan, Organic Chemistry.....	4,800	00
Assistant Professors, each 12 months to 30th June:		
L. J. Rogers.....	3,400	00
J. T. Burt-Gerrans, Electro-Chemistry.....	3,275	00
W. S. Funnell.....	2,850	00
W. H. Martin.....	2,700	00
Assistants (Sessional):		
C. S. Gilbert.....	850	00
Walter Leaf.....	850	00
J. W. Rebbeck.....	850	00
G. A. Williams.....	850	00
Miss E. V. Eastcott.....	800	00
A. R. Gordon.....	800	00
F. R. Lorrigan.....	800	00
A. H. Gee, @ \$700 (less 1 month).....	612	50
S. W. Davidson (substitute 1 month).....	55	00
G. I. Hoover.....	700	00
G. H. W. Lucas (paid also \$99 for special instruction; and \$500 in Special Research).....	500	00
Mrs. Mary Lucas, Technical Assistant (Sessional).....	400	00
Assistants, Electro-Chemistry (Sessional):		
A. E. R. Westman.....	900	00
A. H. Heatley.....	800	00
E. J. Repath, Laboratory Assistant (with rooms, heat and light valued at \$420 as caretaker of Chemical building), 12 months to 30th June, \$1,100; Lecture Assistant, Sessional, \$350.....	1,450	00
Laboratory Attendants:		
W. Banton, 12 months' salary.....	700	00
S. King, 11 months, 2 days, @ \$550 per annum.....	507	72
G. Banton, 42 weeks, 5 days, @ \$10 per week.....	428	34
A. Orum, 41 weeks @ \$8.....	328	00
E. A. Bishop, Lecture Assistant, Electro-Chemistry (Sessional—paid also \$1,400 as caretaker of Mining building).....	100	00
		\$40,806 56

Biology.

B. A. Bensley, Professor, Zoology, 12 months to 30th June.....	\$5,400	00
Associate Professors, each 12 months to 30th June:		
W. H. Piersol, Histology and Embryology, @ \$4,500, of which half charged to Anatomy.....	2,250	00
E. M. Walker.....	3,900	00
A. G. Huntsman, Marine Biology (without salary).....		
Assistant Professors, each 12 months to 30th June:		
W. A. Clemens, Limnobiology, @ \$3,275, of which \$2,000 charged to Special Research (paid also \$20 for Local Lectures).....	1,275	00
A. F. Coventry, Vertebrate Embryology.....	3,275	00
Lecturers (Sessional):		
J. R. Dymond, Systematic Zoology.....	2,500	00
E. H. Craigie, Comparative Anatomy and Neurology (paid also \$300 for Teachers' Classes).....	2,000	00
J. W. MacArthur, Experimental Biology.....	2,500	00
W. H. T. Baillie, Mammalian Anatomy (paid also \$300 for Teachers' Classes).....	2,300	00
H. G. Armstrong, Demonstrator (Sessional—paid also \$100 in Health Service).....	900	00
Miss N. H. C. Ford, Special Assistant for Household Science (Ses- sional).....	600	00
Class Assistants (Sessional):		
A. E. McCulloch.....	260	00
L. A. Pequegnat (paid also \$150 in Anatomy).....	160	00
H. H. MacKay.....	145	00
W. E. Sparks (paid also \$100 in Health Service).....	135	00
H. D. Ball.....	110	00
A. G. McPhedran (paid also \$200 in Medicine; and \$210 in Health Service).....	110	00
O. C. J. Withrow.....	110	00

Biology—Continued.

W. R. Franks.....	\$60 00	
J. M. Macdonald.....	60 00	
J. N. Bird.....	50 00	
Dr. Adele C. Brown.....	25 00	
B. I. Johnstone.....	25 00	
N. K. Bigelow, Assistant, Systematic Biology, 12 months' salary....	1,400 00	
Preparator Service @ 30c. to 70c. per hour:		
Miss M. Doran, 445 hours.....	311 50	
R. H. McDonigle, 190 hours.....	114 00	
R. C. Riley, 144 hours.....	100 80	
Miss M. Maitland, 95½ hours (paid also \$1,000 in Hygiene)....	63 03	
Miss M. J. Thompson, 121 hours.....	60 50	
Miss E. Piersol, 30 hours.....	9 00	
Mrs. E. J. Kingsley, 20 charts @ \$6 to \$10.....	124 00	
A. Pride, Sub-Curator, Biological Museum, 12 months to 30th June.	1,300 00	
Miss E. Mason, Office Assistant, 12 months to 30th June.....	1,000 00	
Miss L. Mogg, Stenographer (Sessional—paid also \$50 for clerical assistance).....	500 00	
J. T. Howells, Laboratory Attendant, 12 months to 30th June.....	1,400 00	
		\$34,532 83

Botany.

J. H. Faull, Professor, 12 months to 30th June.....	\$4,920 00	
R. B. Thomson, Associate Professor, Phanerogamic Botany, 12 months to 30th June (paid also \$300 for Summer Session)...	4,320 00	
Lecturers (Sessional):		
G. H. Duff.....	2,350 00	
Miss J. G. Wright.....	1,750 00	
Instructors (Sessional):		
G. H. Berkeley (@ \$1,600—resigned 15th April; paid also \$300 in Special Research).....	1,300 00	
Miss C. W. Fritz (paid also \$200 in Special Research).....	1,600 00	
Assistants (Sessional):		
A. R. Walker (paid also \$400 in Special Research).....	1,600 00	
G. D. Darker (paid also \$300 in Special Research).....	750 00	
Class Assistants (Sessional):		
Miss V. I. Jones.....	200 00	
Miss Olive Monkman (paid also \$194.67 for Summer Work, etc.)	200 00	
Technical Assistants (Sessional):		
Miss L. M. Hunter.....	1,000 00	
Miss M. V. McCulloch (paid also \$330 for Summer Work).....	1,000 00	
A. Simpson, Gardener (with living quarters valued at \$360), 12 months to 30th June.....	1,600 00	
S. G. Smith, Laboratory Attendant, 52 weeks, 1 day, @ \$15 per week	782 50	
		23,372 50

History.

G. M. Wrong, Professor, 12 months to 30th June (paid also \$60 for Journalism Course).....	\$6,000 00	
Associate Professors, each 12 months to 30th June:		
R. Hodder Williams, resigned (paid also \$15 for Local Lectures)	3,875 00	
G. M. Smith (paid also \$18 for Correspondence Courses).....	3,875 00	
R. Flenley (paid also \$207 for Teachers' Classes, etc.).....	3,875 00	
W. P. M. Kennedy, Special Lecturer (Sessional—half time, balance, \$1,000, in Political Economy).....	1,000 00	
Lecturers (Sessional):		
H. H. Wrong (paid also \$18 for Correspondence Courses).....	2,150 00	
J. Bartlet Brebner (paid also \$332 for Teachers' Classes, etc.)....	2,150 00	
Special Lecturers (Sessional):		
W. S. Wallace (paid also \$3,000 as Associate Librarian; \$200 as Editor, University Studies; and \$400 as Editor, Canadian Historical Review).....	1,000 00	
S. H. Hooke.....	940 00	
Miss M. G. Reid (paid also \$224 for Teachers' Classes, etc.; and \$1,000 in U.C. Women's Union).....	500 00	
		25,365 00

Italian and Spanish.

Professors, each 12 months to 30th June:		
M. A. Buchanan.....	\$4,920 00	
J. E. Shaw.....	4,800 00	
Emilio Goggio, Assistant Professor, 12 months to 30th June (paid also \$150 for Tutorial Classes).....	3,000 00	
G. C. Patterson, Lecturer (Sessional—paid also \$6 for Correspondence Courses).....	2,550 00	
Special Lecturers (Sessional):		
B. F. Swedelius.....	1,000 00	
R. B. Conlogue.....	400 00	
Juan Cano.....	150 00	
Joaquin Ortega.....	150 00	
Primitivo P. Sanjurjo.....	150 00	
Antonio Solalinde.....	150 00	
	<hr/>	\$17,270 00

Philosophy.

Professors, each 12 months to 30th June:		
J. G. Hume, History of Philosophy.....	\$5,700 00	
G. S. Brett, also Director of Psychological Department.....	5,000 00	
T. R. Robinson, Assistant Professor, 12 months to 30th June.....	3,875 00	
J. A. Nicholson, Assistant, Logic (Sessional).....	800 00	
	<hr/>	15,375 00

Psychology.

J. W. Bridges, Associate Professor, 12 months to 30th June, \$3,600; instruction to Medical students (from Rockefeller Fund), \$200; (paid also \$695 for Summer Session, etc.).....	\$3,800 00	
E. A. Bott, Assistant Professor and Director of Laboratory, 12 months to 30th June, \$3,600; instruction to Medical students (from Rockefeller Fund), \$200.....	3,800 00	
Miss K. M. Banham, Lecturer (Sessional—paid also \$120 for Summer Session).....	1,500 00	
S. N. F. Chant, Class Assistant (Sessional—paid also \$310 for Workers' Educational Classes).....	1,000 00	
Miss J. E. Doran, Clinic Assistant (Sessional).....	400 00	
G. C. Cooper, Technician, 12 months' salary.....	1,900 00	
	<hr/>	\$12,400 00
Less charged to Rockefeller Fund.....	400 00	
	<hr/>	12,000 00

Political Economy.

J. Mavor, Professor, 9 months' salary to 31st March, \$4,500; one-half of 6 months' retiring allowance, \$1,500.....	\$6,000 00	
Professors, each 12 months to 30th June:		
R. M. MacIver.....	4,500 00	
C. R. Fay, History of Economics (paid also \$10 for Local Lectures).....	4,000 00	
Associate Professors, each 12 months to 30th June:		
W. T. Jackman, Rural Economics (paid also \$331 for Extra-Mural Classes, etc.).....	3,800 00	
G. E. Jackson (paid also \$12 for Correspondence Courses).....	3,600 00	
Lecturers (Sessional):		
H. A. Innis (paid also \$110 for W. E. A. Classes).....	2,300 00	
H. R. Kemp (paid also \$200 for W. E. A. Classes).....	1,950 00	
S. P. Dobbs (paid also \$200 for W. E. A. Classes).....	1,800 00	
V. W. Bladen (paid also \$200 for W. E. A. Classes).....	1,800 00	
T. H. Black, Professor of Roman Law, etc., 12 months to 30th June.....	3,500 00	
Lecturers (Sessional):		
W. P. M. Kennedy, Special Lecturer, Federal Constitutions (half time, balance, \$1,000, in History).....	1,000 00	
A. R. Clute, Federal English and Colonial Constitutional Law (paid also \$500 in Faculty of Applied Science; and \$60 for Journalism Course).....	800 00	
H. W. A. Foster, Commercial and International Law.....	800 00	
	<hr/>	35,850 00

History of Industrial Art.

C. T. Currelly, Professor, 12 months to 30th June (part time).....	\$4,500 00	
Miss C. Harcum, Assistant Professor, 12 months to 30th June.....	2,150 00	
		\$6,650 00

(2) DEPARTMENTS IN UNIVERSITY COLLEGE (\$137,110).

Greek.

Professors, each 12 months to 30th June:		
M. Hutton (paid also \$1,250 as Principal of University College; and \$20 for Local Lectures).....	\$6,000 00	
A. Carruthers, Greek Archaeology (retired).....	4,920 00	
W. D. Woodhead, Associate Professor, 12 months to 30th June.....	3,600 00	
		14,520 00

Latin.

J. Macnaughton, Professor, 12 months to 30th June.....	\$6,000 00	
Associate Professors, each 12 months to 30th June:		
G. Oswald Smith (paid also \$650 as Registrar, University College)	3,720 00	
E. A. Dale (paid also \$15 for Local Lectures).....	3,600 00	
David Duff, Assistant Professor, 12 months to 30th June.....	3,090 00	
Miss E. Harris, Instructor (Sessional—with living valued at \$400).....	1,650 00	
		18,060 00

Ancient History.

W. S. Milner, Professor, 12 months to 30th June.....	\$5,700 00	
C. N. Cochrane, Associate Professor, 12 months to 30th June.....	3,600 00	
A. Grant Brown, Assistant Professor, 12 months to 30th June.....	3,275 00	
		12,575 00

English.

Professors, each 12 months to 30th June:		
W. J. Alexander (paid also \$60 for Journalism Course).....	\$6,000 00	
M. W. Wallace (paid also \$20 for Local Lectures).....	4,920 00	
Associate Professors, each 12 months to 30th June:		
R. S. Knox (paid also \$5 for Local Lecture).....	3,350 00	
H. J. Davis (paid also \$300 for Tutorial Classes).....	3,200 00	
W. H. Clawson, Assistant Professor, 12 months to 30th June (paid also \$312 for Summer Session, etc.).....	3,400 00	
Lecturers (Sessional):		
Miss M. M. Waddington (paid also \$1,000 in U.C. Women's Union).....	2,200 00	
Miss G. I. Wookey (paid also \$360 for Summer Session, etc.)...	1,700 00	
Temporary assistance for reading essays:		
W. M. Whitelaw (paid also \$390 for Tutorial classes).....	50 00	
P. A. W. Wallace (paid also \$390 for Tutorial classes).....	105 00	
		24,925 00

French.

Professors, each 12 months to 30th June:		
J. Home Cameron.....	\$5,220 00	
J. S. Will (paid also \$23 for Correspondence Courses, etc.)....	4,920 00	
Associate Professors, each 12 months to 30th June:		
St. E. de Champ.....	4,500 00	
F. C. A. Jeanneret (paid also \$24 for Correspondence Courses)..	3,600 00	
M. Moraud (paid also \$25 for Local Lectures).....	3,600 00	
Assistant Professors, each 12 months to 30th June:		
H. S. McKellar (paid also \$336 for Summer Session, etc.).....	2,850 00	
Louis Allen.....	2,700 00	
J. G. Andison, Lecturer (Sessional).....	2,350 00	
Instructors (Sessional—part time):		
W. J. McAndrew (paid also \$90 for Tutorial Classes).....	1,500 00	
A. E. Tilby.....	1,200 00	
L. A. Bibet.....	900 00	
Miss J. C. Laing (paid also \$1,300 in Architecture).....	100 00	
Mrs. W. R. Patterson, temporary assistance for reading essays.....	200 00	
		33,640 00

German.

G. H. Needler, Professor, 12 months to 30th June.....	\$5,400 00	
Barker Fairley, Associate Professor, 12 months to 30th June.....	4,200 00	
Thure Hedman, Assistant Professor, 12 months to 30th June.....	3,150 00	
G. E. Holt, Lecturer (Sessional).....	2,500 00	
	<hr/>	\$15,250 00

Oriental Languages.

W. R. Taylor, Professor, 12 months to 30th June.....	\$5,220 00	
W. A. Irwin, Lecturer (Sessional), \$2,300; honorarium for extra services, \$400.....	2,700 00	
W. E. Staples, Instructor (Sessional).....	800 00	
	<hr/>	8,720 00

Ethics.

F. Tracy, Professor, 12 months to 30th June (paid also \$6 for Correspondence Courses).....	\$5,220 00	
	<hr/>	5,220 00

University College General.

M. Hutton, Principal, 12 months to 30th June (paid also in Greek)..	\$1,250 00	
G. Oswald Smith, Registrar, 12 months to 30th June (paid also in Latin).....	650 00	
Miss C. Tocque, Registrar's Clerk, 12 months to 30th June.....	1,200 00	
Miss M. F. Dougall, Stenographer for Language Departments, 12 months' salary.....	1,100 00	
	<hr/>	4,200 00
		<hr/>
		\$474,605 09

25. MAIN BUILDING.

Heat and light (supplied from Central Power Plant)

Gas (\$69.36):		
Consumers' Gas Co.....	\$69 36	
Water (\$56.06):		
City Treasurer.....	56 06	
Caretaker's supplies (\$545.74):		
Chas. W. Mack, time stamp.....	4 18	
Superintendent's Dept., labour, \$11.44; material, \$530.12.....	541 56	
Cleaning (\$4,836.22):		
Allen Mfg. Co., laundry.....	5 12	
Canadian Cleaning Co., cleaning windows.....	60 00	
Superintendent's Dept., labour.....	4,771 10	
Repairs and renewals (\$5,247.28):		
T. Eaton Co. Ltd., chairs.....	75 00	
Superintendent's Dept., labour, \$3,763.15; material, \$1,409.13..	5,172 28	
Caretaker, C. E. Bradshaw, 12 months to 30th June.....	1,500 00	
Messenger Service:		
At \$8.00 to \$15.00 per week:		
Miss M. Bradshaw, 42 weeks.....	630 00	
R. Cowling, 18½ weeks.....	148 00	
W. Farrell, 4 weeks, 5 days.....	38 67	
Miss E. Fox, 10½ weeks.....	157 50	
Thos. Lister, 9 weeks.....	81 00	
L. Smith, 42½ weeks.....	362 50	
J. Warner, 33 weeks, 4 days.....	270 66	
Messengers' carfares, etc.....	39 33	
	<hr/>	\$13,982 32

Less sundry credits:

Repairs, \$400.41; cleaning, \$174.90.....	575 31	
	<hr/>	\$13,407 01

26. BIOLOGICAL BUILDING AND DEPARTMENT.

(a) Maintenance of Building:		
Heat and light (supplied from Central Power Plant)		
Gas (\$83.82):		
Consumers' Gas Co.....	\$83	82
Water (\$143.85):		
City Treasurer.....	143	85
Caretaker's supplies (\$252.25):		
Superintendent's Dept., labour, \$5.61; material, \$246.64...	252	25
Cleaning (\$1,003.10):		
Canadian Cleaning Co., cleaning windows.....	44	90
Superintendent's Dept., labour.....	958	20
Repairs and renewals (\$1,991.15):		
City Treasurer, elevator license.....	5	00
Superintendent's Dept., labour, \$1,045.73; material, \$940.42	1,986	15
Structural changes after vacating by the Department of Anatomy (\$3,500.00):		
Superintendent's Dept., labour, \$3,145.17; material, \$354.83	3,500	00
Caretaker, D. J. Clark, 12 months to 30th June (with rooms, heat and light valued at \$300.00).....	1,200	00
	\$8,174	17
Less credit for cleaning.....	8	00
		\$8,166 17
(b) Maintenance of Department:		
Laboratory and lecture room supplies (\$872.17):		
Canadian Industrial Alcohol Co., alcohol.....	\$83	60
Canadian Laboratory Supplies, winchesters.....	6	14
Dominion Glass Co., bottles.....	20	67
T. Eaton Co. Ltd., scales, etc.....	12	85
Eimer & Amend, paraffin.....	5	03
Freyseng Cork Co., corks, etc.....	15	23
Grand & Toy Ltd., chalk, punch, etc.....	5	20
J. F. Hartz Co. Ltd., chemicals.....	5	10
Lowe-Martin Co. Ltd., cards and book supports.....	23	02
Lyman Bros. & Co., chemicals, etc.....	58	30
T. A. Lyttle Co. Ltd., pails.....	10	97
McNeill Sales Ltd., ink, stencil, etc.....	33	75
Miller Men's Wear, coats.....	34	49
Photography, Dept. of, prints, plates and slides.....	10	40
J. G. Ramsey & Co. Ltd., plates, films, etc.....	40	96
J. Frank Raw Ltd., charts.....	25	50
Richards Glass Co., vials.....	9	21
Students' Book Dept., books, cards, etc.....	85	30
Topley Co., chemicals.....	10	71
Toronto Pottery Co., churns.....	11	04
Will Corporation, slide boxes.....	17	97
University Press, printing and stationery.....	86	60
Petty items (9).....	30	39
Superintendent's Dept., freight, etc., \$190.94; labour, \$15.73; material, \$23.07.....	229	74
Museum specimens, supplies and catalogue (\$192.86):		
Lyman Bros. & Co., chemicals.....	2	42
National Research Council, cards.....	53	94
Wistar Institute of Anatomy and Biology, bibliographic service.....	8	13
P. Wytzman, specimens.....	74	41
Superintendent's Dept., labour, \$45.57; material, \$8.39....	53	96
Marine and Lake Laboratories (\$150.00):		
Prof. E. M. Walker, disbursements:		
Travelling expenses to St. Andrews, N.B., \$114.49;		
balance returned, 1923-24, \$35.51.....	150	00
Students' Laboratory supplies (\$2,089.44):		
American Chemical Products Co., acid.....	6	82
The Anglers Co., culture.....	9	14
W. R. Brock Co., cotton, etc.....	54	64
Canadian Laboratory Supplies, bottles.....	33	13
Canadian Needle & Fishing Tackle Co., needles, etc.....	33	54
D. Clark, earthworms.....	6	00
J. Coulter Co., boxes.....	39	35
Prof. Ulric Dahlgren, eggs.....	12	64

26. BIOLOGICAL BUILDING AND DEPARTMENT—*Continued.*

Dominion Glass Co. Ltd., jars.....	\$9 93	
T. Eaton Co. Ltd., glasses.....	24 00	
J. F. Hartz Co., cover glasses, slips, etc.....	584 16	
Ingram & Bell Ltd., colours.....	6 75	
Lyman Bros. & Co., chemicals.....	148 90	
Marine Biological Laboratory, specimens.....	126 54	
Powers & Powers, amoeba and hydra.....	18 34	
Richards Glass Co., bottles and vials.....	23 32	
The Stevens Companies, section lifters.....	69 53	
Toronto Dog and Cat Hospital, animals.....	197 75	
Ward's Natural Science Establishment, specimens.....	5 47	
Will Corporation, jars, etc.....	12 78	
University Press, printing and stationery.....	633 30	
Petty items (8).....	27 41	
Superintendent's Dept., labour.....	6 00	
New microscopes and apparatus (\$691.83):		
J. F. Hartz Co., knives.....	5 88	
E. Leitz, objectives.....	45 33	
Lockhart's Camera Exchange, repairs to camera.....	10 00	
J. Frank Raw Ltd., adapters.....	10 42	
Spencer Lens Co., microscopes and dissecting stands.....	432 37	
Thermo Electric Instrument Co., ovens, etc.....	159 08	
Petty items (3).....	8 37	
Superintendent's Dept., labour, \$19.45; material, 93c.....	20 38	
Furnishings, fittings and new equipment (\$1,470.85):		
A. C. des Isles, repairing furniture.....	24 50	
T. Eaton Co. Ltd., towels, rug, etc.....	59 33	
Office Specialty Mfg. Co., cabinet and sections.....	258 90	
Rice Lewis & Son Ltd., saw.....	2 65	
Soldiers' Civil Re-Establishment, desk equipment.....	9 50	
Superintendent's Dept., labour, \$656.26; material, \$459.71.	1,115 97	
Incidentals and clerical assistance (\$324.00):		
Allen Mfg. Co., laundry.....	67 67	
Prof. B. A. Bensley, disbursements:		
Laboratory supplies, \$35.27; stationery and postage, \$18.20; carfares and sundries, \$6.53.....	60 00	
The Bursar, postage supplied.....	33 60	
T. Eaton Co. Ltd., condensed milk, etc.....	5 54	
J. F. Hartz Co., chemicals.....	13 50	
Miss L. B. Mogg, clerical assistance.....	50 00	
United Typewriter Co., repairs and inspections.....	13 27	
University Press, printing and stationery.....	68 80	
Petty items (4).....	9 74	
Superintendent's Dept., labour.....	1 88	
Messenger service (\$342.00):		
Wm. Gooch, 14 weeks @ \$8.00 per week, \$112.00; 23 weeks @ \$10.00 per week, \$230.00.....	342 00	
		\$6,133 15
Less sundry credits:		
Sale of dishes, etc.....	37 75	
		\$6,095 40
		\$14,261 57

27. DEPARTMENT OF BOTANY.

Apparatus and equipment (\$1,449.16):	
Bausch & Lomb Optical Co., repairing clock.....	\$5 75
Canadian Laboratory Supplies Ltd., flask.....	6 19
G. H. Duff, petty disbursements.....	17 85
Hadfield's Ltd., knives.....	12 25
J. F. Hartz Co., microtome, knives, etc.....	10 75
Ingram & Bell Ltd., needles, etc.....	21 50
Keuffel & Essen Co., borer.....	11 69
Dr. B. E. Livingston, porcelain spheres.....	29 96
McNeill Sales Ltd., mimeograph.....	210 00
Office Specialty Mfg. Co., cabinet rods.....	8 18
Richards Glass Co., tubes.....	6 34
Spencer Lens Co., microscopes, etc.....	181 92

27. DEPARTMENT OF BOTANY—*Continued.*

Taylor Instrument Companies, repairs.....	\$6 00
Arthur H. Thomas Co., electrodes.....	16 85
Prof. R. B. Thomson, disbursements:	
Tent equipment, \$46.78; sundries, \$3.95.....	50 73
The Topley Co., microscope, etc.....	481 29
United Typewriter Co., letter seal, etc.....	11 03
Petty items (3).....	12 63
Superintendent's Dept., freight, etc., \$114.68; labour, \$91.43; material, \$142.14.....	348 25
Laboratory and office supplies (\$1,180.33):	
Allen Mfg. Co., laundry.....	5 54
W. R. Brock Co., towels.....	9 83
The Bursar, postage supplied.....	45 00
G. H. Duff, petty disbursements.....	21 87
Marion Eppley, mercury.....	5 18
Gordon Mackay & Co., sateen.....	38 87
J. F. Hartz Co., slide boxes.....	12 30
Ingram & Bell Ltd., chemicals.....	41 23
Lake Simcoe Ice Ltd., ice.....	33 45
Lyman Bros. & Co., formalin, ether, etc.....	19 63
Office Specialty Mfg. Co., folders.....	13 91
Photography, Dept. of, prints.....	14 90
W. H. Robson, bottles.....	16 50
Mrs. Sharman, laundry work.....	9 00
Students' Book Dept., refills.....	22 50
Thomas Botanical Supply Co., specimens.....	6 77
Prof. R. B. Thomson, disbursements:	
Laboratory supplies, \$72.88; typewriter rental, \$45.00; car rental, \$29.00.....	146 88
The Topley Co., chemicals, etc.....	236 88
United Typewriter Co., inspections.....	6 75
University Press, printing and stationery.....	325 10
Petty items (7).....	21 16
Superintendent's Dept., freight, etc., \$24.51; labour, 75c.; material, \$101.82.....	127 08
Museum and Herbarium supplies (\$473.88):	
Elam Bartholomew, books.....	15 45
Corrugated Paper Box Co., pads.....	7 84
Max Koch, specimens.....	30 12
Lowe-Martin Co., transfer cases.....	19 42
Photography, Dept. of, prints.....	8 15
W. H. Robson, bottles.....	5 50
Rudd Paper Box Co., boxes.....	65 31
H. Sydow, specimens.....	137 39
Telfer Paper Box Co., boxes.....	34 69
F. B. Wann, plant collection.....	7 60
T. H. Weigel, books, etc.....	24 32
University Press, printing and stationery.....	38 00
Petty items (4).....	10 35
Superintendent's Dept., freight, etc., \$60.51; labour, \$9.23.....	69 74
Clerical assistance in Museum and Herbarium (\$1,988.84):	
Miss Ida M. Cook, 24 weeks.....	600 00
J. Horace Faull, Jr., 125 hours.....	50 00
Miss O. Monkman, 2 weeks, 1 day.....	34 67
Miss B. M. Savage, 52 weeks, 1 day.....	1,304 17
Summer work in Museum and Herbarium (\$465.00):	
Miss M. V. McCulloch, 10 weeks, 1 day.....	305 00
Miss O. Monkman, 10 weeks.....	160 00
Botanic Garden and Greenhouse supplies, material and labour in connection (\$3,339.89):	
Aquaria, specimens.....	29 00
W. R. Brebner, specimens.....	55 57
The Bursar, postage supplied.....	5 00
Dale Estate Ltd., specimens.....	41 95
T. Eaton Co. Ltd., mops.....	5 20
Globe-Wernicke Co. Ltd., fying cabinet.....	38 67
Chas. Jarvis, rent of ground.....	20 00
A. E. Long & Co. Ltd., boxes.....	73 15
T. Manton, specimens.....	15 00
Muller, Sealey Co. Inc., specimens.....	8 37

27. DEPARTMENT OF BOTANY—*Continued.*

Wm. Rennie Co. Ltd., spinach.....	\$5 40
Rowancroft Gardens, specimens.....	7 80
J. A. Simmers Ltd., bone meal, seeds, etc.....	37 40
Students' Book Dept., books.....	5 90
Sutton & Sons, seeds.....	18 17
Prof. R. B. Thomson, disbursements:	
Collecting expenses, \$66.85; postage, \$19.32; supplies, \$94.27	180 44
Toronto Hydro Shop, heater.....	8 25
University Press, stationery.....	30 50
Petty items (7).....	17 83
Superintendent's Dept., freight, etc., \$1.04; labour, \$15.32;	
material, \$37.93.....	54 29
Miss Ida M. Cook, 9 weeks, 2 days @ \$25.00 per week.....	233 33
Miss M. Givens, 1 week.....	25 00
Wm. Hirons, 52 weeks, 1 day, @ \$24.00 per week.....	1,252 00
Wm. Marks, 9 weeks, 1 day, @ \$22.00 per week; 4 weeks @	
\$24.00 per week.....	297 67
Miss J. Morton, 47 weeks, 1 day, @ \$10.80 per week.....	849 00
Miss M. V. McCulloch, 5 days.....	25 00
	<hr/>
	\$8,897 10
Less students' laboratory deposits transferred.....	\$95 82
Sale of duplicating machine.....	15 00
	<hr/>
	110 82

\$8,786 28

28. CHEMICAL BUILDING AND DEPARTMENT.

(a) Maintenance of Building:

Heat and light (supplied from Central Power Plant):

Gas (\$217.91):

Consumers' Gas Co..... \$217 91

Water (\$208.48):

City Treasurer..... 208 48

Caretaker's Supplies (\$86.00):

Superintendent's Dept., labour, \$1.31; material, \$84.69.... 86 00

Cleaning (\$1,209.40):

Allen Mfg. Co., laundry..... 5 80

Canadian Cleaning Co., cleaning windows..... 20 00

Superintendent's Dept., labour..... 1,183 60

Repairs and renewals (\$1,098.35):

Routery Bros., plastering, etc..... 282 18

Superintendent's Dept., labour, \$448.86; material, \$367.31. 816 17

Caretaker (paid as Laboratory Assistant, with rooms, heat and light valued at \$420.00, chargeable against building).....

2,820 14

(b) Maintenance of Department:

Chemistry:

Chemicals, glassware and apparatus (\$3,935.43):

Aikenhead Hardware Ltd., rod..... \$10 38

Art Metropole, pencils..... 47 04

J. Bishop & Co., Platinum Works, electrodes..... 102 07

Boeckh Co. Ltd., brushes..... 100 37

The Bursar, postage supplied..... 20 00

Canadian Carbonate Co., gas..... 8 36

Canadian Laboratory Supplies Ltd., chemicals..... 542 34

Canadian Liquid Air Co. Ltd., gas..... 11 17

Carnahan's Drug Store, films..... 5 20

Central Scientific Co., cement, waterbath, etc..... 259 51

Compressed Gas & Supply Co., hydrogen..... 10 82

Eastman Kodak Co., chemicals..... 43 57

T. Eaton Co. Ltd., towels..... 110 00

E. B. Eddy Co. Ltd., matches..... 37 00

Chas. Englehart, crucibles..... 7 26

Grinnell Co., flanges..... 10 71

Paul K. Hamburger Co., saddles..... 13 83

J. F. Hartz Co. Ltd., chemicals..... 190 85

Lyman Bros. & Co., chemicals..... 56 21

Prof. J. A. McBain, ultrafilter..... 27 84

H. W. McCurdy, silver nitrate..... 39 78

McKay School Equipment Ltd., chemicals, etc..... 1,201 96

28. CHEMICAL BUILDING AND DEPARTMENT—*Continued.*

T. C. McMullen, adjusting weights.....	\$12 50
Prof. W. Lash Miller, paid for hardware, chemicals and other supplies.....	242 26
Geo. F. Nelson, pump, etc.....	30 72
Norton Co., cement.....	6 71
Ontario Cork Co., corks.....	34 85
Ontario Rubber Co., tubing.....	86 85
Wm. R. Perrin Ltd., lard press.....	26 12
M. Phillips, hardware.....	35 35
Photography, Dept. of, slides.....	107 12
E. Pullan Ltd., wipers.....	21 42
Rice Lewis & Son Ltd., hardware.....	6 52
Richards Glass Co., glass bends, tubing, stopcocks, etc.	151 04
Scientific Materials Co., pyrometer.....	188 83
Sharples Specialty Co., bowl.....	32 52
Spencer Lens Co., discs.....	8 75
Standard Chemical Co., chemicals, etc.....	37 33
L. S. Tarshis & Sons, balance.....	11 00
W. Younger, repairing chair.....	5 50
University Press, printing and stationery.....	160 45
Petty items (6).....	20 93
Superintendent's Dept., freight, etc., \$101.24; labour, \$555.16; material, \$399.49.....	1,055 89

 \$5,138 93

Less received from Students' Account... \$1,000 00
 credits for return of empty cases, etc. 203 50

 1,203 50

 \$3,935 43

Equipment for Analytical Chemistry (\$500.00):

J. Bishop & Co., Platinum Works, electrodes.....	292 16
Eastman Kodak Co., calorimeter (one-half charged to Physical Chemistry).....	196 16
Superintendent's Dept., sales tax.....	11 68

 \$4,435 43

Physical Chemistry:

Chemicals, apparatus, etc. (\$651.75):

Canadian Kodak Co., bars.....	\$12 27
Consolidated Optical Co., repairing prisms.....	27 00
Cooper Hewitt Electric Co., burner and fixtures.....	137 87
Eastman Kodak Co., calorimeter (one-half charged to Chemistry).....	196 16
Edison Swan Electric Co., lamps.....	13 18
Fletcher Mfg. Co. Ltd., rods.....	4 68
J. F. Hartz Co., centrifuge, etc.....	39 30
Adam Hilger Ltd., prism.....	29 33
Lockhart's Camera Exchange, lens.....	7 50
W. R. McKee, repairing apparatus.....	19 55
Ontario Rubber Co., tubing.....	52 01
Pathology, Dept. of, filters.....	5 25
J. Frank Raw Ltd., repairs to apparatus.....	15 50
Richards Glass Co., glassware.....	9 04
Spencer Lens Co., counting chamber.....	5 11
Superintendent's Dept., freight, etc., \$41.99; labour, \$10.49; material, \$25.52.....	78 00

 651 75

Electro-Chemistry:

Laboratory supplies (\$1,280.89):

Allen Mfg. Co., laundry.....	\$7 30
J. T. Baker Chemical Co., chemicals.....	127 02
Beaver Flint Glass Co., bottles.....	18 41
Prof. J. T. Burt-Gerrans, paid for supplies.....	29 69
Canadian Asbestos Co., crucibles.....	17 47
Canadian General Electric Co., wire, switches, etc.....	108 76
Canadian Kodak Co., asbestos, etc.....	6 98
Canadian Laboratory Supplies, acids.....	80 19
W. H. Chapman, drawings.....	16 25
Consumers' Gas Co., ore.....	10 00
Contractors' Supply Co. Ltd., fire clay.....	9 20

28. CHEMICAL BUILDING AND DEPARTMENT—*Continued.*

T. Eaton Co. Ltd., towels.....	\$12 84	
Eureka Mineral Wool & Asbestos Co., asbestos board.....	7 16	
Harbison-Walker Refractories Co., magnesia.....	149 61	
Lawson & Wilson Ltd., ledger sheets.....	4 68	
National Carbon Co. Inc., electrodes.....	80 94	
National Drug & Chemical Co. Ltd., chemicals.....	27 11	
Photography, Dept. of, slides.....	26 74	
E. Pullan, wipers.....	9 13	
Toronto Hydro-Electric System, service.....	15 00	
University of Toronto Engineering Society, stationery.....	106 65	
Williams & Wilson Ltd., bricks.....	40 38	
Petty items (5).....	13 50	
Superintendent's Dept., freight, etc., \$63.90; labour, \$70.95; material, \$221.03.....	355 88	
Apparatus (\$1,291.56):		
Canadian Scale Co., scale.....	26 50	
Consolidated Optical Co., furnace.....	80 00	
McKay School Equipment Ltd., filtering apparatus.....	7 80	
W. R. McKee, rheostats, motors, etc.....	508 58	
Rice Lewis & Son, hardware.....	40 38	
The Topley Co., burettes, beakers, flasks, etc.....	416 27	
Toronto Welding Co., cutting walls.....	6 50	
Williams & Wilson Ltd., muffle.....	16 05	
Superintendent's Dept., freight, etc., \$28.51; labour, \$137.16; material, \$23.81.....	189 48	
Fitting up laboratories (\$1,350.70):		
E. B. Badger & Sons, evaporator.....	255 94	
J. P. Devine Co., drying chamber, etc.....	496 52	
Superintendent's Dept., freight, etc., \$55.66; labour, \$309.32; material, \$233.26.....	598 24	
Laboratory cleaning (\$10.00):		
Geo. Banton.....	10 00	
		\$3,933 15
		\$11,840 47

29. PHYSICS BUILDING AND DEPARTMENT.

(a) Maintenance of Building:		
Heat and light (supplied from Central Power Plant):		
Gas (\$218.98):		
Consumers' Gas Co.....	\$218 98	
Water (\$572.35):		
City Treasurer.....	572 35	
Caretaker's supplies (\$119.86):		
Superintendent's Dept., labour, \$3.91; material, \$115.95...	119 86	
Cleaning (\$1,427.30):		
Canadian Cleaning Co., cleaning windows.....	46 90	
Superintendent's Dept., labour.....	1,380 40	
Repairs and renewals (\$2,138.61):		
City Treasurer, elevator license.....	5 00	
George Oakley & Son Ltd., marble step.....	15 37	
R. Robertson & Sons, cutting doorway.....	28 65	
Superintendent's Dept., labour, \$1,502.70; material, \$586.89	2,089 59	
Caretaker, J. Wicksey, 12 months to 30th June.....	1,400 00	
	\$5,877 10	
Less credits for cleaning, etc.....	41 00	
		5,836 10
(b) Maintenance of Department:		
Laboratory and workshop supplies (\$4,434.93):		
Aikenhead Hardware, hardware.....	\$345 13	
Allen Mfg. Co., laundry.....	15 52	
American Hard Rubber Co., rods.....	34 00	
Anaconda American Brass Ltd., rods.....	241 60	
Cuthbert Andrews, tubes.....	173 70	
Baird & Tatlock (London) Ltd., bottles.....	158 82	
H. Bakewell, repairing clock.....	4 50	
Bausch & Lomb Optical Co., condensers.....	5 91	
Beardmore Belting Co., belting.....	8 51	
Bowes & Eowes, tables.....	6 00	

29. PHYSICS BUILDING AND DEPARTMENT--*Continued.*

British Aluminum Co., rods.....	\$5 66
Brown's Copper & Brass Rolling Mills, brass.....	22 33
The Bursar, postage supplied.....	30 00
Prof. E. F. Burton, paid for supplies, carfares, etc.....	34 53
Cambridge & Paul Instrument Co., burners, etc.....	118 18
Canada Metal Co., castings.....	53 08
Canadian Carbonate Co., gas.....	7 94
Canadian General Electric Co., wire.....	12 73
Canadian Johns-Manville Co., asbestos paper.....	46 42
Canadian Laboratory Supplies, chemicals.....	6 34
Canadian Liquid Air Co., gas.....	18 30
Canadian National Carbon Co. Ltd., cells.....	49 35
Corning Glass Works, tubing, etc.....	309 78
T. Eaton Co. Ltd., towels, corks, etc.....	195 71
E. B. Eddy & Co., matches.....	14 80
Eimer & Amend, carbons.....	15 97
A. Gallenkamp & Co. Ltd., thermometers.....	12 44
General Electric Co., lamps.....	44 30
John J. Griffin & Sons, reflectors, etc.....	72 36
John T. Hepburn Ltd., castings.....	6 23
Alfred Herbert Ltd., grinder.....	7 46
Hopkin & Williams Ltd., chemicals.....	139 76
A. S. Hustwitt Co., tape.....	4 80
Ingram & Bell, plates.....	9 18
Wm. Jessop & Sons Ltd., steel.....	6 18
Johnson Matthey & Co. Ltd., wire, etc.....	33 76
Kimble Glass Co., tubing.....	73 47
L'Air Liquide Society, oxygen.....	5 23
Lake Simcoe Ice Ltd., ice.....	37 88
Max Levy & Co., screen.....	5 30
Lyman Bros. & Co. Ltd., chemicals.....	140 88
Geo. A. Matthews, rewinding armature.....	14 00
Norman Macdonald, wheel, etc.....	12 34
W. R. McKee, repairs.....	17 53
Ontario Rubber Co., Ltd. tubing.....	66 97
Ontario Wind Engine & Pump Co., castings.....	36 85
Pastorelli & Rapkin Ltd., thermometers.....	51 47
Pathology, Dept. of, alcohol.....	8 00
Peckover's Ltd., steel.....	24 22
Photography, Dept. of, slides.....	6 90
W. G. Pye & Co., electrical supplies.....	419 16
J. G. Ramsey & Co. Ltd., plates.....	68 86
Richards Glass Co., glassware.....	9 50
Ryrie Bros., watch repairs.....	35 00
E. F. Stoll, overhauling calculator.....	25 00
Toronto & Niagara Power Co., hot plate.....	8 50
Toronto Salt Works.....	4 50
United Typewriter Co. Ltd., inspection, etc.....	30 09
Ward Leonard Electric Co., units.....	73 65
University Press, printing and stationery.....	232 95
Petty items (19).....	52 38
Superintendent's Dept., freight, etc., \$169.75; labour, \$20.58; material, \$512.69.....	703 02
Apparatus (\$3,414.60):	
Aikenhead Hardware, dies, etc.....	10 00
Cambridge & Paul Instrument Co., ammeter, etc.....	398 39
Canadian General Electric Co., motors.....	85 27
Central Scientific Co., weights, etc.....	53 35
T. Eaton Co., trimmer, etc.....	17 00
Eimer & Amend, glassware.....	21 78
A. Gallenkamp & Co. Ltd., microscopes.....	306 11
General Electric Co., lamp.....	38 47
John J. Griffin & Sons Ltd., gyroscope.....	21 04
Hendey Machine Co., clutch.....	12 25
Instruments Ltd., galvanometer.....	156 00
D. McKenzie Machinery Co., saw.....	67 93
Powerlite Devices Ltd., ammeter, etc.....	194 25
W. G. Pye & Co., electrical equipment.....	383 02
Radcliff Saw Mfg. Co., saws.....	9 90
L. S. Tarshis & Sons, balance.....	11 00

29. PHYSICS BUILDING AND DEPARTMENT—*Continued.*

Victor X-Ray Corporation, transformers.....	\$67 28	
Watson & Sons (Electro-Medical) Ltd., X-Ray apparatus..	840 23	
Weston Electrical Instrument Co., instruments.....	147 45	
A. R. Williams Machinery Co., brake, etc.....	182 41	
Alexander Wright & Co. Ltd., drum, etc.....	11 69	
Zenith Mfg. Co., resistances.....	200 40	
Petty items (2).....	7 32	
Superintendent's Dept., freight, etc., \$74.06; material, \$98.00	172 06	
Experimental tables, cases, books, charts (\$995.84):		
Baker Carpet Cleaning Co., cleaning rugs.....	5 99	
T. Eaton Co. Ltd., towels, etc.....	35 00	
"Engineering," subscription.....	13 38	
The Franklin Institute, subscription.....	6 66	
F. J. Franklin, drafting, 81 hours @ 85c.....	68 85	
Macmillan & Co. Ltd., subscription.....	13 50	
Photography, Dept. of, prints.....	2 25	
R. Robertson & Sons, stone tables.....	190 00	
Robt. Simpson Co., frame.....	5 00	
Students' Book Dept., books.....	33 40	
University Press, printing and stationery.....	31 70	
Superintendent's Dept., labour, \$381.40; material, \$208.71.	590 11	
Workshop assistance (\$2,495.08):		
J. Collins, 52 weeks, 1 day, @ \$10.00 per week.....	521 67	
R. J. Lang, 10 months.....	1,000 00	
C. A. Peachey, 52 weeks, 1 day, @ \$19.22 per week.....	973 41	
Motor Generator apparatus (\$1,503.72):		
Watson & Sons (Electro-Medical) Ltd., motor generator...	616 12	
Superintendent's Dept., sales tax, etc., \$37.60; labour, \$326.34; material, \$523.66.....	887 60	
		\$12,844 17
		\$18,680 27

30. SUB-DEPARTMENT OF ASTRONOMY.

Supplies (\$270.85):		
Art Metropole, stationery.....	\$9 85	
Baker & Co. Inc., spoon.....	4 34	
Bausch & Lomb Optical Co., reflector.....	2 89	
Goddard Bros., cartage.....	30 00	
Mrs. R. W. Hopper, painting slides.....	44 50	
Methodist Book & Publishing House, lamp.....	8 50	
Photography, Dept. of, slides.....	71 50	
J. G. Ramsey & Co., photographic supplies.....	18 45	
Students' Book Dept., almanac.....	4 05	
University Press, printing and stationery.....	47 55	
Superintendent's Dept., freight, etc., \$24.22; labour, \$2.13; material, \$2.87.....	29 22	
Apparatus (\$139.63):		
Central Scientific Co., gratings.....	24 07	
Max Kohl, prism.....	115 56	
		410 48

31. GEOLOGICAL DEPARTMENT.

Maintenance (\$1,055.28):		
Walter de Gruyter & Co., books.....	\$11 00	
Dominion Rubber System (Ontario) Ltd., casings.....	53 56	
Grand & Toy Ltd., fyles.....	32 00	
E. Hansard, caning chairs.....	8 00	
E. C. Jeffrey, coal sections.....	25 63	
McKay School Equipment Ltd., rulers.....	12 25	
Macmillan Co. of Canada Ltd., atlas.....	60 00	
Office Specialty Mfg. Co., desk.....	51 13	
Prof. W. A. Parks, disbursements:		
Car expenses, \$27.45; supplies and sundries, \$31.24.....	58 69	
Photography, Dept. of, slides and prints.....	66 40	
Provincial Treasurer, motor license.....	14 00	
Students' Book Dept., note books.....	12 00	
A. T. Thompson & Co., carbons.....	9 48	
W. C. Warburton & Co. Ltd., repairing car.....	69 48	
University Press, printing and stationery.....	105 20	
Petty items (5).....	14 31	

31. GEOLOGICAL DEPARTMENT—*Continued.*

Superintendent's Dept., freight, etc., \$18.97; labour, \$275.74; material, \$157.44.....	\$452 15	
Occasional services of artists (\$298.75):		
T. Logier.....	273 75	
G. R. Workman.....	25 00	
	<hr/>	
	\$1,354 03	
Less credits for breakages, etc.....	48 90	
	<hr/>	\$1,305 13

32. MINERALOGICAL DEPARTMENT.

Maintenance, supplies and apparatus (\$1,261.86):		
Allen Mfg. Co., laundry.....	\$5 48	
Bausch & Lomb Optical Co., carbons, etc.....	12 82	
N. Boubee-Fils, specimens.....	127 89	
Canadian Laboratory Supplies, chemicals.....	35 09	
John Catto Co. Ltd., linen.....	5 25	
Eimer & Amend, wire.....	79 04	
Grand & Toy Ltd., fyles.....	17 00	
Ingram & Bell, bottles and glasses.....	9 10	
Instruments Ltd., drafting sets.....	53 00	
E. Leitz, repairs to microscopes.....	28 77	
Ludwig, Hommel & Co., lamps.....	18 58	
Lyman Bros. & Co., chemicals.....	96 96	
Norton Co., alundum.....	4 99	
Office Specialty Mfg. Co., cards.....	6 13	
Photography, Dept. of, slides and prints.....	15 95	
Provincial Treasurer, motor license.....	14 00	
J. G. Ramsey & Co. Ltd., plates and chemicals.....	5 03	
Ritchey Supply Co., alundum grains.....	22 35	
Students' Book Dept., books.....	20 55	
Voigt & Hochgesang Co., glassware, prisms, etc.....	43 51	
Prof. T. L. Walker, petty disbursements.....	27 60	
Ward's Natural Science Establishment, specimens, chemicals, etc.....	147 22	
University Press, printing and stationery.....	48 65	
Petty items (7).....	14 78	
Superintendent's Dept., freight, etc., \$69.89; labour, \$247.94; material, \$84.29.....	402 12	
	<hr/>	
	\$1,261 86	
Less sundry credits:		
Breakages, \$53.69; sale of materials, \$40.94.....	94 63	
	<hr/>	1,167 23

33. PHILOSOPHICAL AND PSYCHOLOGICAL DEPARTMENTS.

(a) Philosophy:		
Class-room supplies (\$4.10):		
University Press, cards.....	\$4 10	
	<hr/>	4 10
(b) Psychology:		
Supplies (\$699.89):		
Prof. E. A. Bott, disbursements:		
Postage, \$16.55; carfares and express charges, \$14.34; supplies, \$41.17.....	\$72 06	
Consolidated Optical Co., colours.....	17 09	
Dental Co. of Canada Ltd., belts.....	11 63	
Ellis Bros. Ltd., watch repairs.....	13 00	
Grand & Toy Ltd., fyles.....	14 00	
Hardware Co. of Toronto, paint, etc.....	13 17	
Harvard Apparatus Co., pneumographs, magnets, etc.....	121 80	
Geo. M. Hendry Co., blackboards.....	23 52	
Johns Hopkins Press, books.....	6 01	
Lockhart's Camera Exchange, slides, plates, etc.....	34 63	
Lyman Bros. & Co. Ltd., scale.....	29 07	
New Standard Foundry Co., castings.....	6 19	
C. W. Peterson & Co., rotators.....	50 00	
Queen City Brass Foundry, castings.....	17 16	
Standard Foundry Co., castings, etc.....	24 93	
C. H. Stoelting Co., booklets, etc.....	17 40	

PHILOSOPHICAL AND PSYCHOLOGICAL DEPARTMENTS—*Continued.*

United Typewriter Co., inspections.....	\$8 25	
Veeder Mfg. Co., counter drive.....	4 69	
University Press, printing and stationery.....	108 85	
Petty items (7).....	8 68	
Superintendent's Dept., freight, etc., \$49.70; labour, \$5.63; material, \$42.43.....	97 76	
Apparatus and equipment (\$700.80):		
The Art Metropole, protractors.....	11 99	
Baird & Tatlock (London) Ltd., photometer, acoustic table, etc.....	326 72	
Columbia Graphophone Co., grafonola.....	60 00	
Ellis Bros. Ltd., repairs.....	17 00	
Ingram & Bell, stethoscope, etc.....	16 40	
A. Kirschmann, apparatus taken over.....	100 00	
Jas. Morrison Brass Mfg. Co., tubes, etc.....	6 44	
New Standard Foundry Co., castings.....	5 52	
C. W. Peterson & Co., metronome, etc.....	36 04	
Queen City Brass Foundry, castings.....	20 14	
J. Frank Raw Ltd., rack pieces.....	18 50	
Superintendent's Dept., freight, etc., \$20.72; labour, \$24.09; material, \$37.24.....	82 05	
Clerical assistance (\$500.00):		
Mrs. M. Mussen, 8 months @ \$62.50.....	500 00	
Laboratory cleaning (\$105.01):		
Miss G. Evans, 140 hours @ 75c.....	105 01	
Laboratory attendance (\$195.01):		
Miss G. Evans, 260 hours @ 75c.....	195 01	
		\$2,200 71
		\$2,204 81

34. MATHEMATICAL DEPARTMENT.

Class-room supplies (\$41.67):		
Prof. A. T. deLury, petty disbursements.....	\$4 00	
Lowe-Martin Co., cards.....	1 47	
University Press, stationery.....	36 20	
		41 67

35. SUB-DEPARTMENT OF MECHANICS.

Supplies (\$83.82):		
Hardware Co. of Toronto, tools.....	\$11 22	
Prof. W. J. Loudon, petty disbursements.....	7 50	
Students' Book Dept., stationery.....	19 80	
University Press, printing and stationery.....	45 30	
Apparatus (\$44.35):		
Students' Book Dept., books.....	19 35	
Superintendent's Dept., labour, \$7.36; material, \$17.64.....	25 00	
		128 17

36. POLITICAL SCIENCE BUILDINGS AND DEPARTMENT.

(a) Maintenance of Buildings (69 and 71 St. George Street):		
Fuel (\$510.49):		
Britnell & Co. Ltd., fuel and teaming.....	\$31 55	
W. H. Cox Coal Co., fuel.....	135 94	
Wm. McGill & Co., fuel.....	343 00	
Gas (\$39.36):		
Consumers' Gas Co.....	39 36	
Water (\$46.26):		
City Treasurer.....	46 26	
Caretaker's supplies (\$38.14):		
Superintendent's Dept., labour, \$1.28; material, \$36.86....	38 14	
Cleaning (\$602.60):		
H. F. Baxter, cleaning windows.....	2 60	
Superintendent's Dept., labour.....	600 00	
Repairs and renewals (\$503.23):		
Superintendent's Dept., labour, \$347.26; material, \$155.97..	503 23	
		\$1,740 08

36. POLITICAL SCIENCE BUILDINGS AND DEPARTMENT—*Continued.*

Less sundry credits:			
Cleaning, \$33.50; light, \$32.50.....		\$66 00	
			\$1,674 08
(b) Maintenance of Department:			
Office and class-room supplies (\$235.37):			
The Bursar, postage supplied.....	\$20 00		
Prof. R. M. MacIver, petty disbursements.....	3 69		
Mitchell & McGill, desk and chair.....	52 00		
United Typewriter Co., typewriter and inspections.....	70 20		
Miss J. R. White, preparing stencils.....	2 50		
University Press, stationery.....	83 65		
Superintendent's Dept., labour, \$3.08; material, 25c.....	3 33		
Clerical assistance (\$372.00):			
Miss G. Edgar, 375½ hours @ 50c.....	188 75		
Miss H. Macdonell, 366½ hours @ 50c.....	183 25		
			607 37
			\$2,281 45

37. HISTORY.

Class-room supplies (\$196.72):			
The Bursar, postage supplied.....	\$25 00		
Denoyer-Geppert Co., maps.....	24 11		
The Map Co., map.....	6 65		
Noiseless Typewriter Sales Co., inspections and carbon paper...	11 00		
Oxford University Press, books.....	6 60		
Philip, Son & Nephew Ltd., atlases.....	11 04		
Rand, McNally & Co., maps.....	26 28		
Frank Stark, operating lantern.....	1 00		
University Press, stationery.....	71 40		
Superintendent's Dept., freight, etc.....	13 64		
Classical assistance (\$500.00):			
Miss J. A. MacIver, 12 months to 30th June.....	500 00		
			696 72

38. ETHNOLOGY.

Class-room supplies (\$261.39):			
Miss Ruth Agnew, compiling catalogue of slides.....	\$25 00		
Newton & Co., slides.....	84 81		
Photography, Dept. of, slides.....	69 40		
J. G. Ramsey & Co. Ltd., slide boxes.....	22 08		
Sir Bertram Windle, disbursements, slides, etc.....	60 10		
			261 39

39. ITALIAN AND SPANISH.

Class-room supplies (\$21.38):			
Students' Book Dept., books.....	\$12 48		
University Press, printing.....	8 90		
			21 38

40. UNIVERSITY COLLEGE DEPARTMENTS.

Greek:			
	(Nothing spent).		
Latin (\$35.35):			
Photography, Dept. of, lantern slides.....	\$18 00		
University Press, printing and stationery.....	17 35		
Ancient History (\$51.30):			
University Press, printing.....	51 30		
English:			
	(Nothing spent).		
French (\$194.57):			
Class-room supplies (\$45.80):			
Students' Book Dept., books.....	45 80		
Furniture (\$148.77):			
Office Specialty Mfg. Co., desks and chairs.....	148 77		
German:			
	(Nothing spent).		

40. UNIVERSITY COLLEGE DEPARTMENTS—*Continued.*

Orientals (\$99.58):		
Denoyer-Gippert Co., maps.....	\$29 31	
Students' Book Dept., books.....	39 85	
W. R. Taylor, cablegram.....	3 28	
J. Wicksey, attendance at meeting.....	2 50	
University Press, binding books, printing, etc.....	22 90	
Superintendent's Dept., freight, etc.....	1 74	
Ethics (\$21.90):		
Students' Book Dept., stationery and refills.....	5 40	
University Press, stationery.....	16 50	
		\$402 70

41. UNIVERSITY COLLEGE GENERAL EXPENSES.

Office supplies, stationery, printing and incidentals (\$292.61):		
The Bursar, postage supplied.....	\$80 00	
T. Eaton Co. Ltd., mirror.....	1 95	
Principal M. Hutton, cablegram.....	4 26	
Students' Book Dept., books.....	6 15	
Toronto Weekly Railway and Steamboat Guide, subscription...	6 50	
United Typewriter Co., inspections.....	12 00	
University Press, printing and stationery.....	181 30	
Superintendent's Dept., labour.....	45	
Advertising (\$11.34):		
"Evening Telegram".....	6 30	
"Toronto Daily Star".....	5 04	
		303 95

42. TRINITY COLLEGE SERVICE.

The Bursar, Trinity College, students' carfares for transportation to University lectures.....	1,455 06
	\$552,260 83

III. FACULTY OF MEDICINE.

43. SALARIES.

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
A. Primrose, Dean, 12 months to 30th June (paid also \$1,000 as Professor of Surgery).....		\$1,500 00
J. J. R. Macleod, Associate Dean, 12 months to 30th June (paid also \$6,000 as Professor of Physiology).....		1,500 00
		\$3,000 00
<i>Anatomy.</i>		
J. P. McMurrich, Professor, 12 months to 30th June (paid also \$300 as Dean, School of Graduate Studies; and \$300 for Special Lectures).....		6,000 00
W. H. Piersol, Associate Professor, 12 months to 30th June, @ \$4,500, of which half charged to Biology.....		2,250 00
J. C. Watt, Assistant Professor, 12 months to 30th June.....		3,500 00
Demonstrators (Sessional):		
H. A. Cates.....		1,000 00
H. G. Willson.....	\$1,000 00	
Assistants (Sessional):		
A. S. Lawson.....		150 00
E. A. McCulloch.....		150 00
L. A. Pequegnat (paid also \$160 in Biology).....		150 00
E. E. Shouldice (paid also \$150 in Surgery).....		150 00
P. D. Spohn.....		150 00
L. C. Palmer (Michaelmas Term).....		75 00
R. M. Janes (paid also \$2,400 in Surgery).....		100 00
H. W. Wookey (paid also \$2,400 in Surgery).....		100 00

43. SALARIES—*Continued.*

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
W. A. Costain (paid also \$150 in Surgery).....		\$50 00
J. Macdonald.....		50 00
Miss G. Dowsley, Technical and Clerical Assistant, 12 months to 30th June.....		600 00
G. Lynne, Laboratory Assistant and Caretaker, 12 months to 30th June.....		1,500 00
H. McCormick, Laboratory Attendant, 12 months to 30th June.....		1,456 00
	\$1,000 00	\$17,431 00

Pathology and Bacteriology.

J. J. Mackenzie, Professor, obit. Aug. 1; balance of salary to 30th June paid as compassionate allowance to widow.....		6,000 00
H. B. Maitland, Assistant Professor, 12 months to 30th June.....	500 00	2,850 00
Lecturers (Sessional):		
Wm. Magner.....		1,800 00
W. L. Robinson.....	*1,800 00	
Fellows (Sessional):		
G. C. Cameron.....	400 00	1,000 00
G. H. Eagles.....		1,000 00
R. F. Farquharson.....		1,000 00
R. B. Hare.....		1,000 00
Demonstrators (Sessional):		
I. H. Erb (paid also \$73 for Graduate Course).....		250 00
G. F. Laughlen.....		150 00
A. MacKay.....		100 00
G. R. Philp.....		100 00
L. R. Hill.....		50 00
A. M. Jeffrey.....		50 00
J. A. Linton.....		50 00
F. Payne, Preparator, 12 months to 30th June.....	1,200 00	
F. Thibault, Technician, 12 months to 30th June.....		1,300 00
A. Wilson, Laboratory Assistant, 12 months to 30th June (paid also \$750 as caretaker of Pathological building).....		600 00
Laboratory Attendants for preparing media:		
Miss E. A. Gordon, 11 months at \$80.....		880 00
A. Myers, 12 months' salary.....		600 00
Miss H. Moore, 1st July to 6th October @ \$25 per month; 7th October to 24th March @ \$35 per month.....		274 85
Miss A. E. Moore, 2 weeks, 4 days.....		66 67
E. Castleton, 18 weeks @ \$10.....		180 00
N. E. McKinnon, Assistant Curator, Pathological Museum, 12 months' salary.....	250 00	750 00
Stenographers:		
Miss I. E. Ruttan, 12 months to 30th June.....		1,100 00
Miss E. R. Trowell, 1st September to 28th February @ \$85 per month.....	510 00	
Miss V. L. McKinnon, 1st March to 30th June @ \$85 per month	340 00	
	\$5,000 00	\$21,151 52

Pathological Chemistry.

V. J. Harding, Professor, 12 months to 30th June.....	200 00	4,800 00
George Hunter, Lecturer (Sessional).....		2,300 00
Fellows (Sessional):		
Miss K. Drew.....		750 00
B. A. Eagles.....		750 00
Demonstrators (Sessional):		
W. S. Quint, @ \$500 (resigned 31st December).....		187 50
D. H. Boddington.....		500 00
F. M. R. Bulmer (paid also \$1,200 in Therapeutics).....		250 00
T. G. H. Drake.....		250 00
Laboratory Assistants, each 12 months to 30th June:		
T. Richardson.....		1,200 00
L. Sutton.....		780 00

43. SALARIES—Continued.

Charged to Eaton
and Rockefeller
Funds. Charged to
Revenue.

Mrs. M. Davis, Laboratory Attendant, 12 months to 30th June, (part time).....		\$300 00
Mrs. D. M. Palmer, Secretarial Assistant, 10 months to 30th April @ \$75.....	\$750 00	
	<hr/>	<hr/>
	\$950 00	\$12,067 50

Pharmacy and Pharmacology.

V. E. Henderson, Professor, 12 months to 30th June.....		5,000 00
N. C. Sharpe, Assistant Professor, 3 months (part time) @ \$75; 9 months @ \$250).....		2,475 00
Assistants, Pharmacy (Sessional):		
J. A. Macdonald.....		275 00
J. C. Hallamore.....		100 00
Miss K. Muldoon.....		100 00
F. W. W. Hipwell, Class Assistant, Pharmacology (Sessional).....		200 00
Allan Brock, Technical Assistant, 12 months to 30th June.....		1,350 00
Miss J. Deas, Clerical Assistant, 12 months' salary.....		1,200 00
Miss D. A. Manning, Stenographer, 8½ months from 1st October @ \$42.....		357 00
J. Brickles, Laboratory Attendant, 12 months to 30th June @ \$50 (balance in Bio-Chemistry \$100; in Special Research \$160)		340 00
	<hr/>	<hr/>
		\$11,297 00

Bio-Chemistry.

Andrew Hunter, Professor, 12 months to 30th June.....		6,000 00
Associate Professors, each 12 months to 30th June:		
H. B. Speakman, Zymology (without salary—paid \$4,000 in Special Research).....		.....
H. Wasteneys (paid also \$350 for Special Lectures).....		4,200 00
Miss J. McFarlane, Demonstrator (Sessional).....		1,500 00
Fellows (Sessional):		
G. S. Eadie (paid also \$480 in Special Research).....	\$212 50	787 50
J. A. Morrell (paid also \$400 in Special Research).....	212 50	787 50
H. Borsook (paid also 300 in Special Research).....		900 00
F. L. Hutchison.....		800 00
J. W. Fletcher, Technician, 12 months to 30th June.....		1,200 00
Lloyd Sloan, Technical Assistant, 12 months' salary.....		780 00
A. E. Giddens, Laboratory Assistant, 12 months to 30th June.....		1,000 00
Miss M. Delamere, Secretarial Assistant, 12 months' salary.....		1,000 00
Laboratory Attendants:		
J. Brickles, 12 months @ \$50 (see under Pharmacology).....		100 00
Mrs. A. H. Moffatt, 3 weeks, 1 day, @ \$5.77 per week.....		29 53
Mrs. J. Whyte, 21 weeks @ \$5.77.....		121 17
	<hr/>	<hr/>
	\$425 00	\$19,205 70

Physiology.

J. J. R. Macleod, Professor, 12 months to 30th June (paid also \$1,500 as Associate Dean).....		6,000 00
Assistant Professors, each 12 months to 30th June:		
J. M. D. Olmsted.....		3,450 00
N. B. Taylor.....		3,400 00
M. J. Wilson, Demonstrator (Sessional).....		1,200 00
Fellows (Sessional):		
H. D. Logan.....		1,000 00
N. A. McCormick (paid also \$100 in Special Research).....		800 00
Fellows (Sessional—part time):		
F. N. Allan (paid also \$120 in Special Research).....	170 00	230 00
Miss K. O'Brien.....	170 00	230 00
E. C. Noble (paid also \$100 in Special Research).....		150 00
J. Hepburn.....		75 00
W. P. Warner.....		75 00
Miss M. Grange, Departmental Librarian, 12 months' salary.....		950 00

43. SALARIES—*Continued.*

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
Miss M. E. Armour, Assistant and Secretary, 12 months' salary (part time).....		\$600 00
Mechanicians:		
A. Oxley, 3 months to 30th September @ \$120.....		360 00
A. Elliott, 2 months from 1st October @ \$110; 7 months @ \$120.....		1,060 00
F. L. Robinson, Laboratory Assistant and Glass-blower, 12 months to 30th June.....		1,800 00
J. Creasy, Laboratory Assistant, 12 months' salary.....		900 00
Animal Caretakers:		
Wm. Joyce, 12 months' salary.....		1,050 00
A. Lamb, Assistant, 37 weeks @ \$15.....		570 00
G. Messham, Assistant, 12 weeks @ \$20.....		240 00
	\$340 00	\$24,140 00
<i>Hygiene.</i>		
J. G. Fitzgerald, Professor, @ \$4,000 (on leave of absence for 8 months without salary—paid also \$10 for University Extension Course; and in Connaught Antitoxin Laboratories)....		1,334 00
R. D. Defries, Associate Professor, 12 months to 30th June (part time), \$1,000; Acting Head of Department for Session 1922-23, \$1,000 (paid also in Connaught Antitoxin Laboratories).....		2,000 00
D. T. Fraser, Assistant Professor, Hygiene and Preventive Medicine, 12 months to 30th June (paid also in Connaught Antitoxin Laboratories).....		3,150 00
G. D. Porter, Lecturer (without salary—paid \$5,000 in University Health Service).....		
Demonstrators (Sessional):		
R. R. McClenahan.....		1,000 00
P. J. Moloney (paid also in Connaught Antitoxin Laboratories).....		500 00
H. M. Lancaster, Sanitary Chemistry (paid also \$300 in Chemical Engineering).....		500 00
J. G. Cunningham, Industrial Hygiene.....		500 00
A. Grant Fleming (without salary).....		
Miss M. T. Allen, Secretarial Assistant, 12 months' salary (paid also \$100 in Health Service).....		1,000 00
Miss M. Maitland, Class Assistant (Sessional—paid also \$63.03 in Biology).....		1,000 00
Cleaner (part time):		
Mrs. W. A. Riddell, 34 weeks @ \$7.50; overtime—38 half days @ \$1.25.....		302 50
Mrs. M. Malcolm, 8 half days @ \$1.50; 40 half days @ \$1.25..		62 00
		\$11,348 50
<i>Medicine and Clinical Medicine.</i>		
Duncan Graham, Professor, 12 months to 30th June.....	\$10,000 00	
Associate Professors, each 12 months to 30th June:		
J. T. Fotheringham.....	700 00	
W. B. Thistle.....	600 00	
G. Chambers.....	450 00	
H. B. Anderson (without salary).....		
Senior Demonstrators (Annual):		
R. G. Armour (paid also \$187 for Summer Courses, etc.).....	2,500 00	
W. R. Campbell (paid also \$112 for Summer Courses, etc.).....	2,500 00	
H. K. Detweiler (paid also \$171 for Summer Courses, etc.).....	2,500 00	
Junior Demonstrators (Annual):		
R. Hodge (R.—paid also \$56 for Summer Courses).....	2,000 00	
H. A. Dixon (R.—paid also \$3 for Short Course).....	1,500 00	
Clinicians (Sessional—part time):		
Associates:		
G. S. Strathy.....	500 00	
G. S. Young (paid also \$5 for Extension Course).....	500 00	
R. A. Jamieson, Senior Demonstrator (paid also \$201 for Summer Courses, etc.).....	500 00	
E. A. Broughton, Junior Demonstrator.....	500 00	

43. SALARIES—*Continued.*

Charged to Eaton
and Rockefeller
Funds. Charged to
Revenue.

Demonstrators, Clinical Microscopy (Sessional):	
G. W. Lougheed (paid also \$100 in Health Service).....	\$250 00
Edward Jeffrey, Assistant.....	200 00
Technicians, each 12 months' salary:	
Miss R. E. Ratz, Chemistry.....	1,320 00
C. G. Dix, Bacteriology.....	1,140 00
Miss S. Clutton, Secretarial Assistant, 12 months' salary.....	900 00
Honoraria to Part-time Clinicians (\$6,150):	
W. Goldie, Associate Professor, 12 months to 30th June.....	\$350 00
Assistant Professors, each 12 months to 30th June:	
G. Howland.....	300 00
J. A. Oille (paid also \$20 in Health Services.....)	300 00
D. King Smith.....	300 00
Associates (Sessional):	
F. A. Clarkson.....	250 00
J. H. Elliott.....	250 00
J. D. Loudon.....	250 00
H. C. Parsons.....	250 00
Senior Demonstrators (Sessional):	
G. F. Boyer.....	200 00
A. H. Caulfeild (paid also \$10 in Health Service).....	200 00
E. E. Cleaver (paid also \$10 in Health Service).....	200 00
A. A. Fletcher.....	200 00
N. B. Gwyn.....	200 00
B. Hannah.....	200 00
H. S. Hutchison.....	200 00
A. J. Mackenzie.....	200 00
A. G. McPhedran (paid also \$110 in Biology; and \$210 in Health Service).....	200 00
J. H. McPhedran.....	200 00
Fletcher McPhedran.....	200 00
L. Murray.....	200 00
W. E. Ogden.....	200 00
T. J. Page.....	200 00
F. W. Rolph.....	200 00
G. Sheard, Jr.....	200 00
E. J. Trow.....	200 00
F. G. Banting.....	200 00
Junior Demonstrators (Sessional):	
G. Bates.....	150 00
F. S. Park (paid also \$100 in Health Service).....	150 00
Sub-Department of Paediatrics:	
Junior Demonstrators (Annual):	
F. F. Tisdall (R.—).....	2,000 00
Dr. Gladys Boyd.....	1,500 00
G. A. Davis, Special Research Fellow, 7 month at \$90.....	630 00
Chemists (Annual):	
Miss A. M. Courtney.....	2,500 00
Miss I. F. MacLachlan, Assistant.....	1,800 00
Honoraria to part-time Clinicians (\$1,550):	
Alan Brown, Associate Professor, 12 months to 30th June..	350 00
A. W. Canfield, Associate (Sessional).....	250 00
Senior Demonstrators (Sessional):	
A. P. Hart.....	200 00
E. A. Morgan.....	200 00
G. R. Pirie.....	200 00
G. E. Smith.....	200 00
R. Simpson, Junior Demonstrator (Sessional).....	150 00
	\$36,990 00
(Eaton Endowment, \$18,490; Rockefeller Fund, \$5,500).....	23,990 00
	13,000 00
	\$20,700 00

43. SALARIES—Continued.

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
<i>Surgery and Clinical Surgery.</i>		
Clarence L. Starr, Professor, 12 months to 30th June.....	\$10,000 00	
R. I. Harris, Demonstrator (Annual—paid also \$48 for Summer Courses, etc.).....	2,400 00	
Junior Demonstrators (Annual):		
R. M. Janes (paid also \$100 in Anatomy; and \$90 for Summer Courses, etc.).....	2,400 00	
H. W. Wookey (paid also \$100 in Anatomy; and \$6 for Summer Course, etc.).....	2,400 00	
J. C. McClelland.....	1,800 00	
G. E. Wilson, Associate (annual—paid also \$48 for Summer Courses, etc.).....	500 00	
Miss R. Ross, Secretary, 6 months @ \$75; 6 months @ \$87.50.....	975 00	
Honoraria to part-time Clinicians (\$9,300):		
Professors, each 12 months to 30th June:		
A. Primrose (paid also \$1,500 as Dean of Faculty).....		\$1,000 00
H. A. Bruce.....		700 00
Associate Professors, each 12 months to 30th June:		
F. N. G. Starr.....		700 00
W. McKeown.....		700 00
S. M. Hay (retired).....		450 00
Assistant Professors, each 12 months to 30th June:		
W. E. Gallie.....		300 00
W. Warner Jones.....		300 00
Associates (Sessional):		
Wallace A. Scott.....		300 00
C. B. Shuttleworth.....		300 00
G. Silverthorn (paid also \$700 in Medical Jurisprudence).....		300 00
E. S. Ryerson (paid from Secretary's Office).....		250 00
N. S. Shenstone.....		250 00
Demonstrators, Clinical Surgery (Sessional):		
M. H. V. Cameron.....		250 00
R. E. Gaby.....		250 00
O. R. Mabee.....		250 00
A. H. Perfect.....		250 00
D. E. Robertson (paid also \$20 in Health Service).....		250 00
A. B. Wright.....		250 00
H. E. Clutterbuck.....		200 00
R. R. Graham.....		200 00
C. B. Parker.....		200 00
Robin Pearse.....		200 00
L. B. Robertson (obit. 24th February, stipend paid to widow)		200 00
Junior Demonstrators (Sessional):		
W. A. Costain (paid also \$50 in Anatomy).....		150 00
T. A. J. Duff.....		150 00
C. H. Hair.....		150 00
A. B. LeMesurier.....		150 00
R. A. McComb.....		150 00
G. C. McIntyre.....		150 00
T. A. Robinson.....		150 00
E. E. Shouldice (paid also \$150 in Anatomy).....		150 00
R. H. Thomas.....		150 00
J. H. Wood.....		150 00
	\$20,475 00	\$9,300 00
	7,575 00	12,900 00
		\$22,200 00
<i>Obstetrics and Gynaecology.</i>		
W. B. Hendry, Professor, 12 months to 30th June.....		1,000 00
W. G. Cosbie, Senior Demonstrator (Sessional).....	\$2,500 00	
H. B. Van Wyck, Junior Demonstrator, 11 months from 1st August @ \$1,500 per annum.....	916 67	458 33
Miss M. Bonham, Technician, 12 months to 30th June.....		1,000 00
Miss A. Moore, Secretary, 10 months from 1st September.....	750 00	

43. SALARIES—Continued.

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
Honoraria to part-time Clinicians (\$2,700):		
Associate Professors, each 12 months to 30th June:		
K. C. McIlwraith.....		\$450 00
F. W. Marlow.....		350 00
F. A. Cleland, Assistant Professor, 12 months to 30th June.....		300 00
Associates (Sessional):		
J. A. Kinnear.....		300 00
N. D. Frawley.....		250 00
J. G. Gallie.....		250 00
William A. Scott.....		250 00
Senior Demonstrators (Sessional):		
W. W. Lailey.....		200 00
R. W. Wesley.....		200 00
D. M. Low, Junior Demonstrator (Sessional).....		150 00
	\$4,166 67	\$5,158 33

Ophthalmology.

J. M. MacCallum, Professor, 12 months to 30th June.....		700 00
Honoraria to part-time Clinicians (\$1,400):		
Assistant Professors, each 12 months to 30th June:		
W. H. Lowry.....		300 00
D. N. Maclellan.....		300 00
Senior Demonstrators (Sessional):		
F. Aylesworth.....		200 00
C. E. Hill.....		200 00
Mortimer Lyon.....		200 00
W. W. Wright.....		200 00
		\$2,100 00

Oto-Laryngology.

Perry Goldsmith, Professor, 12 months to 30th June (paid also \$80 for Summer Courses).....		700 00
D. E. S. Wishart, Junior Demonstrator (Sessional).....	\$1,500 00	
Honoraria to part-time Clinicians (\$1,300):		
G. Royce, Associate Professor, 12 months to 30th June.....		
Associates (Sessional):		
G. M. Biggs.....		300 00
Edmund Boyd.....		250 00
Senior Demonstrators (Sessional):		
J. C. Calhoun.....		200 00
A. A. Campbell.....		200 00
Dr. Jean Sproule Mauson, Junior Demonstrator (Sessional).....		
	\$1,500 00	\$2,000 00

Therapeutics.

R. D. Rudolf, Professor, 12 months to 30th June.....		1,000 00
F. M. R. Bulmer, Fellow (Sessional—paid also \$250 in Pathological Chemistry).....		1,200 00
Honoraria to part-time Clinicians (\$1,750):		
Demonstrators (Sessional):		
C. E. C. Cole.....		250 00
W. V. Watson.....		200 00
Samuel Johnston, Lecturer, Anaesthesia (Sessional).....		250 00
Junior Demonstrators, Anaesthesia (Sessional):		
W. H. Carveth.....		150 00
T. R. Hanley.....		150 00
J. J. Hurley.....		150 00
M. D. McKichan.....		150 00
W. R. Parks.....		150 00
C. H. Robson.....		150 00
H. J. Shields.....		150 00
		\$3,950 00

43. SALARIES—*Continued.*

	Charged to Eaton and Rockefeller Funds.	Charged to Revenue.
<i>Psychiatry.</i>		
C. K. Clarke, Professor, 12 months to 30th June.....		\$700 00
Harvey Clare, Associate, 12 months to 30th June.....		75 00
Demonstrators (Sessional):		
E. K. Clarke (paid also \$200 in Social Service).....		50 00
D. R. Fletcher.....		50 00
F. S. Vrooman.....		50 00
		\$925 00
<i>Medical Jurisprudence.</i>		
G. Silverthorn, Professor, 12 months to 30th June (paid also \$300 in Surgery).....		700 00
		\$700 00
<i>Miscellaneous.</i>		
G. E. Richards, Associate, Radiology, 12 months to 30th June.....		300 00
Honoraria to part-time Clinicians, Radiology (\$200):		
Assistant Demonstrators (Sessional):		
W. H. Dickson.....		100 00
A. H. Rolph.....		100 00
A. D. A. Mason, Demonstrator, Dental Surgery (Sessional).....		50 00
C. Hart, Attendant, Lecture Theatre, Toronto General Hospital, 15th November to 30th June @ \$125 per month.....	\$315 62	621 88
	\$315 62	\$1,171 88
<i>Special Lectures.</i>		
Course in English and Philosophy:		
Instructors, English Expression (Sessional—paid also in Ontario College of Education):		
E. L. Daniher.....		625 00
J. F. Van Every.....		625 00
Course in Science and Civilization:		
A. G. Huntsman.....		250 00
J. P. McMurrich (paid also in Anatomy and Graduate Studies).....		100 00
H. Wasteneys (paid also in Bio-Chemistry).....		100 00
History of Medicine:		
J. P. McMurrich (paid also in Anatomy and Graduate Studies).....		200 00
Class Advisers to 1st and 2nd Year students:		
V. E. Henderson (paid also in Pharmacology).....		250 00
H. Wasteneys (paid also in Bio-Chemistry).....		250 00
		\$2,400 00
<i>Secretary's Office.</i>		
E. S. Ryerson, Secretary to Faculty (\$1,550), Graduate Courses (\$1,200), Class Adviser (\$250), 12 months to 30th June (paid also \$84 for Summer Course).....		3,000 00
Miss W. Jones, Assistant, 12 months to 30th June.....		1,400 00
Stenographers, each 12 months to 30th June...:		
Miss O. Russell.....		1,400 00
Miss A. P. Perry.....		1,150 00
		\$6,950 00
	\$45,262 29	\$187,996 43

44. ANATOMICAL DEPARTMENT.

Anatomical Material (\$1,402.25):		
E. E. Bolton.....		20 00
L. Cosby.....		20 00
J. G. Henry.....		40 00

44. ANATOMICAL DEPARTMENT—Continued.

A. A. Jackson	\$20 00	
Sam C. Le Clair	100 00	
F. W. Matthews Co.	487 32	
J. Minshull	68 00	
H. R. Ranks	160 00	
Roadhouse & Son	20 00	
J. K. Shinn	20 00	
Wm. Speers	120 00	
G. F. Sutherland	54 25	
J. S. Torrance	40 00	
John A. Walsh	40 00	
Chas. H. Ward	136 66	
Superintendent's Dept., labour, \$22.34; material, \$33.68	56 02	
Material for preservation, chemicals, etc. (\$388.66):		
W. R. Brock Co., cotton, etc.	32 10	
Canadian Industrial Alcohol Co., methylated spirits	171 20	
H. S. Eckels & Co., syringe	2 13	
Ingram & Bell, chemicals	110 01	
Lyman Bros. & Co. Ltd., chemicals, etc.	16 93	
Ontario Rubber Co., tubing	6 75	
Sanderson, Percy & Co., shellac	15 04	
Victoria Paper & Twine Co., twine	4 50	
Superintendent's Dept., labour, \$19.97; material, \$10.03	30 00	
Incidental expenses (\$666.61):		
Aikenhead Hardware, hardware	6 97	
Allen Mfg. Co. Ltd., laundry	17 46	
Biology, Dept. of, dishes	35 25	
W. R. Brock Co., towelling	77 42	
The Bursar, postage supplied	6 00	
J. Coulter Co. of Toronto, boxes	34 77	
Dominion Glass Co., bottles	8 10	
Freyseng Cork Co., corks	8 51	
J. F. Hartz Co., cover glasses, etc.	88 00	
Hudson-Parker Ltd., gowns	33 64	
Ingram & Bell, forceps, etc.	16 58	
Photography, Dept. of, slides	8 00	
J. G. Ramsey & Co., plates	28 22	
Richards Glass Co., vials	9 21	
Robt. Simpson Co., crock	10 95	
Miss M. J. Thompson, 80 hours @ 50c	40 00	
The Topley Co., bottles	110 98	
United Typewriter Co., inspection	7 50	
Wistar Institute of Anatomy and Biology, bibliographic service	8 13	
University Press, printing and stationery	41 65	
Petty items (3)	4 43	
Superintendent's Dept., freight, etc., \$8.84; labour, \$27.58; material, \$28.42	64 84	
Microscopes, specimens, etc. (\$1,655.62):		
J. F. Hartz Co., skeletons, etc.	\$ 493 60	
Spencer Lens Co., microscopes	1,028 57	
Chas. H. Ward, skeleton supports	61 15	
Superintendent's Dept., freight, etc.	72 30	
	<hr/>	
	\$1,655 62	\$2,457 52
Less credit for sale of towels, etc.		39 44
		<hr/>
		\$2,418 08

45. PATHOLOGY AND BACTERIOLOGY.

Supplies (\$2,531.86):		
John Allan, meat	\$124 20	
Allen Mfg. Co., laundry	24 52	
Art Metropole, bristol board	4 42	
Beaver Flint Glass Co., tubes	4 29	
Chas. Bowers, mice	10 00	
The Bursar, postage supplied	29 00	
Canadian Carbonate Co. Ltd., gas	4 18	
Canadian General Electric Co., carbons	4 21	
Canadian Industrial Alcohol Co., alcohol	315 11	
Canada Stamp & Stencil Co., stamp	4 10	

45. PATHOLOGY AND BACTERIOLOGY—*Continued.*

Connaught Laboratories, animals.....	\$93 20
D. R. C. Curtis, animals.....	15 00
T. Eaton Co. Ltd., mop heads, etc.....	20 40
Firstbrook Bros. Ltd., sawdust.....	8 00
Harrington Bros. Ltd., chemicals.....	6 70
Ingram & Bell, chemicals and cotton.....	388 52
S. H. Link, animals.....	9 00
Lockport Cotton Batting Co., cotton.....	21 97
Prof. H. B. Maitland, disbursements:	
Hardware, \$28.34; stationery, etc., \$14.12; chemicals and other supplies, \$97.54.....	140 00
F. J. Martin, animals.....	6 00
J. McGillian, carrots.....	271 00
Munson Supply Co., typewriter keys.....	10 00
Pharmacology, Dept. of, frogs.....	4 65
J. G. Ramsey & Co., slides, etc.....	11 25
Rice Lewis & Son, screen.....	4 51
T. C. Rochford, clover.....	30 25
Mrs. V. S. Smith, animals.....	7 20
Topley Co., cotton.....	45 87
Toronto Produce Co., fodder.....	227 91
United Typewriter Co., inspection.....	14 25
W. T. Veale, animals.....	22 40
W. Weber, animals.....	149 40
University Press, printing and stationery.....	213 75
Petty items (5).....	12 06
Superintendent's Dept., freight, etc., \$28.01; labour, \$145.05; material, \$101.48.....	274 54
Apparatus (\$1,755.30):	
Baird & Tatlock (London) Ltd., centrifuge, etc.....	157 80
Canadian Laboratory Supplies, mechanical stage, etc.....	30 68
Dominion General Laboratories, tubes.....	47 55
J. F. Hartz Co., test tubes.....	78 76
Ingram & Bell, glassware, etc.....	908 09
Alfred Lane, incubators.....	46 76
Mrs. J. J. Mackenzie, microscope and books.....	236 30
Rice Lewis & Son, screen.....	5 01
A. Richards, test-tube holders.....	118 00
Richards Glass Co., tubes.....	16 11
Superintendent's Dept., labour, \$50.85; material, \$59.39.....	110 24
Museum supplies (\$985.23):	
T. Eaton Co. Ltd., plates, etc.....	22 14
Grand & Toy Ltd., guides, etc.....	21 00
Wm. Hart, watch stands.....	16 05
Ingram & Bell, jars, etc.....	726 23
R. Laidlaw Lumber Co., lumber.....	13 95
Miller Men's Wear, coats.....	14 11
J. G. Ramsey & Co., plates.....	14 56
University Press, stationery.....	68 05
Petty items (3).....	8 41
Superintendent's Dept., labour, \$42.43; material, \$38.30.....	80 73
Lockers (\$534.22):	
Superintendent's Dept., labour, \$230.88; material, \$303.34.....	534 22
	\$5,806 61
Less sale of alcohol, etc.....	26 50
	\$5,780 11

46. PATHOLOGICAL CHEMISTRY.

Supplies (\$1,925.25):	
H. Allnut & Son, filters.....	121 61
Arlington Chemical Co., meal.....	6 01
Canadian Laboratory Supplies, chemicals, etc.....	720 29
Central Scientific Co., centrifuge, etc.....	64 40
Wm. Davies Co., meat.....	7 12
Eastman Kodak Co., chemicals.....	15 77
Eimer & Amend, alcohol.....	5 01
General Chemical Co., chemicals.....	97 82
Gordon, Mackay & Co., towels.....	35 56

46. PATHOLOGICAL CHEMISTRY—*Continued.*

J. F. Hartz Co., stethoscope, etc.....	\$4 69
Hughes Owens Co. Ltd., glassware.....	169 29
Lyman Bros. & Co., chemicals.....	6 82
Merck & Co., chemicals.....	118 77
O. B. Stanton & Wilson Co. Ltd., book cases.....	6 03
Arthur H. Thomas, glassware, etc.....	334 27
United Typewriter Co., inspection.....	6 75
University Press, printing and stationery.....	69 95
Petty items (2).....	3 69
Superintendent's Dept., freight, etc., \$101.70; labour, 75c.; material, \$28.95.....	131 40
Apparatus (\$453.56):	
W. Barber & Co., vacuum pump and accessories.....	213 86
Central Scientific Co., pump.....	87 47
A. H. Thomas Co., calorimeter.....	121 71
The Topley Co., repairing prism.....	12 00
Superintendent's Dept., labour, \$10.70; material, \$7.82.....	18 52
Alterations and repairs (\$94.92):	
Superintendent's Dept., labour, \$51.59; material, \$43.33.....	94 92
Library Stack (\$295.40):	
Superintendent's Dept., labour, \$224.23; material, \$71.17.....	295 40
	<hr/>
	\$2,769 13
Less sale of chemicals, etc.....	93 02
	<hr/>
	\$2,676 11

47. PHARMACY AND PHARMACOLOGY.

Supplies \$1,304.01):	
The Anglers Co., turtles.....	6 36
Canadian Laboratory Supplies Ltd., chemicals.....	153 72
Canadian Milk Products Ltd., Klim.....	17 40
Central Scientific Co., pump, etc.....	50 82
Connaught Laboratories, animals.....	25 35
T. Eaton Co. Ltd., boiler, etc.....	13 60
R. Fleming, fowl.....	30 59
J. Fontaine, frogs.....	105 00
Freyseng Cork Co., corks.....	13 43
Harris Laboratories, chemicals.....	36 26
Hart House, scraps.....	14 46
Prof. V. E. Henderson, disbursements:	
Laboratory supplies, \$66.07; share of incinerator charges, \$17.50.....	83 57
Hudson-Parker Ltd., coats.....	10 45
Ingram & Bell, chemicals.....	34 80
John McGillian, carrots.....	16 00
McKay School Equipment, weights, etc.....	23 92
Merck & Co., chemicals.....	60 14
National Drug & Chemical Co., chemicals.....	20 04
Ontario Rubber Co. Ltd., tubing.....	42 07
Photography, Dept. of, slides.....	27 04
Reckitts Ltd., starch.....	7 42
Rice Wire & Metal Goods, wire cloth, etc.....	72 87
Richards Glass Co., glassware.....	6 86
Student's Book Dept., paper.....	5 65
Taber Laundry Works, laundry.....	16 05
Toronto Produce Co., fodder.....	12 80
United Typewriter Co., repairs.....	4 52
W. Weber, animals.....	10 00
Wistar Institute of Anatomy and Biology, animals.....	57 46
University Press, stationery.....	25 10
Petty items (3).....	8 64
Superintendent's Dept., freight, etc., \$72.40; labour, \$73.63; material, \$145.59.....	291 62
Special apparatus (\$839.94):	
Harvard Apparatus Co., apparatus.....	232 50
C. F. Palmer, kymograph, etc.....	\$400 00 112 57
Standard Meter Co., meter.....	20 64
L. S. Tarshis & Sons, balance.....	11 00
A. H. Thomas Co., bulbs, etc.....	63 23

47. PHARMACY AND PHARMACOLOGY—Continued.

Maintenance of Shop in Physiological Department (\$243.54):		
Aikenhead Hardware, tools.....		\$157 06
A. R. Williams Machinery Co., tools.....		81 48
Superintendent's Dept., labour, \$1.27; material, \$3.73.....		5 00
Alterations (\$637.08):		
Superintendent's Dept., labour, \$413.28; material, \$243.80.....	\$262 92	394 16
	\$662 92	\$2,381 65
Less credit for sale of frogs, etc.....		5 01
		<hr/>
		\$2,376 64

48. BIO-CHEMISTRY.

Supplies (\$2,220.51):		
W. R. Brock Co., cheesecloth, etc.....		50 96
Canadian Industrial Alcohol Co., alcohol.....		54 17
Canadian Laboratory Supplies, chemicals.....		98 68
Canadian Office Appliance & Supply Co., line-a-time model.....		19 50
Eastman Kodak Co., chemicals.....		6 13
T. Eaton Co. Ltd., towels, etc.....		87 61
Grasselli Chemical Co., chemicals.....		142 89
Harris Abattoir Co. Ltd., meat, etc.....		45 51
J. F. Hartz Co., flasks.....		4 50
Hudson-Parker Ltd., coats.....		65 02
Hughes Owens Co. Ltd., weights.....		61 35
International Equipment Co., cups.....		40 83
L'Air Liquide Society, gas, etc.....		14 87
Lake Simcoe Ice Supply Co. Ltd., ice.....		74 14
Lyman Bros. & Co. Ltd., chemicals.....		41 76
McKay School Equipment, paper.....		5 13
F. Simpson & Sons, groceries.....		6 60
Arthur H. Thomas Co., chemicals.....		820 95
United Typewriter Co., inspection.....		7 50
Williams & Wilkins Co., reprints.....		35 22
University Press, stationery and printing.....		92 35
Petty items (4).....		7 62
Superintendent's Dept., freight, etc., \$221.34; labour, \$98.86; material, \$116.02.....		436 22
Apparatus (\$1,234.63):		
Canadian General Electric Co., motor.....		20 05
Central Scientific Co., balance, etc.....		64 37
Eimer & Amend, stopcock remover.....		5 22
J. F. Hartz Co., thermometer.....		1 47
McKay School Equipment, glassware.....		318 22
J. Frank Raw Ltd., repairs.....		14 00
F. L. Robinson, electric shaker.....		55 00
Secretary's Office, Medical Building, desk.....		25 00
L. S. Tarshis & Sons, balance.....		11 00
A. H. Thomas Co., chemicals.....		576 28
Superintendent's Dept., labour, \$98.54; material, \$45.48.....		144 02
Polariscope and refrigerators (\$955.11):		
Adam Hilger Ltd., polarimeter (one-half charged to Physiology)	\$375 66	
Jack Frost Ice Machine Co. Ltd., refrigerating machine.....	470 25	
Superintendent's Dept., freight, etc., \$32.14; labour, \$42.60; material, \$34.46.....	109 20	
	<hr/>	
	\$955 11	\$3,455 14

49. PHYSIOLOGY.

Supplies (\$2,489.00):		
Aikenhead Hardware Ltd., hardware.....		199 15
Allen Mfg. Co., laundry.....		87 88
Anglers Co., frogs.....		223 09
Wm. Bartlett & Son, awning.....		6 40
Canadian Driver Harris Co. Ltd., wire.....		23 45
Canadian Industrial Alcohol Co., alcohol.....		51 80
Canadian Kodak Co. Ltd., film.....		12 84
Canadian Laboratory Supplies Ltd., chemicals.....		172 70
Canadian Medical Association, reprints.....		6 78
Canada Metal Co., piping.....		9 87
T. Eaton Co. Ltd., meat, etc.....		178 15
Haines & White, clips.....		5 00

49. PHYSIOLOGY—Continued.

Ingram & Bell, chemicals, etc.		\$132 41
Instruments Ltd., repairs.		20 00
Lake Simcoe Ice Ltd., ice.		22 95
L. man Bros. & Co., chemicals.		143 23
McAinsh & Co. Ltd., book.		8 50
McKay School Equipment, funnels, etc.		25 64
Prof. J. J. R. Macleod, disbursements.		25 00
Mechanical Leathers Ltd., belting.		9 74
C. V. Mosby Book & Publishing Co., reprints.		15 00
T. Motton, attendance at meetings.		5 00
O'Keefe's Beverages, distilled water.		9 00
Ontario Rubber Co. Ltd., valves.		9 43
Photography, Dept. of, slides.		23 30
J. G. Ramsey Co. Ltd., chemicals, etc.		8 40
Royal Laundry.		5 44
A. H. Thomas Co., chemicals.		22 49
The Topley Co., calimeter.		10 33
Toronto Produce Co., dog biscuits, etc.		240 94
United Typewriter Co., inspections, etc.		7 97
W. Weber, animals.		82 75
Williams & Wilkins Co., reprints.		14 61
University Press, printing and stationery.		213 33
Petty items (13).		31 24
Superintendent's Dept., telephone calls, 72c.; freight, etc., \$174.95; labour, \$43.85; material, \$205.67.		425 19
Apparatus (\$457.66):		
Aikenhead Hardware Ltd., hardware.		62 33
Art Metropole, basepiece.		9 46
Canadian Laboratory Supplies, tubing, etc.		87 79
Consolidated Plate Glass Co., glass.		8 90
Harvard Apparatus Co., clips, etc.		57 80
Ingram & Bell, syringes.		52 20
McClelland & Stewart Ltd., books.		46 00
McKay School Equipment, glassware.		104 23
Jas. W. Paton, cement.		3 00
A. H. Thomas, tubing, etc.		25 95
Alterations in laboratory (\$463.05):		
Superintendent's Dept., labour, \$185.27; material, \$277.78.		463 05
Polariscope and refrigerators (\$484.87):		
Adam Hilger Ltd., polarimeter (one-half charged to Bio- Chemistry).	\$375 66	
Superintendent's Dept., freight, etc., \$32.15; labour, \$42.59; material, \$34.47.		109 21
	\$484 87	\$3,409 71
Less sundry credits:		
Connaught Laboratories, towards alterations.	\$113 92	
Sale of apparatus.	39 00	
		152 92
		\$3,256 79

50. HYGIENE.

Supplies (\$501.99):		
D. A. Balfour Co. Ltd., stationery.		5 00
The Bursar, postage supplied.		38 00
Canadian Laboratory Supplies Ltd., chemicals.		82 04
Canadian Office Appliance & Supply Co., speedograph.		96 02
Connaught Laboratories, animals.		6 35
Dr. R. D. Defries, disbursements:		
Share of incinerator charges, \$15.00; stationery, \$9.40; supplies and sundries, \$34.47.		58 87
Genatosan Ltd., chemicals.		23 36
Ingram & Bell, chemicals, etc.		32 02
Office Specialty Mfg. Co., cases.		5 37
Powers & Powers, specimens.		6 07
Taber Laundry Works, laundry.		20 51
United Typewriter Co., inspection, etc.		8 65
W. O. Ward, mea		8 60
Weatherhead Paper Co., paper.		5 45
University Press, printing and stationery.		64 10

50. HYGIENE—Continued.

Petty items (6).....	\$8 16
Superintendent's Dept., labour, \$4.50; material, \$28.92.....	33 42
Apparatus (\$709.19):	
D. A. Balfour Co., carbon paper.....	30 68
Canadian Laboratory Supplies, syringes, etc.....	33 53
Chicago Surgica & Electrical Co., condenser.....	6 00
Ingram & Bell, syringes, etc.....	45 15
McAinsch & Co. Ltd., book.....	6 50
McClary Mfg. Co., fish boilers.....	15 10
Mitchell & McGill, case.....	9 00
Munson Supply Co., keys.....	5 00
O. H. Pierce, alculating machine, etc.....	397 50
Rainb w Lantern Slide Co., slides.....	14 11
Royal Typewriter Co., typewriter, \$133.65; less allowance on Underwood machine, \$95.....	38 65
Society of American Bacteriologists, books.....	4 48
Ward' Natural Science Establishment, slide.....	1 41
Superintendent's Dept., labour, \$85.51; material, \$16.57.....	102 08
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	\$1,211 18

51. DEPARTMENT OF MEDICINE.

(a) Maintenance of Building (1 Queen's Park):

Fuel (\$258.50):	
Britnell & Co. Ltd., fuel.....	\$151 50
W. H. Cox Coal Co., fuel.....	62 00
Wm. McGill & Co., fuel.....	45 00
Gas and City Current (\$81.80):	
Consumers' Gas Co.....	37 68
Toronto Hydro-Electric System.....	44 12
Water (\$41.64):	
City Treasurer.....	41 64
Cleaning (\$302.75):	
Canadian Cleaning Co., cleaning windows.....	2 75
Superintendent's Dept., labour.....	300 00
Caretaker's supplies (\$41.38):	
Superintendent's Dept., labour, 93c.; material, \$40. 5.....	41 38
Repairs and renewals (\$594.23):	
Superintendent's Dept., labour, \$442.48; material, \$151.75.....	594 23
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	\$1,320 30

(b) Maintenance of Department (\$3,164.01):

Supplies and apparatus (\$1,117.54):	
American Medical Association, reprints.....	\$12 75
British Medical Journal, reprints.....	33 79
The Bursar, postage supplied.....	14 00
Canadian Laboratory Supplies, tubes.....	6 85
Dr. Duncan Graham, paid for supplies.....	34 43
J. F. Hartz Co., cotton, etc.....	34 08
Ingram & Bell, glassware, etc.....	598 06
E. F. Malady Co., medical supplies.....	29 18
Harold B. Post, slides.....	23 20
A. Richards, racks.....	18 00
Geo. Sparrow & Co., pots.....	8 89
Synthetic Drug Co., mice.....	30 06
Arthur H. Thomas Co., syringes, etc.....	88 18
U-File-M nder Mfg. Co., binder strips.....	7 83
United Typewriter Co., inspection.....	9 00
W. Weber, animals.....	18 00
University Press, printing and stationery.....	84 75
Petty items (3).....	7 84
Superintendent's Dept., freight, etc., \$18.03; labour, \$2.70; material, \$37.92.....	58 65
Books and periodicals (\$636.80):	
J. F. Hartz Co.....	22 00
Mrs. Kathleen Mackenzie.....	20 50
Thos. Nelson & Sons.....	15 00
Students' Book Dept.....	397 45
University Press, binding.....	181 85

51. DEPARTMENT OF MEDICINE—*Continued.*

Laboratory cleaning (\$290.10):		
Mrs. Bradbury, 27 weeks.....	\$161	40
Mrs. Kirkwood, 12 weeks.....	64	80
Mrs. Sherman, 11 weeks, 4 days.....	63	90
Sub-Department of Paediatrics:		
Apparatus and supplies (\$1,119.57):		
Dr. Alan Brown, reprints.....	44	53
The Bursar, postage supplied.....	3	00
Canadian Laboratory Supplies, chemicals, bottles, etc..	196	96
Canadian Medical Association, reprints.....	25	78
Canadian Writing Machine Co., typewriter.....	65	00
L. J. Cartwright, slides.....	23	25
Consumers' Gas Co., range parts.....	12	00
Fuller Brush Co., brushes.....	8	88
Dr. Duncan Graham, paid for supplies.....	17	73
Grand & Toy Ltd., envelopes.....	20	50
J. F. Hartz Co., apparatus.....	344	43
Ingram & Bell, chemicals.....	222	28
Journal of Biological Chemistry, reprints.....	6	83
Lyman Bros., chemicals.....		65
Office Specialty Mfg. Co., cards, etc.....	12	01
Richards Glass Co., tubes, etc.....	14	34
Mrs. L. B. Robertson, reprints.....	10	84
Students' Book Dept., books.....	8	00
Synthetic Drug Co., mice.....	4	72
Dr. F. F. Tisdall, reprints.....	18	22
White & Thomas, repairing condenser.....	14	50
University Press, printing.....	22	00
Superintendent's Dept., freight, etc., \$1.98; material, \$21.14.....	23	12
(Eaton Endowment).....	\$3,164	01
		\$1,320 30
52. SURGERY.		
Supplies and apparatus (\$318.23):		
The Bursar, postage supplied.....	19	00
L. J. Cartwright, slides.....	36	50
Dr. R. I. Harris, slide carrier.....	3	50
Hospital for Sick Children, bandages, etc.....	17	40
Mrs. L. B. Robertson, reprints.....	7	23
Dr. C. L. Starr, paid for laboratory supplies.....	11	90
Toronto General Hospital, medical supplies.....	13	36
United Typ writer Co., inspection.....	9	00
University Press, printing and stationery.....	153	35
Superintendent's Dept., telephone call, 40c.; labour, \$26.07; material, \$20.52.....	46	99
		\$318 23
53. OBSTETRICS AND GYNAECOLOGY.		
Supplies and apparatus (\$75.31):		
Canadian Carbonate Co., gas.....		\$3 76
Ingram & Bell, chemicals.....		7 05
J. Frank Raw Ltd., repairing microscopes.....		17 00
Robt. Simpson Co., glassware, etc.....		29 10
University Press, stationery.....		18 40
		\$75 31
54. OPHTHALMOLOGY. (Nothing spent).		
55. OTO-LARYNGOLOGY.		
Supplies and apparatus (\$72.79):		
Annals of Otolgy, Rhinology and Laryngology, subscription... ..		6 12
Students' Book Dept., books and periodicals.....		69 90
		\$76 02
Less credit allowed on 1921-22 account.....		3 23
		\$72 79

56. THERAPEUTICS.

Supplies and apparatus (\$115.86):

Canadian Medical Association, reprints.....		\$21 06
J. F. Hartz Co., pump, etc.....		16 77
McClelland & Stewart Ltd., books.....		46 00
Students' Book Dept., books.....		10 50
W. Thacker & Co., book.....		1 73
W. R. Woodruff, cards.....		19 80
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		\$115 86

57. MEDICAL JURISPRUDENCE.

(Nothing spent).

58. MEDICAL BUILDING.

Heat and light (supplied from Central Power Plant)

Gas (\$799.27):

Consumers' Gas Co.....		799 27
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Water (\$1,139.04):

City Treasurer.....	\$1,309 08	
Less credit.....	170 04	
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		1,139 04

Caretaker's supplies (\$219.95):

Superintendent's Dept., labour, \$4.95; material, \$215.00.....		219 95
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Cleaning (\$1,866.20):

Allen Mfg. Co., laundry.....		2 70
Canadian Cleaning Co., cleaning windows.....		50 00
Superintendent's Dept., labour.....		1,813 50

Repairs and renewals (\$2,274.01):

Wm. Bartlett & Son, awnings.....		37 90
City Treasurer, elevator license.....		5 00
Marchmont Co. Ltd., removing rubbish.....		24 00
Superintendent's Dept., labour, \$1,322.26; material, \$884.85....		2,207 11

Converting heating to vacuum system (\$2,753.28):

Superintendent's Dept., labour, \$986.52; material, \$1,766.76....		2,753 28
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Caretaker, T. Motton, 12 months to 30th June (including \$50.00 for attendance at Council meetings).

1,400 00

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		\$10,451 75
Less sundry credits.....		14 01
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		\$10,437 74

59. PATHOLOGICAL BUILDING.

Heat and light (\$4,826.77):

Toronto General Hospital.....		4,826 77
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Gas (\$1,060.71):

Consumers' Gas Co.....		1,060 71
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Water (\$565.50):

City Treasurer.....		565 50
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Caretaker's supplies (\$353.03):

Superintendent's Dept., labour, \$6.61; material, \$346.42.....		353 03
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Cleaning (\$1,277.45):

Allen Mfg. Co., laundry.....		1 85
Canadian Cleaning Co., cleaning windows.....		30 00
Superintendent's Dept., labour.....		1,245 60

Repairs and renewals (\$2,261.06):

City Treasurer, elevator licenses.....		10 00
Superintendent's Dept., labour, \$1,885.96; material, \$365.10....		2,251 06

Caretaker, A. Wilson, 12 months to 30th June (paid also as Laboratory Assistant).

750 00

Attendant, Hospital Theatre, J. Cattle, 1st July to 15th November.

378 12

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		\$11,472 64

60. ANATOMICAL BUILDING.

Heat and light (supplied from Central Power Plant)	
Gas (\$8.76):	
Consumers' Gas Co.....	\$8 76
Water (\$15.53):	
City Treasurer.....	15 53
Caretaker's supplies (\$300.67):	
Superintendent's Dept., labour, \$4.79; material, \$295.88.....	300 67
Cleaning (\$1,017.25):	
Superintendent's Dept., labour.....	1,017 25
Repairs and renewals (\$652.42):	
City Treasurer, elevator license.....	10 00
Frank A. Ellis, adjustments.....	2 50
Murray Kay Co. Ltd., repairs to linoleum.....	11 35
Patterson & Heward, brass sign.....	26 13
Superintendent's Dept., labour, \$390.39; material, \$212.05.....	602 44
Caretaker, G. S. Laing, 8 months @ \$1,400 per annum.....	933 34
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	\$2,927 97
Less credit for cleaning.....	11 00
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	\$2,916 97

61. GENERAL EXPENSES.

Stationery, printing, postage, office supplies, etc., (\$2,395.99):	
The Bursar, postage supplied.....	155 72
Carey & Conway, towels.....	5 75
Miss I. Gix, clerical assistance.....	45 00
"The Globe," subscription.....	6 00
Grand & Toy Ltd., panels, etc.....	113 00
Lowe-Marti Co., cards.....	55 91
"Mail & Empire," subscription.....	6 00
Might Directories Ltd., city directory.....	15 68
Multipost Co., rebuilding stamp.....	15 00
Munson Supply Co., keys.....	5 00
Murdock-Penman, cleaning mimeograph.....	7 50
Office Specialty Mfg. Co., furniture.....	200 10
Miss A. P. Perry, running bulletins.....	20 00
Photography, Dept. of, slides.....	11 00
Dr. E. S. Ryerson, paid for telegrams, etc.....	24 33
Simmons & Son, funeral wreaths.....	75 75
Students' Book Dept., directories, etc.....	50 55
"Torontonensis," 1 copy.....	10 00
United Typewriter Co., typewriter and inspection.....	108 80
University Press, printing and stationery.....	1,352 75
Petty items (4).....	6 90
Superintendent's Dept., labour, \$72.40; material, \$32.85.....	105 25
Messenger service (\$337.35):	
J. Cattle, 6½ weeks.....	67 47
H. Douglas Jones, 26 weeks.....	269 88
Sundry expenses of the Dean (\$438.77):	
Grand & Toy Ltd., stationery.....	13 35
Hart House, entertainment of guests.....	35 93
Dr. A. Primrose, reimbursement re dinners for guests of Faculty of Medicine.....	364 49
Edmund Scheuer Ltd., trophy for Daffydil Night.....	25 00
Clerical assistance to the Dean (\$500.00):	
Miss Hazel Sharpe, 10 months.....	500 00
Miscellaneous items (\$794.34):	
A. C. Burke, illuminating box.....	\$103 62
McKay School Equipment, deliascope.....	88 20
Reid Incinerator Co., and J. H. Wickett, incinerator.....	579 01
Superintendent's Dept., labour, \$14.84; material, \$8.67.....	23 51
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	\$794 34
	\$3,672 11
Less credit for sale of desk.....	25 00
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	\$3,647 11

62. SUMMER SESSION.

Remuneration to instructors:

R. G. Armour.....	\$168 00
W. R. Campbell.....	112 00
C. E. C. Cole.....	126 00
W. G. Cosbie.....	84 00
H. K. Detweiler.....	168 00
R. E. Gaby.....	42 00
J. G. Gallie.....	84 00
P. G. Goldsmith.....	80 00
R. I. Harris.....	42 00
A. P. Hart.....	280 00
W. R. Hodge.....	56 00
G. W. Howland.....	56 00
H. S. Hutchison.....	168 00
R. A. Jamieson.....	168 00
R. M. Janes.....	84 00
W. W. Lailey.....	84 00
W. H. Lowry.....	80 00
O. R. Mabee.....	42 00
F. W. Marlow.....	84 00
J. A. Oille.....	56 00
C. B. Parker.....	42 00
D. E. Robertson.....	42 00
L. B. Robertson.....	42 00
E. S. Ryerson.....	84 00
W. A. Scott.....	84 00
E. E. Shouldice.....	42 00
G. E. Wilson.....	42 00
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	\$2,442 00

63. POST-GRADUATE COURSES.

Remuneration to instructors:

(a) Paediatrics (\$832.00):

George Boyer.....	\$40 00
Alan Brown.....	192 00
Alan Canfield.....	55 00
I. H. Erb.....	73 00
W. E. Gallie.....	10 00
Beverly Hannah.....	63 00
A. P. Hart.....	40 00
E. A. Morgan.....	101 00
George Pirie.....	82 00
D. E. Robertson.....	10 00
L. B. Robertson.....	20 00
A. H. Rolph.....	73 00
George Smith.....	73 00

(b) Surgery (\$72.00):

W. E. Gallie.....	6 00
R. R. Graham.....	6 00
R. I. Harris.....	6 00
R. M. Janes.....	6 00
Warner Jones.....	6 00
C. B. Parker.....	6 00
G. E. Richards.....	6 00
L. B. Robertson.....	6 00
N. S. Shenstone.....	6 00
C. B. Shuttleworth.....	6 00
G. E. Wilson.....	6 00
H. W. Wookey.....	6 00

(c) Medicine (\$78.00):

R. G. Armour.....	9 00
G. F. Boyer.....	3 00
H. K. Detweiler.....	3 00
H. A. Dixon.....	3 00
J. H. Elliott.....	9 00
Wm. Goldie.....	3 00
G. Howland.....	6 00
R. Jamieson.....	3 00
W. F. McPhedran.....	3 00
L. M. Murray.....	3 00

63. POST-GRADUATE COURSES—*Continued.*

W. E. Ogden.....	9 00	
John Oille.....	9 00	
H. C. Parsons.....	9 00	
King Smith.....	3 00	
E. J. Trow.....	3 00	
Sundry expenses:		
The Bursar, postage supplied.....	76 50	
University Press, bulletins.....	168 40	
		\$1,226 90
		<u>\$53,297 39</u> <u>\$242,898 10</u>

ROCKEFELLER FUND.

Balance on hand 1st July, 1922.....	\$17,984 64
Received during 1922-23.....	50,626 58
	<u>\$68,611 22</u>

Expended during 1922-23:

	Salaries	Expenses	
Anatomy.....	\$1,000 00	\$1,655 62	
Pathology.....	5,000 00		
Pathological Chemistry.....	950 00		
Pharmacy.....		662 92	
Bio-Chemistry.....	425 00	955 11	
Physiology.....	340 00	484 87	
Medicine.....	5,500 00		
Surgery.....	7,575 00	318 23	
Obstetrics and Gynaecology.....	4,166 67		
Oto-Laryngology.....	1,500 00		
Miscellaneous.....	315 62	794 34	
Psychology (Faculty of Arts).....	400 00		
	<u>\$27,172 29</u>	<u>\$4,871 09</u>	32,043 38
Balance 30th June, 1923 (Schedule 4).....			<u>\$36,567 84</u>

IV. FACULTY OF APPLIED SCIENCE.

64. SALARIES.

C. H. Mitchell, Dean, 12 months to 30th June (paid also \$5 for Local Lecture).....	\$6,000 00	\$6,000 00
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Electrical Engineering.

Professors, each 12 months to 30th June:

T. R. Rosebrugh.....	\$5,700 00
H. W. Price.....	4,800 00
A. R. Zimmer, Assistant Professor, 12 months to 30th June.....	2,850 00
W. S. Guest, Lecturer (Sessional).....	2,810 00
W. C. C. Duncan, Assistant (Sessional).....	1,600 00
Demonstrators (Sessional):	
S. K. Cheney.....	1,300 00
J. S. Panter (\$1,200 less \$21.43).....	1,028 57
A. L. Ward.....	1,200 00
H. C. Crane (paid also \$645 in Special Research).....	1,100 00
A. E. Hamilton.....	1,100 00
A. G. Turnbull (\$1,100 less \$47.14).....	1,052 86
J. W. Milne.....	1,000 00
S. C. Scadding.....	1,000 00
R. J. Thompson.....	1,000 00
R. J. Williamson.....	1,000 00
S. S. Smillie (from 7th November at rate of \$1,000 for Session..	850 00

64. SALARIES—Continued.

Electricians:		
W. R. McKee, 12 months to 30th June.....	\$1,800	00
Assistants:		
R. G. Boyd, 1st July to 31st August @ \$900 per annum...	150	00
C. Greenie, 9th September to 30th June @ \$700 per annum	563	90
P. Ledger, 3 days.....	8	20
J. W. Lawson, Mechanician (part time), 12 months' salary, (paid also \$900 in Special Research).....	1,100	00
Miss M. Munro, Stenographer and Librarian, @ \$900 per annum, of which half charged to Applied Mechanics.....	450	00
		<hr/>
		\$33,463 53

Mechanical Engineering.

R. W. Angus, Professor, 12 months to 30th June.....	\$5,220	00
E. A. Allcut, Associate Professor, Thermodynamics, 12 months to 30th June (paid also \$5 for Local Lecture).....	4,000	00
Assistant Professors, each 12 months to 30th June:		
R. Taylor, Hydraulics.....	2,700	00
J. H. Parkin, Design.....	3,000	00
H. A. Tuttle, Lecturer, Thermodynamics (Sessional—paid also \$200 for investigation Alberta coal).....	1,800	00
U. C. Holland, Assistant, Machine Design (Sessional).....	1,800	00
Demonstrators, Machine Design (Sessional):		
W. G. McIntosh.....	1,250	00
J. E. B. Shortt (Easter Term—paid also \$250 in Special Research).....	390	00
Demonstrators, Hydraulics (Sessional):		
J. J. Weicker.....	1,250	00
E. B. Philip (paid also \$260 in Special Research).....	1,000	00
C. H. Dougall (Easter Term).....	405	00
Demonstrators, Thermodynamics (Sessional):		
J. S. E. MacAllister (paid also \$375 in Special Research).....	1,000	00
M. V. Powell.....	1,000	00
F. Hickey, Engineer and Machinist, 12 months' salary.....	1,800	00
Assistant Machinists, Firemen and Laboratory Attendants:		
T. Carnie, 1,052 hours @ 70c.....	736	40
W. Odd, 1,700 hours @ 50c and 55c.....	924	80
F. Mellon, 1,517 hours @ 50c.....	758	50
E. Hamilton, 204 hours @ 60c.....	122	40
Miss R. Cave, Stenographer @ \$1,050 per annum, of which \$500 charged to Surveying.....	550	00
		<hr/>
		29,707 10

Applied Mechanics and Civil Engineering.

Professors, each 12 months to 30th June:		
J. McGowan.....	\$5,100	00
P. Gillespie, Civil Engineering.....	4,800	00
Associate Professors, each 12 months to 30th June:		
C. R. Young, Structural.....	4,000	00
A. T. Laing, Highways.....	4,000	00
T. R. Loudon, Applied Mechanics.....	3,720	00
S. G. Bennett, Lecturer, Commercial Engineering (Sessional—paid also as Secretary to Faculty).....	400	00
Demonstrators (Sessional):		
C. A. Hughes (paid also \$40 in Special Research).....	1,200	00
W. L. Sagar.....	1,200	00
E. L. Paterson.....	1,000	00
W. K. Simpson, Mechanician, 12 months to 30th June.....	1,750	00
John Brown, Laboratory Attendant, 8 months' salary.....	900	00
Miss M. Munro, Stenographer and Librarian @ \$900 per annum (see under Electrical Engineering).....	450	00
		<hr/>
		28,520 00

Mining Engineering.

H. E. T. Haultain, Professor, 12 months to 30th June.....	\$5,700 00	
Assistant Professors, each 12 months to 30th June:		
F. C. Dyer.....	2,950 00	
J. T. King.....	2,850 00	
Demonstrators (Sessional):		
W. F. Green.....	1,200 00	
J. M. Muir.....	1,100 00	
E. Tozer, Laboratory Assistant, 12 months to 30th June.....	1,200 00	
C. Waybrant, Laboratory Attendant, 7 months' salary.....	700 00	
Miss D. Birkett, Stenographer and Librarian, 12 months to 30th June, @ \$1,000 of which \$200 charged to Metallurgical Engineering and \$400 to Chemical Engineering.....	400 00	
	<hr/>	\$16,100 00

Metallurgical Engineering.

G. A. Guess, Professor, 12 months to 30th June.....	\$5,700 00	
O. W. Ellis, Assistant Professor, 12 months to 30th June.....	2,700 00	
J. E. Toomer, Lecturer (Sessional).....	2,550 00	
J. Stark, Laboratory Attendant, 10 months' salary.....	750 00	
Miss D. Birkett, Stenographer and Librarian, 12 months to 30th June @ \$1,000 (see under Mining Engineering).....	200 00	
	<hr/>	11,900 00

Surveying.

L. B. Stewart, Professor of Surveying and Geodesy, 12 months to 30th June.....	\$5,700 00	
W. M. Treadgold, Associate Professor, 12 months to 30th June (paid also \$465 for Summer Camp).....	3,720 00	
Assistant Professors, each 12 months to 30th June:		
S. R. Crerar (paid also \$409.38 for Summer Camp).....	3,275 00	
E. W. Banting (paid also \$370 for Summer Camp).....	2,960 00	
J. W. Melson, Lecturer (Sessional—paid also \$253.13 for Summer Camp).....	2,025 00	
Miss R. Cave, Stenographer, 12 months to 30th June, @ \$1,050 (see under Mechanical Engineerin).....	500 00	
	<hr/>	18,180 00

Chemical Engineering and Applied Chemistry.

J. Watson Bain, Professor, 12 months to 30th June.....	\$5,100 00	
Associate Professors, each 12 months to 30th June:		
M. C. Boswell, Organic Chemistry.....	3,900 00	
E. G. R. Ardagh, Chemical Engineering.....	3,840 00	
C. D. Locke, Lecturer (Sessional) @ \$2,000 (resigned 28th February)	1,425 00	
Demonstrators (Sessional):		
F. P. Downey.....	1,200 00	
W. J. Grant, @ \$1,200 (resigned 24th January).....	645 00	
J. E. Clark (Easter Term).....	555 00	
O. W. Herzberg, @ \$1,200 (resigned 3rd February).....	710 00	
J. J. Crawford (Easter Term).....	490 00	
G. G. Macdonald.....	1,200 00	
H. M. Lancaster, Instructor, Sanitary Chemistry (Sessional—paid also \$500 in Hygiene).....	300 00	
A. Hunt, Lecture Assistant and Glass-blower, 10 months' salary....	1,200 00	
D. Sinclair, Laboratory Assistant, 12 months to 30th June.....	1,400 00	
J. Johnson, Lecture Assistant, 12 months to 30th June (part time)..	900 00	
Laboratory Attendants:		
J. Addison, 7 weeks @ \$9.....	63 00	
C. Dykeman, 41 weeks @ \$9.....	369 00	
E. Nelson, 41 weeks @ \$8.....	328 00	
Miss D. Birkett, Stenographer and Librarian, 12 months to 30th June @ \$1,000 (see under Mining Engineering).....	400 00	
	<hr/>	24,025 00

64. SALARIES—Continued.

Architecture.

C. H. C. Wright, Professor, 12 months to 30th June.....	\$5,700 00	
A. W. McConnell, Associate Professor @ \$3,720 (on leave of absence on half salary).....	1,860 00	
J. M. Lyle, Substitute Instructor (Sessional).....	1,000 00	
Adrian Berrington, Associate Professor @ \$3,700, on sick leave, \$2,312.51; obit. 4th April—compassionate allowance to widow, \$925.....	3,237 51	
W. A. Golding, Temporary Instructor, 6 months' salary.....	1,200 00	
H. H. Madill, Lecturer (Sessional).....	2,550 00	
Instructors (Sessional, part time):		
C. W. Jefferys, Freehand.....	1,100 00	
F. Coates, Modelling.....	800 00	
F. E. Simpson, Assistant, Modelling, 8 months' salary.....	500 00	
H. B. Dunington-Grubb, Special Lecturer, Landscape Architecture (Easter Term).....	200 00	
Paul P. Cret, honorarium for special lectures.....	150 00	
Miss J. C. Laing, Instructor and Librarian, 12 months' salary (paid also \$100 in French).....	1,300 00	
T. Rosser, Attendant, 8 months' salary.....	600 00	
	<hr/>	\$20,197 51

Drawing.

C. H. C. Wright, Professor (paid as Professor of Architecture).....		
J. Roy Cockburn, Associate Professor, Descriptive Geometry, 12 months to 30th June.....	\$4,000 00	
W. J. Smither, Assistant Professor, 12 months to 30th June.....	2,850 00	
W. J. T. Wright, Lecturer (Sessional).....	2,400 00	
Instructors (Sessional):		
W. B. Dunbar (paid also \$800.20 in Special Research).....	1,500 00	
H. J. Franklin (paid also \$150 in Secretary's Office).....	1,500 00	
Demonstrators (Sessional):		
A. C. Wilson.....	1,200 00	
C. G. R. Armstrong.....	1,100 00	
G. R. Workman.....	1,100 00	
P. V. Jermyn.....	1,100 00	
F. H. Taylor.....	1,100 00	
W. B. Ramsay.....	1,000 00	
J. R. Gilley (\$1,000, less \$285).....	715 00	
J. H. Curzon, @ \$1,200 (resigned 31st December).....	515 00	
W. L. Dickson (Easter Term).....	625 00	
G. D. Maxwell, @ \$1,200 (transferred to Superintendent's Office, 1st January; paid also \$165 in Secretary's Office)...	515 00	
O. Rolfsø (Easter Term).....	625 00	
G. Brown, Attendant, 8 months' salary.....	800 00	
Miss F. Stinson, Office Assistant, 9 months' salary, @ \$900, of which half charged to Engineering Physics.....	450 00	
	<hr/>	23,095 00

Engineering Physics and Photography.

G. R. Anderson, Associate Professor, 12 months to 30th June.....	\$4,320 00	
Instructors (Sessional):		
K. B. Jackson.....	1,400 00	
J. T. Ransom.....	1,250 00	
H. M. Dilworth.....	1,000 00	
Photographers:		
A. R. Timothy, 9½ months @ \$100.....	950 00	
Miss M. Hines, Assistant, 11 months @ \$80.....	880 00	
Frank Stark, 39 weeks @ \$12.....	468 00	
Miss F. Stinson, Office Assistant, 9 months' salary @ \$900, of which half charged to Drawing.....	450 00	
	<hr/>	10,718 00

64. SALARIES—Continued.

Special Lectures.

A. R. Clute, Limited Companies (paid also in Political Economy) . . .	\$500 00	
W. S. Ferguson, Accountancy (paid also in Mathematics)	200 00	
R. E. Laidlaw, Engineering Law	200 00	
W. H. Greaves, Public Speaking	200 00	
H. L. Seymour, Town Planning	100 00	
C. M. Allen, Engineering Congress	60 00	
		\$1,260 00

Secretary's Office.

S. G. Bennett, Secretary to Faculty, 12 months to 30th June (paid also \$400 in Applied Mechanics)	\$2,400 00	
Assistance to Secretary:		
G. D. Maxwell, 1 month (see also Drawing)	165 00	
H. J. Franklin, 1 month (see also Drawing)	150 00	
Miss E. Birkett, Record Clerk, 12 months to 30th June	1,150 00	
Miss E. Myers, Stenographer, 12 months to 30th June	1,050 00	
		4,915 00

228,081 14

65. MINING BUILDING.

Heat and light (supplied from Central Power Plant):		
Gas (\$1,043.43):		
Consumers' Gas Co.	\$1,043 43	
Water (\$685.45):		
City Treasurer	685 45	
Caretaker's supplies (\$282.91):		
Superintendent's Dept., labour, \$5.29; material, \$277.62	282 91	
Cleaning (\$2,846.60):		
Henry F. Baxter, cleaning windows	47 00	
Canadian Cleaning Co., cleaning windows	12 00	
Superintendent's Dept., labour	2,787 60	
Repairs and renewals (\$2,990.80):		
City Treasurer, elevator license	10 00	
Hart House, meal for man working overtime	35	
Johnson Temperature Regulating Co., repairing system	9 30	
Superintendent's Dept., labour, \$2,027.60; material, \$943.55	2,971 15	
Caretaker, E. A. Bishop, 12 months to 30th June (paid also as Lecturer Assistant)	1,400 00	
		\$9,249 19
Less sundry credits:		
Cleaning, \$28.00; light, \$2.00	30 00	
		9,219 19

66. ENGINEERING BUILDING (INCLUDING OLD Y.M.C.A. BUILDING).

Heat and light (supplied from Central Power Plant):		
Gas and occasional fuel (\$216.01):		
Consumers' Gas Co.	\$33 42	
Britnell & Co., Ltd., teaming	3 00	
W. H. Cox Coal Co., Ltd., fuel	126 49	
Wm. McGill & C., fuel	53 10	
Water (\$170.12):		
City Treasurer	170 12	
Caretaker's supplies (\$204.39):		
Superintendent's Dept., labour, \$4.53; material, \$199.86	204 39	
Cleaning (\$2,569.00):		
Canadian Cleaning Co., cleaning windows	50 00	
Superintendent's Dept., labour	2,519 00	
Repairs and renewals (\$2,298.45):		
Routery Bros., repairs to plaster	25 80	
Superintendent's Dept., labour, \$1,450.60; material, \$822.05	2,272 65	
Caretaker, W. J. Graham, 12 months to 30th June (reduced service)	650 00	

66. ENGINEERING BUILDING (INCLUDING OLD Y.M.C.A. BUILDING—*Continued.*)

Supervision of building by caretaker of Convocation Hall, S. J. Apted, 12 months to 30th June.....	\$300 00	
Fireman, R. Crowley, 27 weeks, 2 days, @ \$10.00 per month.....	63 71	
		<hr/>
	\$6,471 68	
Less sundry credits:		
Repairs, \$43.44; cleaning, \$18.70.....	62 14	
		<hr/>
		\$6,409 54

67. ELECTRICAL BUILDING (INCLUDING MECHANICAL BUILDING).

Heat and light (supplied from Central Power Plant):		
Fuel for Experimental Plant (\$2,887.62):		
Britnell & Co., teaming.....	\$134 59	
W. H. Cox Coal Co., Ltd., fuel.....	2,753 03	
Gas (\$64.92):		
Consumers' Gas Co.....	64 92	
Water (\$346.63):		
City Treasurer.....	346 63	
Caretaker's supplies (\$174.29):		
Superintendent's Dept., labour, \$2.84; material, \$171.45.....	174 29	
Cleaning (\$1,932.95):		
Allen Mfg. Co., laundry.....	8 45	
Henry F. Baxter, cleaning windows.....	50 60	
Canadian Cleaning Co., cleaning windows.....	20 00	
Superintendent's Dept., labour.....	1,853 90	
Repairs and renewals (\$1,730.68):		
City Treasurer, elevator license.....	10 00	
Hart House, pails.....	10	
R. Robertson & Sons, brickwork.....	327 25	
Superintendent's Dept., labour, \$904.20; material, \$489.13.....	1,393 33	
Increase in Electrical Service (\$539.97):		
Superintendent's Dept., labour, \$175.75; material, \$364.22.....	539 97	
Caretaker, F. F. Hitchcock, 12 months to 30th June.....	1,400 00	
		<hr/>
	\$9,077 06	
Less credits for repairs, etc.....	45 53	
		<hr/>
		9,031 53

68. GEODETIC OBSERVATORY BUILDING.

Heat and light (supplied from Central Power Plant):		
Water (\$16.20):		
City Treasurer.....	\$16 20	
Cleaning (\$125.00):		
Canadian Cleaning Co., cleaning windows.....	9 50	
Superintendent's Dept., labour.....	115 50	
Caretaker's supplies (\$27.44):		
Superintendent's Dept., labour, 65c; material, \$26.79.....	27 44	
Repairs and renewals (\$105.41):		
Superintendent's Dept., labour, \$94.84; material, \$10.57.....	105 41	
		<hr/>
		274 95

69. ELECTRICAL ENGINEERING DEPARTMENT.

Supplies (\$2,531.60):		
Aikenhead Hardware Co., Ltd., hardware.....	\$131 99	
American Radio & Research Corporation, condensers.....	22 01	
Wm. Bartlett & Sons, curtains.....	45 25	
Booth-Coulter Copper & Brass Co., brass.....	41 55	
Bound Brook Oil-Less Bearing Co., bushings.....	7 81	
Britnell & Son, Ltd., sand.....	9 30	
The Bursar, postage, supplied.....	33 00	
Canada Metal Co., Ltd., solder.....	14 87	
Canada Wire & Cable Co., wire.....	5 02	
Canadian General Electric Co., wire.....	18 44	
Canadian Independent Telephone Co., Ltd., coils, etc.....	88 90	
Canadian Machine Telephone Co., Ltd., copper ribbon.....	8 10	
Cartan Plating Co., telephone parts.....	11 49	

69. ELECTRICAL ENGINEERING DEPARTMENT—*Continued.*

Connecticut Telephone & Electric Co., coils	\$7 84
Jas. A. Cook & Son, clutch boards	4 85
Davis Slate & Mfg. Co., slate	56 92
Dept. of Marine & Fisheries, radio license	5 04
Dodge Mfg. Co., of Canada, Ltd., flanges	44 89
T. Eaton Co., Ltd., glassware, etc.	61 55
Electrical Alloy Co., wire, etc.	51 90
Flint Varnis & Color Works of Canada, Ltd., enamel	8 15
General Radio Co., rheostats	39 21
Hardware Co. of Toronto, hardware	108 02
Higgins & Burke, Ltd., soap	7 06
John Macdonald & Co., Ltd., cheesecloth	9 86
Chas. W. Mack, stamps	13 79
Matthews Bros., Ltd., frames	5 02
McKay School Equipment, metre sticks	4 83
W. R. McKee, repairs	38 59
National Fibre Co. of Canada, Ltd., fibre rod	6 48
Northern Electric Co., Ltd., tubes, etc.	278 69
Parker-Kalon Corporation, screws	8 57
Peckover's, Ltd., iron	4 21
Perkins-Ladd Electric Co., tubes	32 72
Eugene F. Phillips Electrical Works, Ltd., wire	18 02
Photography, Dept. of, slides, etc.	74 57
Powley & Moody, Ltd., batteries	50 61
Prof. H. W. Price, paid for laboratory supplies	49 87
Roovers Bros., tape	26 34
Superintendent of Documents, Washington, pamphlets	5 27
Toronto Hydro-Electric System, cable	78 89
United Typewriter Co., Ltd., inspection, etc.	9 00
University Press, supplies	5 50
Petty items (6)	16 33
Superintendent's Dept., telephone calls, \$2.25; freight, etc., \$366.66; labour, \$207.53; material, \$384.34	960 78
Apparatus (\$3,458.06)	
American Radio & Research Corporation, tubes	24 32
Automatic Telephones & Time Recorders, Ltd., telephones	14 00
Benjamin Electric Mfg. Co., slab	34 50
Canadian General Electric Co., circuit breaker, etc.	153 00
Canadian Independent Telephone Co., Ltd., transformers	19 17
Canadian Westinghouse Co., valve	16 46
John Chattillon & Sons, scales	35 35
Diehl Mfg. Co., motors	31 84
Dodge Mfg. Co. of Canada, pulley, etc.	109 73
General Radio Co., variometers, etc.	122 13
Gregory Electric Co., motors, etc.	800 49
Ingram & Bell, first aid cabinet	16 00
Instruments Ltd., thermometers	62 40
Keuffel & Esser Co., magnifiers	36 73
Leeds & Northrup Co., furnace, etc.	712 79
Jas. Morrison Brass Mfg. Co., gauge	9 63
Northern Electric Co., motors, etc.	366 47
Hipp, Ordish & Co., stop watches	20 90
Roller-Smith Co., wattmeter	77 53
Students' Book Dept., books	28 85
Taylor Instrument Companies, aut meter	7 15
University of Toronto Engineering Society, set of pens	10 50
Venner Time Switches, Ltd., stop watch	14 02
Weston Electrical Instrument Co., ammeters	550 18
Zenith Mfg. Co., electrical apparatus	169 45
Superintendent's Dept., freight, etc., \$6.59; labour, \$7.88	14 47
Furniture, printing and incidentals (\$299.49):	
Barber-Ellis Ltd., paper	31 35
T. Eaton Co., Ltd., note-books	6 50
H. W. Wilson Co., subscriptions	3 59
University Press, printing	91 05
Superintendent's Dept., labour	167 00
Establishment in new building (\$2,472.73):	
Benjamin Electric Mfg. Co., switch parts	8 18
Canada Wire & Cable Co., Ltd., wire	12 27
Canadian Independent Telephone Co., Ltd., insulators	14 32

69. ELECTRICAL ENGINEERING DEPARTMENT—*Continued.*

T. Eaton Co., Ltd., insulators.....	\$9 15
Ferranti Meter & Transformer Co., transformers.....	511 51
W. M. Hough Co., flooring.....	150 00
Hydro-Electric Power Commission, insulators.....	5 50
Geo. B. Meadows, switchboard parts.....	195 63
Sadler & Haworth, belting.....	32 14
Standard Underground Cable Co., wire.....	73 13
The States Co., regulators.....	116 92
Swedish General Electric Co., lining bearings.....	35 11
Willard Storage Battery Co., batteries.....	83 60
Superintendent's Dept., labour, \$645.84; material, \$579.43.....	1,225 27

\$8,761 88

Less sundry credits:

Sangamo Electric Co.....	\$3 92
Turnbull Electric Co.....	4 00

7 92

\$8,753 96

70. MECHANICAL ENGINEERING DEPARTMENT.

Supplies (\$775.20):

Prof. R. W. Angus, paid for laboratory supplies.....	\$32 24
Beardmore Belting Co., splicing belts.....	11 65
Brown & Sharpe Mfg. Co., caliper.....	12 36
Canadian Ice Machine Co., Ltd., chemicals.....	32 06
Canadian Laboratory Supplies, tubing.....	8 92
Garlock Packing Co., packing.....	130 42
Hardware Co. of Toronto, hardware.....	56 88
Instruments Ltd., thermometers.....	51 50
Lyman Bros. & Co., mercury.....	7 09
McCull Bros., Ltd., oil.....	40 86
Geo. B. Meadows, Ltd., wire.....	13 59
Photography, Dept. of, slides.....	29 94
R. Robertson & Sons, repairs to brickwork.....	30 00
H. V. Short Hardware Ltd., hardware.....	22 42
University of Toronto Engineering Society, stationery.....	6 06
University Press, stationery.....	22 65
Petty items (6).....	16 79
Superintendent's Dept., freight, 71c; labour, \$138.72; material, \$110.34.....	249 77

Apparatus—Hydraulics (\$4,454.76):

G. I. Alden, dynamometer.....	356 78
Baines & David, steel.....	8 44
Canadian S.K.F. Co., bearings.....	43 44
Canadian Rumely Co., Ltd., turbine material.....	217 88
Carter Welding Co., cutting beams.....	10 00
Crescent Concrete Co., concrete work.....	23 65
Dodge Mfg. Co., of Canada, casting.....	5 49
Dominion Bridge Co., steel.....	37 67
Goldie & McCulloch Ltd., pump plate.....	103 00
W. & L. E. Gurley, meter.....	102 56
Hamilton Gear & Machine Co., wheel.....	36 84
John Inglis Co., tank, etc.....	432 75
Keuffel & Esser Co., pantograph, etc.....	145 78
Ontario Wind Engine & Pump Co., castings.....	5 96
Powerlite Devices Ltd., voltmeter, etc.....	86 57
R. Robertson & Sons, Ltd., concrete work.....	1,350 95
Turbine Equipment Co., Ltd., pump.....	68 00
Westinghouse Electric & Mfg. Co., motor.....	780 99
John Whitfield Co., forging.....	9 93
A. R. Williams Machinery Co., saw.....	76 69
Superintendent's Dept., freight, etc., \$277.34; labour, \$123.44; material, \$150.61.....	551 39

Apparatus—Thermodynamics (\$2,749.74):

Canadian Allis Chalmers Ltd., engine.....	815 47
Canadian Fairbanks-Morse Co., scale.....	32 36
Canadian General Electric Co., turbine.....	764 53
Canadian Rumely Co., castings.....	10 20
Climax Engineering Co., engine.....	569 21

70. MECHANICAL ENGINEERING DEPARTMENT—Continued.

John Inglis Co., tank, etc.	\$84	82	
R. Robertson & Sons, foundations	141	18	
Standard Pattern Works, patterns		27	17
Superintendent's Dept., freight and tax, \$170.45; labour, \$53.79; material, \$80.56		304	80
Furniture, printing and incidentals (\$838.73):			
T. Eaton Co., Ltd., cabinet		35	00
Lineograph Co., printing		86	96
Photography, Dept. of prints		39	90
University Press, printing		634	15
Sundry lantern operators, etc.		9	50
Superintendent's Dept., sales tax, \$5.22; labour, \$13.36; material, \$14.64		33	22
Fuel for Experimental Plant (\$420.53):			
Britnell & Co., Ltd., teaming		21	03
W. H. Cox Coal Co., Ltd., fuel		399	50
Investigation of Alberta Coal (\$392.61):			
Henry J. Green, thermometer		7	61
H. A. Tuttle, remuneration, \$200.00; disbursements, \$8.00		208	00
Superintendent's Dept., labour, \$112.80; material, \$64.20		177	00
			\$9,631 57
Less sundry credits:			
Canadian Westinghouse Co.	\$2	24	
Grasselli Chemical Co.	23	00	
			25 24
			\$9,606 33

71. APPLIED MECHANICS AND CIVIL ENGINEERING.

Supplies (\$1,367.50):			
Aikenhead Hardware Ltd., hardware	\$274	10	
The Bursar, postage supplied	38	00	
Canadian Laboratory Supplies, thermometers	16	85	
Canadian National Carbon Co., Ltd., carbons	5	31	
K. A. Clark, freight	8	21	
Dean Bros., castings	7	36	
Dodge Mfg. Co. of Canada, pulley	5	49	
Don Valley Brick Works, bricks	23	90	
T. Eaton Co., Ltd., meter	20	00	
Grand & Toy, Ltd., holders	19	30	
Imperial Foundry Co., bars	9	99	
John Leckie, Ltd., rope	12	11	
Lyman Bros., chemicals	24	72	
Prof. J. McGowan, petty disbursements	15	60	
National Fire Proofing Co., tile	6	57	
National Steel Car Corporation, Ltd., welding	15	05	
Office Specialty Mfg. Co., filing supplies	11	04	
Ontario Foundry Co., castings	15	95	
Ontario Lime Co., cement	10	02	
Peckover's Ltd., steel	86	91	
Photography, Dept. of, prints, etc.	160	88	
R. Robertson & Sons, test piers	12	50	
D. A. Schemnitz, micrometer	10	00	
University of Toronto Engineering Society, linen	5	00	
University Press, stationery	44	55	
Petty items (3)	4	26	
Superintendent's Dept., freight, etc., \$35.47; labour, \$202.33; material, \$266.03		503	83
Apparatus (\$2,133.15):			
Canadian Laboratory Supplies, oven	77	71	
Dodge Mfg. Co. of Canada, clutch, etc.	37	06	
McGregor & McIntyre Ltd., steel rails, etc.	33	56	
G. S. Moler, cabinets	185	01	
Office Specialty Mfg. Co., filing sections	69	68	
Ontario Foundry Co., castings	25	53	
J. Frank Raw Ltd., ext nsometer	30	00	
Riehle Bros. Testing Machine, compression	1,380	65	
W. K. Simpson, repairing rattler machine and rattler	15	85	
United Typewriter Co., typewriter	137	70	

71. APPLIED MECHANICS AND CIVIL ENGINEERING—*Continued.*

A. R. Williams Machinery Co., chains	\$17 48
Superintendent's Dept., freight and sales tax	122 92
	<hr/>
	\$3,500 65
Less credit:	
Grand Trunk Railway, claim for damages	15 85
	<hr/>

\$3,484 80

72. MINING ENGINEERING DEPARTMENT.

Supplies (\$1,439.02):

Aikenhead Hardware Ltd., hardware	\$25 30
Allen Mfg. Co., Ltd., laundry	3 78
Baird & Tatlock (London) Ltd., chemicals	99 43
Beardmore Belting Co., belting	6 58
Canadian Laboratory Supplies, bottles, etc.	70 05
Codex Book Co., Inc., pads	4 05
W. H. Cox Coal Co., Ltd., coal	44 00
Denver Fire Clay Co., crucibles, muffles, etc.	332 28
T. Eaton Co. Ltd., sealers, etc.	24 24
Ellis Bros. Ltd., watch repairs	4 00
Fletcher, Russell & Co. Ltd., muffles, etc.	88 80
Freyseng Cork Co., corks	3 74
Grasselli Chemical Co., chemicals	15 08
The B. Greening Wire Co. Ltd., sieves	5 54
Imperial Oil Ltd., oil	4 12
Imperial Refining & Smelting Co., silver	9 36
Morgan Crucible Co. Ltd., scorifiers	190 54
Ontario Lime Co., cement	6 08
Ontari Rubber Co., stoppers	30 57
Photography, Dept. of, prints	5 18
T. S. Simms & Co., Ltd. brushes	8 16
Standard Foundry Co., bars	11 29
Sturtevant Mill Co., discs	7 82
Topley Co. Ltd., glassware	57 41
Torsion Balance Co., repairs	9 50
W. S. Tyler Co., cloth, etc.	14 20
University Press, stationery	73 15
Superintendent's Dept., freight, etc., \$174.09; labour, \$35.58; material, \$75.10	284 77

Apparatus and equipment (\$792.88):

Canadian Johns-Manville Co., asbestos wood	7 73
Canadian Laboratory Supplies, weights	14 32
Dodge Mfg. Co., pulley	12 00
Driver-Harris Co., wire	8 75
T. Eaton Co. Ltd., chairs, etc.	34 45
W. R. McKee, tension apparatus, etc.	37 93
Ontario Lime Co., cement	8 90
Sheldon's Ltd., motor	47 04
Robt. Simpson Co. Ltd., trays	5 88
L. S. Tarshis & Sons, balances	33 00
Taylor Instrument Companies, repairing pyrometer	93 00
Hiram Walker & Sons Metal Products Ltd., wire	10 28
Petty items (2)	5 28
Superintendent's Dept., freight, etc., 138.84; labour, \$205.96; material, \$129.52	474 32
	<hr/>

\$2,231 90

Less credit for sale of empty cases 42 00

2,189 90

73. METALLURGICAL ENGINEERING DEPARTMENT.

Supplies (\$855.58):

J. T. Baker Chemical Co., chemicals	\$77 61
Bausch & Lomb Optical Co., remounting lens	5 93
Canada Metal Co., lead	4 37
Canadian Asbestos Co., crucibles	40 91
Prof. O. W. Ellis, petty disbursements	14 69
Eureka Mineral Wool & Asbestos Co., millboard	36 90

73. METALLURGICAL ENGINEERING DEPARTMENT—*Continued.*

Prof. G. A. Gess, travelling expenses, \$51.85; petty disbursements, \$11.51.....	\$63 36
L'Air Liquide Society, valve, etc.....	6 27
Lyman Bros. & Co., chemicals.....	6 31
Office Specialty Mfg. Co., card cabinet.....	13 45
Photography, Dept. of, slides.....	27 20
E. Pullan, wipers.....	10 19
Scientific Materials Co., glassware, etc.....	155 36
Arthur H. Thomas Co., crucibles, etc.....	147 43
The Topley Co., carbons.....	15 60
W. W. Wills, chemicals.....	5 11
University Press, stationery.....	27 50
Petty items (5).....	11 68
Superintendent's Dept., freight, etc., \$71.13; labour, \$57.39; material, \$57.19.....	185 71
Apparatus (\$465.29):	
Carter Welding Co., welding.....	1 25
Leeds & Northrup, galvanometer, etc.....	78 04
W. R. McKee, repairs.....	10 25
J. Frank Raw Ltd., dilatometer, etc.....	50 00
Scientific Materials Co., drill press.....	26 25
Spencer Lens Co., camera, etc.....	191 41
The Topley Co., microscope.....	68 00
Superintendent's Dept., labour, \$31.87; material, \$8.22.....	40 09
	\$1,320 87

74. SURVEYING DEPARTMENT.

Supplies (\$331.50):	
E. Dent & Co. Ltd., repairing regulator.....	\$87 13
Drawing, Dept. of, stencil sheets.....	1 25
Grand & Toy Ltd., holders.....	10 00
J. W. Melson, photographic materials.....	12 58
Photography, Dept. of, slides.....	13 90
J. G. Ramsey & Co., carbon.....	4 45
J. Frank Raw Ltd., drafting supplies.....	131 10
Students' Book Dept., book.....	3 80
United Typewriter Co., inspection.....	3 75
University Press, stationery.....	32 35
Superintendent's Dept., freight, etc., \$11.54; labour, \$9.65; material, \$10.00.....	31 19
Apparatus (\$846.44):	
Consolidated Optical Co., instruments.....	379 33
Gregory Electric Co., motors.....	17 36
Instruments Ltd., level.....	135 00
J. Frank Raw Ltd., telescope, chains, etc.....	309 25
Students' Book Dept., books.....	5 50
Summer Survey Camp: Equipment (\$1,473.52):	
J. Austin & Sons, lumber.....	256 22
T. Eaton Co. Ltd., lamps, etc.....	166 55
Kermath Mfg. Co. of Canada Ltd., on account marine motor...	200 00
A. Langdon, on account motor boat.....	190 00
J. E. Minto, painting and carpentry.....	387 60
S. W. Welch, hardware.....	127 29
Superintendent's Dept., material.....	145 86
Summer Survey Camp: Maintenance, including staff, travelling expenses and miscellaneous items (\$3,216.48):	
S. R. Crerar, services, \$409.38; living expenses, \$51.00; travelling expenses, \$41.15; sundries, \$5.60.....	507 13
W. M. Treadgold, services, \$465.00; travelling expenses, \$24.70; sundries, \$4.85.....	494 55
E. W. Banting, services, \$370.00; living expenses, \$79.50; travelling expenses, \$26.40; sundries, \$8.00.....	483 90
J. W. Melson, services, \$253.13; living expenses, \$88.50; travelling expenses, \$43.15.....	384 78
N. Bowron, express charges.....	10 23
Brown & Lindop, auto hire.....	3 00
T. Eaton Co. Ltd., lamps, etc.....	55 10
W. S. Fife, framing pictures.....	26 75
Adam Hall Ltd., reservoir.....	14 13

74. SURVEYING DEPARTMENT—*Continued.*

A. Langdon, stakes.....	\$11 25
Sterling Bank of Canada, exchange.....	1 00
S. W. Welch, hardware.....	65 74
Superintendent's Dept., carter's expenses, etc., \$13.47; labour, \$116.30; material, \$31.00.....	160 77
Payments to help:	
J. E. Minto, caretaker, 7 months, \$175.00; cutting ice, wood, etc., \$149.00; work on roadway, \$75.00; general repairs, car- pentry, painting, etc., \$203.35.....	602 35
L. Manning, cook, 24 days.....	193 00
Mrs. H. Cox, cook's assistant.....	30 00
Mrs. J. E. Minto, cooking, etc.....	90 00
A. Wadmore, general assistant.....	36 50
Frank Welch.....	39 50
John Welch, blacksmith.....	6 80
	<hr/>
	\$5,867 94
Paid from Students' Account.....	40
	<hr/>

\$5,867 54

75. CHEMICAL ENGINEERING AND APPLIED CHEMISTRY DEPARTMENT.

Supplies (\$7,560.85):

Art Metropole, glassware.....	\$109 31
Prof. J. W. Bain, paid for laboratory supplies.....	15 46
British American Oil Co., wax, etc.....	8 94
Canadian Laboratory Supplies, chemicals, glassware, etc.....	4,080 98
Canadian Liquid Air Co., gas.....	42 81
Celite Products of Canada, chemicals.....	6 15
Dominion General Laboratories, chemicals.....	130 00
T. Eaton Co., stools, etc.....	51 24
Eimer & Amend, supplies.....	5 23
Electrical Alloy Co., wire.....	11 56
Eureka Mineral Wool & Asbestos Co., millboard.....	15 35
Freyseng Cork Co., corks.....	77 74
Goldsmith Bros., goldfoil.....	9 17
F. J. Hartz Co. Ltd., chemicals.....	339 52
Laboratory Materials Co., tubes.....	25 35
L'Air Liquide Society, oxygen, etc.....	21 35
Lake Simcoe Ice Ltd., ice.....	25 14
Leeds & Northrup Ltd., telescope, etc.....	19 41
Lyman Bros. & Co. Ltd., chemicals.....	213 21
McKay School Equipment, chemicals and glassware.....	739 18
W. R. McKee, repairs to motors, etc.....	53 33
Mallinckrodt Chemical Works, chemicals.....	31 87
Merck & Co. Ltd., mercury.....	75 67
Mining Engineering, Dept. of, bottles and cases.....	49 00
Munson Supply Co., rubber keys.....	5 00
Nichols Chemical Co. Ltd., acid.....	12 40
Photography, Dept. of, prints.....	24 28
J. Frank Raw, repairs to balances.....	73 50
Sheet Metal Products, pails.....	41 80
Students' Book Dept., books.....	42 75
Thermos Bottle Co., fillers.....	10 68
Arthur H. Thomas Co., funnels, etc.....	28 03
The Topley Co., chemicals.....	103 17
Torsion Balance Co., balances.....	67 77
United Typewriter Co., stencil.....	5 40
University Press, stationery.....	39 30
Petty items (5).....	13 87
Superintendent's Dept., freight, etc., \$50.04; labour, \$516.97; material, \$368.92.....	935 93
Apparatus (\$905.00):	
Canadian Institute of Chemistry, furniture.....	34 00
Canadian Laboratory Supplies, barometer, cones, etc.....	256 75
National Electric Controller Co., rheostats.....	86 49
Standard Calorimeter Co., thermometers, etc.....	32 57
L. S. Tarshis & Sons, balance.....	22 00
The Topley Co., balopticon.....	71 17
Westman Press Ltd., book.....	8 00

75. CHEMICAL ENGINEERING AND APPLIED CHEMISTRY DEPARTMENT—*Continued.*

Weston Electrical Instrument Co., instruments.....	\$122 41	
Superintendent's Dept., labour, \$235.41; material, \$36.20.....	271 61	
Fitting up laboratories (\$493.68):		
Superintendent's Dept., labour, \$292.49; material, \$201.19.....	493 68	
		\$8,959 53
Less sundry credits:		
Grasselli Chemical Co., cases and bottles returned....	\$82 50	
Sale of balance.....	15 00	97 50
		\$8,862 03

76. ARCHITECTURE AND DRAWING DEPARTMENTS.

(a) Architecture:

Supplies (\$537.17):

Allen Mfg. Co., laundry.....	\$4 34
Art Metropole, draughting supplies, etc.....	106 51
The Bursar, postage supplied.....	10 00
Canadian Bag Co., scrim.....	5 88
T. Eaton Co., oilcloth, wire, etc.....	37 12
J. W. Geddes, frames.....	22 95
Hardware Co. of Toronto, tools.....	6 68
E. Harris Co. of Toronto, paints, colours, etc.....	58 06
Ontario Lime Co., plaster.....	40 90
Photography, Dept. of, slides, prints, etc.....	54 45
Robt. Simpson Co., wall paper.....	7 52
Students' Book Dept., books.....	10 10
United Typewriter Co., inspections.....	6 75
University of Toronto Engineering Society, squares, etc....	17 80
University Press, mounting plates, stationery, etc.....	76 50
Petty items (6).....	8 80
Superintendent's Dept., freight, etc., \$8.57; labour, \$12.20; material, \$15.42.....	36 19
Sundry subscriptions:	
<i>Ameri an Architect.</i>	7 00
<i>Architectural Forum.</i>	6 82
<i>Architectural Record.</i>	3 64
H. Gagnier Ltd.....	3 00
C. Scribner's Sons.....	6 16

Apparatus (\$390.40):

Aikenhead Hardware Ltd., garment hanger.....	1 02
T. Eaton Co., camera, etc.....	142 50
Office Specialty Mfg. Co., desk and chair.....	77 97
Students' Book Dept., books.....	14 75
Superintendent's Dept., labour, \$81.97; material, \$72.19..	154 16

Models for life class (\$70.00):

Prof. C. H. C. Wright, reimbursement for payments made..	70 00
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Sundry expenses re Prof. P. P. Cret's visit (\$19.51):

Hart House, entertainment.....	17 88
Prof. C. H. C. Wright, petty disbursements.....	1 63

\$1,017 08

(b) Drawing:

Supplies (\$127.49):

Aikenhead Hardware Ltd., hardware.....	17 63
Murdock-Penman, ink.....	8 00
Photography, Dept. of, prints.....	13 75
Superior Mfg. Co., stamp bands.....	2 81
United Typewriter Co., ink.....	2 70
University of Toronto Engineering Society, supplies.....	8 10
University Press, printing and stationery.....	40 45
Superintendent's Dept., labour, \$19.43; material, \$14.62...	34 05

Apparatus (\$61.10):

Office Specialty Mfg. Co., bookcase sections.....	34 00
Students' Book Dept., books.....	27 10

Printing instruction sheets (\$94.73):

Canadian Engravers Ltd., zinc.....	13 63
The Crichton Studio, drawing chart.....	25 00
United Typewriter Co., paper, etc.....	23 00
University Press.....	33 10

76. ARCHITECTURE AND DRAWING DEPARTMENTS—*Continued.*

New drafting tables and fitting up (\$169.47):

Office Specialty Mfg. Co., table.....	\$71 58
Superintendent's Dept., labour, \$51.81; material, \$46.08...	97 89

\$452 79

Less credit for sale of stencil sheets.....	1 25
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\$451 54

\$1,468 62

77. ENGINEERING PHYSICS AND PHOTOGRAPHY.

(a) Engineering Physics:

Supplies (\$204.36):

B. & G. Mfg. Co. Ltd., lamp dip.....	\$26 50
Chance Bros. & Co. Ltd., glass.....	37 15
Hardware Co. of Toronto, hardware.....	24 50
Lake Simcoe Ice Ltd., ice.....	5 26
Macbeth-Evans Glass Co. Ltd., glass.....	6 14
United Typewriter Co., paper.....	16 50
University Press, stationery.....	15 95
Superintendent's Dept., labour, \$15.18; material, \$57.18...	72 36

Apparatus (\$792.76):

R. & J. Beck Ltd., on account photometer.....	120 45
Foote, Pierson & Co. Inc., photometer.....	190 96
A. H. W. Joyner Ltd., rheostats.....	43 97
Ph. & F. Pellin, spectroscope.....	172 86
J. Frank Raw Ltd., photometer.....	156 00
Sheringham Daylight (Foreign) Ltd., lamp shade.....	72 08
Superintendent's Dept., freight and tax.....	36 44

\$997 12

(b) Photography:

Supplies (\$1,252.65):

Allen Mfg. Co., laundry.....	1 23
Art Metropole, colours.....	6 52
Canadian Foreign Agency Co., plates.....	12 19
Canadian General Electric Co., carbons.....	23 97
Canadian Kodak Co. Ltd., plates and chemicals.....	523 54
C. F. Cole Co. Ltd., blue-print paper.....	49 44
Cooper Hewitt Electric Co., mercury tubes.....	29 68
Defender Photo Supply Co., supplies.....	46 70
T. Eaton Co., Ltd. photographic supplies.....	117 55
Lyman Bros. & Co. Ltd., chemicals.....	62 38
Ramsey & Taylor, photographic supplies.....	45 18
J. G. Ramsey & Co. Ltd., photostat paper.....	265 70
University Press, stationery.....	25 65
Superintendent's Dept., freight, etc., \$32.78; labour, \$9.28; material, 86c.....	42 92

Apparatus (\$499.54):

Cooper Hewitt Electric Co., burner and fixtures.....	140 95
T. Eaton Co. Ltd., print dryer.....	260 00
The Topley Co., balopticon.....	58 50
Superintendent's Dept., freight, etc., \$21.95; labour, \$8.18; material, \$9.96.....	40 09

\$2,749 31Less received for work done for various departments (in-
cluding Accounts Receivable, \$114.05).....

1,719 35

\$1,029 96

78. GENERAL EXPENSES.

Stationery, printing and office supplies (\$1,953.78):

D. A. Balfour, carbon.....	\$47 43
S. G. Bennett, disbursements: Telegrams, \$38.09; carfares, \$7.50; stationery and sundries, \$13.22.....	58 81
E. A. Bishop, evening attendance.....	4 00

78. GENERAL EXPENSES—Continued.

The Bursar, postage supplied.....	\$344 50	
Grand & Toy Ltd., stationery.....	31 20	
Might Directories Ltd., city directory.....	15 68	
Office Specialty Mfg. Co., folders.....	13 99	
Pelican Carbon Co. Ltd., carbon.....	3 50	
Photography, Dept. of, slides.....	16 30	
Wm. Tyrrell & Co., almanac.....	3 50	
United Typewriter Co., inspection and repairs.....	48 25	
University Press, printing and stationery.....	1,328 85	
Petty items (3).....	5 55	
Superintendent's Dept., telephone calls, \$2.65; labour, \$7.67; material, \$21.90.....	32 22	
Notice boards for time tables (\$381.29):		
Superintendent's Dept., labour, \$211.86; material, \$169.43.....	381 29	
Clerical assistance (\$270.00):		
Miss M. L. Bennett, 12½ weeks.....	250 00	
Miss F. F. Hamilton, 1 week.....	20 00	
Messenger service (\$1,015.34):		
V. Brown, 42-2/3 weeks @ \$12.00.....	512 00	
R. Harvie, 8-1/6 weeks @ \$8.00, \$65.34; 2 weeks @ \$9.00, \$18.00; 42 weeks @ \$10.00, \$420.00.....	503 34	
Engineering Alumni Association, contribution towards work in connection with finding employment for members of 1923 Class.....	225 00	
		3,845 41
		\$299,444 87

V. FACULTY OF HOUSEHOLD SCIENCE.

79. SALARIES.

Household Science Department (\$10,420):		
Miss A. L. Laird, Associate Professor, 12 months to 30th June (with rooms, heat and light valued at \$280; paid also \$5 for Local Lecture).....	\$3,720 00	
Lecturers (Sessional):		
Miss H. R. Coatsworth.....	2,000 00	
Miss B. Harris.....	2,000 00	
Miss E. M. McMillan.....	2,000 00	
Instructors (Sessional):		
Miss F. Graper.....	1,500 00	
Miss E. W. Park.....	1,200 00	
Miss B. Sutherland, Instructor and Research Worker (Easter Term).....	1,000 00	
	\$13,420 00	
Charged to Massey-Treble Bequest.....	3,000 00	
		\$10,420 00
Food Chemistry Department (\$5,420.00):		
Dr. C. C. Benson, Associate Professor, Physiological Chemistry, also Secretary to Faculty, 12 months to 30th June (with rooms, heat and light valued at \$280).....	\$3,720 00	
Miss J. Panton, Instructor (Sessional).....	1,000 00	
Miss F. Burwash, Assistant (Sessional).....	700 00	
		15,840 00

80. HOUSEHOLD SCIENCE BUILDING AND DEPARTMENT.

(a) Maintenance of Building:	
Heat and light (supplied from Central Power Plant)	
Gas (\$179.62):	
Consumers' Gas Co.....	\$179 62
Water (\$230.68):	
City Treasurer.....	230 68
Caretaker's supplies (\$129.32):	
Superintendent's Dept., labour, \$3.27; material, \$126.05...	129 32
Cleaning (\$1,627.20):	
Canadian Cleaning Co., cleaning windows.....	30 00
Superintendent's Dept., labour.....	1,597 20

80. HOUSEHOLD SCIENCE BUILDING AND DEPARTMENT—*Continued.*

Repairs and renewals (\$1,819.31):			
City Treasurer, elevator license.....		\$5 00	
T. Eaton Co., curtains.....		23 00	
Superintendent's Dept., labour, \$1,064.43; material, \$726.88		1,791 31	
Caretaker, D. Forbes, 12 months to 30th June (with rooms, heat and light valued at \$420.00).....		1,000 00	
			\$4,986 13
Less sundry credits:			
Cleaning, etc.....		6 75	
			\$4,979 38
(b) ¹ / ₂ Maintenance of Departments:			
(1) Household Science:			
Laboratory supplies (\$689.77):			
Canadian Laboratory Supplies, chemicals and crucibles		\$15 32	
Canadian Milk Products, milk.....		8 00	
T. Eaton Co., towelling, etc.....		23 50	
Farmers' Dairy Co. Ltd., milk.....		37 48	
Geo. M. Hendry Co., glassware.....		168 58	
Lever Bros. Ltd., soap.....		26 67	
Lyman Bros. & Co., chemicals.....		6 29	
McClary Mfg. Co., strainers.....		12 80	
McKay School Equipment, chemicals.....		27 26	
A. Martin Ltd., meat and provisions.....		33 30	
Pathology, Dept. of, methylated spirits.....		3 00	
A. Provam, groceries.....		325 32	
University Press, stationery.....		2 25	
Laboratory attendance (\$1,080.00):			
Mrs. Bowes, 10 months @ \$54.00.....		540 00	
Mrs. Conacher, 10 months @ \$54.00.....		540 00	
Equipment and incidentals (\$157.03):			
Canadian Laboratory Supplies, oven.....		86 71	
J. F. Hartz Ltd., scale.....		16 00	
Northern Aluminum Co. Ltd., trays.....		11 75	
United Typewriter Co., inspections.....		7 50	
Superintendent's Dept., labour, \$34.09; material, 98c..		35 07	
Books and special equipment (\$1,973.77):			
Canadian Laboratory Supplies, balance.....		173 82	
J. F. Hartz Ltd., microscope.....		109 00	
McDonald & Willson Ltd., range.....		236 00	
Macmillan Co. of Canada Ltd., books.....		11 12	
Students' Book Dept., books.....		78 70	
Toronto Hydro-Electric System, vacuum cleaner.....		69 50	
Superintendent's Dept., labour, \$786.59; material, \$509.04.....		1,295 63	
			\$3,900 57
Less sundry credits:			
Breakages.....	\$47 89		
Charged to Massey-Treble Bequest..	1,973 77	2,021 66	
			1,878 91
(2) Food Chemistry:			
Maintenance (\$634.92):			
AnSCO Co., cotton.....		\$1 55	
Baird & Tatlock (London) Ltd., spectrometer.....		72 51	
J. T. Baker Chemical Co., ether petroleum.....		4 06	
Dr. C. C. Benson, disbursements:			
Food supplies and sundries, \$35.56; cleaning materials, \$14.23.....		49 79	
Beaver Flint Glass Co. of Toronto, repairs.....		24 17	
Canadian Laboratory Supplies, crucibles, etc.....		74 79	
T. Eaton Co. Ltd., towelling.....		29 77	
Eimer & Amend, furnace.....		83 77	
Freyseng Cork Co., corks.....		4 69	
Harris Abattoir Co. Ltd., sundries.....		4 30	
J. F. Hartz Co., chemicals.....		33 02	
Lyman Bros. & Co. Ltd., crucibles, etc.....		26 06	
J. Frank Raw Ltd., repairs to balances.....		33 00	
Scientific Materials Co., supplies.....		55 95	
Students' Book Dept., books.....		11 10	

80. HOUSEHOLD SCIENCE BUILDING AND DEPARTMENT—*Continued.*

A. H. Thomas Co., glassware.....	\$82 60	
University Press, stationery.....	3 20	
Superintendent's Dept., freight, etc., \$27.89; labour, \$6.08; material, \$6.62.....	40 59	
Laboratory attendance (\$268.25):		
Mrs. C. Field, 74 days @ \$2.40.....	177 60	
Mrs. Brown, 80 hours @ 30c.....	24 00	
Mrs. Kelly, 61 hours @ 30c.....	18 30	
Miss E. Rudolph, 6 days @ \$2.50.....	15 00	
Mrs. J. A. Graham, 41 hours @ 30c.....	12 30	
Sundry persons.....	21 05	
	<hr/>	
	\$903 17	
Less credit for breakages.....	87 65	
	<hr/>	\$815 52
(3) General expenses:		
Stationery, printing, office supplies and incidentals (\$123.65):		
The Bursar, postage supplied.....	\$27 00	
University Press, printing and stationery.....	96 65	
Clerical assistance (\$600.00):		
Miss B. Cross, 33-1/3 weeks @ \$18.00.....	600 00	
	<hr/>	723 65
		<hr/>
		\$8,397 46
		<hr/>
		\$24,237 46

VI. FACULTY OF FORESTRY.

81. SALARIES.

C. D. Howe, Dean and Professor, 12 months to 30th June (paid also \$50.00 for Correspondence Courses, etc.).....	\$5,000 00	
Associate Professors:		
J. H. White, 12 months to 30th June.....	3,750 00	
W. N. Miller, 12 months to 30th June.....	3,750 00	
T. W. Dwight, 1st December to 30th June @ \$3,500 per annum	2,041 67	
Miss E. W. Mills, Secretary in Dean's Office, 12 months to 30th June	1,200 00	
	<hr/>	\$15,741 67

82. FORESTRY BUILDING AND DEPARTMENT.

(a) Maintenance of Building:		
Fuel (\$1,242.93):		
Britnell & Co., teaming.....	\$45 00	
W. H. Cox Coal Co., fuel.....	1,046 00	
Wm. McGill & Co., fuel.....	129 38	
Rose & Brown Coal Co., fuel.....	8 25	
Superintendent's Dept., labour.....	14.30	
Light (\$617.12):		
Consumers' Gas Co.....	130 52	
Toronto Hydro-Electric System.....	349 20	
Toronto & Niagara Power Co.....	137 40	
Water (\$63.90):		
City Treasurer.....	63 90	
Caretaker's supplies (\$66.84):		
Superintendent's Dept., labour, \$1.75; material, \$65.09....	66 84	
Cleaning (\$530.90):		
Henry F. Baxter, cleaning windows.....	12 50	
Superintendent's Dept., labour.....	518 40	
Repairs and Renewals (\$817.39):		
Superintendent's Dept., labour, \$543.15; material, \$275.24.	817 39	
Caretaker, George Ward, 12 months to 30th June.....	1,200 00	
	<hr/>	\$4,539 08
Less sundry credits:		
Light, \$4.00; cleaning, \$4.50.....	8 50	
	<hr/>	4,530 58
(b) Maintenance of Department:		
Laboratory supplies (\$371.84):		
The Art Metropole, paper.....	\$5 39	

82. FORESTRY BUILDING AND DEPARTMENT—*Continued.*

Canadian Laboratory Supplies, chemicals, etc.....	\$84 95
Canadian Pad & Paper Co., foolscap.....	5 49
C. F. Cole Co., cloth.....	12 27
Department of the Interior, Ottawa, slides.....	15 00
T. Eaton Co., batting.....	8 40
J. F. Hartz Co., chemicals.....	7 02
Miss E. W. Mills, paid for laboratory supplies.....	39 43
Photography, Dept. of, slides.....	17 00
J. Frank Raw Ltd., paper.....	6 40
University Press, printing and stationery.....	41 00
Petty items (3).....	4 69
Superintendent's Dept., labour, \$73.73; material, \$51.07...	124 80
Apparatus (\$873.85):	
Botany Dept., duplication machine.....	15 00
Canadian Laboratory Supplies, incubator, etc.....	496 33
Keuffel & Esser Co., calipers.....	30 65
McKay School Equipment, survey transit, etc.....	214 29
J. Frank Raw, repairing tapes.....	75
Superintendent's Dept., sales tax, \$1.86; labour, \$53.96; material, \$61.01.....	116 83
Office supplies, etc. (\$856.72):	
The Bursar, postage supplied.....	55 00
Dean C. D. Howe, disbursements:	
Stenographic work, \$8.00; photographic work, \$8.09; sundries, \$5.46.....	21 55
Miss E. W. Mills, disbursements:	
Telegrams and telephone calls, \$18.35; stationery and sundries, \$17.22.....	35 57
Office Specialty Mfg. Co., furniture, etc.....	222 14
O. B. Stanton & Wilson Co., trays, and cards.....	20 75
United Typewriter Co., typewriter, \$133.65; desk, etc., \$121.45.....	255 10
University Press, printing and stationery.....	197 73
Petty items (2).....	4 15
Superintendent's Dept., telephone calls, \$4.80; freight, etc., \$32.66; labour, \$2.00; material, \$5.27.....	44 73
Practice Camp supplies, travel, etc. (\$826.98):	
Prof. W. N. Millar, sundry disbursements:..	
Provisions, \$272.47; wages and expenses of help, \$124.06; equipment and supplies, \$52.63; Travelling expenses: Faculty, \$16.68; stu- dents, \$40.50; transportation of equipment, \$35.30; meals and lodging, \$15.00; sundries, \$11.25—\$567.89; less students' share of ex- penditures, \$344.45.....	223 44
Travelling expenses:	
C. D. Howe.....	56 60
W. N. Millar.....	23 55
J. H. White.....	26 30
Miss E. W. Mills, paid for freight.....	3 66
J. E. Minto, caretaking, \$15.00; wood, \$40.00; paid for freight, \$14.21.....	69 21
F. S. Newman, honorarium.....	25 00
Northern Electric Co., telephone equipment.....	202 23
Woods Manufacturing Co., tents, etc.....	193 22
Superintendent's Dept., freight, \$2.64; labour, \$1.13.....	3 77
Special Lectures (\$125.00):	
Henry S. Graves.....	75 00
Clyde Leavitt.....	25 00
Frank Newman.....	25 00
Clerical assistance (\$250.00):	
H. W. Crosbie, 3 weeks, 4 days.....	37 50
Miss K. Johnson, 113 hours.....	56 50
Miss Vera Jones, 2 days.....	6 00
Miss L. Rubin, 8 weeks, 2 days.....	150 00
Laboratory assistance (\$250.00):	
H. W. Crosbie, 25 weeks.....	250 00

3,554 39

\$23,826 64

VII. 83. FACULTY OF MUSIC.

Honoraria to Dean and Lecturers (\$1,250.00):	
Dr. A. S. Vogt, Dean.....	\$250 00
Dr. F. A. Mouré, University Organist and Lecturer on History of Music (paid also as Bursar).....	250 00
Dr. Healey Willan, Lecturer on Theory of Music.....	250 00
Dr. Albert Ham, Lecturer on Church Music.....	250 00
Dr. H. A. Fricker, Lecturer on Choral and Orchestral Music...	250 00
Secretarial allowance (\$200.00):	
Miss A. W. Patterson (paid also as President's Secretary).....	200 00
Printing Calendar, postage and incidental expenses (\$129.95):	
The Bursar, postage supplied.....	40 00
Nordheimer Piano & Music Co., rent and cartage of piano.....	30 00
University Press, printing and stationery.....	59 95
	\$1,579 95

VIII. 84. SCHOOL OF GRADUATE STUDIES.

J. P. McMurrich, Dean, honorarium.....	\$300 00
Miss N. Mackenzie, Secretary, 12 months to 30th June.....	1,500 00
Stationery, printing and office supplies (\$947.25):	
The Bursar, postage supplied.....	55 00
Office Specialty Mfg. Co., furniture and filing equipment.....	375 95
United Typewriter Co., chair.....	16 00
University Press, printing and stationery.....	455 85
Superintendent's Dept., labour, \$16.83; material, \$27.62.....	44 45
	\$2,747 25

IX. SOCIAL SERVICE.

85. SALARIES.

A. Dale, Professor and Director of Department, 12 months to 30th June (paid also \$220 for W.E.A. Classes, etc.).....	\$4,800 00
Miss A. C. McGregor, Director of Field Work, 12 months to 30th June	1,900 00
Miss K. Anderson, Secretary-Librarian, 12 months' salary.....	1,100 00
Special Lecturers (Sessional):	
F. N. Stapleford.....	500 00
P. Bryce.....	200 00
E. K. Clarke (paid also \$50 in Psychiatry).....	200 00
Miss F. Emory.....	200 00
Miss A. F. Hodgkins (paid also \$5 for Local Lecture).....	200 00
A. M. MacLaren.....	200 00
J. W. MacMillan.....	200 00
C. M. Wright.....	200 00
P. R. Hayward.....	150 00
Miss M. McPhedran.....	100 00
Dr. Edna Guest (paid also \$5 for Local Lecture).....	100 00
R. F. Widdows.....	100 00
	\$10,150 00

86. SOCIAL SERVICE BUILDING AND DEPARTMENT.

(a) Maintenance of Building:	
Fuel (\$465.81):	
Britnell & Co.....	\$465 81
Light (\$21.12):	
Consumers' Gas Co.....	21 12
Water (\$21.98):	
City Treasurer.....	21 98
Caretaker's supplies (\$52.32):	
Superintendent's Dept., labour, \$2.01; material, \$50.31....	52 32
Cleaning (\$8.40):	
Canadian Cleaning Co., cleaning windows.....	8 40
Repairs and renewals (\$528.81):	
Superintendent's Dept., labour, \$404.92; material, \$123.89.	528 81

86. SOCIAL SERVICE BUILDING AND DEPARTMENT—*Continued.*

Caretaker, R. Brown, 12 months to 30th June (with rooms, heat and light valued at \$300.00).....	\$800 00	
		\$1,898 44
Less credit for caretaker's attendance at meeting.....	1 00	
		\$1,897 44
<i>(b) Maintenance of Department:</i>		
Office supplies, printing, postage and incidentals (\$553.11):		
Miss K. Anderson, disbursements:		
Telegrams, stationery and sundries.....	\$17 71	
The Bursar, postage supplied.....	92 00	
Miss G. Gibb, pianist's services.....	21 00	
Munson Supply Co., typewriter keys.....	5 00	
United Typewriter Co., inspection.....	6 75	
University Press, printing and stationery.....	406 80	
Petty items (2).....	3 85	
Special Lectures (\$233.55):		
Dr. C. A. Dawson, lecture fee, \$50.00; expenses, \$20.00....	70 00	
I. B. S. Holbourn.....	50 00	
Prof. Graham Taylor.....	100 00	
University Press, printing.....	13 55	
Books and magazines (\$114.90):		
Students' Book Dept.....	114 90	
		901 56
		\$12,949 00

X. UNIVERSITY EXTENSION AND PUBLICITY.

87. SALARIES.

W. J. Dunlop, Director, 12 months to 30th June (paid also \$100 from <i>Canadian Historical Review</i>).....	\$4,000 00	
Miss H. M. Latter, Secretary, 12 months to 30th June.....	1,500 00	
Stenographers and Clerks @ \$1,050.00 per annum:		
B. W. Sharpe, 12 months to 30th June.....	1,050 00	
Miss A. M. Belton, 1st July to 30th September.....	262 50	
Miss H. M. Gilmour, 1st October to 30th June.....	787 50	
		\$7,600 00

88. EXTENSION AND PUBLICITY DEPARTMENTS.

(1) Extension:

(a) Summer Session, 1922, and Teachers' Classes (\$3,939.10):

Instructors:

W. H. Baillie (including expenses, \$86.25).....	\$386 25
Miss K. M. Banham.....	120 00
J. B. Brebner (including expenses, \$111.85).....	411 85
J. W. Bridges.....	180 00
W. H. Clawson.....	300 00
E. H. Craigie.....	300 00
R. Flenley.....	150 00
L. E. Horning.....	300 00
W. T. Jackman.....	316 00
H. S. McKellar.....	300 00
Miss K. M. Millar.....	125 00
I. R. Pounder.....	300 00
Miss M. G. Reid.....	150 00
R. B. Thomson.....	300 00
Miss G. I. Wookey.....	300 00

(b) Correspondence Courses (\$1,351.00):

Instructors:

Upper School, Middle School, Commercial (\$1,017.00):

Wm. Baird.....	4 00
J. O. Carlisle.....	79 00
G. A. Cline.....	40 00
W. C. Ferguson.....	112 00
H. A. Grainger.....	40 00
W. J. Loughheed.....	125 00

88. EXTENSION AND PUBLICITY DEPARTMENTS—*Continued.*

J. F. Van Every.....	\$45 00
Wm. Ward.....	11 00
W. H. Williams.....	421 00
J. G. Workman.....	140 00
Arts Course (\$334.00):	
J. B. Brebner.....	32 00
W. H. Clawson.....	12 00
R. Flenley.....	57 00
C. D. Howe.....	45 00
Gilbert Jackson.....	12 00
F. C. A. Jeanneret.....	24 00
Wm. Kirkwood.....	6 00
H. S. McKellar.....	6 00
G. C. Patterson.....	6 00
Miss M. G. Reid.....	74 00
G. M. Smith.....	18 00
F. Tracy.....	6 00
J. S. Will.....	18 00
Hume Wrong.....	18 00
(c) Local Lectures (\$135.00):	
Lecturers:	
E. A. Allcut.....	5 00
C. E. Auger.....	5 00
Gordon Bates.....	5 00
J. W. Bridges.....	15 00
Augustus Bridle.....	5 00
Miss F. Brown.....	5 00
N. L. Burnette.....	10 00
C. A. Chant.....	10 00
C. K. Clarke.....	15 00
W. A. Clemens.....	20 00
A. P. Coleman.....	5 00
G. A. Cornish.....	40 00
E. A. Dale.....	15 00
J. A. Dale.....	20 00
A. T. DeLury.....	5 00
C. R. Fay.....	10 00
Edna Guest.....	5 00
Miss A. F. Hodgkins.....	5 00
J. H. Horning.....	5 00
L. E. Horning.....	15 00
C. D. Howe.....	5 00
M. Hutton.....	20 00
Wm. Jackman.....	15 00
G. M. Jones.....	10 00
Mrs. M. Kensit.....	10 00
R. S. Knox.....	5 00
Miss A. L. Laird.....	5 00
George Locke.....	5 00
J. C. Maynard.....	5 00
J. W. McFadden.....	5 00
H. S. McKellar.....	30 00
J. F. McLaughlin.....	5 00
C. H. Mitchell.....	5 00
M. Moraud.....	25 00
W. A. Parks.....	5 00
P. Sandiford.....	5 00
C. B. Sissons.....	5 00
M. H. Staples.....	5 00
M. W. Wallace.....	20 00
H. Wasteneys.....	5 00
J. S. Will.....	5 00
R. Hodder Williams.....	15 00
(d) Courses for Workers' Educational Association (\$4,202.28):	
Instructors:	
H. E. Amoss.....	200 00
V. W. Bladen.....	200 00
Alfred Buckley.....	100 00
A. W. Burt (including expenses, \$49.64).....	499 64
S. N. F. Chant.....	310 00

88. EXTENSION AND PUBLICITY DEPARTMENTS—*Continued*

S. A. Cudmore.....	\$200 00
J. A. Dale.....	200 00
S. J. Dempsey.....	90 00
S. P. Dobbs.....	200 00
Pelham Edgar.....	100 00
W. L. Grant.....	10 00
H. A. Innis (including expenses, \$40.65).....	150 65
H. R. Kemp.....	200 00
F. H. Kirkpatrick.....	300 00
M. J. McGarvin.....	200 00
Alfred McGowan.....	200 00
Owen Merriman.....	110 00
E. J. Pratt.....	330 00
J. D. Robbins.....	100 00
E. Sapor.....	100 00
Adam Shortt.....	200 00
H. E. Whiteley.....	100 00
Sundry attendance:	
R. Brown.....	85 50
J. Wicksey.....	12 50
Superintendent's Dept., labour, \$2.56; material, \$1.43.....	3 99
(e) Rural Tutorial Classes (\$522.05):	
Instructors:	
P. George Marshall (including expenses, \$18.00).....	78 00
W. J. McAndrew (including expenses, \$12.60).....	102 60
J. Earle Newton (including expenses, \$10.25).....	30 25
W. M. Whitelaw (including expenses, \$85.67).....	475 67
	\$686 52
Less paid by Rural Centres (including arrears from 1921-22, \$37.95).....	164 47
	\$522 05
(f) City Tutorial Classes (\$1,762.97):	
Instructors:	
J. W. Bridges.....	200 00
H. J. Davis.....	300 00
Emilio Goggio.....	150 00
W. B. Lane (including expenses, \$83.22).....	383 22
W. S. W. McLay.....	110 00
E. J. Pratt.....	300 00
P. A. W. Wallace.....	300 00
Mrs. C. Fairbrass, attendance.....	19 75
(g) Short Winter Course (\$143.95):	
L. E. Horning, remuneration for lectures.....	15 00
F. H. Kirkpatrick, remuneration for lectures.....	50 00
Burwash Hall, use of dining room.....	10 00
University Press, printing and stationery.....	66 45
C. E. Bradshaw, attendance.....	2 50
(h) Short Course in Journalism (\$321.95):	
Instructors:	
W. J. Alexander.....	60 00
A. R. Clute.....	60 00
A. H. Moore.....	30 00
P. A. W. Wallace.....	90 00
G. M. Wrong.....	60 00
University Press, printing.....	21 95
(i) Short Course in Town-planning (\$126.60):	
Naulon Cauchon, remuneration for lectures.....	35 00
W. D. Cromarty, remuneration for lectures.....	35 00
Hart House, entertainment of Messrs. Cauchon and Cromarty.....	16 50
University Press, printing.....	40 10
(j) Courses for Nurses (\$445.00):	
Lecturers:	
Miss Esther Beith.....	5 00
Dr. W. J. Bell.....	5 00
Mrs. H. M. F. Bowman.....	10 00
Dr. Edmund Boyd.....	10 00
Dr. Eric K. Clarke.....	5 00

88. EXTENSION AND PUBLICITY DEPARTMENTS—*Continued.*

Dr. F. A. Clarkson.....	\$5 00
Miss Rosabel Coutts.....	10 00
Dr. G. A. Davis.....	5 00
C. J. Decker.....	15 00
Dr. H. A. Dixon.....	10 00
Miss Florence Emory.....	10 00
Dr. J. G. Fitzgerald.....	10 00
Miss E. G. Flaws.....	10 00
W. H. Greaves.....	40 00
Miss Mary M. Griffen.....	10 00
Dr. Edna Guest.....	5 00
Miss Jean I. Gunn.....	20 00
Dr. Beverley Hannah.....	20 00
Miss Isabel J. Hutchison.....	5 00
Miss J. M. Kniseley.....	5 00
Miss Elsie Luckham.....	5 00
Miss E. A. Luxon.....	5 00
Dr. R. R. McClenahan.....	5 00
Dr. C. S. McDougall.....	10 00
Miss Christina McLennan.....	10 00
Dr. Fletcher McPhedran.....	10 00
Miss Kathleen Panton.....	10 00
Dr. J. T. Phair.....	10 00
Dr. G. D. Porter.....	5 00
Dr. G. E. Richards.....	5 00
Dr. Annie Ross.....	20 00
Miss Georgie Rowan.....	10 00
Peter Sandiford.....	60 00
Miss G. I. Wookey.....	60 00
Dr. G. S. Young.....	5 00
(k) Social functions for these courses (\$98.55):	
George Coles, Ltd., catering, class in Journalism, \$35.00; class in Export Trade, \$30.00.....	65 00
W. J. Dunlop, expenses <i>re</i> picnic for Summer Session students.....	15 05
R. P. Morrison, luncheon, Short Course for Farmers.....	18 50
(l) Office expenses (\$2,671.24):	
Clerical assistance (\$538.91):	
R. de R. Acklom, 28 weeks @ \$8.00, \$224.00; 7½ hours' overtime, \$3.01.....	227 01
Miss P. M. Courtney, 14 2/3 weeks @ \$18.00.....	263 70
G. H. Charles, occasional.....	33 20
Miss M. S. R. Boyd, occasional.....	10 40
Miss N. T. Denoon, occasional.....	4 60
Stationery, printing, office supplies and incidentals (\$1,255.80):	
The Bursar, postage supplied.....	225 00
W. J. Dunlop, paid for telegrams, carfares, etc.....	24 86
"Farmers' Sun," subscription.....	5 00
A. T. Laidlaw, paid for postage.....	7 50
Office Specialty Mfg. Co., chairs, transfer cases, etc... Photography, Dept. of, lantern operators.....	70 05 5 00
Toronto <i>Weekly Railway & Steamboat Guide</i> , sub- scription.....	6 50
United Typewriter Co., inspection.....	20 25
Geo. Walton, addressing envelopes.....	4 50
University Press, printing and stationery.....	835 65
Petty items (4).....	9 66
Superintendent's Dept., labour, \$8.66; material, \$3.67 Sundry attendance.....	12 33 29 50
Addressograph Equipment (\$876.53):	
The Elliott Co., stencils, trays, carbon, etc.....	876 53
	<hr/>
	\$16,019 69
2. Publicity:	
(a) Announcements of special events, public lectures, short courses, sundry advertisements (\$1,498.72):	
Alger Press, Ltd.....	4 80
<i>Evening Telegram</i>	264 05
<i>Farmers' Sun</i>	48 00
Globe Printing Co.....	310 42

88. EXTENSION AND PUBLICITY DEPARTMENTS—*Continued.*

<i>Hamilton Herald</i>	\$9 00
Mail Printing Co.....	335 77
Mason Advertising Agency.....	7 50
<i>Ottawa Farm Journal</i>	10 08
Preston & Sons, Ltd.....	4 94
Reformer Printing & Publishing Co., Ltd.....	3 60
<i>The School</i>	200 00
<i>Toronto Daily Star</i>	300 56
(b) Advertisements in journals and periodicals (\$796.53):	
<i>Acta Victoriana</i>	20 00
<i>The Auditorium</i> , Owen Sound.....	6 50
<i>Canadian Engineer</i>	48 00
<i>Canadian Forum</i>	30 00
<i>Canadian Historical Review</i>	30 00
Canadian Medical Association.....	40 80
Copp, Clark Co.....	20 00
Engineering Institute of Canada.....	35 00
Heaton's Agency.....	50 00
Lindsay Collegiate Institute <i>Tatler</i>	6 00
<i>Normal School Year Book</i>	11 50
<i>Ontario Catholic Year Book and Directory</i>	15 00
Peterborough Normal School.....	4 00
<i>The School</i>	20 00
<i>Separate Public School Review</i>	15 00
<i>Smith's Falls Collegiate Institute Annual</i>	5 00
<i>Specula Galtonia</i>	3 25
<i>St. Andrew's College Review</i>	18 00
<i>St. Michael's College Year Book</i>	20 00
<i>The Torch</i> , Napanee Collegiate Institute.....	3 00
<i>Torontonensis</i>	60 00
<i>Trinity College School Record</i>	6 00
<i>Trinity University Review</i>	17 50
<i>University of Toronto Monthly</i>	199 98
University of Toronto Y.M.C.A. Handbook.....	22 00
<i>The Varsity</i>	75 00
<i>Wycliffe Magazine</i>	15 00.
(c) Issue of University bulletins and items for newspapers and other forms of publicity (\$4,665.09):	
Printing and distribution of bulletins, etc.:	
Banner Printing Co., folders.....	22 47
Bridgen's, Ltd., halftones.....	178 90
The Bur-ar, postage supplied.....	528 84
Connaught Laboratories, expenses of Insulin exhibit included in Canadian Exhibition train sent to tour France.....	81 10
Hurley Printing Co., printing.....	4 18
Methodist Book & Publishing House, prints.....	2 00
Photo Engravers Ltd., halftones.....	23 23
Photography, Dept. of, prints.....	4 95
Rverson Press, halftones.....	12 17
Wilcox Engraving Co., photographs.....	9 40
University Press, printing and stationery.....	2,254 60
Operating telescopes for public observation:	
C. A. Crooks, 4 nights.....	8 00
J. Dandy, 6 nights.....	20 00
J. H. Horning, 4 nights.....	16 00
W. Mann, 2 nights.....	4 00
Exhibit at Canadian National Exhibition:	
Biology, Dept. of, slides.....	2 50
Canadian National Exhibition, electrical power.....	53 10
Connaught Laboratories, expenses re exhibit.....	151 46
Consumers' Gas Co., installation of piping, etc.....	27 48
A. D. Fisher Mfg. Co., rental of motor.....	5 00
Ingram & Bell, Ltd., thermometer.....	2 00
May Bros., thermos refills.....	9 00
Robt. Simpson Co., ferns and flags.....	132 60
Superintendent's Dept., labour, \$311.81; material, \$136.21.....	448 02
Assistance and caretaking:	
W. E. Dean, caretaker, 213 hours @ 40c.....	85 20

88. EXTENSION AND PUBLICITY DEPARTMENTS—*Continued.*

W. H. T. Baillie, 116 hours @ \$1.50, \$174.00; expenses, \$21.39.....		\$195 39	
K. E. Ferrie, 52 hours @ \$1.50.....		78 00	
C. A. Peachey, 128 hours @ 50c.....		64 00	
G. M. Shrum, 109 hours @ \$1.50.....		163 50	
E. N. Wright, 52 hours @ \$1.50.....		78 00	
(d) Travelling expenses of organizers and speakers (\$113.66):			
W. J. Dunlop, travelling expenses.....		113 66	
			\$23,093 69
Less sundry credits:			
National Council of Education, advertising	\$362 23		
Alumni Federation, University of Toronto, advertising.....	33 16		
Sale of bulletins.....	10 00		
		405 39	\$22,688 30
			\$30,288 30

XI. RESIDENCES.

89. MEN'S RESIDENCES.

Heat and light (supplied from Central Power Plant):			
Gas and occasional fuel (\$96.00):			
Britnell & Co., fuel.....		\$96 00	
Water (\$256.56):			
City Treasurer.....		256 56	
Caretaker's supplies (\$569.32):			
Superintendent's Dept., labour, \$1.81; material, \$567.51.....		569 32	
Cleaning and house service (\$7,682.32):			
Allen Mfg. Co., laundry.....		499 37	
Puritan Laundry Co.....		76 90	
Superintendent's Dept., labour.....		7,106 05	
Repairs and renewals (\$2,954.66):			
T. Eaton Co., Ltd., repairing bed springs.....		17 50	
Routery Bros., plastering.....		211 50	
Superintendent's Dept., labour, \$1,884.79; material, \$840.87....		2,725 66	
		\$11,558 86	
Less sundry credits:			
Repairs, \$158.09; lamp rental, \$4.50.....		162 59	\$11,396 27

90. WOMEN'S RESIDENCES.

(a) Maintenance of Buildings:			
4 Queen's Park (\$1,126.20):			
Fuel (\$311.81):			
Britnell & Co., fuel, \$16.00; teaming, \$4.43.....		\$20 43	
W. H. Cox Coal Co., fuel.....		82 50	
Wm. McGill & Co., fuel.....		208 88	
Light (\$22.38):			
Consumers' Gas Co.....		22 38	
Water (\$33.54):			
City Treasurer.....		33 54	
Repairs and renewals (\$758.47):			
A. H. Power Furnace Co., Ltd., installing heating system.....		240 00	
Superintendent's Dept., labour, \$400.28; material, \$118.19.....		518 47	
7 Queen's Park (\$6,009.53):			
Fuel (\$3,172.15):			
Britnell & Co., fuel, \$45.00; teaming, \$135.51.....		180 51	
W. H. Cox Coal Co.....		2,714 49	
Wm. McGill & Co.....		210 75	
Standard Fuel Co.....		34 50	
Superintendent's Dept., labour.....		31 90	

90. WOMEN'S RESIDENCES—*Continued.*

Light (\$621.12):	
Consumers' Gas Co.....	\$340 27
Toronto Hydro-Electric System.....	207 72
Toronto & Niagara Power Co.....	73 13
Water (\$154.07):	
City Treasurer.....	154 07
Repairs and renewals (\$2,062.19):	
Routery Bros., plastering.....	19 35
Superintendent's Dept., labour, \$896.80; material, \$1,146.04.....	2,042 84
9 Queen's Park \$552.33):	
Fuel (\$104.50):	
Britnell & Co., Ltd.....	15 00
W. H. Cox Coal Co.....	14 50
Wm. McGill & Co.....	75 00
Light (\$84.33):	
Consumers' Gas Co.....	13 56
Toronto Hydro-Electric System.....	49 26
Toronto & Niagara Power Co.....	21 51
Water (\$10.84):	
City Treasurer.....	40 84
Repairs and renewals (\$322.66):	
R. Robertson & Sons, cutting openings.....	30 80
Routery Bros., plastering.....	19 35
Superintendent's Dept., labour, \$201.45; material, \$71.06.....	272 51
100 Queen's Park \$1,545.74):	
Fuel \$748.14):	
Britnell & Co., Ltd., fuel \$80.00; teaming, \$24.13.....	104 13
W. H. Cox Coal Co.....	483 61
Wm. McGill & Co.....	108 89
Standard Fuel Co.....	51 51
Light (\$70.25):	
Consumers' Gas Co.....	70 25
Water (\$39.72):	
City Treasurer.....	39 72
Repairs and renewals (\$687.63):	
Routery Bros., plastering.....	25 25
Superintendent's Dept., labour, \$485.00; material, \$177.38.....	662 38
94 St. George Street (\$1,769.82):	
Fuel (\$1,009.87):	
Britnell & Co., Ltd., fuel, \$165.00; teaming, \$32.99.....	197 99
W. H. Cox Coal Co.....	179 41
Wm. McGill & Co.....	581 47
Standard Fuel Co.....	51 00
Light (\$127.60):	
Consumer's Gas Co.....	48 84
Toronto Hydro-Electric System.....	78 76
Water (\$75.49):	
City Treasurer.....	75 49
Repairs and renewals (\$565.92):	
Murray-Kay Co., Ltd., linoleum.....	31 20
G. H. Robinson, furniture repairs.....	47 00
Routery Bros., Ltd., plastering.....	2 20
Superintendent's Dept., labour \$380.41; material, \$105.11.....	485 52
	\$1,778 88
Less credit for repairs.....	9 06
	\$1,769 82
85 St. George Street (\$1,236.99):	
Fuel (\$386.91):	
Britnell & Co., fuel, \$29.00; teaming, \$6.19.....	35 19
W. H. Cox Coal Co.....	208 15
Wm. McGill & Co.....	109 57
Standard Fuel Co.....	34 00
Light (\$57.46):	
Consumers' Gas Co.....	57 46
Water (\$12.00):	
City Treasurer.....	12 00

90. WOMEN'S RESIDENCES—*Continued.*

Repairs and renewals (\$780.62):		
Routery Bros., plastering.....		\$75 82
Superintendent's Dept., labour, \$308.41; material, \$396.39.....		704 80
		<hr/>
		\$12,240 61
 (b) Housekeeping account (Queen's Hall and Annexes):		
Provisions and housekeeping expenses (\$10,706.69):		
Armstrong & Paffard, groceries.....		\$4 45
Wm. B. Brebner, flowers.....		6 83
Canada Bread Co.....	557	54
Mrs. M. Chambers, fish.....		5 30
Christie, Brown & Co., biscuits.....		11 68
City Dairy, ice cream.....	133	77
Club Coffee Co., coffee.....		90 70
George Coles Ltd., confectionery.....		175 92
Wm. Davies Co., Ltd., meat.....	359	33
Wm. Dawson & Sons, Ltd., subscription to periodicals....		6 00
T. Eaton Co., Ltd., towels and sundry supplies.....	146	31
Farmers' Dairy Co., milk.....	999	24
<i>The Globe</i> , subscription.....		6 00
Gourlay, Winter & Leeming, rent of pianos.....	125	22
Gunn's, Ltd., meat.....	864	66
Harris Abattoir Co., meat.....	2,874	34
Samuel Harris, meat.....		81 88
H. J. Heinz Co., pickles.....		54 08
Lake Simcoe Ice, Ltd., ice.....		140 47
Miss L. Livingstone, disbursements:		
Stationery and postage, \$23.35; utensils, sharpening knives, etc., \$9.59; flowers and sundries, \$20.99....		53 93
Lyman Bros. & Co., drugs.....		10 29
Lyons & Marks, hardware.....		24 43
Maple Leaf Milling Co., flour.....		77 43
A. A. McKinnon, produce.....	357	45
J. J. McLaughlin Ltd., beverages.....		5 88
M. Rawlinson Ltd., cartage.....		15 00
Robt. Simpson Co., Ltd., provisions.....		68 07
John Sloan & Co., Ltd., groceries.....	1,582	21
Students' Book Dept., stationery.....		14 50
Swift Canadian Co., Ltd., meat.....		101 06
Andrew Thomson & Co., vegetables.....		143 65
Todhunter, Mitchell & Co., coffee.....		246 62
White & Co., Ltd., fruit and fish.....		924 67
Whyte Packing Co., eggs.....		324 68
University Press, printing and stationery.....		54 20
Superintendent's Dept., labour, \$40.50; material, \$18.40...		58 90
Cleaning and house service (\$7,275.47):		
Canadian Cleaning Co., cleaning windows.....		66 00
<i>Evening Telegram</i> , advertising for help.....		6 33
A. H. Harraden, cleaning and repairing mats.....		30 00
Langley's Ltd., cleaning curtains.....		20 50
Parisian Laundry Co., laundry.....	663	57
John Sloan & Co., cleanser.....		5 11
Petty items (2).....		3 84
Superintendent's Dept., labour, \$13.41; material, \$124.18...		137 59
Pay lists, wages of maids, etc.....	6,342	53
Furnishings, dishes and sundries (\$685.45):		
Arcade Florist, ferns.....		12 00
Cassidy's Ltd., dishes.....	170	95
T. Eaton Co., Ltd., sheeting, towelling, etc.....	371	72
Harry Martin, couch covers.....		8 50
Ohio Vacuum Co., repairs.....		3 70
Singer Sewing Machine Co., hemstitching.....		3 00
Geo. Sparrow & Co., grate, etc.....		17 25
Wrought Iron Range Co., utensils.....		13 70
W. Younger, repairing chairs.....		65 00
Superintendent's Dept., labour.....		19 63
Alexander Donald, compensation for theft of daughter's property		293 50
		<hr/>
		\$18,961 11

90. WOMEN'S RESIDENCES—*Continued.*

Less sundry credits, guests, dances, etc.....	\$202 85	
	<hr/>	
	\$18,758 26	
Superintendent, Miss L. I. Livingstone, 12 months to 30th June (with living valued at \$440.00).....	1,550 00	
Housekeepers:		
Miss M. Stalmsmith, 2 months to 31st August @ \$1,100 per annum.....	183 34	
Miss M. E. Nickel, 9 months to 30th June @ \$1,100 per annum (with living valued at \$400 per annum).....	825 00	
	<hr/>	\$21,316 60
(c) Housekeeping account (100 Queen's Park):		
Cleaning, house service and sundries (\$2,182.00):		
Canadian Cleaning Co., cleaning windows.....	\$5 25	
T. Eaton Co., Ltd., rugs, spreads, etc.....	426 21	
Gordon, Mackay & Co., linen.....	49 25	
Industrial Refuge, laundry.....	198 98	
Interlake Tissue Mills, paper.....	7 71	
Nordheimer Piano & Music Co., tuning piano.....	6 00	
Toronto Window Cleaning Co., cleaning windows.....	10 20	
University College Women's Union, meals supplied to supervisor.....	160 00	
Miss M. M. Waddington, disbursements:		
Cleaning materials, \$49.59; meals for housekeeper during summer, \$40.00.....	89 59	
University Press, printing and stationery.....	11 90	
Superintendent's Dept., labour, \$11.38; material, \$15.28 ...	26 66	
Pay lists, wages of housekeeper, maids, etc.....	1,190 25	
Share of salary of Assistant Dietitian at Union (\$300):		
Miss M. Jamieson.....	300 00	
	<hr/>	\$2,482 00
Less sundry credits, guests, etc.....	131 20	
	<hr/>	2,350 80
(d) Housekeeping account (85 St. George Street):		
Cleaning, house service and sundries (\$616.35):		
Industrial Refuge, laundry.....	\$27 67	
Interlake Tissue Mills, Ltd., paper.....	7 71	
University College Women's Union, meals supplied to supervisor.....	100 00	
Miss M. M. Waddington, paid for cleaning materials.....	7 24	
University Press, printing.....	5 10	
Petty items (2).....	4 59	
Superintendent's Dept., material.....	20 47	
Pay lists, wages of housekeeper, maids, etc.....	443 57	
Furnishings (\$960.08):		
Wm. J. Brown, couch.....	105 00	
T. Eaton Co., Ltd., furniture.....	810 37	
Gordon, Mackay & Co., blankets and sheets.....	44 71	
Share of salary of Assistant Dietitian at Union (\$180):		
Miss M. Jamieson.....	180 00	
	<hr/>	1,756 43
(e) Housekeeping account (94 St. George Street):		
Cleaning, house service and sundries (\$2,116.35):		
W. J. Brown, chesterfield.....	160 00	
T. Eaton Co., Ltd., chintz, etc.....	64 10	
Gordon Mackay & Co., linen.....	16 87	
Industrial Refuge, laundry.....	228 80	
Interlake Tissue Mills, Ltd., paper.....	16 27	
Parisian Laundry Co., laundry.....	99 51	
Toronto Window Cleaning Co., cleaning windows.....	13 51	
University College Women's Union, meals supplied to supervisor.....	160 00	
Miss M. M. Waddington, disbursements:		
Meals for housekeeper during summer, \$40.00; cleaning supplies, \$23.65.....	63 65	

90. WOMEN'S RESIDENCES—*Continued.*

L. White & Sons, dyeing drapes.....	\$10 00	
University Press, stationery and printing.....	9 05	
Superintendent's Dept., labour, \$10.52; material, \$9.64.....	20 16	
Pay lists, wages of housekeeper, maids, etc.....	1,254 43	
Share of salary of Assistant Dietitian at Union (\$300):		
Miss M. Jamieson.....	300 00	
		<hr/>
	\$2,416 35	
Less sundry credits, guests, etc.....	56 10	
		<hr/>
		\$2,360 25
		<hr/>
		\$40,024 69

91. UNIVERSITY COLLEGE WOMEN'S UNION.

(a) Maintenance of Building:

Fuel (\$1,431.82)		
Britnell & Co., fuel, \$14.50; teaming, \$57.85.....	\$72 35	
W. H. Cox Coal Co.....	897 72	
Wm. McGill & Co.....	385 50	
Rose & Brown Coal Co.....	8 25	
Standard Fuel Co.....	68 00	
Light (\$375.80):		
Consumers' Gas Co.....	375 80	
Water (\$62.84):		
City Treasurer.....	62 84	
Repairs and renewals (\$1,173.30):		
Lewiss Legrow, thawing water-pipes.....	5 60	
Superintendent's Dept., labour, \$783.22; material, \$384.48.....	1,167 70	
Caretakers (\$657.55):		
A. Baird, 26 hours at 40c.....	10 40	
Leo Cole, 5 days at \$100 per month.....	16 44	
Geo. A. Town, 24 weeks, ½ day, at \$100 per month, \$600.31; 76 hours overtime at 40c, \$30.40.....	630 71	
		<hr/>
		\$3,701 31

(b) Housekeeping account:

Provisions and housekeeping expenses (\$13,758.56):		
Andrews Cake Bakery, confectionery.....	\$114 91	
Armstrong & Paffard, groceries.....	38 45	
Jas. Bamford, fruit, etc.....	1,329 14	
Belle Ewart Ice Co., ice.....	86 78	
J. Blood, groceries.....	215 07	
Bloor Food Shop, confectionery.....	142 16	
Christie, Brown & Co., biscuits.....	63 82	
John B. Ciceri & Co., fruit.....	63 54	
Paul Ciceri Co., Ltd., fruit.....	165 63	
Club Coffee Co., Ltd., coffee.....	28 41	
George Coles Ltd., confectionery.....	253 17	
M. Doyle Fish Co., Ltd., fish.....	60 34	
T. Eaton Co., Ltd., hardware, etc.....	39 66	
Eby, Blain, Ltd., groceries.....	2,094 04	
Farmers' Dairy Co., Ltd., milk.....	1,481 84	
Glassco, Ltd., jam.....	179 54	
Grand & Toy, Ltd., stationery.....	23 40	
Gunn's Ltd., meat.....	786 50	
Freya C. Hahn, honey.....	30 00	
Harris Abattoir Co., Ltd., meat.....	3,963 74	
H. J. Heinz Co., beans.....	113 92	
J. G. Hume, apples.....	21 00	
R. Hymus, meat.....	20 50	
Interlake Tissue Mills, Ltd., napkins.....	19 33	
W. S. Johnston & Co., meal tickets.....	42 86	
Kilgour Bros., bags and pails.....	11 12	
M. P. Mallon, chickens.....	58 00	
Maple Leaf Milling Co., flour.....	88 46	
J. J. McLaughlin, Ltd., beverages.....	13 93	
Medland Bros., napkins.....	11 25	
W. J. Mills, rent of tables.....	11 70	
Wm. Neilson, Ltd., ice cream.....	361 60	
Wm. Patterson & Sons, produce.....	340 80	

91. UNIVERSITY COLLEGE WOMEN'S UNION—*Continued.*

W. H. Procter & Co., pickles.....	\$14 82
Miss M. G. Reid, paid for 12 weeks' room rent pending completion of quarters.....	120 00
F. Simpson & Sons, fish.....	36 00
M. J. Smith, vegetables.....	13 90
Miss M. M. Waddington, disbursements:	
Food supplies, \$248.42; postage, \$42.52; flowers, \$32.93; utensils, \$13.40; stationery and sundries, \$66.63...	403 90
Harry Webb Co., bread.....	782 28
Women's Patriotic League, aprons.....	27 43
University Press, stationery.....	31 35
Petty items (7).....	23 40
Superintendent's Dept., labour, \$25.09; material, \$5.78....	30 87
Cleaning and house service (\$5,393.11):	
T. Eaton Co., Ltd., mops.....	2 90
Industrial Refuge, laundry.....	465 15
Interlake Tissue Mills, paper.....	52 78
Toronto Window Cleaning Co., cleaning windows.....	16 57
Turco-Persian Rug Renovating Co., cleaning rugs.....	8 90
L. White & Sons, Ltd., cleaning drapes.....	36 50
Superintendent's Dept., labour, \$6.80; material, \$131.91 ...	138 71
Pay lists, wages of servants, maids, etc.....	4,671 60
Piano, magazines, etc. (\$80.06):	
<i>Canadian Forum</i> , subscription.....	1 33
Heintzman & Co., piano rental and cartage.....	21 95
Macdonald's Subscription Agency, subscriptions.....	29 82
Nordheimer Piano & Music Co., tuning piano.....	6 00
W. H. Smith & Son, subscriptions.....	20 96
Furnishings, dishes and sundry renewals (\$1,000.75):	
Miss J. Barber, bear skin.....	18 00
A. J. Boughton, hanging pictures.....	11 50
Canadian Wm. A. Rogers Co., silverware.....	55 91
Carters' Tested Seeds, Ltd., bulbs.....	12 25
Cassidy's, Ltd., glassware.....	48 99
John Catto Co., Ltd., linen.....	46 00
F. M. Cronkwright, repairing range.....	1 75
T. Eaton Co., Ltd., rugs, dishes, etc.....	148 26
Gordon, Mackay & Co., Ltd., linen.....	73 76
M. L. Hogg, bulbs.....	6 60
Wm. Junor, dishes.....	341 95
Lyons & Marks, wringers.....	5 55
Oliver Spanner & Co., mounting rug.....	20 90
Geo. Sparrow & Co., utensils.....	58 47
Wrought Iron Range Co., utensils.....	35 40
Superintendent's Dept., labour, \$80.56; material, \$34.90 ...	115 46
Linen, china and other furnishings for new house (\$1,538.54):	
Canadian Wm. A. Rogers, Ltd., silverware.....	102 36
J. & J. Carson, linen.....	50 82
Cassidy's, Ltd., glassware.....	13 92
T. Eaton Co., Ltd., furniture, linen, etc.....	731 10
Gordon, Mackay & Co., linen and blankets.....	365 53
Wm. Junor, dishes.....	144 61
Geo. Sparrow & Co., milk pump, etc.....	39 54
Wrought Iron Range Co., pans, etc.....	81 70
Superintendent's Dept., material.....	8 96
	\$25,472 33
Resident Head, Miss M. M. Waddington, 12 months to 30th June (with living valued at \$400.00—paid also \$2,200 in English).....	1,000 00
Deputy Resident Head, Miss M. G. Reid, 9 months to 30th June (with living valued at \$400.00—paid also \$500 in History).....	1,000 00
Dietitian, Miss J. Barber, 12 months to 30th June (with living valued at \$400.00).....	1,500 00
Assistant Dietitian (\$780 with living valued at \$400; salary divided between 94 St. George St., 85 St. George St., and 100 Queen's Park).....	.....
	\$28,972 33

91. UNIVERSITY COLLEGE WOMEN'S UNION—Continued.

Less credit for meals supplied the supervisors at 94 St. George St., 85 St. George St., and 100 Queen's Park..	\$420 00	
		\$28,552 33
		<u>\$79,973 29</u>

XII. (92) ROYAL ONTARIO MUSEUM.

University's share of maintenance advanced to the Trustees of the Royal Ontario Museum under 2 Geo. V, Cap. 80.....	\$34,978 68
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XIII. (93) CENTRAL POWER PLANT.

Fuel (\$77,601.94):	
Britnell Contracting Co., teaming.....	\$6,517 97
Century Coal Co., fuel.....	8,747 48
W. H. Cox Coal Co., Ltd., fuel.....	33,225 22
W. A. Marshall & Co., fuel.....	817 24
Wm. McGill & Co., fuel.....	19,384 54
Scott Coal Co., Ltd., fuel.....	1,911 61
F. P. Weaver Coal Co., Ltd., fuel.....	2,082 09
Western Ontario Coal Co., Ltd., fuel.....	4,052 37
Superintendent's Dept., labour, \$855.38; material, \$8.04.....	863 42
City electric current (\$4,319.32):	
Toronto Hydro-Electric System.....	1,852 65
Toronto & Niagara Power Co.....	2,466 67
Water (\$431.27):	
City Treasurer.....	431 27
Repairs and renewals, engineers' supplies and miscellaneous items (\$9,658 65):	
H. Bramley, moving arches, etc.....	90 76
B. Cole, moving arches.....	69 66
John Inglis Co., Ltd., welding.....	23 00
Inspector of Weights and Measures, inspection.....	7 00
G. Lovegrove, repairs to walls.....	448 17
G. W. Morley, repairing clock.....	3 50
G. O'Connor, boiler repairs.....	246 00
F. Orchard, moving arches.....	69 66
Photography, Dept. of, prints.....	4 95
R. Robertson & Sons, repairs to boilers, etc.....	1,447 22
Melvern F. Thomas, engineering service.....	150 00
Turnbull Elevator Co., Ltd., repairs.....	139 80
Underfeed Stoker Co., bearings, brick, etc.....	287 65
Western Waterproofing Co., waterproofing.....	83 26
Petty items (2).....	2 98
Advertising for coal tenders:	
<i>Evening Telegram</i>	16 00
<i>The Globe</i>	18 48
Mail Printing Co.....	25 20
<i>Toronto Daily Star</i>	16 20
Superintendent's Dept., labour, \$1,967.09; material, \$4,542.07..	6,509 16
Engineers, assistant engineers, firemen and trimmers (\$14,475.97):	
Chief Engineer, C. S. Moseley, 12 months to 30th June.....	2,200 00
Assistant Engineers:	
L. McMaster, 12 months to 30th June.....	1,500 00
Wm. Smith, 12 months to 30th June.....	1,500 00
F. H. Jewitt, 25 weeks, 5 days, @ \$120.00 per month, \$710.10; 26 weeks, 3 days, @ \$125.00 per month, \$760.33; 2 hours' overtime, \$1.03.....	1,471 46
Firemen:	
M. Andrews, 12 months @ \$110.00 per month, \$1,320.00; overtime, \$19.89.....	1,339 89
G. O'Connor, 40 weeks, 3 days, @ \$110 per month, \$1,037.60; overtime, \$33.45.....	1,071 05
F. Orchard, 35 weeks, 3 days, @ \$110 per month, \$909.28; overtime, \$11.93.....	921 21
B. Cole, 34 weeks, 4 days, @ \$110 per month, \$887.28; overtime, \$7.34.....	894 62

XII. (93) CENTRAL POWER PLANT—*Continued.*

A. O'Connor, 5 weeks, 2 days, @ \$100 per month, \$123.34; 21 weeks @ \$105 per month, \$516.83; 12 days @ \$110 per month, \$44.00.....	\$684 17
H. Elliott, 18 weeks, 3 days, @ \$110 per month, \$472.99; overtime, \$1.83.....	474 82
Walter Odd, 44 hours @ 50c.....	22 00
Trimmers, etc.:	
H. Bramley, 36 weeks @ \$95 per month, \$797.94; 64 hours @ 45c, \$28.80; overtime, \$7.15.....	833 89
A. Richardson, 22 weeks, 6 days, @ \$95 per month, \$506.63; overtime, \$19.43.....	526 06
H. Bullock, 20 weeks @ \$95 per month, \$443.30; overtime, \$11.10.....	454 40
E. South, 16 weeks, 2 days, @ \$95 per month.....	360 99
Thos. Bullock, 5 weeks, 2½ days, @ 95 per month, \$185.24; overtime, \$3.17.....	188 41
J. McDougal, 11 days @ \$90 per month.....	33 00
New Generator (\$9,359.93):	
Canadian General Electric Co., generator, etc., (paid on account)	6,528 25
F. G. Engholm, superintending foundations.....	75 00
R. Robertson & Sons, concrete foundations.....	816 41
A. D. LePan, superintendent, expenses of Mr. Bonus and Prof. Price on trip to Detroit and Toledo <i>re</i> generator	58 15
Advertising for tenders on generator:	
<i>Evening Telegram</i>	5 40
Globe Printing Co.....	6 16
Mail Printing Co.....	8 40
<i>Toronto Daily Star</i>	5 60
Superintendent's Dept., labour, \$598.67; material, \$1,257.89....	1,856 56
	\$115,847 08
Less sale of cinders, etc.....	91 50
	\$115,755 58

XIV. (94) CONTINGENCIES AND MISCELLANEOUS.

Portrait of Sir Edmund Walker (\$2,572.70):	
Walter W. Russell, fee for portrait.....	\$2,255 00
Chapman Bros., Ltd., frame.....	129 90
Superintendent's Dept., freight and sales tax.....	187 80
Wind Channel—Mechanical Building (\$1,500.00):	
R. Robertson & Sons, masonry \$2,100; of which \$600 charged to grant of \$5,000, provided by the Scientific and Industrial Research Council, Ottawa.....	1,500 00
Hart House Moving Picture (\$1,000.00):	
Canadian Pacific Railway Co., University's contribution towards cost of making Hart House film.....	1,000 00
Roger St. Denis, settlement of claim for damages for injuries received in Hart House.....	1,800 00
President's House (\$587.44):	
Repairs:	
Superintendent's Dept., labour, \$119.36; material, \$12.73..	132 09
Fuel:	
Britnell & Co., fuel, \$152.50; teaming, \$18.00.....	170 50
W. H. Cox Coal Co., Ltd.....	231 75
Wm. McGill & Co., fuel.....	53 10
Prof. V. E. Henderson, deficit in connection with entertainment of delegates to Federation of American Societies for Experimental Biology.....	201 17
Dunlop's Ltd., flowers for funerals.....	216 60
Arthur W. Miles, funeral expenses of John Rossall, grounds employee	153 50
Toronto General Hospital, account of John Rossall.....	12 50
Robert M. Williams, illuminating addresses.....	34 50
Sir Edmund Walker, Chairman's disbursements for postage.....	6 82
O'Keefe's Beverages, spring water for Board meetings.....	4 98
National Trust Co., sundry valuations.....	380 00
Receiver-General of Canada, refund of overpayment of labour and material accounts, May and June, 1919.....	216 75
Society for the Promotion of Engineering Education, dues.....	11 02

XIV. (94) CONTINGENCIES AND MISCELLANEOUS—*Continued.*

Medals (\$7.95):		
Ryrie Bros.....	\$62 75	
Allan G. Wyon.....	35 79	
	<u>\$98 54</u>	
Less received from donors.....	90 59	\$7 95
Taxes (\$150.07):		
City Treasurer, Local Improvements rates, 1 Queen's Park....		47 34
John A. Paterson, adjustment of taxes on Malone property to date of purchase.....		102 73
Sundry attendance.....		13 00
		<u>\$8,869 00</u>

XV. (95) CAPITAL ACCOUNT CHARGES.

Accountant, Supreme Court of Ontario, fourteenth annual payment on debenture issue of 1909.....	\$25,260 00	
Less portion charged to Ontario College of Education.....	10,000 00	
		<u>\$15,260 00</u>
Accountant, Supreme Court of Ontario, eighth annual payment on debenture issue of 1915 <i>re</i> Hart House.....		5,975 00
Toronto General Hospital, twelfth annual payment on debenture issue of 1911 <i>re</i> grant to Toronto General Hospital.....		15,157 00
Toronto General Hospital, twelfth annual payment on debenture issue of 1911 <i>re</i> Pathological Building.....		6,568 00
Wardrop Estate, eighth instalment on purchase of house, No. 8 Queen's Park.....		750 00
Shoenberger Estate, seventh instalment on purchase of house, No. 184 College St.....		500 00
Campbell Estate, fifth instalment on purchase of house, No. 100 Queen's Park.....		720 00
E. T. Malone, K.C., second instalment on purchase of house, No. 86 Queen's Park.....	\$5,000 00	
Interest payment.....	1,462 50	
		<u>6,462 50</u>
Purchase of Beatty leasehold, City Treasurer, taxes, 1923.....		600 38
Repayment to Endowment on account of advance for construction of Central Power Plant (written off Asset Valuation).....		20,208 00
		<u>\$72,200 88</u>

XVI. (96) SPECIAL RESEARCH.

Applied Science.

Chemical Engineering (\$3,124.43):	
Research Assistants:	
R. R. McLaughlin, 7 months.....	\$600 00
H. H. Moor, 7 months.....	600 00
Alex. Murray, 2½ months.....	300 00
F. S. Spence, 3½ months.....	300 00
L. A. G. Winter, 7 months.....	600 00
R. I. Wynne Roberts, 7 months.....	600 00
Expenses (\$124.43):	
Canadian Laboratory Supplies, chemicals.....	104 01
Dominion Oxygen Co., Ltd., hydrogen.....	14 32
National Electric Products, Ltd., rental of cylinder.....	1 50
St. Lawrence Starch Co., corn oil.....	4 60
Civil Engineering (\$3,692.94):	
Research Assistants:	
P. J. Culliton, 1 month.....	100 00
A. R. Duff, 10 months.....	1,750 00
W. B. Dunbar, 4 months, 11 days (paid also in Drawing)...	764 20
Expenses (\$1,078.74):	
Art Metropole, paper.....	5 64
Baines & David, wire.....	18 40
Bausch & Lomb Optical Co., optical units.....	35 89

XVI. (96) SPECIAL RESEARCH—Continued.

British Xylonite Co. (Canada) Ltd., amber.....	\$35 99
Canadian National Railways, sand.....	7 97
C. F. Cole Co., tracing paper.....	5 11
P. J. Culliton, disbursements:	
Travelling expenses, \$20.94; hardware and sundries, \$20.84.....	41 78
W. B. Dunbar, 36 hours @ \$1.00, special work on conduit sections.....	36 00
Prof. P. Gillespie, petty disbursements.....	9 92
Grand & Toy, pads.....	7 50
B. Greening Wire Co., Ltd., wire.....	40 13
C. A. Hughes, 40 hours @ \$1.00, special work on torsion research.....	40 00
W. E. Janney, work on test girders.....	72 00
Lurie Wrecking & Salvage Co., Ltd., lumber.....	11 14
McGregor & McIntyre, work on steel plates.....	45 46
Pedlar People, Ltd., metal.....	98 58
Photography, Dept. of., prints.....	7 45
J. E. Russell Co., Ltd., sand.....	26 77
Frank Ryan & Co., cartage.....	18 91
W. K. Simpson, work on test girders.....	13 50
Spencer Lens Co., microscopes.....	170 00
Toronto Transportation Commission, rental of air com- pressor.....	122 00
Petty items (5).....	8 61
Superintendent's Dept., freight, etc., \$18.06; labour, \$158.51; material, \$23.42.....	199 99
Electrical Engineering (\$3,048.46):	
Research Assistant:	
G. F. Tracy, 12 months to 30th June.....	1,600 00
Mechanician:	
J. W. Lawson, 12 months' salary (paid also in department)	900 00
Expenses (\$548.46):	
Absolute Contractor Corporation, electrical supplies.....	11 70
Baker & Co., Inc., rivets.....	17 59
Canadian S.K.F. Co., Ltd., bearings.....	14 04
Jas. A. Cook & Son, Ltd., stationery.....	11 47
A. J. Hamilton Pattern Works, patterns.....	34 51
Instruments Ltd., hydrometer.....	65 75
Leeds & Northrup Co., recorder, etc.....	319 47
Photography, Dept. of, prints.....	38 00
Students' Book Dept., books.....	16 25
University Press, binding.....	7 90
Petty items (7).....	11 78
Mechanical Engineering (\$3,777.99):	
Research Assistants:	
H. C. Crane, 4½ months (paid also in Electrical Engineering)	645 00
I. S. Glover, 1 month.....	125 00
J. S. E. MacAllister, 3 months (paid also in department)...	375 00
E. B. Philip, 2 months (paid also in department).....	260 00
H. J. Pugsley, 1 month.....	100 00
J. E. B. Shortt, 2 months (paid also in department).....	250 00
Expenses (\$2,022.99):	
American Propeller & Mfg. Co., propeller.....	171 94
Prof. R. W. Angus, disbursements for supplies.....	20 05
Art Metropole, weights.....	18 28
Bausch & Lomb Optical Co., apparatus.....	22 91
Brigden's Ltd., prints.....	31 35
Canadian Laboratory Supplies, tubes, etc.....	36 56
Canadian Westinghouse Ltd., motor.....	370 19
Central Scientific Co., gas apparatus.....	127 10
John Chatillon & Sons, balance.....	14 22
Dominion Bridge Co., steel.....	53 30
Dominion Engineering Works, Ltd., turbine.....	200 00
F. Hickey, cutting templates.....	86 00
J. Inglis & Co., Ltd., gas producer linings.....	80 43
Photography, Dept. of, prints.....	10 90
Standard Foundry Co., castings.....	20 38
Students' Book Dept., books.....	43 60
C. H. Taylor, aerofoils, etc.....	126 08

XVI. (96) SPECIAL RESEARCH—Continued.

Petty items (3).....	\$6 68	
Superintendent's Dept., freight, etc., \$13.01; labour, \$151.42; material, \$418.59.....	583 02	
Metallurgical Engineering (\$1,151.97):		
Research Assistant:		
D. A. Schemnitz, 10 months.....	750 00	
Expenses (\$401.97):		
Aikenhead Hardware Ltd., blades.....	4 41	
American Brass Co., rods.....	16 80	
Northern Electric Co., resistances.....	28 83	
Otis-Fensom Elevator Co., cutting steel bars.....	210 00	
Precision Tool Works Ltd., dies.....	47 03	
The Topley Co., glasses.....	11 27	
Weston Electrical Instrument Co., relay.....	27 85	
Superintendent's Dept., freight, etc., \$6.02; labour, \$31.06; material, \$18.70.....	55 78	
Mining Engineering (\$1,900.06):		
Research Assistants:		
C. W. H. Coe, 7 months.....	600 00	
T. S. C. Fawcett, 3 months.....	450 00	
J. G. McNiven, 7 months.....	600 00	
Expenses (\$250.06):		
Armstrong Cork & Insulation Co., cement.....	3 56	
Braun-Knecht-Heiman Co., cupels.....	5 25	
Gray Ball Bearing Co. Ltd., steel balls.....	22 92	
Hamilton Gear & Machine Co., discs.....	37 62	
F. Hickey, pulleys.....	16 95	
Norton Co., tubes.....	17 08	
Photography, Dept. of, slides, etc.....	17 86	
J. G. Ramsey Co. Ltd., photographic supplies.....	33 80	
Toronto Plate Glass Importing Co. Ltd., glass.....	20 59	
Hiram Walker & Sons, Metal Products Ltd., tubes, etc....	15 95	
University Press, paper bags.....	5 60	
Superintendent's Dept., freight, etc., \$12.24; labour, \$3.48; material, \$37.16.....	52 88	
General Expenses (\$3,071.05):		
The Bursar, postage supplied.....	180 00	
University Press, Bulletin No. 4, etc.....	2,891 05	
		\$19,766 90

Medicine.

W. Cowan, technician, 12 months to 30th June.....	\$1,200 00
Miss V. Gillett, artist's services, 12 months to 30th June.....	1,200 00
A. Ramsbottom, animal caretaker, 12 months to 30th June.....	600 00
Expenses (\$1,897.59):	
Allen Mfg. Co., laundry.....	14 95
Canadian Carbonate Ltd., gas.....	11 28
Connaught Laboratories, animals.....	16 75
J. F. Hartz Co. Ltd., gas bag.....	5 88
Hudson Parker Ltd., towels.....	27 59
Ingram & Bell, chemicals.....	356 93
Geo. B. Meadows Ltd., repairing cages.....	62 65
Pathological Chemistry, Dept. of, chemicals.....	83 02
Photography, Dept. of, slides.....	6 30
Queen City Dental Manufacturers Ltd., chemicals.....	73 54
Dr. D. E. Robertson, disbursements:	
Animals, \$107.05; animal feed, \$76.75; laboratory supplies, \$71.12.....	254 92
Mrs. E. G. Robertson, microscope, etc.....	125 00
Toledo Technical Apparatus, inhaler.....	76 92
Toronto Dog and Cat Hospital, animals.....	684 00
U.S. Industrial Alcohol Co., cylinder, etc.....	10 47
U.S. Industrial Chemical Co., chemicals.....	20 88
W. Weber, animals.....	49 50
Superintendent's Dept., freight, etc., \$14.20; material, \$2.81....	17 01

4,897 59

XVI. (96) SPECIAL RESEARCH—*Continued.**Anatomy.*

W. C. M. Scott, Research Fellow.....	\$250 00	
Miss M. I. Tom, Research Assistant, 10 months.....	1,000 00	
Expenses (\$414.00):		
Canadian Laboratory Supplies, chemicals.....	8 05	
J. F. Hartz Co., glassware, etc.....	181 45	
Ingram & Bell, chemicals.....	101 06	
Lyman Bros. & Co. Ltd., chemicals.....	41 86	
Marine Biological Laboratory, illustrations of article by Dr. Watt	25 64	
Photography, Dept. of, prints.....	13 10	
Physiology, Dept. of, model of lung.....	14 00	
W. Weber, animals.....	3 20	
Superintendent's Dept., material.....	25 64	
		\$1,664 00

Astronomy.

Prof. C. A. Chant, honorarium towards expenses of Australian expedi- tion, \$500.00; disbursements as follows: freight, \$320.28; supplies and equipment, \$191.07; cables and sundries, \$30.96.....	\$1,042 31	
Consolidated Optical Co., camera, etc.....	1,200 00	
Superintendent's Dept., freight.....	136 38	
		2,378 69

Bio-Chemistry.

Research Fellows:		
H. Borsook, 3 months (paid also in Department).....	\$300 00	
J. A. Morrell, 4 months (paid also in Department).....	400 00	
Expenses (\$898.55):		
Canadian Laboratory Supplies, chemicals.....	79 65	
Canadian National Carbon Co., carbons.....	5 70	
Central Scientific Co., thermostat, etc.....	71 33	
R. H. Chappell, distillation apparatus.....	25 50	
Cooper Hewitt Electric Co., burner and lamp fixtures.....	137 95	
Dearsenol Laboratories Inc., water pumps.....	7 50	
Eastman Kodak Co., chemicals.....	42 18	
Eimer & Amend, stirrer.....	38 11	
Emil Greiner, apparatus.....	68 05	
Pyrolective Instrument Co., chemicals.....	24 97	
Special Chemical Co., chemicals.....	64 14	
Arthur H. Thomas Co., chemicals.....	294 35	
The Topley Co., flasks.....	6 00	
Petty items (2).....	2 29	
Superintendent's Dept., labour, \$7.66; material, \$23.17.....	30 83	
		1,598 55

Biology.

Assistant Professor, W. A. Clemens (share of salary charged to Re- search—see Faculty of Arts).....	\$2,000 00	
Expenses (\$3,652.75):		
Prof. W. A. Clemens, disbursements re Fisheries Research in Lake Nipigon:		
Travelling expenses, \$502.26; board for assistants, \$492.95; labour, \$405.33; boat hire, \$237.50; freight, \$170.16; provisions and sundry supplies, \$505.48 = \$2,313.68, less paid by Provincial Government, \$500.00.....	1,813 68	
Field Assistants to Prof. Clemens:		
W. J. K. Harkness.....	250 00	
H. H. Mackay.....	310 00	
American Tent & Awning Co., stove.....	12 75	
Art Metropole, paper.....	4 66	
Ash Temple Co., syringes.....	5 75	
Beaver Brass Mfg. Co., windlass, etc.....	125 92	
Belle Ewart Ice Co., ice.....	28 00	

XVI. (96) SPECIAL RESEARCH—*Continued.*

The Bursar, postage supplied.....	\$3 75	
Canadian Laboratory Supplies, chemicals.....	44 40	
D. C. Duff, 11 days' service.....	24 64	
T. Eaton Co. Ltd., produce, etc.....	15 00	
G. A. Evans, milk.....	4 20	
Freyseng Cork Co., corks.....	5 51	
Grand & Toy Ltd., paper.....	5 00	
Wm. & J. G. Greey, cloth.....	23 52	
J. F. Hartz Co. Ltd., chemicals.....	4 85	
John Leckie Ltd., nets, etc.....	94 41	
Lyman Bros., chemicals.....	18 48	
R. H. McGonigle, technician, 48 hours @ 60c.....	28 80	
Merck & Co., chemicals.....	4 47	
O'Keefe's Beverages Ltd., distilled water.....	34 00	
Photography, Dept. of, slides.....	8 00	
Photo Engravers Ltd., zinc.....	15 86	
Richards Glass Co., glassware.....	39 88	
A. H. Thomas, forceps, etc.....	8 41	
The Topley Co., apparatus.....	9 84	
Wistar Institute of Anatomy & Biology, animals.....	15 00	
University Press, reprints, etc.....	325 75	
Petty items (7).....	16 40	
Superintendent's Dept., freight, etc., \$183.05; labour, \$100.83; material, \$67.94.....	351 82	
		\$5,652 75

Botany.

Assistant Professor, H. B. Sifton, 12 months to 30th June.....	\$2,850 00	
Research Assistants:		
A. R. Walker, 4 months (paid also in Department).....	400 00	
H. P. Bell, 3 months.....	300 00	
G. H. Berkeley, 3 months (paid also in Department).....	300 00	
G. D. Darker, 3 months (paid also in Department).....	300 00	
H. N. Racicot, 3 months.....	300 00	
Miss C. Fritz, 2 months (paid also in Department).....	200 00	
Expenses (\$2,128.32):		
Art Metropole, paper.....	6 66	
Canadian Laboratory Supplies, flasks, etc.....	9 82	
Miss I. M. Cook, clerical assistance, 6 weeks less 10 hours.....	143 50	
Draper Mfg. Co., charts.....	5 99	
Driver Harris Co., nickel sheet.....	5 12	
Foster Pottery Co., pots.....	40 87	
Freyseng Cork Co., corks.....	5 24	
Miss Catherine Graham, collecting plant materials, \$25.00; dis- bursements, \$6.17.....	31 17	
Walter Graham, loam.....	6 00	
Emil Greiner Co., apparatus.....	78 50	
Hazel-Atlas Glass Co., jars.....	13 93	
Ingram & Bell, tubes.....	50 64	
Keuffel & Esser Co., planimeter.....	32 08	
Dr. D. T. MacDougal, instruments.....	201 00	
Photography, Dept. of, prints.....	126 90	
Chas. Potter, slides.....	8 15	
Pringle & Booth, prints.....	142 90	
J. G. Ramsey, plates, etc.....	66 98	
H. W. Spence, microtome.....	450 00	
Prof. R. B. Thomson, disbursements re Summer Work in Western Canada:		
Travelling expenses (2 men) \$273.25; hotel expenses, \$46.25; provisions and equipment, \$42.12, \$361.62; collecting expenses throughout year, \$45.00.....	406 62	
The Topley Co., electric oven, etc.....	216 55	
Union Paper Co., mailing tubes.....	33 11	
University Press, printing and stationery.....	16 65	
Petty items (5).....	12 16	
Superintendent's Dept., freight, etc., \$5.42; labour, \$3.44; material, \$8.92.....	17 78	

XVI. (96) SPECIAL RESEARCH—*Continued.**Chemistry.*

Associate Professor, J. B. Ferguson, 12 months to 30th June.....	\$4,000 00	
Research Assistants:		
G. H. W. Lucas, 8 months (paid also in Department).....	500 00	
D. M. Findlay, 1 month (part time).....	12 50	
Expenses (\$358.66):		
Acheson Graphite Co., electrodes.....	53 58	
Canadian General Electric Co., hygrometer, etc.....	8 92	
Canadian Liquid Air Co., gas.....	2 49	
Central Scientific Co., chemicals.....	5 06	
Lyman Bros. & Co., mercury.....	93 99	
Mack Storage Battery Co., batteries.....	20 90	
McKay School Equipment, chemicals.....	17 15	
National Carbon Co. Inc., electrodes.....	3 37	
Ontario Rubber Co., rubber mat.....	31 76	
J. Frank Raw Ltd., micrometer, etc.....	18 00	
Scientific Experimenter Ltd., relays.....	10 00	
Superintendent's Dept., freight, etc., \$5.68; labour, \$19.50; material, \$68.26.....	93 44	
		\$4,871 16

Geology.

Prof. A. P. Coleman, disbursements for Field Work:		
Nova Scotia and New Brunswick:		
Travelling expenses, \$117.70; hotel expenses, \$62.25; sun- dries, \$12.45.....		\$192 40
Colorado and Utah:		
Travelling expenses, \$26.70; hotel expenses, \$15.85.....		42 55
Sudbury:		
Travelling expenses, \$21.55; hotel expenses, \$11.95; sun- dries, \$8.35.....		41 85
Prof. E. S. Moore, disbursements:		
Field Work, Northern Ontario:		
Travelling expenses, \$104.45; hotel expenses, \$57.95; equip- ment and freight, \$53.40; sundries, \$4.65.....		220 45
Stationery and postage.....		28 66
Spencer Lens Co., microscope, etc.....		123 46
Superintendent's Dept., labour, \$85.60; material, \$50.16.....		135 76
		785 13

Mineralogy.

Research Assistant:		
E. W. Todd, 8 months.....	\$2,000 00	
Expenses (\$969.66):		
Eimer & Amend, crucible, etc.....	203 53	
Hughes Owen Co. Ltd., refractometer, etc.....	422 67	
Negrette & Zambra, thermograph.....	109 22	
J. G. Ramsey & Co., plates.....	8 08	
Spencer Lens Co., illuminators.....	65 24	
Thermal Syndicate Ltd., apparatus.....	28 34	
Welsbach Co., oxides.....	10 40	
Prof. T. L. Walker, disbursements re Field Work:		
Hotel expenses, \$77.80; gasoline and sundries, \$26.31.....	104 11	
G. R. Workman, drafting.....	4 25	
University Press, reprints.....	8 75	
Petty items (3).....	5 07	
		2,969.66

Palaeontology.

American Museum of Natural History, prints.....	\$10 31
Chas. Lang, model.....	11 12
Theo. Logier, drafting, 184 hours @ 75c.....	138 00
E. Leitz Inc., microscope.....	339 77

XVI. (96) SPECIAL RESEARCH—Continued.

Prof. W. A. Parks, expenditure re Red Deer River Expedition:		
Travelling expenses, \$694.40; wages of assistants, \$440.24; provisions, \$315.50; hotel expenses, \$281.30; equipment, \$155.70; team, \$104.60; supplies, \$58.31; freight, \$23.78; sundries, \$17.06.....	\$2,090	89
D. Pike Co., tent, etc.....	85	90
Photography, Dept. of, prints, etc.....	17	30
J. G. Ramsey & Co., kodak lens.....	65	00
B. Stone, typewriting.....	30	00
G. R. Workman, drafting, 19 hours @ \$1.25.....	23	75
University Press, stationery.....	3	00
Superintendent's Dept., freight, etc., \$163.64; labour, 42c.; material, \$2.76.....	166	82
		<hr/>
		2,981 86

Physics.

Research Assistant:		
J. F. T. Young, 8 months (paid also in Department).....	\$1,000	00
Expenses (\$4,886.37):		
Aikenhead Hardware Ltd., tubing, etc.....	33	08
Bausch & Lomb Optical Co., lens and condensers.....	75	78
Booth-Coulter Copper & Brass Co., tubing, brass, etc.....	45	31
Brown Engineering Corporation Ltd., grinding piston.....	22	90
Canada Metal Co. Ltd., castings.....	45	36
Canadian Carbonate Ltd., gas.....	8	36
Canadian General Electric Co., lamps, wire, etc.....	21	15
Canadian Johns-Manville Co., asbestos.....	19	55
Canadian Laboratory Supplies, chemicals, flasks, etc.....	31	53
Canadian Liquid Air Co. Ltd., oxygen.....	65	30
Canadian National Carbon Co., carbons.....	6	07
Canadian Westinghouse Co., electrical supplies.....	8	46
Canadian Wool Co. Ltd., wool.....	25	56
Central Scientific Co., oil.....	10	17
Corning Glass Works, glassware.....	13	55
Crane Ltd., valves.....	9	18
Eastman Kodak Co., plates, etc.....	67	83
T. Eaton Co. Ltd., plates, fillers, etc.....	47	15
Eimer & Amend, chemicals, carbons, etc.....	32	52
H. J. Franklin, drafting.....	38	70
Garage Supply Co., rings.....	9	31
Hart Battery Co., batteries.....	75	00
Geo. M. Hendry Co. Ltd., glassware, etc.....	58	58
John T. Hepburn Ltd., castings.....	34	53
Adam Hilger Ltd., plates, tubes, prisms, etc.....	2,951	88
Hopkins & Williams Ltd., chemicals.....	21	55
Wm. Jessop & Sons Ltd., steel.....	26	59
Linde Air Products Co., gas.....	50	69
Lyman Bros. & Co., chemicals.....	14	24
Jas. Morrison Brass Mfg. Co., brass elbows, gauge, etc.....	30	26
Ontario Rubber Co. Ltd., tubing.....	29	48
Photography, Dept. of, prints.....	24	65
Planet Bicycle Co., tubing.....	6	40
Presbyterian Publications, prints, plates, etc.....	16	20
J. G. Ramsey & Co. Ltd., plates, films, etc.....	41	64
Royal Society, papers.....	18	69
Thermal Syndicate Ltd., flasks, tubes, etc.....	299	89
Toronto Hydro-Electric System, service.....	14	04
University Press, printing.....	113	20
Petty items (6).....	18	03
Superintendent's Dept., freight, etc., \$229.78; labour, \$46.16; material, \$128.07.....	404	01
		<hr/>
		5,886 37

Physiology.

Research Fellow:		
E. Fidler, 12 months to 30th June.....	\$1,200	00
Research Assistants:		
G. S. Eadie, 4 months (paid also in Department of Bio-Chemistry)	480	00
S. U. Page, 2 months.....	200	00

XVI. (96) SPECIAL RESEARCH—*Continued.*

F. N. Allan, 1 month (paid also in Department).....	\$120 00
N. A. McCormick, 1 month (paid also in Department).....	100 00
E. C. Noble, 1 month (paid also in Department).....	100 00
Expenses (\$962.67):	
The Anglers Co., animals.....	24 00
Canadian Laboratory Supplies, pipettes, etc.....	48 94
Evangelical Press, reprints.....	11 53
Gallagher & Co., fish.....	15 40
J. F. Hartz Co., chemicals.....	94 15
Dr. A. G. Huntsman, expenses, trip to Halifax.....	83 86
Ingram & Bell Ltd., chemicals, etc.....	121 39
Leeds & Northrup, cell.....	5 01
Lucas Bros. Inc., chart sheets.....	10 11
National Fish Co. Ltd., insulin supplies.....	171 08
Photography, Dept. of, negatives and prints.....	8 90
Southern Biological Supply Co., frogs.....	7 41
Taylor Instrument Co., chemicals.....	5 83
Arthur H. Thomas Co., chemicals.....	15 43
W. Weber, animals.....	243 00
Williams & Wilkins, reprints.....	88 46
Petty items (4).....	8 17
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	\$3,162 67
Less credit—Connaught Laboratories, animals.....	85 25
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\$3,077 42

Psychology.

Research Assistant:	
Miss D. D. Hearn, 4 months.....	\$240 00
Expenses (\$758.54):	
Baird & Tatlock, freight.....	17 00
Dawson Bros., installing wind-pipe and bellows.....	218 00
Exide Batteries of Canada Ltd., battery.....	14 50
Geo. E. Grove, chain, etc.....	4 50
Guest & Co., water motor.....	90 00
Hardware Co. of Toronto, hardware, etc.....	82 76
Leeds & Northrup Co., resistance box, etc.....	132 60
New Standard Foundry Co., castings.....	6 00
Ontario Rubber Co., hose, tubing, etc.....	65 27
Powerlite Devices Ltd., millimeter.....	15 38
Superintendent's Dept., labour, \$67.88; material, \$44.65.....	112 53
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998 54

Zymology.

H. B. Speakman, Director and Associate Professor, 12 months to 30th June @ \$4,000 less 2 months on leave without salary.....	\$3,333 33
Research Assistants:	
A. M. Wynne, 12 months to 30th June, \$2,500; bonus, \$200....	2,700 00
Miss H. D. Howell, 3 months @ \$100 per month.....	300 00
Laboratory Assistants:	
Arthur Clarke, 12 months to 30th June.....	700 00
J. F. Phillips, 2 months @ \$75.00 per month.....	150 00
Expenses (\$3,434.49):	
Allen Mfg. Co., laundry.....	13 84
Miss D. Birkett, typing.....	7 75
Canadian Laboratory Supplies, chemicals.....	829 94
Canadian General Electric Co., motor.....	15 33
Central Scientific Co., apparatus.....	29 69
R. H. Chappell, repairing glassware.....	25 40
Miss M. Cooper, typing.....	30 00
Eastman Kodak Co., chemicals.....	25 12
T. Eaton Co., Ltd., microscopes, etc.....	184 35
Eimer & Amend, extracting apparatus.....	12 32
Emil Greiner Co., apparatus.....	79 97
J. F. Hartz Co., chemicals.....	387 90
Ingram & Bell, apparatus.....	5 95
Lake Simcoe Ice Co., ice.....	10 45
Leeds & Northrup, galvanometer.....	56 41
Lyman Bros. & Co., chemicals.....	11 68

XVI. (96) SPECIAL RESEARCH—*Continued.*

McKay School Equipment, filter paper.....	\$15 45	
The Masco Co., Ltd., relay.....	5 06	
O'Keefe Brewery Co., Ltd., malt.....	5 98	
J. G. Ramsey Co., Ltd., plates.....	10 74	
Ratcliffe Paper Co., paper.....	4 09	
Richards Glass Co., tubes.....	18 48	
Soclean Ltd., wringer, etc.....	10 20	
Special Chemical Co., chemicals.....	65 65	
Students' Book Dept., subscriptions.....	55 70	
L. S. Tarshis & Sons, balance.....	11 00	
Arthur H. Thomas Co., chemicals.....	721 75	
Toronto Hydro-Electric System, service.....	105 80	
United Typewriter Co., inspections.....	11 07	
A. M. Wynne, paid for supplies, postage and sundries.....	35 16	
Yorkville Laundry, laundry.....	7 10	
University Press, printing and stationery.....	112 00	
Petty items (2).....	4 25	
Superintendent's Dept., freight, etc., \$91.83; labour, \$215.46; material, \$201.62.....	508 91	
		\$10,617 82
		<u>\$74,924 76</u>

APPENDIX IV.

University Press.

Transactions for year ending 30th June, 1923.

Receipts:

Ordinary, including \$10,044.01 outstanding and receivable on 30th June, 1923.....	\$121,321 76
Rentals, Students' Book Department.....	1,200 00

\$122,521 76

Expenditures:

Ordinary.....	\$102,062 86
Interest on capital expenditure for Press Building.....	1,456 74

\$103,519 60

Transferred to Publications Account.....	871 70
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\$102,647 90

Value of supplies bought in advance and on hand 30th June, 1923.....	\$2,894 81
And work in progress.....	2,788 90

\$5,683 71

Less liabilities.....	3,990 90	1,692 81	100,955 09
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\$21,566 67

Purchases in advance (net).....	1,692 81
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\$19,873 86

Balance of operating account, 30th June, 1923, as above.....	\$19,873 86
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Less expenditures on additions to type and equipment during 1922-23.....	990 43
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Transferred to University Press Building Capital Account.....	\$18,883 43
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Publications Account:

Amount outstanding, 30th June, 1922.....	\$3,131 82
Expenditures, 1922-23.....	1,239 27

\$4,371 09

Receipts from sales.....	2,437 65
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Amount outstanding, 30th June, 1923.....	\$1,933 44
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Details of Expenditure, Operating Account.

R. J. Hamilton, Manager, 12 months to 30th June, \$2,250.00; allowance for clerical assistance, \$200.00.....	\$2,450 00
Pay lists, wages of employees.....	51,754 03

54,204 03

Supplies and general maintenance (\$47,858.83):

Aikenhead Hardware, Ltd., hardware.....	\$7 24
Alexander & Cable, lithographing.....	85 00
Allen Paper Co., paper.....	767 33
H. E. Allen & Sons, cards.....	26 60
Anstey & Webb, binding and sewing.....	2,179 18
Art Metropole, paper, etc.....	109 73
D. A. Balfour Co., carbon.....	112 53
Barber-Ellis Ltd., envelopes.....	2,032 54
Wm. Bartlett & Son, shades.....	75 00
Bell Telephone Co., service.....	40 80
Brigden's Ltd., halftones.....	749 65
W. R. Brock Co., flannel.....	44 44
Brown Bros., Ltd., stationery.....	1,632 28
Buntin-Reid Co., paper.....	1,235 87
Chas. Bush, Ltd., ink, rollers, etc.....	653 56
The Bursar, postage supplied.....	146 00

University Press—Continued.

B. Cairns, Ltd., bands, stamps, etc.....	\$5 80
Canada Metal Co., Ltd., metal.....	69 19
Canada Paper Co., Ltd., paper.....	279 35
Canada Printing Ink Co., ink.....	44 12
Canadian Cleaning Co., cleaning windows.....	16 50
Canadian Wm. A. Rogers Ltd., cups.....	78 39
Cannon Canadian Co., paste.....	89 26
A. L. Carroll, metal.....	9 92
Edward Carroll, grinding knives.....	15 53
Clarke & Clarke, Ltd., leather.....	199 90
Commercial Paper Co., paper.....	15 64
Copeland-Chatterson Ltd., paper.....	61 86
Copp, Clark Co., paper.....	228 40
Wm. E. Coutts, cards.....	6 44
Dominion Envelope & Carton Co., envelopes.....	752 01
Dominion Paper Box Co., tubes.....	124 10
Dominion Regalia Co., badges.....	41 40
George Everall Co., envelopes.....	11 78
W. J. Gage & Co., envelopes, pencils, etc.....	151 51
Grand & Toy, Ltd., envelopes.....	257 31
Fred W. Halls Paper Co., paper.....	989 91
R. J. Hamilton, disbursements:	
Postage and carfares, \$225.73; freight and cartage, \$107.02; supplies and sundries, \$72.06.....	404 84
Henderson Bros., ruling, binding, etc.....	1,361 21
Geo. M. Hendry Co., stationery.....	21 84
Imperial Oil Ltd., oil.....	49 83
Ink Specialty Co., ink.....	96 98
J. R. Irving, ruling.....	11 75
Lanston Monotype Machine Co., parts.....	844 88
H. J. Lagan, machine parts, wire, etc.....	119 76
A. E. Long & Co., boxes.....	19 59
Manton Bros., rollers.....	113 64
Geo. B. Meadows, Ltd., baskets.....	13 59
Miller & Richards, repairs to press.....	6 40
Mitchell & McGill, cardboard and desk.....	100 00
McNe-Liro Typesetting Co., typesetting.....	13 20
McCore Type Foundry, type.....	35 01
J. L. Morrison Co., machine parts.....	69 68
Mortimer Co., paper.....	196 32
A. Muirhead Co., Ltd., brushes and gold leaf.....	50 80
Murdock-Pennman, carton.....	370 38
McNeill Sales Ltd., stencil.....	58 10
National Paper Goods Co., envelopes.....	29 99
National Stationers, Ltd., note books.....	38 92
Office Specialty Mfg. Co., cards.....	20 96
Peerless Carbon & Ribbon Co., carbon.....	18 00
Printers' Machinery Co., repairs.....	323 38
Provincial Paper Mills Ltd., paper.....	15,882 82
E. Pullan Ltd., wipers.....	149 79
Rapid Electrotype Co., electros.....	74 68
Rapid Typesetting Co., typesetting.....	2,858 60
Ratcliff Paper Co., paper and twine.....	58 92
Reliance Engraving Co., zincs.....	1,642 19
Remington Typewriter Co., typewriter.....	125 05
Edw. & Jas. Richardson, seals.....	36 70
Ritchie & Ramsay, paper.....	417 58
Skene Bros., cartage.....	333 00
W. H. Smith & Son, paper and thread.....	17 74
Standard Embossing Co., embossing.....	264 45
Stephenson, Blake & Co., wire.....	51 05
Students' Book Dept., stationery.....	247 12
Superintendent's Office, ribbons.....	7 50
Telfer Paper Box Co., boxes and tubes.....	359 40
Thomas & Martin, paper, note books, binding, etc.....	483 06
Thompson, Ahern & Co., brokerage, etc.....	6 03
Toronto Type Foundry Co., type.....	22 89
Toronto Typothetae, dues, etc.....	912 75
Toronto Wood Turning Works, cutting sticks.....	10 74
United Paper Mills, paper.....	2,597 28

University Press—Continued.

United Typewriter Co., stencil, ink, etc.....	\$94 12
Vawter-Lockett, Ltd., paper.....	51 56
Victoria Paper & Twine Co., paper.....	92 26
Weatherhead Paper Co., paper.....	152 68
Whyte Paper Co., paper.....	193 32
Wilson-Munroe Co., millboard, etc.....	474 51
Items under \$5.00 (11).....	25 90
Superintendent's Dept., freight, etc., \$29.27; labour, \$233.75; material, \$263.30.....	526 32
Heat, light and power:	
Heat, \$917.52; electric current, \$400.40; gas, \$202.91.....	1,520 83
City Treasurer, water, \$37.87; elevator license, \$5.00.....	42 87
Advertising announcements:	
<i>Canadian Forum</i>	72 00
<i>Canadian Historical Review</i>	60 00
<i>Epistaxis</i>	20 00
<i>St. Andrew's College Review</i>	18 00
<i>The School</i>	110 00
<i>Torontonensis</i>	40 00
<i>University of Toronto Monthly</i>	70 00
	<hr/>
	\$47,858 83
	<hr/>
	\$102,062 86
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Details of Expenditure, Plant Account.

Canada Metal Co., Ltd., metal.....	\$232 08
Elliott Co., addressograph.....	375 00
International Business Machines Co., dial recorder.....	275 40
Moore Type Foundry, type.....	38 93
Stephenson, Blake & Co., mitring machine.....	50 00
Toronto Type Foundry Co., Ltd., parts.....	19 02
	<hr/>
	\$990 43
	<hr/> <hr/>

APPENDIX V.

Superintendent's Stores and Sundry Labour Account.

Ledger balance, 30th June, 1922.....		\$13,287 94
Purchases made during 1922-23:		
Absolute Contractor Corporation, tubes.....	\$28 98	
Adams Furniture Co., furniture.....	276 28	
Aikenhead Hardware, Ltd., hardware.....	4,857 71	
Allen Mfg. Co., hemming sheets and towels.....	21 95	
K. B. Allison, cost service.....	25 00	
V. D. Anderson Co., valves.....	9 33	
Anaconda American Brass Co., Ltd., sheet copper.....	2,463 87	
The Argus Mfg. Co., boiler coat, etc.....	90 07	
Armstrong Cork & Insulation Co., Ltd., blocks.....	53 84	
Babcock & Wilcox, Ltd., plumbers' supplies.....	208 13	
Baldwin & Flanagan, pump.....	1,188 49	
Wm. Bartlett & Son, canvas, shades, etc.....	727 24	
Bayley & Sons, Inc., electrical supplies.....	226 58	
C. W. Beal, sink.....	5 50	
Beardmore Belting Co., belting.....	241 23	
W. J. Bell Co., towels.....	912 56	
Benjamin Electric Mfg. Co., reflectors, switchboard, etc.....	2,009 34	
The Boeckh Co., Ltd., brooms, brushes, etc.....	87 38	
Booth-Coulter Copper & Brass Co., copper.....	18 35	
W. R. Brock Co., towels.....	184 65	
Brown Engineering Corporation, Ltd., retreading flanges, etc.....	14 70	
Brown's Copper & Brass Rolling Mills, rolled copper.....	190 78	
Builders' Moulding Co., flooring.....	392 53	
Robt. Bury & Co., lumber.....	2,178 04	
Buyers' Door & Mfg. Co., blinds.....	5 17	
W. Calder, iron fittings.....	50 75	
Canada Hardware Ltd., hardware.....	1,760 08	
Canada Ice Machine Co., Ltd., ammonia oil.....	7 81	
Canada Machinery Corporation, cutter, etc.....	39 78	
Canada Metal Co., solder.....	69 75	
Canada Pipe & Steel Co., Ltd., drinking fountains.....	152 88	
Canada Powers Regulator Co., Ltd., valves, etc.....	47 79	
Canada Wire & Cable Co., Ltd., cable.....	1,915 02	
Canadian Allis-Chalmers Ltd., valves.....	195 00	
Canadian Blower & Forge Co., Ltd., cable.....	209 00	
Canadian Colors & Chemical Ltd., lime.....	70 92	
Canadian Fairbanks-Morse Co., engine parts.....	552 76	
Canadian Fish Co., Ltd., hooks.....	10 33	
Canadian Gasket Co., gaskets.....	5 56	
Canadian General Electric Co., cable, etc.....	9,500 30	
Canadian Germicide Co., disinfectant.....	115 37	
Canadian Johns-Manville Co., Ltd., asbestos, wood, etc.....	1,655 86	
Canadian Office & School Furniture Co., furniture.....	1,475 65	
Canadian Oil Companies, oil soap.....	548 64	
Canadian Sirocco Co., Ltd., motors.....	4,828 61	
Canadian S.K.F. Co., Ltd., bearings.....	27 10	
Canadian Westinghouse Co., fan.....	27 94	
Central Ornamental Glass Co., clock dials.....	83 60	
Cleansweep Co., cleaning materials.....	12 50	
Consolidated Plate Glass Co. of Canada, glass.....	2,412 01	
Consumers' Gas Co., changing meter, oven, etc.....	326 65	
Copp, Clark Co., Ltd., chalk, erasers, etc.....	70 66	
Crane, Ltd., plumbers' supplies.....	10,709 56	
Jas. Crow Co., welding.....	42 27	
Cudahy Packing Co., polish.....	13 95	
W. H. Cunningham & Hill, Ltd., plates, etc.....	202 78	
Darling Bros., Ltd., springs.....	29 78	
Davis Slate & Mfg. Co., slate.....	807 20	
Davis Soap Co., soap.....	28 12	
Wm. S. Dean, brackets and locks.....	47 98	
Dearborn Chemical Co., feed water treatment.....	377 02	
C. A. Denham Co., Ltd., traps, etc.....	1,187 22	
Dennis Wire & Iron Works Co., wire.....	46 01	
Devoe Electric Switch Co., panels, etc.....	1,349 10	
Diamond Cleanser Ltd., cleanser.....	10 70	

Superintendent's Stores and Sundry Labour Account—Continued.

W. E. Dillon Co., ventilators.....	\$109 73
W. E. Dixon & Co., brooms, brushes, etc.....	129 37
Dodge Mfg. Co. of Canada, Ltd., pulleys.....	16 65
Dominion Carbon Brush Co., carbon brushes.....	35 16
Dominion Paint Works, paint.....	38 04
Dominion Radiator Co., boiler, pipes, etc.....	3,414 27
Dunlop Tire & Rubber Goods Co., hose.....	127 58
Eagle Lock Co., locks, etc.....	829 00
T. Eaton Co., cork carpet, etc.....	498 11
E. B. Eddy Co., toilet paper, etc.....	748 96
Ely Bros, charcoal.....	52 80
Excelsior Plate Glass Co., plate and wire.....	313 52
Exide Batteries of Canada, Ltd., battery.....	53 22
Factory Products Ltd., rawl plugs, etc.....	56 22
Ferrier Wire Goods Co., screens.....	64 41
Fittings, Limited, castings.....	8 55
Fox Lubricant Co., oil.....	7 41
Garlock Packing Co., discs.....	275 14
Good Mfg. Co. of Canada, plumbers' supplies.....	159 39
Gordon, Mackay & Co., Ltd., sheeting, etc.....	487 95
Gregory Electric Co., motors.....	17 55
Grinnell Co., hardware.....	682 62
Gumite Corporation, gumite paint.....	34 56
Gurney Foundry Co., Ltd., grates, etc.....	19 24
Gutta Percha & Rubber Co., belting.....	82 59
Hamilton Gear & Machine Co., gears.....	9 67
T. H. Hancock Ltd., lumber.....	501 73
Hardware Co. of Toronto, hardware.....	25 20
Geo. M. Hendry Co., blackboards.....	387 36
John T. Hepburn, Ltd., packing gland goods.....	9 16
Higgins & Burke, Ltd., soap.....	56 54
G. A. Hodgson & Sons, mop sticks.....	19 90
Holland Varnish Co., enamel, etc.....	48 35
Imperial Varnish & Color Co., paint.....	77 41
John Inglis Co., boilers.....	1,128 89
Ingram & Bell, cabinet.....	32 00
Interlake Tissue Mills, Ltd., towels.....	279 38
Ewart W. Johnson, resurfacing floors.....	7 60
Johnson Temperature Regulating Co., thermostat.....	1,477 87
Albert M. Judd, electric supplies.....	6,251 33
R. Laidlaw Lumber Co., Ltd., lumber.....	407 53
John Leckie Ltd., rope and twine.....	115 39
Arthur S. Leitch Co., heaters.....	491 56
Liquid Soap & Sanitary Products, soap.....	310 58
A. R. Lundy, wire.....	59 19
Lyman Bros. & Co., chemicals.....	106 77
Lyons & Marks, door mats.....	12 37
J. H. McCabe, wood.....	9 50
McColl Bros., gasoline.....	1,146 30
John Macdonald Co., Ltd., cotton.....	40 85
Norman Macdonald, paper, etc.....	37 29
McFarlane Mfg. Co., ladders.....	134 40
McGregor & McIntyre Ltd., iron, steel, etc.....	136 95
McKay School Equipment, chalk.....	55 00
McKinnon Sales, soap.....	153 38
Macey Office Equipment Co., chairs.....	662 00
Matthews Bros., Ltd., frames, moulding, etc.....	52 45
G. A. Matthews, electrical supplies.....	782 89
G. B. Meadows Co., screens.....	172 53
Mechanical Engineers Ltd., belting.....	9 32
Medland Bros., cleanser.....	25 89
Metropolitan Engineering Co., switch boxes.....	44 30
Mickle, Dyment & Son, lumber.....	286 80
J. H. Morin & Co., painters' supplies.....	1,308 89
J. H. Morrison, cement.....	65 44
Jas. Morrison Brass Mfg. Co., plumbers' supplies.....	7,650 90
Murphy Iron Works, brick.....	229 65
Murray-Kay Co., towels, linoleum, etc.....	158 74
National Art Glass Co., glass repairs.....	108 58
Nesbitt Electric Mfg. Co., Ltd., panels.....	120 66

Superintendent's Stores and Sundry Labour Account—Continued.

North American Bent Chair Co., Ltd., chairs.....	\$30 41
Northern Electric Co., wire, dials, etc.....	972 00
Geo. Oakley & Son, Ltd., stone, marble work, etc.....	2,561 45
Ontario Government Dispensaries, alcohol.....	4,646 40
Ontario Lime Co., cement.....	455 31
Ontario Rubber Co., screw bumpers.....	8 05
Ontario Wind Engine & Pump Co., pump and pulleys.....	81 70
A. B. Ormsby, Ltd., copper.....	12 75
Otis-Fensom Elevator Co., lubricant, etc.....	50 62
Pathology, Dept. of, methylated spirits.....	7 00
Pease Foundry Co., tees, valves, etc.....	186 57
Peckover's Ltd., steel.....	2,314 41
Pedlar People, Ltd., sheet metal.....	128 99
Perfection Sanitary Brush Co., brushes.....	5 22
Perkins, Ince & Co., snap.....	5 21
Petrie Brass Works, parts.....	43 27
Phillips Mfg. Co., Ltd., lumber.....	5 23
Eugene F. Phillips Electric Works, Ltd., wire.....	5 47
N. L. Piper Railway Supply Co., oil, oil burners, etc.....	39 65
Geo. Rathbone Ltd., lumber.....	30 06
Reid & Brown Structural Steel & Iron Works, culvert box.....	17 77
Renfrew Electric Products, Ltd., elements, etc.....	155 33
Rice, Lewis & Son, shoes.....	38 58
Rice Wire & Metal Goods, mesh brass.....	16 46
Robb Engineering Works, engine.....	149 03
R. Robertson & Sons, alterations to doorways.....	27 00
Chas. Rogers & Sons Co., planer.....	60 00
Roofers' Supply Co., pitch, etc.....	1,991 71
Ross Heater & Mfg. Co., joint and anchor.....	119 24
Routery Bros., repairs.....	20 00
Jas. A. Rumgay, fuses, etc.....	911 88
Sanderson, Percy & Co., painters' supplies.....	7,865 15
Sangamo Electric Co. of Canada, meters, etc.....	897 22
Sheet Metal Products Co., cans.....	10 16
Sheldons Ltd., motor, etc.....	415 00
H. V. Short Hardware Ltd., copper wire, bolts, etc.....	254 18
A. C. Simmonds, lamps.....	77 79
Robt. Simpson Co., cocoa mats, etc.....	232 59
Smart Turner Machine Co., Ltd., repairs to pump.....	246 44
John B. Smith & Sons, lumber.....	9,271 80
N. Smith, belting.....	6 57
Standard Foundry Co., plates, rings, etc.....	24 03
Sterling Brass & Aluminum Co., castings.....	48 63
Stewart & Wood, enamel, paint, etc.....	452 81
Sturgeon's Ltd., enamel.....	60 60
Supersal Specialty Co., shellac, varnish, etc.....	807 76
Talbot & Talbot, mops, floor cloths, etc.....	188 11
J. Taylor & Co., soap.....	91 71
T. Taylor, canvas.....	5 00
Thorne Twine & Paper Co., mops.....	175 62
Toronto Builders' Supply, Ltd., boards.....	111 22
Toronto Plate Glass Importing Co., dials.....	73 62
Toronto Welding Co., welding.....	29 00
Toronto Wood Turning Works, ball joints, etc.....	14 11
Triplex Weather-Strip Co., weather-stripping.....	69 90
Tuttle & Bailey Mfg. Co., steel, etc.....	44 19
Under Feed Stoker Co., bricks.....	227 10
Universal Sales Co., marvello.....	159 78
W. Walker & Sons, Ltd., sash cord.....	85 74
W. Warburton & Co., Ltd., brushes.....	22 46
West Disinfecting Co., fumigators.....	6 65
Weston Electric Instrument Co., electrical appliances.....	5 07
A. R. Williams Machinery Co., castings.....	78 76
Williams & Wilson, Ltd., brick.....	112 73
Wm. C. Wilson & Co., waste, etc.....	66 26
Fred Wood & Son, repairing saws.....	22 73
Worr Foundry Co., Ltd., castings.....	67 10
Young Pump Co. of Canada, vacuum outfit.....	761 06
University Press, printing and stationery.....	93 40

Superintendent's Stores and Sundry Labour Account—Continued.

Items under \$5.00 (22).....	\$53 21	
Superintendent's Dept., freight, sales tax, etc.....	806 11	
		\$130,050 38
Less credits from Canada Customs <i>re</i> alcohol (including \$1,345.23 refund from 1921-22).....	5,226 42	
		\$124,823 96
		\$138,111 90

Sundry labour, as per pay lists:

Carpenters.....	\$34,224 58	
Electricians.....	20,431 58	
Painters.....	23,179 21	
Plumbers and steamfitters.....	35,223 14	
Labourers, firemen, etc.....	31,096 02	
Cleaners.....	38,601 94	
		182,756 47
		\$320,868 37

Apportionment of the foregoing:

	<i>Labour</i>	<i>Material</i>
Administration (\$28,804.64):		
Bursar's Office.....	\$8 45	\$0 85
Registrar's Office.....	2 44	12
Superintendent's Office.....	1,221 84	156 74
Library Building.....	2,144 19	377 42
Library Current.....	163 08	86 95
Gymnasium and Athletics.....	3,546 17	2,538 94
Military Studies Building.....	420 42	78 75
Military Studies Department.....	33 95	16 01
Convocation Hall.....	2,385 49	1,337 39
Grounds.....	12,927 05	1,041 90
Protective Service.....	18 57	110 51
Examinations.....	111 28	.....
Convocation Expenses.....	70 01	6 12
Faculty of Arts (\$30,600.29):		
Main Building.....	8,545 69	1,939 25
Biological Building.....	5,154 71	1,541 89
Biological Department.....	743 01	493 98
Botany Department.....	116 73	281 89
Chemical Building.....	1,633 77	452 00
Chemical Department.....	555 16	399 49
Physical Chemistry Department.....	10 49	25 52
Electro-Chemistry Department.....	517 43	478 10
Physics Building.....	2,887 01	702 84
Physics Department.....	728 32	1,343 06
Astronomy Department.....	2 13	2 87
Geology Department.....	275 74	157 44
Mineralogy Department.....	247 94	84 29
Psychology Department.....	29 72	79 67
Mechanics Department.....	7 36	17 64
Political Science Building.....	948 54	192 83
Political Science Department.....	3 08	25
University College General Expenses.....	45	.....
Faculty of Medicine (\$17,731.28):		
Anatomy Department.....	69 89	72 13
Pathology Department.....	469 21	502 51
Pathological Chemistry Department.....	287 27	151 27
Pharmacy Department.....	488 18	393 12
Bio-Chemistry Department.....	240 00	195 96
Physiology Department.....	271 71	517 92
Hygiene Department.....	90 01	45 49
Medicine, Department of.....	2 70	59 06
Maintenance of Building—1 Queen's Park....	743 41	192 20
Surgery Department.....	26 07	20 52
Medical Building.....	4,127 23	2,866 61
Pathological Building.....	3,138 17	711 52
Anatomy Building.....	1,412 43	507 93
General Expenses.....	87 24	41 52

Superintendent's Stores and Sundry Labour Account—Continued.

	<i>Labour</i>	<i>Material</i>	
Faculty of Applied Science (\$22,024.13):			
Mining Building.....	\$4,820 49	\$1,221 17	
Engineering Building.....	4,037 84	1,021 91	
Electrical Building.....	2,936 69	1,024 80	
Geodetic Observatory Building.....	210 99	37 36	
Electrical Engineering Department.....	1,028 25	963 77	
Mechanical Engineering Department.....	442 11	420 35	
Applied Mechanics and Civil Engineering....	202 33	266 03	
Mining Engineering Department.....	241 54	204 62	
Metallurgical Engineering Department.....	89 26	65 41	
Surveying Department.....	125 95	186 86	
Chemical Engineering and Applied Chemistry	1,044 87	606 31	
Architecture Department.....	94 17	87 61	
Drawing Department.....	71 24	60 70	
Engineering Physics Department.....	15 18	57 18	
Photography Department.....	17 46	10 82	
General Expenses.....	219 53	191 33	
Faculty of Household Science (\$4,861.23):			
Household Science Building.....	2,664 90	852 93	
Household Science Department.....	820 68	510 02	
Food Chemistry Department.....	6 08	6 62	
Faculty of Forestry (\$1,666.10):			
Forestry Building.....	1,077 60	340 33	
Forestry Department.....	130 82	117 35	
School of Graduate Studies.....	16 83	27 62	
Social Service Building.....	406 93	174 20	
University Extension and Publicity.....	323 03	141 31	
Residences (\$16,864.56):			
Men's Residences.....	8,992 65	1,408 38	
Women's Residences.....	2,799 69	2,202 14	
University College Women's Union.....	895 67	566 03	
Royal Ontario Museum.....	7,346 99	3,440 30	
Central Power Plant.....	17,897 11	5,808 00	
Contingencies and Miscellaneous.....	119 36	12 73	
Special Research.....	891 42	1,121 87	
University Press.....	233 75	263 30	
New Buildings.....	43,333 67	66,138 00	
Ontario College of Education.....	5,817 78	2,104 97	
Alterations and repairs to sundry properties, various incidental accounts, etc.....	1,721 66	1,602 75	
Work done for University organizations, members of the staff, etc. (including accounts receivable on 30th June, 1923, \$7,498.75).....	14,748 21	13,514 37	
Sundry cash sales.....	.....	1,526 44	
	<hr/>	<hr/>	
	\$182,756 47	\$128,528 36	
			<hr/>
			\$311,284 83
Ledger Balance, 30th June, 1923.....			<hr/> <hr/>
			\$9,583 54

APPENDIX VI.

Ontario College of Education.

Expenditures for salaries and maintenance for the year ending 30th June, 1923, as detailed below.....		\$159,754 28
Legislative Grant received therefor.....	\$130,855 00	
Fees received.....	34,536 00	
	<hr/>	
	\$165,391 00	
Net amount unused returned to Provincial Treasurer.....	5,636 72	
	<hr/>	
		\$159,754 28

Salaries.

	Payment to officer	Superannuation reservation under 7, Geo. V, Cap. 58
Professors, each 12 months to 30th June:		
W. Pakenham, Dean, @ \$6,000 (paid also \$120 for Summer Session).....	\$5,850 00	\$150 00
H. J. Crawford, Classics, also Headmaster of University Schools, @ \$5,220. Obit. 2nd August, balance of salary to 30th June paid as compassionate allowance to widow.....	5,209 13	10 87
P. Sandiford, Educational Psychology, @ \$4,800 (paid also \$65 for University Extension Courses).....	4,680 00	120 00
Associate Professors, each 12 months to 30th June:		
G. A. Cornish, Science, @ \$4,375 (paid also \$40 for Local Lectures).....	4,265 62	109 38
J. T. Crawford, Mathematics, @ \$4,375.....	4,265 62	109 38
W. C. Ferguson, Modern Languages, @ \$4,375; honorarium as Acting Headmaster of University Schools, \$500 (paid also \$112 for Correspondence Courses).....	4,765 62	109 38
Assistant Professors, each 12 months to 30th June:		
G. M. Jones, English and History, @ \$4,375 (paid also \$10 for Local Lectures).....	4,265 62	109 38
F. E. Coombs, Elementary Subjects, @ \$4,290 (paid also \$300 for Summer Session).....	4,182 75	107 25
W. E. Macpherson, Librarian, etc., @ \$4,190 (paid also \$300 for Summer Session).....	4,085 25	104 75
Miss L. L. Ockley, Household Science, @ \$3,000.....	2,925 00	75 00
D. E. Hamilton, Instructor in University Schools, 1st July to 30th September, @ \$3,125; Assistant Professor of Methods in Classics and Head of Department of Classics, 1st October to 30th June, @ \$3,900 (paid also \$300 for Summer Session).....	3,613 60	92 65
Lecturers, also Instructors in University Schools, each 12 months to 30th June:		
S. W. Perry, Art and Commercial Work, @ \$3,875.....	3,778 13	96 87
A. N. Scarrow, Manual Training, @ \$3,560.....	3,471 00	89 00
G. N. Bramfitt, Music, @ \$3,250.....	3,168 75	81 25
F. Halbus, Physical Training, @ \$2,625 (paid also \$300 as Instructor, University Gymnasium).....	2,559 36	65 64
Miss A. E. Robertson, Instructor in Household Science, 12 months to 30th June, @ \$2,500.....	2,437 50	62 50
J. G. Althouse, Headmaster, University Schools, 6 months from 1st January, @ \$4,375 per annum.....	2,132 81	54 69
Instructors in University Schools, each 12 months to 30th June:		
J. O. Carlisle, @ \$3,560 (paid also \$79 for Correspondence Courses).....	3,471 00	89 00
G. A. Cline, @ \$3,250 (paid also \$40 for Correspondence Courses).....	3,168 75	81 25
E. L. Daniher, @ \$3,125 (paid also \$625 in Faculty of Medicine).....	3,046 88	78 12
H. A. Grainger, @ \$3,875 (paid also \$40 for Correspondence Courses).....	3,778 13	96 87
J. A. Irwin, @ \$3,750.....	3,656 25	93 75
W. J. Loughheed, @ \$3,875 (paid also \$125 for Correspondence Courses).....	3,778 13	96 87
N. L. Murch, @ \$3,125.....	3,046 88	78 12
T. M. Porter, @ \$3,875.....	3,778 13	96 87
W. L. C. Richardson, @ \$3,250.....	3,168 75	81 25
J. F. Van Every, @ \$3,300 (paid also \$625 in Faculty of Medicine; and \$45 for Correspondence Courses).....	3,217 50	82 50

Ontario College of Education—Continued.

	Payment to officer.	Superannuation reservation under 7 Geo. V, Cap. 58
W. H. Williams, @ \$3,750 (paid also \$421 for Correspondence Courses).....	\$3,656 25	\$93 75
J. G. Workman, @ \$3,560 (paid also \$140 for Correspondence Courses).....	3,471 00	89 00
J. B. Dandeno, Special Instructor in Agriculture.....	200 00	
Supply Teachers, @ \$7.50 per day:		
C. L. Rowe, 6 days.....	45 00	
Miss I. Eadie, 2 days.....	15 00	
A. Holmes, 2 days.....	15 00	
P. A. McDougall, 1 day.....	7 50	
N. F. Nelson, 1 day.....	7 50	
Miss M. M. Wilson, 1 day.....	7 50	
Clerical Staff, each 12 months to 30th June:		
Miss L. Swinarton, Secretary.....	1,550 00	
Miss E. G. Seldon.....	1,150 00	
Messenger Service:		
Miss Ella Campbell, 12 months' salary.....	600 00	
	<hr/> \$110,490 91	<hr/> \$2,605 34
		110,490 91
		<hr/> \$113,096 25
Retiring Allowances:		
Teachers' Insurance and Annuity Association, contribution of College for year ending 30th June, 1923, to fund for retiring Professor W. E. Macpherson, reimbursement of amount paid directly to T.I. & A. Association.....	2,053 86	
	47 91	2,101 77
Charges on Investment:		
Accountant, Supreme Court of Ontario, proportion of annual payment on debenture issue of 1909 for interest and sinking fund.....		10,000 00
Maintenance of building:		
Fuel (\$2,358.61):		
W. H. Cox Coal Co., fuel.....	\$222 09	
Wm. McGill & Co., fuel.....	1,459 01	
F. P. Weaver Coal Co. Ltd., fuel.....	447 17	
Britnell & Co., teaming, \$198.34; fuel, \$32.....	230 34	
Gas and City current (\$1,229.58):		
Consumers' Gas Co.....	157 25	
Toronto Hydro-Electric System.....	726 86	
Toronto & Niagara Power Co.....	345 47	
Water (\$407.43):		
City Treasurer.....	407 43	
Caretaker's supplies (\$570.06):		
Superintendent's Dept., labour, \$6.75; material, \$563.31....	570 06	
Cleaning (\$2,693.60):		
Henry F. Baxter, cleaning windows.....	48 00	
Superintendent's Dept., labour.....	2,645 60	
Repairs and renewals (\$2,162.32):		
Frank A. Ellis, repairing clocks.....	6 00	
Routery Bros., repairs to plaster.....	30 95	
Superintendent's Dept., labour, \$1,016.02; material, \$1,109.35.....	2,125 37	
Grounds (\$933.50):		
Superintendent's Dept., labour, \$825; material, \$108.50....	933 50	
Telephone service (\$162.96):		
Bell Telephone Co.....	162 96	
	<hr/> \$10,518 06	
Less sundry credits:		
Cleaning, \$112.50; repairs, \$79.95; lighting, \$60.00; rent of rink, \$40.00.....	292 45	
	<hr/> \$10,225 61	
Engineer and caretaker, S. Hunter, 12 months to 30th June....	1,600 00	
Fireman (\$628.15):		
Chas. Fly, 16 weeks, 1½ days, @ \$75 a month, \$283.65; 27 hours overtime, \$10.80.....	294 45	

Ontario College of Education—Continued.

Jas. Marshall, 16 weeks, 13 days, @ \$75 a month, \$312.50; 53 hours overtime, \$21.20.....	\$333 70	
Nightwatchmen (\$1,354.47):		
G. Iliff, 12 months to 30th June.....	1,200 00	
Leo Cole, 31 nights, @ \$100 a month.....	101 88	
C. Fly, 14 nights, @ \$100 a month.....	46 02	
J. Banford, 2 nights.....	6 57	
		\$13,808 23
Maintenance of Instruction:		
Use of city schools (\$9,460.00):		
Board of Education, City of Toronto.....	\$9,460 00	
Payment for use of rural schools (\$238.29):		
John G. Adams, B.A., honorarium for organizing and super- vising practice for Specialists in Agriculture.....	25 00	
Wm. B. Wyndham, B.A., honorarium for organizing and supervising practice for Specialists in Agriculture.....	25 00	
Dean Pakenham, expenses of instructors and students <i>re</i> practice teaching.....	188 29	
Laboratory assistance and Pianist's services (\$161.00):		
Miss M. W. Conner, pianist.....	41 00	
Mrs. Cooper, laboratory assistance.....	3 00	
Mrs. Mackerrigan, laboratory assistance.....	60 00	
Mrs. Mitchell, laboratory assistance.....	57 00	
Office supplies (\$1,337.44):		
The Bursar, postage supplied.....	235 00	
Field, Love & House, typewriter inspection.....	23 00	
Grand & Toy Ltd., cash box.....	3 50	
Office Specialty Mfg. Co., desk, folders, etc.....	81 45	
Dean Pakenham, disbursements:		
Telegrams and telephone calls, \$10.14; carfares, \$8.00; sundries, \$8.96.....	27 10	
United Typewriter Co., stencils and inspection.....	76 60	
University Press, printing and stationery.....	869 40	
Superintendent's Dept., freight and sales tax, \$19.29; labour, \$2.10.....	21 39	
General supplies and apparatus for class-room use (\$4,110.30):		
Acid-Proof Ink Co., ink.....	15 03	
Art Metropole, protractors.....	4 82	
E. C. Bridgman, charts.....	10 22	
Brigden's Ltd., half-tones.....	32 55	
Canadian Carbonate Ltd., gas.....	4 18	
Canadian Independent Telephone Co., recording set.....	145 71	
Canadian Laboratory Supplies, chemicals.....	39 55	
Canadian Liquid Air Co. Ltd., oxygen.....	78	
Canadian Storage Battery Co. Ltd., battery.....	11 25	
Central Scientific Co., scientific apparatus.....	342 13	
Copp, Clark Co., chalk.....	16 54	
Eastman Kodak Co., slides.....	55 39	
T. Eaton Co. Ltd., battery, cotton, etc.....	163 96	
E. B. Eddy Co. Ltd., matches.....	19 49	
Evans Bros. Ltd., subscriptions.....	36 00	
Farmers' Dairy Co. Ltd., milk and cream.....	23 00	
Film & Slide Co. of Canada, Ltd., lamps, rent of slides.....	34 05	
Grand & Toy Ltd., mounting sketches.....	3 25	
Paul Hahn & Co., rent of piano.....	41 60	
Geo. M. Hendry Co., repairs to apparatus.....	5 79	
W. Johnson, pictures.....	15 00	
Liquid Soap & Sanitary Products, vending machine.....	38 85	
Lyman Bros. & Co., chemicals.....	8 25	
Mackenzie & Co., pictures and frames.....	120 00	
Methodist Book & Publishing House, delineascope and slides.....	104 00	
Miller Men's Wear, cadet equipment.....	470 25	
Mitchell & McGill, filing equipment.....	201 30	
Miss L. L. Ockley, expenses <i>re</i> attendance at Convention of Household Science Association of America, \$49.95; petty disbursements, \$10.00.....	59 95	
Office Specialty Mfg. Co., desk, etc.....	57 65	
Oxford University Press, record blanks.....	15 73	
W. J. Parks, groceries.....	176 03	
Pathescope of Canada Ltd., rent of reels.....	36 25	

Ontario College of Education—Continued.

S. W. Perry, petty disbursements (Art supplies).....	\$9 53	
Presbyterian Publications, slides.....	21 75	
J. G. Ramsey & Co. Ltd., plates.....	79 30	
Rice Lewis & Son Ltd., trimmers.....	8 22	
Ryrie Bros. Ltd., clocks.....	48 00	
Mrs. A. Selke, attendance at meetings.....	6 00	
Robert Simpson Co. Ltd., linen.....	7 50	
Students' Book Dept., books.....	124 78	
United Typewriter Co., typewriter and stencilling.....	211 85	
University Press, printing and stationery.....	292 00	
Vokes Hardware Co., hardware.....	92 16	
Robert M. Williams, engraving diplomas.....	27 60	
World Book Co., tests.....	30 77	
Superintendent's Dept., sales tax, \$12.89; labour, \$505.59; material, \$323.81.....	842 29	
Library assistance, books and periodicals (\$1,444.13):		
Miss Ada Garrow, assistant, 25 weeks.....	625 00	
John A. Long, assistant, 5 weeks.....	100 00	
Books and periodicals, etc.:		
American Home Economics Association.....	2 70	
Mrs. Isabel Crawford.....	90 45	
Lowe-Martin Co. Ltd.....	7 41	
National Geographic Society.....	3 50	
Ryerson Press.....	4 90	
<i>The School</i>	7 50	
Students' Book Dept.....	592 06	
Superintendent of Documents, Washington.....	1 86	
University Press.....	8 75	
Physical Training, including rent and care of grounds and rink, Field Day sports, etc. (\$669.57):		
Aura Lee Club, rent of grounds.....	200 00	
Ryrie Bros. Ltd., medals.....	191 80	
A. G. Spalding & Bros., balls.....	36 00	
University Press, printing programmes.....	53 20	
Superintendent's Dept., labour.....	188 57	
Lunchroom equipment (\$22.30):		
T. Eaton Co. Ltd., dishes.....	22 30	
Summer Session (\$1,320.00):		
Instructors:		
J. W. Bridges.....	300 00	
F. E. Coombs.....	300 00	
D. E. Hamilton.....	300 00	
W. E. Macpherson.....	300 00	
Dean W. Pakenham.....	120 00	
Graduate Scholarship in Education:		
J. A. Long.....	500 00	
Publication of <i>The School</i> :		
University Press, on account of printing.....	1,500 00	
	\$20,763 03	
Less credit for typewriter.....	15 00	
	<hr/>	20,748 03
		<hr/> <hr/>
		\$159,754 28

APPENDIX VII.

Details of Expenditure on New Buildings.

1. Anatomical Building (Construction Account):			
Adams Furniture Co., stoves.....		\$15	60
Canada Hardware Ltd., hardware.....		984	20
Canadian Ornamental Iron Co.....		4,014	80
T. Cannon & Son, cartage.....		17	50
City Treasurer, water service.....		209	79
Consumers' Gas Co., piping and excavating.....		166	79
H. N. Dancy, masonry, \$80,720.24; breeching, \$6,394.00..		87,114	24
Darling & Pearson, architects' fees.....		6,500	00
G. Duthie & Son, roofing.....		8,255	70
J. F. Hartz Co., sterilizer.....		319	50
Harvard Apparatus Co., kymograph.....		47	18
Ingram & Bell, surgical instruments.....		315	18
Mrs. E. Lovegrove, concrete work.....		674	05
Murray-Kay Ltd., linoleum.....		1,050	40
Otis-Fensom Elevator Co., elevators.....		8,000	00
Office Specialty Mfg. Co., desk.....		58	00
Pathology, Dept. of, microscope.....		100	00
A. Petrie & Co., plastering.....		7,198	25
Robertson & Olsen, steel shutters.....		117	00
J. C. Scott Co., carpentry.....		16,092	00
W. H. Thomson, teaming and labour.....		1,326	38
Toronto General Hospital, X-ray of workman injured in excavating.....		24	00
J. D. Wilson, clerk of works.....		1,200	00
Superintendent's Dept., freight, etc., \$4.79; labour, \$29,750.18; material, \$41,708.76.....		71,463	73
			\$215,264 29
Apportionment of the foregoing:			
Masonry.....		\$80,720	24
Furnishings and Equipment.....		27,371	86
Heating and Ventilating.....		16,328	56
Carpentry.....		16,092	00
Plumbing.....		12,403	20
Roofing.....		8,255	70
Elevators.....		8,000	00
Plastering.....		7,198	25
Electric Wiring.....		6,739	75
Architects' Fees.....		6,500	00
Breeching across building.....		6,394	00
Painting.....		5,453	89
Ornamental Iron.....		4,014	80
Locks and Door Checks.....		3,519	77
Grading and Sodding.....		2,903	17
Hardware.....		984	20
Contingencies:			
Clerk of Works.....	\$1,200	00	
Linoleum.....	1,050	40	
Steel Shutters.....	117	00	
Cartage.....	17	50	
			2,384 90
Expended prior to 1922-23.....		\$259,381	95
Expended during 1922-23.....		215,264	29
			\$474,646 24
2. Women's Union Building (Construction):			
Nicholls Estate, purchase price for property No. 79 St. George St.....		\$35,077	09
Beaver & Co., plastering.....		4,028	84
Wm. J. Brown, chesterfield and chair.....		374	52
Canadian Cleaning Co., cleaning windows.....		5	92
Darling & Pearson, architects' fees.....		2,400	00
G. Duthie & Son Ltd., roofing.....		1,617	00
T. Eaton Co. Ltd., tables and chairs.....		743	25

Details of Expenditure on New Buildings—Continued.

Gordon, Mackay Co., linen.....	\$147 74	
Geo. H. Hees & Son, upholstering.....	220 47	
John Hillock & Co., refrigerator.....	750 00	
John Inglis & Co., work on boiler.....	23 17	
Mahaffy Iron Works, platform.....	17 20	
Murray-Kay Ltd., matting and linoleum.....	980 71	
R. Robertson & Sons, masonry.....	20,380 54	
Geo. Sparrow & Co., cooking apparatus.....	2,928 90	
W. H. Thomson, labour.....	12 00	
E. E. Woodley, carpentry.....	11,466 25	
Superintendent's Dept., labour, \$7,133.57; material, \$8,239.27.....	15,372 84	
		\$96,546 44
Apportionment of the foregoing:		
Purchase of property.....	\$35,077 09	
Masonry.....	20,380 54	
Carpentry.....	11,466 25	
Plumbing and Heating.....	6,591 14	
Furnishings.....	4,968 02	
Plastering.....	4,028 84	
Architects' Fees.....	2,400 00	
Painting and Glazing.....	2,219 34	
Electric Wiring.....	1,919 59	
Roofing and Sheet Metal.....	1,617 00	
Electric Fixtures.....	1,488 22	
Cafeteria Counters.....	1,325 00	
Linoleum.....	900 76	
Contingencies.....	861 84	
Refrigerator.....	750 00	
Hardware.....	552 81	
		96,546 44
3. Ontario College of Education (Construction):		
J. G. Althouse, travelling expenses of A. D. Le Pan, Super- intendent, and J. G. Althouse to Buffalo.....	\$43 25	
Canadian Ornamental Iron Co.....	2,100 00	
Darling & Pearson, architects' fees.....	10,800 00	
Hudson & Moseley, carpentry.....	14,800 00	
Page & Co., masonry.....	74,100 00	
J. D. Wilson, clerk of works.....	700 00	
Superintendent's Dept., labour, \$1,721.09; material, \$5,130.06.....	6,851 15	
		\$109,394 40
Apportionment of the foregoing:		
Masonry.....	\$74,100 00	
Carpentry.....	14,800 00	
Architects' Fees.....	10,800 00	
Electric Wiring.....	6,404 66	
Ornamental Iron.....	2,100 00	
Clerk of Works.....	700 00	
Painting.....	224 81	
	\$109,129 47	
Furnishings.....	264 93	
		\$109,394 40
4. Administration Building (Construction):		
S. J. Apted, caretaker's allowance in lieu of living quarters vacated, 7 months.....	\$350 00	
Archibald & Holmes, masonry.....	82,000 00	
Canadian Ornamental Iron Co., iron stairs.....	1,900 00	
Darling & Pearson, architects' fees.....	10,800 00	
Photography, Dept. of, prints.....	1 20	
J. C. Scott Co., carpentry.....	5,100 00	
W. H. Thomson, labour.....	24 75	
J. D. Wilson, clerk of works.....	500 00	
Superintendent's Dept., labour, \$4,728.83; material, \$11,059.91.....	15,788 74	
		\$116,464 69

Details of Expenditure on New Buildings—Continued.

Apportionment of the foregoing:

Masonry.....	\$82,000 00	
Architects' Fees.....	10,800 00	
Plumbing, Heating and Ventilating.....	6,097 37	
Carpentry.....	5,100 00	
Electric Wiring.....	4,884 40	
Roofing.....	4,776 32	
Iron Stairs, etc.....	1,900 00	
Clerk of Works.....	500 00	
Allowance in lieu of quarters.....	350 00	
Contingencies.....	56 60	
		\$116,464 69



REPORT
RELATING TO THE REGISTRATION OF
Births, Marriages and Deaths
IN THE
PROVINCE OF ONTARIO
FOR THE
Year Ending 31st December,
1923

(Being the 54th Annual Report)

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO



TORONTO:

Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty

1925

PRODUCED BY
The United Press
LIMITED
TORONTO
CANADA

To His Honour the Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I herewith beg to present for your consideration the Fifty-fourth Annual Report of the Registrar-General, relating to the Registration of Births, Marriages and Deaths in the Province of Ontario, during the year 1923.

Respectfully submitted,

LINCOLN GOLDIE,

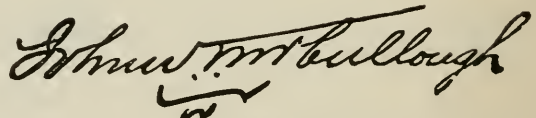
Registrar-General of Ontario.

SIR:—

I have the honour to submit for your approval the Fifty-fourth Annual Report made in conformity with and under the provisions of the Act respecting the Registration of Births, Marriages and Deaths in the Province of Ontario, for the year ending December 31st, 1923.

I have the honour to be, Sir,

Your obedient servant,

A handwritten signature in cursive script, reading "John W. McCallough". The signature is written in dark ink and is positioned above the typed name of the signatory.

Deputy Registrar-General.

TO HON. LINCOLN GOLDIE,
Registrar-General of Ontario.

REPORT UPON

Births, Marriages and Deaths

FOR THE YEAR 1923

Herewith is presented the Fifty-fourth Report of Vital Statistics for the Province of Ontario for the year 1923.

POPULATION

The estimated population for 1923 is 3,028,907. The city municipalities contain 1,205,908 or 40% of the whole; the towns of 5,000 population and over, 162,200, or 5.4%; while the balance, 1,650,799, or 54.5%, is contained in the villages, towns under 5,000 population and the rural portions of the Province.

BIRTHS (EXCLUDING STILL-BIRTHS)

	1923	Ratio	1922	Ratio
Entire Province.....	70,056	23.1	71,320	23.9
Cities.....	30,334	24.9	30,645	25.7
Towns.....	4,911	30.3	4,855	30.3
Rural.....	34,811	23.1	35,820	22.0

There was a numerical decrease of 1,264 births in the whole Province; this represents 1.8%, and is a slight continuation of that following 1922, when the decline was 3.8%.

For comparative purposes the number of births and birth rate for a decade are herewith presented:

Year	Births	Ratio	Year	Births	Ratio
1914.....	66,225	25.0	1919.....	62,774	22.0
1915.....	67,032	24.9	1920.....	72,511	25.1
1916.....	65,264	23.9	1921.....	74,152	25.3
1917.....	62,666	22.6	1922.....	71,320	23.9
1918.....	64,729	23.0	1923.....	70,056	23.1

Of the births, 36,141 or 51.6% males, and 33,915 or 48.4% females, being 106.5 males to 100 females. The largest number of births occurred, as usual, in the month of March, being 6,395.

Following is a table giving the ages of the parents. It may be noted that the largest number of children were born to mothers 26 years of age: last year the largest number was to mothers of 25 years. Although not appearing in the table, there was one mother 58 years of age.

ILLEGITIMATE BIRTHS

There were 1,579 illegitimate births registered, which gives a rate of 22.5 per 1,000 living births. This is 1.3 higher than in 1922. Over 40% of these children were born to mothers under 20 years of age; 65.3% to mothers under 23 years, and 77.8% were born to mothers under 26 years.

MULTIPLE BIRTHS

There were 744 pairs of twins, being 791 boys and 697 girls. Eighteen boys and fifteen girls were included in eleven cases of triplets.

STILL-BIRTHS

There were 3,028 still-births registered as births, as compared with 3,115 so registered in 1922. Still-births as births and as deaths are not considered statistically. Of course the number registered does not indicate in any degree the number of conceptions which occur where the results do not bring full born children into the world. When intrauterine life does not reach viable age, the issue are not registered as births or as deaths, and this fact and the difficulty or impossibility of knowing exactly how many conceptions occur hamper the study of infant mortality.

These births are not included in any statistics whatever. They are noted here for information only. The number registered as births was 3,028. There were 2,960 registered as deaths.

Year	As Births	As Deaths
1914.....	1,469	2,745
1915.....	2,246	2,807
1916.....	2,055	2,518
1917.....	1,425	2,486
1918.....	2,198	1,339
1919.....	2,091	2,463
1920.....	2,495	2,868
1921.....	3,234	3,046
1922.....	3,115	2,946
1923.....	3,028	2,960

Including the still-births with the living births for the moment, the rate is 41.4 still-births in every 1,000 births.

MARRIAGES

The number of marriages registered during the year was 24,842, distributed as follows:

	1923	Ratio	1922	Ratio
Entire Province.....	24,842	8.2	23,360	7.8
Cities.....	14,421	11.9	13,336	11.2
Towns.....	1,780	11.0	1,607	10.0
Rural.....	8,641	5.2	8,417	5.2

There was an increase of 1,482 marriages during the year over the number in 1922, representing an increase of 5.8%. This small increase represents a ratio increase of but 0.4, and is a long way from the ratio of pre-war days when the rate fell off every year until the signing of the armistice. The increase which followed in 1919 and 1920 seemed promising, but a decline came owing to economic conditions, and until a more normal condition makes itself evident the marriage rate will not likely improve greatly.

CONJUGAL RELATIONS, MARRIAGES, ONTARIO, 1923
(Including all Municipalities.)

	Bachelors	Widowers	Divorced Men	Not stated	Total Brides
Spinsters.....	21,689	1,338	53	.....	23,080
Widows.....	79	898	6	.....	1,694
Divorced Women.....	46	17	5	.....	68
Not stated.....	.....	.....	.....	.....	.....
Total Grooms.....	22,525	2,253	64	.....	24,842

CONJUGAL RELATIONS—MARRIAGES, CITIES OF ONTARIO, 1923

	Bachelors	Widowers	Divorced Men	Not stated	Total Brides
Spinsters.....	12,510	815	41	.....	13,366
Widows.....	501	492	5	.....	998
Divorced Women.....	38	15	4	.....	57
Not stated.....	.....	.....	.....	.....	.....
Total Grooms.....	13,049	1,322	50	.....	14,421

CONJUGAL RELATIONS—MARRIAGES, TOWNS OF 5,000 POPULATION AND OVER, IN ONTARIO, 1923

	Bachelors	Widowers	Divorced Men	Not stated	Total Brides
Spinsters.....	1,560	76	3	.....	1,639
Widows.....	54	85	.....	.....	139
Divorced Women.....	1	1	.....	.....	2
Not stated.....	.....	.....	.....	.....	.....
Total grooms.....	1,615	162	3	.....	1,780

CONJUGAL RELATIONS—MARRIAGES, COUNTIES OF ONTARIO, 1923
(Including Towns and Villages under 5,000 population.)

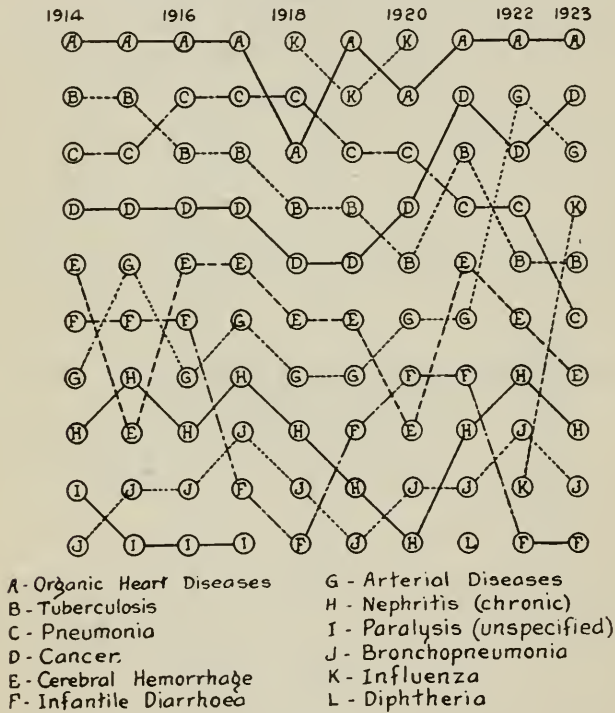
	Bachelors	Widowers	Divorced Men	Not stated	Total Brides
Spinsters.....	7,619	447	9	.....	8,075
Widows.....	235	321	1	.....	557
Divorced Women.....	7	1	1	.....	9
Not stated.....	.....	.....	.....	.....	.....
Total Grooms.....	7,861	769	11	.....	8,641

DEATHS

The number of deaths which were registered during the year 1923 was 35,636, which is a ratio of 11.8 per 1,000 of population. This is a numerical increase of 1,602 deaths, and an increase of 0.4 in the rate, which corresponds with the rate for 1921.

	1923		1922	
	Deaths	Ratio	Deaths	Ratio
Entire Province.....	35,636	11.8	34,034	11.4
Cities.....	15,013	12.3	14,147	11.9
Towns.....	2,478	15.3	2,332	14.5
Rural.....	18,145	11.0	17,555	10.8

TEN HIGHEST CAUSES OF DEATH AND THEIR RELATIVE POSITIONS 1914 - 1923



The following table shows the ten highest causes of death for a decade.

TEN HIGHEST CAUSES OF DEATH IN EACH YEAR
PER 100,000 OF POPULATION

(The number may be found in Table 10 for the current year.)

(FOR TEN YEARS)

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Apoplexy.....	47.5	51.2	53.5	52.3	53.2	54.7	48.1	53.0	53.2	51.2
Bright's disease.....	37.2	40.3	36.7	36.0	38.2	32.3	33.8	33.4	32.1	39.4
Broncho-pneumonia.....	17.9	23.9	31.9	27.9	35.5	25.2	34.0	30.2	33.9	37.2
Cancer.....	69.6	71.6	72.6	79.3	75.5	76.9	85.1	88.2	87.5	90.0
Diseases of the arteries.....	39.7	44.8	43.4	46.8	52.2	45.7	64.8	62.2	91.8	70.3
Infantile diarrhoea.....	44.2	43.0	43.9	23.9	30.1	34.0	53.6	44.9	31.8	22.8
Paralysis, unspecified.....	20.3	19.0	21.5	19.1	.....	.....	.....	.....	.....	.....
Influenza.....	.....	.....	.....	.....	262.2	88.8	113.1	.....	22.0	69.2
Pneumonia.....	73.0	84.9	105.6	99.7	166.5	82.9	91.6	72.3	71.3	64.5
Tuberculosis.....	85.1	89.2	92.3	88.9	90.0	78.0	78.7	73.4	66.3	65.6
Organic heart disease.....	108.1	102.4	120.1	116.0	129.5	114.1	109.5	96.1	126.0	142.0
Diphtheria.....	.....	.....	.....	.....	.....	.....	.....	22.2	.....	.....

Excepting influenza, diphtheria and paralysis as causes, the others have been consistent over a long period of years. These causes are outstanding and account for over 50% of all deaths. Their positions from year to year change somewhat, as will be seen in the following table. The first column contains the ten causes in sequence of ratio per 100,000 of population, as they were in 1914, and the changes from that position are shown in the other columns. Please note that the positions of the causes of death in this table do not in any way indicate rates per 100,000 of population, but the relative positions as the ten highest causes of death.

DEATHS FROM TUBERCULOSIS

The number of deaths from tuberculosis of all classes, registered in 1923, was 1,989, giving a rate per 100,000 of population of 65.6, and is the lowest rate ever recorded in Ontario, being the fruit of many years of fighting the white plague. Nor is the battle won, for it is the ideal of every endeavour to make this disease as scarce and as controllable as typhoid fever.

The following table shows deaths from tuberculosis by age groups for a decade.

DEATHS IN ONTARIO FROM TUBERCULOSIS BY AGES, 1914-1923.

Year.	Total.	Ratio per 100,000.	Under 5 years.					5-9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70-79	80 & over.	Not stated.	Total deaths from all causes.
			0-1	1	2	3	4												
1914	2,340	85.1	54	41	20	16	11	56	58	181	688	469	307	214	116	63	12	34	32,440
1915	2,466	89.2	79	39	25	19	16	55	74	168	676	516	273	242	176	73	15	20	33,294
1916	2,559	92.2	66	43	35	19	9	53	61	224	683	536	327	238	156	68	17	24	35,580
1917	2,460	88.9	51	43	26	19	11	45	70	196	664	490	351	240	144	72	18	20	33,284
1918	2,519	90.0	39	35	35	13	27	40	86	242	677	526	323	207	161	66	15	27	43,038
1919	2,215	78.0	44	32	21	12	25	61	54	175	575	459	311	192	155	66	11	22	34,010
1920	2,280	78.7	48	37	24	21	14	52	74	177	602	480	323	195	146	55	9	23	40,440
1921	2,083	71.0	54	36	28	15	9	39	47	162	578	428	259	192	145	80	8	3	34,551
1922	1,979	66.4	45	31	19	16	13	39	51	154	548	408	261	175	127	75	9	8	34,034
1923	1,989	65.6	47	35	18	16	11	52	55	141	507	422	282	168	158	60	10	7	35,636

Tuberculosis held second place as a cause of death in 1914, but now holds fifth place.

ORGANIC HEART DISEASES

Under this heading are included deaths from pericarditis, myocarditis, endocarditis, angina pectoris, and all other diseases affecting the muscle. The number of deaths was 4,373, being a rate of 142.0 per 100,000 of population.

Heart disease holds first place as a cause of death and in the decade was displaced but twice, and each time by influenza, during the two epidemics which occurred in the years 1918 and 1920.

CANCER

There were 2,724 deaths from cancer registered, giving a rate of 90.0 per 100,000 of population. The increase in both the number and the rate continues.

During the decade the rate has increased from 69.6 to 90.0, being an increase of 20.4 per 100,000 of population.

Twenty years earlier (1904) the rate was 54.8 and in 1913 it was 69.3, giving an increase in the rate in that decade of 14.5. The mean rate for the first decade was 61.0 and for the second 80.0, being an increase, the latter over the former, of 31%.

The following table shows the sites of the cancer:

	Males	Females
Cancer of the buccal cavity.....	106	28
“ “ stomach and liver.....	479	459
“ “ peritoneum, intestines and rectum.....	200	229
“ “ female genital organs.....	..	283
“ “ breast.....	1	278
“ “ skin.....	55	26
“ “ unspecified organs.....	349	232

The following table gives the number of deaths for each 100,000 of population for a decade, showing the classification.

	1914		1915		1916		1917		1918		1919		1920		1921		1922		1923	
Buccal cavity.....	113	4.1	114	4.1	73	2.6	97	3.5	77	2.7	82	2.8	117	4.0	98	3.3	94	3.1	134	4.4
Stomach.....	628	22.8	665	24.0	659	23.7	701	25.3	647	23.1	623	21.9	782	27.0	860	29.3	869	29.2	938	31.0
Peritoneum.....	271	9.8	258	9.3	258	9.2	283	10.2	281	10.0	305	10.7	396	13.6	391	13.0	438	14.7	428	14.1
Female genital organs.....	144	5.2	131	4.7	149	5.3	154	5.5	148	5.3	181	6.3	234	8.0	236	8.0	244	8.2	283	9.4
Breast.....	126	4.5	106	3.8	136	4.9	121	4.3	129	4.6	128	4.5	198	6.8	235	8.0	231	7.7	279	9.2
Skin.....	25	.99	31	1.1	46	1.6	69	2.4	71	2.5	58	2.0	49	1.7	66	2.2	77	2.6	81	2.7
Unspecified.....	565	20.5	677	24.4	691	24.8	771	27.8	750	26.8	805	28.3	688	23.7	699	24.1	656	22.0	531	19.2
Total.....	1872	69.6	1982	71.6	2012	72.6	2196	79.3	2103	75.5	2182	76.9	2464	85.0	2585	88.0	2609	87.5	2724	90.0

The percentage rate by ages was as follows:

Under 30	30-39	40-49	50-59	60-69	70-79	80 +
1.7%	4.0%	11.5%	19.8%	29.6%	24.7%	8.6%

COMMUNICABLE DISEASES

	1919		1920		1921		1922		1923	
Typhoid.....	145	5.1	203	7.0	213	7.2	179	6.0	238	7.9
Smallpox.....	5	0.17	33	1.1	24	0.8	6	2.0	3	1.0
Measles.....	31	1.3	303	10.4	54	1.8	67	2.2	109	3.6
Scarlet fever.....	96	3.3	170	5.8	144	4.9	136	4.4	156	5.1
Whooping cough.....	164	5.7	376	12.9	310	10.5	200	6.7	318	10.5
Diphtheria.....	475	16.7	745	25.7	653	22.2	411	13.7	316	10.4
Influenza.....	2,522	88.8	3,276	113.1	509	17.3	960	32.2	2,098	19.3

The rates from communicable diseases show an increase in every case but that of deaths from diphtheria.

Diphtheria in 1923 dropped to the lowest point it has ever reached, viz., 10.4 per 100,000 of population. Its highest point in a period of nineteen years was reached in 1920, when the rate was 25.7. Not since 1904 had such a rate been reached. In that year it was 26.6 and earlier than that the rate was higher.

The rate from typhoid fever is somewhat higher and is higher than it has been since 1917, when it was 9.1 per 100,000.

Influenza as a cause of death became quite active again. It caused 2,098 deaths, being a rate of 69.3 per 100,000 of population. This is the fourth epidemic of influenza in six years. Fortunately those of 1919, 1920 and 1923 were far below that of 1918.

INFANT MORTALITY

The deaths registered for 1923 of infants under one year was 5,950, being a rate of 84.9 per 1,000 living births, which is 1.9 above the rate for 1922. The rate in 1922 is the lowest ever experienced by the Province.

The chief causes of deaths for the last ten years is herewith appended.

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Scarlet fever.....	...	...	109	...	...	...	...	...	...	...
Whooping cough.....	119	141	209	173	163	110	242	211	112	191
Influenza.....	...	...	...	344	207	248	...	...	...	236
Meningitis.....	154	114	130	95	83	75	89	59	...	...
Convulsions.....	402	370	378	297	326	265	231	170	146	113
Respiratory diseases.....	758	925	1,038	878	850	770	970	825	749	826
Diseases of stomach and diarrhoea.....	1,188	223	1,096	597	784	905	1,420	1,176	810	648
Malformations.....	176	173	236	223	224	280	515	470	488	492
Diseases of early infancy.....	3,510	3,391	3,238	3,046	3,184	2,828	3,423	2,908	2,859	2,723
Total.....	6,835	6,838	7,000	5,777	6,402	5,999	7,802	6,763	5,921	5,950
	103.2	102.0	107.2	92.1	99.0	95.5	107.5	91.3	83.0	84.9

TABLE No. 1.

Showing the number of Births, Marriages and Deaths, and the ratio per 1,000 of population in each County (excluding Cities and Towns), 1923.

Counties.	Estimated Population.	Births excluding Still-births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths excluding Still-births.	Ratio per 1,000.
Total, including all municipalities.....	3,028,907	70,056	23.1	24,842	8.2	35,636	11.8
Total, excluding cities and towns.....	1,650,799	34,811	21.1	8,641	5.2	18,145	11.0
Algema.....	25,100	499	19.9	123	4.9	209	8.3
Brant.....	24,000	327	13.6	90	3.8	202	8.4
Bruce.....	43,200	825	19.1	283	6.6	558	12.9
Carleton.....	37,400	605	16.2	89	2.4	311	8.3
Cochrane.....	29,834	1,182	39.6	238	8.0	449	15.0
Dufferin.....	14,700	330	22.4	113	7.7	201	13.7
Elgin.....	28,958	493	17.0	158	5.5	329	11.4
Essex.....	51,055	1,321	25.9	363	7.1	545	10.7
Frontenac.....	22,741	387	17.0	62	2.7	249	10.9
Grey.....	45,600	931	20.4	256	5.6	524	11.5
Haldimand.....	21,287	382	17.9	128	6.0	298	14.0
Haliburton.....	6,209	162	26.1	25	4.0	65	10.5
Halton.....	24,899	470	18.9	141	5.7	256	10.3
Hastings.....	39,415	926	23.5	253	6.4	484	12.3
Huron.....	45,800	845	18.4	309	6.7	529	11.6
Kenora.....	14,252	270	18.9	47	3.3	97	6.8
Kent.....	45,470	953	21.0	272	6.0	505	11.1
Lambton.....	37,500	679	18.1	175	4.7	432	11.5
Lanark.....	25,500	496	19.5	169	6.6	320	12.5
Leeds and Grenville.....	40,800	711	17.4	233	5.7	555	13.6
Lennox and Addington.....	18,700	351	18.8	128	6.8	246	13.2
Lincoln.....	31,000	466	15.0	110	3.5	280	9.0
Manitoulin.....	10,468	251	24.0	63	6.0	143	13.7
Middlesex.....	45,906	763	16.6	190	4.1	551	12.0
Muskoka.....	19,000	467	24.6	132	6.9	257	13.5
Nipissing.....	23,200	755	26.8	182	6.5	292	10.4
Norfolk.....	24,366	577	23.7	166	6.8	361	14.8
Northumberland and Durham.....	49,730	938	18.9	275	5.5	597	12.0
Ontario.....	34,554	605	17.5	191	5.5	443	12.8
Oxford.....	31,677	585	18.5	157	5.0	327	10.3
Parry Sound.....	27,022	700	25.9	165	6.1	326	12.1
Peel.....	23,896	425	17.8	111	4.6	265	11.1
Perth.....	34,739	680	19.6	214	6.2	365	10.5
Peterboro.....	21,267	369	17.4	65	3.1	239	11.2
Prescott and Russell.....	42,055	1,354	32.2	261	6.2	516	12.3
Prince Edward.....	16,806	321	19.1	104	6.2	236	14.0
Rainy River.....	13,541	394	29.1	104	7.7	135	10.0
Renfrew.....	43,630	1,001	22.9	288	6.6	482	11.0
Simcoe.....	55,424	1,173	21.2	253	4.6	598	10.8
Stormont, Dundas and Glengarry.....	55,542	1,185	21.3	287	5.2	602	10.8
Sudbury.....	34,859	979	28.1	159	4.6	319	9.2
Thunder Bay.....	14,334	166	11.6	32	2.2	63	4.4
Timiskaming.....	29,500	804	27.3	229	7.8	240	8.1
Victoria.....	19,600	338	17.2	84	4.3	247	12.6
Waterloo.....	28,981	607	20.9	131	4.5	312	10.8
Welland.....	43,250	970	22.4	336	7.8	416	9.6
Wellington.....	36,032	764	21.2	207	5.7	453	12.6
Wentworth.....	43,100	685	15.9	129	3.0	442	10.3
York.....	149,900	3,344	22.3	361	2.4	1,274	8.5

TABLE No. 2.

Showing the total number of Births, Marriages and Deaths, and the ratio per 1,000 of population in each City of Ontario, 1923.

Cities.	Estimated Population.	Births excluding Still-births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths excluding Still-births.	Ratio per 1,000.
Totals.....	1,215,908	30,334	24.9	14,421	11.9	15,013	12.3
Belleville.....	12,600	345	27.4	161	12.8	206	16.3
Brantford.....	30,500	714	23.4	321	10.5	334	11.0
Chatham.....	13,600	317	23.3	200	14.7	256	18.8
Fort Wilfam.....	21,500	749	34.8	225	10.5	204	9.5
Galt.....	13,700	290	21.2	119	8.7	160	11.7
Guelph.....	18,800	407	21.6	208	11.1	259	13.8
Hamilton.....	122,000	3,033	24.9	1,355	11.1	1,367	11.2
Kingston.....	22,200	552	24.9	272	12.3	386	17.4
Kitchener.....	23,200	606	26.1	245	10.6	242	10.4
London.....	63,200	1,380	21.8	771	12.2	1,014	16.0
Niagara Falls.....	15,800	407	25.8	311	19.7	164	10.4
Ottawa.....	111,500	3,055	27.4	1,081	9.7	1,718	15.4
Owen Sound.....	12,100	316	26.1	103	8.5	157	13.0
Peterborough.....	21,500	550	25.6	227	10.6	331	15.4
Port Arthur.....	15,400	517	33.6	193	12.5	157	10.2
St. Catharines.....	21,200	630	29.7	233	11.0	289	13.6
St. Thomas.....	16,500	339	20.5	183	11.1	206	12.5
Sarnia.....	15,800	416	26.3	141	8.9	169	10.7
Sault Ste. Marie.....	22,300	650	29.1	216	9.7	232	10.4
Stratford.....	16,700	396	23.7	150	9.0	189	11.3
Toronto.....	542,408	12,680	23.4	6,604	12.2	6,120	11.3
Welland.....	10,600	226	21.3	135	12.7	119	11.2
Windsor.....	42,400	1,551	36.6	847	20.0	587	13.8
Woodstock.....	10,400	208	20.0	120	11.5	147	14.1

TABLE No. 3.

Showing the total number of Births, Marriages and Deaths, in the Towns of 5,000 population and over in Ontario, together with the ratio per 1,000 population, 1923.

Towns.	Estimated Population.	Births excluding Still-births.	Ratio per 1,000.	Marriages.	Ratio per 1,000.	Deaths excluding Still-births.	Ratio per 1,000.
Totals.....	162,200	4,911	30.3	1,780	11.0	2,478	15.3
Barrie.....	7,000	181	25.9	76	10.9	120	17.1
Brockville.....	10,100	228	22.6	103	10.2	227	22.5
Cobourg.....	5,300	117	22.1	64	12.1	128	24.2
Collingwood.....	6,200	131	21.1	54	8.7	87	14.0
Cornwall.....	8,500	382	44.9	119	14.0	186	21.9
Eastview.....	5,700	192	33.7	9	1.6	92	16.1
Ford City.....	6,100	244	40.0	64	10.5	75	12.3
Hawkesbury.....	5,000	208	41.6	45	9.0	86	17.2
Ingersoll.....	5,200	122	23.5	57	11.0	70	13.5
Kenora.....	5,400	162	30.0	47	8.7	60	11.1
Lindsay.....	7,700	192	24.9	94	12.2	131	17.0
Midland.....	7,000	205	29.3	44	6.3	78	11.1
North Bay.....	11,000	414	37.6	130	11.8	117	10.6
Orillia.....	8,900	220	24.7	87	9.8	128	14.4
Oshawa.....	12,800	505	39.5	187	14.6	177	13.8
Pembroke.....	8,700	283	32.5	77	8.9	160	18.4
Preston.....	5,600	134	23.9	59	10.5	54	9.6
Smith's Falls.....	6,800	160	23.5	56	8.2	99	14.6
Sudbury.....	9,500	354	37.3	124	13.1	202	21.3
Trenton.....	6,000	155	25.8	77	12.8	73	12.2
Walkerville.....	7,600	142	18.7	152	20.0	58	7.6
Waterloo.....	6,100	180	29.5	55	9.0	70	11.5

TABLES Nos. 4, 5, 6.

Showing Birth, Marriage and Death rates per 1,000 of population, 1904-1923 inclusive.

Year	Population	Table No. 4		Table No. 5		Table No. 6	
		Births	Rate	Marriages	Rate	Deaths	Rate
1904.....	2,285,045	49,158	21.5	19,789	8.6	29,600	12.9
1905.....	2,319,078	50,808	21.9	20,426	8.8	29,748	12.8
1906.....	2,353,110	50,621	21.5	19,845	8.4	31,244	13.2
1907.....	2,387,143	52,289	21.9	21,915	9.1	13,756	13.3
1908.....	2,421,176	54,878	22.6	21,058	8.6	30,947	12.7
1909.....	2,455,208	54,448	21.7	22,366	9.1	30,792	12.5
1910.....	2,489,241	55,755	22.4	24,036	9.6	31,332	12.5
1911.....	2,523,274	56,096	22.2	25,807	10.2	31,878	12.6
1912.....	2,564,313	58,870	22.9	28,845	11.2	32,150	12.5
1913.....	2,605,352	64,516	22.7	26,998	10.3	34,317	13.1
1914.....	2,646,390	66,225	25.0	24,245	9.1	32,440	12.2
1915.....	2,687,429	67,032	24.9	23,506	8.7	33,294	12.3
1916.....	2,728,468	65,264	23.9	23,401	8.5	35,580	13.0
1917.....	2,769,507	62,666	22.6	21,499	7.7	33,284	12.0
1918.....	2,810,546	64,729	23.0	19,525	6.9	43,038	15.3
1919.....	2,851,584	62,774	22.0	26,328	9.2	34,010	11.9
1920.....	2,892,623	72,511	25.1	29,104	10.0	40,440	14.0
1921.....	2,933,662	74,152	25.3	24,871	8.5	34,551	11.8
1922.....	2,981,182	71,320	23.9	23,360	7.8	34,034	11.4
1923.....	3,028,927	70,056	21.1	24,842	8.2	35,636	11.8

TABLE No. 7.
Recapitulation of Causes of Death by Classes of Diseases in Counties, 1923.

Causes of Death by Classes of Diseases.	Ages.													Sex.		Months.																	
	Total.	Ages.												Male.	Female.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.						
		Under 1 year.	1 year.	2 years.	3 years.	4 years.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30 years.	40 years.															50 years.	60 years.	70 years.	80 years and over.	Not stated.	
Grand Total, including all municipalities.....	35,636	5,950	849	365	280	199	715	488	667	777	923	2,084	2,359	3,422	5,256	6,283	4,953	66	18,452	17,184	3,477	4,427	3,853	3,330	3,053	2,582	2,416	2,461	2,388	2,596	2,533	2,520	
Grand Total, excluding cities and towns.....	18,145	291,893	163,141	87,333	252,355	392,411	881,980	1,528,263	1,528,263	489,445	87,000	1,776,219	2,034,168	1,579,132	1,242,127	1,181,286	1,289,127	1,278,127	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286	1,181,286
I. General diseases.....	3,128	331	118	61	60	37	135	104	152	202	201	360	280	223	297	313	244	10	1549	1579	278	628	555	356	217	193	173	144	139	137	151	157	157
II. General diseases not included in Class I.....	2,042	33	11	8	7	21	18	12	16	23	79	169	355	576	518	192	3	893	1149	180	155	189	181	196	173	175	180	147	134	158	174	174	174
III. Diseases of the nervous system and sense organs.....	1,610	112	28	8	5	18	13	12	14	21	39	82	181	302	468	300	3	786	824	146	166	156	153	150	132	116	110	118	125	126	112	112	112
IV. Diseases of the circulatory system.....	3,448	24	3	2	1	18	17	18	13	19	60	128	335	734	1171	896	9	1844	1604	331	329	328	311	353	243	247	219	266	287	280	280	280	
V. Diseases of the respiratory system.....	1,926	425	117	31	27	12	25	18	38	19	17	75	75	115	239	362	329	2	993	933	311	371	269	204	169	78	55	67	77	119	97	109	109
VI. Diseases of the digestive system.....	1,119	362	60	27	15	10	36	22	29	14	22	33	52	97	118	121	100	1	594	525	77	99	90	76	102	71	78	139	122	108	83	74	74
VII. Non-venereal diseases of the genito-urinary system and its annexa.....	908	9	5	2	1	7	7	9	5	11	33	69	105	205	238	197	4	538	370	89	77	81	77	81	69	59	73	52	92	87	71	71	71
VIII. The puerperal state.....	147	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX. Diseases of the skin and cellular tissue.....	112	11	1	1	1	1	1	1	1	1	1	1	3	7	8	34	42	.....	64	48	9	13	10	15	15	8	5	6	6	10	7	7	7
X. Diseases of the bones and organs of locomotion.....	19	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	3	.....	12	7	1	1	2	2	2	3	1	1	2	1	2	1	2
XI. Malformations.....	252	241	3	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	137	115	20	16	20	23	24	33	34	18	21	21	21	26	26
XII. Diseases of early infancy.....	1,287	1,287	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	757	530	130	122	145	119	113	98	92	87	88	10	61	69	69
XIII. Old age.....	889	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	409	480	98	129	88	81	72	58	71	55	61	68	55	55	55
XIV. External causes.....	1,074	26	35	27	20	13	68	44	74	78	69	119	98	61	84	98	114	16	758	316	73	50	62	52	66	141	137	113	110	90	78	100	100
XV. Ill-defined diseases.....	184	54	12	3	3	5	1	3	2	7	17	39	18	13	.....	.....	.....	.....	111	73	20	28	23	22	11	9	11	11	11	10	15	10	10

TABLE No. 8.
Recapitulation of Causes of Death by Classes of Diseases in Cities, 1923.

Causes of Death by Classes of Diseases.	Ages.														Sex.		Months.																				
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30 years.	40 years.	50 years.	60 years.	70 years.	80 years and over.	Not stated.	Male.	Female.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.					
Grand Total.....	15,013	2,547	385	177	113	97	319	193	327	448	1,039	1,198	1,680	2,295	2,306	1,625	12	7,738	7,275	1,488	1,948	1,545	1,413	1,252	1,072	986	1,012	1,033	1,124	1,066	92	110	1,074				
I. General diseases.....	2,220	291	143	84	52	47	136	45	76	129	134	252	215	158	204	155	98	1	1,089	1,131	210	520	302	209	178	128	138	99	115	119	92	110					
II. General diseases not included in Class I.....	2,026	44	8	7	4	...	20	19	15	19	42	126	280	449	538	348	106	1	898	1,128	181	175	187	175	165	152	150	172	170	181	154	164					
III. Diseases of the nervous system and sense organs.....	1,188	80	21	7	6	4	25	10	16	13	23	69	92	169	233	257	162	1	594	594	112	120	138	107	96	88	84	88	90	88	88	88	89				
IV. Diseases of the circulatory system.....	2,797	5	4	3	1	2	26	28	21	20	42	97	198	365	640	820	521	4	1,440	1,357	269	279	286	252	269	216	165	178	202	232	222	222	227				
V. Diseases of the respiratory system.....	1,664	329	98	38	13	11	28	16	24	27	34	85	105	132	241	264	219	...	899	765	246	391	215	208	120	66	55	33	52	83	102	93					
VI. Diseases of the digestive system.....	1,254	308	70	14	12	9	35	34	38	29	41	115	113	163	126	94	53	...	682	572	106	72	92	105	80	116	91	144	136	118	111	83					
VII. Non-neuronal diseases of the genito-urinary system and its annexa.....	841	9	2	3	2	2	6	7	10	10	27	72	84	128	176	106	106	...	481	360	71	84	77	70	81	68	69	53	57	76	72	63					
VIII. The puerperal state.....	182	...	...	...	...	...	...	...	6	24	47	84	21	...	...	...	...	...	182	22	24	14	21	16	17	14	10	6	11	11	16					
IX. Diseases of the skin and cellular tissue.....	78	21	...	...	...	...	...	...	2	3	2	1	2	5	7	9	12	14	...	39	39	8	3	6	7	7	6	6	4	10	4	9				
X. Diseases of the bones and joints.....	37	...	...	...	...	...	...	...	2	3	1	2	5	2	4	5	2	1	...	24	13	4	2	2	2	3	5	6	3	3	4					
XI. Malformations.....	238	218	12	1	1	2	1	2	1	118	120	24	22	11	29	22	15	15	13	23	22	20	20	20				
XII. Diseases of early infancy.....	1,200	1199	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	712	488	119	134	109	118	117	78	84	94	78	91	85	93				
XIII. Old age.....	304	148	282	
XIV. External causes.....	818	21	16	19	20	19	40	28	39	51	53	129	76	91	81	69	61	5	575	243	47	63	51	60	64	77	76	92	81	63	72	72					
XV. Ill-defined diseases.....	76	22	8	...	...	...	...	...	...	...	...	...	...	14	13	5	2	...	39	37	13	8	9	6	7	5	8	5	3	6	1	1				

TABLE
Showing Total Deaths by Individual

CAUSES OF DEATH.	Total.	Alghama.	Brant.	Bruce.	Carleton.	Cochrane.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand	Halliburton.	Halton.	Hastings.	Huron.	Kenora.
37. Disseminated tuberculosis, total.....	15			1							1						
37A. Disseminated tuberculosis, acute.....	10										1						
37B. Disseminated tuberculosis, chronic.....	5			1													
38. Syphilis.....	24		1			1				1		1		1			1
40. Gonococcal infection (ophthalmia excepted).....	1																
41. Purulent infection, septicaemia.....	52		2	3		3			2	3	1				1	1	
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																	
Total.....	2,042	7	25	75	25	14	33	49	54	25	76	39	6	39	58	83	5
43-49. Cancer. Total.....	1,258	4	14	51	17	7	23	33	27	15	54	20	5	21	31	50	3
43. Cancer of the buccal cavity.....	66	1	1	2		1	1	2	1		3	2		1	2	2	
44. Cancer of the stomach and liver.....	470	2	6	21	7	2	10	5	11	6	22	10	2	8	18	23	2
45. Cancer of the peritoneum, intestines and rectum.....	191		1	6		1	3	10	5	3	7	3		4	3	5	1
46. Cancer of the female genital organs.....	97			2		1	3	2	1	1	4			2	3	5	
47. Cancer of the breast.....	124	1	1	6	3		1	2	3	2	4		1	1	3	5	
48. Cancer of the skin.....	40			3	1		1	2	1		2	1				2	
49. Cancer of the unspecified organs.....	270		5	11	6	2	4	10	5	3	12	3	2	5	2	8	
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).....	20							2							1	1	
51. Acute rheumatic fever.....	53			1	1	1	1		5		1	1		2		3	
52. Chronic rheumatism, osteo-arthritis, gout.....	63		1		2			1			2	3		3	3	3	
53. Scruvy.....	1																
54. Pellagra.....	3																
56. Rickets.....	13			2		1					2				1		
57. Diabetes mellitus.....	202	2	5	7	1		1	6	5	3	7	4	1	1	8	7	
58. Anaemia chlorosis, total.....	270		3	12	2	1	3	5	5	3	9	8		6	9	12	1
58A. Pernicious anaemia.....	232		3	10	2	1	1	4	3	3	9	7		6	8	10	1
58B. Other anaemias and chlorosis.....	38			2			2	1	2			1			1	2	
59. Diseases of the pituitary gland.....	1								1								
60. Diseases of the thyroid gland, total.....	66			1			2		5	2	3			4	3	3	
60A. Exophthalmic goitre.....	39								4	2	1			4	1	2	
60B. Other diseases of the thyroid gland.....	27			1			2		1		2				2	1	
62. Diseases of the thymus.....	4						1										
63. Diseases of the adrenals (Addison's disease).....	4																
64. Diseases of the spleen.....	2						1										
65. Leukaemia lymphadenoma, total.....	20			1	1	1		1	1			1		1	1		
65A. Leukaemia.....	15				1	1		1	1			1			1		
65B. Lymphadenoma (Hodgkin's disease).....	5			1										1			
66. Alcoholism (acute and chronic).....	22		1			2		1	2	2							1
67. Chronic poisoning by mineral substances, total.....	2								1								
67A. Chronic lead poisoning.....	1								1								
67B. Others under this title.....	1																
68. Chronic poisoning by organic substances.....	3		1														
69. Other general diseases.....	35	1			1	1	1		2					1	1	4	

TABLE
Showing Total Deaths by Individual

CAUSES OF DEATH.	Total.	Algoma.	Brant.	Bruce.	Carleton.	Cochrane.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton.	Hastings.	Huron.	Kenora.
121. Hydatid tumour of the liver.....	1																
122. Cirrhosis of the liver, total	49	2		4								1			3		
122A. Specified as alcoholic.....	49	2		4								1			3		
122B. Not specified as alcoholic.....	32		1	1				1	2	1	1				2	1	
123. Biliary calculi.....	64		4	3		2	1	1	1		3	1		3		1	
124. Other diseases of the liver.....	7			1					1			1					
125. Diseases of the pancreas.....	24	1		1				1	2								1
126. Peritonitis without specified cause.....	1																
127. Other diseases of the digestive system (cancer and tuberculosis excepted).....	1																
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																	
Total.....	908	3	10	44	6	10	10	30	27	9	31	11	2	22	19	44	1
128. Acute nephritis.....	61			3	1			2	2		3	1		1		3	
129. Chronic nephritis (Bright's disease).....	609	3	9	29	3	7	5	24	19	6	16	4	2	15	14	31	
131. Other diseases of the kidneys and their annexa (diseases of kidneys in pregnancy excluded).....	47			2	1			1	1	1	4			1	1		
132. Calculi of the urinary passages.....	7																
133. Diseases of the bladder.....	36		1	1	1		1	2			2	1					
134. Diseases of the urethra, urinary abscess, etc., total.....	3																1
134A. Stricture of the urethra.....	1																1
134B. Other diseases of the urethra.....	2																
135. Diseases of the prostate.....	110			9		1		1	4	1	6	5		4	3	7	
136. Non-veneral diseases of the male genital organs.....	1						1										
137. Cysts and other benign tumours of the ovary.....	9						1									1	
138. Salpingitis and pelvic abscess.....	4					2										1	
139. Benign tumours of the uterus.....	9						1			1				1			
140. Non-puerperal uterine hæmorrhage.....	2														1		
141. Other diseases of the female genital organs.....	10						1		1							1	
CLASS VIII.—THE PUERPERAL STATE.																	
Total.....	147	4	2	3	2	6	3	2	6		5	3			6	7	1
143. Accidents of pregnancy, total.....	20	1	1	1	1	1		1	1								2
143A. Abortion.....	9	1	1														1
143B. Ectopic gestation.....	3					1										1	
143C. Other accidents of pregnancy.....	8			1	1			1	1								
144. Puerperal hæmorrhage.....	13					1			1								
145. Other accidents of childbirth, total.....	7					1					1	1			1		
145A. Caesarean section.....																	
145B. Other surgical operations and instrumental delivery.....	1					1											
145C. Others under this title.....	6										1	1			1		

TABLE
Showing Total Deaths by Individual

CAUSES OF DEATH.	Total.	Algoma.	Brant.	Bruce.	Carleton.	Cochrane.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton.	Hastings.	Huron.	Kenora.
		146. Puerperal sepsis.....	43	1			1	2	2	1	1		2				2
147. Phlegmasia alba dolens; puerperal embolism or sudden death in puer- perium.....	13			1					1							1	
148. Puerperal albuminuria and convulsions.....	47	2	1	1		1	1		2		2	2			3	3	
149. Following childbirth (not otherwise defined).....	4																
150. Puerperal diseases of the breast.....																	
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.																	
Total	112			3	2	2		3	3	1	6			4	4	7	
151. Gangrene.....	73			3	1			1	3	1	5			4	2	5	
152. Furuncle.....	8					2											
153. Acute abscess.....	11							1							1	1	
154. Other diseases of the skin and annaxa.....	20				1			1			1				1	1	
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.																	
Total	19				2				1			1					
155. Diseases of the bones (tuberculosis excepted)	17				2				1			1					
156. Diseases of the joints (tuberculosis and rheu- matism excepted).....	2																
158. Other diseases of the or- gans of locomotion.....																	
CLASS XI.—MALFORMATIONS.																	
Total	252	4	1	11	3	7	5	4	9	2	8	3	3	1	4	10	1
159. Congenital malformations (still-births not includ- ed), total.....	252	4	1	11	3	7	5	4	9	2	8	3	3	1	4	10	1
159A. Hydrocephalus.....	38			1	1	1	1		4						1	1	
159B. Congenital malforma- tions of the heart.....	99	1		7			1	2	5	1	6	2	1		2	4	
159C. Others under this title...	115	3	1	3	2	6	3	2		1	2	1	2	1	1	5	1
CLASS XII.—DISEASES OF EARLY INFANCY.																	
Total	1,287	25	11	27	15	70	10	13	59	15	32	17	7	7	32	29	3
160. Congenital debility, icterus and scleroma.....	360	13	2	7	1	23	3	3	11	2	10	1	2	4	9	11	1
161. Premature birth, injury at birth, total.....	786	11	8	16	9	44	6	9	41	10	16	15	4	3	15	14	2
161A. Premature birth.....	682	10	8	14	8	36	6	8	40	10	16	12	4	3	11	11	1
161B. Injury at birth.....	104	1		2	1	8		1	1			3			4	3	1
162. Other diseases peculiar to early infancy.....	137	1	1	4	5	3	1	1	7	3	6	1	1		7	3	
163. Lack of care.....	4														1	1	
CLASS XIII.—OLD AGE.																	
Total	889	13	9	30	10	1	6	24	16	12	31	19	6	7	29	25	4
164. Senility.....	889	13	9	30	10	1	6	24	16	12	31	19	6	7	29	25	4

No. 10.—Continued.

Diseases in each County, 1923.

Kent.	Lambton.	Lanark.	Leeds and Grenville.	Lemnox and Addington.	Lincoln.	Manitoulin.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland & Durham.	Ontario.	Oxford.	Perry Sound.	Peel.	Perth.	Peterboro.	Prescott and Russell.	Prince Edward.	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas & Glengarry.	Sudbury.	Thunder Bay.	Timiskaming.	Victoria.	Waterloo.	Welland.	Wellington.	Wentworth.	York.	Grand Total, including Cities and Towns.	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	116
		1			1								1		2						1									1		3	38	
1	1	2	2		1	2		1	2	1	2	1	2		1		3		1	2		1	1	1		1		1	1		2	97		
		1			1															1									1				7	
																																		1
3	2	4	2		1	2	1	1	1	2	5	5	2	2	1	2	2	1	4	1	4	3	4	1	1	1	2	1	2	8	4	4	204	
3	2	2	1		1	1	1	1	1	1	3	4	2	1	1	2	1	2	1	1	4	1	2				2	1		6	4	1	107	
											1	1	1						1				1	1									1	17
																																		33
		2	1								1	2			1							2	1						2	1		2	47	
	2			1												2	2	1					1			1		1		2	2		59	
	1			1													2	1					1			1		1		2	2		53	
	1																	1																5
																																		1
6	3	3	7	3	4	3	8	3	5	8	7	2	4	5	5	4	3	7		1	5	8	4	7	1	13	2	5	10		5	25	526	
6	3	3	7	3	4	3	8	3	5	8	7	2	4	5	5	4	3	7		1	5	8	4	7	1	13	2	5	10		5	25	526	
1	1	1	1	2	1	3	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	78	
3	2	2	3	5	1	3	2	2	4	2	4	2	1	3	2	3	3	3	4		3	4	1	1	1	9		6	4	3	4	8	206	
2	2	3	5	1	2	2	2	4	4	2	2	2	1	3	2	3	3	4		3	4	1	1	1	4	1	4	3	1	12	7	242		
27	21	17	23	15	17	7	17	16	44	18	28	25	17	34	9	21	12	71	10	14	45	28	43	61	5	32	14	20	38	28	23	115	2,724	
11	3	4	6	6	1	4	7	3	12	4	10	6	3	10	4	6	3	26	8	1	10	4	16	21	3	5	3	3	11	7	6	30	673	
12	14	11	14	9	14	3	7	10	28	12	14	17	13	22	4	15	7	30	1	13	30	22	24	35	2	26	9	16	23	17	14	75	1,725	
10	14	7	14	9	14	3	6	7	25	10	12	15	9	17	4	13	7	23	1	13	25	17	21	29	2	23	8	13	19	14	12	68	1,484	
2		4					1	3	3	2	2	2	4	5	2	2	7				5	5	3	6	3	3	1	3	4	3	2	7	241	
3	4	2	3		2		3	3	4	2	4	2	1	2	1	2	15	1			5	1	3	5		1	2	1	4	4	3	10	297	
1																						1												9
21	24	17	28	9	21	18	19	17	8	20	49	19	28	11	9	17	12	7	23	2	38	33	37	10		3	16	12	6	55	24	34	1,388	
21	24	17	28	9	21	18	19	17	8	20	49	19	28	11	9	17	12	7	23	2	38	33	37	10		3	16	12	6	55	24	34	1,388	

No. 10.—Continued.

Diseases in each County, 1923.

Kent.	Lambton.	Lanark.	Leeds and Grenville.	Lennox and Addington.	Lincoln.	Manitoulin.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland & Durham.	Ontario.	Oxford.	Parry Sound.	Peel.	Perth.	Peterboro.	Prescott and Russell.	Prince Edward.	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas & Glengarry.	Sudbury.	Thunder Bay.	Timiskaming.	Victoria.	Waterloo.	Welland.	Wellington.	Wentworth.	York.	Grand Total, including Cities and Towns.				
39	29	11	21	13	16	2	22	18	18	18	36	19	11	28	26	15	15	20	12	17	28	29	22	36	16	21	17	13	30	23	23	64	2,025				
					1		1	1		2						1												1					1	20			
						1																											4	18			
								1	1							1	1	1					1	1								4	43				
1	2	1	1		2		1	1			1	1	1	1	1	1	1		1								1					2	43				
3	1	1								1	1	1	1	1	1						1			1								2	37				
		1																			1		1			2			2		1		30				
											1				1							1					1							13			
									1																									1	1		
																	1							1				1						10			
																																		1	6		
2	7	1	1	3			2	8	1			1	3						2		4	5	1	1	1	2		2	1		1	1		27			
												2	1	1	1	1			2								1	1	2	2		2	3		58		
4	1		1								1		2	2	2						1			1	3									133			
1			3		1																			1	3					1				37			
3	4	2	2	1	2		2	7	8	2	2	1	7	5	2	5	1	2	3	6	5	2	1	9	8	4	2	1	12	2	1	9		44			
																																				266	
1	1				1		3				1	1	1	2		1	1		1	1	5	2			1					1				48			
3	5	1	4	3	1	1	5				1	2	5	1	1	1	1	2	2			1	6	7				1		1	2	3	2	7	7		
1				1	1		1		1	1	2			1				1			1				3		1		1	1	1	1	3		14		
11	3	4	4	2	4	1	5	1	3	5	13	4	4	6	9	5		3	2	3	5	4	5	10	2	8	4	3	2	11	6	19		524			
3	1	1	3	1	2		2			3	3	1	2	4			2		2	2				5	1	7	2		1	2	3	5		160			
5	1	1		1			2		1	1	3	2	2	4			1	1		1			1	1	1		2	2	1	2	1	11		208			
1					2	1	1			1	2	1	2	1	4																					2	
2	1	1	1					1	2		5			3	1						1	2	1	3	4		1					4	1	1	54		
																																				78	
1			1									1	1	1		1					3											2	2		32		
2											1																									1	
											1	1	1	1		1							1	1											7		
																																				16	
																																				5	
							1		1		1					2	1	1	1				1					1		4					28		
															3										1				1			1			17		
																																					1
																																				7	
																																					6

TABLE
Showing Total Deaths by Individual

CAUSES OF DEATH.	Total.	Algoma.	Brant.	Bruce.	Carlton.	Cochrane.	Dufferin.	Elgin.	Essex.	Frontenac.	Grey.	Haldimand.	Haliburton.	Halton.	Hastings.	Huron.	Kenora.	
201. Fracture (cause not specified).....	98	...	2	...	4	1	...	3	1	...	6	2	...	...	...	7	8	...
202. Other external violence (cause specified).....	21	1	...	2	1	2	...	...	2	...	1	...	...	...	...	...	...	...
203. Other external violence (cause not specified)..	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
CLASS XV.—ILL-DEFINED DISEASES.																		
Total.....	184	5	2	3	6	11	...	3	2	3	3	5	...	1	6	...	1	
204. Sudden death.....	28	...	...	3	1	1	...	...	...	...	...	...	...	...	...	...	...	...
205. Cause of death not specified or ill-defined, total	156	5	2	...	5	10	...	3	2	3	3	5	...	1	6	...	1	
205A. Cause of death ill-defined.	96	3	2	...	4	7	...	2	2	2	2	4	...	2	...	...	...
205B. Cause of death not specified or unknown.....	60	2	...	...	1	3	...	1	...	1	1	1	...	1	4	...	1	

No. 10.—Concluded.

Diseases in each County, 1923.

Kent.	Lambton.	Lanark.	Leeds and Grenville.	Lennox and Addington.	Lincoln.	Manitoulin.	Middlesex.	Muskoka.	Nipissing.	Norfolk.	Northumberland & Durham.	Ontario.	Oxford.	Parry Sound.	Peel.	Perth.	Peterboro.	Prescott and Russell.	Prince Edward.	Rainy River.	Renfrew.	Simcoe.	Stormont, Dundas & Glengary.	Sudbury.	Thunder Bay.	Timiskaming.	Victoria.	Waterloo.	Welland.	Wellington.	Wentworth.	York.	Grand Total, including Cities and Towns.	
5	1	2	2	3	3	...	...	...	3	2	5	4	...	...	2	2	2	5	...	1	2	5	2	...	...	...	3	2	2	2	...	4	145
...	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	1	4	52
1	1	5	...
3	2	...	4	3	2	7	3	1	9	4	5	6	2	4	1	5	6	1	3	5	5	3	4	20	...	6	4	3	...	4	...	8	274	
1	1	...	1	...	...	1	...	...	1	1	1	3	...	...	...	1	1	1	1	2	1	1	2	2	...	...	1	...	1	...	2	39	...
2	1	...	4	2	2	7	2	1	9	3	4	3	2	4	1	5	5	1	2	3	4	2	2	18	...	6	4	2	...	3	...	6	235	
2	1	...	2	2	1	5	1	1	3	3	3	3	2	3	...	2	4	1	2	1	3	...	1	6	...	3	4	1	...	1	...	5	159	
...	...	...	2	...	1	2	1	...	6	...	1	...	...	1	1	3	1	...	...	2	1	2	1	12	...	3	...	1	...	2	...	1	76

TABLE No. 11.

Table Showing Total Deaths by Individual Diseases in each City.—1923.

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.
Total Deaths—All Causes.....	15,013	206	334	256	204	160	259	1,367	386	242	1,014	164	1,718	157	331	157	289	206	169	232	189	6,120	119	587	147
CLASS 1.—GENERAL DISEASES.																									
Total.....	2220	25	37	32	31	14	33	199	60	38	132	31	364	32	42	17	47	20	21	37	15	863	24	97	9
1. Enteric fever, total.....	52	1		5	1			3	1		2	9	8		1		2	2	2	1		13	1	2	
1A. Typhoid fever.....	51	1		5	1			3	1		2	9	7		1		2	2	2	1		13	1	2	
1B. Paratyphoid fever.....	1											1													
5. Malaria.....	1																								
6. Smallpox.....	3											1													
7. Measles.....	64	1											6									33		1	
8. Scarlet fever.....	68	1				3						1	6	4	5		3		2					3	
9. Whooping cough.....	160	1	4	5				14	3	1	3		12									30		4	
10. Diphtheria.....	152	1	1		6		4	25	3	1	3		71	2			2	2	2			43	1	7	1
11. Influenza, total.....	720	10	12	13	4	7	17	50	22	17	36	11	82	17	21	5	16	10	6	9	5	322	7	19	2
11A. With pulmonary complications specified	397	7	5	5	2	5	8	30	10	6	23	6	39	10	9	3	10	4	5	1	2	189	4	13	1
11B. Without pulmonary complications specified	323	3	7	8	2	2	9	20	12	11	13	5	43	7	12	2	6	6	1	8	3	133	3	6	1
13. Mumps.....	1							1																	
16. Dysentery, total.....	22				1	1	1	5	1	5			3									1		3	1
16B. Bacillary.....	5										5														
16C. Unspecified or due to other causes.....	17				1	1	1	5	1	1			3								1			3	1
21. Erysipelas.....	51	1						8		1	4		3		1		1		1			29		2	
22. Acute polio-myelitis.....	3							1																2	
23. Encephalitis lethargica.....	28				1			2		3	4		1			1	2					10	1	3	
24. Meningococcus meningitis.....	16							2					3				1		1	1	1	6	2		
25. Other epidemic and endemic diseases, total	8				2								3									2		1	
25A. Chicken-pox.....	6				2								2									1		1	
25C. Others under this title	2												1									1		1	
29. Tetanus.....	13	1		1	2				1		3									1	1	1	1	2	
30. Mycoses.....	2																					2			
31-37. Tuberculosis. Total	706	8	16	6	12	3	10	63	19	9	63	7	112	8	10	9	16	8	5	14	5	263	5	31	4
31. Tuberculosis of the respiratory system.....	539	5	15	5	10	2	6	49	11	8	55	6	89	6	9	8	12	6	4	12	3	190	4	21	3
32. Tuberculosis of the meninges and central nervous system.....	69	2	1	1	2		1	6	4	1	3		11	2	1		3	1		1	1	25		2	1
33. Tuberculosis of the intestines and peritoneum.....	29						2		1		2	1	5				1				1	12	1	3	
34. Tuberculosis of the vertebral column.....	18						1	5			1		2			1	1					5		2	
35. Tuberculosis of the joints.....	4							1														3			
36. Tuberculosis of other organs, total.....	15				1			1			1		2									9		1	
36C. Lymphatic system (mesenteric, and retroperitoneal glands excepted).....	2				1																				1
36D. Genito-urinary system.....	8							1					2									5			
36E. Organs other than above.....	5										1											4			
37. Disseminated tuberculosis, total.....	32	1						3	1		1		3						1	1		19		2	
37A. Disseminated tuberculosis, acute.....	29							3	1		1		2						1	1		18		2	
37B. Disseminated tuberculosis, chronic.....	3	1											1												
38. Syphilis.....	65	1			2			8	1	1	2	1	18	1	1		2		1	1		21	1	3	
40. Gonococcal infection (ophthalmia excepted).....	3										1						1					1			
41. Purulent infection, septicæmia.....	82	1	2			1	1	11		4	4		12							2	3	30	2	6	1

TABLE No. 11.—Continued.

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																									
Total	2026	26	43	35	25	28	33	176	56	36	138	8	185	32	48	23	34	32	23	28	25	906	14	54	18
43-49. Cancer. Total.....	1288	19	25	21	12	19	19	116	37	28	81	6	106	19	31	12	21	18	15	19	15	596	6	33	14
43. Cancer of the buccal cavity.....	60	1	1	.....	1	.....	3	2	1	.....	1	8	2	3	.....	2	1	.....	1	1	30	.....	2	.....	2
44. Cancer of the stomach and liver.....	398	7	8	6	6	4	5	40	12	12	26	.....	40	6	7	5	7	4	4	10	5	165	1	14	4
45. Cancer of the peritoneum, intestines and rectum.....	212	2	5	6	1	5	5	21	3	7	10	1	14	4	3	2	2	3	4	1	2	100	4	7	..
46. Cancer of the female genital organs.....	170	3	7	6	.....	2	3	15	6	1	8	.....	15	3	2	3	1	2	1	2	1	83	1	4	1
47. Cancer of the breast...	137	2	1	1	3	3	1	15	4	3	11	2	8	2	7	1	1	1	1	1	1	64	.....	2	2
48. Cancer of the skin.....	40	.....	.....	1	2	1	5	2	.....	4	.....	3	.....	3	.....	1	1	.....	.....	.....	15	.....	.....	2	.....
49. Cancer of unspecified organs.....	271	4	3	2	1	2	4	17	8	4	22	2	18	2	6	1	7	6	5	4	5	139	.....	6	3
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).	10	.....	.....	.....	.....	.....	.....	2	.....	.....	1	.....	1	.....	.....	.....	1	.....	.....	.....	.....	5	.....	.....	.....
51. Acute rheumatic fever	42	1	1	1	.....	1	1	3	.....	.....	.....	.....	6	2	.....	.....	1	.....	.....	.....	1	20	.....	3	1
52. Chronic rheumatism, osteo-arthritis, gout.	45	2	4	2	1	2	1	.....	.....	.....	5	.....	6	.....	1	1	.....	1	.....	1	.....	18	.....	.....	.....
53. Scurvy.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
54. Pellagra.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
56. Rickets.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	2	.....
57. Diabetes mellitus.....	179	1	4	3	1	2	2	17	3	4	20	.....	17	2	4	2	3	2	.....	1	2	83	1	3	1
58. Anaemia chlorosis, total.....	223	.....	6	5	1	1	7	19	6	2	19	1	28	2	6	3	5	5	4	2	4	82	6	8	1
58A. Pernicious anaemia.....	199	.....	6	5	1	1	6	17	5	2	16	1	26	2	5	3	5	5	4	1	1	73	5	8	1
58B. Other anaemias and chlorosis.....	24	.....	.....	.....	.....	.....	1	2	1	.....	3	.....	2	.....	1	.....	.....	.....	.....	1	3	9	1	.....	.....
59. Diseases of the pituitary gland.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
60. Diseases of the thyroid gland, total.....	80	3	1	2	1	.....	11	4	.....	4	.....	7	5	3	1	2	2	1	2	2	28	.....	1	.....
60A. Exophthalmic goitre.....	30	.....	1	.....	.....	.....	6	1	.....	2	.....	3	.....	.....	.....	.....	1	.....	1	1	14	.....	.....	.....
60B. Other diseases of the thyroid gland.....	50	3	.....	2	1	.....	5	3	.....	2	.....	4	5	3	1	2	1	1	1	1	14	.....	1	.....
62. Diseases of the thymus	7	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
63. Diseases of the adrenals (Addison's disease).....	8	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....
64. Diseases of the spleen.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65. Leukaemia lymphadenoma, total.....	46	.....	.....	1	3	.....	3	2	1	3	.....	2	2	2	.....	2	.....	.....	.....	.....	1	21	1	1	1
65A. Leukaemia.....	35	.....	.....	.....	3	.....	1	2	1	3	.....	2	2	1	.....	1	.....	.....	.....	.....	1	16	.....	1	1
65B. Lymphadenoma (Hodgkin's disease).	11	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	5	1	.....	.....
66. Alcoholism (acute and chronic).....	33	.....	2	.....	3	.....	1	1	1	.....	.....	.....	1	.....	.....	2	.....	.....	1	1	.....	19	.....	1	.....
67. Chronic poisoning by mineral substances, total.	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
67A. Chronic lead poisoning.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
68. Chronic poisoning by organic substances.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....
69. Other general diseases	38	.....	.....	.....	1	3	2	1	3	1	2	.....	6	.....	1	1	1	1	2	.....	.....	11	.....	2	.....
CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.																									
Total	1188	12	39	19	10	18	30	106	32	15	91	11	105	10	24	15	29	21	13	22	23	475	8	39	21
70. Encephalitis.....	25	1	.....	1	2	.....	1	1	.....	3	.....	4	.....	1	3	1	.....	1	.....	.....	.....	5	1	.....	.....
71. Meningitis, total.....	50	2	1	2	.....	1	5	1	2	1	.....	3	.....	1	1	4	.....	1	1	1	1	18	.....	3	1
17A. Simple meningitis.....	48	2	1	2	.....	1	5	1	2	1	.....	3	.....	1	1	4	.....	1	1	1	1	16	.....	3	1
71B. Non-epidemic cerebrospinal meningitis.	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
72. Tabes dorsalis (locomotor ataxia).....	81	.....	.....	.....	1	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1	.....

TABLE No. 11.—Continued.

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.	
73. Other diseases of the spinal cord.....	85	1	3	2	1	4	1	7	3	1	6	1	13	...	1	...	2	1	1	2	...	32	3	...	...
74. Cerebral hæmorrhage, apoplexy, total.....	580	7	23	9	4	12	15	54	19	9	35	10	48	7	16	7	13	14	7	9	16	212	3	21	10	
74A. Cerebral hæmorrhage and embolism.....	545	7	22	9	4	11	13	54	18	8	31	10	44	7	15	6	13	14	7	9	14	199	3	19	8	
74B. Cerebral thrombosis and embolism.....	35	...	1	...	1	2	...	...	1	1	4	...	4	...	1	1	...	...	...	...	2	13	...	2	2
75. Paralysis of unstated origin, total.....	95	1	1	1	...	...	...	9	...	...	3	...	11	...	...	...	6	3	2	4	1	49	1	3	...
75A. Hemiplegia.....	69	1	1	...	...	...	...	6	...	...	3	...	6	...	...	...	5	1	1	3	...	38	1	3	...
75B. Others under this title	26	...	...	1	...	...	3	...	...	...	...	...	5	...	...	1	2	1	1	1	1	11	...	...	...
76. General paralysis of the insane.....	55	...	...	...	...	4	1	...	...	...	13	...	1	...	...	...	1	...	...	...	...	34	...	...	1
77. Other forms of mental alienation.....	48	...	1	...	...	7	6	...	...	...	10	...	...	...	...	...	...	...	...	...	...	23	...	1	...
78. Epilepsy.....	42	...	2	1	...	1	2	...	1	4	...	2	...	...	1	...	...	...	...	2	...	17	...	...	9
79. Convulsions (non-puerperal, 5 years and over).....	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80. Infantile convulsions (under 5 years of age)	45	...	1	1	1	1	...	2	2	...	6	...	4	...	1	1	1	...	...	3	2	17	...	2	...
81. Chorea.....	6	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	1	2	...	...	...
82. Neuralgia and neuritis.	5	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	3	...	1	...
83. Softening of the brain.	12	...	1	...	...	1	2	...	...	...	...	...	1	...	...	...	1	...	...	...	...	6	...	...	...
84. Other diseases of the nervous system.....	70	...	5	1	...	1	7	...	1	...	...	5	...	2	...	...	1	1	...	2	...	41	...	3	...
85. Diseases of the eyes and annæxæ.....	3	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...
86. Diseases of the ears and of the mastoid sinus.	58	...	1	...	...	...	10	3	1	9	...	12	2	...	3	1	...	...	1	...	12	...	3	...	...
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.																										
Total.....	2797	34	50	46	23	34	41	244	85	44	226	28	274	23	70	21	51	47	32	26	33	1215	13	94	43	
87. Pericarditis.....	20	...	...	1	...	...	1	...	...	2	...	4	...	...	...	1	...	...	...	...	...	11	...	...	...
88. Endocarditis and myocarditis (acute).....	150	1	6	1	2	2	16	2	2	9	3	22	...	...	2	3	3	4	1	3	60	...	4	2	...
89. Angina pectoris.....	178	3	...	1	1	...	9	4	3	7	...	10	...	4	1	1	12	...	1	2	115	...	2	2	...	
90. Other diseases of the heart.....	1465	21	27	20	12	22	25	139	40	25	105	16	130	11	41	12	32	16	15	19	24	628	8	51	26	
91. Diseases of the arteries, total.....	942	9	14	23	8	9	14	73	37	14	101	8	104	12	24	6	14	16	12	3	4	384	5	35	13	
91A. Aneurysm.....	24	...	...	1	...	4	1	...	...	...	...	1	2	...	1	...	...	...	...	...	...	10	1	1	...
91B. Arteriosclerosis.....	903	9	13	22	8	9	12	67	36	13	100	7	102	12	23	5	11	15	12	3	4	369	4	34	13	
91C. Other diseases of the arteries.....	15	...	1	...	2	2	...	1	1	...	...	...	...	...	1	1	1	...	...	...	...	5	...	...	...
92. Embolism and thrombosis (not cerebral).	12	...	2	...	...	3	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	4	...	...	...
93. Diseases of the veins (varices, hæmorrhoids, phlebitis, etc.)	9	...	1	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	5	...	...	...
94. Diseases of the lymphatic system (lymphangitis, etc.).....	12	...	...	...	...	1	...	...	...	...	1	2	...	...	...	...	...	...	2	...	...	5	...	1	...
95. Hæmorrhage without specified cause.....	9	...	...	...	2	...	1	...	1	...	...	...	1	...	...	...	1	...	...	...	...	3	...	1	...
CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.																										
Total.....	1664	22	26	28	21	13	38	148	20	23	111	17	217	8	39	10	34	18	11	25	23	711	7	76	18	
97. Diseases of the nasal fossæ and their annæxæ.....	7	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	...	...	...	4	...	2	...
98. Diseases of the larynx.	11	1	...	1	1	...	1	...	...	1	...	2	...	...	...	...	...	...	...	...	1	2	...	1	...
99. Bronchitis, total.....	153	2	3	3	4	2	12	1	1	4	4	21	1	3	1	6	2	2	4	3	71	1	1	1	...	
99A. Bronchitis, acute.....	61	1	1	1	4	5	1	...	...	1	13	...	2	...	...	1	...	1	2	2	26	...	1	...	...
99B. Bronchitis, chronic.....	49	1	2	1	...	4	...	...	1	2	1	7	1	1	...	...	...	1	...	...	26	...	...	1	...
99C. Bronchitis, not otherwise defined, under 5 years.....	9	...	...	...	...	...	...	...	...	...	1	...	...	...	1	2	...	...	1	1	3	...	...	...	...
99D. Bronchitis, not otherwise defined, 5 years and over.....	34	...	1	...	2	3	...	...	2	2	...	...	...	...	...	4	1	1	1	...	16	1	...	...	...
100. Broncho-pneumonia (inc. capillary bronchitis), total.....	565	11	6	4	7	3	6	49	7	5	24	5	64	...	11	...	11	5	2	10	4	304	...	20	7	
100A. Broncho-pneumonia	554	11	6	3	7	3	6	49	7	5	24	4	62	...	11	...	11	5	2	9	4	298	...	20	7	
100B. Capillary bronchitis.	11	...	1	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	1	...	6	...	...	...	...

TABLE No. 11.—Continued.

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.	
101. Pneumonia, total.....	788	7	14	17	12	4	22	68	7	14	75	8	112	5	20	9	14	9	7	10	11	281	6	47	9	
101A. Pneumonia, lobar.....	329	5	5	5	6	1	10	27	3	5	20	5	53	3	5	2	8	3	1	1	11	137	2	22	6	
101B. Pneumonia, not otherwise defined.....	459	7	9	12	6	3	12	41	4	9	55	3	59	2	15	7	6	9	4	9	11	144	4	25	3	
102. Pleurisy.....	29	1	1	1	1	1	1	1	1	1	2	1	4	1	1	1	1	1	1	1	2	15	1	1	1	
103. Congestion and haemorrhagic infarct of the lung.....	48	1	1	1	1	1	5	11	4	1	2	1	10	1	3	1	1	1	1	1	1	8	1	1	1	
105. Asthma.....	39	3	1	1	1	2	5	5	2	2	1	1	3	1	1	1	2	1	1	1	1	14	2	2	1	
106. Pulmonary emphysema.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	
107. Other diseases of the respiratory system (tuberculosis excepted), total.....	21	1	3	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	9	1	1	1	
107C. Others under this title	21	1	3	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	9	1	1	1	
CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.																										
Total.....	1254	21	34	30	17	14	24	118	28	23	76	22	184	10	24	17	20	9	21	17	12	456	11	50	16	
108. Diseases of the mouth and annexa.....	14	1	1	1	1	1	1	2	1	1	2	1	2	1	1	1	1	1	1	1	1	3	1	1	1	1
109. Diseases of the pharynx and tonsils (including adenoid vegetations).....	47	2	2	1	1	1	5	1	1	4	1	4	1	4	1	1	1	1	1	1	1	26	3	3	1	1
110. Diseases of the oesophagus.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
111. Ulcer of the stomach, duodenum, total.....	83	1	5	1	2	1	8	1	1	5	1	7	1	2	1	2	1	1	1	2	2	36	1	4	1	1
111A. Ulcer of the stomach.....	41	1	2	1	2	1	3	1	1	2	1	3	1	1	1	1	1	1	1	2	1	18	1	3	1	1
111B. Ulcer of the duodenum.....	42	1	3	1	1	1	5	1	1	3	1	4	1	1	1	1	1	1	1	1	1	18	1	1	1	1
112. Other diseases of the stomach (cancer excepted).....	86	2	2	1	1	1	9	1	2	6	4	12	1	2	4	2	2	1	1	1	1	34	4	4	1	1
113. Diarrhoea and enteritis, under 2 years.....	287	4	11	6	7	1	5	22	2	5	12	5	71	2	6	5	1	3	8	2	2	88	4	16	1	1
114. Diarrhoea and enteritis, 2 years and over.....	59	2	2	1	1	1	4	2	1	7	1	5	1	5	2	1	1	1	1	1	1	26	1	1	1	1
117. Appendicitis and typhlitis.....	227	4	5	8	2	2	7	25	8	3	14	5	36	3	3	1	5	2	7	4	2	69	2	10	3	1
118. Hernia, intestinal obstruction, total.....	177	5	6	2	1	2	8	15	6	5	11	3	17	2	2	2	5	2	2	7	2	63	3	3	5	1
118A. Hernia.....	59	4	1	1	1	3	4	4	4	4	5	1	6	2	2	2	2	2	2	2	2	16	2	2	1	1
118B. Intestinal obstruction.....	118	1	5	1	1	2	5	11	2	1	6	2	11	2	2	3	3	2	5	2	2	47	3	1	3	1
119. Other diseases of the intestines.....	34	1	1	1	1	1	1	2	1	1	6	1	5	1	1	1	1	1	1	1	1	15	1	1	1	1
120. Acute yellow atrophy of the liver.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1
121. Hydatid tumour of the liver.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
122. Cirrhosis of the liver, total.....	47	2	2	1	1	1	1	2	1	2	1	7	1	1	2	1	2	1	1	1	1	25	1	2	1	1
122B. Cirrhosis of the liver, not specified as alcoholic.....	47	2	2	1	1	1	1	2	1	2	1	7	1	1	2	1	2	1	1	1	1	25	1	2	1	1
123. Biliary calculi.....	46	2	2	1	1	1	4	1	2	1	1	8	1	1	1	1	1	1	1	1	1	2	11	1	5	2
124. Other diseases of the liver.....	90	4	3	5	5	5	15	4	3	2	1	7	1	4	2	3	1	1	1	1	1	28	1	2	1	1
125. Diseases of the pancreas.....	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1	1	1	1
126. Peritonitis without specified cause.....	33	1	1	1	1	1	1	1	1	1	3	1	3	1	1	1	1	1	1	1	1	19	1	1	1	1
127. Other diseases of the digestive system (cancer and tuberculosis excepted).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																										
Total.....	841	13	17	15	10	5	12	86	32	9	72	9	93	9	18	5	16	14	18	8	12	330	4	30	4	
128. Acute nephritis.....	61	1	4	2	1	5	1	1	1	6	2	7	2	2	2	2	2	2	2	2	1	25	1	1	1	1
129. Chronic nephritis (Bright's disease).....	487	10	9	8	4	2	10	55	15	7	49	4	45	3	10	3	6	12	14	2	7	190	2	17	3	1

TABLE No. 11.—Continued.

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.
131. Other diseases of the kidneys and their annexa (diseases of kidneys in pregnancy excluded).....	60	2	3	6	3	3	5	1	1	1	1	1	1	2	31	1	1								
132. Calculi of the urinary passages.....	20							1			1	3	2								2	8	1	1	
133. Diseases of the bladder.....	25	1						3		1	2	2			1	1						13		1	
134. Diseases of the urethra, urinary abscess, etc., total.....	7	1										1								1		2		2	
134A. Stricture of the urethra.....	5	1										1								1		1		1	
134B. Other diseases of the urethra.....	2																					1		1	
135. Diseases of the prostate.....	111	2	2	3	2	1	1	9	8	1	8	1	14	2	3		2	1	2	2	1	40		5	1
136. Non-venereal diseases of the male genital organs.....	1											1													
137. Cysts and other benign tumours of the ovary.....	14							1	1		1	4		1								6			
138. Salpingitis and pelvic abscess.....	22	1						1	1		2	4					2		1			7		3	
139. Benign tumours of the uterus.....	18	1						4	1			2	4							1		4			
140. Non-puerperal uterine haemorrhage.....	3																1					2			
141. Other diseases of the female genital organs.....	12			1				1	2				3		1	1					1	2			
CLASS VIII.—THE PUERPERAL STATE.																									
Total.....	182	3	4	2	5	3	7	13	7	3	8	4	16	4	3	1	3	2	2	4	2	76	2	7	1
143. Accidents of pregnancy, total.....	26	1	2	1				1	1		2	1	3	1								12		1	
143A. Abortion.....	8		2	1				1			1	1	1									2			
143B. Ectopic gestation.....	6							1			1	1	1									1		1	
143C. Other accidents of pregnancy.....	12	1										1	1									9			
144. Puerperal haemorrhage.....	12								1					1		1	1				1	6		1	
145. Other accidents of childbirth, total.....	19	1						2	3		1	2							1	3		5		1	
145A. Caesarean section.....	2							1											1						
145B. Other surgical operations and instrumental delivery.....	1																					1			
145C. Others under this title.....	16	1					1	3			1	2								3		4		1	
146. Puerperal sepsis.....	60	1	1	1	2	1	1	4		3	2	3	4	1	1				1			29	2	3	
147. Phlegmasia alba dolens; puerperal embolism or sudden death in puerperium.....	18		1					1	2	1			2									11			
148. Puerperal albuminuria and convulsions.....	44				3	2	3	2	4		3	5	1	2		3	1		1	1		11		1	1
149. Following childbirth (not otherwise defined).....	2							1														1			
150. Puerperal diseases of the breast.....	1																					1			
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.																									
Total.....	78			1				7	2	2	4		8		3		2	2		2		43	2		
151. Gangrene.....	25							2	2	1	3		5		1		1		1			9			
152. Furuncle.....	8							1				1										5			
153. Acute abscess.....	20			1				2					1				1			1		14			
154. Other diseases of the skin and annexa.....	25							2		1	1		2		1		1					15	2		

TABLE No. 11.—Continued.

CAUSES OF DEATH.	Total	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.																									
Total.....	37	..	2	..	2	..	1	3	..	..	1	1	3	..	2	..	1	..	1	1	1	17	1	..	..
156. Diseases of the bones (tuberculosis excepted).....	34	..	2	..	2	..	1	3	..	..	1	1	3	..	2	..	..	..	1	1	1	15	1	..	..
156. Diseases of the joints (tuberculosis and rheumatism excepted).....	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..
158. Other diseases of the organs of locomotion	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
CLASS XI.—MALFORMATIONS.																									
Total.....	238	3	4	4	2	3	2	29	5	3	5	4	29	1	4	4	2	2	1	5	4	106	2	11	3
159. Congenital malformations (still-births not included), total.....	238	3	4	4	2	3	2	29	5	3	5	4	29	1	4	4	2	2	1	5	4	106	2	11	3
159A. Hydrocephalus.....	30	2	..	1	..	..	1	4	..	..	1	1	4	..	..	..	..	..	..	..	..	13	1	..	2
159B. Congenital malformations of the heart.....	95	1	1	2	2	2	1	13	1	3	2	2	12	..	2	1	2	2	..	1	..	40	..	4	1
159C. Others under this title.....	113	..	3	1	..	1	..	12	4	..	2	1	13	1	2	3	..	..	1	4	4	53	1	7	..
CLASS XII.—DISEASES OF EARLY INFANCY.																									
Total.....	1200	19	32	16	26	14	12	112	23	25	53	14	132	9	25	23	26	15	13	29	13	472	12	83	2
160. Congenital debility, icterus and sclerema.....	277	9	9	4	4	3	3	27	4	5	16	4	36	4	8	11	4	5	2	8	1	92	3	14	1
161. Premature birth, injury at birth, total.....	780	9	22	10	21	10	8	76	18	17	32	8	88	3	12	10	18	7	10	18	11	302	9	60	1
161A. Premature birth.....	663	8	19	10	20	8	7	62	13	16	29	7	73	3	11	8	16	5	7	15	9	252	9	55	1
161B. Injury at birth.....	117	1	3	..	1	2	1	14	5	1	3	1	15	..	1	2	2	3	3	3	2	50	..	5	..
162. Other diseases peculiar to early infancy.....	138	1	1	2	1	1	1	9	1	2	5	2	7	2	5	2	4	2	1	3	1	76	..	9	..
163. Lack of care.....	5	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..
CLASS XIII.—OLD AGE.																									
Total.....	394	18	28	5	..	4	11	21	12	10	29	4	33	10	15	5	7	9	3	10	11	129	4	9	7
164. Senility, total.....	394	18	28	5	..	4	11	21	12	10	29	4	33	10	15	5	7	9	3	10	11	129	4	9	7
CLASS XIV.—EXTERNAL CAUSES.																									
Total.....	818	10	17	19	32	9	14	98	21	10	59	11	63	8	12	16	16	12	7	17	11	305	13	33	5
165. Suicide by solid or liquid poisons (corrosive substances excepted).....	11	..	..	..	..	..	1	1	..	1	..	1	..	..	1	..	..	..	..	..	..	6	..	..	..
166. Suicide by corrosive substances.....	10	..	..	..	..	..	..	2	1	..	1	..	..	..	1	..	..	..	..	..	..	5	..	..	..
167. Suicide by poisonous gas.....	21	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	1	..	..	..	..	16	..	..	..
168. Suicide by hanging or strangulation.....	16	1	..	..	..	1	2	..	1	..	1	..	1	..	1	..	..	..	..	..	3	6	..	..	..
169. Suicide by drowning.....	20	..	1	2	..	..	1	2	..	2	2	4	..	1	..	1	..	..	..	..	..	4	..	2	..
170. Suicide by firearms.....	17	..	..	..	..	..	2	1	..	..	..	2	..	2	..	..	1	..	1	..	..	9	1	..	..
171. Suicide by cutting or piercing instruments	11	..	..	1	..	1	3	..	..	..	..	..	..	..	1	..	..	..	..	..	1	3	1	..	..
172. Suicide by jumping from high places.....	11	..	..	1	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..	6	..	..	..
174. Other suicides.....	3	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	6	..	..	..
175. Poisoning by food.....	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..

TABLE No. 11—Continued

CAUSES OF DEATH.	Total.	Belleville.	Brantford.	Chatham.	Fort William.	Galt.	Guelph.	Hamilton.	Kingston.	Kitchener.	London.	Niagara Falls.	Ottawa.	Owen Sound.	Peterboro.	Port Arthur.	St. Catharines.	St. Thomas.	Sarnia.	Sault Ste. Marie.	Stratford.	Toronto.	Welland.	Windsor.	Woodstock.
177. Other acute accidental poisonings (gas excepted).....	9	1	1						1		1		1				1								
178. Conflagration.....	6							3															3		
179. Accidental burns (conflagration, excepted).....	78	1	2	4	3	2	1	19	1	2	3	1	2			1	1	1	2	4	1	23	2	1	1
180. Accidental mechanical suffocation.....	11			1	1				1														7		1
181. Accidental absorption of irrespirable or poisonous gas.....	36							1		2		3													
182. Accidental drowning.....	50		2	3	1		2	3	5		5	4	4	3	3	1	2				2	1	4	2	3
183. Accidental injury by firearms (wounds of war excepted).....	14	1	1					2	1		2					1	1			1		3		1	
184. Accidental injury by cutting or piercing instruments.....	3												1									2			
185. Accidental injury by fall.....	127		1	2	3	2	3	7	2		7	2	9	1	2	1		2		2	3	66	6	4	2
186. Accidental injury in mines and quarries.....	1																					1			
187. Accidental injury by machines.....	30	1		2	4		1	5			2		2				2			1		8		2	
188. Accidental injury by other crushing (vehicles, railways, landslides, etc.).....	226	4	5	3	15	3	3	29	6	3	14	2	21	2	2	7	6	4	3	5	2	71		15	1
188A. Railroad accidents.....	52		1		5	1	1	7	2	2	6		2			5	1	3	1	3	1	6		5	
188B. Street car accidents.....	18				2								5				1					10			
188C. Automobile accidents.....	118	2	3	1	5	2	2	15	2	1	4	2	10		1		3	1	2		1	50		10	1
188E. Other vehicles.....	16		2	1				4	1		3			1			1					3			
188F. Other crushing.....	22	2	1		2			3	1		1		4	1	1	2				2		2			
189. Injury by animals (poisoning excepted).....	11		1							1	2		1	1	1				1			3			
192. Starvation (deprivation of food or water).....	1																					1			
193. Excessive cold.....	1										1														
194. Excessive heat.....	4							1			1													2	
196. Electricity (lightning excepted).....	9		1		1			1															6		
197. Homicide by firearms.....	8							1			1		1										5		
198. Homicide by cutting or piercing instruments.....	1																						1		
199. Homicide by other means.....	5				1																	2		2	
200. Infanticide (murder of infants less than one year of age).....	5		1					2					1									1			
201. Fracture (cause not specified).....	34	1	1	3				5	2		6		6	1	1		2	2		1		3			
202. Other external violence (cause specified).....	25				1	1	7		1	1	1		2		1	2			1			6	1		1
203. Other external violence (cause not specified).....	2		1										1												
CLASS XV.—ILL-DEFINED DISEASES.																									
Total.....	76		1	4	1	1	7	3	1	9		12	1	2		1	3	3		1	4	16	2	4	
204. Sudden death.....	8			1				1	1	2		2													1
205. Cause of death not specified or ill-defined, total.....	68		1	3	1	1	7	2		7		10	1	2		1	3	3		1	4	16	2	3	
205A. Ill-defined.....	53		1	2		1	5	1		7		6	1	2			2	2		1	2	16	1	3	
205B. Not specified or unknown.....	15			1	1		2	1				4					1	1		2			1		

TABLE No. 12.

Table Showing Total Deaths by Individual Diseases in each Town of 5,000 population and over, 1923.

CAUSES OF DEATH.	Total.	Barrle.	Brockville.	Cobourg.	Collingwood.	Cornwall.	Eastview	Ford City	Hawkesbury.	Ingersoll.	Kenora.	Lindsay.	Midland.	North Bay.	Orillia.	Oshawa.	Pembroke.	Preston.	Smith's Falls.	Stubbury.	Trenton.	Walkerville.	Waterloo.	
Total Deaths—All Causes.....	2,478	120	227	128	87	186	92	75	86	70	60	131	78	117	128	177	160	54	99	202	73	56	70	
CLASS I.—GENERAL DISEASES.																								
Total.....	435	15	34	33	11	34	18	13	16	8	7	20	5	22	21	42	35	7	20	57	6	3	8	
1. Enteric fever, total.....	29	2	1	1	1	4	.....	.....	4	1	.....	3	1	1	2	1	2	.....	.....	5	.....	.....	.....	.....
1A. Typhoid fever.....	28	2	1	1	1	4	.....	.....	4	1	.....	3	1	1	1	2	.....	.....	.....	5	.....	.....	.....	.....
1B. Paratyphoid fever.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7. Measles.....	9	1	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8. Scarlet fever.....	13	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	6	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
9. Whooping cough.....	28	.....	3	.....	2	1	.....	3	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
10. Diphtheria.....	36	1	1	.....	.....	3	6	3	.....	.....	.....	.....	.....	4	2	3	5	.....	.....	1	.....	.....	.....	.....
11. Influenza, total.....	125	5	9	9	2	6	3	.....	3	4	4	9	3	3	2	15	18	3	8	15	2	1	.....	2
11A. Influenza, with pulmonary complications specified.....	78	2	6	4	.....	3	2	.....	2	3	2	6	1	3	2	13	12	1	6	7	1	1	.....	1
11B. Influenza, without pulmonary complications specified.....	47	3	3	5	2	3	1	.....	1	1	2	3	2	.....	.....	2	6	2	2	8	1	.....	.....	.....
16. Dysentery, total.....	9	.....	1	3	.....	.....	.....	2	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
16C. Dysentery, unspecified or due to other causes.....	9	.....	1	3	.....	.....	.....	2	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
21. Erysipelas.....	7	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
22. Acute polio-myelitis.....	3	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23. Encephalitis lethargica.....	5	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24. Meningococcus meningitis.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25. Other epidemic and endemic diseases, total.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25A. Chicken-pox.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29. Tetanus.....	5	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31-37. Tuberculosis. Total.....	145	3	18	14	3	11	5	8	5	2	2	1	.....	7	13	10	6	2	10	17	2	1	5	.....
31. Tuberculosis of the respiratory system.....	122	3	17	14	3	5	5	7	5	2	1	1	.....	7	11	8	4	2	9	13	2	.....	3	.....
32. Tuberculosis of the meninges and central nervous system.....	7	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33. Tuberculosis of the intestines and peritoneum.....	8	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34. Tuberculosis of the vertebral column.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35. Tuberculosis of the joints.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36. Tuberculosis of other organs, total.....	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36D. Genito-urinary system.....	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37. Disseminated tuberculosis, total.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37A. Disseminated tuberculosis, acute.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
37B. Disseminated tuberculosis, chronic.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38. Syphilis.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
41. Purulent infection, septicaemia.....	14	2	1	1	2	2	1	.....	1	1	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																								
Total.....	275	14	25	16	11	16	10	4	5	8	6	21	12	11	13	17	24	7	14	16	5	7	13	
43-49. Cancer. Total.....	178	9	15	9	7	13	7	2	3	4	2	15	7	7	12	16	6	7	11	4	6	9	.....
43. Cancer of the buccal cavity.....	8	1	1	.....	.....	2	.....	.....	.....	.....	.....	1	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....
44. Cancer of the stomach and liver.....	70	4	10	6	.....	2	5	1	3	.....	2	5	2	4	3	4	4	3	1	5	2	1	3	.....
45. Cancer of the peritoneum, intestines and rectum.....	25	.....	.....	1	2	5	1	.....	.....	.....	.....	2	1	1	.....	2	1	2	.....	1	1	.....	.....
46. Cancer of the female genital organs.....	16	1	1	.....	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	3	.....	.....	.....
47. Cancer of the breast.....	18	1	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	1	.....	.....	.....
48. Cancer of the skin.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
49. Cancer of unspecified organs.....	40	2	3	2	1	2	.....	.....	.....	1	.....	6	3	1	2	5	4	1	3	1	.....	2	1	
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
51. Acute rheumatic fever.....	9	.....	.....	.....	1	1	1	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
52. Chronic rheumatism, osteo-arthritis, gout.....	8	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
56. Rickets.....	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
57. Diabetes mellitus.....	17	1	1	1	.....	1	1	.....	1	1	1	1	1	1	1	1	1	1	2	.....	.....	.....	.....	.....

TABLE No. 12.—Continued.

CAUSES OF DEATH.	Total.	Barrie.	Brockville.	Cobourg.	Collingwood.	Cornwall.	Eastview.	Ford City.	Hawkesbury.	Ingersoll.	Kenora.	Lindsay.	Midland.	North Bay.	Orillia.	Oshawa.	Pembroke.	Preston.	Smith's Falls.	Sudbury.	Trenton.	Walkerville.	Waterloo.	
58. Anaemia chlorosis, total.....	30	3	2	4	1	1				1			3	3	2		3	2		2	1		2	
58A. Pernicious anaemia.....	23	3	2	2	1	1				1			3	3			2			1	1		1	
58B. Other anaemias and chlorosis...	7			2										2			3	2		1			1	
60. Diseases of the thyroid gland, total.....	12	1	3		1				1	1				1	1		1		1	1				
60. Exophthalmic goitre.....	6	1	2							1				1	1		1		1	1				
60B. Other diseases of the thyroid gland.....	6		1		1				1				1	1			1		1	1				
62. Diseases of the thymus.....	3							1								1							1	
65. Leukaemia lymphadenoma, total.....	2												1				1							
65A. Leukaemia.....	1													1										
65B. Lymphadenoma (Hodgkin's disease).....	1																1							
66. Alcoholism (acute and chronic)...	6		2								1						1				2			
69. Other general diseases.....	6		1		1		1					1							1					
CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.																								
Total.....	172	7	11	13	5	10	8	1	11	10	3	7	8	6	11	6	11	6	9	8	11	6	4	
70. Encephalitis.....	5		1							1				1	1		1							
71. Meningitis, total.....	4						1			1										1				
71A. Simple meningitis.....	4						1			1										1				
72. Tabes dorsalis (locomotor ataxia).....	2			1					1															
73. Other diseases of the spinal cord.....	10	1		1	2		1		1						1				1	1		1		
74. Cerebral haemorrhage, apoplexy, total.....	94	3	6	6	2	7	4		5	5	3	5	6	3	5	4	6	3	5	4	7	4	1	
74A. Cerebral haemorrhage.....	89	3	5	6	2	7	4		5	5	3	5	6	2	3	4	5	3	5	4	7	4	1	
74B. Cerebral thrombosis and embolism.....	5		1						2	1				1	2		1							
75. Paralysis of unstated origin, total.....	7		1						2	1														
75A. Hemiplegia.....	3																							
75B. Others under this title.....	4		1						2	1														
76. General paralysis of the insane.....	2		1														1							
77. Other forms of mental alienation.....	3			2																	1			
78. Epilepsy.....	8														3	1						1	2	
80. Infantile convulsions (under 5 years of age).....	11	1	1			3	2			2							1		1					
81. Chorea.....	1																1							
82. Neuralgia and neuritis.....	3			1													1							
83. Softening of the brain.....	6	1		1									1				1				1			
84. Other diseases of the nervous system.....	10	1		1	1			1	1				1	2						1			1	
86. Diseases of the ears and of the mastoid sinus.....	6		1						1				2				1						1	
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.																								
Total.....	362	21	49	16	12	26	9	7	9	12	11	23	8	15	24	21	20	10	15	21	15	7	11	
87. Pericarditis.....	1			1																				
88. Endocarditis and myocarditis (acute).....	17	1	2		1	1	2	2		1			1	1			2		1		1		1	
89. Angina pectoris.....	18	1	1	2		1		2	1		1		5	3	3		1	2		1	1			
90. Other diseases of the heart.....	224	12	27	11	11	18	5	3	5	7	6	11	5	10	13	16	15	5	12	12	9	1	10	
91. Diseases of the arteries, total.....	98	7	18	2		5	2		3	4	4	10	2	2	6	5	3	3	3	7	6	5	1	
91B. Arteriosclerosis.....	92	5	15	2		5	2		2	4	4	10	2	2	6	5	3	3	3	7	6	5	1	
91C. Other diseases of the arteries.....	6	2	3						1															
93. Diseases of the veins (varices, haemorrhoids, phlebitis, etc.).....	1		1																					
94. Diseases of the lymphatic system (lymphangitis, etc.).....	2							2																
95. Haemorrhage without specified cause.....	1						1																	
CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.																								
Total.....	270	13	21	15	16	16	18	14	9	10	5	9	14	14	11	11	13	5	2	16	13	14	11	
98. Diseases of the larynx.....	3	1								2														
99. Bronchitis, total.....	26	2	1	3	3			1		2	1		2	2			2	2	1	1	1	1	1	
99A. Bronchitis, acute.....	11	2	1					1		1			1	1			1				1	1	1	
99B. Bronchitis, chronic.....	3			1															1	1				
99C. Bronchitis, not otherwise defined, under 5 years.....	4				1								1	1							1			
99D. Bronchitis, not otherwise defined, 5 years and over.....	8			2	2				1	1							1	1						

TABLE No. 12.—Continued.

CAUSES OF DEATH.	Total.	Barré.	Brockville.	Cobourg.	Collingwood.	Cornwall.	Eastview.	Ford City.	Hawkesbury.	Ingersoll.	Kenora.	Lindsay.	Midland.	North Bay.	Orillia.	Oshawa.	Pembroke.	Smith's Falls.	Sudbury.	Trenton.	Walkerville.	Waterloo.	
100. Broncho-pneumonia (incl. capillary bronchitis), total.....	73	3	3	5	6	7	5	6	2	1	...	1	6	1	3	7	6	1	1	1	3	3	2
100A. Broncho-pneumonia.....	72	3	3	5	5	7	5	6	2	1	...	1	6	1	3	7	6	1	1	1	3	3	2
100B. Capillary bronchitis.....	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
101. Pneumonia, total.....	148	7	13	6	7	13	7	7	6	1	6	4	11	6	4	5	5	2	13	8	8	7	7
101A. Pneumonia, lobar.....	32	3	3	3	3	4	2	...	1	...	...	...	2	1	...	2	1	...	3	1	3	2	2
101B. Pneumonia, not otherwise defined.....	116	7	10	3	4	3	11	7	7	5	1	6	3	9	5	4	3	1	10	7	5	5	5
102. Pleurisy.....	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
103. Congestion and hemorrhagic infarct of the lung.....	6	4	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
105. Asthma.....	11	...	...	1	...	2	...	...	...	1	2	1	1	1	...	...	...	...	...	1	1	1	1
106. Pulmonary emphysema.....	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.																							
Total.....	239	11	22	10	8	19	11	13	17	4	6	9	6	11	15	19	9	2	13	17	8	4	5
108. Diseases of the mouth and annexa.....	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...
109. Diseases of the pharynx and tonsils (including adenoid vegetations).....	7	2	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	2	...	1	...	...
111. Ulcer of the stomach, duodenum, total.....	11	...	2	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	1
111A. Ulcer of the stomach.....	8	2	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...
111B. Ulcer of the duodenum.....	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
112. Other diseases of the stomach (cancer excepted).....	14	...	1	1	1	1	...	2	...	...	2	1	...	1	...	1	1	...	1	1	1	...	1
113. Diarrhoea and enteritis, under 2 years.....	77	1	2	2	...	2	7	13	12	1	3	...	7	4	7	2	...	1	6	2	3	2	2
114. Diarrhoea and enteritis, 2 years and over.....	21	...	1	2	1	1	...	...	1	...	2	...	1	3	4	1	...	4	...	...	...	...	...
117. Appendicitis and typhlitis.....	41	2	6	3	1	6	...	...	1	...	...	2	3	3	3	6	...	2	1	...	...	...	...
118. Hernia, intestinal obstruction, total.....	30	2	4	...	2	3	3	...	2	...	1	2	...	1	1	...	...	2	3	3	...	1	...
118A. Hernia.....	7	1	...	1	1	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
118B. Intestinal obstruction.....	23	1	3	...	1	2	2	...	1	...	1	2	...	1	1	...	...	1	3	3	...	1	...
119. Other diseases of the intestines.....	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
120. Acute yellow atrophy of the liver.....	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
122. Cirrhosis of the liver, total.....	3	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
122A. Cirrhosis of the liver, specified as alcoholic.....	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
122B. Cirrhosis of the liver, not specified as alcoholic.....	2	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
123. Biliary calculi.....	9	1	...	1	...	...	...	...	1	...	...	1	...	2	1	...	1	...	1	...	...	...	...
124. Other diseases of the liver.....	8	3	...	...	...	1	...	...	...	...	1	...	...	2	...	...	...	...	1	...	...	...	...
125. Diseases of the pancreas.....	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
126. Peritonitis without specified cause.....	9	...	1	...	...	3	...	...	1	2	...	...	...	1	...	...	...	...	...	1	...	...	...
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																							
Total.....	143	9	18	10	3	11	...	3	2	...	2	10	1	11	9	10	12	4	10	5	3	5	5
128. Acute nephritis.....	7	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	1	...	1	1
129. Chronic nephritis (Bright's disease).....	97	4	14	7	3	6	...	2	1	...	2	5	...	7	6	7	10	3	9	2	2	3	4
131. Other diseases of the kidneys and their annexa (diseases of kidneys in pregnancy excluded).....	7	2	...	...	...	2	...	...	...	...	...	...	1	...	1	...	...	...	...	1	...	...	...
133. Diseases of the bladder.....	3	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
135. Diseases of the prostate.....	16	...	2	2	...	1	...	...	...	...	4	...	1	3	1	...	1	...	...	1	...	...	...
136. Non-veneraeal diseases of the male genital organs.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
137. Cysts and other benign tumours of the ovary.....	2	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
138. Salpingitis and pelvic abscess.....	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
139. Benign tumours of the uterus.....	3	...	...	...	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...
141. Other diseases of the female genital organs.....	5	...	1	...	...	2	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...

TABLE No. 12—Continued.

CAUSES OF DEATH.	Total	Barrie.	Brockville.	Cobourg.	Collingwood.	Cornwall.	Eastview.	Ford City.	Hawkesbury.	Ingersoll.	Kenora.	Lindsay.	Midland.	North Bay.	Orillia.	Oslawa.	Pembroke.	Preston.	Smith's Falls.	Sudbury.	Trenton.	Walkersville.	Waterloo.	
CLASS VIII.—THE PUERPERAL STATE.																								
Total.....	40	2	4	1	2	2	...	...	1	...	...	4	3	5	3	4	1	...	5	...	1	2		
143. Accidents of pregnancy, total...	7	...	1	1	...	1	...	...	...	...	...	...	...	1	...	2	...	...	...	1	...	...	...	...
143A. Abortion.....	3	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
143B. Ectopic gestation.....	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
143C. Other accidents of pregnancy...	2	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
144. Puerperal haemorrhage.....	3	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...
145. Other accidents of childbirth, total.....	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
145A. Caesarean section.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
145C. Others under this title.....	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
146. Puerperal sepsis.....	13	1	2	...	...	...	...	...	...	...	...	1	1	1	1	1	...	...	...	4	...	1	...	...
147. Phlegmasia alba dolens; puerperal embolism or sudden death in puerperium.....	7	...	...	...	1	1	...	...	1	...	...	1	1	...	2	...	...	...	...	...	...	...	...	...
148. Puerperal albuminuria and convulsions.....	6	...	1	...	1	...	...	...	...	...	...	1	...	2	...	1	...	...	...	...	...	...	...	...
149. Following childbirth (not otherwise defined).....	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.																								
Total.....	14	...	3	...	...	2	1	...	...	1	3	...	...	1	...	1	...	...	1	1	...	...	...	...
151. Gangrene.....	9	...	2	...	...	2	...	...	...	1	3	...	...	1	...	...	...	...	...	...	...	...	...	...
152. Furuncle.....	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
153. Acute abscess.....	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
154. Other diseases of the skin and annexa.....	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.																								
Total.....	3	...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
155. Diseases of the bones (tuberculosis excepted).....	2	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
156. Diseases of the joints (tuberculosis and rheumatism excepted).....	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
CLASS XI.—MALFORMATIONS.																								
Total.....	36	2	5	...	1	...	2	4	...	1	2	...	...	2	6	2	2	2	2	1	...	3	1	...
159. Congenital malformations (stillbirths not included), total...	36	2	2	...	1	...	2	4	...	1	2	...	...	2	6	2	2	2	2	1	...	3	1	...
159A. Hydrocephalus.....	10	1	...	...	...	...	...	1	...	...	...	...	...	1	1	1	1	1	1	...	1	1	...	1
159B. Congenital malformations of the heart.....	12	...	3	...	...	...	1	1	...	1	...	...	...	...	4	...	1	...	...	...	...	1	...	...
159C. Others under this title.....	14	1	2	...	1	...	1	2	...	1	1	...	...	1	1	1	...	1	...	...	1	...	1	...
CLASS XII.—DISEASES OF EARLY INFANCY.																								
Total.....	237	13	14	3	5	21	15	8	11	6	5	14	11	11	7	30	11	9	6	22	7	3	5	...
160. Congenital debility, icterus and scleroma.....	56	1	6	1	1	8	2	2	5	3	1	5	1	1	2	7	1	...	1	5	2	...	1	...
161. Premature birth, injury at birth, total.....	159	11	5	2	4	9	13	6	5	3	4	9	9	9	5	21	9	7	4	13	4	3	4	...
161A. Premature birth.....	139	7	4	2	3	8	13	6	5	3	4	9	8	7	3	18	8	6	4	11	4	2	4	...
161B. Injury at birth.....	20	4	1	...	1	1	...	...	...	...	...	...	1	2	2	3	1	1	...	2	...	1	...	...
162. Other diseases peculiar to early infancy.....	22	1	3	...	...	4	...	...	1	...	...	...	1	1	...	2	1	2	1	4	1	...	...	...
CLASS XIII.—OLD AGE.																								
Total.....	105	5	9	6	10	11	...	3	2	9	...	6	4	4	6	4	12	...	2	4	2	2	4	...
164. Senility.....	105	5	9	6	10	11	...	3	2	9	...	6	4	4	6	4	12	...	2	4	2	2	4	...

TABLE No. 12—Concluded.

CAUSES OF DEATH.	Total.	Barrie.	Brockville.	Cobourg.	Collingwood.	Cornwall.	Eastview.	Ford City.	Hawkesbury.	Ingersoll.	Kenora.	Lindsay.	Midland.	North Bay.	Orillia.	Oshawa.	Pembroke.	Preston.	Smith's Falls.	Sudbury.	Trenton.	Walkerville.	Waterloo.
CLASS XIV.—EXTERNAL CAUSES.																							
Total	133	7	12	5	3	11	...	3	1	2	12	5	6	7	4	6	9	2	6	26	2	3	1
166. Suicide by corrosive substances...	2	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
168. Suicide by hanging or strangulation.....	4	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	2	...	1	...
169. Suicide by drowning.....	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
170. Suicide by firearms.....	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
171. Suicide by cutting or piercing instruments.....	3	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
174. Other suicides.....	3	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
177. Other acute accidental poisonings (gas excepted).....	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
178. Conflagration.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
179. Accidental burns (conflagration excepted).....	10	...	2	...	...	...	...	1	...	...	...	...	1	1	1	1	1	...	1	3	...	...	...
180. Accidental mechanical suffocation.....	4	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
182. Accidental drowning.....	21	...	1	1	...	3	...	...	...	6	...	2	1	...	2	...	2	...	...	4	1	...	...
183. Accidental injury by firearms (wounds of war excepted).....	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
185. Accidental injury by fall.....	11	...	1	...	1	1	...	1	...	...	...	...	1	...	...	...	1	...	1	1	1	2	...
187. Accidental injury by machines...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
188. Accidental injury by other crushing (vehicles, railways, land-slides, etc.), total.....	38	1	2	3	...	3	...	1	...	2	5	1	2	2	1	3	...	1	2	9	...	...	...
188A. Railroad accidents.....	22	...	1	1	...	1	...	1	...	2	4	...	...	1	1	1	...	...	2	7	...	...	...
188B. Street car accidents.....	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...
188C. Automobile accidents.....	7	1	...	1	...	2	...	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	...
188E. Other vehicles.....	3	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
188F. Other crushing.....	4	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...
189. Injury by animals (poisoning excepted).....	5	1	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
196. Electricity (lightning excepted)...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
197. Homicide by firearms.....	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
201. Fracture (cause not specified)....	13	1	1	...	...	...	...	1	...	...	3	...	...	...	...	3	1	2	...	...	...	...	1
202. Other external violence (cause specified).....	6	1	1	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
CLASS XV.—ILL-DEFINED DISEASES.																							
Total	14	1	...	...	...	5	...	2	1	...	...	...	...	1	1	...	...	...	...	3	...	...	...
204. Sudden death.....	3	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
205. Cause of death not specified or ill-defined, total.....	11	1	...	...	...	2	...	2	1	...	...	...	...	1	1	...	...	...	...	3	2	...	...
205A. Ill-defined.....	10	1	...	...	...	2	...	2	1	...	...	...	...	1	1	...	...	...	...	2	...	...	...
205B. Not specified or unknown.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...

TABLE

Deaths of Children from Specified Diseases in

CAUSES OF DEATH.	Total	TOTAL UNDER 1 YEAR		Under 1 day		Under 1 week		1 week and under 2 weeks		2 weeks and under 3 weeks		
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.												
Total	32	18	14	1	1	3					1	1
87. Pericarditis.....	1		1									
88. Endocarditis and myocarditis (acute).....	9	6	3								1	
90. Other diseases of the heart.....	8	4	4		1	1						
91a. Arteriosclerosis.....	1	1				1						
94. Diseases of the lymphatic system (lymphangitis, etc.).....	12	6	6			1						1
95. Haemorrhage without specified cause.....	1	1		1								
CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.												
Total	826	465	361	4		14	8	18	17	13	9	
97. Diseases of the nasal fossae and their annexa.....	3	1	2									
98. Diseases of the larynx.....	4	2	2				1					
99a. Acute bronchitis.....	63	28	35	1			2	3				3
99b. Chronic bronchitis.....	1	1										
99c. Bronchitis not otherwise defined (under 5 years).....	27	16	11					1				
100a. Broncho-pneumonia.....	386	225	161	1		4	3	8	4	9	2	
100b. Capillary bronchitis.....	8	3	5									1
101a. Lobar pneumonia.....	79	44	35				1	1		1		
101b. Pneumonia not otherwise defined.....	243	138	105	2		10	1	4	12	3	3	
102. Pleurisy.....	3	2	1									
103. Congestion and haemorrhagic infarct of the lung.....	7	3	4					1	1			
105. Asthma.....	1	1										
107c. Other diseases of the respiratory system (tuberculosis excepted).....	1	1										
CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.												
Total	741	438	303	2	1	12	7	9	6	9	4	
108. Diseases of the mouth and annexa.....	6	3	3					1				
109. Diseases of the pharynx and tonsils (including adenoid vegetations).....	19	13	6								1	
112. Other diseases of the stomach (cancer excepted).....	67	40	27			3	1	1				1
113. Diarrhoea and enteritis (under 2 years).....	581	341	240	2	1	4	2	7	4	7	2	
117. Appendicitis and typhlitis.....	1		1									
118a. Hernia.....	9	8	1			1						
118b. Intestinal obstruction.....	38	22	16			4	4		1	1		
119. Other diseases of the intestines.....	5	3	2									
124. Other diseases of the liver.....	9	3	6						1			
126. Peritonitis without specified cause.....	6	5	1									1
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.												
Total	18	6	12			1		1				1
128. Acute nephritis.....	8	3	5			1						1
129. Chronic nephritis (Bright's disease).....	1		1									
131. Other diseases of the kidneys and their annexa (diseases of kidneys in pregnancy excluded).....	7	1	6									
136. Non-venerereal diseases of the male genital organs.....	2	2						1				
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.												
Total	33	15	18					1	4	2	3	
151. Gangrene.....	2	1	1								1	1
152. Furuncle.....	5	1	4									
153. Acute abscess.....	10	7	3					1				
154. Other diseases of the skin and annexa.....	16	6	10						4	1	2	

TABLE

Deaths of Children from Specified Diseases in First

CAUSES OF DEATH.	Total	TOTAL UNDER 1 YEAR		Under 1 day		Under 1 week		1 week and under 2 weeks		2 weeks and under 3 weeks	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.											
Total	1	1									
155. Diseases of the bones (tuberculosis excepted) ..	1	1									
CLASS XI.—MALFORMATIONS.											
Total	492	258	234	53	58	76	74	33	14	17	11
159A. Hydrocephalus.....	71	31	40	12	14	2	8	1	1	1	1
159B. Congenital malformations of the heart.....	187	109	78	22	18	40	34	11	3	6	3
159C. Congenital malformations (still-births not included).....	234	118	116	19	26	34	32	21	10	10	7
CLASS XII.—DISEASES OF EARLY INFANCY.											
Total	2,723	1,599	1,124	591	421	487	345	120	88	92	66
160. Congenital debility, icterus and scleroma.....	693	417	276	67	41	83	64	29	20	32	15
161A. Premature birth.....	1,484	867	617	436	304	242	164	62	51	46	39
161B. Injury at birth.....	240	142	98	48	37	78	54	11	7	3	3
162. Other diseases peculiar to early infancy.....	297	169	128	38	36	84	63	18	10	11	12
163. Lack of care.....	9	4	5	2	3						
CLASS XIV.—EXTERNAL CAUSES.											
Total	50	32	18	5	2	1		1		2	1
177. Other acute accidental poisonings (gas excepted).....	4	4									
179. Accidental burns (conflagration excepted).....	5	2	3								
180. Accidental mechanical suffocation.....	26	16	10	1	1	1		1		2	1
182. Accidental drowning.....	1		1								
185. Accidental injury by fall.....	1	1									
188A. Railroad accidents.....	1		1								
188C. Automobile accidents.....	2	2									
188E. Other vehicles.....	1	1									
188F. Other crushing.....	1	1									
194. Excessive heat.....	1		1								
200. Infanticide (murder of infants less than one year of age).....	6	5	1	4	1						
202. Other external violence (cause specified).....	1		1								
CLASS XV.—ILL-DEFINED DISEASES.											
Total	79	46	33	13	14	3	6	3	2	6	4
204. Sudden death.....	4	2	2								1
205A. Ill-defined.....	46	26	20	7	10	2	4	1	2	5	
205B. Not specified or unknown.....	29	18	11	6	4	1	2	2		1	3

No. 13—Concluded

Year of Life by Months for Ontario, 1922.

AGE AT DEATH																							
3 weeks & under 1 month		1 month & under 2 months		2 months & under 3 months		3 months & under 4 months		4 months & under 5 months		5 months & under 6 months		6 months & under 7 months		7 months & under 8 months		8 months & under 9 months		9 months & under 10 months		10 months & under 11 months		11 months & under 12 months	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
					1																		
					1																		
10	11	22	19	12	9	10	6	3	8	4	3	1	7	9	6	4	1	1	1	2	1	1	5
...	3	3	1	2	5	3	3	...	...	1	...	...	2	1	2	2	...	1	...	1	...	1	...
6	2	9	8	1	...	5	1	...	...	1	1	...	1	6	4	1	...	...	1	...	1	...	
4	6	10	10	9	4	2	2	3	8	2	2	1	4	2	...	1	1	...	...	1	...	3	
58	34	103	62	53	45	28	28	18	15	12	9	16	6	4	3	3	...	4	...	2	2	4	...
25	13	59	31	38	35	30	26	17	13	9	9	15	5	3	2	2	...	3	...	1	2	4	...
28	19	33	26	12	10	1	2	1	1	2	...	...	...	1	1	1	...	1	...	1	...	...	...
...	5	2	10	5	2	...	1	...	...	1	1	...	1	1	...	...	...	...	...	...	...	...	...
2	1	6	1	2	...	2	3	...	1	2	2	...	3	2	...	4	1	...	1	...	1	2	2
...	...	1	...	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...	1	...	1	2
2	1	4	1	2	...	1	1	...	1	1	2	...	2	...	1	...	1	...	...	1	...	...	...
...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
...
...
...
...
2	1	8	1	3	3	3	...	...	...	1	...	1	...	...	1	1	1	1	...	...	...	1	...
...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1	...	4	1	...	3	2	...	...	...	...	...	...	...	1	...	1	1	1	...	...	...	1	...
1	...	3	...	2	...	1	...	...	...	1	...	...	...	...	1	...	1	1	...	...	...	...	...

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES																SEX		
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.		80 years and over.	Not stated.	Male.
DEATHS—ALL CAUSES.																			
Total	35636	5950	849	365	280	199	715	488	667	777	923	2084	2359	3422	5256	6283	4953	66	18452
CLASS I—GENERAL DISEASES																			
Total	5783	663	288	156	119	92	305	163	248	358	357	676	540	406	537	503	360	12	2856
1. Enteric fever, total.....	238	1	1	7	1	1	12	19	30	35	19	38	30	17	21	4	2	147	
1A. Typhoid fever.....	235	1	1	7	1	1	12	19	30	35	19	37	30	16	20	4	2	145	
1B. Paratyphoid fever.....	3											1		1				2	
5. Malaria.....	1				1														
6. Smallpox.....	3	1	1										1					1	
7. Measles.....	109	38	26	11	10	2	13	3	2	2	1	1						48	
8. Scarlet fever.....	156	5	21	21	16	22	38	10	5	7	4	7						82	
9. Whooping cough.....	318	191	71	22	13	5	10	2	1	1	1	1					1	147	
10. Diphtheria.....	316	13	20	32	30	33	130	34	8	2	3	1	3	4	3			148	
11. Influenza, total.....	2098	236	83	31	20	12	24	25	46	39	57	155	172	167	297	410	321	3	950
11A. Influenza, with pulmonary complications specified.....	1087	113	50	18	8	4	10	13	26	18	39	106	106	99	169	192	116		508
11B. Influenza, without pulmonary complications specified.....	1011	123	33	13	12	8	14	12	20	21	18	49	66	68	128	218	205	3	442
13. Mumps.....	7	1	1		2		1	1					1						7
16. Dysentery, total.....	74	25	8	3	2	1	3			1	1	4	1	3	7	6	9		38
16A. Dysentery, amoebic.....	1																		
16B. Dysentery, bacillary.....	5											2	1	1		1			
16C. Dysentery, unspecified or due to other causes.....	68	24	8	3	2	1	3			1	1	2		2	7	5	9		38
21. Erysipelas.....	96	36	2	1			2			1		9	3	6	12	11	13		53
22. Acute polio-myelitis.....	17	4	2		2	1	3	1			1			1	1				7
23. Encephalitis lethargica.....	44		1		1		1	5	3	3	5	2	10	9	4				28
24. Meningococcus meningitis.....	31	6	5	4	2	1		5	1	3	1	2	1						22
25. Other epidemic and endemic diseases, total.....	10	5	2	1			2												4
25A. Chickenpox.....	8	4	1	1			2												3
25C. Others under this title.....	2	1	1																1
29. Tetanus.....	27	1		1	2	1	7	1	1	2	1	3	2	3	2				21
30. Mycoses.....	3											1	1		1				3
31-37. Tuberculosis. Total.....	1989	47	35	18	16	11	52	55	141	257	250	422	282	168	158	60	10	7	998
31. Tuberculosis of the respiratory system.....	1676	17	11	8	7	1	26	32	124	233	236	377	245	150	142	51	9	7	840
32. Tuberculosis of the meninges and central nervous system.....	115	20	19	6	6	6	17	7	7	5	3	9	3	3	3	1			59
33. Tuberculosis of the intestines and peritoneum.....	62	1	2		1	1	1	4	4	6	3	15	9	6	4	5			20
34. Tuberculosis of the vertebral column.....	41		1				2	5	2	4	3	5	11	2	4	2			23
35. Tuberculosis of the joints.....	10			1			1	2	1				2		3				9
36. Tuberculosis of other organs, total.....	36	1		1	1		2	1	2	4	9	7	4	2	1	1			21
36A. Tuberculosis of the skin and subcutaneous cellular tissue.....	3	1		1						1									2
36B. Tuberculosis of the bones (vertebral column excepted).....	2										1		1						1
36C. Tuberculosis of the lymphatic system (mesenteric, and retroperitoneal glands excepted).....	7						2				1	1	2		1				2
36D. Tuberculosis of the genito-urinary system.....	15								1		3	5	3	1	1		1		12
36E. Tuberculosis of organs other than above.....	9				1				1		3	2	1	1					4

AGES AND MONTHS IN ONTARIO, 1923.

Female.	NATIVITY				SOCIAL CONDITION					MONTHS											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
17184	26335	6727	2099	475	13845	13777	7728	3	283	3477	4427	3853	3330	3053	2582	2416	2461	2388	2596	2533	2520
2927	4511	827	358	87	3037	2000	707	...	39	526	1218	920	610	427	354	339	272	286	284	262	285
91	190	23	17	8	127	97	11	...	3	11	6	18	55	25	11	12	13	32	24	18	13
90	187	23	17	8	126	95	11	...	3	11	6	18	54	25	11	12	12	32	24	17	13
1	3	...	...	...	1	2	...	...	...	...	...	...	1	...	...	...	1	...	...	1	...
1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
61	105	3	1	...	107	2	1	...	...	8	9	13	16	17	18	16	1	...	2	...	...
74	150	6	1	...	147	9	...	...	...	14	16	19	13	10	21	7	8	10	8	17	13
171	309	4	2	3	315	2	1	...	...	32	48	47	30	26	27	23	22	14	15	19	15
168	298	7	9	2	303	12	1	...	...	38	26	32	22	23	26	31	17	21	22	24	34
1148	1554	409	101	34	732	837	508	...	21	215	865	545	220	89	41	21	14	13	22	22	31
579	809	212	50	16	371	470	234	...	12	121	513	284	83	36	10	3	3	2	10	10	12
569	745	197	51	18	361	367	274	...	9	94	352	261	137	53	31	18	11	11	12	12	19
...	6	...	...	1	6	...	...	...	...	1	...	...	1	...	...	...	...	3	...	1	1
36	62	6	6	...	51	15	8	...	...	2	1	5	3	7	4	6	10	19	13	4	3
1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
5	3	2	...	...	2	3	...	...	...	1	1	...	1	1	...	...	...	...	...	...	1
30	58	4	6	...	48	12	8	...	...	1	...	5	2	6	1	6	10	19	13	3	2
43	77	13	5	1	50	27	19	...	...	10	10	10	18	12	7	3	8	3	5	7	3
10	16	1	...	...	16	...	1	...	...	2	4	1	1	...	1	2	3	...	1	2	2
16	32	7	5	...	19	21	3	...	1	2	3	6	7	5	3	2	1	5	4	3	3
9	26	3	2	...	27	4	...	...	...	3	6	8	1	2	3	4	...	1	...	1	2
6	9	1	...	...	10	...	...	...	...	1	...	...	2	3	...	...	...	...	...	1	3
5	7	1	...	...	8	...	...	...	...	1	...	...	2	1	...	...	...	...	...	1	3
1	2	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
6	24	3	...	...	16	9	2	...	...	...	1	2	...	1	...	5	5	5	5	1	2
...	1	2	...	...	3	...	...	...	...	...	...	2	...	...	...	...	...	1	...	...	...
991	1466	296	193	34	981	871	126	...	11	168	203	189	187	182	183	175	154	135	151	124	138
836	1217	258	174	27	771	782	113	...	10	145	169	162	159	148	157	147	127	112	124	112	114
56	97	12	4	2	99	15	1	...	...	8	18	10	11	12	7	7	10	12	9	3	8
42	45	10	5	2	33	22	7	...	...	4	4	2	5	9	6	8	5	2	6	2	9
18	31	6	4	...	23	15	2	...	1	5	3	2	6	4	3	5	4	2	4	1	2
1	8	1	1	...	5	5	...	...	...	...	...	3	...	2	1	1	...	...	...	2	1
15	28	6	1	1	14	21	1	...	...	1	4	3	3	1	7	3	4	3	6	...	1
1	3	...	...	...	3	...	...	...	...	...	...	1	...	1	...	...	1	...	...	...	...
1	1	...	1	...	...	2	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...
5	7	...	...	...	2	5	...	...	...	...	...	...	...	2	2	2	...	1	...	...	...
3	11	4	...	...	6	9	...	...	...	1	2	2	2	...	3	...	1	1	2	...	1
5	6	2	...	1	31	5	1	...	...	...	2	...	1	...	2	...	...	1	3	...	...

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES																SEX		
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.		80 years and over.	Not stated.	Male.
37. Disseminated tuberculosis, total.....	49	8	2	2	1	3	5	3	2	7	1	7	5	3					26
37A. Disseminated tuberculosis, acute.....	40	8	2	2	1	3	5	2		5	1	5	4	2					21
37B. Disseminated tuberculosis, chronic.....	9							1	2	2		2	1	1					5
38. Syphilis.....	94	36	2	2		1				1	7	14	15	10	6				67
49. Gonococcal infection (ophthalmia excepted).....	4	2										1		1					3
41. Purulent infection, septicaemia.....	148	15	7	2	1	1	9		10	5	6	15	17	17	25	12	6		82
CLASS II—GENERAL DISEASES NOT INCLUDED IN CLASS I.																			
Total.....	4343	84	21	9	12	7	42	41	31	37	69	216	478	847	1201	931	313	4	1910
43-49. Cancer. Total.....	2724			2	1		7	1	7	7	19	110	313	540	807	674	234	2	1190
43. Cancer of the buccal cavity.....	134										2	1	11	23	49	29	19		106
44. Cancer of the stomach and liver.....	938						1		1	1		24	80	191	299	262	78	1	479
45. Cancer of the peritoneum, intestines and rectum.....	428							1	1	4	1	19	40	73	141	109	38	1	200
46. Cancer of the female genital organs.....	283				1							3	20	55	72	74	48	10	
47. Cancer of the breast.....	279											2	14	66	71	53	53	20	1
48. Cancer of the skin.....	81											4	3	10	13	30	21		55
49. Cancer of the unspecified organs.....	581			2			6		5	2	11	28	58	100	178	143	48		349
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).....	32	2						1			1	1	3	6	8	7	3		14
51. Acute rheumatic fever.....	104				4	1	14	22	10	8	5	7	6	12	8	4	3		58
52. Chronic rheumatism, osteo-arthritis, gout.....	116						2	1		1	2	5	9	16	28	34	17	1	40
53. Scurvy.....	2	2																	1
54. Pellagra.....	8												2	4	2				1
56. Rickets.....	28	20	6	1															18
57. Diabetes mellitus.....	398		1	1	1	7	11	3	5	19	18	26	70	137	75	22	1		173
58. Anaemia chlorosis, total.....	523	2	4			1	1	3	6	7	3	22	64	111	156	118	25		231
58A. Pernicious anaemia.....	454					1	1		6	5	3	19	59	105	142	97	16		204
58B. Other anaemias and chlorosis.....	69	2	4					3		2		3	5	6	14	21	9		27
59. Diseases of the pituitary gland.....	2												1	1					1
60. Diseases of the thyroid gland.....	158	3	1				1	3	3	5	16	26	50	37	11	2			22
60A. Exophthalmic goitre.....	75							1	3	3	10	12	25	17	4				6
60B. Other diseases of the thyroid gland.....	83	3	1				1	2		2	6	14	25	20	7	2			16
62. Diseases of the thymus.....	14	9	2	3															8
63. Diseases of the adrenals (Addison's disease).....	12											1	3	3	3	1	1		6
64. Diseases of the spleen.....	3		1										2						1
65. Leukaemia lymphadenoma, total.....	68	1	2	2	2		6	1		4	7	9	7	13	10	4			33
65A. Leukaemia.....	51	1	2	2	2		4			3	3	7	5	13	7	2			24
65B. Lymphadenoma (Hodgkin's disease).....	17						2	1		1	4	2	2		3	2			9
66. Alcoholism (acute and chronic).....	61								1	1	6	20	14	15	3	1			55
67. Chronic poisoning by mineral substances, total.....	4											1	2	1					4
67A. Chronic lead poisoning.....	3											1	2						3
67B. Others under this title.....	1												1						1

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES														SEX Male				
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.		60 to 69 years.	70 to 79 years.	80 years over.	Not stated.
68. Chronic poisoning by organic substances, total.....	7										1	2			2	1	1	3	
69. Other general diseases.....	79	45	4		4	4	5		1		1	2		5	2	1	5	51	
CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.																			
Total.....	2970	208	49	16	14	10	43	25	30	28	45	114	194	367	565	769	486	4	1457
70. Encephalitis.....	58	9	2		3		5	3	2	2	3	7	7	10	4	1			29
71. Meningitis, total.....	115	45	14	5	2	4	13	3	7	1	3	4	5	5	2				56
71A. Simple meningitis.....	112	45	13	5	2	4	12	3	7		2	4	5	5	2	3			54
71B. Non-epidemic, cerebrospinal meningitis.....	3		1						1	1									2
72. Tabes dorsalis (locomotor ataxia).....	33											1	4	7	17	3	1		21
73. Other diseases of the spinal cord.....	202	2					1	1	3	3	4	8	15	29	54	72	10		102
74. Cerebral haemorrhage, apoplexy, total.....	1552	8	2		1	1			1	2	4	16	64	167	356	524	403	3	723
74A. Cerebral haemorrhage.....	1475	7	2		1				1	2	3	13	61	160	340	498	384	3	682
74B. Cerebral thrombosis and embolism.....	77	1			1						1	3	3	7	16	26	19		41
75. Paralysis of unstated origin, total.....	243	1		1							2		4	30	55	103	47		105
75A. Hemiplegia.....	146	1		1							1		2	22	31	55	33		67
75B. Others under this title.....	97										1		2	8	24	48	14		38
76. General paralysis of the insane.....	85										1	19	30	21	8	3	3		72
77. Other forms of mental alienation.....	125	1								5	7	10	22	31	33	13	3		48
78. Epilepsy.....	116	2	2	1			6	2	5	8	12	18	17	19	9	11	3	1	67
79. Convulsions (non-puerperal, 5 years and over).....	2											1			1				1
80. Infantile convulsions (under 5 years of age).....	147	113	22	5	2	3	2												92
81. Chorea.....	17				1		1	7	1		1		2	1		2	1		7
82. Neuralgia and neuritis.....	26								1	1	1	1	1	5	8	6	2		10
83. Softening of the brain.....	27													3	6	13	5		11
84. Other diseases of the nervous system.....	135	13	2	1	3	2	8	4	4	3	5	19	16	31	6	10	8		65
85. Diseases of the eyes and annexa.....	4	1		1				1					1						3
86. Diseases of the ears and of the mastoid sinus.....	83	13	5	2	2		11	4	6	3	2	10	6	8	6	5			45
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.																			
Total.....	6607	32	7	3	4	3	44	47	43	35	66	167	348	757	1451	2110	1477	13	3475
87. Pericarditis.....	40	1			2	1	2	3			2	4	4	3	6	12			24
88. Acute endocarditis and myocarditis.....	277	9		1	1	1	19	15	14	16	18	31	50	58	18	18	7	1	133
89. Angina pectoris.....	366										2	8	23	85	112	99	35	2	268
90. Other diseases of the heart.....	3690	8	1		1		20	28	29	18	42	113	220	415	830	1177	782	6	1819
91. Diseases of the arteries, total.....	2129	1	1								1	6	43	178	470	786	638	4	1172
91A. Aneurysm.....	42		1							1		3	7	11	10	9			32
91B. Arteriosclerosis.....	2031	1									1	3	36	160	454	755	617	4	1109
91C. Other diseases of the arteries.....	56													7	6	22	21		31
92. Embolism and thrombosis (not cerebral).....	36						1	1			1	1	6	4	7	8	7		23
93. Diseases of the veins (varices, haemorrhoids, phlebitis, etc.).....	22											3	2	5	4	4	4		8
94. Diseases of the lymphatic system (lymphangitis, etc.).....	25	12	4	2		1	1					1		1		1	2		12

AGES AND MONTHS IN ONTARIO, 1923.—Continued.

Not stated	NATIVITY				SOCIAL CONDITION					MONTHS											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
4 28	6 74	..... 3	1 2	..... .....	1 67	4 7	2 5	..... .....	..... .....	8	2 4	..... 14	..... 9	..... 13	1 12	1 4	1 3	..... 5	2 3	..... 2	..... 2
1513	2147	602	188	33	823	1281	836	.....	30	269	301	309	273	260	229	218	209	219	229	230	224
29	49	5	2	2	29	27	2	.....	.....	5	6	6	6	3	4	4	8	6	4	3	3
59	105	6	4	.....	98	15	2	.....	.....	11	10	9	10	13	8	12	5	10	10	9	8
58	103	5	4	.....	96	14	2	.....	.....	11	10	9	10	13	8	11	5	9	10	9	7
1	2	1	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	1
12	21	9	2	1	3	23	5	.....	2	5	3	6	.....	2	2	2	.....	2	3	1	7
100	150	40	12	.....	46	106	49	.....	1	17	21	10	12	23	15	23	17	13	20	15	16
829	1056	373	105	18	181	738	617	.....	16	129	149	174	157	120	118	111	116	120	116	129	113
793	1009	348	101	17	170	706	585	.....	14	125	146	164	154	113	104	108	109	114	110	119	109
36	47	25	4	1	11	32	32	.....	2	4	3	10	3	7	14	3	7	6	6	10	4
138	166	59	16	2	35	112	92	.....	4	35	20	21	18	26	21	22	11	19	17	16	17
79	95	40	10	1	17	71	55	.....	3	18	9	14	12	15	12	14	6	13	11	11	11
59	71	19	6	1	18	41	37	.....	1	17	11	7	6	11	9	8	5	6	6	5	6
13	51	22	11	1	24	49	10	.....	2	6	12	10	9	5	5	6	3	5	7	9	8
77	81	28	11	5	43	66	14	.....	2	11	20	9	8	9	8	7	7	8	9	13	16
49	89	17	8	2	75	31	9	.....	1	17	9	14	11	8	9	5	7	9	13	6	8
1	2	.....	.....	.....	1	.....	1	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....
55	144	3	.....	.....	147	.....	.....	.....	.....	17	22	18	18	19	14	9	11	4	4	2	9
10	13	3	.....	1	13	4	.....	.....	.....	3	4	4	1	.....	.....	.....	1	3	.....	.....	1
16	23	3	.....	.....	10	11	5	.....	.....	1	3	2	1	6	4	.....	2	4	.....	.....	1
16	21	3	3	.....	5	13	8	.....	1	2	2	4	1	4	2	1	3	.....	1	5	2
70	103	20	11	1	57	62	15	.....	1	6	13	14	9	11	9	8	15	12	18	12	8
1	3	.....	1	.....	3	1	.....	.....	.....	1	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....
38	70	11	2	.....	53	23	7	.....	.....	4	8	6	11	15	8	3	4	6	3	8	7
3132	4315	1770	431	91	993	3277	2290	.....	47	630	632	659	592	665	498	433	454	447	518	547	532
16	29	10	1	.....	12	21	7	.....	.....	4	8	3	3	6	.....	.....	4	1	5	4	2
144	201	57	15	4	107	149	19	.....	2	31	28	25	15	43	22	15	14	17	29	13	25
98	245	99	21	1	39	233	91	.....	3	32	25	31	32	35	23	23	21	31	37	33	43
1871	2389	996	255	50	585	1823	1251	.....	31	340	358	377	379	362	286	262	266	221	278	300	261
957	1377	585	133	34	218	1002	900	.....	9	210	206	212	153	209	163	123	138	170	162	188	195
10	34	5	3	.....	9	27	6	.....	.....	2	8	5	.....	5	5	4	2	.....	.....	2	5
922	1303	565	129	34	205	953	864	.....	9	201	189	199	149	198	154	115	131	165	158	183	189
25	40	15	1	.....	4	22	30	.....	.....	7	9	8	4	6	4	4	3	3	4	3	1
13	25	8	3	.....	3	22	11	.....	.....	7	3	1	2	5	.....	6	3	.....	2	4	3
14	12	8	1	1	3	11	6	.....	2	1	.....	4	3	1	1	3	3	1	.....	2	3
13	23	2	.....	.....	20	2	3	.....	.....	1	4	3	4	3	2	.....	3	3	2	.....	.....

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES																Male.		
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.		80 years and over.	Not stated.
117. Appendicitis and typh- litis	355	1	3	2	6	8	39	38	44	21	34	44	42	38	24	10	1	207	
118. Hernia, intestinal ob- struction, total.	334	47	10	2	2	1	6	1	10	3	8	17	25	52	49	57	44	174	
118A. Hernia	105	9	1	1	1	1	1	1	1	1	1	5	5	21	21	20	21	65	
118B. Intestinal obstruction	229	38	9	2	2	1	6	1	9	3	7	12	20	31	28	37	23	109	
119. Other diseases of the intestines	63	5					1			2	4	9	5	10	9	10	8	32	
120. Acute yellow atrophy of the liver	13									1	1	4	3		1	2	1	8	
121. Hydatid tumour of the liver	2										1		1					2	
122. Cirrhosis of the liver, total	99		1							1	3	7	3	23	24	31	6	60	
122A. Specified as alcoholic	1															1		1	
122B. Not specified as alco- holic	98		1							1	3	7	3	23	24	30	6	59	
123. Biliary calculi	87										1	6	15	23	17	16	9	22	
124. Other diseases of the liver	162	9	3		1			1	1	2	5	13	11	36	30	26	24	64	
125. Diseases of the pancreas	20							1		1	1	2	4	6	1	4		12	
126. Peritonitis without spec- ified cause	66	6	2	2			8	2	2	2	4	11	9	6	8	3	1	28	
127. Other diseases of the di- gestive system (cancer and tuberculosis excepted)	2								1					1				2	
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																			
Total	1892	18	8	7	3	3	15	16	22	16	40	113	169	252	430	452	323	5	1101
128. Acute nephritis	129	8	4	5	2	2	12	7	4	4	4	10	13	20	13	13	8	67	
129. Chronic nephritis (Bright's disease)	1193	1		1			2	8	12	6	21	60	102	184	318	277	197	4	645
131. Other diseases of the kidneys and their an- nexa (diseases of kid- neys in pregnancy excluded)	114	7	2	1	1	1	1		1	2	5	7	17	14	18	25	11	1	65
132. Calculi of the urinary passages	27											3	4	8	5	5	2	22	
133. Diseases of the bladder	64							1		1				2	13	20	27	54	
134. Diseases of the urethra, urinary abscess, etc., total	10									1		1		1	5	1	1	8	
134A. Stricture of the ure- thra	6													1	3	1	1	6	
134B. Other diseases of the urethra	4									1		1			2			2	
135. Diseases of the prostate	237												3	10	45	104	75	237	
136. Non-veneral diseases of the male genital organs	3	2	1															3	
137. Cysts and other benign tumours of the ovary	25							2		1	5	4	3	6	4				
138. Salpingitis and pelvic abscess	28							1	2	6	9	5	4	1					
139. Benign tumours of the uterus	30									1	7	11	3	4	2	2			
140. Non-puerperal uterine haemorrhage	5									1		2	1		1				
141. Other diseases of the female genital organs	27		1					2		1	11	8	2	2					

AGES AND MONTHS IN ONTARIO, 1923.—Continued.

Female.	NATIVITY				SOCIAL CONDITION					MONTHS											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
148	277	53	19	6	189	149	17	...	...	31	34	31	26	36	33	31	32	20	28	23	30
160	237	71	22	4	118	147	69	...	...	29	29	28	32	32	21	22	28	31	28	29	25
40	67	30	6	2	27	53	25	...	...	9	13	10	9	10	7	4	7	8	12	7	9
120	170	41	16	2	91	94	44	...	...	20	16	18	23	22	14	18	21	23	16	22	16
31	42	16	4	1	15	34	14	...	...	5	4	6	6	4	4	1	12	4	4	7	6
5	8	4	1	...	3	9	1	...	...	2	...	3	2	1	...	...	2	...	3	...	...
...	...	...	1	1	1	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...
39	60	26	11	2	11	54	32	...	2	10	6	12	8	3	5	7	11	10	9	8	10
...	...	1	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
39	60	25	11	2	11	54	31	...	2	10	6	12	8	2	5	7	11	10	9	8	10
65	64	17	5	1	4	66	17	...	...	10	7	7	7	5	8	9	11	10	9	8	6
98	114	32	16	...	33	92	36	...	1	18	16	14	12	16	16	8	13	10	13	12	14
8	9	8	3	...	6	13	1	...	5	5	...	...	3	1	1	...	3	1	2	3	3
38	54	6	5	1	31	26	8	...	1	9	4	5	6	5	9	6	3	5	5	7	2
...	1	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
791	1291	442	134	25	339	1049	493	...	11	167	169	171	166	177	148	143	142	119	180	167	143
62	104	20	5	...	62	53	14	...	...	11	20	9	11	9	5	5	9	6	13	15	16
548	822	268	88	15	195	661	330	...	7	99	103	112	101	122	97	88	86	75	119	100	91
49	76	29	6	3	23	66	22	...	3	16	9	10	9	8	7	10	6	9	14	12	4
5	16	7	4	...	6	15	6	...	...	2	1	2	1	4	3	3	2	2	1	3	3
10	32	28	3	1	8	24	32	...	...	7	5	4	7	3	12	6	2	2	6	4	6
2	4	3	3	...	1	6	3	...	...	1	1	2	...	...	1	...	1	2	1	1	...
...	2	3	1	...	1	2	3	...	...	1	2	...	...	...	1	...	...	1	...	1	...
2	2	...	2	...	...	4	...	...	...	1	...	...	...	...	...	1	...	1	1	...	...
...	151	64	17	5	20	147	69	...	1	21	16	17	23	21	14	18	29	19	19	25	15
...	3	...	...	...	3	...	...	...	...	...	...	...	1	1	...	1	...	...	...	...	...
25	18	7	...	...	7	14	4	...	...	3	4	3	1	3	3	...	2	2	1	3	...
28	21	5	2	...	4	21	3	...	...	4	1	4	1	2	...	5	2	1	4	1	3
30	23	5	2	...	3	20	7	...	...	3	5	3	7	2	3	3	2	...	1	1	...
5	2	2	1	...	1	3	1	...	...	2	2	1	...	...	...	...	...	...	...	...	...
27	19	4	3	1	6	19	2	...	...	3	3	2	1	4	3	2	2	1	1	4	1

AGES AND MONTHS IN ONTARIO, 1923.—Continued.

Female.	NATIVITY				SOCIAL CONDITION					MONTHS											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
369	252	80	35	2	11	356	2			37	44	34	40	33	32	30	21	18	24	25	31
53	40	9	4		4	48	1			8	4	5	4	3	7		4	5	6	4	3
20	15	4	1		2	18				6	2		2	1	3			2	2	2	2
11	10		1			11				1		2	1				1	1	1	2	1
22	15	5	2		2	19	1			1	2	3	1	1	4		3	2	3		2
28	20	4	3	1	1	27				2	5	4		1	2	5		1		3	5
29	13	9	7			29				3	4	3	4	1	1	4	2		2	2	3
3	3					3				1	1									1	
2		1	1			2					1										1
24	10	8	6			24				2	2	3	4	1	1	4	2		2	1	2
116	73	31	11	1	2	113	1			10	15	13	18	9	8	9	5	7	7	7	8
38	26	9	3		1	37				7	2	2	2	7	5	2	4		1	2	4
97	75	16	6		3	94				7	14	5	11	11	9	10	6	5	7	7	5
7	5	1	1			7						2	1								3
1		1				1								1							
92	138	45	16	5	68	71	61	4		19	22	15	22	23	17	13	11	10	19	15	18
47	66	28	8	5	19	39	46	3		10	9	10	11	14	11	3	7	4	13	10	5
7	14	2	1		10	6	1			2	2	1	3	3	1		1	1	1		2
12	23	8	2		19	10	4			4	6	1	4	2	1	2	1	2	3	2	5
26	35	7	5		20	16	10	1		3	5	3	4	4	4	8	2	3	2	3	6
21	44	14	1		31	22	6			6	3	4	4	1	3	9	3	10	5	5	6
17	40	12	1		30	18	5			5	3	3	3	1	3	9	3	10	3	4	6
3	4	1			1	3	1			1		1							1	1	
1		1				1													1		
251	523	1	1		524	1				46	42	36	55	47	46	30	42	32	48	50	51
251	523	1	1		524	1				46	42	36	55	47	46	30	42	32	48	50	51
43	78				78					5	8	5	12	9	4	2	8	4	7	5	9
89	204	1	1		205	1				17	16	19	17	17	20	12	12	14	23	20	19
119	241				241					24	18	12	26	21	22	16	22	14	18	25	23

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES														SEX				
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.		60 to 69 years.	70 to 79 years.	80 years and over	Not stated.	Male.
CLASS XII.—DISEASES OF EARLY INFANCY.																			
Total	2724	2723	1																1599
160. Congenital debility, icterus and scleroma.....	693	693																	417
161. Premature birth, injury at birth, total.....	1725	1724	1																1009
161A. Premature birth.....	1484	1484																	867
161B. Injury at birth.....	241	240	1																142
162. Other diseases peculiar to early infancy.....	297	297																	169
163. Lack of care.....	9	9																	4
CLASS XIII.—OLD AGE.																			
Total	1388														38	350	1000		598
164. Senility.....	1388														38	350	1000		598
CLASS XIV.—EXTERNAL CAUSES.																			
Total	2025	50	55	47	42	34	112	78	120	141	134	265	189	194	177	179	184	24	1436
165. Suicide by solid or liquid poisons (corrosive substances excepted).....	20								2	3	2	7		2	3	1			14
166. Suicide by corrosive substances.....	18								1	2	2	4	6	1	2				10
167. Suicide by poisonous gas.....	21										2	6	1	7	4	1			11
168. Suicide by hanging or strangulation.....	43								1		3	10	5	10	7	6		1	35
169. Suicide by drowning.....	43								2	7	6	8	6	7	6				22
170. Suicide by firearms.....	37								5	3	1	10	8	9		1			32
171. Suicide by cutting or piercing instruments.....	30								1	1	5	4	6	5	6	2			26
172. Suicide by jumping from high places.....	13									1		3	4	2	2	1			10
173. Suicide by crushing.....	1										1								1
174. Other suicides.....	10									1		2	2	2	3				8
175. Poisoning by food.....	6		1								1			3					4
177. Other acute accidental poisonings (gas excepted).....	27	4	7	4	4							2	1						20
178. Conflagration.....	58		4	5	2	3	7	2	3	3	5	5	7	2	2	6	1	1	25
179. Accidental burns (conflagration excepted).....	133	5	21	19	11	9	7	3	2	6	8	12	9	5	5	8	3		62
180. Accidental mechanical suffocation.....	37	26	2	2			3					1	1		2				19
181. Accidental absorption of irrespirable or poisonous gas.....	44		1	1						1	4	4	6	5	7	7	6	2	27
182. Accidental drowning.....	266	1	7	3	8	7	40	31	39	39	18	32	12	14	3	3	1	8	231
183. Accidental injury by firearms (wounds of war excepted).....	48			1		1	2	7	10	4	3	5	6	4	5				43
184. Accidental injury by cutting or piercing instruments.....	7							1		1	1	1		3					6
185. Accidental injury by fall.....	242	1	2	3	2		8	6	4	6	14	17	12	20	30	53	64		147
186. Accidental injury in mines and quarries.....	14									3	1	6	2	2					14
187. Accidental injury by machines.....	61		1				1	3	9	6	3	13	12	3	8	2			61
188. Accidental injury by other crushing (vehicles, railways, land-slides, etc.), total.....	524	5	6	7	13	12	37	20	28	33	46	88	56	64	56	29	15	9	430

AGES AND MONTHS IN ONTARIO, 1923.—Continued.

Female	NATIVITY				SOCIAL CONDITION					MONTHS											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1125	2715	.....	3	6	2724	.....	.....	.....	.....	271	282	279	258	255	193	192	202	176	223	193	200
276	689	.....	1	3	693	.....	.....	.....	.....	80	60	81	52	63	40	46	57	45	57	64	48
716	1722	.....	2	1	1725	.....	.....	.....	.....	155	184	165	175	161	138	131	127	108	143	109	129
617	1481	.....	2	1	1484	.....	.....	.....	.....	128	169	139	150	142	120	111	110	87	126	98	104
99	241	.....	.....	.....	241	.....	.....	.....	.....	27	15	26	25	19	18	20	17	21	17	11	25
128	297	.....	.....	.....	297	.....	.....	.....	.....	34	38	33	30	28	14	15	18	23	22	19	23
5	7	.....	.....	2	9	.....	.....	.....	.....	2	.....	.....	1	3	1	.....	.....	.....	1	1	.....
790	736	523	89	40	125	389	862	.....	12	164	191	151	130	110	93	103	79	96	82	100	89
790	736	523	89	40	125	389	862	.....	12	164	191	151	130	110	93	103	79	96	82	100	89
589	1350	392	214	69	961	739	268	1	56	123	124	121	120	150	240	226	217	197	159	163	185
6	14	3	2	1	8	9	2	.....	1	.....	2	3	.....	3	1	.....	1	5	.....	2	3
8	14	3	1	.....	6	11	1	.....	.....	4	1	2	.....	1	.....	1	4	1	1	3	.....
10	9	9	1	2	6	9	4	.....	2	1	3	1	.....	3	.....	.....	4	5	1	2	1
8	24	11	7	1	9	25	8	.....	1	4	4	4	2	4	2	.....	4	3	4	8	4
21	24	10	6	3	13	20	8	.....	2	1	1	2	3	4	5	5	4	9	2	1	6
5	20	8	6	3	13	20	2	.....	2	2	2	1	2	6	4	3	2	4	1	.....	10
4	14	6	7	3	12	16	1	.....	1	5	4	1	1	4	.....	3	3	4	1	3	1
3	11	1	1	.....	5	8	.....	.....	.....	.....	.....	.....	.....	.....	3	2	5	2	1	.....	.....
.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
2	8	.....	2	.....	3	7	.....	.....	.....	.....	2	.....	2	2	.....	1	1	.....	.....	2	.....
2	5	1	.....	.....	3	3	.....	.....	.....	.....	.....	.....	.....	1	.....	2	.....	.....	1	1	1
7	26	1	.....	.....	20	6	1	.....	.....	2	1	3	1	3	.....	4	1	5	3	2	2
33	41	7	9	1	34	18	5	.....	1	18	1	1	3	.....	4	1	11	3	3	1	12
71	97	24	10	2	90	34	9	.....	.....	9	9	12	13	5	15	8	13	12	12	10	15
18	36	1	.....	.....	35	.....	2	.....	.....	3	3	5	2	5	1	2	3	5	2	5	1
17	23	16	3	2	17	18	6	.....	3	5	15	6	5	5	1	.....	1	2	1	1	2
35	180	32	39	15	208	42	3	.....	13	2	1	4	4	21	58	59	46	26	14	10	21
5	36	6	3	3	30	14	2	.....	2	4	2	2	3	1	6	3	2	5	6	12	2
1	2	3	1	1	3	3	.....	.....	1	3	.....	.....	1	.....	.....	1	.....	1	1	.....	.....
95	147	73	16	6	65	95	77	.....	5	16	20	13	17	18	26	18	28	16	23	20	27
.....	5	2	7	.....	6	8	.....	.....	.....	1	.....	.....	.....	2	.....	2	.....	1	3	3	2
.....	38	10	13	.....	26	32	2	.....	1	4	10	5	3	1	9	5	2	4	8	6	4
94	359	91	55	19	248	222	39	1	14	19	17	28	31	40	53	74	59	55	50	48	50

CAUSES OF DEATH BY SEX,

CAUSES OF DEATH	AGES														SEX				
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.		60 to 69 years.	70 to 79 years.	80 years and over.	Not stated.	Male.
188A. Railroad accidents...	160	1	1	1	1	...	4	2	7	13	20	35	21	22	17	5	4	6	143
188B. Street car accidents...	22	...	...	1	3	...	1	...	1	...	1	8	1	3	...	2	...	1	17
188C. Automobile accidents.	208	2	3	3	8	10	30	12	11	12	12	25	15	25	22	10	7	1	148
188D. Aeroplane and balloon accidents...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2
188E. Other vehicles...	54	1	2	1	...	2	1	5	2	4	3	4	7	4	9	7	...	2	45
188F. Other crushing...	78	1	...	1	1	...	1	1	7	4	8	16	12	10	8	5	2	1	75
189. Injury by animals (poisoning excepted)	32	...	1	1	1	...	...	...	1	7	1	...	3	8	3	5	1	...	28
192. Starvation (deprivation of food or water)...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	5
193. Excessive cold...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	3	...	5
194. Excessive heat...	16	1	...	...	...	...	1	1	...	1	...	1	2	3	1	3	1	1	12
195. Lightning...	5	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...	1	3
196. Electricity (lightning excepted)...	28	...	...	...	...	...	1	1	2	8	3	6	4	...	1	1	1	...	26
197. Homicide by firearms.	17	...	1	...	...	...	...	2	1	2	3	5	1	1	1	...	...	1	9
198. Homicide by cutting or piercing instruments.	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
199. Homicide by other means...	7	...	...	...	...	...	1	...	1	1	...	1	2	1	...	...	...	...	3
200. Infanticide (murder of infants less than one year of age)...	6	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
201. Fracture (cause not specified)...	145	...	...	...	...	...	...	1	1	1	1	2	2	1	13	36	87	...	41
202. Other external violence (cause specified)...	52	1	1	...	1	2	2	2	3	4	1	10	8	9	2	3	1	2	42
203. Other external violence (cause not specified).	5	...	...	1	...	...	...	...	1	...	...	...	...	...	2	...	1	...	4
CLASS XV.—ILL-DEFINED DISEASES.																			
Total	274	79	22	...	4	...	3	5	1	4	3	11	15	34	55	23	15	...	158
204. Sudden death	39	4	...	...	...	...	...	...	...	1	...	1	3	7	10	5	8	...	27
205. Cause of death not specified or ill-defined, total	235	75	22	...	4	...	3	5	1	3	3	10	12	27	45	18	7	...	131
205A. Ill-defined	159	46	18	...	4	...	2	2	1	1	2	8	9	21	33	8	4	...	84
205B. Not specified or unknown	76	29	4	...	...	...	1	3	...	2	1	2	3	6	12	10	3	...	47

AGES AND MONTHS IN ONTARIO, 1923.—Concluded.

Female.	NATIVITY				SOCIAL CONDITION					MONTH											
	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
17	104	25	18	13	58	79	14	...	9	7	8	13	13	14	14	17	24	15	10	11	14
5	13	7	1	1	11	10	1	...	...	1	1	2	3	1	3	1	1	3	3	2	1
60	151	38	17	2	120	71	14	1	2	3	2	2	9	15	21	35	26	26	25	20	24
...	...	...	2	...	1	1	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...
9	42	9	3	...	26	22	6	...	...	...	...	4	2	6	10	11	4	5	7	2	3
3	49	12	14	3	32	39	4	...	3	8	6	7	4	4	5	8	4	6	5	13	8
4	25	6	1	...	14	12	6	...	...	1	...	2	3	3	4	4	6	3	1	2	3
1	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
2	6	1	3	...	3	1	2	...	1	2	1	2	...	...	...	...	...	...	...	1	1
4	9	4	2	1	5	8	2	...	1	...	...	...	...	1	9	5	1	...	...	...	...
2	4	1	...	...	3	2	...	...	...	...	...	...	...	1	3	...	...	...	...	...	...
2	18	9	1	...	12	16	...	...	...	3	1	2	1	1	4	3	2	7	2	1	1
8	10	3	2	2	4	9	3	...	1	1	3	...	1	2	1	...	2	2	1	2	2
1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
4	3	1	2	1	3	3	...	...	1	1	1	2	...	...	1	...	...	...	...	2	...
1	6	...	...	...	6	...	...	...	...	2	1	...	...	...	1	...	...	1	...	...	1
104	95	41	9	...	23	41	80	...	1	13	13	17	13	9	17	12	8	10	12	9	12
10	35	8	7	2	24	23	3	...	2	2	4	4	5	4	13	7	3	3	5	2	...
1	5	...	...	...	2	3	...	...	...	...	...	...	...	...	...	...	...	1	...	3	1
116	223	26	14	11	142	85	37	...	10	34	39	35	28	20	14	20	19	15	18	17	15
12	28	6	3	2	9	22	8	...	...	3	10	6	7	...	1	...	4	...	3	4	1
104	195	20	11	9	133	63	29	...	10	31	29	29	21	20	13	20	15	15	15	13	14
75	133	14	6	6	85	47	19	...	8	23	25	23	17	19	11	15	7	7	5	3	4
29	62	6	5	3	48	16	10	...	2	8	4	6	4	1	2	5	8	8	10	10	10

APPENDIX

BIRTHS BY MONTHS AND SEX IN ONTARIO (INCLUDING CITIES AND TOWNS), 1923.

Countries.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Grand Total, Prov.	.....	70,056	5,636	5,648	6,396	6,105	6,218	6,030	6,141	6,112	5,941	5,470	5,134	5,225	744	11	1,579	3,050
Total Counties, Cities, Towns	M	36,141	2,883	2,865	3,338	3,137	3,197	3,116	3,134	3,133	3,101	2,837	2,678	2,722	791	18	840	1,723
Total Counties, Cities, Towns	F	33,915	2,753	2,783	3,058	2,968	3,021	2,914	3,007	2,979	2,840	2,633	2,456	2,503	697	15	739	1,327
Total Counties only (including towns under 5,000).....	.....	34,811	2,760	2,849	3,229	3,002	3,091	2,976	3,071	3,027	3,034	2,722	2,525	2,525	374	7	481	1,429
Total.....	M	17,874	1,413	1,447	1,648	1,559	1,572	1,518	1,571	1,553	1,560	1,402	1,305	1,326	386	10	243	819
Total.....	F	16,937	1,347	1,402	1,581	1,443	1,519	1,458	1,500	1,474	1,474	1,320	1,220	1,199	362	11	238	610
Algoma.....	M	261	27	23	29	23	27	19	22	24	18	17	16	16	9	.....	5	15
	F	238	24	23	18	11	22	23	23	16	24	15	19	20	9	.....	8	11
	Total	499	51	46	47	34	49	42	45	40	42	32	35	36	9	.....	13	26
Brant.....	M	148	14	5	14	10	5	21	14	15	17	13	10	10	4	.....	4	5
	F	179	18	13	17	17	15	16	15	17	12	14	13	12	4	.....	6	7
	Total	327	32	18	31	27	20	37	29	32	29	27	23	22	4	.....	10	12
Bruce.....	M	414	44	35	29	41	36	36	31	39	32	35	27	29	3	.....	13	22
	F	411	35	34	34	41	44	35	33	35	33	24	25	38	7	.....	6	23
	Total	825	79	69	63	82	80	71	64	74	65	59	52	67	5	.....	19	45
Carleton.....	M	330	21	28	27	29	26	26	25	30	28	28	29	33	7	.....	2	14
	F	275	16	25	19	21	21	26	31	28	31	17	24	16	9	.....	2	17
	Total	605	37	53	46	50	47	52	56	58	59	45	53	49	8	.....	4	31

Cochrane.....	M	628	35	70	48	48	66	51	44	61	49	65	45	12	.....	4	27
	F	554	34	56	39	46	44	53	53	41	61	43	33	20	.....	2	28
Total		1,182	69	126	87	94	110	104	97	102	110	108	78	16	.....	6	55
Dufferin.....	M	179	17	19	16	10	19	13	23	26	9	8	10	4	.....	4	12
	F	151	8	13	14	19	12	13	15	14	11	7	13	2	.....	3	2
Total		330	25	32	30	29	31	26	38	40	20	15	23	3	.....	7	14
Elgin.....	M	261	25	21	21	25	26	19	24	30	8	25	20	7	.....	4	7
	F	232	20	18	15	20	21	19	27	28	17	12	14	5	.....	1	4
Total		493	45	39	36	45	47	38	51	58	25	37	34	6	.....	5	11
Essex.....	M	670	59	57	57	46	53	62	58	62	48	50	54	16	.....	6	38
	F	651	60	57	40	52	59	68	46	60	59	48	51	20	.....	4	17
Total		1,321	119	114	97	98	112	130	104	122	107	98	105	18	.....	10	55
Frontenac.....	M	197	15	26	15	15	19	22	15	20	20	8	7	9	.....	4	13
	F	190	15	17	17	15	18	15	21	15	21	15	8	5	.....	4	5
Total		387	30	43	32	30	37	37	36	35	41	23	15	7	.....	8	18
Grey.....	M	454	33	31	42	38	45	46	44	45	35	27	25	11	.....	4	17
	F	477	29	40	58	45	41	57	32	43	38	30	28	7	.....	10	11
Total		931	62	71	100	83	86	103	76	88	73	57	53	9	.....	14	28
Haldimand.....	M	205	17	26	19	12	12	16	21	26	18	11	10	3	.....	2	9
	F	177	18	20	11	15	16	16	18	8	16	14	13	3	.....	3	8
Total		382	35	46	30	27	28	32	39	34	34	25	23	3	.....	5	17
Haliburton.....	M	88	6	7	12	4	6	6	7	12	11	9	6	1	.....	5	5
	F	74	2	8	13	6	7	5	7	7	4	2	7	1	.....	2	4
Total		162	8	15	25	10	13	11	14	19	15	11	13	1	.....	7	9

BIRTHS BY MONTHS AND SEX IN ONTARIO, 1923—Continued.

Counties.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Halton.....	M	250	23	24	18	32	27	16	20	22	21	22	11	14	2	2	6	12
	F	220	17	22	25	16	19	17	17	16	18	23	18	12	4	.....	5	7
	Total	470	40	46	43	48	46	33	37	38	39	45	29	26	3	.....	11	19
Hastings.....	M	475	30	44	40	43	50	35	44	36	47	43	30	33	5	.....	6	15
	F	451	35	34	39	27	35	42	39	46	46	43	38	27	3	.....	13	19
	Total	926	65	78	79	70	85	77	83	82	93	86	68	60	4	.....	19	34
Huron.....	M	431	30	31	36	30	36	33	55	42	33	36	43	26	10	.....	3	19
	F	414	20	30	36	33	43	45	44	38	34	38	20	33	6	.....	3	13
	Total	845	50	61	72	63	79	78	99	80	67	74	63	59	8	.....	6	32
Kenora.....	M	140	12	9	16	13	13	10	13	13	15	14	6	6	1	.....	.....	2
	F	130	11	9	10	11	15	10	14	14	7	11	11	7	3	.....	.....	2
	Total	270	23	18	26	24	28	20	27	27	22	25	17	13	2	.....	2	4
Kent.....	M	487	45	49	58	33	39	27	55	42	38	36	31	34	6	.....	9	18
	F	466	38	37	45	46	29	43	50	33	43	37	36	29	4	.....	5	18
	Total	953	83	86	103	79	68	70	105	75	81	73	67	63	5	.....	14	36
Lambton.....	M	361	27	23	36	30	29	39	23	27	36	32	35	24	11	.....	.....	23
	F	318	32	30	26	27	18	31	26	37	24	24	21	22	5	.....	.....	11
	Total	679	59	53	62	57	47	70	49	64	60	56	56	46	8	.....	2	34

Lanark.....	M 260	27	19	24	17	24	25	28	31	17	17	12	19	.....	4	14
	F 236	14	20	29	16	30	18	30	19	24	12	12	12	.....	2	5
Total	496	41	39	53	33	54	43	58	50	41	29	24	31	1	6	19
Leeds & Grenville.	M 366	22	30	28	43	36	36	27	27	29	27	29	32	5	9	18
	F 345	31	26	32	28	34	28	36	33	23	34	21	19	9	7	16
Total	711	53	56	60	71	70	64	63	60	52	61	50	51	7	16	34
Lennox & Add'ton.	M 165	7	17	14	14	18	10	22	17	9	10	15	12	10	1	10
	F 186	12	14	20	16	25	12	16	11	14	13	16	17	4	2	4
Total	351	19	31	34	30	43	22	38	28	23	23	31	29	7	3	14
Lincoln.....	M 243	24	19	21	22	28	21	20	18	15	19	17	19	8	3	12
	F 223	19	26	28	15	23	20	15	18	19	18	4	18	4	1	6
Total	466	43	45	49	37	51	41	35	36	34	37	21	37	6	4	18
Manitoulin.....	M 133	8	14	13	14	16	11	11	8	9	9	11	9	.....	2	1
	F 118	9	11	13	10	9	14	7	13	14	10	3	5	2	5	4
Total	251	17	25	26	24	25	25	18	21	23	19	14	14	1	7	5
Middlesex.....	M 382	25	29	43	34	26	41	33	22	28	33	26	42	8	6	21
	F 381	32	28	40	36	32	27	25	41	27	28	36	29	4	4	10
Total	763	57	57	83	70	58	68	58	63	55	61	62	71	6	10	31
Muskoka.....	M 239	12	19	21	18	19	21	21	25	27	17	18	21	4	7	14
	F 228	13	25	22	19	26	20	13	22	19	10	19	20	2	4	12
Total	467	25	44	43	37	45	41	34	47	46	27	37	41	3	11	26
Nipissing.....	M 387	30	28	48	22	36	36	40	29	30	23	28	37	13	2	24
	F 368	36	40	46	33	28	33	26	23	24	24	30	25	5	6	14
Total	755	66	68	94	55	64	69	66	52	54	47	58	62	9	8	38

BIRTHS BY MONTHS AND SEX IN ONTARIO, 1923—Continued.

Countries.	Sex.	Total.	Months.												No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.	
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.					
Norfolk.....	M	300	31	25	28	26	31	23	14	27	27	25	28	15	.....	.....	.....	7	10
	F	277	31	23	21	29	23	30	21	21	25	12	20	18	.....	.....	.....	2	7
	Total	577	62	48	49	55	54	44	48	44	52	37	48	33	1	.....	.....	9	17
Northumberland & Durham.....	M	476	39	36	58	43	37	33	44	36	41	41	33	35	14	.....	.....	5	38
	F	462	38	43	56	36	46	33	28	46	35	31	37	33	8	.....	.....	7	24
	Total	938	77	79	114	79	83	72	82	72	76	72	70	68	11	.....	.....	12	62
Ontario.....	M	312	19	28	39	31	25	21	21	24	26	19	25	25	10	.....	.....	4	11
	F	293	29	30	23	27	21	20	20	26	27	22	20	22	4	.....	.....	3	14
	Total	605	48	58	62	58	46	41	50	41	53	41	45	47	7	.....	.....	7	25
Oxford.....	M	309	26	27	25	26	20	33	23	23	24	28	23	34	6	.....	.....	2	10
	F	276	26	20	28	29	18	19	29	29	26	21	23	12	4	.....	.....	2	9
	Total	585	52	47	53	55	38	52	52	49	50	49	46	46	5	.....	.....	4	19
Parry Sound.....	M	347	37	23	38	33	23	24	24	30	39	23	26	29	7	.....	.....	7	9
	F	353	32	27	31	38	44	31	32	24	28	22	18	26	5	.....	.....	3	11
	Total	700	69	50	69	71	67	56	54	45	67	45	44	55	6	.....	.....	10	20
Peel.....	M	208	10	20	21	19	14	19	29	12	18	20	11	15	7	.....	.....	1	9
	F	217	15	15	15	14	28	14	16	22	19	16	28	15	3	.....	.....	3	7
	Total	425	25	35	36	33	42	33	45	34	37	36	39	30	5	.....	.....	4	16

Perth.....	M	357	30	29	37	28	40	33	26	40	33	22	21	18	2	1	3	10
	F	323	16	31	30	23	29	24	27	22	40	15	33	33	4	2	6	11
	Total	680	46	60	67	51	69	57	53	62	73	37	54	51	3	1	9	21
Peterborough.....	M	197	16	16	18	14	17	13	15	18	17	20	19	14	12	.....	6	11
	F	172	9	15	17	22	11	13	13	10	11	18	13	18	4	.....	2	12
	Total	369	25	31	35	36	28	26	30	28	28	38	32	32	8	.....	8	23
Prescott & Russell.	M	663	61	44	59	53	61	48	57	50	67	59	55	49	14	3	1	33
	F	691	78	50	62	67	56	54	63	69	61	52	40	39	20	.....	4	17
	Total	1,354	139	94	121	120	117	102	120	119	128	111	95	88	17	1	5	50
Prince Edward.....	M	172	14	10	16	16	23	15	14	12	9	17	14	12	2	1	2	3
	F	149	14	12	15	15	15	11	16	9	10	11	9	12	6	2	1	9
	Total	321	28	22	31	31	38	26	30	21	19	28	23	24	4	1	3	12
Rainy River.....	M	197	22	20	18	16	22	13	14	17	14	14	11	16	3	.....	3	3
	F	197	13	13	18	19	23	14	19	15	15	22	12	14	3	.....	6	6
	Total	394	35	33	36	35	45	27	33	32	29	36	23	30	3	.....	9	9
Renfrew.....	M	535	41	46	55	52	44	46	36	39	48	40	42	43	12	.....	8	25
	F	466	43	44	42	42	37	48	53	30	42	32	23	30	16	.....	12	15
	Total	1,001	87	90	97	94	81	94	89	69	90	72	65	73	14	.....	20	40
Simcoe.....	M	604	45	52	53	64	55	42	45	59	54	49	40	46	10	.....	13	26
	F	569	33	52	42	52	49	54	47	64	55	46	31	44	18	3	8	22
	Total	1,173	78	104	95	116	104	96	92	123	109	95	71	90	14	1	21	48
Stormont, Dundas & Glengarry.....	M	642	54	59	53	44	55	62	53	70	52	53	47	40	22	.....	5	23
	F	543	40	45	50	35	54	47	57	43	55	46	42	29	14	.....	6	15
	Total	1,185	94	104	103	79	109	109	110	113	107	99	89	69	18	.....	11	38

BIRTHS BY MONTHS AND SEX IN ONTARIO, 1923.—Continued.

Counties.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Sudbury.....	M	502	30	42	42	46	37	48	62	38	36	33	43	45	14	.....	5	21
	F	477	39	36	41	36	40	43	37	34	49	38	41	43	14	.....	8	21
	Total	979	69	78	83	82	77	91	99	72	85	71	84	88	14	.....	13	42
Thunder Bay.....	M	90	14	6	9	13	12	4	8	8	5	3	2	6	3	.....	2	5
	F	76	5	3	7	10	6	10	4	10	9	4	3	5	3	.....	3	4
	Total	166	19	9	16	23	18	14	12	18	14	7	5	11	3	.....	5	9
Timiskaming.....	M	397	31	34	35	46	30	37	28	32	33	38	25	28	19	.....	3	14
	F	407	30	30	45	39	35	35	28	26	34	35	31	39	13	.....	3	11
	Total	804	61	64	80	85	65	72	56	58	67	73	56	67	16	.....	6	25
Victoria.....	M	173	12	23	12	14	12	20	19	13	13	12	11	12	5	.....	5	9
	F	165	17	12	20	21	11	13	18	12	15	9	12	5	1	.....	1	5
	Total	338	29	35	32	35	23	33	37	25	28	21	23	17	3	.....	6	14
Waterloo.....	M	309	28	31	28	18	43	19	23	26	19	22	21	31	2	.....	6	10
	F	298	23	26	37	22	33	24	23	30	24	21	15	20	6	.....	5	6
	Total	607	51	57	65	40	76	43	46	56	43	43	36	51	4	.....	11	16
Welland.....	M	494	45	38	33	40	54	36	41	48	43	38	32	46	8	.....	7	22
	F	476	39	42	32	45	48	31	43	40	35	41	37	43	14	.....	5	12
	Total	970	84	80	65	85	102	67	84	88	78	79	69	89	11	.....	12	34

Wellington	M	377	27	37	33	22	25	38	38	40	29	24	5	17	
	F	387	42	36	27	40	30	32	40	26	31	27	9	19	
	Total	764	69	73	60	62	55	70	78	66	60	51	7	9	36
Wentworth	M	347	28	21	32	38	36	26	34	28	29	15	6	11	
	F	338	24	34	26	33	33	32	25	27	25	22	4	4	8
	Total	685	52	55	58	71	69	58	59	55	54	37	5	2	19
York	M	1,712	115	141	163	166	165	164	139	129	121	135	34	102	
	F	1,632	113	151	153	133	136	159	142	131	139	122	38	67	
	Total	3,344	228	292	316	299	301	313	281	260	260	257	36	51	169

BIRTHS BY MONTHS AND SEX—CITIES, 1923.

Cities.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Grand Total.....		30,334	2,480	2,421	2,764	2,661	2,687	2,599	2,654	2,645	2,534	2,349	2,233	2,307	312	3	1,021	1,417
Total Males.....		15,757	1,283	1,237	1,485	1,356	1,380	1,372	1,350	1,360	1,341	1,224	1,170	1,199	353	5	549	785
Total Females.....		14,577	1,197	1,184	1,279	1,305	1,307	1,227	1,304	1,285	1,193	1,125	1,063	1,108	271	4	472	632
Belleville.....	M	179	16	17	11	14	11	17	20	11	16	21	14	11	3	.....	4	4
	F	166	13	10	15	12	19	15	17	15	17	12	11	10	3	.....	7	5
	Total	345	29	27	26	26	30	32	37	26	33	33	25	21	3	.....	11	9
Brantford.....	M	343	23	22	35	25	29	39	43	30	31	24	22	20	10	.....	6	9
	F	371	41	40	26	19	29	29	31	30	35	32	23	36	8	.....	5	15
	Total	714	64	62	61	44	58	68	74	60	66	56	45	56	9	.....	11	24
Chatham.....	M	162	17	16	18	9	17	11	17	8	7	16	20	6	3	.....	1	11
	F	155	14	19	9	15	12	15	17	10	13	13	10	8	3	.....	4	7
	Total	317	31	35	27	24	29	26	34	18	20	29	30	14	3	.....	5	18
Fort William.....	M	377	30	33	39	36	27	31	38	24	34	30	30	25	11	.....	7	20
	F	372	29	43	32	30	28	35	31	33	31	24	22	34	9	.....	8	12
	Total	749	59	76	71	66	55	66	69	57	65	54	52	59	10	.....	15	32
Galt.....	M	151	11	12	18	12	18	14	10	12	8	11	16	9	5	.....	1	7
	F	139	14	10	15	11	12	8	10	9	16	9	12	13	1	.....	3	8
	Total	290	25	22	33	23	30	22	20	21	24	20	28	22	3	.....	4	15

Guelph.....	M	209	18	14	19	15	20	19	14	22	17	16	17	3	4	7
	F	198	20	16	16	20	16	21	15	23	14	17	11	5	5	9
	Total	407	38	30	35	35	36	40	29	45	31	33	28	4	9	16
Hamilton.....	M	1,583	133	148	129	137	151	118	135	143	120	123	128	31	49	68
	F	1,450	122	133	134	153	108	137	126	124	112	82	104	25	41	52
	Total	3,033	255	281	263	290	259	255	261	267	232	205	232	28	90	120
Kingston.....	M	271	26	25	17	22	30	22	25	32	16	20	17	2	10	24
	F	281	17	31	21	25	24	21	27	22	28	22	20	2	14	14
	Total	552	43	56	38	47	54	43	52	54	44	42	37	2	24	38
Kitchener.....	M	314	20	26	44	32	25	20	19	28	27	31	24	5	4	6
	F	292	26	32	22	27	19	25	31	22	22	20	25	5	.....	12
	Total	606	46	58	66	59	44	45	50	50	49	51	49	5	4	18
London.....	M	733	65	72	57	59	74	69	55	54	60	57	50	22	37	44
	F	647	50	51	57	62	61	60	54	54	56	49	43	8	35	35
	Total	1,380	115	123	114	121	135	129	109	108	116	106	93	15	72	79
Niagara Falls.....	M	219	17	21	13	19	17	18	28	19	12	16	24	4	2	10
	F	188	16	15	18	14	13	13	12	22	12	17	20	2	.....	13
	Total	407	33	36	31	33	30	31	40	41	24	33	44	3	2	23
Ottawa.....	M	1,638	122	174	154	131	146	117	166	134	120	108	124	49	107	67
	F	1,417	103	124	137	127	119	119	130	116	107	115	97	27	90	66
	Total	3,055	225	298	291	258	265	236	296	250	227	223	221	38	197	133
Owen Sound.....	M	165	15	14	13	13	13	25	11	12	10	19	9	3	5	4
	F	151	11	17	19	11	12	21	10	12	11	7	8	1	1	2
	Total	316	26	31	32	24	25	46	21	24	21	26	17	2	6	6

BIRTHS BY MONTHS AND SEX—CITIES, 1923.—Concluded.

Cities	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins	No. cases of triplets.	Illegitimate Births.	Still-Births.
Peterborough.....	M	270	22	24	27	23	17	21	21	21	32	18	26	18	7	1	6	23
	F	280	25	26	31	17	19	21	21	36	26	26	18	18	7	2	4	14
	Total	550	47	50	58	40	34	40	42	57	58	44	44	36	7	1	10	37
Port Arthur.....	M	266	17	20	19	30	32	23	18	22	21	34	17	13	4	.....	4	12
	F	251	23	20	19	19	19	17	28	25	24	17	21	19	4	.....	2	13
	Total	517	40	40	38	49	51	40	46	47	45	51	38	32	4	.....	6	25
St. Catharines.....	M	344	36	19	31	23	26	29	30	27	33	27	34	29	7	.....	5	18
	F	286	24	14	22	28	32	23	22	28	21	25	26	21	7	.....	2	12
	Total	630	60	33	53	51	58	52	52	55	54	52	60	50	7	.....	7	30
St. Thomas.....	M	154	8	18	18	15	10	13	13	17	14	9	14	5	.....	.....	2	6
	F	185	15	8	7	19	24	20	13	18	20	17	16	8	2	.....	.....	7
	Total	339	23	26	25	34	34	33	26	35	34	26	30	13	1	.....	2	13
Sarnia.....	M	211	20	14	19	18	18	16	25	19	15	20	14	13	5	.....	2	12
	F	205	26	16	13	23	18	13	19	21	15	17	12	12	3	.....	4	10
	Total	416	46	30	32	41	36	29	44	40	30	37	26	25	4	.....	6	22
Sault Ste. Marie...	M	323	33	35	33	29	23	22	23	36	20	21	24	24	12	.....	7	27
	F	327	41	33	35	23	27	16	20	24	32	30	21	25	4	.....	5	5
	Total	650	74	68	68	52	50	38	43	60	52	51	45	49	8	.....	12	32

Stratford.....	M	204	15	15	18	18	20	25	19	14	17	15	13	15	5	.....	2	9
	F	192	17	17	15	17	16	16	20	16	17	11	19	13	1	.....	5	9
	Total	396	32	32	32	33	37	41	39	30	34	26	32	28	3	.....	7	18
Toronto.....	M	6,593	539	506	600	575	598	549	581	578	573	512	461	521	138	4	264	343
	F	6,087	488	493	535	556	537	553	553	526	459	445	451	491	124	2	224	270
	Total	12,680	1,027	999	1,135	1,131	1,135	1,102	1,134	1,104	1,032	957	912	1,012	131	2	488	613
Welland.....	M	122	5	7	13	11	11	14	12	12	9	10	7	11	4	.....	.....	11
	F	104	7	8	10	11	8	5	10	9	11	11	10	4	.....	.....	1	8
	Total	226	12	15	23	22	19	19	22	21	20	21	17	15	2	.....	1	19
Windsor.....	M	811	65	68	78	64	84	64	61	67	63	67	57	73	15	.....	17	38
	F	740	44	45	66	74	65	64	66	70	58	70	57	61	17	.....	12	27
	Total	1,551	109	113	144	138	149	128	127	137	121	137	114	134	16	.....	29	65
Woodstock.....	M	115	10	9	14	8	11	8	11	9	4	7	11	13	5	.....	3	5
	F	93	11	13	11	9	4	7	9	10	3	4	5	7	3	.....	.....	7
	Total	208	21	22	25	17	15	15	15	20	19	7	11	16	4	.....	3	12

Towns.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Grand Total.....		4,911	396	378	403	442	440	455	416	440	373	399	376	393	58	1	77	204
Total Males.....		2,510	187	181	205	222	245	226	213	220	200	211	203	197	52	3	48	119
Total Females.....		2,401	209	197	198	220	195	229	203	220	173	188	173	196	64	.....	29	85
Barrie.....	M	99	7	10	8	7	9	8	7	13	7	6	9	8	.....	.....	3	2
	F	82	4	10	6	10	7	5	4	11	8	6	4	7	.....	.....	1	4
	Total	,181	11	20	14	17	16	13	11	24	15	12	13	15	1	.....	4	6
Brockville.....	M	115	9	12	6	7	13	9	8	12	11	11	10	7	3	.....	1	6
	F	113	13	11	8	12	4	12	8	9	9	12	9	6	3	.....	1	3
	Total	228	22	23	14	19	17	21	16	21	20	23	19	13	3	.....	2	9
Cobourg.....	M	59	2	6	3	5	5	5	7	5	10	6	4	1	1	.....	3	1
	F	58	3	4	4	6	4	7	4	10	6	3	4	3	3	.....	1	1
	Total	117	5	10	7	11	9	12	11	15	16	9	8	4	2	.....	4	2
Collingwood.....	M	70	10	8	3	7	6	5	5	7	5	4	4	6	.....	.....	3	2
	F	61	6	7	8	7	5	9	4	2	2	4	4	3	.....	.....	4	.....
	Total	131	16	15	11	14	11	14	9	9	7	8	8	9	.....	.....	7	2
Cornwall.....	M	208	18	7	12	24	23	22	17	12	20	20	16	17	3	.....	3	13
	F	174	20	10	16	19	12	16	18	14	16	12	9	12	5	.....	4	12
	Total	382	38	17	28	43	35	38	35	26	36	32	25	29	4	.....	7	25

Eastview.....	M F	104 88	3 12	10 11	10 7	14 11	8 4	7 9	11 2	8 7	10 6	11 9	5 6	7 4	1 1	1 1	6 6
	Total	192	15	21	17	25	12	16	13	15	16	20	11	11	1	1	12
Ford City.....	M F	122 122	10 9	11 11	15 10	15 7	10 5	11 10	7 11	7 15	6 8	13 8	9 12	8 16	6 6	1 1	2 4
	Total	244	19	22	25	22	15	21	18	22	14	21	21	24	6	2	6
Hawkesbury.....	M F	111 97	10 4	7 8	11 11	10 11	8 11	7 5	15 5	7 11	4 4	5 8	16 7	11 12	2 2	1 1	2 2
	Total	208	14	15	22	21	19	12	20	18	8	13	23	23	2	1	4
Ingersoll.....	M F	63 59	7 6	3 1	9 4	5 3	3 5	6 9	6 5	4 5	8 4	3 8	4 5	5 4	5 4	3 1	3 1
	Total	122	13	4	13	8	8	15	11	9	12	11	9	9	2	4	3
Kenora.....	M F	90 72	6 7	4 8	5 9	5 5	8 6	11 7	7 10	9 4	5 2	8 6	12 3	10 5	5 3	2 1	2 1
	Total	162	13	12	14	10	14	18	17	13	7	14	15	15	4	2	2
Lindsay.....	M F	107 85	6 11	3 5	11 10	8 7	15 4	8 12	10 9	13 7	7 7	10 4	10 4	6 5	4 5	2 2	4 6
	Total	192	17	8	21	15	19	20	19	20	14	14	14	11	2	2	10
Midland.....	M F	98 107	10 9	4 8	7 10	10 14	11 11	11 11	8 4	6 8	5 7	11 9	7 7	8 9	4 4	1 4	4 1
	Total	205	19	12	17	24	22	22	12	14	12	20	14	17	2	5	5
North Bay.....	M F	217 197	12 21	17 10	22 10	16 19	13 25	17 21	22 13	17 16	17 18	22 13	22 13	20 18	1 5	4 1	14 10
	Total	414	33	27	32	35	38	38	35	33	35	35	35	38	3	4	24

BIRTHS BY MONTHS AND SEX—TOWNS, 1923.—Concluded.

Towns.	Sex.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	No. pairs of twins.	No. cases of triplets.	Illegitimate Births.	Still-Births.
Orillia.....	M	106	4	11	12	13	9	12	10	6	7	7	3	12	.....	.....	4	7
	F	114	11	14	6	6	10	10	18	10	5	7	11	6	.....	.....	1	2
	Total	220	15	25	18	19	19	22	28	16	12	14	14	18	.....	.....	5	9
Oshawa.....	M	260	20	24	15	25	35	20	22	27	19	18	18	17	2	3	4	13
	F	245	6	27	21	19	22	23	24	25	15	19	22	22	8	.....	3	10
	Total	505	26	51	36	44	57	43	46	52	34	37	40	39	5	1	7	23
Pembroke.....	M	127	13	3	10	11	10	10	11	13	17	6	8	15	2	.....	3	7
	F	156	11	10	13	9	11	13	17	17	16	13	14	12	6	.....	2	9
	Total	283	24	13	23	20	21	23	28	30	33	19	22	27	4	.....	5	16
Preston.....	M	65	3	2	6	5	6	7	9	9	3	7	3	5	6	.....	1	3
	F	69	6	7	5	7	6	8	3	7	5	7	2	6	.....	.....	.....	2
	Total	134	9	9	11	12	12	15	12	16	8	14	5	11	3	.....	1	5
Smith's Falls.....	M	76	3	7	4	6	7	10	7	7	5	11	6	3	1	.....	.....	6
	F	84	9	5	7	4	7	4	7	6	10	10	5	10	1	.....	1	3
	Total	169	12	12	11	10	14	14	14	14	13	15	11	13	1	.....	1	9
Sudbury.....	M	181	12	13	14	17	20	20	12	14	11	19	14	15	7	.....	2	11
	F	173	16	13	12	17	14	14	17	17	11	12	13	17	5	.....	1	6
	Total	354	28	26	26	34	34	34	29	31	22	31	27	32	6	.....	3	17

Trenton.....	M	64	8	7	13	1	5	4	6	1	3	5	6	3
	F	91	9	4	7	13	12	5	7	5	7	1	.....	1
	Total	155	17	11	20	14	17	9	13	6	10	3	3	7	4
Walkerville.....	M	78	6	5	5	3	7	5	8	7	11	7	2	5
	F	64	7	5	4	6	6	6	4	5	5	5	1	1
	Total	142	13	10	9	9	13	12	11	12	12	16	3	3	6
Waterloo.....	M	90	8	7	4	8	14	3	10	5	9	4	1	3
	F	90	9	8	10	8	4	9	8	3	7	7	.....	2
	Total	180	17	15	14	16	18	18	12	18	13	16	11	1	5

MARRIAGES BY MONTHS—COUNTIES, 1923.

Counties.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Grand Total.... (all municipalities)	24,842	1,561	1,212	1,333	1,901	1,513	3,606	1,881	2,108	3,181	2,500	2,048	1,998
Total Counties, (excluding Cities and Towns....)	8,641	606	454	483	661	488	1,260	623	684	1,073	882	714	713
Algoma.....	123	10	5	1	12	10	18	14	12	9	8	18	6
Brant.....	90	2	2	8	15	4	16	6	6	7	5	9	10
Bruce.....	283	18	15	20	26	16	54	12	13	40	21	15	33
Carleton.....	89	8	3	7	6	4	11	9	5	14	6	4	12
Cochrane.....	238	15	9	7	21	13	27	25	22	20	36	25	18
Dufferin.....	113	8	11	12	8	4	21	5	5	14	9	7	9
Elgin.....	158	12	9	17	14	13	16	5	13	18	12	11	18
Essex.....	363	26	17	22	19	29	47	23	21	42	44	45	28
Frontenac.....	62	4	2	1	3	7	9	3	3	8	10	6	6
Grey.....	256	19	15	19	21	7	46	19	17	30	19	19	25
Haldimand.....	128	8	7	9	10	7	22	6	10	17	7	9	16
Haliburton.....	25	1	.....	1	3	1	9	1	.....	.....	5	2	2
Halton.....	141	14	6	8	8	8	26	8	16	14	10	10	13
Hastings.....	253	19	7	25	12	18	30	21	23	31	29	17	21
Huron.....	309	24	19	14	20	9	63	14	21	41	26	32	26
Kenora.....	47	2	5	3	2	.....	5	6	7	8	3	2	4
Kent.....	272	20	17	12	23	12	33	23	17	28	29	20	38
Lambton.....	175	9	7	14	10	8	34	6	6	29	21	15	16
Lanark.....	169	6	4	10	9	10	27	16	13	20	19	13	22
Leeds & Grenville	233	18	10	9	16	10	32	24	23	34	25	11	21
Lennox & Add... Lincoln.....	128	5	6	3	20	8	15	5	13	20	20	8	5
Manitoulin.....	110	3	7	8	10	13	18	5	12	9	10	4	11
Middlesex.....	63	5	1	.....	4	4	4	8	14	9	5	5	4
Muskoka.....	190	8	13	10	14	8	28	11	18	25	23	14	18
Nipissing.....	132	5	2	7	8	5	23	13	10	27	11	9	12
Norfolk.....	182	17	10	2	21	7	19	27	17	18	21	15	8
North. & Durham	166	8	15	12	16	12	20	14	13	19	16	11	10
Ontario.....	275	23	13	29	21	11	42	19	23	25	24	25	20
Oxford.....	191	16	13	19	14	11	21	14	14	22	21	13	13
Parry Sound....	157	12	10	13	15	13	23	9	7	21	9	15	10
Peel.....	165	10	7	7	13	8	30	8	23	23	7	14	15
Perth.....	111	5	7	5	9	7	22	8	11	9	13	6	9
Peterborough....	214	15	13	9	20	12	42	7	19	26	12	33	6
Prescott & Russell	65	6	5	5	2	2	7	5	13	10	1	5	4
Prince Edward... Rainy River.....	261	40	16	2	26	19	28	19	25	36	25	15	10
Renfrew.....	104	8	6	8	5	3	13	7	12	11	11	6	14
Simcoe.....	104	5	5	7	12	7	7	3	13	15	13	8	9
	288	14	10	4	14	16	48	40	21	39	33	29	20
	253	21	15	13	21	17	34	16	15	24	41	18	18

MARRIAGES BY MONTHS—COUNTIES, 1923—Continued.

Counties.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Stormont, Dundas & Glengarry...	287	28	17	12	25	17	40	15	17	39	26	31	20
Sudbury.....	159	12	9	2	9	10	16	13	19	21	24	17	7
Thunder Bay....	32	2	4	1	2	4	2	6	1	.....	7	1	2
Timiskaming....	229	23	17	10	26	17	26	12	8	31	19	23	17
Victoria.....	84	4	2	5	8	3	15	6	7	7	11	10	6
Waterloo.....	131	12	15	8	6	10	20	4	3	12	16	9	16
Welland.....	336	27	15	16	14	18	44	32	29	38	42	32	29
Wellington.....	207	9	19	13	17	8	40	12	18	27	14	17	13
Wentworth.....	129	9	5	7	8	11	20	14	7	14	18	9	7
York.....	361	11	7	27	23	17	47	25	29	72	45	22	36

MARRIAGES BY MONTHS IN THE CITIES OF ONTARIO, 1923.

Cities.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total.....	14,421	828	689	777	1,110	906	2,091	1,130	1,250	1,884	1,435	1,185	1,136
Belleville.....	161	12	9	12	19	9	29	12	11	19	9	11	9
Brantford.....	321	14	13	16	25	19	57	25	29	40	32	23	28
Chatham.....	200	12	16	8	18	8	25	18	13	19	31	17	15
Fort William.....	225	18	16	6	16	21	28	19	16	24	21	21	19
Galt.....	119	5	7	7	7	6	15	10	11	18	12	8	13
Guelph.....	208	6	11	14	17	17	35	9	16	20	25	20	18
Hamilton.....	1,355	71	64	76	98	72	180	118	104	191	139	131	111
Kingston.....	272	15	14	18	26	19	35	21	23	43	23	16	19
Kitchener.....	245	10	9	7	16	25	35	22	18	35	25	23	20
London.....	771	34	38	40	63	48	107	56	72	111	81	70	51
Niagara Falls.....	311	14	13	12	18	26	40	29	32	42	27	34	24
Ottawa.....	1,081	75	52	26	98	73	156	75	94	146	132	84	70
Owen Sound.....	103	10	4	8	7	3	25	7	3	12	12	5	7
Peterborough.....	227	11	6	8	21	16	42	16	24	24	25	19	15
Port Arthur.....	193	13	6	8	11	20	18	16	25	22	22	17	15
St. Catharines.....	233	17	8	5	11	10	30	17	20	38	24	24	29
St. Thomas.....	183	8	5	17	13	12	24	12	16	20	27	10	19
Sarnia.....	141	8	7	9	7	2	17	12	15	27	13	14	10
Sault Ste. Marie.....	216	14	10	6	20	16	20	16	23	33	22	17	19
Stratford.....	150	10	10	5	13	8	21	13	11	18	9	12	20
Toronto.....	6,604	390	322	399	513	392	997	517	581	833	617	518	525
Welland.....	135	5	7	6	9	9	22	12	8	22	13	12	10
Windsor.....	847	47	35	48	56	67	114	72	79	112	83	73	61
Woodstock.....	120	9	7	16	8	8	19	6	6	15	11	6	9

MARRIAGES BY MONTHS IN TOWNS OF ONTARIO, OF 5,000 POPULATION AND OVER, 1923.

Towns.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total.....	1,780	127	69	73	130	119	255	128	174	224	183	149	149
Barrie.....	76	9	4	.....	4	4	14	11	6	5	5	6	8
Brockville.....	103	4	3	3	5	13	16	10	15	9	9	10	6
Cobourg.....	64	4	2	3	5	5	11	5	11	4	6	4	4
Collingwood.....	54	8	1	3	8	1	4	5	3	7	5	1	8
Cornwall.....	119	10	3	3	5	14	15	1	6	20	14	18	10
Eastview.....	9	2	2	.....	.....	.....	.....	2	.....	2	1	.....	.....
Ford City.....	64	3	3	.....	6	2	8	5	8	12	7	7	3
Hawkesbury.....	45	1	3	2	5	3	10	3	4	7	4	1	2
Ingersoll.....	57	5	1	6	5	3	6	5	4	4	9	4	5
Kenora.....	47	4	4	1	3	6	7	5	3	5	2	3	4
Lindsay.....	94	6	2	8	7	4	11	7	9	20	6	4	10
Midland.....	44	6	2	4	3	.....	6	2	1	5	7	3	5
North Bay.....	130	4	2	1	11	13	17	14	13	24	9	11	11
Orillia.....	87	6	2	4	8	6	12	7	9	10	13	5	5
Oshawa.....	187	13	12	9	11	11	22	12	12	20	30	17	18
Pembroke.....	77	7	1	1	11	6	10	3	9	11	6	8	4
Preston.....	59	4	3	4	3	1	9	3	7	9	6	6	4
Smith's Falls.....	56	5	4	2	5	2	9	3	3	5	6	2	10
Sudbury.....	124	6	4	5	12	9	21	8	15	10	13	11	10
Trenton.....	77	7	3	5	4	5	6	6	8	9	12	8	4
Walkerville.....	152	6	6	9	8	7	30	9	21	18	10	13	15
Waterloo.....	55	7	2	.....	1	4	11	2	7	8	3	7	3

Marriages by Denominations for the Counties of Ontario, 1923.
(Excluding Cities and Towns of 5,000 population and over.)

DENOMINATIONS OF GROOMS	DENOMINATIONS OF BRIDES																												
	Adventists	Anglicans	Baptists	Brethren	Christians	Christian Science	Church of Christ	Congregationalists	Disciples	Evangelicals	Friends	Greek Church	Holiness Movement	Jews	Lutherans	Methodists	Mormons	Presbyterians	Roman Catholics	Salvation Army	Pentecostal	Protestants	United Church	United Brethren	Unitarians	Oriental religions	No religion	Other sects	Not stated
Total Grooms	5	651	49	2	1	1	2	2	3	3	1	1	1	12	3	258	2	102	53	5	1	1	1	1	1	1	7	1	1
Anglicans.....	1,244	39	217	1	7	6	2	2	2	2	3	3	8	1	8	78	2	56	6	2	1	1	1	1	1	1	1	1	1
Baptists.....	416	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Brethren.....	11	8	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Christians.....	10	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Christian Science.....	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Church of Christ.....	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Congregationalists.....	23	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Disciples.....	15	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Evangelicals.....	15	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Friends.....	55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Greek Church.....	30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Holiness Movement.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Jews.....	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lutherans.....	238	11	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Methodists.....	93	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mormons.....	2,475	1	227	98	2	1	2	7	4	15	2	2	2	8	2	21	3	25	5	2	2	2	2	2	2	2	2	2	2
Presbyterians.....	17	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Roman Catholics.....	1,892	220	63	1	1	1	7	3	4	18	1	436	1	1,082	41	4	7	3	41	4	4	4	2	2	2	2	2	2	2
Salvation Army.....	1,871	56	9	1	1	1	1	1	2	6	1	4	1	32	1,703	10	1	10	10	1	1	1	1	1	1	1	1	1	1
Pentecostal.....	14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Protestants.....	128	3	3	1	1	1	1	1	1	1	1	1	1	1	1	6	6	9	9	99	3	1	1	1	1	1	1	1	1
United Church.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
United Brethren.....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unitarians.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Oriental religions (Buddhists, Confucians, Mohammedans, Shintoes, Sikhs, Hindus).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No religion.....	42	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other sects.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Not stated.....	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total.....	8,641	6,123	459	12	9	4	5	28	14	60	2	26	5	8	232	99	2,578	15	1,778	1,854	26	8	119	4	8	1	44	7	7

Ages of Bridegrooms and Brides for the Counties of Ontario, 1923. (Excluding cities and towns of 5,000 population and over.)

AGES OF BRIDES.

Table with columns for ages of bridegrooms (18-80) and brides (Under-80), and rows for age groups (Under, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 55, 60, 65, 70, 75, 80, Over, Not stated).

Marriages by Denominations in Towns of Ontario of 5,000 population and over, 1923.

DENOMINATIONS OF GROOMS	DENOMINATIONS OF BRIDES																																	
	Total Grooms	Adventists	Anglicans	Baptists	Brethren	Christians	Christian Science	Church of Christ	Congregationalists	Disciples	Evangelicals	Friends	Greek Church	Holiness Movement	Jews	Lutherans	Menonites	Methodists	Mormons	Presbyterians	Roman Catholics	Salvation Army	Pentecostal	Protestants	Union Church	United Brethren	Unitarians	Oriental religions	No religion	Other sects	Not stated			
Adventists.....	3	3																																
Anglicans.....	358	208	10					1																										
Baptists.....	67	4	32																															
Brethren.....	1			1																														
Christians.....	3																																	
Christian Science.....	2																																	
Church of Christ.....	1																																	
Church of Christ.....	1																																	
Congregationalists.....	8	1						2																										
Disciples.....	10																																	
Evangelicals.....	1																																	
Friends.....	1																																	
Greek Church.....	31		2										27																					
Holiness Movement.....	1													1																				
Jews.....	3														3																			
Lutherans.....	60		4																															
Menonites.....	3																																	
Methodists.....	398		56	19																														
Mormons.....	2																																	
Presbyterians.....	342		55	11																														
Roman Catholics.....	467		14	5																														
Salvation Army.....	8																																	
Pentecostal.....	7																																	
Protestants.....	1		2																															
United Church.....	1																																	
United Brethren.....	1																																	
Unitarians.....	1																																	
Oriental religions (Buddhists, Confucians, Mohammedans, Shintos, Sikhs, Hindus).....																																		
No religion.....																																		
Other sects.....	3																																	
Not stated.....																																		
Total.....	1,780	3	347	79	1	7	1	1	4	12	30	1	3	60	6	397	1	319	483	11	4	1	1	1	1	1	1	1	1	1	1	1	1	1

CAUSES OF DEATH BY SEX, AGES AND MONTHS—ALGOMA

Causes of Death.	Ages.													Sex.		Nativity.				Social Condition.				Months.																	
														Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.					
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	122	87	163	26	12	8	117	54	32	6	25	18	18	14	13	15	18	20	23	21	9			
Total.	54	5	6	1	3	10	5	10	7	15	9	10	26	26	13	4	122	87	163	26	12	8	117	54	32	6	25	18	18	14	13	15	18	20	23	21	9				
DEATHS—ALL CAUSES. Total	42	6	1	2	1	9	1	3	3	6	3	3	1	3	3	4	17	25	37	2	3	3	28	9	5	...	6	7	6	2	2	2	2	2	2	3	2	3	2	3	
CLASS I.—GENERAL DISEASES.																																									
Group Total	3	2	2	2	2	14	4	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
8. Scarlet fever.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
9. Whooping cough.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
10. Diphtheria.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11. Influenza, total.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11A. Influenza, with pulmonary complications specified.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11B. Influenza, without pulmonary complications specified.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
24. Meningococcus meningitis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31-37. Tuberculosis. Total.....	20	1	1	1	1	4	3	3	3	4	1	1	1	1	1	1	8	12	16	1	3	3	12	5	3	...	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
31. Tuberculosis of the respiratory system.....	17	1	1	1	1	3	3	3	3	1	1	1	1	1	1	1	6	11	13	1	3	3	9	5	3	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
32. Tuberculosis of the meninges and central nervous system.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
33. Tuberculosis of the intestines and peritoneum.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																									
Total	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	4	1	2	3	3	1	3	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
43-49. Cancer. Total.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
43. Cancer of the buccal cavity.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
44. Cancer of the stomach and liver.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
47. Cancer of the breast.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
57. Diabetes mellitus.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
69. Other general diseases.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

186. Accidental injuries in mines and quarries.....	7	1	3	1	2	7	3	2	2	3	4	1	2	1	1	2	1
187. Accidental injury by machines.....	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
188. Accidental injury by other crushing (vehicles, railways, landslides, etc)	9	1	4	1	2	9	5	9	1	2	4	1	2	1	1	2	1
188A. Railroad accidents.....	3	1	1	1	1	3	1	3	1	2	1	1	1	1	1	1	1
188C. Automobile accidents.....	2	1	1	1	1	2	2	2	1	2	2	1	1	1	1	1	1
188E. Other vehicles.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
188F. Other crushing.....	3	2	2	1	1	3	1	3	1	2	1	1	1	1	1	1	1
193. Excessive cold.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
199. Homicide by other means.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
201. Fracture (cause not specified).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
202. Other external violence (cause specified).....	2	1	1	1	1	2	1	2	1	1	1	1	1	1	1	2	1
CLASS XV.—ILL-DEFINED DISEASES.																	
Total.....	11	5	1	2	1	5	6	11	1	6	5	1	2	2	1	1	2
204. Sudden death.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
205. Cause of death not specified or ill-defined, total.....	10	5	1	1	1	5	5	10	1	5	4	1	2	1	1	1	2
205A. Ill-defined.....	7	3	1	1	1	3	4	7	1	3	4	1	2	1	1	1	1
205B. Not specified or unknown.....	3	2	1	1	1	2	1	3	1	2	1	1	1	1	1	1	1

CLASS XI.—MALFORMATIONS.												
Total.....												
159.	5	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Congenital malformations (still-births not included), total.....												
159A.	5	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hydrocephalus.....												
159B.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Congenital malformations of the heart.....												
159C.	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Others under this title.....												
CLASS XII.—DISEASES OF EARLY INFANCY.												
Total.....												
160.	10	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Congenital debility, icterus and scleroma.....												
161.	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Premature birth, injury at birth, total.....												
161A.	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Premature birth.....												
162.	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other diseases peculiar to early infancy.....												
CLASS XIII.—OLD AGE.												
Total.....												
164.	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Senility.....												
CLASS XIV.—EXTERNAL CAUSES.												
Total.....												
165.	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Suicide by solid or liquid poisons (corrosive substances excepted).....												
169.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Suicide by drowning.....												
173.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poisoning by food.....												
183.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Accidental injury by fall.....												
194.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Excessive heat.....												

CLASS VIII.—THE PUERPERAL STATE.												
Total												
133.	Accidents of pregnancy, total.....	2	1	1	1	1	2	1	1	1	1	1
13c.	Other accidents of pregnancy.....	1	1	1	1	1	1	1	1	1	1	1
146.	Puerperal sepsis.....	1	1	1	1	1	1	1	1	1	1	1
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.												
Total												
151.	Gangrene.....	3				3	2	1	3	1	1	1
153.	Acute abscess.....	1				1	1	1	1	1	1	1
154.	Other diseases of the skin and annexa.....	1				1	1	1	1	1	1	1
CLASS XI.—MALFORMATIONS.												
Total												
4	4	4				4	1	3	4	4	1	1
159.	Congenital malformations (stillbirths not included), total.....	4				4	1	3	4	4	1	1
159a.	Congenital malformations of the heart.....	2				2	1	2	2	2	1	1
159c.	Others under this title.....	2				2	2	2	2	2	1	1
CLASS XII.—DISEASES OF EARLY INFANCY.												
Total												
13	13	13				13	8	5	13	13	2	1
160.	Congenital debility, lacterus and sclerosis.....	3				3	2	4	3	3	1	1
161.	Premature birth, injury at birth, total.....	9				9	4	0	9	9	0	0
161a.	Premature birth.....	8				8	4	4	8	8	2	2
161b.	Injury at birth.....	1				1	1	0	1	1	0	0
162.	Other diseases peculiar to early infancy.....	1				1	1	1	1	1	1	1
CLASS XIII.—OLD AGE.												
Total												
24	24	24				24	8	16	14	9	1	1
164.	Senility.....	24				24	8	16	14	9	1	1
CLASS XIV.—EXTERNAL CAUSES.												
Total												
22	1	2	1	1	4	2	12	10	13	6	1	2
166.	Suicide by corrosive substances.....	1				1	1	1	1	1	1	1
169.	Suicide by drowning.....	1				1	1	1	1	1	1	1
171.	Suicide by cutting or piercing instruments.....	1				1	1	1	1	1	1	1
179.	Accidental burns (conflagration excepted).....	1				1	1	1	1	1	1	1
180.	Accidental mechanical suffocation.....	1				1	1	1	1	1	1	1
182.	Accidental drowning.....	3				3	2	2	2	2	1	1
185.	Accidental injury by fall.....	5				5	3	2	2	2	1	2

CAUSES OF DEATH BY SEX, AGES AND MONTHS—HURON COUNTY

Causes of Death.	Ages.													Sex.		Nativity.			Social Condition.				Months.																									
														Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.												
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	259	270	368	131	24	6	149	210	167	3	49	44	58	49	54	36	46	49	36	35	35	38	35								
Total.	1	2	3	4	5	6	7	8	9	9	6	10	19	31	41	93	117	131	1	259	270	368	131	24	6	149	210	167	3	49	44	58	49	54	36	46	49	36	35	35	38	35						
Number of Column.	1	2	3	4	5	6	7	8	9	9	6	10	19	31	41	93	117	131	1	259	270	368	131	24	6	149	210	167	3	49	44	58	49	54	36	46	49	36	35	35	38	35						
DEATHS—ALL CAUSES. Total	56	8	1	2	2	3	3	3	3	6	6	3	8	8	26	30	46	7	1	2	23	25	7	1	2	9	10	6	5	5	5	6	2	2	1	2	2	2	2	1	3							
CLASS I.—GENERAL DISEASES.																																																
Total	529																																															
1. Enteric fever, total.	2																																															
1A. Typhoid fever.	2																																															
7. Measles.	1																																															
8. Scarlet fever.	3																																															
9. Whooping cough.	2																																															
11. Influenza, total.	27																																															
11A. Influenza, with pulmonary complications specified.	8																																															
11B. Influenza, without pulmonary complications specified.	19																																															
16. Dysentery, total.	1																																															
16C. Dysentery, unspecified or due to other causes.	1																																															
21. Erysipelas.	4																																															
31-37. Tuberculosis. Total.	15																																															
31. Tuberculosis of the respiratory system.	10																																															
32. Tuberculosis of the meninges and central nervous system.	1																																															
33. Tuberculosis of the intestines and peritoneum.	2																																															
36. Tuberculosis of other organs, total.	2																																															
36C. Lymphatic system (mesenteric, and retroperitoneal glands excepted).	1																																															
36E. Organs other than above.	1																																															
41. Purulent infection, septicaemia.	1																																															

CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.												
Total.....	1	2	3	4	5	6	7	8	9	10	11	12
43-49. Cancer. Total.....	1	1	1	1	1	1	1	1	1	1	1	1
44. Cancer of the stomach and liver.....				4	5	6	2	1	1	2	1	1
45. Cancer of the peritoneum, intestines and rectum.....				1	1	1	1	1	1	1	1	1
46. Cancer of the female genital organs.....				1	1	1	1	1	1	1	1	1
47. Cancer of the breast.....				1	1	1	1	1	1	1	1	1
49. Cancer of unspecified organs.....				1	1	1	1	1	1	1	1	1
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).....				1	1	1	1	1	1	1	1	1
57. Diabetes mellitus.....				1	1	1	1	1	1	1	1	1
58. Anaemia chlorosis, total.....				1	2	3	1	1	1	1	1	1
58A. Pernicious anaemia.....				1	1	1	1	1	1	1	1	1
65. Leukaemia lymphadenoma, total.....				1	1	1	1	1	1	1	1	1
65A. Leukaemia.....				1	1	1	1	1	1	1	1	1
CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.												
Total.....	1	2	3	4	5	6	7	8	9	10	11	12
73. Other diseases of the spinal cord.....				2	4	9	7	5	14	17	27	2
74. Cerebral haemorrhage, apoplexy, total.....				1	1	1	1	1	1	2	2	1
74A. Cerebral haemorrhage.....				1	1	1	1	1	1	1	1	1
75. Paralysis of unstated origin, total.....				2	3	7	4	5	9	12	19	1
75A. Hemiplegia.....				1	1	1	1	1	1	1	1	1
75B. Others under this title.....				1	1	1	1	1	1	1	1	1
80. Infantile convulsions (under 5 years of age).....				1	1	1	1	1	1	1	1	1
82. Neuralgia and neuritis.....				1	1	1	1	1	1	1	1	1
84. Other diseases of the nervous system.....				1	1	1	1	1	1	1	1	1
31	4	4	4	4	5	14	17	27	2	2	7	14
2					1	1	1	1	1	1	1	1
21					1	1	1	1	1	1	1	1
21A					1	1	1	1	1	1	1	1
21B					1	1	1	1	1	1	1	1
21C					1	1	1	1	1	1	1	1
3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1
42	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.												
Total.....	1	2	3	4	5	6	7	8	9	10	11	12
87. Pericarditis.....				1	1	1	1	1	1	1	1	1
88. Endocarditis and myocarditis (acute).....				1	1	1	1	1	1	1	1	1
89. Angina pectoris.....				1	1	1	1	1	1	1	1	1
90. Other diseases of the heart.....				1	1	1	1	1	1	1	1	1
91. Diseases of the arteries, total.....				1	2	2	2	2	2	2	2	2
91A. Aneurysm.....				1	1	1	1	1	1	1	1	1
91B. Arteriosclerosis.....				1	1	1	1	1	1	1	1	1

CAUSES OF DEATH BY SEX, AGES AND MONTHS—ONTARIO COUNTY

Causes of Death.	Ages.													Sex.		Nationality.			Social Condition.				Months.																																										
	Total.													Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.																													
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	40																								
443	51	3	3	1	2	3	2	5	3	10	10	6	10	7	12	11	42	37	53	19	3	4	3	9	167	110	4	43	74	36	40	30	40	30	31	31	23	28	38	30	4																								
DEATHS.—ALL CAUSES. Total.																											79	8	1	2	3	2	5	3	10	10	6	10	7	12	11	42	37	53	19	3	4	3	9	167	110	4	43	74	36	40	30	40	30	31	23	28	38	30	4
CLASS I.—GENERAL DISEASES.																											Total																																						
1. Enteric fever, total.																											2																																						
1A. Typhoid fever.																											2																																						
7. Measles.																											1																																						
8. Scarlet fever.																											2																																						
9. Whooping cough.																											3																																						
10. Diphtheria.																											2																																						
11. Influenza, total.																											41																																						
11A. Influenza with pulmonary complications specified.																											25																																						
11B. Influenza without pulmonary complications specified.																											16																																						
21. Erysipelas.																											1																																						
31-37. Tuberculosis, Total.																											26																																						
31. Tuberculosis of the respiratory system.																											24																																						
33. Tuberculosis of the intestines and peritoneum.																											1																																						
35. Tuberculosis of the joints.																											1																																						
41. Purulent infection, septicaemia.																											1																																						
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																											Total																																						
43-49. Cancer, Total.																											47																																						
44. Cancer of the stomach and liver.																											23																																						
45. Cancer of the peritoneum, intestines and rectum.																											7																																						
6																											6																																						

CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																					
21	1	3	4	4	9	13	8	20	1	1	14	6	1	2	5	3	2	1	4	1	1
Total																					
14	1	3	4	1	5	6	8	13	1	1	9	4	1	1	5	2	1	1	2	1	1
132.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
133.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
135.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLASS VIII.—THE PUERPERAL STATE.																					
3	1	2				3	3				3				1			1			
Total																					
148.	1	2				3	3				3				1			1			
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.																					
1						1						1									1
Total																					
1						1						1									1
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.																					
2	1					1	1	2			1										
Total																					
1						1															
CLASS XI.—MALFORMATIONS.																					
7	6	1				6	1	7			7				1	2					2
Total																					
7	6	1				6	1	7			7				1	2					2
CLASS XII.—DISEASES OF EARLY INFANCY.																					
71	71					39	32	71			71				13	8	10	7	3	4	5
Total																					
26	26					16	10	26			26				3	3	6	2	2		1
30	30					15	15	30			30				8	1	3	2	4	1	4
23	23					11	12	23			23				8	2	1	3	1	3	1
7	7					4	3	7			7				1	1	1	1	1	1	1
151	151					8	7	151			151				2	4	1	3			
CLASS XIII.—DISEASES OF EARLY INFANCY.																					
160.	160.																				
161.	161.																				
161A.	161A.																				
161B.	161B.																				
162.	162.																				

CAUSES OF DEATH BY SEX, AGES AND MONTHS—RENFREW COUNTY

Causes of Death.	Number of Column.	Ages.												Sex.			Nativity.			Social Condition.					Months.																		
														Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.							
		Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
Total.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
482		95	14	7	3	4	8	11	13	7	10	28	22	43	46	96	74	1	253	227	370	51	57	4	209	166	106	1	1	30	57	95	44	27	45	22	34	34	37	38	39	40	41
DEATHS.—ALL CAUSES. Total.....																																											
CLASS I.—GENERAL DISEASES.																																											
Total.....																																											
1. Enteric fever, total.....																																											
1A. Typhoid fever.....																																											
8. Scarlet fever.....																																											
9. Whooping cough.....																																											
10. Diphtheria.....																																											
11. Influenza, total.....																																											
11A. Influenza, with pulmonary complications specified.....																																											
11B. Influenza, without pulmonary complications specified.....																																											
16. Dysentery, total.....																																											
16C. Dysentery, unspecified or due to other causes.....																																											
21. Erysipelas.....																																											
31-37. Tuberculosis. Total.....																																											
31. Tuberculosis of the respiratory system.....																																											
32. Tuberculosis of the meninges and central nervous system.....																																											
37. Disseminated tuberculosis, total.....																																											
37A. Disseminated tuberculosis, acute.....																																											
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																											
Total.....																																											
43-49. Cancer. Total.....																																											
43. Cancer of the buccal cavity.....																																											
44. Cancer of the stomach and liver.....																																											

CLASS VIII.—THE PUERPERAL STATE.												
Total												
144.	Puerperal haemorrhage.....	7										
146.	Puerperal sepsis.....	1										
147.	Phlegmona alba dolens; puerperal embolism or sudden death in puerperium.....	3	1	2								
148.	Puerperal albuminuria and convulsions.....	1	1									
2		2	1	1								
CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.												
Total												
151.	Gangrene.....	4	2	2	2	3	1					
4		4	2	2	2	3	1					
CLASS XI.—MALFORMATIONS												
Total												
159.	Congenital malformations (still-births not included) total.....	5	5									
159A.	Hydrocephalus.....	2	3	2	5							
159C.	Others under this title.....	3	2	1	3							
CLASS XII.—DISEASES OF EARLY INFANCY.												
Total												
160.	Congenital debility, icterus and scleroma.....	45	45									
161.	Premature birth; injury at birth, total.....	10	29	16	14	30						
161A.	Premature birth.....	30	8	2	10							
161B.	Injury at birth.....	25	16	14	20							
162.	Other diseases peculiar to early infancy.....	5	5	4	5							
CLASS XIII.—Old Age.												
Total												
164.	Senility.....	38	9	29	19	19	14	8	15	1	10	27
CLASS XIV.—EXTERNAL CAUSES.												
Total												
178.	Conflagration.....	28	1	4	2	5	3	3	2	23	5	23
179.	Accidental burns (conflagration excepted).....	5	2									
182.	Accidental drowning.....	2	2									
183.	Accidental injury by firearms (wounds of war excepted).....	6	2	1	1	6	5	1				
185.	Accidental injury by fall.....	5	5	3	1	5						
187.	Accidental injury by machines.....	1	1	1	1	1						

CAUSES OF DEATH BY SEX, AGES AND MONTHS—SIMCOE COUNTY

Causes of Death.	Ages.													Sex.		Nativity.				Social Condition.				Months.																	
														Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.					
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
Total.	69	10	4	4	8	10	5	14	15	21	37	57	84	130	112	316	282	456	122	13	7	213	241	142	2	69	71	78	47	52	36	39	32	36	37	38	39	40	41		
1	2	3	4	5	3	1	3	1	5	8	2	9	7	4	7	11	9	41	44	68	12	4	45	23	17	2	6	24	14	6	3	5	5	5	7	3	4	3	4	3	
598	4	4	2	1	1	1	2	1	1	1	1	1	1	1	1	3	3	1	4	4	12	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEATHS.—ALL CAUSES. Total.....																																									
CLASS I.—GENERAL DISEASES.																																									
Total.....	85	9	5	3	1	3	1	5	8	2	9	7	4	7	11	9	41	44	68	12	4	45	23	17	2	6	24	14	6	3	5	5	5	7	3	4	3	4	3	4	3
1. Enteric fever, total.....																																									
1A. Typhoid fever.....																																									
7. Measles.....																																									
8. Scarlet fever.....																																									
9. Whooping cough.....																																									
10. Diphtheria.....																																									
11. Influenza, total.....																																									
11A. Influenza, with pulmonary complications specified.....																																									
11B. Influenza, without pulmonary complications specified.....																																									
13. Mumps.....																																									
21. Erysipelas.....																																									
22. Acute poliomyelitis.....																																									
24. Meningococcus meningitis.....																																									
31-37. Tuberculosis.....																																									
31-37. Tuberculosis, Total.....	28							4	6	2	4	5	2	4	1	15	13	23	4	1	17	9	2	1	3	4	1	3	4	1	3	2	2	4	2	4	3	2	3	2	
31. Tuberculosis of the respiratory system																																									
33. Tuberculosis of the intestines and peritoneum.....																																									
37. Disseminated tuberculosis, total.....																																									
37A. Disseminated tuberculosis, chronic.....																																									
38. Syphilis.....																																									
41. Purulent infection, septicaemia.....																																									

CAUSES OF DEATH BY SEX, AGES AND MONTHS—SUDBURY DISTRICT

Table with columns for Causes of Death, Number of Column, Sex (Male/Female), Ages (1 year to 80+ years), Nativity (Canada/British/Foreign), Social Condition (Single/Married/Widowed/Divorced/Not stated), and Months (January to December). Rows include 'Total', 'DEATHS.—ALL CAUSES. Total.', 'CLASS I.—GENERAL DISEASES.', 'CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.', and specific diseases like Measles, Whooping cough, Diphtheria, etc.

CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.																			
Total	10	3	3	3	1	8	2	4	6	1	2	1	1	2	3	1	1	1	1
88. Endocarditis and myocarditis (acute).	2					2	2		2										
89. Angina pectoris	1				1														
90. Other diseases of the heart.	4				2	3	1	4											
91. Diseases of the arteries, total.	2				2	1	1	1	1										
91A. Arteriosclerosis	2				2	1	1	1	1										
91B. Arteriosclerosis																			
CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.																			
Total	8	3	1	1	1	3	5	6	1	1	1	1	1	1	1	1	2	1	1
98. Diseases of the larynx	1							1											
100. Broncho-pneumonia (incl. capillary bronchitis), total.	3	2			1	2	1	2	1										
100A. Broncho-pneumonia.	3	2			1	2	1	2	1										
101. Pneumonia, total.	4	1			1	1	3	3	1										
101A. Pneumonia, not otherwise defined.	4	1			1	1	3	3	1										
101B. Pneumonia, not otherwise defined.																			
CLASS XI.—DISEASES OF THE DIGESTIVE SYSTEM.																			
Total	3	2			1	1	2	2	1	1	1	1	1	1	1	1	1	1	1
113. Diarrhoea and enteritis, under 2 years	2	2					2	2											
118. Hernia, intestinal obstruction, total.	1						1												
118A. Hernia	1						1												
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.																			
Total	4	1			2	1	2	2	1	1	1	1	1	1	1	1	1	1	1
128. Acute nephritis	1							1											
129. Chronic nephritis (Bright's disease)	3	1			2	1	2	1	1	1	1	1	1	1	1	1	1	1	1
CLASS XI.—MALFORMATIONS.																			
Total	1	1				1		1											
159. Congenital malformations (still-births not included), total.	1	1				1		1											
159c. Others under this title.	1	1				1		1											
CLASS XII.—DISEASES OF EARLY INFANCY.																			
Total	5	5				4	1	5											2
160. Congenital debility, icterus and scler- ona	3	3				2	1	3											2

CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.

Total.....	17	1	1	5	4	5	8	9	11	5	1	4	4	9	4	9	2	1	5	1	2	1	2	1
128. Acute nephritis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
129. Chronic nephritis (Bright's disease).....	12	1	1	4	4	2	5	7	8	3	1	3	4	5	3	4	5	1	4	1	1	4	1	2
133. Diseases of the bladder.....	4	1	1	1	3	3	2	2	2	2	2	4	4	4	4	4	1	1	1	1	1	1	1	1

CLASS VIII.—THE PUERPERAL STATE.

Total.....	4	1	3	1	1	1	4	3	3	1	1	4	4	4	4	1	1	1	1	1	1	1	1	1
144. Puerperal haemorrhage.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
146. Puerperal sepsis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
147. Pilegmiasia alba dolens; puerperal embolism or sudden death in puerperium.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
148. Puerperal albuminuria and convulsions.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS IX.—DISEASES OF THE SKIN AND CELLULAR TISSUE.

Total.....	8	1	1	1	4	1	5	3	6	1	1	1	5	2	1	5	2	1	1	2	1	1	3	3
151. Gangrene.....	6	1	1	1	3	1	3	3	5	1	1	5	5	1	1	2	1	1	1	2	1	2	2	2
153. Acute abscess.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
154. Other diseases of the skin and annexa.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.

Total.....	2	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
155. Diseases of the bones (tuberculosis excepted).....	2	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS XII.—DISEASES OF EARLY INFANCY.

Total.....	28	7	7	14	14	28	14	14	28	28	28	28	28	28	28	28	2	3	4	2	1	6	1	4	1	2
160. Congenital debility, icterus and scleroma.....	7	7	7	4	3	7	4	3	7	7	7	7	7	7	7	7	2	2	2	2	1	2	1	2	1	1
161. Premature birth, injury at birth, total.....	17	17	17	8	6	17	8	6	17	17	17	17	17	17	17	17	2	2	2	1	2	1	2	1	3	1
161A. Premature birth.....	14	14	14	1	1	14	1	1	14	14	14	14	14	14	14	14	1	1	1	1	2	1	2	1	2	1
161B. Injury at birth.....	3	3	3	1	2	3	1	2	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1	
162. Other diseases peculiar to early infancy.....	4	4	4	1	3	4	1	3	4	4	4	4	4	4	4	4	1	1	1	1	1	2	1	1	1	

CLASS XIII.—OLD AGE.

Total.....	55	1	1	116	38	27	28	27	20	1	7	9	18	28	10	6	2	8	2	6	8	3	1	3	3
164. Semility.....	55	1	1	116	38	27	28	27	20	1	7	9	18	28	10	6	2	8	2	6	8	3	1	3	3

CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.

	132	2	1	1	3	1	1	9	13	29	31	30	11	45	87	67	58	4	3	22	74	35	1	5	12	10	6	9	13	15	14	13	13	9	13				
43-49. Cancer. Total.....	91							5	7	23	23	26	6	30	61	43	44	3	1	10	53	27	1	3	10	6	4	4	9	10	12	10	8	7	8				
44. Cancer of the stomach and liver.....	36							5	4	1	1	1		17	2	1	2						3	1	5	3	2	2	6	6	7	7	2	5					
45. Cancer of the peritoneum, intestines and rectum.....	46							5	4	9	12	13	3	17	2	1	2	3	1	6	26	13	1	1	5	3	2	2	6	6	7	7	1	1					
46. Cancer of the female genital organs.....	9							4	4	4	4			4	5	2	7								2					1	1	2							
47. Cancer of the breast.....	9							4	4	4	1			9	5	4									2					1	2	2							
49. Cancer of unspecified organs.....	6							1	2	1	2			6	5	1									2					1	1								
50. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).....	18							2	3	4	5	3		8	10	12	6							2	2	4	2	3	2	2									
51. Acute rheumatic fever.....	1							1						1																									
52. Chronic rheumatism, osteo-arthritis, gout.....	7							1						4	3	4	2			1																			
54. Pellagra.....	3							1						1	2																								
56. Kieckets.....	2							1						3	3																								
57. Diabetes mellitus.....	1							1						1	1																								
58. Anæmia chlorosis, total.....	9							1	1	5	2			4	5	6	3			3	5	1			1	1	1	1	2	1	2								
58A. Pernicious anæmia.....	11							1	2	2	1			3	8	4	6	1		1	8	2			1	1	1	1	2	1	2								
58B. Other anæmias and chlorosis.....	10							1	1	2	1			3	7	4	6			1	7	2			1	1	2	1	1	2									
60. Diseases of the thyroid gland, total.....	1							1		2				1																									
60A. Exophthalmic goitre.....	3							1						3	3																								
60B. Other diseases of the thyroid gland.....	1							1						1																									
65. Leukaemia lymphadenoma, total.....	1							1						1																									
65A. Leukaemia.....	1							1						1																									
66. Alcoholism (acute and chronic).....	1							1						1																									
67. Chronic poisoning by mineral substances, total.....	1							1						1																									
67B. Others under this title.....	1							1						1																									
69. Other general diseases.....	1							1						1																									

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

	92	5	2	1	1	1	1	3	3	5	15	21	13	45	47	65	21	4	2	30	33	29		6	7	11	8	8	12	8	7	6	6	5				
71. Meningitis, total.....	3							1						2	1	2	1																					
71A. Simple meningitis.....	3							1						2	1	2	1																					
72. Tabes dorsalis (locomotor ataxia).....	1							1						2	1	2	1																					
73. Other diseases of the spinal cord.....	8							1		1	2	3	1	4	6	2																						
74. Cerebral hæmorrhage, apoplexy, total.....	47							2		6	14	14	10	20	27	35	8	2	2	8	18	21		2	3	9	6	1	3	6	4	3	3	5	2			
74A. Cerebral hæmorrhage.....	47							2		6	14	14	10	20	27	35	8	2	2	8	18	21		2	3	9	6	1	3	6	4	3	3	5	2			
75. Paralysis of unstated origin, total.....	8							3		1	2	2		4	4	3	5																					
75A. Hemiplegia.....	5							2		1	2			1	4	3																						
75B. Others under this title.....	3							1						3	1	1																						
76. General paralysis of the insane.....	1							1						3	1	1																						
77. Other forms of mental alienation.....	3							2		1				1	1	1																						
78. Epilepsy.....	10							2		1	1	3	2	7	3	6	3	1																				
79. Convulsions (non-puerperal 5 years and over).....	1							1						1		1																						
80. Infantile convulsions (under 5 years of age).....	5							2		3				5																								
81. Chorea.....	1							1						1																								
82. Neuralgia and neuritis.....	1							1						1																								
84. Other diseases of the nervous system.....	3							1						2		1																						

CAUSES OF DEATH BY SEX, AGES AND MONTHS—CITY OF BELLEVILLE

Causes of Death.	Ages.														Sex.		Nativity.			Social Condition.						Months.																							
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	Male.	Female.	Canada	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.									
Total.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41										
Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41									
Total.	33	4	1	1	1	2	2	2	4	3	10	9	34	31	28	42	100	106	164	35	6	1	69	81	55		1	18																					
DEATHS.—ALL CAUSES. Total																																																	
CLASS I.—GENERAL DISEASES.																																																	
Total	25																																																
1. Enteric fever, total	1																																																
1A. Typhoid fever	1																																																
8. Scarlet fever	1																																																
10. Diphtheria	1																																																
11. Influenza, total	10																																																
11A. Influenza, with pulmonary complications specified	7																																																
11B. Influenza, without pulmonary complications specified	3																																																
21. Erysipelas	1																																																
29. Tetanus	1																																																
31-37. Tuberculosis, Total	8																																																
31. Tuberculosis of the respiratory system	5																																																
32. Tuberculosis of the meninges and central nervous system	2																																																
37. Disseminated tuberculosis, total	2																																																
37A. Dissemminated tuberculosis, chronic	1																																																
38. Syphilis	1																																																
41. Purulent infection, septicaemia	1																																																
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																																	
Total	26																																																
43-49. Cancer, Total	19																																																
43. Cancer of the buccal cavity	1																																																
44. Cancer of the stomach and liver	7																																																

CLASS VIII.—THE PUERPERAL STATE.																													
Total.....	4			1	1	2				4	3	1		4	1	1	1												
143. Accidents of pregnancy, total.....	2					1								2															
143A. Abortion.....	1			1																									
146. Puerperal sepsis.....	1			1																									
147. Pilegnasia alba dolens; puerperal embolism or sudden death in puerperium.....	1					1								1															
CLASS X.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.																													
Total.....	2		1				2	1	1				1	1			1												
155. Diseases of the bones (tuberculosis excepted).....	2			1			2	1	1				1	1			1												
CLASS XI.—MALFORMATIONS.																													
Total.....	4	3	1					1	3	4				4			1	2											
159. Congenital malformations (still-births not included), total.....	4	3	1					1	3	4				4			1	2											
159B. Congenital malformations of the heart.....	1								1	1				1			1	2											
159C. Others under this title.....	3	3							2	3				3			1	2											
CLASS XII.—DISEASES OF EARLY INFANCY.																													
Total.....	32	32					17	15	32					32			1	3	1										
160. Congenital debility, icterus and scleroma.....	9						5	4	9					9															
161. Premature birth, injury at birth, total.....	22	22					12	10	22					22			1	2	4										
161A. Premature birth.....	19						11	8	19					19			1	3	3										
161B. Injury at birth.....	3						1	2	3					3			1	1	1										
162. Other diseases peculiar to early infancy.....	1							1	1					1															
CLASS XIII.—OLD AGE.																													
Total.....	28						2	8	18		8	20	16	10	2		3	8	17										
164. Senility.....	28						2	8	18		8	20	16	10	2		3	8	17										
CLASS XIV.—EXTERNAL CAUSES.																													
Total.....	17	1	1	2	1	1	1	2	1	2	2	1	1	14	3	13	2	2	11	5	1	1	1	3	2	2	3	1	2
177. Other acute accidental poisonings (gas excepted).....	1								1						1				1								1		
179. Accidental burns (conflagration excepted).....	2		1														2		2							1			
182. Accidental drowning.....	2			1	1										2				2							1		1	

CAUSES OF DEATH BY SEX, AGES AND MONTHS—CITY OF FORT WILLIAM

Causes of Death.	Number of Columns.	Ages.																			Sex.		Nativity.			Social Condition.				Months.												
		Under 1 year.		1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	Male.	Female.	Canada.	British.	Foreign.	Not stated.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Total.	53	8	6	2	2	2	9	3	5	5	12	20	21	23	12	13	8	2	131	73	128	38	29	9	111	66	20	7	18	9	22	16	17	13	19	17	12	24	18	19		
DEATHS.—ALL CAUSES. Total.....																																										204
CLASS I.—GENERAL DISEASES.																																										
Total.....																																										31
1. Enteric fever, total.....																																										1
1A. Typhoid fever.....																																										1
1B. Diphtheria.....																																										6
11. Influenza, total.....																																										4
11A. Influenza, with pulmonary complications specified.....																																										2
11B. Influenza, without pulmonary complications specified.....																																										2
16. Dysentery, total.....																																										1
16c. Dysentery, unspecified or due to other causes.....																																										1
23. Encephalitis lethargica.....																																										2
23. Other epidemic and endemic diseases, total.....																																										2
25A. Chicken-pox.....																																										2
29. Tetanus.....																																										2
31-37. Tuberculosis. Total.....																																										12
31. Tuberculosis of the respiratory system.....																																										10
32. Tuberculosis of the meninges and central nervous system.....																																										2
38. Syphilis.....																																										2
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																										
Total.....																																										25
43-49. Cancer. Total.....																																										12
44. Cancer of the stomach and liver.....																																										6

111. Ulcer of the stomach, duodenum, total	8	3	3	3	7	1	1	5	2	1	6	1	3	1	3	2	1	1	1	1	1
111A. Ulcer of the stomach	3	1	1	1	2	1	1	3	3	2	1	2	1	1	3	1	1	1	1	1	1
111B. Ulcer of the duodenum	5	2	3	3	5	1	2	2	2	1	4	1	3	1	3	1	1	1	1	1	1
112. Other diseases of the stomach (cancer excepted)	9	1	1	1	4	5	5	3	1	5	5	1	1	2	3	1	1	1	1	1	1
113. Diarrhoea and enteritis, under 2 years	22	18	4	1	12	10	21	1	1	22	2	1	2	1	4	3	2	1	6	3	1
114. Diarrhoea and enteritis, 2 years and over	4	1	1	3	3	1	3	1	3	1	1	3	2	3	2	2	3	1	2	3	1
117. Appendicitis and typhitis	25	1	1	2	11	14	19	6	6	12	11	2	2	3	3	2	1	2	3	1	4
118. Hernia, intestinal obstruction, total	15	1	1	3	9	6	9	6	6	6	6	3	3	1	2	3	1	2	1	2	3
118A. Hernia	4	1	1	1	3	1	3	1	1	1	1	2	1	1	1	1	1	1	1	1	1
118B. Intestinal obstruction	11	1	1	3	6	5	6	5	5	5	5	1	2	1	1	2	1	2	1	2	1
119. Other diseases of the intestines	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
122. Cirrhosis of the liver, total	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
122B. Cirrhosis of the liver, not specified as alcoholic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
123. Biliary calculi	4	1	1	2	2	2	2	1	1	1	4	1	1	2	1	2	2	2	2	2	1
124. Other diseases of the liver	15	1	1	6	1	2	1	12	3	9	5	3	9	3	2	1	2	2	2	1	1
125. Diseases of the pancreas	5	1	1	1	2	3	1	4	1	4	2	3	1	1	3	1	2	2	1	1	1
126. Peritonitis without specified cause	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	86	82	613	826	1710	46	40	41	34	11	55	20	7	9	3	9	11	8	7	5	1
128. Acute nephritis	5	2	1	5	3	2	2	6	6	3	2	2	2	2	3	6	8	4	3	4	1
129. Chronic nephritis (Bright's disease)	55	2	4	6	18	13	26	23	23	6	4	34	17	2	6	3	6	8	4	3	1
131. Other diseases of the kidneys and their annexa (diseases of kidneys in pregnancy excluded)	6	2	1	1	3	3	2	1	1	1	1	3	2	3	1	1	1	1	1	1	2
132. Calculi of the urinary passages	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
133. Diseases of the bladder	3	1	1	1	2	3	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1
135. Diseases of the prostate	9	3	1	3	2	4	9	3	3	3	1	7	1	1	1	1	1	1	1	1	1
137. Cysts and other benign tumours of the ovary	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
138. Salpingitis and pelvic abscess	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
139. Benign tumours of the uterus	4	1	2	1	4	3	1	1	1	1	4	1	2	2	1	1	1	1	1	1	1
141. Other diseases of the female genital organs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	13	2	1	9	13	9	4	1	12	4	2	2	1	2	1	2	1	2	1	1	1
143. Accidents of pregnancy, total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
143A. Abortion	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
145. Other accidents of child-birth, total	3	1	2	3	1	2	1	2	3	2	1	3	2	1	1	1	1	1	1	1	1
145C. Others under this title	3	1	2	3	1	2	1	2	3	2	1	3	2	1	1	1	1	1	1	1	1
146. Puerperal sepsis	4	1	4	4	2	2	4	2	2	4	2	4	2	2	2	1	1	1	1	1	1
147. Phlegmasia alba dolens; puerperal embolism or sudden death in puerperium	2	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
148. Puerperal albuminuria and convulsions	2	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
149. Following child-birth (not otherwise defined)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS VIII.—THE PUERPERAL STATE.

CAUSES OF DEATHS BY SEX, AGES AND MONTHS—CITY OF LONDON

Causes of Death.	Ages.													Sex.		Nationality.					Social Condition.					Months.														
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	Male.	Female.	Canada.	British.	Foreign.	Not stated.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		103	13	5	4	2	15	9	21	25	82	76	112	184	183	166	514	500	659	289	52	14	335	395	277	7	101	105	111	110	81	70	76	67	58	90	73	72		
		1014	132	2	2	2	1	3	5	9	13	25	16	10	18	8	12	62	70	90	34	6	2	59	49	24	8	13	15	19	11	7	6	12	4	16	15	6		
DEATHS.—ALL CAUSES. Total.....																																								
CLASS I.—GENERAL DISEASES.																																								
Total.....																																								
1. Enteric fever, total.....																																								
1A. Typhoid fever.....																																								
8. Scarlet fever.....																																								
9. Whooping cough.....																																								
10. Diphtheria.....																																								
11. Influenza, total.....																																								
11A. Influenza, with pulmonary complications specified.....																																								
11B. Influenza, without pulmonary complications specified.....																																								
16. Dysentery, total.....																																								
16a. Dysentery, bacillary.....																																								
21. Erysipelas.....																																								
23. Encephalitis lethargica.....																																								
29. Tetanus.....																																								
31-37. Tuberculosis. Total.....																																								
31. Tuberculosis of the respiratory system.....																																								
32. Tuberculosis of the meninges and central nervous system.....																																								
33. Tuberculosis of the intestines and peritoneum.....																																								
34. Tuberculosis of the vertebral column.....																																								
36. Tuberculosis of other organs, total.....																																								
36a. Organs other than above.....																																								
37. Disseminated tuberculosis, total.....																																								
37a. Disseminated tuberculosis, acute.....																																								
38. Syphilis.....																																								
40. Gonococcal infection (ophthalmia excepted).....																																								
41. Purulent infection, septicaemia.....																																								

CAUSES OF DEATH BY SEX, AGES AND MONTHS—CITY OF ST. CATHARINES

Causes of Death.	Ages.													Sex.		Nativity.			Social Condition.					Months.																	
	Total.													Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	Janu. ry.	Febru. ry.	March.	April.	May.	June.	July.	August.	Septem. ber.	October.	November.	December.					
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	155	134	201	62	26	117	117	55	42	40	35	26	32	19	13	12	13	13	17	17	22	18		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
289	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	155	134	201	62	26	117	117	55	42	40	35	26	32	19	13	12	13	13	17	17	22	18	18	22	18
DEATHS.—ALL CAUSES. Total.....																																									
CLASS I.—GENERAL DISEASES.																																									
Total.....																																									
1.	Enteric fever, total.....																																								
1A.	Typhoid fever.....																																								
2.	Measles.....																																								
3.	Whooping cough.....																																								
4.	Diphtheria.....																																								
5.	Influenza, total.....																																								
6.	Influenza, with pulmonary complications specified.....																																								
7.	Influenza, without pulmonary complications specified.....																																								
8.	Erysipelas.....																																								
9.	Encephalitis lethargica.....																																								
10.	Tuberculosis. Total.....																																								
11.	Tuberculosis of the respiratory system.....																																								
12.	Tuberculosis of the meninges and central nervous system.....																																								
13.	Tuberculosis of the vertebral column.....																																								
14.	Syphilis.....																																								
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																									
Total.....																																									
43-49.	Cancer. Total.....																																								
43.	Cancer of the buccal cavity.....																																								
44.	Cancer of the stomach and liver.....																																								

CLASS XIV.—EXTERNAL CAUSES.

Total	16	1	1	2	1	1	1	3	1	1	2	12	4	9	6	1	1	9	4	3	2	3	1	2	1	1	3	3	1	..			
169. Suicide by drowning.....	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
177. Other acute accidental poisonings (gas excepted).....	1	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
179. Accidental burns (conflagration excepted).....	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
182. Accidental drowning.....	2	..	1	1	..	..	..	..	..	..	2	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..
183. Accidental injury by firearms (wounds of war excepted).....	1	..	..	1	..	..	..	2	..	..	1	..	..	1	1	1	..	..	..	..	..	1	..	..	..	..	1	..	..	..
187. Accidental injury by machines.....	2	..	..	..	..	..	..	..	2	..	2	..	..	1	1	1	..	..	2	..	..	..	..	..	..	..	1	..	..	..
188. Accidental injury by other crushing (vehicles, railways, landslides, etc.)	6	..	..	1	1	1	..	1	..	1	..	6	..	2	..	..	..	..	4	2	..	..	..	2	1	..	1	1	1	1
188A. Railroad accidents.....	1	1	..	1	..	1	1		
188B. Street car accidents.....	1	1	1	1	..	1	1	1		
188C. Automobile accidents.....	3	..	1	1	3	..	3	..	3	3	1	1	1	
188E. Other vehicles.....	1	1	1	..	1	1	1	
201. Fracture (cause not specified).....	2	2	2	2	1	1
Total	1	1	1	1	1	1

CLASS XV.—ILL-DEFINED DISEASES.

Total	1	1	1		
205. Cause of death not specified or ill-defined, total.....	1	1	1	1	1	1	
205B. Cause of death not specified or unknown.....	1	1	1	1	1	1

CAUSES OF DEATH BY SEX, AGES AND MONTHS—CITY OF SARNIA

Causes of Death.	Ages.													Sex.		Nativity.			Social Condition.						Months.																						
	Total.	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.							
			27	6	1	2	2	2	3	3	4	2	17	12	14	26	31	17	86	83	124	38	6	1	62	70	37		16	15	14	13	17	14	16	12	22	12	6	12							
DEATHS.—ALL CAUSES. Total.....	169																																														
CLASS I.—GENERAL DISEASES.																																															
1. Enteric fever, total.....	21	1	2	1	1												11	10	16	3	2		9	8	4		2	5	2	1	2	2	1	2	1	2						2					
1A. Typhoid fever.....								1									1	1		1			1	1																							
7. Measles.....	2																1	1		1			1	1																							
10. Diphtheria.....	2																1	1		2		1	2		2																						
11. Influenza, total.....	6	1	1	1	1												4	2	5	1		1	4	1																							
11A. Influenza, with pulmonary complications specified.....	5	1															3	2	4	1		1	4																								
11B. Influenza, without pulmonary complications specified.....	1																1			1																											
21. Erysipelas.....	1																1			1			1																								
31-37. Tuberculosis. Total.....	5																3	2	5				2	2																							
31. Tuberculosis of the respiratory system.....	4																3	1	4				1	2																							
37. Disseminated tuberculosis, total.....	1																1		1				1																								
37A. Disseminated tuberculosis, acute.....	1																1		1				1																								
38. Syphilis.....	1																1		1				1																								
41. Purulent infection, septicaemia.....	2																1	1	2				1	1																							
43-49. Cancer. Total.....	23	2															10	13	18	5			2	14	7																						
44. Cancer of the stomach and liver.....	4																7	8	11	4				9	6																						
45. Cancer of the peritoneum, intestines and rectum.....	4																2	2	3	1			3	1																							
46. Cancer of the female genital organs.....	4																2	2	3	1			2	2																							
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																															

47. Cancer of the breast.	1						1					1							1					1			
49. Cancer of unspecified organs.	5						2	4	1			1							1	2			1				1
58. Anaemia chlorosis, total.	4						1	2	3										1	2			1				1
58A. Pernicious anaemia.	4						1	2	3										1	2			1				1
60. Diseases of the thyroid gland, total.	1						1												1				1				1
60h. Other diseases of the thyroid gland.	1						1												1				1				1
66. Alcoholism (acute and chronic).	1						1												1				1				1
69. Other general diseases.	2						1	2											1				1				1

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

Total.	13	1				2	1	5	2			9	3	1				5	4			1	1	1	2		2	
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70. Encephalitis.	1																	1				1						
71. Meningitis, total.	1											1																
71A. Simple meningitis.	1											1																
73. Other diseases of the spinal cord.	1						1												1				1					
74. Cerebral haemorrhage, apoplexy, total.	7						1	4	1			7	4	2					1			1	1	1		1	2	
74A. Cerebral haemorrhage.	7						1	4	1			7	4	2					1			1	1	1		1	2	
75. Paralysis of unsteady origin, total.	2						1	1				2	2						1			1	1			2		
75A. Hemiplegia.	1						1					1							1			1				1		
75B. Others under this title.	1						1					1							1			1				1		
84. Other diseases of the nervous system	1						1					1							1			1				1		

CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.

Total.	32					3	3	8	12	5		18	14	18	13	1		4	20	8		3	1	2	1	4	3	2	5	3	1	3
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88. Endocarditis and myocarditis (acute)	4						2	1				2	2	2					2						1	2					1	
90. Other diseases of the heart.	15						4	8	2			7	8	11	4				1	9	5			1	1	1	2	3	1	2		1
91. Diseases of the arteries, total.	12						1	4	3			8	4	5	7				3	1	1		1	1	1	2	1	3	2		2	
91h. Arteriosclerosis.	12						1	4	3			8	4	5	7				3	1	1		1	1	1	2	1	3	2		2	
95. Haemorrhage without specified cause.	1						1					1							1				1									2

CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.

Total.	11	1				1	1	2	3	2	1	9	2	8	3			4	5	2			1	2	1	3	1	1		1		1
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99. Bronchitis, total.	2						1				1								1						1						1	
99B. Bronchitis, chronic.	1						1					2							1						1						1	
99h. Bronchitis, not otherwise defined, 5 years and over.	1						1				1								1						1						1	
100. Broncho-pneumonia (incl. capillary bronchitis), total.	2	1							1		1		2						1							1						1
100A. Broncho-pneumonia.	2	1							1		1		2						1							1						1
101. Pneumonia, total.	7							3	2			5	2	6	1				2	4	1				2	2	1				2	
101A. Pneumonia, lobar.	3							1	1			3		3					1	2	1				1	1					3	
101B. Pneumonia, not otherwise defined.	4							2	2			2	2	3	1				1	2	1				1	1					1	

CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.

Total.....	23	2	1	1	1	1	2	2	1	5	7	1	1	6	12	5	4	7	4	2	3	1	1	1
98. Diseases of the larynx.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
99. Bronchitis, total.....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
99A. Bronchitis, acute.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
99C. Bronchitis, not otherwise defined, under 5 years.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100. Broncho-pneumonia (incl. capillary bronchitis), total.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100A. Broncho-pneumonia.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
101. Pneumonia, total.....	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
101A. Pneumonia, not otherwise defined.....	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
102. Pleurisy.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
103. Congestion and haemorrhagic infarct of the lung.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
105. Asthma.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.

Total.....	12	1	1	1	1	1	4	3	1	1	6	8	3	1	4	7	1	2	1	1	1	1	2	1	4
111. Ulcer of the stomach, duodenum, total.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
111A. Ulcer of the stomach.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
111B. Ulcer of the duodenum.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
112. Other diseases of the stomach (cancer excepted).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
117. Appendicitis and typhlitis.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
118. Hernia, intestinal obstruction, total.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
118B. Intestinal obstruction.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
123. Biliary calculi.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
124. Other diseases of the liver.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
125. Diseases of the pancreas.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
126. Peritonitis without specified cause.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.

Total.....	12	1	2	4	3	2	5	7	5	1	5	6	2	1	2	2	1	2	2	1	2	2	1	2	2
128. Acute nephritis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
129. Chronic nephritis (Bright's disease).....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
132. Calculi of the urinary passages.....	7	3	2	2	2	2	5	5	2	2	4	2	4	1	2	4	1	1	1	1	1	1	1	2	
135. Diseases of the prostate.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
141. Other diseases of the female genital organs.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

CLASS VIII.—THE PUERPERAL STATE.

Total.....	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
144. Puerperal haemorrhage.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
148. Puerperal albuminuria and convulsions.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

CAUSES OF DEATH BY SEX, AGES AND MONTHS—CITY OF TORONTO

Causes of Death.	Ages.													Sex.			Nativity.			Social Condition.						Months.															
														Male.	Female.	Canada.	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.					
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	3130	2990	3644	1937	476	63	2332	2493	1217	1	77	604	876	642	530	506	428	362	392	430	440	449	461	
Total.	972	144	72	45	39	118	60	99	133	204	438	553	754	932	588		3130	2990	3644	1937	476	63	2332	2493	1217	1	77	604	876	642	530	506	428	362	392	430	440	449	461		
DEATHS.—ALL CAUSES. Total.	863	97	62	37	19	46	12	22	47	46	103	91	68	85	72	37	421	442	560	229	63	11	452	304	98	9	84	246	120	69	64	38	43	38	48	37	29	47			
CLASS I.—GENERAL DISEASES.																																									
Total.	13	13	18	30	43	57	322	189	133	204	438	553	754	932	588		11	2	6	5	2	5	4	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	
1. Enteric fever, total.....	13	13	18	30	43	57	322	189	133	204	438	553	754	932	588		11	2	6	5	2	5	4	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	
1A. Typhoid fever.....	13	13	18	30	43	57	322	189	133	204	438	553	754	932	588		11	2	6	5	2	5	4	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2
7. Measles.....	33	18	9	3	2	1	1	1	1	1	1	1	1	1	1	1	11	2	6	5	2	5	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8. Scarlet fever.....	30	1	5	8	5	3	2	2	2	2	2	2	2	2	2	2	19	14	31	1	1	33	5	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9. Whooping cough.....	43	16	19	4	1	1	1	1	1	1	1	1	1	1	1	1	18	17	27	3	3	29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10. Diphtheria.....	57	3	3	5	8	21	6	2	1	1	1	1	1	1	1	1	25	32	51	4	2	54	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11. Influenza, total.....	322	22	13	10	2	2	4	1	4	14	28	39	49	61	35	118	204	182	118	18	4	98	148	74	2	33	184	58	18	9	2	1	3	2	2	2	2	2	2	2	2
11A. Influenza, with pulmonary complications specified.....	189	11	6	2	1	2	1	1	1	8	18	21	23	28	17	65	124	103	71	12	3	54	94	39	2	21	122	34	4	5	5	5	5	5	5	5	5	5	5	5	
11B. Influenza, without pulmonary complications specified.....	133	11	4	4	1	2	1	3	5	2	10	7	16	21	18	53	80	79	47	6	1	44	54	35	12	62	24	14	4	2	1	3	2	1	3	2	1	4	4	4	
21. Erysipelas.....	29	12	2	1	1	1	1	1	1	1	1	1	1	1	1	14	15	22	5	1	19	7	3	2	5	3	7	3	1	1	1	1	1	1	1	1	1	1	1	1	
23. Encephalitis lethargica.....	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	3	7	2	1	3	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
24. Meningococcus meningitis.....	6	2	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	5	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25. Other epidemic and endemic diseases, total.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25A. Chicken-pox.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
29. Tetanus.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
30. Mycoses.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31-37. Tuberculosis, Total.....	263	12	10	4	2	3	11	3	14	28	30	57	44	20	18	7	141	122	158	70	30	5	138	109	14	2	27	29	27	22	25	18	15	21	17	24	14	24	24		
31. Tuberculosis of the respiratory system.....	190	3	4	1	1	2	10	21	28	46	38	19	13	5	5	97	93	107	53	26	4	86	91	11	2	21	23	22	15	17	15	10	13	11	17	12	14	14			
32. Tuberculosis of meninges and central nervous syst.	25	4	3	2	1	1	5	2	2	2	2	1	1	1	1	16	9	19	4	2	1	23	2	2	2	1	2	2	2	3	3	1	2	3	1	3	1	3			

33. Tuberculosis of the intestines and peritoneum.	12	1	1	1	1	1	2	5	7	9	3	7	2	3	2	1	2	1	2	1	1	1	1	2	2													
34. Tuberculosis of the vertebral column.	5	1	1	1	1	1	2	4	1	2	2	1	2	3	1	1	1	1	1	1	1	3	1	1	1													
35. Tuberculosis of the joints.	3	1	1	1	1	1	1	3	3	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1													
36. Tuberculosis of other organs.	9	1	1	1	2	2	2	5	4	4	5	2	7	2	2	2	2	2	2	2	2	2	2	2	2													
36d. Tuberculosis of genito-urinary system.	5	1	1	1	1	1	1	4	1	2	3	1	4	1	1	1	1	1	1	1	1	1	1	1	1													
36e. Tuberculosis of organs other than above.	4	1	1	1	1	1	1	1	3	2	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1													
37. Disseminated tuberculosis.	19	5	2	1	2	3	2	11	8	16	2	1	16	3	3	1	3	2	2	1	1	1	2	2	2													
37A. Disseminated tuberculosis acute.	18	5	2	1	2	3	1	10	8	15	2	1	15	3	3	1	2	2	2	1	1	1	2	2	2													
37B. Disseminated tuberculosis chronic.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1													
38. Syphilis.	21	8	1	1	2	6	3	18	3	11	7	3	10	9	1	1	1	4	3	2	2	3	1	1	1													
40. Gonococcal infection (ophthalmia excepted).	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1													
41. Purulent infection, septicaemia.	30	1	2	1	1	1	2	7	5	1	7	1	12	16	1	1	3	2	4	4	2	4	3	1	1													
Total.	906	17	2	4	10	10	11	12	24	66	134	204	231	137	40	404	502	485	327	91	3	210	493	191	1	11	86	89	86	71	80	61	65	77	66	76	78	71
43-49. Cancer. Total.	596	1	1	1	3	3	4	5	36	97	147	173	97	31	263	333	287	248	59	2	98	367	126	5	56	58	56	42	51	43	37	59	44	50	51	49		
43. Cancer of the buccal cavity.	30	1	1	1	1	1	3	8	10	4	3	24	6	9	19	2	4	15	11	2	4	15	11	3	3	2	3	1	3	3	4	4	1	2	1	2	1	
44. Cancer of the stomach and liver.	165	1	1	1	1	1	4	23	42	62	26	7	95	70	74	69	22	22	115	25	3	15	11	16	13	18	14	9	23	9	9	11	17	17	17	17	17	
45. Cancer of the peritoneum, intestines and rectum.	100	1	1	1	1	1	2	6	12	19	34	21	6	44	56	57	34	8	19	57	24	10	11	12	9	10	6	8	8	5	13	4	4	4	4	4		
46. Cancer of the female genital organs.	83	2	2	2	2	2	8	20	24	19	8	2	83	46	33	4	10	49	24	10	49	24	10	49	24	10	49	24	10	49	24	10	49	24	10	49	24	10
47. Cancer of the breast.	64	4	4	4	4	4	13	19	14	9	5	2	64	35	24	5	14	36	14	4	36	14	4	7	5	7	3	3	3	3	3	3	3	3	3	3	3	
48. Cancer of the skin.	15	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
49. Cancer of unspecified organs.	139	3	2	2	2	2	11	26	34	31	24	4	91	48	63	58	17	25	88	24	2	16	18	15	8	6	11	3	13	7	13	18	11	11	11	11		
70. Benign tumours and tumours not returned as malignant (tumours of female genital organs excepted).	5	1	1	1	1	1	1	1	1	1	1	4	1	2	1	2	1	2	3	2	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	
51. Acute rheumatic fever.	20	1	2	5	4	1	2	1	1	2	1	10	10	16	3	1	15	3	2	15	3	2	1	2	1	4	1	4	1	4	1	4	1	4	1	4		
52. Chronic rheumatism, osteo-arthritis, gout.	18	1	1	1	1	1	1	3	1	5	6	4	14	11	5	2	8	3	6	1	2	1	2	1	2	1	3	1	2	1	4	2	1	4	2	1		
54. Pellagra.	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
56. Rickets.	9	1	1	1	1	1	1	1	1	1	1	4	5	9	2	4	5	9	2	4	5	9	2	4	5	9	2	4	5	9	2	4	5	9	2	4		
57. Diabetes mellitus.	83	1	3	3	1	5	8	5	16	25	11	5	40	43	46	27	10	17	42	22	1	8	10	8	9	6	6	3	6	7	6	8	6	8	6	8		
58. Anaemia chlorosis, total.	82	2	2	2	2	2	1	5	12	17	19	21	2	39	43	49	31	2	17	45	18	2	11	10	8	9	7	3	9	5	5	3	7	7	3	7		
58A. Pernicious anaemia.	73	1	1	1	1	1	1	5	11	15	19	18	2	37	36	44	27	2	15	40	16	2	8	9	7	6	3	8	5	5	5	5	5	5	5	5		
58B. Other anaemias and chlorosis.	9	1	1	1	1	1	2	3	3	3	2	7	5	4	2	7	5	4	2	5	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

CLASS II.—GENERAL DISEASES.
NOT INCLUDED IN CLASS I.

TORONTO—Continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
Number of Colu.mn.																																												
59. Diseases of the pituitary gland.....	1											1																																
60. Diseases of the thyroid gland, total.....	28	1				1	2	1	1	5	8		8		1				4	24	25	2		5	14	8		1		1	4	1	1	2	1	2	4	4	3	2	3			
60A. Exophthalmic goitre.....	14					2	1	2	5	4		1	13		1				1	13	13	1		2	8	4		1		1		1	1	2	1	1	2	2	1	1				
60B. Other diseases of the thyroid gland.....	14	1				1	1	1	1	3	4	1	3	11	12	1	1		3	11	12	1	1	3	6	4		1		4						1	3	2	1	1	2			
62. Diseases of the adrenals.....	2	1				1						1	1	2					1	2			2																					
63. Diseases of the adrenals (Addison's disease).....	5																		2	3	4	1		1	2		2																	
65. Leukaemia lymphadenoma total.....	21	1				1	1					8	13	11	5	4	1	11	7	3			1	4	5	1	4	5	1	1	4	5	1	1	2		1	2		1	3	1		
65A. Leukaemia.....	16	1				1	2	2	2	3	1		6	10	10	3	2	1	7	6	3		1	3	2	1	1	3	2	1	1	2		1	2		1	2		1	3	1		
65B. Lymphadenoma (Hodg-kin's disease).....	5					1	2	1											2	3	1	2	2		4	1																		
66. Alcoholism (acute and chronic).....	19												6	6	3				17	2	8	5	6		13	4	1		1															
68. Chronic poisoning by organic substances.....	3																		2	1	2		1	1	1	1	1																	
69. Other general diseases.....	11	5	2		2	1													6	5	9		2	10	1																			
Total.....	475	26	5	3	1	3	12	3	6	5	15	31	43	76	93	91	62		241	234	267	166	41	1	132	213	119		11	51	49	60	36	37	37	31	41	39	34	27	33			
70. Encephalitis.....	5	2				2													4	1	3	1	1	1	5																			
71. Meningitis, total.....	18	6	1	1	3	1	1												11	15	2	1	15	3																				
71A. Simple meningitis.....	16	6	1	1	3	1	1												10	6	14	1	1	14	2																			
71B. Non-epidemic cerebro-spinal meningitis.....	2																		1	1	1	1	1	1	1	1	1																	
72. Tabes dorsalis (locomotor ataxia).....	3																		1	2	1	2																						
73. Other diseases of the spinal cord.....	32																		19	13	19	11	2		8	15	8		1															
74. Cerebral haemorrhage, apoplexy, total.....	212					1													89	123	105	92	14	1	28	102	77		5	21	24	25	19	13	19	15	21	18	7	15	15			
74A. Cerebral haemorrhage.....	199					1													81	118	101	85	13	1	26	97	73		3	20	24	23	18	12	15	15	19	18	6	14	15			
74B. Cerebral thrombosis and embolism.....	13																		8	5	4	7	1	1	2	5	4		2	1														
75. Paralysis of unstated origin, total.....	49																		22	27	25	20	4		8	22	19		12	2	5	2	4	3	1	4	4	6	2	4				
75A. Hemiplegia.....	38																		19	19	18	1		4	19	15		8	2	5	2	4	1											
75B. Others under this title.....	11																		3	8	6	2	3		4	3		4																
76. General paralysis of the insane.....	34																		30	4	15	15	4		9	22		2	1	1	5	4	3	3	3	2	4	3	2	4	3	2	1	
77. Other forms of mental alienation.....	23																		11	12	13	6	4		6	12		3	2	3	7	4	2											
78. Epilepsy.....	17																		7	19	10	5	2		10	6		1		4	1	2	1	2	2	2	1	1						
80. Infantile convulsions (under 5 years of age).....	171	14	3																12	5	17				17																			

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

WINDSOR—Continued

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
36. Tuberculosis of other organs, total.	1																																										
36c. Lymphatic system (mesenteric, and retroperitoneal glands excepted).	1																																										
37. Disseminated tuberculosis, total.	2																																										
37A. Disseminated tuberculosis, acute.	2																																										
38. Syphilis.	3																																										
41. Purulent infection, septicaemia.	6	1				2																																					
Total.	54	3	1			1	1	1			2	5	9	13	6	11	1		26	28	35	14	5		13	26	15			3	7	3	6	4	4	3	2	6	2	7			
43-49. Cancer. Total.	33										4	6	10	5	8			16	17	18	12	3		4	21	8			1	7	4	1	3	2	2		2	5	2	4			
44. Cancer of the stomach and liver.	14											2	5	2	5			9	5	8	5	1		3	5	6					2	2	1	2				3	1	2			
45. Cancer of the peritoneum, intestines and rectum.	7										2	2	1	1	1			3	4	2	2	1		1	6							1	3		1		1						
46. Cancer of the female genital organs.	4										1	1	1	1	1			4	2	2	2				3	1						2											
47. Cancer of the breast.	2										1	1	1	1	1			2	1	1	1				2	1																	
49. Cancer of unspecified organs.	6										1	2	1	2	1			4	2	3	2	1			5	1									1			2		2	1		
51. Acute rheumatic fever.	3										1	1	1	1	1			1	2	3	2				2	1																	
56. Rickets.	2		1																2	2	2				2	2																	
57. Diabetes mellitus.	3										1								2	1	3				2	1																	
58. Anaemia chlorosis, total.	8										3	2	1	2	1	1			1	2	1	1			1	2	5					1											
58A. Pernicious anaemia.	8										3	2	1	2	1	1			1	2	1	1			1	2	5					1											
60. Diseases of the thyroid gland, total.	1																		1	1	1																						
60B. Other diseases of the thyroid gland.	1																		1	1	1																						
65. Leukaemia lymphadenoma, total.	1																																										
65A. Leukaemia.	1																																										
66. Alcoholism (acute and chronic).	1																																										
69. Other general diseases.	2																																										

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

Number of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
71. Meningitis, total.	3																																									
71A. Simple meningitis.	3																																									
72. Tabes dorsalis (locomotor ataxia).	1																																									
74. Cerebral haemorrhage, apoplexy, total.	21											1	6	3	3	9	12	13	6	2	6				16	5								1	4	1	2	2	2	2	1	
74A. Cerebral haemorrhage.	19											1	6	3	3	8	11	12	5	2	14				14	5																
74B. Cerebral thrombosis and embolism.	2											1	1	1	1	1	1	1	1	1	1																					
75. Paralysis of unstated origin, total.	3																																									
75A. Hemiplegia.	3																																									
77. Other forms of mental alienation.	1																																									
Total.	39	4	1	1			1	2			2	4	8	7	5	4		17	22	26	8	5		11	22	5		1	3	6	1	2	3	5	3	4	3	2	3	4		

CLASS XI.—MALFORMATIONS.

Total.....	5	5	3	2	5	3	2	5	5	1	1	1	1
159. Congenital malformations (still-births not included), total.....	5	5	3	2	5	3	2	5	5	1	1	1	1
159B. Congenital malformations of the heart.....	3	3	2	1	3	2	1	3	3	1	1	1	1
159C. Others under this title.....	2	2	1	1	2	1	1	2	2	1	1	1	1

CLASS XII.—DISEASES OF EARLY INFANCY.

Total.....	14	14	8	6	14	8	6	14	14	1	2	2	1	3	2
160. Congenital debility, icterus and scleroma.....	6	6	3	3	6	3	3	6	6	1	1	2	1	1	1
161. Premature birth, injury at birth, total.....	5	5	3	2	5	3	2	5	5	1	1	1	1	1	1
161A. Premature birth.....	4	4	2	2	4	2	2	4	4	1	1	1	1	1	1
161B. Injury at birth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
162. Other diseases peculiar to early infancy.....	3	3	2	1	3	2	1	3	3	1	1	1	1	1	1

CLASS XIII.—OLD AGE.

Total.....	9	9	4	5	2	5	2	5	2	7	4	2	1	1	1
164. Senility.....	9	9	4	5	2	5	2	5	2	7	4	2	1	1	1

CLASS XIV.—EXTERNAL CAUSES.

Total.....	12	12	2	1	1	8	4	9	2	1	6	4	2	1	2
166. Suicide by corrosive substances.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
171. Suicide by cutting or piercing instruments.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179. Accidental burns (conflagration excepted).....	2	2	1	1	2	1	1	2	1	1	1	1	1	1	1
182. Accidental drowning.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
185. Accidental injury by fall.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
187. Accidental injury by machines.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
188. Accidental injury by other crushing (vehicles, railways, landslides, etc.).....	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
188A. Railroad accidents.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
188E. Other vehicles.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
189. Injury by animals (poisoning excepted).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
201. Fracture (cause not specified).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
202. Other external violence (cause specified).....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS XIV.—EXTERNAL CAUSES.

Total.....	3								1	1		2	1		1	1	1				
174. Other suicides.....	1								1	1		1	1								
185. Accidental injury by fall.....	1								1	1		1	1								
202. Other external violence (cause specified).....	1								1	1		1	1		1	1	1				

CAUSES OF DEATH BY SEX, AGES AND MONTHS—TOWN OF HAWKESBURY

Causes of Death.	Total.																																																
	Ages.											Sex.		Nativity.			Social Condition.				Months.																												
	Under 1 year.	1 year.	2 years.	3 years.	4 years.	5 to 9 years.	10 to 14 years.	15 to 19 years.	20 to 24 years.	25 to 29 years.	30 to 39 years.	40 to 49 years.	50 to 59 years.	60 to 69 years.	70 to 79 years.	80 yrs. & over.	Not stated.	Male.	Female.	Canada	British.	Foreign.	Not stated.	Single.	Married.	Widowed.	Divorced.	Not stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.									
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44						
Number of Column.	1																																																
DEATHS.—ALL CAUSES. Total.	86	1	1	1	1	3	5	3	1	1	3	4	5	9	10	8	48	38	83	2	1			42	32	12		5																					
CLASS I.—GENERAL DISEASES.																																																	
Total.	16	1	1	2	1	1	1	1	1	1	3	1	2	1	1	1	8	8	15	1				6	10			4																					
1. Enteric fever, total.	4																																																
1A. Typhoid fever.	4																																																
8. Scarlet fever.	1																																																
10. Diphtheria.	1																																																
11. Influenza, total	3																																																
11A. Influenza, with pulmonary complications specified.	2																																																
11B. Influenza, without pulmonary complications specified.	1																																																
21. Erysipelas.	1																																																
31-37. Tuberculosis. Total.	5																																																
31. Tuberculosis of the respiratory system	5																																																
41. Purulent infection, septicaemia.	1																																																
CLASS II.—GENERAL DISEASES NOT INCLUDED IN CLASS I.																																																	
Total.	5																																																
43-49. Cancer. Total.	3																																																
44. Cancer of the stomach and liver.	3																																																
57. Diabetes mellitus.	1																																																
60. Diseases of the thyroid gland, total.	1																																																
60B. Other diseases of the thyroid gland.	1																																																

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

Total.....	11	1	1	2	5	1	7	4	10	1	1	6	4	1	2	1	1	2	1	1
72. Tabes dorsalis (locomotor ataxia).....	1						1		1			1								
73. Other diseases of the spinal cord.....	1						1		1											
74. Cerebral haemorrhage, apoplexy, total.....	5	1	1	1	3	1	4	1	5			2	3	2	1	1	1	1	1	1
75A. Cerebral haemorrhage.....	5	1	1	1	3	1	4	1	5			2	3	2	1	1	1	1	1	1
75B. Paralysis of undated origin, total.....	2	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1
75C. Paralysis of undated origin, non-fatal.....	2	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1
76. Others under this title.....	1						1		1			1								
84. Other diseases of the nervous system.....	1	1					1		1			1								
86. Diseases of the ears and of the mastoid sinus.....	1							1	1											

CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.

Total.....	9	1	1	3	1	3	5	4	9			1	5	3	2	2	1	1	1	1
89. Angina pectoris.....	1						1		1											
90. Other diseases of the heart.....	3	1	1	2	1	1	4	1	5			1	2	2	2	1	1	1	1	1
91. Diseases of the arteries, total.....	5	1	1	1	1	1	2	3	3			2	1	1	1	1	1	1	1	1
91A. Arteriosclerosis.....	2	1	1	1	1	1	1	1	2			2	1	1	1	1	1	1	1	1
91C. Other diseases of the arteries.....	1						1		1											

CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.

Total.....	9	5	1	1	1	1	4	5	9			5	2	2	2	4	2			1
100. Broncho-pneumonia (incl. capillary bronchitis), total.....	2	1	1				1	1	2			2								
100A. Broncho-pneumonia.....	2	1	1				1	1	2			2								
101. Pneumonia, total.....	7	4	1	1	1	1	3	4	7			3	2	2	2	2	2			1
101B. Pneumonia, not otherwise defined.....	4	1	1	1	1	1	3	4	7			3	2	2	2	2	2			1

CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.

Total.....	17	11	1	1	2		12	5	17			14	3	1	1	4	2	4	2	1
112. Other diseases of the stomach (cancer excepted).....	2						2		2			2								
113. Diarrhoea and enteritis, under 2 years over.....	12	11	1	1	1		8	4	12			12	2							1
114. Diarrhoea and enteritis, 2 years and over.....	1						1		1			1								
117. Appendicitis and typhlitis.....	1						1		1			1								
123. Biliary calculi.....	1						1		1			1								

CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.

Total.....	2						2		2			2								
128. Acute nephritis.....	1						1		1			1								
129. Chronic nephritis (Bright's disease).....	1						1		1			1								

CLASS III.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.												
Total.....	1	2	2	1	3	5	6	2	1	1	1	1
74. Cerebral haemorrhage, apoplexy, total.....	6	1	2	2	3	3	4	2	4	2	2	1
74A. Cerebral haemorrhage.....	6	1	2	2	3	3	4	2	4	2	2	1
82. Neuralgia and neuritis.....	1	1	1	1	1	1	1	1	1	1	1	1
84. Other diseases of the nervous system.....	1	1	1	1	1	1	1	1	1	1	1	1
CLASS IV.—DISEASES OF THE CIRCULATORY SYSTEM.												
Total.....	8	2	1	3	2	3	5	6	1	1	1	1
88. Endocarditis and myocarditis (acute).....	1	1	1	2	1	2	3	4	1	1	1	1
90. Other diseases of the heart.....	5	1	2	1	2	3	4	2	1	2	2	1
91. Diseases of the arteries, total.....	2	1	1	1	1	1	1	1	1	1	1	1
91A. Arteriosclerosis.....	2	1	1	1	1	1	1	1	1	1	1	1
91B. Arteriosclerosis.....												
CLASS V.—DISEASES OF THE RESPIRATORY SYSTEM.												
Total.....	14	4	2	1	1	3	2	9	5	13	8	3
99. Bronchitis, total.....	2	1	1	1	2	2	2	2	2	2	2	1
99A. Bronchitis, acute.....	1	1	1	1	1	1	1	1	1	1	1	1
99C. Bronchitis, not otherwise defined, under 5 years.....	1	1	1	1	1	1	1	1	1	1	1	1
100. Broncho-pneumonia (incl. capillary bronchitis), total.....	6	2	2	2	5	1	6	5	1	6	4	1
100A. Broncho-pneumonia.....	6	2	2	2	5	1	6	5	1	6	4	1
101. Pneumonia, total.....	4	1	1	2	2	2	4	1	1	2	2	1
101A. Pneumonia, lobar.....	1	1	1	1	1	1	1	1	1	1	1	1
101B. Pneumonia, not otherwise defined.....	3	1	1	1	1	1	3	1	1	1	1	1
103. Congestion and haemorrhagic infarct of the lung.....	1	1	1	1	1	1	1	1	1	1	1	1
105. Asthma.....	1	1	1	1	1	1	1	1	1	1	1	1
CLASS VI.—DISEASES OF THE DIGESTIVE SYSTEM.												
Total.....	6	1	1	1	2	4	2	4	1	1	2	2
112. Other diseases of the stomach (cancer excepted).....	1	1	1	1	1	1	1	1	1	1	1	1
117. Appendicitis and typhlitis.....	3	1	1	1	2	2	2	1	2	1	1	1
118. Hernia, intestinal obstruction, total.....	2	1	1	1	1	1	1	1	1	1	1	1
118B. Intestinal obstruction.....	2	1	1	1	1	1	1	1	1	1	1	1
CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.												
Total.....	1	1	1	1	1	1	1	1	1	1	1	1
137. Cysts and other benign tumours of the ovary.....	1	1	1	1	1	1	1	1	1	1	1	1

CLASS VII.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ITS ANNEXA.

Total.....	5	1	1	1	1	3	2	2	2	1	1	4	2	1	1	1	1
128. Acute nephritis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
129. Chronic nephritis (Bright's disease).....	3	1	1	1	1	2	1	2	1	1	1	3	1	1	1	1	1
136. Non-veneral diseases of the male genital organs.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS VIII.—THE PUERPERAL STATE.

Total.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
146. Puerperal sepsis.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS XI.—MALFORMATIONS.

Total.....	3	3	1	2	3	1	2	3	3	3	3	3	1	1	1	1	1
159. Congenital malformations (still-births not included, total).....	3	3	1	2	3	1	2	3	3	3	3	3	1	1	1	1	1
159A. Hydrocephalus.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
159B. Congenital malformations of the heart.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
159C. Others under this title.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS XII.—DISEASES OF EARLY INFANCY.

Total.....	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
161. Premature birth, injury at birth, total.....	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
161A. Premature birth.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
161B. Injury at birth.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

CLASS XIII.—OLD AGE.

Total.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
164. Senility.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

CLASS XIV.—EXTERNAL CAUSES.

Total.....	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
168. Suicide by hanging or strangulation.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
185. Accidental injury by fall.....	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Forty-second Annual Report
OF THE
Provincial Board of Health
OF
Ontario, Canada
FOR THE YEAR
1923

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO



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TORONTO

Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty
1924



TO HIS HONOUR HENRY COCKSHUTT, ESQ.,
Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I herewith beg to submit for your consideration the Forty-second Annual Report of the Provincial Board of Health for the year 1923.

Respectfully yours,

FORBES GODFREY,
Minister of Health and Labour.

Toronto, February 1st, 1924.

TO THE HONOURABLE FORBES GODFREY, M.D.,
Minister of Health and Labour.

SIR,—I have the honour to submit for your approval the Forty-second Annual Report of the Provincial Board of Health, made in conformity with and under the provisions of the Public Health Act, for the year 1923.

I have the honour to be, Sir,

Your obedient servant,

JOHN W. S. McCULLOUGH,
Chief Officer of Health.

Toronto, February 1st, 1924.

ORGANIZATION

MINISTER OF HEALTH AND LABOUR.

THE HONOURABLE FORBES GODFREY, M.D.

The Provincial Board of Health

Adam H. Wright, B.A., M.D., M.R.C.S., Eng., <i>Chairman</i>	Toronto
Henry R. Casgrain, M.D., C.M.....	Windsor
Thos. E. Kaiser, M.D., C.M.....	Oshawa
W. H. Howey, M.D., C.M.....	Sudbury
A. S. McElroy, M.D., C.M.....	Ottawa
James Roberts, M.D., C.M., M.O.H.....	Hamilton
John W. S. McCullough, M.D., C.M., D.P.H.....	Toronto

Executive

John W. S. McCullough, M.D., C.M., D.P.H.....	Chief Officer of Health
Robert W. Bell, M.D., C.M.....	Provincial Inspector of Health

District Officers of Health

<i>District:</i> No. 1. Thos. J. McNally, M.D., C.M., D.P.H.....	London
No. 2. J. J. Fraser, M.D., D.S.O.....	Toronto
No. 3. Daniel A. McClenahan, M.D., C.M., D.P.H.....	Hamilton
No. 4. Norman H. Sutton, M.B.....	Peterboro
No. 5. Paul J. Moloney, M.D., C.M.....	Ottawa
No. 6. W. Egerton George, M.D.....	North Bay
No. 7. G. L. Sparks, M.D.....	Fort William
No. 8. Hugh W. Johnston, M.D.....	Sault Ste. Marie

Sanitary Inspectors

Alex. White, <i>Chief Inspector</i>	John Richardson	D. S. McKee	Wm. C. Millar
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Division of Sanitary Engineering

F. A. Dallyn, C.E.....	Provincial Sanitary Engineer
A. V. DeLaporte, B.A.Sc.....	Chemist in Charge of Experimental Station
A. E. Berry, M.A.Sc., C.E. (Tor.).....	Assistant Engineer

Division of Laboratories

H. M. Lancaster, B.A.Sc.....	Director
Charles M. Anderson, M.D., C.M., C.P.H.....	Bacteriologist
A. H. Bonham, B.A.Sc.....	Chemist
Dorothy J. McCullough, M.A.....	Asst. Bacteriologist

ANNUAL REPORT

OF THE

Provincial Board of Health

For the Province of Ontario

For the Year Ending 31st December, 1923

RESUMÉ OF THE TRANSACTIONS OF THE PROVINCIAL BOARD OF HEALTH BY JOHN W. S. McCULLOUGH, CHIEF OFFICER OF HEALTH.

This is the Forty-second Annual Report of the Provincial Board of Health for the year ending December 31st, 1923.

The Board convened at four regular sessions at which all the members were present, and the minutes of these sessions are contained in the Board's official minute book of proceedings.

Legislation.

The following legislation in respect to public health was enacted by the legislature during the session of 1923, viz.:—

I

Section 8 of *The Public Health Act* is amended by adding thereto the following clause:—

Rev. Stat.,
c. 218, s. 8,
amended.

(q) The manufacture of non-intoxicating beverages and distilled and mineral water, and the manufacture of syrups, wines and brewed beers.

Manufacture
of beverages.

Section 100 of *The Public Health Act* is amended by adding thereto the following subsections:—

Rev. Stat.,
C. 218,
s. 100,
amended.

(6) A person, firm or corporation shall not manufacture or bottle for sale as food for man, any beverage such as carbonated water, natural and artificial mineral water, spring and distilled water, unfermented wine or cordials, concentrated syrup, extracts, essence, fruit juice, or any dry substance in concentrated form for the manufacture of any beverage, brewed ginger beer, or other non-intoxicating drink, without first obtaining a permit in writing so to do from the Medical Officer of Health and the local board of the municipality in which such manufacturing or bottling is to be conducted.

Permit re-
quired for
manufac-
turing or
bottling of
carbonated
water, etc.

(7) When the Medical Officer and Local Board of Health desire to cancel a permit they must give notice in writing of such cancellation to the person or persons or the agent of such person or persons to whom the permit was issued and such cancellation shall not become effective until thirty days after receipt of such notice by the said person, persons or their agent.

Cancellation
of permit.

Revocation of permit, on what grounds.

(8) Such permit may be refused and if granted may be cancelled or revoked for failure to comply with the Regulations pertaining to the building, equipment and methods of manufacture or bottling of such beverage or if such beverage upon analysis is found to be contaminated or contain any injurious ingredients, or for other cause is found to be unfit for food.

Commencement of Act.

This Act shall come into force on the first day of March, 1924.

II

Rev. Stat., c. 218, s. 90, amended.

Section 90 of *The Public Health Act* is amended by inserting after the words "water supply" in the third line, the words "or for agricultural, domestic or industrial purposes" so that the section will read as follows:—

Provincial Board to have supervision of streams, etc.

90. The Provincial Board shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used as a source for a public water supply or for agricultural, domestic or industrial purposes with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time when the necessity for such examination arises, and inquire what, if any, pollution exists and the causes thereof.

Rev. Stat., c. 218, s. 90, amended.

Section 90 of *The Public Health Act* is further amended by adding thereto the following subsections:

Inquiry by Provincial Board as to complaints of pollution of waters.

(2) The Provincial Board may inquire into and hear and determine any complaint made by or on behalf of a riparian proprietor entitled to the use of water, that any industrial waste or any other polluting material of any kind whatsoever which either by itself or in connection with other matter may corrupt or impair the quality of the water or may render such water unfit for accustomed or ordinary use has been placed in, or discharged into such water, or placed or deposited upon the ice thereof, or placed or suffered to remain upon the bank or shore thereof.

Report of Provincial Board.

(3) The Provincial Board may make a report upon such complaint and as to what remedial measures, if any, are required in respect to any alleged injury or invasion of right as it may deem just.

Application to Court on report of Board.

(4) Where the report of the Provincial Board recommends the removal or degree of treatment of any such polluting material any riparian proprietor interested may apply to a Judge of the Supreme Court or a County Judge by way of originating notice according to the practice of the Court, for an order for the removal or abatement of the injury in terms of the report of the Board and to restrain the proprietors of the industry from carrying on the same, or the offending party or parties from continuing the acts complained of until the injury or invasion of right has been abated to the satisfaction of the Provincial Board.

Court may act on report of Board or further evidence.

(5) The Judge may make such order upon the report of the Provincial Board or upon such further evidence as he may deem meet and on such terms and conditions as may be deemed proper.

On the 8th of June, 1923, the Board suffered a serious loss in the death of Dr. Robert W. Bell, who for nearly twenty years had filled the office of Provincial Medical Inspector. He had been in poor health for some months but so great was his sense of duty, he insisted in carrying on a portion of his work even when confined to his bed.

Dr. Bell was born in Carleton Place, Ontario about seventy-two years ago and was graduated from the medical department of McGill University in 1873. After some years' practice in Peterborough, where he was universally esteemed and where he held command of His Majesty's 57th Battalion, he entered the government service, being attached to the Insane Asylum's branch. In 1904 he was appointed Provincial Medical Inspector and soon became a leading authority in general public health, particularly in the line of epidemiology. In the diagnosis of smallpox his judgment was usually taken as final, he having seen an unusually large number of cases of this affection.

Dr. Bell was a most genial man and amongst his associates on the Board's staff and in the medical profession he was highly regarded.

The Chief Sanitary Inspector, Mr. Alex. R. White, has been transferred to Spadina House in the Division of Industrial Hygiene in order that there should be closer oversight of the general work of inspection in New Ontario.

Mr. H. M. Lancaster, B.A.Sc. for many years our Chief Chemist, left us at the 1st of June to assume charge of the Division of Food and Drugs in the Federal Department of Health, where, no doubt, he will bring to that Department the same energy and skilful administration of his work afforded here. His place as Director of Laboratories has been filled by the promotion of Dr. Chas. M. Anderson, C.P.H., the former chief bacteriologist.

Early in July the new Minister of Health, Dr. Forbes Godfrey, assumed his duties. It is a source of gratification to find for the first time in the history of Ontario a member of the medical profession in charge of the Department of Public Health, and in view of this the members of the Board and the staff look forward to increased activity and satisfactory advancement of public health work.

Insulin Distribution.

One of the earliest acts of the new Minister was to begin the free distribution of Insulin to needy persons requiring this means of treatment for diabetes. A favorable price was secured from the Connaught Laboratories and at the 1st of September supplies were made available at the eight laboratory centres of the Board and from the Board's of Health of Windsor (Border Cities), Hamilton and Brantford. The requisition of a qualified physician is all that is necessary to secure supplies of the remedy.

Tryparsamide.

Arrangements were made towards the close of the year with the Rockefeller Institute for a supply of tryparsamide for the treatment of suitable cases of general paresis. The cases in the various institutions will be assembled at one of the Ontario hospitals where the use of this remedy will be given careful supervision.

DIVISION OF LABORATORIES

DR. CHAS. M. ANDERSON, C.P.H., DIRECTOR

The service afforded by the chief laboratory at Toronto and the various branches shows considerable increase during the year. The only complaints received have been occasional delays in reporting on specimens mailed at week-ends and which failed to be received because of delay in delivery by the postal authorities of what is classed as second-class matter. Physicians sending specimens at the week-end are urged to ensure rapid delivery by affixing a "quick delivery stamp." However, arrangements have been made at the Toronto laboratories for an official to collect mail of this nature at the general post office on the evenings of Saturdays, Sundays and holidays. By this provision it is hoped that the cause for any complaint of the kind will be removed and the service of the laboratory, as it is desired to be, made of the promptest and most efficient character. Complete details of this service will be found in the report of the Director of this Division.

DIVISION OF PREVENTABLE DISEASES

DR. R. R. McCLENAHAN, D.P.H., DIRECTOR

(a) Venereal Disease Clinics.

The V.D. clinics have now reached eighteen in number. All have been inspected either monthly or semi-monthly and are carrying on most satisfactory work.

The authorities of the Water Street Hospital, Ottawa, gave notice that after December, 1923, they would be unable to continue the treatments being given in the out-patient department. This hospital clinic, under its director, Dr. Dehaitre, has been very successful, especially in the treatment of syphilis. Arrangements have been made to establish a new V.D. clinic in connection with St. Luke's Hospital, Ottawa, where more commodious quarters have been obtained.

(b) During the year many demonstrations in treatment have been given to medical practitioners in various smaller centres. This work of an educational character has been very much appreciated by the physicians.

(c) Close supervision of venereal disease treatment in institutions such as the Ontario Reformatory, Guelph, Burwash Industrial Farm, Men's and Women's Farms near Toronto, Mercer Reformatory, Mimico Industrial School, etc., has been carried out; practically all of the syphilitic treatments at Guelph, Burwash, and the Mercer Reformatory were given by clinical specialists of the division.

(d) A survey of the anti-syphilitic work in the Ontario hospitals was made during the year and several hospitals were assisted in carrying out routine blood tests of the inmates.

(e) Several individuals requiring information and advice as to sex instruction or treatment for venereal diseases are seen daily by members of the division.

(f) Phenarsenamine has continued of the same high standard as in the past. A preparation of mercury salicylate is now manufactured by the laboratory and is distributed to clinics and to physicians when patients are unable to pay therefor.

(g) Educational work by means of films, lectures, literature and exhibits has been carried on even more extensively than in previous years, with very excellent and gratifying results. Especial reference should be made to the exhibit of the division at the Canadian National Exhibition, Toronto, and to the Fall Fair, Ottawa. Close co-operation in all educational propaganda has been maintained with the Canadian Social Hygiene Council.

(h) Various epidemiological investigations were made by members of the division during the year, such as the typhoid epidemics in Alliston and Cochrane, and minor epidemics of typhoid and diphtheria in other places.

(i) Through close co-operation with the district officers of health and the laboratory service, a very careful watch is being kept on all cases of communicable disease developing in the province. This close check will undoubtedly prevent many serious epidemics which otherwise might develop before being brought to the Board's attention.

(j) A travelling clinic for the diagnosis of tuberculosis has been established. The clinical specialist in charge of this clinic is co-operating with sanatoria in the province in the establishment of clinics in centres adjacent to the sanatoria.

(k) The new communicable disease regulations which have been adopted in all the provinces are now in force and have been well received by the medical profession generally.

(l) A detailed report of activities will be found in the annual report of the division.

DIVISION OF SANITARY ENGINEERING

F. A. DALLYN, C.E., DIRECTOR

The work of this division continues to yield very gratifying results. Five new filter plants have been put into service. The sources of water supply at Hanover and Cochrane have also, through major improvements, been replaced by sources entirely above suspicion. Some thirty-five new chlorine equipments have been put in service, in some instances replacing units giving trouble; in others, replacing bleaching-powder equipments. Of the total, nineteen were in supplies not hitherto protected.

The typhoid fever outbreak at Cochrane in the spring of the year, caused primarily from the pollution of the town's water supply with infected sewage, is no reflection on the work of the Sanitary Engineering Division. The division reported upon the advisability of chlorinating this supply on November 25th, 1921, and March 3rd, 1922, and the town authorities had prepared by-laws to give effect to the recommendation. The Sanitary Engineering Division, upon receiving indirect evidence on March 11th that the Cochrane supply was seriously infected, rushed an emergency chlorine equipment to Cochrane and had it in operation March 15th, some days before the local authorities were alive to the nature of the epidemic. It is of the greatest interest that the wide-spread distribution of infected persons throughout the province coincident with the epidemic found no other municipal water supply in the province lacking the means to arrest any chance infection.

DIVISION OF INDUSTRIAL HYGIENE

DR. J. G. CUNNINGHAM, D.P.H., DIRECTOR

One hundred and eighty cases of occupational diseases have been reported to the division from various sources during the year.

A second investigation into the storage-battery industry has been made with a view to estimating results of recommendations for prevention suggested after the first investigation. These results are not satisfactory.

The incidence of lead poisoning in paint manufacturing was investigated, showing eight cases of poisoning among fifty-five men exposed. This was the only general trade investigation conducted during the year owing to the large number of individual cases reported.

A compilation of lead-poisoning literature has been completed and circulated. A considerable local and foreign demand has arisen for it and criticisms have been favourable.

A publication, entitled "Health Confessions of Business Women," has been completed and widely circulated. The book is based on a contest conducted among business girls through the newspapers, awarding prizes for letters received containing the most original methods of dealing with the maintenance of health. With these letters as a basis, a book has been produced which deals with the subject in an original way and is very readable. Among other things it contains practical suggestions for maintaining health in so far as personal hygiene can do it.

The need for research in occupational disease and for the extended use of existing governmental facilities for preventing occupational diseases is stressed in the body of the division report.

Effort has been continued to interest employers, employees, and physicians in maintaining the health of industrial workers.

DIVISION OF PUBLIC HEALTH EDUCATION

DR. J. J. MIDDLETON, D.P.H., DIRECTOR

The division maintained a weekly supply of health articles in upwards of one hundred newspapers throughout the province, prepared a new form for the Annual Reports of M.O.H.'s, and managed the Board's exhibit at the Canadian National Exhibition. This division also arranged the programme for the Ontario Health Officers' Convention. A programme of moving-picture showings and public addresses was also carried on. The distribution of public health literature supervised, new pamphlets prepared, and the annual report edited, as well as answering correspondence and other important details in connection with the health education of the public. A complete report of the work of the division will be found elsewhere in this volume.

DIVISION OF MATERNAL AND CHILD HYGIENE AND PUBLIC
HEALTH NURSING

MARY POWER, B.A., DIRECTOR

During 1923 the field nurses worked in twenty-five towns, six villages and fifty townships; while five counties have been visited from a survey standpoint. Special service was rendered in the Cochrane epidemic and follow-up work in connection with the fire of October 1922 was continued throughout the winter. The seasonal work of reaching outlying settlements in the district of Thunder Bay and Rainy River was repeated this summer and the people living along the line of railway in certain portions of those districts without municipal organization were visited.

In compliance with the request of the Medical Officer of Health of Toronto, our staff co-operated in the inspection of fresh-air camps during the month of July. A nurse from the Department of Public Health and a provincial nurse from the respective district visited each camp, investigating sanitary conditions and inquiring into the advantage taken of the summer outing to instil health habits and promote hygienic living.

One nurse assisted in the tuberculosis survey among children in the town of Dundas.

Home-nursing classes have been given by the field nurses in the course of demonstrations and also by the nurse in charge of exhibits, while fall fairs and school fairs have proved an excellent opportunity for health teaching in each of the health districts.

In six centres public health nurses have been appointed by the community following the work of our nurses.

A tabulation of the recorded work of the field staff is as follows:

Exclusive of the special summer work undertaken in District No. VII, the nurses made 39,538 visits, held sixty-nine clinics with 1,105 attendance; saw 5,465 cases and attended 194 meetings. In addition, the nurses made inspections of 20,545 school children and noted 14,744 defects.

District Officers of Health.

The position left vacant in District No. IV has been filled by the appointment of Dr. N. H. Sutton, of Peterborough, which is now made the headquarters of the district, the branch public health laboratory serving that area being located in that city. The work of the district officers is of high importance, but the areas served by the respective officers is too large, especially in New Ontario, to be adequately served by them. At best it is only possible for the district men to afford a limited service in their respective districts. The individual reports of the several officers, found elsewhere, gives a detailed account of their work.

Sanitary Inspectors.

The Chief Inspector is now fittingly attached to the Division of Industrial Hygiene and a comprehensive report of the several inspectors is given elsewhere in this volume.

General Administration.

This volume completes the Forty-second Annual Report upon public health work in Ontario. During that period great changes have taken place not only in the scientific conception of sanitation but also in the methods of adminis-

tration. While the organization under the control of the Provincial Board is well-developed and capable of performing its work in a highly satisfactory manner, the general type of administration in the municipalities outside of a limited number of cities has not had a corresponding development. In the vast majority of the cities and in all of the towns, villages and municipalities, the local organization is little better than it was forty years ago. There is a local board of health whose members have as a rule no knowledge of proper methods of administration and a part-time medical officer of health who (with notable exceptions) has neither the knowledge of the subject nor the inclination to afford the necessary attention. Too much blame cannot in fairness be laid at the door of the medical officer of health for his lack of efficiency. His business in life is not public health, which pays him little or nothing, but the practice of his profession to which, if he shall successfully meet the competition of his confreres and in addition that of all sorts of quacks and interlopers in practice, his unremitting attention must be given. The enforcement of public health regulations is more likely to injure the medical officer's practice than to secure him the support and co-operation of either laymen or professional brethren. The so-called salary, usually a mere trifle, fails to compensate the medical officer of health for the disabilities incumbency of the office engenders. In short the "part time" medical officer of health is a failure. It has been a failure wherever tried and will, for obvious reasons, never be successful. As pointed out in last year's report, England with the longest experience in public health work is rapidly substituting the "part-time" officer for the "full-time" one. The same tendency is apparent in the United States, where since 1914, upwards of 200 county medical officers have been appointed. It is only a question of time until this plan, the most pressing necessity in the public health work of Ontario, must be established if we are to afford the public the best service in the most economical way and at the same time maintain our position in the ranks of advanced scientific opinion. True advancement in public health will not accrue to spasmodic efforts but to be steady and secure must have a sound basis. This can only be achieved by a sound system for the entire province.

Regulations.

Under the authority of the Board in that behalf the following Regulations were approved by the Lieutenant-Governor in Council on the 8th day of February, 1923, and published in *Ontario Gazette* on the 24th day of the same month.

REGULATIONS FOR THE CONTROL OF COMMUNICABLE DISEASES

Approved by the Lieutenant-Governor in Council, on the 8th day of February, 1923, and published in the *Ontario Gazette* on the 24th day of February, 1923.

REGULATION 1.—Diseases requiring notification, Sections 49, 50, 53, 55, 56, 61, shall apply to the following communicable diseases which must be reported to the Medical Officer of Health or secretary of the local Board of Health.

1. Anthrax.
2. Actinomycosis.
3. Botulism.

4. Cerebro-spinal meningitis—epidemic.
5. Chancroid.
6. Chickenpox.
7. Cholera, Asiatic.
8. Conjunctivitis, acute infectious.
9. Diphtheria.
10. Dysentery, amoebic and bacillary.
11. Encephalitis lethargica.
12. Gonorrhoea.
13. Influenza—epidemic.
14. German measles.
15. Glanders.
16. Leprosy.
17. Malaria.
18. Malignant oedema.
19. Malta fever.
20. Measles.
21. Mumps.
22. Paratyphoid fever.
23. Plague.
24. Pneumonía—(a) Acute lobar.
(b) Bronchial or lobular.
25. Poliomyelitis, acute anterior.
26. Puerperal septicaemia.
27. Rabies.
28. Rocky Mountain spotted fever.
29. Scarlet fever.
30. Septic sore throat.
31. Smallpox
32. Syphilis.
33. Tetanus.
34. Trachoma.
35. Trichinosis
36. Tuberculosis.
37. Typhoid fever
38. Typhus fever.
39. Whooping cough.
40. Yellow fever.
41. Goitre.
42. Pellagra.

REGULATION 2.—Diseases requiring quarantine and placarding. Sections 49 to 72 inclusive and Rule 31 of Schedule B of the Public Health Act shall apply to the following communicable diseases and the houses where these diseases exist must be placarded:

1. Plague.
2. Chickenpox.
3. Cholera.
4. Cerebro-spinal meningitis—epidemic.
5. Diphtheria.

6. German measles.
7. Leprosy.
8. Measles.
9. Mumps.
10. Poliomyelitis—epidemic anterior.
11. Scarlet fever.
12. Smallpox.
13. Typhus fever.
14. Whooping cough.
15. Yellow fever.

A quarantine card must give the name of the disease and in every way conform to Rule 31 of Schedule B of the Public Health Act, as follows:

“The Medical Officer of Health, within six hours after he has received notice of the existence in any house of any communicable disease in respect of which it is his duty to do so, shall affix, or cause to be affixed, near the entrance of such house a card at least nine inches wide and twelve inches long, stating that such disease exists in the house, and stating the penalty for removal of such card without the permission of the Medical Officer of Health, and no person shall remove such card without his permission.”

For example:

12''

SMALLPOX EXISTS IN THIS HOUSE.

This card must not be removed except by permission of the Medical Officer of Health, under penalty of not less than \$5.00 nor more than \$500.

Signed.....
M.O.H.

9''

The Medical Officer of Health may name upon such card the period of quarantine required.

The Medical Officer of Health of every municipality where a patient is suffering from any of the communicable diseases as set out in Regulation 2 shall forbid any person except the attending physician, health officer, clergyman, nurse, sanitary inspector or in case of death, the undertaker, from going into or leaving the premises without his permission, or the carrying off, or causing to be carried off, any material or article whereby such disease may be conveyed, until after the disease has abated and the premises, dwelling, clothing and other contents have been rendered free from danger by means of such cleansing and disinfection as the Provincial Board of Health may direct, and he shall prescribe the precautions to be taken.

REGULATION 3.—Period of isolation and quarantine according to Sections 57, 58 and 72 of the Public Health Act.

Disease	Quarantine Period for Contacts	Isolation Period for Patient
Plague.....	14 days	Until clinical recovery.
Chickenpox.....	21 "	When all scales have fallen off and lesions healed.
Cholera.....	Until 3 successive negative stool examinations have been made at 24-hour intervals after use of aperients.	Until clinical recovery and 5 successive negative stool examinations at 24-hour intervals and aperients given before each of first 4 examinations and a purge before the final examination.
Cerebro-spinal meningitis (epidemic).....	10 days	Until clinical recovery.
Diphtheria.....	7 days or until a negative culture has been obtained from the nose and throat.	In localities where a bacteriological examination is unobtainable, 3 weeks, if convalescence is complete and no sore throat, nasal or aural discharges remain or if after 10 days from date of onset of a clinical case, 2 successive negative cultures taken from the site of the lesion with a 12-hour interval, are shown to the satisfaction of the M.O.H. In the case of chronic carriers, when a negative virulence test is obtained.
German measles.....	21 days	Until 2 weeks from appearance of rash.
Leprosy.....	—	Until clinical recovery.
Measles.....	16 days	Until 10 days from the appearance of the rash, and clinical recovery.
Mumps.....	18 days	Until 3 weeks from onset if all swelling has subsided.
Poljomyelitis (epidemic anterior).	7 days	Until 3 weeks after onset and the patient's temperature is normal.
Scarlet fever.....	10 days	Until 35 days from appearance of rash, if no sore throat or nasal or aural discharges persist.
Smallpox.....	14 days, or satisfactory proof of successful vaccination against smallpox within 2 years, or evidence of satisfactory vaccination, at the time, or an immune reaction, or satisfactory proof of having had smallpox.	28 days or until all scabs have fallen off and all lesions have healed.
Typhus fever.....	14 days, and complete delousing.	42 days.
Whooping cough.....	14 days	For 3 weeks after the commencement of the whooping.
Yellow fever.....	6 days	Until clinical recovery.
Children having itch, ringworm, scabies and other communicable diseases of the skin, ophthalmia neonatorum, trachoma, pediculosis and impetigo contagiosa.		Shall not return to school until clinical recovery therefrom.

REGULATION 4.—Meaning of the terms isolation and quarantine as used in the regulations.

By isolation is meant the separation of persons having a communicable disease, or carriers of the infecting organism, from other persons, in such places and under such conditions as will prevent the direct or indirect conveyance of the disease or infecting organism to any other person.

By quarantine is meant the restriction to their places of residence of persons who have been exposed to a communicable disease for a period of time equal to the incubation period of the disease to which they have been exposed.

REGULATION 5.—Release of the bread-winner.

In cases of any of the communicable diseases named in Regulations 2 and 3 the Medical Officer of Health may, if he is satisfied of the effectual isolation of the patient, permit those who do not have the direct care of the patient or patients, to leave the premises in order to attend to their regular duties; except when such individuals are employed or in any way engaged in the handling or preparing of food or are associated with children away from the quarantined house. Such individuals must, if they desire to attend to their regular duties, change their residence in a manner satisfactory to the Medical Officer of Health.

REGULATION 6.—Release of persons immune because of a previous attack.

If satisfactory proof of a previous attack in the case of a contact of a case of whooping cough, measles, German measles, mumps, anterior poliomyelitis, smallpox, scarlet fever, typhus fever, or chickenpox is submitted to the Medical Officer of Health such contacts shall be released.

REGULATION 7.—Release of children or teachers.

Children or teachers in a quarantined house, must be excluded from school, college, university or other institution of learning, except when such children or teachers change their residence in a manner satisfactory to the Medical Officer of Health, provided they do not attend such school, college, university or other institution of learning until the period of quarantine for the disease to which they have been exposed has elapsed.

REGULATION 8.—Release in certain communicable diseases.

In the case of teachers or children in a house quarantined for chickenpox, German measles, mumps, measles or whooping cough, the Medical Officer of Health may, if he is satisfied of the effectual isolation of the patient and satisfactory proof is given that such teachers or children have themselves at some previous time had the disease for which the house is quarantined, allow them to attend school, college, university or other institutions of learning without changing their residence.

REGULATION 9.—The Medical Officer of Health shall be satisfied that the cleansing and disinfection of any house, building, car, vessel or vehicle, or any part thereof and of any articles therein likely to retain infection, are satisfactorily carried out before the quarantine is removed.

REGULATION 10.—Letting of premises.

No person shall let for hire, cause or permit anyone to occupy premises previously occupied by a person ill of any communicable disease until such premises shall have been disinfected under the supervision of the Medical Officer of Health or persons acting under his instructions, in accordance with the Regulations of the Provincial Board of Health.

REGULATION 11.—Whenever an order or direction of the Medical Officer of Health, requiring the disinfection of articles or premises, is not complied with, the Medical Officer of Health shall forthwith cause to be placed upon the door of the premises a placard in word and form as follows:

NOTICE.

These premises have been occupied by a person affected with
They must not again be occupied until the orders for cleansing, renovation or disinfection have been complied with. This notice must not be removed under a penalty of \$100.

Place and date. M.D.
M.O.H.

REGULATION 12.—Every doubtful case of communicable disease shall be classed and dealt with as if it were a case of communicable disease until such is disproved.

REGULATION 13.—No milk container from a house under quarantine shall be returned to any dairy or milk vendor.

REGULATION 14.—No person from a house in which there is a patient suffering from smallpox, scarlet fever, typhoid fever, paratyphoid fever, septic sore throat, dysentery, Asiatic cholera or diphtheria, shall handle milk, butter or any other dairy product which is to be sold or given to any party or delivered to any creamery or butter factory. Any of these products may be distributed under precautions laid down by the Medical Officer of Health.

REGULATION 15.—Every physician shall report forthwith, to the secretary of the local Board of Health the death from any communicable disease of any person under his care, within twelve (12) hours thereafter.

REGULATION 16.—The secretary of the local Board of Health must report weekly to the Provincial Board of Health all cases of communicable disease occurring within his municipality.

REGULATION 17.—In all communicable diseases where the discharges from the nose or throat or other secretions and secretions of the body likely to contain the infectious agent of the disease, such discharges must be collected and destroyed or disinfected as provided for in the regulations for cleansing and disinfection.

REGULATION 18.—When any of the communicable diseases named in Regulation 2 exist in any municipality the Provincial Board of Health may with the consent of the Minister, prevent any person or persons from passing to or from such municipality, and may for this purpose prevent the transportation of any person or persons to or from such municipality by means of any boat, vessel, steam, electric or other car, carriage, vehicle or premises. It shall be the duty of the local Board of Health, the corporation of the municipality and of every officer thereof to assist in every possible way in carrying out the provisions of this and every regulation of the Board.

Diphtheria

REGULATION 19.—A suspected case of diphtheria must be isolated until the diagnosis is confirmed or disproved. A clinical case of diphtheria must be isolated even if the results of the laboratory examinations are negative.

REGULATION 20.—So-called membranous croup shall be classed, quarantined and cared for in the same manner as diphtheria.

REGULATION 21.—The quarantine of cases of diphtheria in public institutions where the population is resident shall be governed by both clinical and laboratory examinations. Immediately after the appearance of a case of diphtheria in an institution, the Medical Officer of Health shall notify the Provincial Board of Health, which shall supply facilities for taking cultures, if necessary, from all residents of the institution. All individuals, whether sick or well, who are found in the institution harbouring diphtheria bacilli shall be quarantined until a negative report is made upon nose and throat cultures.

Rabies

REGULATION 22.—When any animal suspected of having rabies has bitten a human being, the fact should be immediately reported to the Medical Officer of Health, who shall secure, or cause to be secured, such animal alive and without injury, if possible. The animal shall at once be securely chained up or confined in a safe and comfortable place and a report giving full particulars concerning the action taken, sent to the Provincial Board of Health. This report shall include the name of the locality in which the biting occurred (city, town, village or township), the date of biting, the name, residence and address of the owner of the animal, the full name of the person bitten, together with place of residence and the names, addresses and residences of all owners of animals which have been bitten by the animal in question, together with a list and descriptions of the animals bitten and the disposition made of the same. Such supposedly rabid animal must be kept under careful observation by the Medical Officer of Health for at least ten days. (If after this interval the animal is living and well he is not suffering from rabies.)

REGULATION 23.—When such animal dies or is killed, care must be taken not to injure the brain or spinal cord. The head and several inches of the neck of the animal must be cut off and sent to the laboratory of the Provincial Board of Health for examination.

REGULATION 24.—All persons bitten by the animal suspected of having rabies should at once communicate with the Provincial Board of Health, and be advised as to the necessity of receiving the Pasteur treatment. (Supplied free by the Provincial Board of Health.)

Epidemic Cerebro-Spinal Meningitis—Epidemic Anterior Poliomyelitis

REGULATION 25.—In every case of epidemic cerebro-spinal meningitis and epidemic anterior poliomyelitis, the discharges from the nose, throat and mouth of the patient must be received on cloths and burned at once. After death or recovery of the patient all personal clothing and bedding, together with the contents of the room and the room itself, must be thoroughly disinfected under the personal supervision of the Medical Officer of Health. Every doubtful case of this character must be classed as epidemic and cared for accordingly until proved to be otherwise.

Smallpox Regulations

REGULATION 26.—Where smallpox is present in any municipality in Ontario, the local Board of Health of the municipality may at once appoint one or more sanitary policemen for the purpose of assisting to arrest the spread of the disease.

If the Medical Officer of Health or Provincial Board of Health requires the appointment of any specific number of sanitary policemen, then such number shall be appointed by the local Board. In case the local Board neglects or refuses to make the required appointment, the Provincial Board may appoint as many sanitary policemen for such municipality as it deems necessary.

REGULATION 27.—Any default on the part of the authorities of any municipality in taking immediate and effective action in carrying out the Public Health Act, the Vaccination Act, the Regulations of the Provincial Board of Health, or any health by-law in force in the municipality, shall be at once reported by the Medical Officer of Health to the Provincial Board, in order that the said Board may take such measures as it deems necessary for placing the said municipality in a position to effectively combat the disease.

Conjunctivitis—Acute Infectious

With reference to the prevention of conjunctivitis—acute infectious (ophthalmia neonatorum).

REGULATION 28.—Every physician in attendance upon a lying-in-woman shall, immediately following the birth, instil into the eyes of the newly-born child, a sufficient quantity (a few drops) of a one per cent. solution of nitrate of silver (supplied free by the Provincial Board of Health) or of a forty per cent. solution of argyrol.

REGULATION 29.—If within two weeks after the birth of a child, one or both eyes shall become reddened, inflamed, swollen or show any discharge, every physician, midwife, nurse or person in charge of a maternity or other hospital where such child is, and every person in charge of a child shall forthwith report in writing to the Medical Officer of Health the name, age and address of such child together with the circumstances of the case.

REGULATION 30.—The Medical Officer of Health shall, upon receipt of the report referred to in Regulation 29, and if the child is not under the care of a legally qualified physician, direct the parents, or whoever has charge of the child, to immediately place it in charge of a legally qualified physician, or if the parents or person in charge are unable to pay the cost of such attendance, the Medical Officer of Health shall provide the necessary treatment at the cost of the municipality.

REGULATION 31.—The Medical Officer of Health shall send a weekly report of all such cases to the secretary of the local Board of Health for transmission to the Provincial Board, as required by Section 24 of the Public Health Act.

DIVISION OF PREVENTABLE DISEASES, PROVINCIAL
BOARD OF HEALTH.

I have the honour to submit the following report of the work done by the Division of Preventable Diseases for the year ending December 31st, 1923.

1. *Scope of Work.*

Despite the fact that the great part of the work being done by the Division is still in connection with the treatment and control of Venereal Diseases, nevertheless there has been a considerable extension in the field of activity of the Division during the past year. This broadening in the scope of the work had to do, particularly, with the efforts of the Provincial Board to aid in the campaign against tuberculosis, investigations into epidemics of communicable diseases such as typhoid fever, diphtheria, etc., and a closer co-operation with the District Medical Officers of Health and provincial laboratories in connection with sporadic outbreaks of these diseases. Further, three new clinics for the free treatment of venereal diseases were opened during the year at North Bay, Peterboro and Sault Ste. Marie, and educational work along the lines of social hygiene was carried out on a large scale by the Social Service Department.

Before going on with the report in detail it is perhaps advisable to outline briefly the policy that has been carried out by the Provincial Board of Health as applied to tuberculosis. During the past year the Board appointed a clinician in the Division of Preventable Diseases for work in tuberculosis. A travelling clinic has been organized, is equipped with a portable X-ray apparatus, etc., and will be available to every district in the Province. The objects of the clinic are:—

1. To be of assistance to the general practitioner in the early diagnosis of all types and cases of pulmonary tuberculosis. This refers chiefly to those in districts not in close proximity to sanatoria, tuberculosis clinic, or X-ray unit. Further, to facilitate in the disposition of all cases needing sanatorium treatment.

2. To organize clinics in different centres, the arrangements for holding the clinic being made through the co-operation of the private physicians, and local and District Medical Officers of Health.

3. To endeavour to educate the people to the menace of tuberculosis, the importance of early diagnosis and means to be taken to cure the disease.

A considerable amount of work has already been done in connection with tuberculosis, particularly with reference to the recent survey in the Dundas area, a more detailed account of which will appear further on in the report under the heading of investigations.

2. *Personnel.*

Changes in the personnel of the Division occurred during the year. Two clinicians, Dr. Charles P. Fenwick and Dr. C. Brink, and one stenographer were taken on the strength. The Division now has a director, four clinicians, one social service nurse, and two stenographers.

3. *Finance.*

The amount of money available for the work of the Division during the year was \$122,500, of which \$57,473.68 was advanced by the Dominion Government.

4. *Diagnosis.*

(a) *Laboratories.*

The following tables will show the large amount of work that is being done by the nine laboratories of the Province and the great assistance they have been to the Division in the way of Diagnosis of communicable diseases:—

Laboratory	Wassermanns			Darkfield Examinations			G. C. Examinations			Diphtheria Swabs				T. B. Sputa			Typhoid Bloods					
	Pos.	Neg.	Total	Pos.	Neg.	T'U'l	Pos.	Neg.	Sus.	T'U'l	Release		Diagnosis		Total	Pos.	Neg.	T'U'l	Pos.	Neg.	T'U'l	
											Pos.	Neg.	Pos.	Neg.								
Kingston.....	435	1,649	2,084	0	0	0	46	98	0	144	20	84	56	397	557	102	682	784	86	377	463	
Fort William....	193	759	952	7	20	27	85	240	0	325	318	1,513	74	172	2,077	38	199	237	46	92	138	
Sault Ste. Marie..	131	237	368	0	0	0	26	48	0	74	27	47	60	207	341	18	138	156	5	9	14	
Peterboro.....	69	346	415	1	2	3	140	80	0	220	58	165	55	244	522	68	282	350	72	149	221	
Owen Sound.....	27	114	141	0	1	1	54	258	0	312	8	22	16	109	155	84	270	354	11	88	99	
North Bay.....	200	524	724	0	0	0	127	311	0	438	184	262	125	470	1,041	47	254	301	129	157	286	
Toronto.....	2,932	12,561	15,493	.....	.....	.....	420	2,179	0	2,599	848	1,291	680	2,861	5,680	260	1,664	1,924	232	733	965
Ottawa.....	0	0	0	2	0	2	275	370	0	645	153	1,116	604	3,642	5,515	107	420	527	45	128	173	
London.....	Report not in.																					
Total.....	3,987	16,190	20,177	10	23	33	1,173	3,584	0	4,757	1,616	4,500	1,670	8,102	15,888	724	3,909	4,633	626	1,733	2,359	

The following table represents the tests performed by the laboratories of the Provincial Board and other laboratories in connection with venereal disease clinics as a result of patients being treated in the various venereal diseases. The remaining headings indicate the number of doses of Arsenicals given to patients, the number of reactions and clinic hours of the various clinics:—

Clinics	Wassermann		Comp. Fix.		Darkfield		Gonococcus				Dose	Other preparations	Reactions	Hours Clinic open					
	S. Fluid		G. C.				Diagnosis		Prognosis						Phen.				
	Blood																		
	+	-	+	-	+	-	+	-	+	-	+	-							
Toronto General.....	1,180	1,293	44	35	63	17	228	5	58	181	17	291	139	0	499	2,702	811	0	1,833
St. Michael's.....	272	693	0	0	0	0	0	6	9	70	18	228	11	12	226	1,133	31	0	542
Grace.....	164	264	0	1	6	0	27	0	0	6	0	62	8	0	248	753	0	8	268
Sick Children's.....	312	460	0	0	0	0	3	0	0	26	0	54	5	3	85	1,814	50	33	880
Women's College.....	58	203	0	0	0	0	0	0	0	27	0	436	0	0	20	219	0	0	289
Toronto Western.....	59	94	0	0	0	0	0	7	12	0	7	7	2	0	0	434	2	0	174½
Hamilton General.....	151	262	4	2	0	0	0	0	0	44	0	99	11	0	148	1,267	102	8	512
Brantford General.....	46	80	3	1	0	0	0	0	0	13	0	1	13	2	28	302	47	10	268
St. Catharines.....	24	64	0	2	0	0	0	0	0	21	13	10	13	35	30	275	4	5	411 2/5
Victoria, London.....	102	172	0	0	0	0	0	0	0	15	3	13	21	0	9	546	56	4	1,554
Windsor Clinic.....	126	188	0	2	0	0	0	26	9	91	53	85	126	20	294	926	14	30	418
Ottawa General.....	87	152	1	0	0	0	0	0	0	23	1	26	3	0	2	1,464	0	65	295
Kingston General.....	62	321	0	4	0	0	0	1	0	68	9	31	138	16	74	376	30	0	514
Peterboro Clinic.....	13	28	0	1	0	0	0	0	0	8	0	26	63	8	21	17	0	2	109
North Bay Clinic.....	2	7	1	0	0	0	0	0	0	2	0	0	0	0	0	23	12	4	77
Sault S. Marie Clinic.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	139	0	13	99
Fort William Clinic.....	55	88	0	1	0	0	0	0	1	9	0	16	6	0	46	290	0	4	232
Owen Sound Clinic.....	19	43	0	0	0	0	0	0	1	19	0	77	16	0	83	129	13	8	492
Totals.....	2,732	4,412	54	49	69	17	258	38	86	635	114	1,462	575	108	1,813	12,809	1,172	194	8,967 9/10

(b) The following new cases of syphilis and gonorrhoea, as diagnosed by Wassermann test and smear examination, are reported by the laboratories for the year 1923:—

Laboratory	V.D.G.	V.D.S.
Toronto.....	257	972
London.....	98	696
Kingston.....	33	423
Fort William.....	179	72
Sault Ste. Marie.....	34	140
North Bay.....	127	125
Owen Sound.....	36	27
Peterboro.....	73	39
Ottawa.....	129	0
Total.....	966	2,494
(1922).....	826	2,331
(1921).....	674	1,996

Examinations for syphilis and gonorrhoea are also made in the city laboratories of Toronto and Hamilton and in certain laboratories privately owned. These figures are not included above but their number should not be large except in the case of G.C. smears.

(c) Reported by physicians.

The number of cases and deaths from communicable diseases reported by physicians during the year is shown on the following page along with the totals for 1922.

CASES AND DEATHS FROM COMMUNICABLE DISEASES
Reported Weekly by Local Boards of Health for Year 1923

Date	Smallpox		Scarlet Fever		Diphtheria		Measles		Whooping Cough		Typhoid		Tuberculosis		Infantile Paralysis		Cerebro-spinal Meningitis		Influenza	Deaths Acute Influenza Pneumonia	Deaths Acute Primary Pneumonia	Syphilis	Gonorrhoea	Chancroid
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Deaths	Deaths	Cases	Cases	Cases	Cases
January.....	43	0	368	10	236	25	331	4	376	14	59	10	169	117	2	1	6	5	39	18	362	149	160	3
February.....	23	0	309	13	156	21	703	7	402	30	27	4	173	137	2	2	11	9	335	83	756	100	84	1
March.....	26	0	343	17	224	29	1227	9	432	24	557	22	187	128	.....	.....	12	10	317	66	540	161	178	.....
April.....	29	0	329	11	170	21	1148	7	286	18	338	54	173	118	4	3	13	11	84	22	332	122	125	3
May.....	17	0	395	7	165	14	2359	14	142	16	89	24	221	118	.....	.....	9	8	47	12	250	99	209	6
June.....	13	0	280	20	203	22	2149	14	199	19	38	11	188	147	.....	.....	3	3	13	.....	150	166	174	1
July.....	14	0	243	4	225	24	1412	11	208	20	58	8	188	108	2	1	5	3	7	.....	47	87	127	1
August.....	9	0	215	6	194	12	256	3	197	13	114	14	213	135	.....	.....	.....	8	.....	4	83	161	212	7
September.....	29	0	270	6	245	17	95	0	230	8	131	25	169	74	6	2	2	1	7	2	93	173	222	6
October.....	23	0	517	8	286	13	208	0	185	7	137	46	187	90	.....	.....	.....	.....	9	.....	90	130	242	4
November.....	58	0	680	11	374	22	293	0	369	6	68	13	116	58	1	0	2	0	7	.....	128	187	91	2
December.....	51	0	1060	18	457	24	762	1	179	6	49	11	166	85	2	1	1	1	9	.....	128	166	168	9
Totals.....	335	0	5011	131	2935	244	10843	70	3205	181	1665	212	2150*	1315	19	10	64	59	874	207	2959	1699	1992	43
1922.....	977	6,3950	111	3529	410	8950	40	1691	90	576	127	2078	1442	205	25	71	64	.....	.....	375	2559	2136	2270	39

NOTE.—*Only 65 per cent. reported.

As will be observed there has been an increase in Scarlet Fever, measles, whooping cough, typhoid fever, tuberculosis, and acute primary pneumonia, and a decrease in smallpox, diphtheria, infantile paralysis, syphilis and gonorrhoea.

As far as these two latter diseases are concerned, the decrease is due, in part, to the great amount of free treatment carried on in the Government clinics, and to the fact that the physicians are not reporting their cases. It seems to be a very difficult matter to get physicians generally to report their cases, despite the persistent efforts of the Provincial Board in this regard.

(d) Clinical office work.

In addition to the treatments given in the various Government institutions and the numerous trips that are taken for the purpose of intravenous demonstrations and consultations by the venereal disease clinicians, a great deal of work is being done by them in connection with men and women who are continually coming into the offices of the Division for advice, and if necessary, treatment, as to their condition.

The following is a brief summary of the work done:—

No. of office consultations	339
No. of Wassermans taken	58
No. positives	18
No. negatives	40
No. of G. C. smears taken	91
No. positives	61
No. negatives	30
No. of V.D.S. treatments given	102

5. Treatment.

(a) Clinics.

There are now 18 clinics for the free treatment of venereal diseases established in the following centres: Windsor, London, Brantford, St. Catharines, Hamilton, Toronto (6), Kingston, Peterboro, Ottawa, Owen Sound, North Bay, Sault Ste. Marie and Fort William. Those at North Bay, Peterboro and Sault Ste. Marie were added during the year. Early in the year the Board was notified in writing by the authorities of the Ottawa General Hospital that they could not carry on with the venereal disease clinic after December 31st, 1923. Arrangements for new quarters for the Ottawa clinic were left in the hands of Dr. Lomer, Medical Officer of Health, and after considerable difficulty it was arranged with St. Luke's Hospital that they should take over the clinic, accommodation having been found in an adjoining house which, after certain alterations, will be quite suitable for the carrying on of the clinic. This arrangement with St. Luke's hospital necessitated a change in clinician, and Dr. Mothersill, G.U. specialist of St. Luke's hospital, now has charge of the clinic. With reference to this change of staff, the Division desires to thank Dr. DeHaitre, former chief of the clinic, for his splendid services in connection with the clinic and had it not been for the change of plans of the Water Street hospital authorities, Dr. DeHaitre would still be doing valuable work as head of the V.D. clinic in Ottawa.

Owing to the necessity of having night clinics, thereby inconveniencing physicians at the clinics whose office hours were interfered with, it was found necessary to appoint assistant physicians with remuneration to assist with the treatments, etc., in these clinics. Ten assistant physicians were appointed as follows: Toronto General hospital, 3; St. Michael's hospital, 2; Grace hospital, 1; Women's College hospital, 1; Hamilton General hospital, 1; Brantford General hospital, 1; and Windsor, 1.

The total number of out-patients treatment given in all the clinics for 1923 shows a slight falling off as compared with those given in 1922, though there is an increase in the number of treatments given in hospitals where there are clinics.

There was a substantial increase in the new admissions to the clinics. The following are the figures:—

1923		1922	
Total out-patient treatments.....	56,357	Total out-patient treatments.....	59,648
Male.....	32,119	Male.....	33,354
Female.....	24,238	Female.....	26,294
Total in-patient treatments.....	28,624	Total in-patient treatments.....	27,429
Male.....	14,540	Male.....	11,539
Female.....	14,084	Female.....	15,890
New admissions.....	4,632	New admissions.....	2,882

The Division made 72 inspections of the clinics in Toronto and 53 inspections of outside clinics during the year.

(b) *Treatment in Smaller Centres.*

Thirty-five trips were made to smaller centres by the V.D. clinicians during the year. These trips were in the nature of consultations and demonstrations in the use of Phenarsenamine.

The Toronto laboratory sent out the following amounts of sterile distilled water and 15% sodium hydrate for use in administering Phenarsenamine:—

22,538 ounces sterile distilled water,
1,148 ounces 15% sodium hydrate, and
372 ampoules 15% sodium hydrate.

(c) *Institutions.*

The Division still makes weekly trips to Guelph Reformatory and the Mercer Reformatory for the purpose of treating the infected inmates. Occasional trips are made to the Industrial Farm, Burwash, and the Victoria Industrial School, Mimico. Treatment is supervised at the Men's and Women's Farm, Concord. There has been the closest co-operation in the treatment of venereal disease between the Division and the Medical Officers of these Institutions.

The following figures show the amount of work done in these institutions by the venereal disease clinicians:—

Institution	No. Visits	V.D.S. Treatments	V.D.G. Treatments	Wass.
Industrial Farm, Burwash.....	16	360	257	58
Mercer Reformatory, Toronto.....	50	1,045	..	467
Ontario Reformatory, Guelph.....	50	761	103	..
Victoria Industrial School, Mimico....	12	22 (Hg. rubs 3 mos.)	..	258
Women's Farm, Concord.....	1	Consultation	..	..
Men's Farm, Langstaff.....	1	Consultation	..	..
Ontario gaols.....	9	Inspection	..	..

The total treatments given in these Institutions for the year are as follows:—

Institution	Syphilis Treatments	Gonorrhoea Treatments	
Industrial Farm, Burwash.....	511	6,535	
Mercer Reformatory, Toronto.....	1,000	2,640	
Ontario Reformatory, Guelph.....	778	2,932	
Industrial School, Mimico.....	22 (Hg. rubs 3 mos.)		
Women's Farm, Concord.....	535	1,631	
Men's Farm, Langstaff.....	519	271+	irrigation

The extent of venereal disease among the inmates of Burwash, Guelph, and Mercer Reformatory in 1923 is shown below, with figures and percentages for 1922:—

	1923	1922	
Burwash—No. of admissions	709	746	
No. of syphilis cases	34	90	
No. of gonorrhoea cases	43	37	
Per cent. syphilis	4.8%	12%	
Per cent. gonorrhoea	6.0%	5%	
Guelph—			
No. of admissions	734	960	
No. of syphilis cases	63	78	
No. of gonorrhoea cases	37	66	
Per cent. syphilis	8.58	8.1%	
Per cent. gonorrhoea	5.04%	6.3%	
Mercer—			
No. of admissions	167	137	
No. of syphilis cases	62 (inc. D.I.)	48 (inc. D.I.)	
No. of gonorrhoea cases	68 (inc. D.I.)	65 (inc. D.I.)	
No. of double infection cases (D.I.)	36	24	
Per cent. syphilis	37.1%	36%	
Per cent. gonorrhoea	40.7%	47%	

(d) The report of the Medical Committee of the Canadian Social Hygiene Council on the diagnosis and treatment of venereal disease was issued during the year. This is a splendid work and makes an important step forward in getting a standard treatment for venereal disease. The publication is being distributed by the Department of Health, Ottawa, and also by the Provincial Board of Health, Toronto.

(e) *Manufacture and Distribution of Phenarsenamine and Mercury Salicylate.*

The Board, through the Toronto laboratory, continues to manufacture Phenarsenamine. During the year the Toronto laboratory experimented with preparations of Mercury Salicylate. These experiments having proven satisfactory, this mercury preparation is now being distributed to all our clinics and Medical Officers of Health.

The following table illustrates the distribution of the products manufactured by the Board and used in the treatment of venereal disease:—

DISTRIBUTION OF PRODUCTS MANUFACTURED BY PHENARSENAMINE LABORATORY

FROM JANUARY 1ST TO DECEMBER 31ST, 1923.

	Phenarsenamine		Mercury Salicylate		Sterile Distilled Water		Sodium Hydroxide 15%		Silver Nitrate	
	Ampoules	Grams	Ampoules	Grains	Ounces	Ounces	Ampoules	Ounces	Ampoules	Ounces
SUPPLIED FREE IN ONTARIO:										
To Ontario Government Institutions.....	1,047	704.9	759	2,355	18,550	185	.....	.....	.....	.....
To V.D. Clinics and Medical Officers of Health in Ontario.....	11,486	6,962.2	4,662	8,222	3,988	963	372	.....	.....	.....
To Physicians and Hospitals in Ontario.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,700
SOLD:										
To other Provinces.....	1,005	603.0	.....	.....	.....	.....	.....	.....	.....	15,000
Total Distribution.....	13,538	8,270.1	5,421	10,577	22,538	1,148	372	.....	.....	19,700

NOTE:—On September 1st the Phenarsenamine Department took over the manufacture of silver nitrate ampoules. The above figures represent the amount of this product manufactured from September 1st to December 31st, 1923.

The Division carried out 251 Biological tests for Phenarsenamine and Mercury Salicylate during the year.

6. *Investigations.*

The Division found it necessary to carry out or co-operate in the following investigations during the year:—

- (a) The incidence of venereal disease in Ontario hospitals.
- (b) Typhoid epidemics.
- (c) Diphtheria epidemics.
- (d) Tuberculosis survey in Dundas area.
- (e) Milk supplies.
- (f) Goitre.

DETAIL.

(a) *Incidence of Venereal Disease in Ontario Hospitals.*

In order to obtain this information the Division not only made out and sent a questionnaire to ten Institutions, but in nearly every instance a personal visit was made by the Division and the matter discussed with the hospital authorities. Below is a summary of the findings in this investigation.

SUMMARY OF QUESTIONNAIRE SENT TO ONTARIO HOSPITALS RE
INCIDENCE OF VENEREAL DISEASE

1. Number of patients in all hospitals.	Male -	3,317
	Female -	3,745
	Total -	7,062

2. Number of G.P.I's.:

Male	
18-29	3
30-39	12
40-49	27
50-59	10
60-70	5
Female	
18-29	2
30-39	3
40-49	5
50-59	1
60-70	1

Total . . 69 or 0.96% of patients.

- 1. 71% of males suffering from G.P.I.
- .35% of females suffering from G.P.I.

- 3. Wassermann test is done on admission in 6 of the 10 hospitals.
- 4. Wassermann test has been done on all patients at one hospital only, viz., Cobourg.
- 5. Number of patients showing positive Wassermans, 93—1.3%.
- 6. Number of patients showing positive Wassermans admitted in fiscal year, 1922, 91—4.2%
- 7. Number of patients showing positive Wassermans on C.S.F. for fiscal year, 1922, 53—2.4%.

8. Number of patients admitted in fiscal year, 1922:

Males		Females	
18-29	220	18-29	197
30-39	202	30-39	293
40-49	167	40-49	330
50-59	136	50-59	261
60-70	167	60-70	174
over 70	8	over 70	3
Total	900	Total	1,258
Grand Total	2,158		

9. Number of G.P.I's. in fiscal year, 1922, 72—3.3%.

10. Treatment of G.P.I's. carried out along standard lines. Arsenic, mercury, iodides and at 3 hospitals arsenic combined with spinal drainage.

11. Number of other cases V.D.S. in hospital, 24—0.34%.
12. Number of other cases V.D.S. in fiscal year admissions, 14—0.65%.
13. Specific treatment for V.D.S. cases—arsenic in various forms, e.g., phenarsenamine, diarsenol, neo-diarsenol, novarsenobenzol, etc., intramuscular mercury and iodides.
14. Arsenical products used—novarsenobenzol, diarsenol, phenarsenamine, neo-diarsenol, arsphenamine.

Mercurial products used—mercury salicylate, ung. hydrarg., hg. protiodid, mercurosal, hydrarg. perchlor.

15. Opinion of results obtained in treatment of G.P.I. Concensus of opinions is that results are unsatisfactory. Some claim to have prolonged life and slowed up the destructive processes. Opinion of results in other cases of V.D.S.: Results are fair or satisfactory. Most cases improve with treatment.

16. Follow-up work on cases of G.P.I. and V.D.S.: In some hospitals the relatives are advised to have a Wassermann taken, but in fully 50% of hospitals no follow-up work is attempted.

17. Comments on present scheme of examining contacts:

- (a) Present system very incomplete.
- (b) Seems satisfactory.
- (c) We have found it satisfactory. The relatives have seemed willing to co-operate in all our cases.
- (d) Yes, we quite approve of the action of the Public Health Department writing to local physicians, etc.
- (e) Satisfaction with present system.
- (f) No suggestions.

18. Number of cases V.D.G. in all hospitals:

Male.....	2
Female.....	2
Total.....	4—0.06%.

(b) Typhoid epidemics.

1. *Cochrane.*

About the beginning of 1923 an occasional case of typhoid fever began to occur in the town of Cochrane and about the 1st of March, several cases appeared and the situation became known to the Provincial Board of Health. The number of cases increased rapidly and, although at that time the cause of the outbreak was not clear, it was decided to chlorinate the water supply, which was done and in effect by March 15th, 1923. In the meantime, the cause of the outbreak was definitely traced to contamination of the water supply by town sewage.

So far as can be learned, at least 831 cases of typhoid fever developed in connection with the outbreak; twelve (12) of these cases developed the infection in Cochrane, but left the town and were treated in other towns in Ontario.

The following are considered the most important facts in connection with the epidemic:—

- (i) Total number of cases was 831.
- (ii) Total number of deaths was 59.
- (iii) The age groups particularly affected were between 5 and 25 years.
- (iv) Males and females were affected equally.
- (v) Approximately $\frac{1}{4}$ to 1-3 of the population was affected.
- (vi) Approximately 1600-1800 people received anti-typhoid vaccine during the epidemic.
- (vii) Many cases received anti-typhoid vaccine while at the same time incubating the disease.
- (viii) Most of the above cases had a shorter course of fever with speedier convalescence than the uninoculated cases.
- (ix) 681 cases, who developed the disease, were not inoculated.
- (x) 9 cases went to bed with typhoid fever four weeks or more after having received the second inoculation. At least two of these received vaccine which was inert through age.
- (xi) 200 cases were treated in hospitals, the remainder being treated at home.
- (xii) Owing to the small size of houses, and the small number of rooms in the houses, many secondary cases developed in spite of educational work by seven physicians, 65 nurses and 12 public health nurses.
- (xiii) There were 469 primary cases and 362 secondary cases.
- (xiv) \$20,000 was voted by the Provincial Government to assist in defraying expenses for physicians, nurses, etc. All other expenses were met by the town with the assistance of the Canadian Red Cross Society.
- (xv) The local Board of Health took all necessary measures in connection with sanitation receiving the advice of the District Medical Officer of Health and other members of the Board at various times.

2. *Alliston.*

There were twenty-two cases in this outbreak, the cause of which was a defective water supply. This has been remedied.

3. *Men's Farm, Langstaff.*

There were eleven cases and two deaths in the outbreak which occurred in September, 1923. The cause was a defect in the water supply which has since been remedied.

(c) *Diphtheria.**Burwash Industrial Farm.*

The division took an active part in controlling the epidemic of diphtheria which occurred in August, 1923, at the Burwash Industrial Farm. There were fifteen cases with no deaths. Two hundred and twenty-one swabs were taken.

(d) *Tuberculosis Survey in Dundas Area.*

In September, the Canadian Tuberculosis Association, with the assistance of the Hamilton Medical Society and Provincial Board of Health, undertook a survey of school and pre-school children in the town of Dundas and the township of West Flamboro. The services of the clinician were given in this work. Some 1,400 school and pre-school children were examined and x-rays of the chest taken on 1,100. The report of the survey will be issued by the Canadian Tuberculosis Association in April.

Two cities and four towns have already been visited in connection with the organization of tuberculosis clinics. It is hoped that fifteen to twenty clinics will be in operation during the summer of 1924.

(e) *Milk Supplies.*

Dairies and the general handling of milk supplies were inspected in the following towns:—

Cornwall,
Belleville,
Cobourg,
Lindsay.

(f) *Goitre.*

This disease is prevalent throughout the Province though there are areas in which it is more pronounced. Methods for treating and preventing the disease are being investigated.

7. *Social Service.*

(a) Follow-up work—

- (1) Letters,
- (2) Returns of Death from Syphilis,
- (3) Sources of Infection and Contacts.

(b) Educational.

(a) Follow-up work—

- (1) Letters.

During the year letters were received concerning 589 persons suffering from venereal disease. For many of those who had moved to other localities, arrangements were made for their treatment to be carried on in near-by clinics or by local medical officers of health.

(2) Returns of Death from Syphilis.

Deaths from syphilis were investigated by the division, and the following summary shows the work done along these lines:—

4 stillbirths—

- 2 cases, father and mother under treatment.
- 2 cases, not yet completed.

39 death returns (congenital syphilis)—

- 1 case, father positive
 - mother positive
 - 1 child positive
 - 2 children negative.
- } under treatment.
- 1 case, mother positive, father negative, children negative.
 - 4 cases, mother under treatment, father negative.
 - 1 case, parents negative.
 - 1 case, mother dead, father negative.
 - 1 case, mother negative.
 - 1 case, father negative.
 - 5 cases, mother and father positive and under treatment.
 - 6 cases, mother under treatment.
 - 1 case, mother positive, father under treatment three years ago, failed to continue.
 - 2 cases, parents not located.
 - 1 case, child was an orphan.
 - 1 case, gonorrhoeal ophthalmia.
 - 13 cases under investigation.

53 death returns (acquired syphilis)—

11 cases syphilis—

- 1 case, husband negative.
- 3 cases, no contacts.
- 1 case, wife negative, child negative.
- 6 cases under investigation.

30 cases cerebro-spinal syphilis—

Cases investigated—

- 10 cases cerebro-spinal syphilis—
 - 7 cases, no contacts.
 - 3 cases, contacts negative.
- 1 case, gumma of the brain—no contacts.
- 3 cases, G. P. I.
 - 1 case, husband not located.
 - 2 cases, no contacts.
- 5 cases locomotor ataxia.
 - 3 cases, contacts negative.
 - 2 cases, no contacts.

Cases under investigation—

- 4 cases, cerebro-spinal syphilis.
- 1 case, gumma of the brain.
- 1 case, G. P. I.
- 5 cases, locomotor ataxia.

9 cases syphilis of the cardio-vascular system—

Cases investigated—

- 1 case, pulmonary embolism.
- 2 cases, myocardial failure.
- 1 case, sortitis.

Cases under investigation—

- 3 cases, endocarditis.
- 1 case, abdominal aneurism.
- 1 case, myocardial failure.

Miscellaneous—

- 1 case investigated.
- 2 cases under investigation—
 - 1 case, gumma of stomach.
 - 1 case, syphilis of the larynx.

(3) Sources of Infection and Contacts, etc.

A great deal of work was done by the social service nurses along these lines, and the accompanying figures from their reports will give an idea of the work that has been done in following up contacts and sources of infection.

Referred by—

Self, 490; doctors, 446; friend, 476 Public Health Department, 275; private institutions, 55; Social Service Department, 31; hospital wards, 225; other clinics, 150; provincial posters and wax models, 46; provincial institutions, 32; police, 37; Children's Aid Society, 7; nurses, 53.
Total, 2,323.

Alleged sources of infection investigated—

Syphilis—positive, 128; negative, 56; total, 184. Gonorrhoea—positive, 88; negative, 41; total, 129. Grand total, 313.

Number contacts located—

Syphilis—positive, 132; negative, 402; total, 534. Gonorrhoea—positive, 38; negative, 72; total, 110. Grand total, 644.

Visits by Social Service Nurses, 7,172.

Patients born in Canada, 1,315.

Patients born elsewhere, 680 (including British Empire.)

Average number of patients under treatment monthly, 7,082.

Number of patients lost, 732.

(b) *Educational.*

A very active educational campaign against venereal disease and along the lines of social hygiene was carried on by the division during the year. This was done by means of showing of films, moving pictures, exhibitions, addresses, meetings, and the distribution of literature. Cities, towns and villages in all parts of the Province were visited and many meetings held. Especially was this the case in Thunder Bay and Rainy River Districts where the Social Service Branch of the division spent practically the whole of the month of June in addressing meetings and showing films, etc.

The accompanying report of the Social Service Nurse will indicate briefly the work that is being done along the lines of social service.

During the past year special courses were arranged on four occasions for nurses working outside the city. Three of the nurses had just accepted positions with our own clinics, and the fourth nurse was sent by the St. John Health Centre, St. John, N.B.

In connection with the arrangement of these courses our thanks are due to the Toronto Department of Public Health, the Social Service Department of the Toronto General Hospital, the Neighbourhood Workers' Association, the Juvenile Court, Dr. Edna M. Guest, and the superintendent of the Mercer Reformatory.

Fifty-five trips were made to out-of-town points requiring 116 days. Thirty-four of these trips were for the purpose of showing films, and involved 76 showings. Attendance, 6,510.

Forty-five visits were made for the purpose of supervising clinics.

Thirteen half days were spent at the Mercer Reformatory. This is considerably less than last year, and it is regretted that more time was not available to spend in this work.

Twenty-nine meetings were attended, one being the National Conference of Social Work held in Washington in May.

Thirteen visits were made in connection with special cases. Two cases investigations were made and follow-up work is still under way on these cases.

Special exhibits illustrating the work of the division were shown at the Canadian National Exhibition, Toronto, and at the Fall Fair, Ottawa.

8. *General.*

(a) Wax Models.

During the year the board imported from Paris, France, some very fine wax models illustrating the lesions occurring in venereal diseases and various skin diseases. These models have been used for selected exhibits and have proven a great success.

(b) Regulations in Communicable Diseases.

New regulations are now in force and are being well received by the physicians and medical officers of health of the Province.

(c) Co-operation.

The division co-operated with the following organizations during the year—
 Canadian Social Hygiene Council,
 Canadian Red Cross Society,
 Canadian Tuberculosis Association,
 Various other divisions in the Provincial Board of Health.

(d) Work Contemplated.

- (1) Organization of tuberculosis clinics.
- (2) Some scheme for improvement of milk supply in smaller centres.
- (3) Further venereal disease clinics in larger centres, if considered necessary.
- (4) More intensive campaign of education *re* the seriousness of various communicable diseases.

(e) Letters for the Year.

In-coming letters, 4,048.

Out-going letters, 3,963.

(f) I wish to thank the members of the division for their support and cheerful co-operation during the year. When it is remembered that nearly 8,000 letters were received and sent out, numerous reports written and a great deal of other office routine attended to, the clerical staff is certainly to be commended for its splendid work.

R. R. McCLENAHAN, M.B.

Director, Division of Preventable Diseases.

Toronto, January 29th, 1924.

ANNUAL REPORT, 1923, DIVISION OF INDUSTRIAL HYGIENE

The activities of the Division of Industrial Hygiene are conducted with a view to prevention of sickness among wage earners, especially that part of it which can be accomplished most satisfactorily by employers and wage earners themselves. They include:

(1) Investigation of the incidence of occupational diseases and the means for their prevention.

(2) The preparation of technical and popular literature and addresses drawing the attention of employers, employees, and physicians to the waste from sickness among wage earners and the suggested means for prevention.

(3) The accumulation of data on the extent of sickness in industry for use in presenting the situation to employers, in order that they may institute means of prevention as a matter of good business.

(4) Supervision of sanitation in connection with medical service in unorganized territory.

(1) *The Incidence of Occupational Diseases.*

There are two sources of information.

(a) The co-operation of many agencies has been received in obtaining information regarding cases of occupational diseases which arise. These are employers and employees, physicians, accident prevention associations, Inspection Branch of the Mines Department, and, very recently, the Workmen's Compensation Board. The cases reported include:

Lead poisoning, 38.

Benzol, 13—1 death.

Mercury, 7.

Potassium, cyanide, 6.

Carbon monoxide, 2.

Dye asthma, 2.

Conjunctivitis associated with wood alcohol, 3; together with individual cases of cancer, tweak-wood poisoning, aniline.

Skin eruptions, 111; these include eruptions caused by dye (ursol), potassium cyanide, sugar, oil, formaldehyde, cyanamide, nickel, rash associated with constantly wet hands, urticaria associated with exposure to volatile substances like benzine, turpentine, etc.

When such cases are reported, the Division communicates with the private physician to enlist his interest and co-operation. The individual physician's response in this connection is notable and a source of gratification. The patient is visited and his permission obtained to interview his employer, when the attempt is made to study the processes and other exposed employees. Recommendations for prevention based on the findings are submitted to the employer. The division has been unable to investigate all the cases reported because the industries and plants represented are now so many and varied and widely scattered. In the meantime, data on the incidence of different types of occupational disease in Ontario, hitherto wanting, is being accumulated.

(b) Following the original plan, coincident with the study of individual cases, the division has continued the investigation of the incidence of lead-poisoning in lead-using industries. This phase of the work must receive less

and less attention in the face of the increasing numbers of individual cases reported. Two groups of plants were studied.

- (i) Paint manufacturing.
- (ii) A second study in storage-battery manufacturing.

(i) In nine (9) paint-manufacturing plants, fifty-five workers exposed to lead were given complete physical examination. Eight (8) cases of lead-poisoning of varying severity were identified. In the light of the numbers exposed this is high, but six (6) of these cases occurred in three (3) plants, two (2) showing conditions only fairly good and one (1) in bad condition. The remaining six (6) plants were kept in good condition.

(ii) In storage-battery manufacture, sixty-eight (68) men were examined. Thirty-eight (38) cases of varying severity were identified. In all cases but one *general* plant conditions were quite good. Special care required for the prevention of lead-poisoning was not in evidence however.

A similar investigation was carried out in this industry two years ago by this division when concrete recommendations for prevention were made. The findings in 1923, in spite of the previous demonstration of a comparatively high incidence of poisoning and of the presence of dangerous quantities of lead in the air, showed a failure to remedy conditions on a voluntary basis. The experience of the division in this respect is not limited to this industry.

This investigation also afforded opportunity to determine the value of certain suggested means for the early diagnosis of lead-poisoning. The presence of 300 per million red blood corpuscles showing basophilic granulation in workers exposed to lead has been used in factory legislation in Germany as an indication for their removal from exposure. Its value is controversial.

With the use by the division of a slight modification of Harlowe's stain, the presence of basophilia was detected in nearly every case where there was a history of exposure to lead and any symptoms or other signs which led to suspicion of lead-poisoning. In another group not exposed, in no case was basophilia demonstrated. The number of basophilic cells corresponded roughly to other indications of the severity of the case in all instances. In forty-one cases of this group the presence of hematoporphyrin, in high dilution (1-50 plus), of urine corresponded with the degree of basophilia. Examination of blood smears has been done in all reported cases investigated by the division with the same result.

The presence of basophilic granules in red blood cells is used in the division as an important confirmatory sign of lead-poisoning and simple means for demonstrating basophilia have been placed before the progression of the province.

From this data certain considerations arise:

(a) The number of cases of occupational diseases in Ontario is considerable, in striking contrast to prevailing opinion three years ago. From time to time circumstances arise to show that the number of cases existing is considerably in excess of the number reported but the lack of facilities for investigation prevents detailed information being accumulated regarding them. This applies in the case of dermatitis from sugar, dye, oil, nickel, formaldehyde, and in carbon monoxide poisoning.

(b) The cases reported to the division were all well-developed, that is, beyond the early stage, and, with the exception of some of the skin cases, requiring rest in bed with medical treatment. For each such case, it can be reasonably assumed that there are still at work where these cases arose a number

of workers in varying earlier stages of poisoning, doing their jobs more or less ineffectively because of chronic ill health or actual sickness from intercurrent disease.

This is borne out by our experience in the individual cases investigated and by the trade investigations made; for example:

(i) Investigation in one plant from which had come a patient suffering from benzol poisoning, who later died, showed four men in the same department with a white-blood count of less than 4,000 cells per cubic millimetre with no other reason to account for it than exposure to benzol. These men would shortly have broken down under continued exposure.

(ii) In one plant with seventeen (17) cases of nickel rash reported, investigation showed forty-six (46) cases occurring over a period of a year.

(iii) In paint manufacturing and storage battery manufacturing where all the men examined were at work, four (4) men were encountered who had been treated for lead-poisoning, but twelve (12) men showed the effects of lead in a marked degree, the need for active treatment being unavoidable with continued exposure.

(c) It is generally recognized that labour turnover is high in occupations hazardous to health, so that the full degree of the effect of the occupation on health cannot be seen. A local experience with exposure to lead bears this out:

In one plant where there were eight (8) well-marked cases of lead-poisoning, fifty per cent. of those examined had been employed for less than six (6) months; seven (7) of these eight (8) marked cases were among men who had been employed for more than six months, but 32 per cent. of those employed less than six months showed definite effects of lead.

Prevention.

Obviously, some effective means of prevention should be instituted. Three years' attempt to prevent these diseases by recommendation alone have failed to produce results. While the number of plants and industries dealt with has been small, the individual attention which they have received has been considerable. This conforms with experience elsewhere.

In Great Britain, and to some extent in the United States, very detailed legislation administered by factory inspection departments exists, requiring the accepted means of prevention.

It is considered that legislation should exist in Ontario, setting forth in general, not detailed, terms the requirements for prevention of the commonest occupational diseases, but that the most effective and satisfactory means of prevention lies in the compensation under the Workmen's Compensation Act of all diseases due to industry, independent of other disease conditions existing in the individual and independent of the length of exposure necessary to produce the occupational disease condition presented. This last is necessitated, if for no other reason than that susceptibility to industrial health hazards varies extremely from one individual to another, influencing to a corresponding degree the time required to produce incapacity.

Experience in the division shows that where occupational diseases are compensated industrial executives are, as a rule, more than willing to assist in determining adequate means of prevention. The responsibility of the employer is acknowledged on all sides. It is not enough that he be penalized for a high incidence: he should receive a proportionate financial advantage over his competitor if the incidence of occupational disease in his plant is lower.

Prevention of these diseases involves attention to plant environment, in some cases supplemented by periodic physical examination.

Regarding plant environment, as indicated in last year's report, the need exists in the division for personnel with basic training in architecture and engineering, who can determine the most effective means for mechanical removal of dust and fumes which are dangerous to health in industrial processes, and who will prepare himself to advise on the most effective means of lighting and ventilating factories based on scientific findings which in some cases await practical application.

Experience in Great Britain as seen in the legislation shows that in certain trades attention to environment alone does not suffice for prevention but must be supplemented by periodic physical examination in order that symptoms and signs appearing in the worker may be discovered early, and the individual removed from exposure. This is the case in lead trades, in the India rubber trade (processes where lead, carbon bisulphide, and benzol are used), in chemical trades (chrome and nitro and amido processes). In addition, the inadequacy or impracticability of some methods of quantitative estimation of many substances encountered as health hazards in industry makes the use of physical examination as an indicator of the effectiveness of mechanical preventive measures adopted very important, but it is only of value in so far as it brings to light evidence of poisoning or undue susceptibility to poisoning before the worker is incapacitated. Of this nature are physical findings such as a degree of basophilia in the blood in lead-poisoning, a marked decrease in white blood corpuscles in benzol poisoning, the presence of methemoglobin in blood in carbon monoxide poisoning.

With other occupational diseases, and notably skin diseases, we are not so fortunate. Skin diseases form a high proportion of cases here reported. The greatest variation in susceptibility and effects exists. One worker shows the effects of exposure while another working under the same conditions does not. One worker succumbs to illness in a week and another not for six (6) months under the same conditions. Some are exposed for ten (10) to fifteen (15) years with no effect, while others work for the same time without effect and then suddenly develop marked sensitiveness which persists.

Some of the forms of dermatitis appear to be local in type and some systemic. Most cases resist treatment and all require removal from exposure for successful treatment, while for many no adequate means of prevention has yet been discovered.

Periodic physical examination here should yield information as to whether the individual is likely to develop dermatitis under the conditions of proposed employment. Such information is of first importance in the physical examination of men returning to work after illness and will be required more and more as schemes for rehabilitation develop; an example is the effort now directed toward estimation of muscle strength and cardiac efficiency for purposes of work. Indeed, in this respect rehabilitation and prevention have the same objective, with a larger field for its application in prevention.

Very minor excursions into this field have been made by the division in the effort to prevent some occupational conditions.

Dr. N. C. Sharpe exposed mice to volatile substances, first, with toxic doses for short periods of time at long intervals, and, second, with non-toxic daily doses of one hour's duration, this latter exposure corresponding as closely as possible with that prevailing in industrial conditions.

Those exposed to repeated small doses died earlier than the controls and showed microscopic changes on post-mortem examination. Those exposed to large, occasional doses showed no demonstrable effects.

Dr. G. W. Ross showed that the treatment of sugar dermatitis by Finsen light was satisfactory but that desensitization of the skin to prevent a recurrence on a second exposure to sugar did not take place.

Dr. F. Tisdale showed that the calcium content of blood was unaltered in cases of sugar dermatitis.

Dr. A. H. W. Caulfield has considered the question of anaphylaxis in relation to nonprotein organic compounds, particularly in connection with dye (ursol) asthma.

Some results may be expected if work of this type, properly organized, is commenced even in a small way. It has been recommended that an appointment be made in the division to study some of these conditions with this use of physical examination in mind.

With such a lead from the government, and employers benefiting financially through workmen's compensation in proportion to their success in preventing occupational diseases, industry might be expected to find it profitable and otherwise very satisfactory to group themselves for the study of their special health hazards, with a view to prevention, particularly through detection at a very early stage.

(2) The preparation of technical and popular literature and addresses, drawing attention of employers, employees, and physicians to the waste from sickness among wage earners, and the suggested means of prevention.

(a) *Technical.*

(i) A publication entitled "Lead Poisoning (A Compilation of Present Knowledge)," has been completed. This book contains in convenient form the latest available knowledge on the subject of lead poisoning, under headings of etiology, pathology, symptomatology, signs and diagnosis, laboratory and clinical tests, prevention, a fairly extensive chapter on the lead trades, a short chapter on treatment, and an extensive survey of the legislation dealing with the prevention of lead-poisoning in different countries.

It has received very favourable criticism from the profession in Canada and other countries, as evidenced by a number of private communications received from authorities on the subject.

It places in the hands of the profession in Ontario a valuable reference for the recognition of lead-poisoning in its earlier stages and it is hoped that it will help to give the disease the consideration it requires.

(ii) A publication by Dr. N. C. Sharpe, formerly on the staff of the division, on the hazard from lead to the health of operators using the spraying machine for painting, the result of experimental work which was carried on previous to 1923.

(iii) There is in course of publication a second article based on the work which Dr. Sharpe carried out, which it is hoped will add something to present knowledge of the subject.

(iv) At the Round Table Conference of the Ontario Medical Association Annual Meeting in Windsor, May, 1923, the principle of the part-time appointment of physicians in industry for purposes of health supervision was discussed and favourably received. This subject was brought to the attention of the profession because of a question occasionally met with, "What does the profession think of efforts to show employers that the prevention of sickness in

industry is good business?" and partly because of the fact that industries in Ontario will not employ full-time physicians for this work for some time to come, necessitating the employment of part-time physicians who are engaged at the same time in general practice.

(v) Of considerable importance is the activity of the Committee on Industrial Diseases of the Ontario Medical Association. This committee was established in 1922 on a motion by Dr. F. W. E. Wilson, Niagara Falls, who was elected first chairman. During that year, ending May, 1923, a circular letter was prepared to be sent to all physicians in Ontario, drawing attention to the prevalence of industrial diseases and requesting reports of such cases.

The division has had access to these reports which present problems in which the division is interested. It is hoped that information as to difficulties encountered by practising physicians in these cases will put the division in a better position to place in their hands the type of information required to prevent industrial diseases. A recent meeting of the committee was well attended and enthusiastic.

(b) *Popular.*

(i) A publication entitled "Health Confessions of Business Women" has been completed.

The book is based on a competition in the daily newspapers, with prizes, sponsored by the division, which called on business women for letters giving, from individual experience, health habits which have been found to be of greatest value. Between 200 and 300 replies were received. These have been arranged under suitable headings and contain health suggestions with practical hints for overcoming obstacles to their attainment, which are intensely human and could never have been enumerated in academic fashion.

The result is a little book which deals with a prosaic subject in a way which is interesting and at the same time informative.

The idea of producing a book for a selected group of workers actually written by that group is, it is thought, distinctly original and might well be more widely adopted.

(ii) The subject of industrial health has been drawn to the attention of workmen through occasional bulletins and of foremen and workmen through a Y.M.C.A. publication which reaches them. These articles dealt with physical examination and industrial accidents and fatigue.

For manufacturers articles were prepared for their journal, "Industrial Canada," and a chemical trade journal on industrial accidents, plant medical departments, and occupational diseases.

An exhibit at the Canadian National Exhibition depicted mechanically the destruction of health and life through industrial poisons, using posters in explanation.

3. *Accumulation of data on the incidence of sickness in industry.*

Continued effort has been made to obtain information as to what general sickness exists among wage earners and its effects, particularly as reflected in lost time from work. Local experience of this kind is necessary if the employer is to be interested; however, little information exists.

Nursing service in the plant is almost a necessity if anything like accurate statistics are to be obtained, mainly because the information does not otherwise exist as to whether the worker is away because of ill health or for other reasons. Certain plants are at present compiling such data. Our records to date show

from six (6) to eight (8) days' lost time from sickness per wage earner per year, which is about two and a half ($2\frac{1}{2}$) times as much as that lost from accidents in the same plants.

In this connection, the activities of the Child Welfare Division have been joined with those of this Division in presenting the desirability of appointing public health nurses in communities where industry, generally a single industry, is the mainstay of the community. A report from an industrial nurse employed in such a community and working in close co-operation with the community nurse follows and shows the type of information which can be acquired and some of the results of using it. This reports four (4) months' activity:

Sickness.

During these four (4) months sickness of employees in one hundred and forty-six (146) cases recorded, caused seven hundred and seventy-one (771) days' lost time. Sickness at home caused nineteen (19) men to lose seventy-one (71) days.

Total lost time from sickness was about two and a half ($2\frac{1}{2}$) times the *total* lost time from accidents.

A study of the records compiled from August 1st with respect to sickness show that the greater bulk of lost time occurred in two or three departments. Class of employees, greater percentage. Polish and Ukrainians concerned may be found to have a direct bearing on this feature.

Forty-two (42) employees have voluntarily come to the first aid room for advice and help on account of sickness, twenty-four (24) being referred to doctor for medical treatment. Thirty (30) cases told plant nurse of sickness at home and these cases were referred to the community nurse, who, through visits to the homes, brought them in touch with the doctor. These cases included a large range of ailments and conditions, most of which required medical or surgical treatment. Many of them would not have received proper attention soon enough but for the visit and advice of community nurse.

Fourteen (14) cases of furunculosis, among mechanics and paper machine men, have been treated and at present oil is under examination to determine, if possible, the cause of infection.

Twelve (12) occupational skin conditions have been seen and treated. Three (3) men who have lost considerable time on this account have been transferred to other work and the result being steady employment since.

Eight (8) men have asked for complete physical examination and eighteen (18) have been advised to have examination at an early date for various conditions: hernia, eye conditions, ear conditions, etc.

Infections.

Since August 1st, thirty-two (32) lost time accidents occurred and five hundred and sixteen (516) minor injuries have been treated. No infections occurred following these injuries, but community nurse, in her visits, discovered eight (8) infections following scratches which had not been reported.

It is not possible to estimate in every case how much time was saved to men involved in accident cases by treatment and constant care during period they are forced to be idle. We know, however, that men were able to return to work earlier because of proper care than they would have been if proper provision for such cases was lacking.

This report shows that the employees in this plant lose on an average four (4) days per man per year from sickness. This is low in comparison with most industrial groups and is partly due to preventive measures already adopted.

The accident records are of interest, since, although no effective safety campaign is continuously carried on in this plant, and the lost time from sickness is not high, sickness still causes two and one-half ($2\frac{1}{2}$) as much lost time as accidents. Again, the record shows that this lost time is concentrated mainly in two or three departments, making it possible to focus efforts on prevention. This example of what can be done in reducing infections stands in striking contrast to the fact that nearly fifteen (15) per cent. of all Workmen's Compensation cost in Ontario is due to infections.

4. Supervision of sanitation in connection with medical service in unorganized territory.

During the year the work of the Chief Sanitary Inspector and his staff of five men has been joined with that of this division. Their activities lie mainly

in unorganized territory in northern and northwestern Ontario, where the problem is almost entirely industrial, as represented by pulp and paper and sawmill industries in both their camp and mill operations, together with the mining industry.

This work is administered under the section of the Public Health Act dealing with unorganized territory, which now provides that the Board shall have supervision over physicians who accept contracts to care for the workers in these industries as far as the maintenance of good health is concerned.

Because of the existence of a contract, the physician's relation to his clientele involves more than that of physician to patient and enables him to apply preventive measures before incapacity results, to the benefit of the workman as well as himself. This fact enables the physician to proceed at once to consideration of the phases of the prevention of sickness among wage earners which involve health supervision of individuals who are well, in addition to supervision of their working and living environment, which is now required.

A necessary preliminary to intelligent work of this kind is a knowledge of the amount and kinds of sickness existing. The division is directing efforts toward obtaining the interest and help of contract physicians in accumulating such information, in the belief that we have something to offer in return.

Apart from the assistance received from the various Divisions and the field force in the Board of Health itself, acknowledgment is especially made to Dr. V. E. Henderson, Department of Pharmacology, University of Toronto, and to Dr. T. C. Routley, Secretary, Ontario Medical Association.

ANNUAL REPORT DIVISION OF PUBLIC HEALTH EDUCATION

FOR THE YEAR ENDING DECEMBER 31ST, 1923

The work of this division during the past year has been one of varied activities. The early weeks of the year were taken up with routine writing of health articles for the press, the answering of correspondence, and the checking up of reports on the sanitary inspection of schools. In cases where the sanitary conditions were bad, particulars were immediately sent to the Deputy Minister of Education and the Chief School Medical Officer so that the co-operation of the local school authorities with the local Medical Officer of Health might be assured in remedying the objectionable conditions.

During the month of January much time was taken up with the sending out of thousands of copies of the 1923 Health Almanac. Covering letters were sent to the secretaries of all the Women's Institutes throughout the Province, requesting their co-operation in the distribution of the almanacs. I may say that this co-operation was cheerfully given, and again I must record my earnest thanks to Mr. Putnam, the Superintendent, for having typed all the addresses of the various branch institutes scattered far and wide throughout the Province. There is no organization in Ontario that takes a keener interest in the dissemination of Public Health propaganda than the Women's Institutes.

The Public Health Almanac for 1923 was even more popular than the previous edition. Twenty thousand copies were distributed throughout Ontario and sample copies were sent to England and other countries. The almanac was favourably reviewed in the British Medical Journal, as a result of which numerous requests for copies came from England, and one from Shanghai, China.

In February the Director of the Division, in company with Mr. Jones, the moving picture operator, went to Providence, R.I., and secured some new models for the Health Exhibit. On account of the restricted space at the Provincial Board of Health's exhibit at the Canadian National Exhibition last August there was not enough room for all the models, but they were shown later at the Ottawa Fair in September. While in Providence a number of films on health subjects were purchased and these have since been widely shown in Toronto and throughout the Province. A few of the places in Toronto where the films have been shown are: Canadian Council of Jewish Women, St. George Street, Toronto; Junior Health League of the Toronto Public Schools; Church of Latter-Day Saints, as well as numerous other churches, clubs and organizations.

A number of the standard films were loaned at various times to local Boards of Health throughout the Province, and the films were also borrowed and shown in Hamilton, Brantford, Newmarket and many other places as the result of request from the local health authorities. Thousands of people also viewed the Public Health films that were shown in the Provincial Board of Health's tent every afternoon and evening during the two weeks of the Canadian National Exhibition.

The Ninth Annual Conference of the Ontario Health Officers' Association held on May 21st, 22nd and 23rd was a pronounced success. Upwards of 300 health officers were in attendance, as well as social workers and others interested in public health and preventive medicine.

One of the features of the convention was a paper on "Insulin in the treatment of Diabetes," by Dr. F. G. Banting, who gained world-wide fame for his remarkable discovery. Needless to say, there was a large attendance at this session and Dr. Banting's paper was much appreciated.

Another interesting address was given by Dr. F. C. Vaughan, Commissioner of Health for Detroit, on the subject of Public Health Administration.

The individual papers were all on timely topics, and the symposiums on "Tuberculosis" and "Cancer" reviewed the subjects from every angle and brought out some interesting and instructive discussions and criticisms.

The whole programme, in the opinion of many of those present, was well-balanced and the papers most instructive. Some of the members present even took the trouble after the convention to write to the Secretary expressing their appreciation of the programme presented.

The first session began on Monday, May 21st, at 10 o'clock, with the registration of delegates, after which a moving picture was shown. Next came a few remarks from the Chief Officer of Health, outlining the objects of the conference. The first paper was read by Dr. P. J. Moloney, District Officer of Health, whose subject was "Co-operation in Health Work among Public Officials." Dr. E. R. Secord, of Brantford, President of the Ontario Medical Association, gave an address urging the closest co-operation between the Health Officer and the general practitioner. The conference then adjourned to Hart House, where the members were guests of the Provincial Board of Health at luncheon. The speaker on this occasion was Hon. Mr. Justice Riddell, of the Supreme Court, who outlined the work of social hygiene and the efforts being put forward for combating venereal diseases.

The second session opened with the presidential address by Dr. D. V. Currey, M.O.H., St. Catharines, Ont.; next, Mr. Wills MacLachlan, Toronto, on the subject "Resuscitation," illustration of the Schaefer method. The last speaker at this session was Dr. H. F. Vaughan, Commissioner of Health, Detroit, Mich., who spoke on "Some Recent Aspects of Public Health Administration."

On the second day of the conference the proceedings opened with a paper on "The Schick Test and Active Immunization against Diphtheria," by Dr. James Roberts, M.O.H., Hamilton. The remainder of the session was taken up with a very interesting symposium on Tuberculosis. Dr. Harold Parsons dealt with the subject under the heading of "Tuberculous Contacts," Dr. I. H. Erb, Pathologist to the Hospital for Sick Children, Toronto, discussed "The Pathology of Mediastinal Tuberculosis," while "Tuberculous Infection in Infancy and its Effects" was discussed by Dr. A. Davis, of Toronto. Interesting slides and pathological specimens were shown and a discussion followed led by Dr. W. E. Ogden and Dr. A. H. W. Caulfield.

The fourth session of the conference was taken up with a symposium on Cancer, chiefly from the preventive viewpoint. The introductory paper was read by Dr. Adam Wright, who in a very able paper stressed the importance of preventing chronic intestinal stasis, if cancer of the intestinal tract is to be curtailed. After the reading of Dr. Wright's paper there was a discussion on "Ulcers of the Stomach and Duodenum and their relation to Cancer." The following gentlemen took part in the discussion: Professor Clarence Starr, Toronto; Dr. Wm. Goldie, Toronto; Dr. F. A. Cleland, Toronto; Dr. Grant Fleming, Toronto; Dr. W. J. Dobbie, Weston; Dr. H. W. Hill, Western University, London, Ont.; Dr. L. Hess, Hamilton. The session closed with the reading of a paper entitled "Milk and its relation to Disease," by Dr. A. J. Slack, of the Western University, London, Ont.

The fifth session commenced with a moving picture, followed by a paper on "Dentistry and Health," by Dr. H. S. Thompson, Dental Research Department, University of Toronto. The next paper was by Dr. J. G. Cunningham on "The Part-time Physician in Industry." Dr. W. L. Hutton, M.O.H.,

Brantford, read a paper on "Smallpox" and illustrated his remarks with some very interesting charts. The session concluded with a paper on "The Significance of Certain Vital Statistics," by Mr. F. A. Dallyn, C.E., Director, Division of Sanitary Engineering, Provincial Board of Health.

The closing session was taken up with a paper on "Vital Statistics and Causes of Death," by Mr. S. J. Manchester, Director of Vital Statistics, Registrar-General's Department, followed by Dr. Banting's address on "Insulin."

In June the Director of this Division attended the annual meeting of the Canadian Public Health Association in Edmonton, and the summer months were taken up with the reading and correcting of proofs for the Annual Report and making preparations, and arranging contracts for the erection and construction of the booths at the Health Exhibit at the Exhibition grounds.

With wall decorations of blue and white, and gold lettering designating the various booths, a very instructive, interesting and elaborate exhibit was produced by the Provincial Board of Health at the Canadian National Exhibition in 1923. The main idea of the exhibit was the preservation of the health of all the people and the efforts of the Provincial Board of Health to maintain a high standard of health conditions throughout the Province. With this end in view a booth was erected showing a typical Ontario family, with wax figures representing the father and mother, a boy of school age, a girl of pre-school age and a baby in the cradle. All were represented in good health, and round the exhibit were grouped the booths of the different divisions showing their various activities in the work of health promotion and disease prevention.

The central figure of the Child Welfare booth was the public health nurse, artistically done in plaster, and in the foreground were panoramas depicting the scenes of the nurse's chief activities. These were the Indian wigwam, the pioneer's cottage, the farmhouse, and the city slums. This was a most attractive booth.

The Division of Industrial Hygiene had an interesting mechanical exhibit showing the bad effects on health of poisons that are used in various industrial processes. A cannon, operated by devils representing ignorance and carelessness, was shown in action and at every explosion of the gun an employee was disabled. The Divisions of Laboratories, Sanitary Engineering and Communicable Diseases also had attractive booths which daily interested large crowds of visitors. A word of praise is also due the Registrar-General's Department for their very interesting and instructive exhibit.

In order to standardize the Annual Reports of Medical Officers of Health and obtain the necessary information in definite sequence, a new form, containing headings to be filled in, was prepared, which included practically all the points on which health information and statistics are sought from year to year. Information was particularly desired regarding the salary of the M.O.H. and the total expenditure for Public Health work in each individual municipality, so that an estimate could be made of the total expenditure for health work throughout the Province.

The forms in question are to be filled in and presented to the local Boards of Health before November 15th annually, and a copy sent without delay to the Provincial Board of Health, Spadina House, Toronto. The following headings that have to be filled in are included in the form:

Municipality, County, Name and Address of M.O.H., Date, Estimated Population, Number of Births per annum (exclude "Still Births"), Number of Still Births, Number of Infant Deaths under one year, Infant Mortality rate per 1,000 Living Births, Number of Deaths from all causes, Death rate per

1,000 of the population. Communicable Diseases—Disease, No. of cases, No. of Deaths, Any special outbreak of communicable disease during the year? Methods adopted to combat the outbreaks. Milk supply—(a) Source, (b) Character, (c) Is supply pasteurized? Water Supply—(a) Source, (b) Character, (c) How purified? Any special Public Health Work carried on, such as Child Welfare, Ante-natal Clinics, Tuberculosis Clinics, Venereal Disease Clinics, etc., Any Public Health Education by M.O.H.? Did M.O.H. carry out Sanitary Inspection of Schools during the year and make report? Expenditure for Public Health purposes—(a) Salary or other remuneration of M.O.H., (b) Expenditure for other Public Health Work, (c) Total expenditure for Public Health. General remarks—Brief outline of activities of M.O.H. and local Board of Health.

I would again recommend the appointment of one or more public health lecturers or teachers to do field work in this division. Continual personal propaganda in Public Health is much more effective than sporadic demonstrations and speech-making, for if follow-up work is not carried on the public lose their enthusiasm in the subject and soon forget what they have learned.

J. J. MIDDLETON, M.B., D.P.H.,

Director, Division of Public Health Education.

ANNUAL REPORT MATERNAL AND CHILD HYGIENE DIVISION 1923

The work of the division this year has followed the lines of demonstration, as in previous ones, and this summary will show the activities as carried on in the respective health districts:

DISTRICT NO. I

Demonstrations of generalized public health nursing, including schools, were carried on in the Towns of Leamington, Essex, Kingsville and Tillsonburg, while the Townships of Westminster and Delaware were given service of this type during the months of November and December. The district had but one nurse for the months from July to November, as the other gave special service in the summer work in northwestern Ontario. One outstanding effort in this district during 1923 was the co-operation between the division and the agricultural representative for Essex County. In the spring a well-planned schedule was followed whereby home nursing instruction was given, followed by a child welfare clinic. In September an additional itinerary was undertaken covering the school fairs, in connection with which a child welfare clinic was held in each centre.

DISTRICT NO. II

For the greater part of the year District No. II has had but one nurse, owing to the fact of the special work in the Haileybury district following the fire and the Cochrane epidemic of typhoid in the early spring. The summary for the year, however, shows that demonstrations of generalized public health nursing, including schools, were carried on in the Town of Orangeville, Villages of Grand Valley and Milverton, together with work in four townships; in addition the Counties of Wellington, Waterloo and Perth were surveyed.

In Dufferin County also our co-operation was solicited by the agricultural representative and the public health nurse followed the schedule of the school fairs, having a small exhibit and mother's conference at each point. The course in Home Nursing given in Grand Valley was a signal success.

DISTRICT NO. III

During the year one of the public health nurses in District No. III was sent for duty to the northern fire area, only returning to the district in the month of March. The Town of New Toronto was given a demonstration, including schools, with the result that a permanent local nurse has been appointed. Assistance was given in the survey of tuberculosis among children in the Town of Dundas and vicinity, which work lasted for three months, and was followed by a survey of the County of Wentworth.

York Township has received a great deal of attention; as previously reported demonstrations of public health nursing, including schools, were carried on in several sections of the municipality, as a result of which the following appointments were made during the months of January and February, 1923:

Municipal Public Health Nurse for the Township of York (this service includes schools where no local work has been arranged for).

Public Health Nurse for the Village of Swansea (schools included in this service).

Public Health Nurse, S.S. No. VII, York Township (schools included in this service).

Five months were spent in the Town of Paris, giving a demonstration of Public Health Nursing, including schools. The next point of demonstration was the Town of Simcoe, which work is still in progress. A survey of Brant County, including City of Brantford, was also undertaken.

DISTRICT NO. IV

The district suffered in the matter of work owing to the fact that one of the nurses, who had been sent to the fire area, was retained in that section of the Province permanently. During the year a demonstration of generalized public health nursing, including schools, was undertaken in the Town of Lindsay. The Town of Cobourg was assisted in the installing of the newly-appointed local nurse, while the Township of Hamilton was fairly well covered in a demonstration of general public health work. An attempt was made to use the fall fairs in the Towns of Lindsay and Norwood.

DISTRICT NO. V

The summary for the year shows that the demonstration of public health nursing, including schools, in the Town of Hawkesbury, which was carried on by two nurses, was followed by a demonstration covering the same field in the Village of Vankleek Hill. Upon request of the authorities of the Township of Caledonia, the work was extended to this municipality. The Town of Arnprior was given the services of a nurse for a limited time, while complete demonstrations were undertaken in the Town of Morrisburg and Village of Lancaster. The Township of Lancaster was the scene of some work during the fall months.

DISTRICT NO. VI

The work of the division in this district at the beginning of the year meant continuance of the emergency nursing programme due to the Haileybury fire, making it necessary to retain the nurses in this field until the end of May. In addition, the total staff of the division was called upon to assist in the typhoid epidemic at Cochrane.

The service tendered in the Town of Cobalt took the form of a demonstration of generalized public health nursing, including schools, which was followed by the appointment of a municipal public health nurse to carry on the health programme at the termination of our effort. Intensive work was instituted in the Town of Cochrane at the end of the typhoid outbreak, child welfare clinics under the direction of the division being carried on for one week, making it possible for the entire child population to receive complete physical examinations. The Town of Parry Sound has been the headquarters for one nurse and many of the school fairs and fall fairs were supplied with a small exhibit and conferences for mothers held at the various points.

DISTRICT NO. VII

The Town of Rainy River was given a demonstration of generalized public health nursing, including schools, during the winter and spring months, while the Town of Dryden was given the same type of service from November until April, and the Town of Sioux Lookout from the month of September to the end of the year.

Special summer work was undertaken in three of the agricultural districts, namely Rainy River, Fort William and Port Arthur, during the course of which the settlers in outlying sections were seen by a systematic house to house visitation. The population along the line of railway also received attention, while school fairs presented opportunities which the public health nurses used to the best advantage.

DISTRICT No. VIII

Demonstrations of generalized public health nursing, including schools, have been carried on in the towns of Bruce Mines, Thessalon, Cutler, Spanish and Spragge; in addition the town of Espanola was given a demonstration from August to November. The programme included the generalized work with special emphasis on the schools and in co-operation with the nurse in the industrial plant, with the result that the community has undertaken the work on their own responsibility.

Several townships in the vicinity of Iron Bridge were visited and the public health nurse devoted the month of September to fair work. Following the exhibition at Sault Ste. Marie, the schedule of school fairs, as requested by the agricultural representative, was followed. It must be remembered also that the nursing service in this district suffered from a disadvantage owing to the fact that the staff were transferred to the emergency fields in No. VI.

SUMMARY

Because of the contingencies arising during the year, the regular work of the field nurses was considerably interfered with; in spite of this, however, they made 39,538 visits, saw 5,465 cases and attended 194 meetings. The work of the nurses in connection with schools shows a total of 20,545 inspections of school children, resulting in the noting of 14,744 defects. The staff nurses also held 69 child welfare conferences, with a total attendance of 1,105.

CANADIAN NATIONAL EXHIBITION

The exhibit of the Division this year departed from the child welfare clinics which have been a feature for the last six years, and took the form of a series of special illustrations showing the various fields in which our nurses are stationed. The central point was a statue of a public health nurse (3 ft. 6 in. high); wax and plasticine were employed in the miniature representations of the city slum, the rural district in old Ontario, the pioneer's cabin on the frontier, and the Indian tepee. The accompanying illustration will show the general plan of the exhibit.

All of which is respectfully submitted.

MARY POWER,
B. KNOX,

Toronto, 4th February, 1924.

Maternal and Child Welfare Division.

ANNUAL REPORT, 1923, PROVINCIAL SANITARY ENGINEER

F. A. DALLYN, C.E. (TORONTO)

To the Chairman and Members of the Provincial Board of Health, Ontario.

Gentlemen,—I have the honour to transmit herewith my report of the activities of the Division of Sanitary Engineering for the year 1923.

The effectiveness of the measures initiated and supervised by this Department for the protection of municipal water supplies was rather severely tested during the early part of the year when the outbreak of typhoid at Cochrane* scattered infected individuals all over the province. Over 953 cases were reported from Cochrane and adjoining municipalities with some 84 deaths. Despite the widespread diffusion of infection from this outbreak, only one other outbreak of consequence has occurred during the current year: One at Hanover, which was attributed to the washing of milk utensils by water obtained from a sewage-polluted fire protection system.

Subtracting the reported cases and deaths from these two outbreaks, from the figures for the province as a whole, leaves a residual unaccounted for of 653 cases and 123 deaths. This compares most favourably with the year 1922, in which some 576 cases were reported with 127 deaths; 1919 and 1922 represent the banner years for typhoid in the Province of Ontario. In 1919, 145 deaths were reported by the Registrar General, and in 1922, the province realized for the first time in its history, an extremely low instance of typhoid in towns, the rate being 10.6 per 100,000, the lowest rate recorded in any previous year being 17.2 in 1918; with the prevailing average in excess of 30 for the past ten years. The rate for the cities in 1922—5.1—was influenced by one serious outbreak in an institution, the deaths being credited to one of our cities.

The explanation of this very favourable report for 1923, considering the distribution of infection, lies no doubt in the fact that as soon as the Department realized the nature of the epidemic in Cochrane, an inspection service was

*The epidemic as pictured by a curve showing cases and "date of taking to bed" suggests multiple sources of infection. The curve showing age distribution of the persons affected reveals an unusual number involved in the lower age groups, possibly suggesting involvement of the milk supplies as sources of infection.

The water supply at Cochrane is taken from a series of springs and there is an auxiliary supply from the overflow from these springs, known as Spring Lake. During the winter, which was preceded by a dry fall and possibly, also, owing to considerable railway construction going on in that area, the capacity of the municipal system was taxed to the utmost, with the result that the auxiliary intake supply from Spring Lake was opened. The continued use of water from the lake depressed the level of Spring Lake below that of the drainage outlet of the watershed, which, unfortunately, at the time of the outbreak received the sewerage of the town. At this time the whole area was covered under a heavy sheet of ice and snow, and it would appear that the pump attendant did not realize that there was a possibility of reversing the drainage so as to make it flow into the Spring Lake by lowering the level of Spring Lake to two feet below that of Sewerage Outlet Lake.

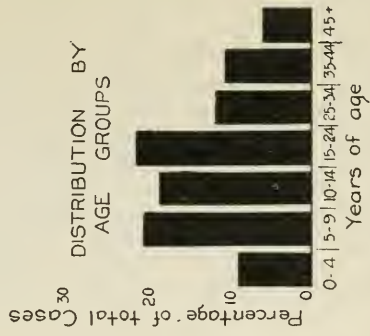
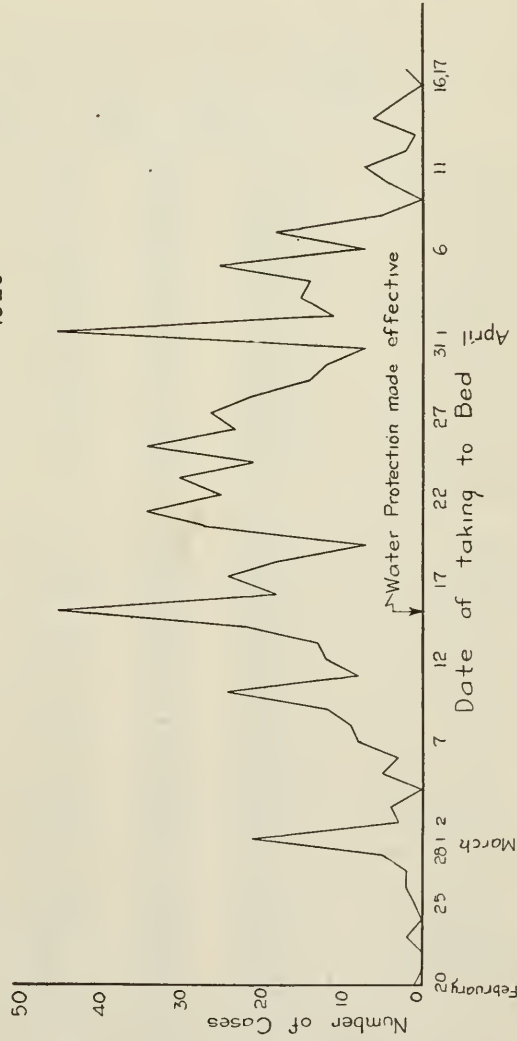
The possibility of pollution reaching the water supply was discussed with the Municipality in 1921-1922, and a By-law was passed to provide for expending a considerable sum for enlarging the reservoir capacity, and to develop the springs somewhat further. Unfortunately, the town did not proceed with that work, nor with the purchase of a chlorine apparatus for the water supply, which also was recommended.

The Director of the Division was in the area just one week before the outbreak was known to exist, and in view of some diarrhoea that was reported on as being contracted in Cochrane, he wired the office to secure a machine, and to have one of the Board's engineers bring it up and instal it. The machine was shipped two days later and was installed and in operation some three days before the local authorities realized that they had a typhoid epidemic on their hands. Any primary infection associated with the municipal water supply was completely under control March 15th, and no further infection was distributed by the municipal water supply system after that date.

Sanitary Engineering Division

The Provincial Board of Health of Ontario

CASE INCIDENCE
COCHRANE TYPHOID FEVER EPIDEMIC
1923



Typhoid fever at Cochrane, first officially reported by local officials March 17th, 1923.

immediately instituted, which reached every water supply in the province which, in the opinion of the Board, might yield a complement of cases, provided the protective apparatus had not been maintained at its recognized efficiency.

The results of the inspection, which was continued at monthly intervals, was to bring about a general adjustment of chlorine dosages to those giving a residual of approximately .2 parts per million, and a greater regard being paid by superintendents to uniformity of operation. This latter has been splendidly demonstrated in the reports of the analyses of water submitted by these municipalities during the current year, the effect of the adjustment brought about by the inspection service being such as to permit the delivering of a practically sterile water in the majority of instances. Supplies, which periodically were showing high colon counts, have since been showing four negatives consistently.

1923 SANITARY
37 ONTARIO

Municipality	Date of Survey	Population	Total No. Premises Inspected.	Water Connections		Sewer Connections	
				Total Number	% of Premises	Total Number	% of Premises
Alexandria.....	Aug. 24-25....	2,274	480	249	52	92	19
Arnprior.....	Aug. 30-31....	4,200	987	942	95	620	63
Arthur.....	Oct. 16.....	1,218	314	0	0	0	0
Brighton.....	Sept. 7.....	1,373	478	305	64	0	0
Cardinal.....	Aug. 22.....	1,300	316	295	93	0	0
Carleton Place..	Sept. 4.....	3,430	981	449	46	363	37
Chesley.....	Oct. 10.....	1,721	482	443	92	149	31
Cobourg.....	Aug. 16-18....	5,100	1,266	1,100	87	771	61
Deseronto.....	June 20.....	1,900	565	383	68	27	5
Durham.....	Oct. 11.....	1,400	435	206	42	0	0
Elmira.....	Oct. 19.....	2,400	533	401	75	168	32
Fergus.....	Oct. 2.....	1,815	543	335	62	0	0
Gananoque.....	June 18-19....	3,460	951	656	69	577	60
Harriston.....	Oct. 12.....	1,326	405	279	69	0	0
Hawkesbury....	Aug. 27-28....	5,560	1,017	925	91	663	65
Humberstone...	May 30-31....	1,500	419	0	0	0	0
Iroquois.....	Aug. 22.....	900	270	235	87	180	67
Kemptville.....	Sept. 1.....	1,184	393	0	0	0	0
Lindsay.....	May 7-17....	7,840	2,087	1,460	70	1,229	59
Listowel.....	Oct. 17.....	2,571	784	618	79	33	4
Madoc.....	June 26.....	1,100	329	0	0	0	0
Markdale.....	Sept. 27.....	927	254	199	78	0	0
Meaford.....	Sept. 26.....	2,484	774	698	90	71	9
Milverton.....	Oct. 19.....	1,029	302	139	46	0	0
Morrisburg....	Aug. 23.....	1,363	418	376	90	47	12
Mount Forest...	Oct. 4.....	1,734	490	407	83	0	0
Oakville.....	June 12-13....	3,200	889	819	92	649	73
Owen Sound....	Sept. 20-25....	12,000	2,980	2,871	96	2,204	74
Palmerston....	Oct. 13.....	1,850	443	304	69	27	6
Perth.....	Sept. 5-6.....	3,630	930	802	86	702	75
Picton.....	June 21-23....	3,200	1,079	529	49	138	13
Port Colborne...	May 29-June 1	3,000	940	864	92	0	0
Port Elgin.....	Oct. 5.....	1,255	433	251	58	0	0
Shelburne.....	Sept. 28.....	1,075	358	309	86	0	0
Trenton.....	June 27-29....	5,600	1,562	704	45	546	35
Tweed.....	June 25.....	1,250	368	0	0	0	0
Vankleek Hill...	Aug. 29.....	1,300	391	0	0	0	0
Totals (37)....		98,469	26,546	18,533	(a)76	9,256	(b)46

(a) Where Municipal Water Systems are in operation.

(b) Sewered Municipalities only.

In addition to this service, an inspection service has been instituted to ascertain the extent to which the regulations passed in 1921 regarding auxiliary connections to fire systems have been complied with. The results so far have been extremely encouraging and there appears to have been a general compliance, thus eliminating a great many hazardous connections, some of which would permit of the discharge of almost raw sewage into municipal systems.

The work of continuing sanitary surveys of the provincial municipalities has gone ahead during the year. Some thirty-seven municipalities have been completely surveyed during the summer months, when the staff could be augmented by temporary appointments granted to engineering and medical students in their senior years. A total list of the 1923 surveys now available may be seen in the following table:—

SURVEY DATA
MUNICIPALITIES

Outdoor Privies		Private Wells		Septic Tanks or Cesspools	Private Sewer Outfalls	Remarks
Total Number	% of Premises	Total Number	% of Premises			
331	69	131	27	33	6	
334	34	26	2.5	5	5	
277	88	164	52	33	1	4 Chemical Closets.
336	70	84	18	129	0	
214	68	14	4.5	85	2	2 Chemical Closets.
591	60	141	14	4	3	
328	68	24	5	4	2	1 Indoor Toilet.
437	35	98	8	31	9	6 Chemical Closets.
387	68	141	25	22	6	1 Smead Dowd Privy.
313	72	125	29	127	7	
295	55	96	18	46	1	15 Indoor Toilets.
353	65	130	24	157	5	
333	35	134	14	6	19	
284	70	87	21	117	0	3 Indoor Toilets.
327	32	50	5	0	1	
385	92	271	65	48	1	Port Colborne Water, 3 connections.
81	30	28	10	1	1	
333	85	142	36	45	4	
816	39	602	29	10	11	
365	47	125	16	374	8	1 Chemical Closet.
254	77	119	36	48	2	
152	60	17	7	96	0	
380	49	51	6.5	261	41	
241	80	107	35	55	0	6 Indoor Toilets.
255	61	19	4.5	68	32	
349	71	31	6	127	1	
214	24	42	5	11	0	
598	21	68	2	64	104	
249	56	18	4	186	0	
200	22	91	10	1	1	
733	68	286	26	156	19	
471	50	37	4	481	2	Private Water Supply, 30 connections.
395	91	151	35	47	0	2 Indoor Toilets.
192	54	29	8	131	0	
916	69	436	28	42	7	
321	87	172	47	38	2	
345	88	172	44	24	0	1 Smead Dowd Privy.
3,385	13	4,458	17	3,113	303	

The division has been concerned in efforts to get under way a series of water-treatment schemes looking forward to placing a greater number of municipalities in that position where the water supply would present at no time unnecessary hazards. It is encouraging to note that these efforts have been rewarded by seeing definitely under way a scheme for the Essex border municipalities, providing for an adequate supply of treated water for Windsor, Walkerville, Ford City, Riverside and the adjoining township municipalities. Smith's Falls is definitely proceeding with a very much needed water filtration plant which we hope to see constructed during 1924. The town of Port Colborne is proceeding with water purification works which should be completed during 1924. The town of Cochrane has completed the installation of two deep wells which are furnishing the municipality with an adequate amount of water quite above suspicion, and these wells have put the town quite independent of the old auxiliary supply which heretofore had to be called upon at times of shortage. Hanover has now definitely abandoned the old sewage-polluted fire protection system, the new supply from Ruhl lake being made available. Goderich is definitely committed to major improvements to its supply, the contract for an improved intake to be let in January. North Bay, after a great deal of delay, has provided for the installation of a chlorine plant, much needed owing to the rather adverse conditions surrounding the intake location at Trout lake. In addition, there have been some major improvements for the Stamford Township water supply, which will preclude any future possibility of seepage from the power canal affecting the quality of the spring water. The supply has already been protected by the operation of a chlorinating plant. At Dunnville, Port Credit, Whitby, Grimsby, and North York filter plants have been completed during the year and are in successful operation. In addition, some thirty-five new chlorination plants have been installed during the year. The list is included in table No. 2A.

Following is a comprehensive list of the methods in vogue in protecting water supplies throughout the province. For convenience the list has been divided into four divisions covering:

- (1) Filtration plants.
- (2) Chlorination plants.
- (3) Deep wells, springs and other supplies in use without treatment.
- (4) Fire protection only.

TABLE 1 A
MUNICIPAL WATER FILTRATION PLANTS IN ONTARIO

Municipality	Source of Water Supply	Type of Filter	Capacity Imperial gallons per 24 hours	Purification Apparatus Installed
Amherstburg.....	Lower Detroit River	Filtered water supplied by the Brunner Mond Company	.....	1918
Arnprior.....	Madawaska River..	Pressure mechanical	450,000	1900
Brampton.....	Springs and Snell's Lake.....	Gravity mechanical	900,000	1920
Chatham.....	Thames River.....	Pressure mechanical	3,500,000	1895
Cobourg.....	Lake Ontario.....	" "	1,300,000	1889
Cutler.....	Aird Bay, Lake Huron.....	" "	140,000	1921
Dundas.....	Catchment Area...	Gravity mechanical	5,600,000	1918
Dunnville.....	Grand River.....	" "	1,300,000	1923
Grimby.....	Lake Ontario.....	Pressure mechanical	1,300,000	1923
Haileybury.....	Lake Temiskaming..	" "	700,000	1913
Hawkesbury.....	Ottawa River.....	Gravity mechanical	1,250,000	1918
Iroquois Falls.....	Abitibi River.....	Pressure mechanical	340,000	1916
Kincardine.....	Lake Huron.....	Slow sand	250,000	1922
Kingsville.....	Lake Erie.....	Pressure mechanical	1,300,000	1921
Lindsay.....	Scugog River.....	" "	2,000,000	1917
New Toronto.....	Lake Ontario.....	" "	1,500,000	1917
Niagara-on-the-Lake...	Lower Niagara River.....	" "	1,100,000	1916
North York.....	Upper Don.....	Gravity mechanical	1,250,000	1923
Orillia.....	Lake Couchiching..	Pressure mechanical	2,000,000	1915
Oshawa.....	Lake Ontario.....	Gravity mechanical	1,500,000	1917
Owen Sound.....	Sydenham River and Springs.....	Slow sand on river supply	.....	.....
Perth.....	Tay River.....	Pressure mechanical	1,100,000	1915
Peterborough.....	Otonabee River.....	Gravity mechanical	5,000,000	1922
Port Credit.....	Lake Ontario.....	Slow sand	300,000	1923
Port Hope.....	" "	" "	1,000,000	1915
Renfrew.....	Bonnechere River..	Pressure mechanical	1,100,000	1918
Richmond Hill.....	Spring Creek.....	Gravity mechanical	275,000	1921
Rockland.....	Ottawa River.....	Pressure mechanical	200,000	1919
Scarborough.....	Lake Ontario.....	Gravity mechanical	1,250,000	1921
St. Thomas.....	Springs and Kettle Creek.....	Pressure mechanical	2,750,000	1893
Smooth Rock Falls.....	Mattagami River..	" "	3,300,000	.....
Sturgeon Falls.....	Sturgeon River.....	" "	690,000	.....
Tecumseh.....	Lake St. Clair.....	" "	450,000	.....
Toronto.....	Lake Ontario.....	Slow sand, Gravity mechanical	70,000,000	1912-17
Wallaceburg.....	Lower St. Clair River.....	Pressure mechanical	650,000	1914
Weston.....	Humber River.....	" "	1,400,000	1910
Whitby.....	Lake Ontario.....	Slow sand	700,000	1923
PROJECTED PLANTS				
Belleville.....	Bay of Quinte.....	Gravity mechanical	.....	.....
Crystal Beach.....	Lake Erie.....	Pressure mechanical	.....	.....
Essex Border.....	Detroit River.....	Gravity mechanical	.....	.....
Goderich.....	Lake Huron.....	" "	.....	.....
Oakville.....	Lake Ontario.....	" "	.....	.....
Port Colborne.....	Lake Erie.....	Pressure mechanical	.....	.....
St. Catharines.....	Welland Canal and Impounding reservoir.....	Gravity mechanical	.....	.....
Smith's Falls.....	Rideau Canal.....	" "	.....	.....
Welland.....	Welland Canal.....	" "	.....	.....

TABLE 1 B
MUNICIPAL WATERWORKS SYSTEMS
Situations in which Major Improvements are Desirable

Municipality	Stop-Gap Treatment	Recommended Improvements	Programme
Belleville.....	Liquid chlorination	Filtration	Nil
Brockville.....	“ “	“	“
Cornwall.....	“ “	“	“
Gananoque.....	Nil	Filtration and chlorination	“
Goderich.....	Liquid chlorination	Filtration, new intake	Under construction
Kenora.....	“ “	“ “ “	Nil
Kingston.....	“ “	Filtration	“
Oakville.....	“ “	“	Under construction
Port Colborne.....	Chlorination by chloride of lime	Filtration, liquid chlorination	“ “
Sault Ste. Marie.....	Liquid chlorination	Filtration	Nil
Smith's Falls.....	“ “	“	Under construction
Welland.....	“ “	“	Nil
Windsor.....	“ “	“	Under construction

TABLE 2 A
LIQUID CHLORINATION EQUIPMENT INSTALLED, 1923

Municipality	Date Installed	Capacity pounds of Chlorine per 24 hours	Remarks
Alliston.....	January	10 pounds	New
Belleville—Canada Cement Co.....	June	10 “	“
Chippawa—Norton Co.....	June	25 “	Replacement
Cobalt.....	July	15 “	New
Cochrane.....	March	10 “	New. Two machines
		20 “	
Dunnville.....	May	40 “	Replacing bleach equipment
Elsas—Continental Wood Products Co	“	25 “	New
Essex.....	March	10 “	Replacing bleach equipment
Fort Erie.....	August	10 “	New
Goderich.....	June	25 “	Replacing bleach equipment
Grimsby.....	July	10 “	New
Hanover.....	September	10 “	Replacing bleach equipment
Hornepayne—C.N. Railway.....	April	10 “	New
Huntsville.....	July	25 “	“
Iroquois Falls.....	June	100 “	Duplication
Kapuskasing.....	March	20 “	“
Kingston.....	July	40 “	“
Langstaff—Toronto Jail Farm.....	October	10 “	Two new machines
Lindsay.....	August	30 “	Replacement
London.....	June	10 “	New. Emergency only
Meaford.....	April	10 “	New
New Toronto.....	May	25 “	.....
Port Colborne—Canada Cement Co.....	October	100 “	New
Port Colborne—International Nickel Co.....	August	25 “	Replacement
Port Credit.....	June	10 “	New
Stamford Township.....	“	10 “	“
Sturgeon Falls.....	September	25 “	Replacing bleach equipment
Teck Hughes Gold Mines.....	December	10 “	New
Thessalon.....	November	20 “	“
Thorold—Beaver Board Co.....	July	10 “	“
Thorold—Ontario Paper Co.....	“	5 “	“
Thorold—Pilkington Glass Works.....	“	15 “	“
Toronto.....	“	300 “	Duplication
Welland—Electro Metallurgical Co.....	“	10 “	Replacement
Weston.....	September	50 “	Replacing bleach equipment
Total—35 installations.			

PLANTS PURCHASED AND TO BE INSTALLED DIRECTLY

Kirkland Lake—Township of Teck.....	20 pounds	New
North Bay.....	15 “	“
Timmins—Hollinger Mines.....	75 “	“

TABLE 2 B

MUNICIPAL WATER CHLORINATION PLANTS
Municipalities Using Approved Liquid Chlorine Equipment

Municipality	Date of Installation	
	Chloride of Lime Equipment	Liquid Chlorine Equipment
Alliston.....	.....	1923
Amherstburg.....	1912	1919
Belleville.....	1916	1919
Brampton.....	.....	1920
Brantford.....	1914	.....
Brockville.....	1912	1916
Burlington.....	.....	1922
Capreol.....	.....	1922
Chatham.....	1912	1918
Cobalt.....	.....	1923
Cochrane.....	.....	1923
Collingwood.....	.....	1917
Copper Cliff.....	.....	1916
Cornwall.....	.....	1920
Courtright.....	.....	1920
Crystal Beach.....	.....	1922
Cutler.....	.....	1919
Depot Harbor.....	.....	1919
Dundas.....	.....	1917
Dunnville.....	1918	1923
Espanola.....	.....	1919
Essex.....	1921	1923
Fort Erie.....	.....	1923
Fort Frances.....	1912	1922
Goderich.....	1916	1923
Grimsby.....	1916	1923
Guelph.....	1915	1920
Haileybury.....	1914	1922
Hanover.....	1921	1923
Hawkesbury.....	.....	1918
Hornepayne.....	.....	1923
Huntsville.....	.....	1923
Ingersoll.....	.....	1916
Iroquois Falls.....	.....	1917
Kapuskasing.....	.....	1920
Kenora.....	1912	1922
Kingston.....	1912	1919
Lindsay.....	.....	1917
London (emergency use only).....	.....	1923
Meaford.....	.....	1923
Merritton.....	.....	1920
Napanee.....	.....	1920
New Toronto.....	1915	1923
Niagara Falls.....	1913	1916
Oakville.....	1914	1922
Orillia.....	1912	1917
Oshawa.....	1916	1917
Ottawa.....	1912	1916
Parry Sound.....	1916	1922
Pembroke.....	1914	1919
Peterboro.....	.....	1916
Port Arthur.....	1913	1914
Port Credit.....	.....	1923
Rainy River.....	1916	1922
Rockland.....	.....	1917
St. Catharines.....	.....	1914

TABLE 2 B
MUNICIPAL WATER CHLORINATION PLANTS
Municipalities Using Approved Liquid Chlorine Equipment

Municipality	Date of Installation	
	Chloride of Lime Equipment	Liquid Chlorine Equipment
Sandwich.....	1913	1917
Sarnia.....	1912	1917
Sault Ste. Marie.....	1913	1919
Smith's Falls.....	.....	1916
Smooth Rock Falls.....	.....	1918
Stamford Township.....	.....	1923
Strathroy.....	1916	1918
Sturgeon Falls.....	.....	1923
Sudbury.....	1915	1919
Thessalon.....	.....	1923
Thorold.....	.....	1915
Timmins.....	.....	1921
Toronto.....	1909	1917
Walkerville.....	1913	1919
Welland.....	.....	1917
Weston.....	1916	1923
Whitby.....	1920	1920
Windsor.....	1913	1917

TABLE 2 C
LIQUID CHLORINATION PLANTS IN ONTARIO FOR TREATMENT OF WATERS
OTHER THAN MUNICIPAL SUPPLIES

Location	Operated by	Date of First Installation	Remarks
Amherstburg.....	Brunner Mond, Canada.....	1919	Town use also
	Detroit & Windsor Ferry Co.....	.....	.....
	Island Pleasure Resort.....	.....	.....
Belleville.....	Canada Cement Co.....	1923	.....
Capreol.....	Canadian National Railways.....	1922	Town use also
Chippawa.....	Norton Co.....	1917	.....
Copper Cliff.....	International Nickel Co.....	1916	Town use also
Courtright.....	Western Salt Co.....	1920	" " "
Crystal Beach.....	Amusement Co.....	1922	" " "
Cutler.....	Spanish Mills.....	1919	" " "
Depot Harbour.....	Grand Trunk Railway.....	1919	" " "
Elsas.....	Continental Wood Products Co.....	1923	.....
Erie Beach.....	Swimming Pool.....	1923	.....
Espanola.....	Spanish River Pulp & Paper Co.....	1919	Town use also
Goudreau.....	Goudreau Gold Mines, Limited.....	.....	.....
Hawkesbury.....	Riordon Pulp & Paper Co.....	1917	.....
Hornepayne.....	Canadian National Railways.....	1923	Town use
Iroquois Falls.....	Abitibi Power & Paper Co.....	1917	" "
Jordan.....	Dominion Canners.....	1920	.....
Kapuskasing.....	Dominion Experimental Farm.....	1920	.....
	Spruce Falls Co.....	1920	Town use
Kingston.....	Penitentiary.....	1922	.....
	Royal Military College.....	1918	.....
Kitchener.....	Y.M.C.A. Swimming Pool.....	1921	.....
Langstaff.....	Toronto Jail Farm.....	1923	2 machines
Murray.....	British American Nickel Co.....	1917	.....
Port Colborne.....	Canada Cement Co.....	1923	.....
	International Nickel Co.....	1919	.....
	Maple Leaf Milling Co.....	1919	.....
Smooth Rock Falls.....	Mattagami Pulp & Paper Co.....	1918	.....
Teck Hughes.....	Teck Hughes Gold Mines.....	1923	.....
Thorold.....	Beaver Board Co.....	1923	.....
	Ontario Paper Co.....	1923	.....
	Pilkington Glass Works.....	1923	.....
Toronto.....	Broadview Y.M.C.A.....	1922	.....
Welland.....	Electro Metallurgical Co.....	1916	.....
	Union Carbide Co.....	1920	.....

TABLE 2 D
WATER CHLORINATION PLANTS
Chloride of Lime Equipment

Municipality	Date of Installation	Remarks
Cobourg.....	1917	.....
Deseronto.....	1923	Fire supply
Keewatin.....	.....	.....
Midland.....	.....	.....
Niagara-on-the-Lake.....	1915	.....
Perth.....	1915	.....
Port Colborne.....	1914	.....
Port Hope.....	1914	.....
Port Stanley.....	.....	.....
Prescott.....	1920	.....
Renfrew.....	1915	.....
St. Thomas.....	1913	.....
Tecumseh.....	1918	.....
Wallaceburg.....	1915	.....

TABLE 3
MUNICIPAL WATER SUPPLIES
Deep Wells, Springs, and Other Supplies in Use Without Treatment

Municipality	Population	Source of Supply
Acton.....	1,800	Wells
Aurora.....	2,400	"
Aylmer.....	2,300	Wells and springs
Barrie.....	7,000	Wells
Beamsville.....	1,200	Springs
Beeton.....	600	"
Bothwell.....	600	Wells
Bowmanville.....	3,500	Skinner's Spring
Bracebridge.....	2,500	Wells (artesian)
Brighton.....	1,400	Springs
Chesley.....	1,800	Wells
Clinton.....	2,000	"
Cochrane.....	2,200	Deep wells (new supply)
Coldwater.....	700	Springs
Creemore.....	600	"
Durham.....	1,600	"
Elmira.....	2,400	Wells
Englehart.....	700	"
Fergus.....	1,800	"
Fort William.....	21,000	Loch Lomond
Galt.....	14,000	Springs
Georgetown.....	2,100	"
Gore Bay.....	600	"
Harriston.....	1,300	Wells
Kitchener.....	23,000	"
Leamington.....	3,900	"
Listowel.....	2,500	"
London.....	60,000	Springs and wells
Markdale.....	900	Spring Creek
Markham.....	.....	Springs
Midland.....	7,000	"
Mildmay.....	.....	Wells
Millbrook.....	800	"
Milton.....	.....	Springs
Mitchell.....	1,700	Wells
Mount Forest.....	1,800	"
New Liskeard.....	2,000	Springs
Newmarket.....	3,400	Wells
Norwich.....	1,300	"

TABLE 3—Continued
MUNICIPAL WATER SUPPLIES
Deep Wells, Springs, and Other Supplies in Use Without Treatment

Municipality	Population	Source of Supply
Orangeville.....	2,500	Springs
Palmerston.....	1,800	Wells
Paris.....	4,400	Springs
Parkhill.....	1,200	Wells
Penetanguishene.....	4,000	Springs and wells
Port Elgin.....	1,400	Springs
Preston.....	5,500	"
Ridgetown.....	2,300	Wells
St. George.....	.....	Springs
St. Mary's.....	4,000	Wells
St. Thomas.....	18,000	Wells (partial supply)
Seaforth.....	2,000	Wells
Shelburne.....	1,100	"
Simcoe.....	4,000	Springs
Stayner.....	1,000	"
Stouffville.....	1,100	"
Stratford.....	18,000	Wells
Tavistock.....	1,000	"
Tillsonburg.....	3,000	Springs
Trenton.....	5,900	"
Walkerton.....	1,500	Springs
Waterloo.....	2,400	Wells
Wingham.....	6,000	"
Woodstock.....	2,500	Springs

TABLE 4
MUNICIPAL WATERWORKS SYSTEMS
Municipal Supplies Used for Fire Protection Only

Municipality	Population	Source of Supply	Date of Installation
Alvinston.....	841	Sydenham River	1893
Blyth.....	700	Blyth Creek	1911
Caledonia.....	1,000	Grand River	1870
Campbellford.....	3,000	Trent River	1890
Deseronto.....	1,800	Bay of Quinte	1897
Dresden.....	1,500	Sydenham River	1912
Exeter.....	1,500	Au Sable River	1911
Lucknow.....	900	Nine Mile River	1890
Napanee.....	3,000	Napanee River	1890
Paisley.....	800	Saugeen River	1888
Pictou.....	3,000	Bay of Quinte	1889
Port Perry.....	1,200	Lake Scugog	1905
Strathroy.....	2,600	Sydenham River	1903
Streetsville.....	600	Credit River	1912
Teeswater.....	850	Teeswater River	1889
Thamesville.....	800	Cornwall Creek	1911
Tilbury.....	1,900	Baptiste Creek	1902
Uxbridge.....	1,500	Ponds	1874

Special investigations were made during the year to assist the municipalities of Chatham, Essex, Forest and Richmond Hill in solving obscure problems in connection with their water supply.

At Chatham the problem was one of treating a very highly turbid water present in the Thames for a short period during the spring run-off, which hitherto had not been successfully combated. By means of some modifications to their

settling basins and the application of alum at certain strategic points in the basins this difficulty was completely overcome, so that the citizens were able to enjoy for the first time clear water during the spring run-off.

At Essex the problem was one of freeing the deep-well supply of sulphur, in order that it might be effectively chlorinated with a minimum of chlorine. This was accomplished by the introduction of air through filter plates suspended in their storage well. As is elsewhere noted this very simple provision permitted the municipality to chlorinate with a dosage of 3.0 P.P.M., whereas the dosage formerly, 30-40 P.P.M., was unable to produce sterility before being air-treated.

At Richmond Hill the problem was one of overcoming the taste and colour due to the presence of iron in their filtered supply. It was readily ascertained that the difficulty arose from their stream, due to the blanket of ice, which excluded air and prevented the oxidation of the iron which normally occurred. The situation was immediately corrected when air was introduced into the settling basin in connection with the filter plant, through diffusor plates.

At Forest the problem was one of discovering means whereby a highly-charged carbonated water naturally soft could be freed of its medicinal property. It was found that the water very readily released its carbon dioxide when aerated in storage tanks by means of air introduced through diffusor plates.

The use of air through diffusor plates is a novel procedure, but has particular merit in that it promotes effective aeration without introducing the difficulties of freezing which surround plants attempting to use sprays during the winter months.

The question of water supplies on steamboats playing the Great Lakes was considered early in the year, at the request of the United States Public Health Service, at a conference in Washington.

Later, by an agreement with Ottawa, regulations were drafted in this office. These were accepted by the Dominion Department of Health, and during the summer were enforced with the assistance of the laboratories of the Board.

The regulations are as follows:

REGULATIONS CONCERNING WATER FOR DRINKING AND CULINARY
PURPOSES ON VESSELS NAVIGATING ON THE GREAT LAKES AND
INLAND WATERS

1. Water furnished on such vessels for drinking and culinary purposes shall at all times be a potable water free of pathogenic bacteria and shall comply with the standard for drinking water and culinary water, namely: Shall not contain organisms of the colon group in excess of 2 per 100cc. of the water determined by the presumptive test as adopted by the American Public Health Association in their standard (current) methods for bacteriological examination of water. (Phelps' Method of Calculating.)

2. Water tanks for holding water for drinking and ordinary purposes shall not, except as herein provided, be filled from other than certified sources.

3. Water taken aboard from uncertified sources or from overboard en route for drinking and culinary purposes shall not be deemed satisfactory for the purpose of these regulations save and when treated by a process or processes that will yield a water of the prescribed standard, and no such system shall be installed except with the certified approval of the Department of Health of Canada.

4. All piping systems arranged for the express purpose of conveying water for drinking and culinary purposes shall at all times be maintained and operated under the direction of a certificated officer or engineer, and all such systems shall be operated without a connection to any other water system aboard.

5. Faucets, cocks, taps or other convenient outlets, subject to the direction of the Department of Health of Canada, other than the necessary hose connections, shall not be maintained on water systems other than the drinking and culinary supply, except as herein provided, and all such outlets shall be provided with a sign reading, "DO NOT DRINK THIS WATER," which shall be maintained in a conspicuous position.

6. Water containers, including raw water storage tanks, shall be identified as such by a conspicuous sign. They shall be sealed or kept under lock and key and at all times be maintained in a sanitary condition and cleaned as herein provided. The insertion of hose into such container or storage tank is hereby prohibited. Vents to such containers shall terminate in a return bend, and all outside vents through the hull of the ship shall discharge at least ten feet above the water line. Some form of protection, such as wire mesh, should be maintained over the opening to prevent the insertion of extraneous matter by unauthorized persons.

7. (a) Water held for drinking and culinary purposes in water containers, bubblers, or water-chilling systems shall not come in contact with the ice.

(b) Ice used for cooling table water shall be a clear and sanitary ice and shall be stored in a clean place and before the ice is placed in the water or water receptacle it shall be carefully washed and handled in a sanitary manner.

(c) Water coolers and containers shall be cleansed at least once a week while in use, and it is recommended that, where possible, the containers should have a steam pipe play the inside with live steam for a period of five minutes after thorough cleansing.

To clean storage tanks.—Before putting ships into commission, all drinking and culinary storage tanks must be scrubbed, flushed, and rinsed. During the season scrubbing of the interior of storage tanks on vessels, or the entrance into them for purposes other than repairing, is forbidden, but the storage tanks should be, every two weeks, drained and flushed, using for the final flushing a solution equivalent to one pound hypochlorite of lime of a strength not less than 25 per cent. available chlorine to 5,000 gallons of water; this solution to be driven through the whole system connected therewith to the faucets and afterwards thoroughly rinsed with water from a certified source.

To prepare solution.—Take one pound of hypochlorite of lime of a strength not less than 25 per cent. available chlorine for each 5,000 gallons capacity to be used; rub up with a small quantity of water in a pail. When thoroughly rubbed up, add water to fill the pail; thoroughly mix and let stand for 15 to 20 minutes to allow of sedimentation. Pour the fluid into a container, refill the pail with water and stir thoroughly and again allow to sediment for 15 minutes, decant the solution into a container and repeat for a third time, when all the available chlorine will have practically been extracted from the hypochlorite of lime. Pour all three then into the tank water to be disinfected.

8. For the better enforcement of these regulations every master shall post in a conspicuous place certificates as provided by sections 9 and 10, and no vessel, save as herein provided, shall leave port after the opening of navigation, 1924, without such a certificate or certificates.

9. The following conditions and practices may constitute grounds for issuing "Non-compliance notices":—

- (1) Careless or insanitary handling of water from sources of supply to storage tanks and to points of consumption.

- (2) Existence of by-passes around water treatment or purification apparatus. The physical disconnection and the removal of the short section of pipe, or an equally effective measure, will be insisted upon for any such circuit. Single or double-check valves in any such circuit will not be approved.
- (3) Failure to post warning signs over faucets at which water other than drinking water is available.
- (4) Having other than purified water available in galley or kitchen excepting the raw water used for the hot water supply, with a special hot-water tank, and, also, excepting the raw-water tap in the galley for scrubbing purposes, not over eighteen inches (18") from the floor, if properly posted, and upon condition that a certified supply is available at the galley or kitchen-quarter sinks.
- (5) Failure to maintain in a sanitary condition water storage tanks and a water supply system aboard vessels.
- (6) Storage of drinking water in tanks, formed in part or whole by the hull or deck of the vessel when the latter is insufficiently protected, and, also, tanks through which the drains or sewer pipes pass.

10. *Inspection Certification.*—(a) A temporary certificate may be issued on presentation of a sworn statement of the company, properly executed, to the effect that it has inspected the system aboard the vessel and found the drinking-water system to be in accordance with the regulations as herein provided.

(b) A regular certificate may be issued, following the inspection of the drinking-water system by a duly authorized agent or inspector of the Department of Health of Canada. The inspection itself consists of the physical examination of the entire drinking-water system of the vessel, including the filling and distributing pipes and equipment for water-storage tanks and water-treatment apparatus.

- (1) The method by which water obtained from certified sources ashore is delivered to the vessel (and care of the hose) shall be made a part of the inspection of the drinking-water system of the vessel. Where the company reports that water is obtained from certified sources ashore, when applying for a temporary certificate, they also shall furnish the names of the piers in the port or ports on which filling hydrants are located.
- (2) Inspection of passenger vessels shall be made, where possible, first, before the vessel goes into commission for the season, and, second, reinspection shall be made from time to time during the navigation season for the purpose of checking the operation of treatment apparatus, and for the purpose of observing changes, in accordance with "Non-compliance notices." If on inspection the drinking-water system conditions are found to be not in accordance with the regulations, a "Non-compliance notice" shall be left with the master.

11. (a) Certificate forms in the prescribed type for water supplies used for the aforesaid purposes shall be procured from the Department of Health of Canada, Ottawa, Ont., and posted as provided in section 8.

(b) The Department of Health of Canada shall at all times maintain a record of the condition and character of the water supply available at certified sources, and such list or such information shall at all times be available to owners, agents, and masters of vessels operating on the Great Lakes and inland waters.

In the following prescribed areas water shall not be obtained overboard except with the knowledge and consent of the Department of Health of Canada:—

The harbour at Fort William; the harbour at Port Arthur, within an area of ten (10) miles of the aforesaid harbours; the lower St. Mary's river and within a distance of ten miles of the locks in the upper river; in the harbours, or within two miles of them; in the north channel in Georgian Bay, or within five miles of Lake Huron ports; the St. Clair river; port of Sarnia; Lake St. Clair; Detroit river; western end of Lake Erie, within sixteen miles of the Detroit river; any port in Lake Erie, or within five miles thereof; the upper Niagara; the lower Niagara; any point in Lake Ontario, within ten miles of the Niagara river; any harbour in Lake Ontario, within eight miles thereof, including Hamilton bay and Toronto bay; the Bay of Quinte; the St. Lawrence river, or any ship canal connected therewith below the town of Brockville.

12. Every vessel or steamboat company shall, on or before the last day of January, file with the Department of Health of Canada at Ottawa, three copies of a report giving the name, the vessel company, managing official, headquarters office, ports of call, season, names of vessels, character (passenger or freight), source of drinking, culinary and ablutionary water, together with the pier location; treatment of water on vessel, nature and date of last certificate, whether "Temporary" or "Non-compliance."

13. Application for a temporary certificate, including the company's statement of the drinking-water system, shall be filed with the Department of Health of Canada not later than the last day of March in each year.

14. For all new ships to be constructed after April 1, 1924, a blue print showing the location of, and protection provided for, all water systems or tanks intended to be used for the supply, or holding, of water for drinking or culinary purposes shall be submitted to the Department of Health of Canada for approval.

The matter of the better control of swimming pools, referred to in my report for 1922, has been dealt with by the following regulations, which you approved of at the meeting of the Board held the 17th of December, 1923.

REGULATIONS GOVERNING THE CONSTRUCTION AND MANAGEMENT OF SWIMMING POOLS

Section 1.—These regulations shall apply to swimming pools operated in connection with any school, hospital, or educational institution, or any Y.M.C.A. or Y.W.C.A., or any athletic association, or to pools inviting public patronage, but shall not apply to baths or pools where use is restricted to therapeutic purposes.

Section 2.—The water in every swimming pool must not be artificially heated to a temperature above 72° F. The room containing the pool shall be properly ventilated, and the temperature of the air at artificially heated pools must not be permitted to become more than 8°F. warmer nor more than 2°F. colder than the water in the pool at any time when the pool is in use, except in the case of pools operated in the summer as open-air pools. It is recommended that the air temperature should be 5°F. warmer than the pool temperature.

Section 3.—Provision shall be made at every such pool for the effective cleansing of the person of all bathers before entering the pool, and the use of such provisions shall be compulsory. All apparatus for this purpose shall be subject to inspection, and approval of the local Board of Health, and no pool shall be continued in use for which the approval of the local Board of Health

has not been obtained in writing under the signature of the Medical Officer of Health and the inspector of such premises.

Section 4.—The number of bathers using a swimming pool during any twenty-four hour interval shall not exceed twenty (20) persons for each thousand gallons of clean water added to the pool during that period, and at no time shall the number of bathers exceed three (3) persons per 1,000 gallons total capacity. The term clean water as used shall be interpreted to mean new, clean water used to refill the pool, new clean water used to replace loss by splashing or during cleaning, water taken from the pool and returned after effective filtration, or any combination of such waters.

Section 5.—At all times when the pool is in use the water shall be reasonably free from algae growths and sufficiently clear to permit a black disk six inches in diameter, on a white field, when placed at the bottom of the pool at the deepest point to be clearly visible from the side-walks of the pool at all distances, up to ten (10) yards, measured from a line across the pool through said disk.

Section 6.—There shall be maintained in the water of all swimming pools during the bathing period, an amount of available excess chlorine not less than 0.2 parts per million, nor shall the excess be more than 0.5 parts per million, as determined colorimetrically with recognized standard ortho-tolidin solution.

Section 7.—Whenever alum or sulphate of alumina are used in connection with the purification or re-purification of swimming pool waters, the water at all times, when the pool is in use, shall show an alkaline reaction to Methyl Red.

Section 8.—There shall be maintained in connection with every swimming pool, sanitary conveniences, located adjacent and opening into the dressing or shower-bath rooms.

Section 9.—The connection for the re-circulation of water in swimming pools shall be made at a point which will permit of effective drainage of the floor of the pool, and every pool shall be provided with a scum gutter at or near water-level of sufficient depth to preclude re-entry of drainage, and all such gutters shall be connected through a handhole trap to a sewer.

Section 10.—The floors of all areas adjacent to the swimming pool, shower and dressing rooms shall be effectively drained and every such floor shall be constructed of impervious material.

Section 11.—Bathing suits and towels must be washed and handled in a manner satisfactory to the local Medical Officer of Health.

Section 12.—Each swimming pool shall be under the supervision of a responsible and trained operator, and no bathing shall be permitted in the absence of such supervision.

The operation of the new statute in respect to the correction of the pollution of streams by industries, prejudicial to agricultural interests, was tested out during the year in connection with Sixteen Mile creek in the vicinity of Milton, Ontario. The officers of this Department on several occasions inspected the pollution complained of, and made the following suggestions:—

(1) *The Robertson Iron Works.*—Robertson's, Limited, plant discharges daily from ten to fifteen thousand gallons of waste liquors, containing among other things 250 to 300 lbs. of 66° Be. sulphuric acid, a considerable quantity of iron, and the drainage from the septic tanks. This is discharged into a pond about 65 feet square, and, perhaps, 3 feet deep, located on the bank of the river. The liquid seeps away through the soil. There is ample evidence, however, that the pond overflows from time to time. This has occurred in the present year.

Should this pond overflow and cut its bank at a period of minimum stream flow, the waste would probably be dangerous to cattle for a distance of several miles.

Robertson's, Limited, should at all times prevent any overflow from this pond to the river. The storm water should be diverted by an open ditch and carried directly to the river. If this is done there would be no trouble from this source.

(2) *The Milton Worsted Knitting Mills.*—The Milton Worsted Yarn and Knitting Mills discharge about 6,000 gallons of waste liquor per day. These liquors contain, besides the residual dye stuff, about 12 lbs. of sulphuric acid. No wool is washed in this plant, but about 5 lbs. of soap compound are used daily as a water softener. These waste liquors might cause trouble during periods of minimum flow, and they most certainly cause a serious discoloration of the stream. If these liquors are discharged into the stream when the grist mill is operating, the colour is rapidly lost in the dilution. When the discharge into the stream is at a time of minimum flow, as often happens, the colour will persist for miles. On July 5th the stream was discoloured for over three miles, but the quantities were so small that the analyses were useless. This company has made no effort to remedy this condition, although a method for effectual removal of the colour has been pointed out to them.

(3) *The Halton Creamery.*—This plant has installed two small tanks for the treatment of their waste. The tanks, however, are too small, and apparently no drainage is provided for. The tanks overflow and the effluent runs down the bank. For a distance of some five or six yards the banks are covered with decomposing creamery waste. There are masses of flies and a noticeable bad odour. Samples of mud secured from this area were filled with maggots. It is altogether a most undesirable condition.

(4) There are several tile drains discharging into the creek which give every evidence of carrying septic tank effluent.

Samples of the waters of the creek were collected. These showed the discoloration and the pollution of these waters from the various sources herein referred to.

In view of the aforementioned facts, the Provincial Board makes the following recommendations, viz.:

- (1) That Robertson's, Limited, make the improvement suggested.
- (2) That the Milton Worsted Yarn & Knitting Company decolour their waste with chloride of lime, as already detailed to the company manager.
- (3) That the Halton Creamery Company install a tile drainage area in connection with their tanks, so that at no time will the direct overflow from the tank reach the river.
- (4) That the local Board of Health enforce the regulations prohibiting the discharge of private sewers into the river.

The lawyer for the plaintiff then took the matter before Chief Justice Orde and secured the following order:—

“Offending companies to remove or abate injury in terms of Board's report and unless they comply therewith within thirty days from this order they are thereafter restrained from continuing the acts complained of until the injury has been abated to satisfaction of Provincial Board. Applicant to get costs of application as against the two companies which actively oppose it. Reasons handed to Mr. Brown, the reporter.”

The routine work of the office in connection with applications presented for the extension of sewerage and water systems continues to increase, the total amount involved for 1923 being \$11,292,701.44, which is subdivided as follows:—

Sewers and sewer extensions—291 certificates \$6,169,221 51
Waterworks and water purification—210 certificates 5,123,479 93

In concluding my report, I should like to direct your attention to the work of Mr. A. V. DeLaporte and Mr. A. E. Berry. Mr. DeLaporte has been responsible for the direction of the sanitary surveys and the experimental station. Mr. Berry has devoted a great deal of his time to a consideration of the problem of garbage collection and disposal in Ontario municipalities, and a very comprehensive statement of his findings is included in this report.

In addition, he was responsible for the supervision of some excellent work, carried on by Mr. Campbell at Whitby Institution, as to the effect of the sterile milk utensils on the keeping quality of the article. Some very encouraging results were obtained.

CERTIFICATES ISSUED *Re* SEWER EXTENSIONS FOR THE YEAR 1923.

Municipality	No. of Certificates	Extensions	Disposal	New	Industrial and Institutional Systems
Barrie	4	\$3,288 67			
Belleville	5	78,320 31			
Bowmanville	1	745 23			
Brantford	1	48,733 45			
Brantford Twp.	1	1,891 00			
Brockville	1	18,523 50			
Campbellford	2	9,879 20			
Chatham	5	9,170 60			
Chippawa	1			\$56,385 00	
Cobourg	3	19,873 37			
Cochrane	1	19,500 00	\$23,000 00		
Cornwall	2	3,009 30			
Dunnville	1	2,184 45			
Eastview	1	22,430 14			
Elmira	1	4,816 80			
Englehart	1	9,239 28			
Etobicoke Township	1			4,000 00	
Ford City	5	335,912 52			
Fort Erie	1			35,000 00	
Fort William	2	5,348 55			
Galt	19	197,428 46			
Goderich	3	4,557 30			
Great Lakes Paper Co., Fort William	1				\$12,235 63
Guelph	3	39,570 00	83,500 00		
Haileybury	1	1,800 00			
Hamilton	8	992,468 47			
Kapuskasing	3	44,843 41	15,000 00		
Kingston	4	15,874 46			
Kitchener	6	61,879 90			
Lafleshville	1	3,600 00			
Leamington	2	15,921 55			
Leaside	3	45,918 84			
Lindsay	3	10,063 16			
London	13	225,326 37			
Midland	1	16,131 25			
Mimico	4	12,416 75			
Newmarket	2	5,363 93			
Nelson Township	1	11,484 00			

CERTIFICATES ISSUED *Re* SEWER EXTENSIONS FOR THE YEAR 1923
—Continued.

Municipality	No. of Certificates	Extensions	Disposal	New	Industrial and Institutional Systems
Niagara Falls.....	7	\$49,682 88			
North Bay.....	3	22,874 32			
Oakville.....	1	2,899 93			
Orillia.....	20	48,488 13			
Oshawa.....	3	58,441 10			
Ottawa.....	29	130,445 86			
Owen Sound.....	3	55,472 00			
Pembroke.....	3	6,022 42			
Peterborough.....	3	10,261 40			
Port Dalhousie.....	3	38,658 47			
Port Dover.....	1			\$30,000 00	
Port Hope.....	5	12,938 00			
Port Nelson.....	1	6,568 78			
Preston.....	2	2,078 80		5,610 00	
Renfrew.....	1	1,959 10			
Riverside.....	3			117,970 67	
Sandwich.....	5	66,621 94			
Sarnia.....	2	14,070 59			
Simcoe.....	3	10,647 26			
Smith's Falls.....	7	19,986 30			
St. Catharines.....	3	6,322 45			
St. Thomas.....	1	3,895 82			
Stamford Township.....	2			463,656 28	
Stratford.....	5	39,359 61	\$35,000 00		
Thorold.....	1	750 00			
Thurlow Township.....	1	150 00			
Timmins.....	1	24,550 00			
Toronto.....	31	1,196,246 00		42,681 00	
Toronto Gen. Trusts Corp.....	1				\$26,600 00
Trenton.....	4	93,332 16			
Walkerville.....	3	173,236 60			
Waterloo.....	1	28,419 18			
Welland.....	2	4,768 15			
Weston.....	2	91,538 50			
Whitby.....	3	3,428 46			
Windsor.....	3	10,047 20			
Woodstock.....	1	2,907 30			
York Township.....	3	679,000 00	5,000 00		
	291	\$5,213,582 93	\$161,500 00	\$755,302 95	\$38,835 63

SUMMARY

Extensions.....	\$5,213,582 93
Disposal Works.....	161,500 00
New.....	755,302 95
Industrial and Institutional Systems.....	38,835 63
	\$6,169,221 51

CERTIFICATES ISSUED *Re* WATERMAIN EXTENSIONS, PURIFICATION, ETC.,
FOR THE YEAR 1923.

Municipality	No. of Certi- ficates	Extensions	Purification	New	Industrial and Institutional Systems
Acton.....	1	\$2,300 00			
Alliston.....	1		\$11,577 00		
Amherstburg.....	1	16,700 00			
Belleville.....	1			\$94,000 00	
Bowmanville.....	3	11,677 56			
Brockville.....	2	14,360 00			
Burlington.....	1	10,674 32			
Canadian National Railway, Depot Harbour.....	1				
Carleton Place.....	1	30,750 00			
Chippawa.....	1			74,359 00	
Cochrane.....	1	37,500 00	30,000 00		
Collingwood.....	2	31,000 00			
Dryden.....	1			30,000 00	
Durham.....	1			116,800 00	
Eastview.....	1	15,245 00			
Elmira.....	2	16,500 00		6,000 00	
Englehart.....	1	8,884 62			
Essex.....	1	36,000 00			
Etobicoke Township.....	7	307,160 50			
Fonthill.....	3	53,850 00			
Ford City.....	1	21,058 71			
Forest.....	1			102,038 00	
Fort William.....	6	20,127 96			
Galt.....	5	38,158 17			
Grantham Township.....	2	8,029 00			
Gravenhurst.....	1	4,153 14			
Great Lakes Paper Co., Fort William.....	1				\$13,292 55
Grimby.....	2	16,351 53			
Haileybury.....	2	21,645 44			
Hamilton.....	3	86,266 00			
Hanover.....	1	7,600 00			
Hespeler.....	3	4,864 50			
Hollinger Consolidated Gold Mines, Limited.....	1				77,870 00
Kapuskasing.....	2	21,993 65			
Kitchener.....	5	32,351 98			
Leaside.....	2	12,253 77			
Lindsay.....	1	17,953 09			
London.....	1	75,000 00			
Meaford.....	1	10,000 00			
Mimico.....	1	1,660 24			
Mitchell.....	1	1,001 85			
Nelson Township.....	1	9,061 36			
New Liskeard.....	2	20,981 10			
Newmarket.....	3	25,037 50			
New Toronto.....	2	52,741 07			
Niagara Falls.....	1	18,768 51			
North Bay.....	1	38,317 00			
North York.....	3	24,170 50		130,000 00	
Oakville.....	1	1,400 00			
Oshawa.....	4	101,848 48			
Pembroke.....	2	22,749 95			
Peterborough.....	2	20,865 13			
Port Colborne.....	2	6,000 00	78,000 00		
Port Credit.....	2	33,800 75			
Port Dover.....	3	49,790 00			
Preston.....	1	9,291 93			
Richmond Hill.....	1	35,000 00			
Riverside.....	18	73,115 07			
Sandwich.....	4	32,668 62			

CERTIFICATES ISSUED *Re* WATERMAIN EXTENSIONS, PURIFICATION, ETC.,
FOR THE YEAR 1923—Continued.

Municipality	No. of Certificates	Extensions	Purification	New	Industrial and Institutional Systems
Sandwich Township.....	3	\$67,237 82			
Scarborough.....	3	87,784 80			
Seaforth.....	1	4,702 50			
Smith's Falls.....	2		\$178,000 00		
Stamford Township.....	1	873 63			
St. Clair Beach.....	2			\$30,270 90	
St. Mary's.....	1	10,110 42			
Stratford.....	2	17,673 25			
Sturgeon Falls.....	2	3,083 74	2,545 00		
Sudbury.....	1	4,407 57			
Teck Township.....	2			72,344 00	
Tecumseh.....	1	11,094 12			
Thessalon.....	1	11,000 00			
Thornbury.....	3	41,400 00			
Timmins.....	1	54,145 00			
Toronto.....	36	1,548,134 43			
Trafalgar Township.....	1			101,000 00	
Trenton.....	1	30,000 00			
Walkerton.....	1	20,000 00			
Waterloo.....	1	2,700 00			
Weston.....	2	27,189 00	3,000 00		
Whitby.....	2	15,434 20			
Windsor.....	1	150,000 00			
Woodbridge.....	1	22,000 00			
York Township.....	9	274,735 00			
	210	\$3,972,383 48	\$303,122 00	\$756,811 90	\$91,162 55

SUMMARY

Extensions.....	\$3,972,383 48
Purification.....	303,122 00
New.....	756,811 90
Industrial and Institutional Systems.....	91,162 55
	<u>\$5,123,479 93</u>

This leads the division to suggest that a service in connection with milk supplies, similar to that offered to the municipalities in respect to water supplies, might be developed were some amendments made in the Milk Act to permit of provincial regulations re cleansing of bottles and other utensils.

One of the inherent difficulties in the sanitation of milk supplies was the lack of a method suitable for sterilizing containers for a small dairy, where the installation of steam equipment would financially embarrass the industry. The experiments in this connection have been carried on by Mr. Berry and it would appear that this difficulty may be overcome through the use of chlorine solutions for the final rinse. The economic advantage, as shown from our experiment, is so great that I do not imagine that there will be any opposition from the producers to such a programme; in fact, there is assurance that we will have their most hearty co-operation.

The Experimental Station during the year completed a most valuable report on the merits of a system of sewage treatment known as the direct oxidation process. The report in this connection is somewhat voluminous and

is available in a separate report to the Department. I might say, however, in passing that this process is an attempt at improving the well-known lime precipitation process which has been in use in England and elsewhere for a number of years and generally abandoned on account of the cost of chemical adjustment. The process, however, yields an effluent which is quite clear, providing the settling tanks are all of sufficient capacity and one which is bacteriologically quite satisfactory for the discharge of it to streams. In this it compares favourably with the activated sludge process. The effluent, however, contains so much free caustic that there is a doubt in our minds as to whether the process is adaptable to the smaller streams where the causticity might have considerable effect upon the organic life of the stream. Furthermore, the process possesses so little advantage over the older one, that in Ontario, where the cost of electric power is low, this Department believes there is no field for this method. The activated sludge system of disposal continues, therefore, unrivalled in the field of sewage disposal in Ontario.

All of which is respectfully submitted.

F. A. DALLYN, C.E.,
Director, Sanitary Engineering Division.

Division of Sanitary Engineering

BULLETIN No. 11

The Keeping Qualities of Milk as Affected by the Various Factors
Which Enter Into the Production and Handling

A. E. BERRY, M.A.Sc., C.E. (Tor.)

A Comparison of the Differential Media Used in the Isolation of
B. Coli in Water Analysis

H. E. P. VALE, B.A.

The Collection and Disposal of Municipal Refuse

A. E. BERRY, M.A.Sc., C.E. (Tor.)

Some Results Obtained from Aeration of Water Supplies Using an
Air Compressor and Diffusor Plates

A. V. DELAPORTE, B.A.Sc., A.M.E.I.C., and G. A. H. BURN, B.A.Sc.

The Protection of Wells Used as a Source of Domestic Water Supply

Study of Pretreatment of Thames River Water at Chatham

A. V. DELAPORTE, B.A.Sc., A.M.E.I.C., and G. A. H. BURN, B.A.Sc.

THE KEEPING QUALITIES OF MILK AS AFFECTED BY THE VARIOUS FACTORS WHICH ENTER INTO THE PRODUCTION AND HANDLING

A. E. BERRY, M.A.Sc., C.E. (TOR.)

With a view to determining the relative importance of various factors in the production and handling of milk, the Sanitary Engineering Division undertook in the summer of 1923 an investigation and series of experiments at the dairy farm in connection with the Ontario Hospital at Whitby. Conditions there were quite favourable for such work. A large herd was available, and the barns were well equipped with modern improvements. The dairying operations were carried on in a manner which might be looked for on the average dairy farm producing milk for sale. A description of the equipment and methods used will serve to illustrate the conditions under which these experiments were performed.

STABLES

The barns are modern in every respect with well-cleaned concrete floors, steel cow stanchions, good lighting, a tight ceiling and water always available for the cows. The manure was removed regularly from the stable to the yard and later to the fields.

MILKING

The work at the barns, including milking, was carried on almost completely by patients of the institution under the supervision of outside foremen. Milking was done partly by hand and partly by machine. Stripping of machine-milked cows was all done by the patients. A certain number of the best cows were hand-milked by foremen, a practice which afforded a good opportunity for procuring uniform methods. Dry milking was practised by all the foremen, but a number of patients were in the habit of wet milking, i.e., moistening the teats and hands with milk.

MILKING HOURS

The milking hours observed throughout the summer were: 5 a.m., 1 p.m., 5 p.m., and 8 p.m. The four periods were used in order to have fresh milk as it was required, and to avoid milking too many cows at one time.

The stables were cleaned and the cows fed just prior to the 8 p.m. milking. This involved the distribution of feed and bedding, from which a considerable quantity of dust was scattered and was still present while the milking operations were going on.

UTENSILS

The milking machines were of the common type operated by suction created through a gasoline engine driven unit. Two cows were milked simultaneously by the one machine. Considerable difficulty was encountered in keeping the cups of the machine on the teats. They frequently fell to the floor and were liable to become contaminated by the bedding and manure. Stable dust was entirely excluded from this milk by the closed-top construction of the receiving pail on the machine.

For hand-milking different types of pails were used. The foremen used the ordinary open-top pails, while the patients, for stripping, were given pails provided with a removable top and a small funnel-shaped arrangement somewhat similar to a common watering can. The milker uses this pail as a stool and milks directly into the funnel. This should exclude from the milk practically all stable dust and dirt from the cow.

MILK ROUTINE

The methods in use did not aim to produce a specially clean milk—a difficult problem with that type of milker—but the results were quite comparable to that obtained on the present-day average dairy farm. Each cow's milk was weighed and strained into an eight-gallon can through a copper gauze and two thicknesses of cheesecloth. Upon completion of milking, the cans were taken from the stable to the pasteurizer located in the basement of one of the buildings. Here the milk was heated to about 170°F. and held for a few minutes. It was then cooled in running water and delivered to the various parts of the institution. None of this milk was more than twenty-four hours old when consumed. What was not required for use at the institution was shipped to the Queen Street Hospital in Toronto.

CLEANING OF UTENSILS

The pails used for milking were washed in cold and hot water in the building adjoining the stable. They were then inverted and allowed to dry. Steam or disinfectants were not used for sterilization. The milk cans were washed in the pasteurizing room, and a steam jet was provided for sterilizing.

OBJECT OF TESTS

The chief object of the experiments was to determine the relative importance of the following four factors in milk production and handling:—

- (1) The care of utensils.
- (2) The care of the cow.
- (3) The stable.
- (4) The personal element.

In previous experimental work it has been customary to consider almost entirely the bacterial content of the milk under various conditions. In view of the fact that there is not necessarily any specific relation between the amount of dirt, the bacterial content, and the keeping qualities of the milk it was decided in these experiments to determine in each case not so much the bacterial content as the keeping qualities of the milk, a factor which is of economic importance especially where milk is not to be consumed for some time after milking. Tests were consequently made at various hours to detect the increase in acidity resulting from the breaking down of lactose by the action of micro-organisms. Titrations were made on the milk, using decinormal sodium hydroxide and phenolphthalein. It was agreed for this work to consider the milk as sour when an acidity of 0.35 per cent. had been reached. At this point milk possesses an odour and is no longer salable or fit for human consumption.

The results of the various series of experiments are tabulated herewith:—

(1) THE CARE OF UTENSILS

Series A:

A comparison of the keeping qualities of milk stored in sterile and non-sterile 8-gallon milk cans.

For this test two 8-gallon milk cans were used. One was sterilized by steam and the other washed but not steam-treated. Fresh milk was permitted to stand in these cans for periods of definite duration. Samples were then collected into sterile bottles and their keeping qualities determined at room temperature (20 to 25 degrees C.).

THREE-HOURS STORAGE IN CANS

<u>Steam-sterilized Can</u>		<u>Washed Can</u>	
27½ hours	.....	24 hours	
20 "	.....	15 "	
22 "	.....	20 "	
27 "	.....	18 "	
34 "	.....	28 "	
51 "	.....	35 "	
<hr/>		<hr/>	
Average 30	"	23	"
Percentage improvement.....		30%	

FOUR-HOURS STORAGE IN CANS

<u>Sterile Can</u>		<u>Washed Can</u>	
27 hours	.....	24 hours	
27 "	.....	23 "	
28 "	.....	24 "	
48 "	.....	44 "	
48 "	.....	45 "	
50 "	.....	31 "	
32 "	.....	27 "	
29 "	.....	26 "	
45 "	.....	43 "	
32 "	.....	27 "	
32 "	.....	26 "	
28 "	.....	17 "	
44 "	.....	28 "	
33 "	.....	31 "	
<hr/>		<hr/>	
Average 36	"	Average 30	"
Percentage improvement.....		20%	

NOTE—This series was run separately and at a different time from those giving 3, 6, 9 and 11 hours storage.

SIX-HOURS STORAGE IN CANS

<u>Sterile Can</u>		<u>Washed Can</u>	
22 hours	.....	20 hours	
20 "	.....	14.5 "	
20 "	.....	18 "	
20 "	.....	17 "	
50 "	.....	34 "	
<hr/>		<hr/>	
Average 26	"	Average 20	"
Percentage improvement.....		30%	

NINE-HOURS STORAGE IN CANS

<u>Sterile Can</u>		<u>Washed Can</u>	
22 hours	.....	19 hours	
19 "	.....	14 "	
18 "	.....	17 "	
19 "	.....	16 "	
33 "	.....	27 "	
49 "	.....	32 "	
<hr/>		<hr/>	
Average 27 "		Average 21 "	
Percentage improvement.....30%			

ELEVEN-HOURS STORAGE IN CANS

<u>Sterile Can</u>		<u>Washed Can</u>	
16 hours	.....	13 hours	
12 "	.....	10 "	
12 "	.....	10 "	
12 "	.....	10 "	
19 "	.....	15 "	
30 "	.....	23 "	
38 "	.....	28 "	
<hr/>		<hr/>	
Average 20 "		Average 15½ "	
Percentage improvement.....29%			

Series B:

A comparison of the keeping qualities of milk stored in 8-gallon cans, which have been subjected to varying heat treatments:—

Four cans were used in this series. One was rinsed for several minutes in scalding water, another was steamed for 5 minutes, a third for 3 minutes and the fourth for half-minute.

Milk was allowed to stand in these for 4 hours.

The keeping qualities were as follows:—

<u>Scalded Can</u>	<u>5-Minute Steam Treatment</u>	<u>3-Minute Steam Treatment</u>	<u>½-Minute Steam Treatment</u>
35 hours	45 hours	44 hours	33 hours
33 "	46 "	42 "	31 "
52 "	55 "	54 "	47 "
53 "	67 "	65 "	49 "
42 "	61 "	62 "	40 "
49 "	56 "	62 "	48 "
34 "	53 "	52 "	32 "
35 "	52 "	54 "	33 "
54 "	53 "	49 "	34 "
55 "	54 "	51 "	32 "
52 "	51 "	49 "	28 "
<hr/>		<hr/>	
Average 45 "	Average 54 "	34 "	28 "
		<hr/>	
		Average 50 "	Average 36 "

Percentage improvement:—

Five-minute steam treatment over scalding.....	20%
" " " " 3-minute steaming.....	8%
" " " " ½-minute steaming.....	50%
Three- " " " " scalding.....	11%
" " " " ½-minute steaming.....	29%
Scalding over ½-minute steaming.....	25%

Series C—Milking Pails:

A determination of the effect of the cleansing of milk pails upon the keeping qualities of the milk.

In this series samples of milk were collected from two pails, one of which had been thoroughly sterilized by steam and the other washed, rinsed in hot water and allowed to dry, while inverted. The samples were collected directly after milking. The foremen did the milking for these tests. The keeping qualities at room temperature were as follows:—

<u>Sterilized Pail</u>		<u>Unsterilized Pail</u>	
42	hours	36	hours
29	"	26	"
45	"	36	"
43	"	31	"
36	"	24	"
40	"	24	"
41	"	30	"
54	"	32	"
51	"	27	"
50	"	34	"
67	"	44	"
91	"	45	"
102	"	36	"
<hr/>		<hr/>	
Average	53 "	Average	33 "
Percentage improvement		60%	

Series D:

A further series of tests was completed, using sterile and washed pails respectively, in which the patients at the institution did the milking. Most of this was strippings after the milking machine had been used. These pails were of the spout type with covered tops, in which the milker sits on the pail and milks into the spout. Various conditions, such as dry and wet milking and the personal element, entered into these tests and the results are consequently less uniform and give a much shorter souring time than when the milking was performed by a trained milker under uniform conditions.

The keeping qualities are as follows:—

<u>Sterilized Pail</u>		<u>Unsterilized Pail</u>	
24	hours	16	hours
30	"	13	"
20	"	18	"
29	"	21	"
24	"	16	"
34	"	21	"
28	"	29	"
24	"	12	"
26	"	18	"
<hr/>		<hr/>	
Average	26½ "	Average	18 "
Percentage improvement		47%	

Series E:

A comparison of the keeping qualities of milk, using dirty, chemically cleaned, and steam sterilized milk pails. In these tests the dirty pail was one which had been used for milking and allowed to stand unwashed overnight, or a similar length of time—a practice which is sometimes found in small dairies. The chemically cleaned pail was treated with a washing compound.

The keeping qualities at room temperature were as follows:—

Unwashed Pail		Chemically-treated Pail		Steam-sterilized Pail	
24 hours	.....	30 hours	.....	36 hours	
16 "	.....	34 "	.....	42 "	
28 "	.....	40 "	.....	51 "	
14 "	.....	37 "	.....	50 "	
27 "	.....	40 "	.....	49 "	
16 "	.....	35 "	.....	48 "	
12 "	.....	40 "	.....	41 "	
27 "	.....	30 "	.....	38 "	
12 "	.....	22 "	.....	38 "	
12 "	.....	26 "	.....	40 "	
..	.....	31 "	.....	42 "	
28 "	.....	22 "	.....	46 "	
11 "	.....	25 "	.....	50 "	
28 "	.....	44 "	.....	53 "	
26 "	.....	38 "	.....	51 "	
Average 20 "		Average 33 "		Average 45 "	

Percentage improvements:—

Chemically-treated over dirty pail.....	65%
Steam-sterilized over dirty pail.....	125%
Steam-sterilized over chemically-treated pail.....	36%

Series F:

Sterilization of milk pails by a chlorine solution at Mimico.

This series was undertaken at the dairy farm in connection with the Ontario Hospital at Mimico on December 10th, 11th and 12th, 1923. Samples were collected from washed milk pails; and from those washed and immersed in a chlorine solution.

The milking in this series was all done by patients of the institution—a factor which did not in any way tend to produce uniform results, except by averaging the results for the entire supply. Owing to the cold weather at the time of the tests and due to the retention of the milking pails in a cold room, there was not an opportunity for any bacteria left in the pails after cleansing to multiply to the same extent as would be expected in warmer weather. The samples collected were incubated both at 20° C. and 37° C.

The keeping qualities were as follows:—

AT ROOM TEMPERATURE (20° C.)

Chlorinated Pail		Unchlorinated Pail	
70 hours	.....	49 hours	
71 "	.....	26 "	
72 "	.....	49 "	
55 "	.....	55 "	
77 "	.....	57½ "	
44 "	.....	58 "	
78 "	.....	44 "	
76 "	.....	50½ "	
71 "	.....	55½ "	
Average 68 "		Average 49 "	

Percentage improvement.....39%

At 37° C.

Chlorinated Pail		Unchlorinated Pail	
22½ hours	.....	17½ hours	.....
21½ "	.....	10½ "	.....
23 "	.....	17½ "	.....
15 "	.....	20 "	.....
24 "	.....	19½ "	.....
13 "	.....	10½ "	.....
15½ "	.....	15 "	.....
21½ "	.....	17 "	.....
22½ "	.....	15 "	.....
Average 20 "		Average 16 "	
Percentage improvement.....		25%	

Series G—Sterilization of Milk Bottles:

A series to compare the efficiencies of steam and scalding water on milk bottles. Three bottles were used. One had been treated with live steam for 5 minutes, a second for ½ minute, and a third immersed in scalding water (200° F. to 212° F.) for 5 minutes.

The keeping qualities were as follows:—

5-Minute Steam Treatment		½-Minute Steam Treatment		5 Minutes in Scalding Water	
65 hours	.....	49 hours	.....	62 hours	.....
60 "	.....	49 "	.....	52 "	.....
69 "	.....	65 "	.....	58 "	.....
45 "	.....	26 "	.....	49 "	.....
64 "	.....	33 "	.....	55 "	.....
45 "	.....	41 "	.....	42 "	.....
50 "	.....	46 "	.....	47 "	.....
67 "	.....	45 "	.....	55 "	.....
Average 58 "		Average 44 "		Average 52½ "	

Percentage improvement:—

- Five minutes steam over half-minute steam treatment.....32%
- Five minutes steam over five minutes scalding water.....10.5%
- Five minutes scalding water over half minute steam treatment.10%

Series H—Milking Machines:

To determine the effect of the cleanliness of the milking machine on the keeping qualities of the milk:—

In this series two milking machines were used. One was made as clean and sterile as possible by steaming the pail and using a washing compound on the tubing and cups and then immersing in a brine solution. The other was washed in the usual manner, but not sterilized.

Keeping qualities:—

<u>Sterilized Machine</u>		<u>Washed Machine</u>	
44	hours	34	hours
48	"	38	"
49	"	34	"
54	"	33	"
61	"	36	"
60	"	32	"
36	"	40	"
50	"	26	"
50	"	36	"
37	"	24	"
38	"	26	"
30	"	35	"
40	"	27	"
42	"	30	"
42	"	26	"
<hr/>		<hr/>	
Average	45½ "	Average	32 "
Percentage improvement.....		42%	

Series I:

A further series with two milking machines was carried out. One was washed in the usual manner while the second was cleaned in a strong washing solution, rinsed in hot water, drained and allowed to dry.

Keeping qualities:—

<u>Thoroughly Washed Machine</u>		<u>Washed Machine</u>	
54	hours	35	hours
40	"	34	"
45	"	41	"
61	"	55	"
58	"	51	"
72	"	61	"
64	"	59	"
49	"	45	"
53	"	45	"
65	"	45	"
59	"	52	"
58	"	49	"
58	"	45	"
<hr/>		<hr/>	
Average	56½ "	Average	47½ "
Percentage improvement.....		16%	

(2) THE CARE OF THE ANIMAL

Series A:

A series to determine the effect of cleanliness of the cow upon the keeping qualities of the milk.

Two cows were tested under similar conditions except that the flanks and udder of one were thoroughly brushed and wiped with a damp cloth some time prior to milking. No special attention was given to the cleaning of the other. The milking was done in each case by a foreman, and in sterile pails.

Keeping qualities:—

<u>Cleaned Cow</u>		<u>Uncleaned Cow</u>	
72	hours	56	hours
63	"	47	"
77	"	52	"
79	"	65	"
82	"	46	"
76	"	49	"
65	"	53	"
79	"	50	"
80	"	45	"
<hr/>		<hr/>	
Average	75 "	Average	51.5 "
Percentage improvement.....		46%	

(3) THE STABLE

Series A:

A determination of the effect of the dust or other material in the air of the stable upon the keeping qualities of the milk.

For this series two cows were used, one (isolated cow) of which was kept in a separate stable as free as possible from dust or other material which might gain access to the milk. Both cows were thoroughly cleaned and given the same attention. The same party did the milking and used every precaution to obtain a clean milk under the two different conditions. Wide-mouth pails were used in both instances.

Keeping qualities:—

<u>Isolated Cow</u>		<u>Herd Cow</u>	
49	hours	49	hours
41	"	39	"
49	"	39	"
38	"	35	"
35	"	35	"
38	"	36	"
32	"	35	"
38	"	33	"
35	"	39	"
36	"	37	"
22	"	36	"
42	"	40	"
<hr/>		<hr/>	
Average	38 "	Average	38 "
Percentage improvement.....		Nil	

(4) THE PERSONAL ELEMENT

Series A:

A series to determine the effect of the milker upon the keeping qualities of the milk.

For these tests the milker, in the first instance, took no extra precautions as to personal cleanliness, while in the other he used a clean suit and washed his hands and arms before milking. The cow was cleaned prior to milking and removed to a dust-free stable. The milk pails were all sterilized by steam. A comparison was also made with milk obtained under the best conditions while using a milking machine, namely, a sterile utensil, clean cow and stable free from dust.

Keeping qualities at room temperature:—

No Special Precaution	HAND MILKED		Best Machine Milk
	Special Precautions		
51 hours	52 hours		50 hours
57 “	56 “		53 “
68 “	67 “		74 “
69 “	74 “		64 “
72 “	75 “		73 “
57 “	65 “		56 “
75 “	76 “		74 “
—	—		—
Average 64 “	Average 66½ “		Average 63½ “

Percentage improvement:—

Best hand milk over ordinary.....4%
 “ “ “ “ machine milk.....4.7%
 Ordinary hand milk over machine milk—very slight.

Series B—Wet and Dry Milking:

This series of tests was carried out with a view to comparison of the keeping qualities with wet and dry milking. The conditions, other than this, were kept as uniform as possible with sterile utensils and uniform methods.

Keeping qualities:—

<u>Dry Milking</u>		<u>Wet Milking</u>	
50 hours	.....	45 hours	
53 “	.....	40 “	
43 “	.....	32 “	
47 “	.....	34 “	
40 “	.....	30 “	
53 “	.....	49 “	
49 “	.....	47 “	
55 “	.....	53 “	
62 “	.....	69 “	
—	—	—	—
Average 50 “		Average 44 “	
Percentage improvement.....		11%	

SUMMARY AND CONCLUSIONS

An analysis of the results obtained in these experiments should be made in conjunction with the conditions surrounding the tests. The conditions at this farm could not be considered as entirely ideal, nor yet as poor, but they would compare quite favourably with those found on the average dairy farm of similar proportions, where milk is produced for sale as such. Any of the factors considered in this study might prove to be of greater importance under extreme conditions. Either a very dirty cow, a very dusty stable or gross carelessness on the part of the milker might be responsible for comparatively brief-keeping qualities of the milk, but such conditions are not commonly encountered where any supervision or care at all is in practice. Consequently, these various factors met with in the production of milk should properly be considered under conditions which are fairly normal in present-day dairying.

The results obtained on the 8-gallon cans indicate an improvement in keeping qualities of 20 to 30 per cent. in the sterilized over the unsterilized can. It is important to note that the milk used in this test was taken from the general supply, i.e., milked by machine and stripped by the patients, and therefore

subject to somewhat wide variations. The storage period in the cans appeared to have little effect, as the 11-hour storage gave the same results as the 3-hour period. The milk pails in which there was no storage, except the time required to milk the cow, gave somewhat higher results than the cans. The sterilized pail showed an improvement of 60 per cent. over the washed pail and 125 per cent. over the unwashed pail. The steam-sterilized pail also gave an improvement of 36 per cent. over the chemically-treated pail. The results on the milking machines indicate an improvement of 42 per cent. in the sterilized over the washed. The lower per cent. improvement (16 per cent.) in the machine in which a washing solution was used in comparison with one washed in the normal way shows that steam treatment is much superior for this purpose than washing soda or similar compounds. A very considerable improvement (46 per cent.) was noted in the cleansing of the cow. This was, of course, in open-mouthed pails, and it would be quite possible to eliminate the major portion of this dirt by the use of modern, small-top utensils. The improved stable conditions gave no noticeable superiority in keeping qualities, while extreme personal cleanliness showed only 4 to 11 per cent. improvement. The effects of wet milking would, however, be largely dependent on the cleanliness of the milker. One party might, under such conditions, procure a supply vastly superior to another of less cleanly habits.

From the foregoing data it is evident that the utensils are the major factor to be considered in the production of a clean milk of maximum keeping qualities. Not only do the utensils prove to be a prolific source of bacterial contamination, but the organisms are apparently of a type which produce rapid souring. Adequate steam treatment or where this is impractical, chlorination, is most essential in the care of utensils. Next to the utensils appears the necessity for thorough cleansing of the flanks and udders of the cow, and the use of small-mouthed pails. The other factors, namely, the condition of the stable and the personal element, are of minor consideration except where gross negligence is encountered.

The effect of temperature upon the keeping qualities of milk has not been included in these results, although it is of the utmost importance in the handling of milk subsequent to production. Many of the adverse conditions associated with production may be mitigated by the maintenance of a low temperature during transportation. This, however, should not take the place of adequate precautions and cleanliness in the methods of production. Clean milk of low initial contamination is more desirable than that in which the development of the organisms has been retarded by low temperatures.

A COMPARISON OF THE DIFFERENTIAL MEDIA USED IN THE ISOLATION OF *B. COLI* IN WATER ANALYSIS

H. E. P. VALE, B.A.

The object of these tests was to make a direct comparison of the more commonly used differential media with a view to facilitating a choice of the most convenient one for *B. coli* isolation. The differential media are constituted in such a way as to give maximum proliferation of a specific group of bacteria and, if possible, to inhibit the growth of other bacteria, as well as providing some constituent which will indicate the probable presence of the specific species. The present day water bacteriological laboratory has a wide choice of media for such purposes both for enrichment and for confirmation.

CHARACTERISTICS OF *B. COLI COMMUNIS*

This organism is a short plump rod 1.3 micra long and varying in width from one-third to one-fifth of its length. Under varying conditions of cultivation it may appear to be more slender and after growth in water for some time it usually appears singly but occasionally it may be in short chains. It stains with the usual aniline dyes and is decolorized by Gram's method. Spores are not formed. In young cultures it is actively motile but in old cultures, or those that have been grown on laboratory media for some time, there is little or no motility. It has the following reactions which are typical, and separate it from all other bacteria. It is anaerobe and facultative anaerobe with an optimum temperature for growth of 37.5°C, although some growth will appear between 20 and 40°C. In broth it first gives rise to a general clouding and later to a pellicle and light slimy sediment. On agar it forms grayish colonies which, as they grow older, become more and more opaque. It will ferment dextrose, lactose, mannit, maltose and dulcitol with the formation of acid and gas; it produces indol with peptone solution, will liquefy gelatine slowly and has a negative Voges Proskauer reaction. The property of fermenting lactose with the production of acid and gas is made use of in water analysis to indicate its presence.

ENRICHING MEDIA

The direct isolation of *B. coli* on solid media is to be recommended in highly polluted waters. If however, it is necessary to plate as much as 5 c.c. of water this method becomes impractical or if the incidence of the colon group is small the organisms may be completely hidden and hard to recognize. Consequently for its isolation from relatively large quantities of water where its occurrence is not general it is preferable to use a preliminary enrichment medium. This is an indirect method but, from a practical standpoint, is far superior to the direct plating method. The media more commonly used for enrichment are lactose broth, lactose peptone bile, and safranin broth.

To make a comparison the following procedure was adopted: Dilutions of sewage, 1-1,000, 1-5,000 and 1-10,000 were used and a set of eight tubes of each media viz: lactose broth, lactose peptone bile and safranin broth, inoculated with the following amounts of the dilution, 1-1,000, 1-100, 1-10, 1, 5, 10, 25 and 50 c.c. The twenty-four tubes were then incubated for twenty-four hours at 37.5°C and examined. The tubes showing ten per cent. of gas, or more were withdrawn and confirmed on eosin methylene blue agar. Suspicious colonies

were fished, replated, and slides were made, while one of the typical colonies was put through a methyl red test. The remaining tubes were then put back and incubated for another twenty-four hours after which all tubes, whether with more or less than ten per cent. of gas, were confirmed as before. This procedure was gone through with 212 sets and the following results obtained:

(1) In 57 per cent. of the samples, lactose broth gave a positive test in greater dilution than either the lactose bile or safranin lactose broth. The lactose bile gave a positive presumptive test, in 1.3 per cent. of the samples, in greater dilution than the lactose broth or the safranin lactose broth. The safranin lactose broth in no instance gave positive tests in greater dilution than the lactose bile or the lactose broth.

(2) All tubes which at the end of forty-eight hours showed less than 10 per cent. of gas were considered as doubtful. On subsequent examination it was found that *B. coli* could be isolated from better than 79 per cent. of these tubes.

(3) In 45 per cent. of the experiments where the last tube of safranin broth was doubtful and subsequently confirmed positive, the corresponding tube of lactose broth showed 10 per cent. or more of gas in forty-eight hours. In 31 per cent. of the cases where the last dilution of lactose bile broth was doubtful, the corresponding dilution of lactose broth was positive in forty-eight hours.

(4) The colon group was detected and confirmed in greatest dilutions by the various media according to the following percentages:—

	Per cent.
Lactose broth	57
Lactose bile broth	1.3
Safranin broth	0
Lactose broth and bile broth	30
Positive for all three	12

From these experiments it is concluded that the use of lactose broth is to be preferred as a preliminary enrichment medium. None of these media possess any particular advantage over the others in ease of preparation. It is worthy of note that the production of gas in the case of the lactose bile is at first more rapid than in the case of lactose broth or safranin and, further, that at the end of twenty-four hours it is equal to or slightly greater than in the case of lactose broth. This would naturally suggest that some product of the metabolism of *B. coli* forms a compound with some constituent of the bile which is inhibitory to the further growth of the organism. The selective action of safranin on organisms other than *B. coli* does not justify itself in these experiments. The inhibitory action of bile is marked but it has this in its favour as pointed out in Creel, namely, that the growth of spore forming anaerobes is very much less in bile than in the broth. Results even more striking than this have been obtained by other workers. Cummings, working on river waters, comes to the conclusion that 50 per cent. of the colon organisms are lost if preliminary enrichment is carried out with bile. Obst and Hauser came to the same conclusion. From the speed with which the gas is produced in the case of the bile, it seems likely that, if the inhibiting factor was found and the various constituents altered, this medium would be better than the broth now employed. The Committee on Standard Methods (1912) suggested that this inhibitory action is exerted on attenuated forms of *B. coli*.

CONFIRMATION MEDIA

The purpose of a confirmation medium is twofold, first to determine if *B. coli* is present and, second, to determine what variety of micro-organisms are present along with it. The media most commonly employed for this purpose, are:—

Endos medium
Lactose litmus agar
Lactose andrade agar
Eosin methylene blue agar
Neutral red agar.

The presence of *B. coli* is detected by its acid production from lactose, the presence of which is shown by an indicator. One of the main duties of a confirmation medium is to rule out the probable presence of *Bacillus lactis aerogenes*, an organism which also ferments lactose with the production of acid and gas, and has practically the same morphology as *B. coli communis*. *Bacillus lactis aerogenes*, as usually found, is slightly longer and more slender than *B. coli*, has a wide distribution in nature and is not generally considered an index of pollution. The ideal medium for confirmation is one in which *B. coli* can be readily recognized and, further, one by means of which the *aerogenes* section can be distinguished from it.

Endo's medium perhaps has the widest use to-day for this purpose, probably as a matter of habit, but it does not appear to be the most suitable because of the difficulties associated with its preparation, its method of adjustment of reaction, which is, to say the least, very unsatisfactory and because, in comparison with other media, it gives us no additional information. The method of adjustment of reaction is by titration with phenolphthalein, and the addition of sodium carbonate to increase the alkalinity. This naturally tends for lack of uniformity in the media, some lots being useless. For the bacteriologist who has a limited amount of time at his disposal this presents a constant source of worry. There is a further difficulty in that the different laboratories use different concentrations of indicators, and the appearance of a typical *B. coli* colony must therefore be described for each concentration of indicators used, a problem which leads to endless confusion. Another objection to Endo's medium is that for good results it must be prepared fresh every few days and this is associated with an added danger of breaking up of the lactose in sterilization. This medium has not been found preferable in any respect to the eosin methylene blue agar.

The chief objection to the lactose litmus agar arises from the fact that the time of pouring plates is very much increased because a definite amount of dye must be put separately into each plate before pouring. This method also increases the chance of contamination. There is a further objection in that great care is necessary for its preparation, and since the lactose is added before autoclaving the danger of hydrolysis is always present. Work with these media indicates that lactose has less tendency to break up if the medium is autoclaved for fifteen minutes at fifteen pounds pressure, instead of being sterilized in the Arnold on three successive days by the fractional method. These objections to the lactose litmus agar, namely, that the time of pouring plates is greatly increased and that fresh solutions of litmus must be prepared every few days and sterilized (as commercial litmus powder diluted and left unsterilized was found to produce a plentiful crop of various molds in a few days) is overcome by bringing the Ph of the agar to 7.2 just before sterilization

and adding one per cent. of andrades indicator. This type of confirmation medium has been found to be quite satisfactory, but it is considered that for water analysis eosin methylene blue agar is preferable for the following reasons:

Eosin methylene blue agar is easily prepared. There is no filtering and no adjustment of reaction and large quantities can be made and kept for months. The dyes are not added separately to each petri dish, as in the case of the lactose litmus agar, but to the flasks which contain the agar preparation. This facilitates a rapid and easy method of pouring plates. It has also been found that poured plates of this medium are much less likely to become contaminated than any of the above media, since they can be kept for a week in a cool dark place with relatively very little contamination. This agar is much more easily melted before pouring than is the case with either of the above media. The chief advantage, however, of eosin methylene blue agar is that with a little practice one can readily distinguish between *B. coli* and *Lactis aerogenes*. In the case of *B. coli*, the colony is 2 to 3 m.m. in diameter, shows no tendency to confluence, is very slightly raised above the medium and has a black centre. *Lactis aerogenes* colonies are 4 to 6 m.m. in diameter, show great tendency to confluence and are much more highly raised above the medium, exhibiting a moist slimy glistening appearance. Very often the *B. coli* colonies will show a greenish, glistening, metallic sheen but this does not always occur and therefore is not wholly diagnostic for the *Bacillus*.

To sum up the various media. Eosin methylene blue agar seems most suitable for confirmation work for the following reasons: (1) Its ease of preparation; (2) its permanence both as regards the agar and poured plates and (3) its constancy of composition and freedom from the vagaries of the other confirmation media.

It is necessary that a microscopical examination be made of all suspicious colonies and that a methyl red test be also made so as to give an absolute differentiation between the colon and *Lactis aerogenes* sections. This process takes very little time but gives the bacteriologist a somewhat better insight into the morphology of the organism with which he has to deal. Ten smears can be put on one slide and several slides can be stained conveniently at one time.

There are a few organisms which ferment lactose and may sometimes be confused with *B. coli* and in turn confuse the results of the water examination. The first is *Lactis aerogenes* which has been dealt with above, and which can be differentiated on the confirming medium or, better still, with a methyl red or Voges Proskauer reaction. Lactose fermenting streptococci are frequently present in water, but they can be readily distinguished from the colon colony on solid media by the pin-head size and half-sphere shape. In making slides of suspicious colonies the colonies of this organism are easily eliminated. Another very frequently occurring bacterium is a fine gram negative bacillus about one to two microns in length and about a quarter as wide. It is not a typical *B. coli* in that it gives a negative Voges Proskauer reaction, and the colonies on agar are slightly more raised and more granular than *B. coli*. One organism isolated on two occasions from samples of well water possesses all the *B. coli* reactions and has its appearance in growth (with the difference that the colonies are slightly larger and more granular). It has a central spore and no motility.

Experience has shown that it is advisable to put not more than two conformations on one plate and that the inoculations be fairly heavy (one loopful for each), and that the loop be drawn straight across the plate and lifted to start the next streak.

THE COLLECTION AND DISPOSAL OF MUNICIPAL REFUSE

BY A. E. BERRY, M.A.Sc., C.E. (TOR.)

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1.—INTRODUCTION

The collection and disposal of municipal wastes dates back to that period when there existed a misconception in regard to the origin of disease. From time immemorial vapours and emanations, gaseous or otherwise, have been believed to be the frequent cause of disease. These miasms were thought to arise from stagnant marshes, decaying vegetation, putrid animal matter and indeed filth of every kind. This belief in the extra-corporal origin of disease reached its widest acceptance about the middle of the nineteenth century. The rise of the

germ theory strengthened it. The discovery of bacteria and of their wide distribution, and almost universal growth in dead organic substances and the theory that these bacteria were the real cause of disease, led scientists to look for the source of disease outside of the body, and chiefly in dead animal and vegetable matter. Remedial and preventive measures based on such beliefs in the omnipotence of environment naturally sought to remove household refuse and wastes of all description.

The refuse problem is to some extent a hygienic one, although it is more a question of economy, convenience and general cleanliness. Only indirectly is it a matter which concerns public health. Bad odours arising from the fermentation of garbage do not produce any specific diseases, yet they are offensive and their elimination is an important consideration. Ashes and street dust may irritate the eyes, nose, and throat and predispose one to bacterial infection. Accumulating rubbish is not only unsightly but may provide conditions favourable for mosquito breeding, while fermenting garbage and manure is a most suitable nidus for the breeding of flies. The role which these insects play in the spread of infectious diseases makes municipal refuse, although indirectly, a factor in relation to public health.

The development of methods for the collection and disposal of municipal refuse has been slow but progressive. In the early days the care of such material was left to the individual, who was advised to burn the combustible parts, and to deposit the non-combustible on low areas or at points sufficiently remote to avoid any objection. When garbage or other material of any food value was deposited outdoors, it was picked over and largely removed by birds and wandering animals. This practice sufficed where the population was not congested, and the accumulation did not become extensive.

The rapid growth of municipalities with centralized development, congested areas, and higher standards of living, brought into prominence the question of a more adequate disposal of those wastes resulting from the natural activities of the community. England led this progressive movement, and started works in the cities and towns to provide for such material. Germany followed and advanced the subject both in theory and in practice. France was chiefly interested in utilizing the valuable parts of the refuse. America was fortunate in that she was able, before attempting any methods of her own, to profit by the knowledge and practical experience gained through the operation of the European systems. The more important methods introduced in the "Old Land" were tried out on this continent, and others have been developed to meet the changed conditions resulting from a greater wastefulness of the people and a higher per capita production of salable refuse. The destruction of refuse in furnaces and the utilization of the heat produced has been considered most favourably by the large European cities. This is apparently due to the absence of those materials, in sufficient quantities as to make economical the extraction of grease and other salable products, so commonly recovered from the wastes of American cities.

The development of disposal methods in municipalities of modern growth is somewhat analogous to those changes through which the general problem has passed from the time of its inception. The primary methods adopted by localities of small population are usually somewhat ineffective, but tend to open the way for more serviceable practices. Little attention is normally given to this question until water and sewerage facilities have been established and the population has reached a sufficient size to conveniently carry the financial burden. Certain summer resorts, frequented chiefly by people accustomed to having a

garbage collection, are, however, an exception to this and possess quite modern and adequate methods. It is rather unfortunate that earlier attention is not given to this problem, since the financial burden of incineration or other extensive disposal works does not necessarily need to be a part of these early schemes. The initial service often provides only for the business sections, but as the demand increases the collection is extended to other sections, and the disposal methods altered to meet these conditions. The initial selection of a system should be such that additions may be made from time to time without creating works which will eventually become unsuited to the local requirements. The unfortunate location of a disposal site might sometime develop into a real transportation difficulty.

The relative magnitude of the problem of refuse collection and disposal can be seen from a comparison of the financial statistics of United States cities as shown in tables No. 1 and No. 2. In table No. 1 is given the per capita cost of the various departments included in the government of these cities according to population groups. In the grand total column of this table for all cities, the Division of Sanitation or promotion of cleanliness ranks sixth with a per capita cost of \$1.58. Table No. 2 indicates the services upon which this amount is spent. Over seventy per cent. is used for refuse collection, while this combined with refuse disposal accounts for four-fifths of the total amount spent on sanitation or the promotion of cleanliness. The amount spent on "sewerage and sewage disposal" is, in comparison, quite small. From a financial aspect, therefore, refuse collection and disposal is by far the most important problem which comes under the sanitation of cities.

Two view points may be utilized in consideration of the problem of collecting and disposing of wastes, namely, that of sanitation, and that of economics. Present day authorities place the former in the position of prominence. It should, very properly, be associated with economical results, but the desire to produce a revenue should not eclipse and alter the methods necessary to obtain sanitary results. The commercial consideration in several instances becomes too prominent, with the result that the most suitable works for efficient sanitary results are either not established at all, or not as soon as conditions warrant their use.

TABLE NO. 1.
FINANCIAL STATISTICS OF U. S. CITIES—1918

Governmental cost payments for expenses of general departments by principal divisions of the general departmental service—per capita rate.

Department	Group I	Group II	Group III	Group IV	Group V	Grand Total
All general departments.....	\$24.06	\$22.66	\$16.41	\$14.40	\$14.93	\$20.11
General Government.....	2.97	2.65	1.18	1.14	1.20	2.14
Police Department.....	2.90	2.22	1.67	1.38	1.28	2.19
Fire Department.....	1.59	2.14	1.75	1.59	1.56	1.69
Conservation of Health.....	0.62	0.67	0.41	0.30	0.33	0.51
Sanitation or promotion of cleanliness.	1.93	1.60	1.35	1.17	1.08	1.58
Highways.....	2.14	2.65	1.90	1.58	1.88	2.06
Charities, Hospitals and Corrections..	2.18	2.02	0.78	0.50	0.55	1.48
Education.....	7.08	6.77	6.05	5.80	6.11	6.56
Recreation.....	.87	0.79	.62	0.43	0.41	0.70

The cities have been placed in groups according to the following populations:

- Group I—500,000 and over.
- Group II—300,000 to 500,000.
- Group III—100,000 to 300,000.
- Group IV— 50,000 to 100,000.
- Group V— 30,000 to 50,000.

TABLE No. 2

DIVISION OF COST FOR SANITATION OR PROMOTION OF CLEANLINESS

Group Number	Total per capita Cost	Percentage Division of per capita cost				
		Sewerage and Sewage Disposal	Refuse Collection	Refuse Disposal	Public Convenience Stations	Other Sanitation
I.	\$1.93	13.0%	77.0%	5.9%	0.6%	3.5%
II.	1.60	16.5	71.2	5.2	0.6	6.5
III.	1.35	13.8	74.7	5.4	1.0	5.1
IV.	1.17	19.5	70.0	5.1	0.9	4.2
V.	1.08	21.2	69.0	5.1	0.5	4.2
Grand Total for All Groups.....	\$1.58	14.9%	74.5%	5.7%	0.5%	4.4%

The term "Wastes" broadly defined, includes all classes of surplus or unnecessary organic or inorganic matter produced as a result of living. This classification may be in turn subdivided into the two general headings, refuse and sewage. The latter term is well known and requires no definition. The term "refuse" is, however, applied to many different substances. It includes all forms of household and trade wastes in the nature of garbage, ashes, or rubbish and street sweepings. The major quantity of municipal refuse is produced in the household and composed of kitchen garbage, ashes, and rubbish.

Household refuse contains materials of widely varying composition and behaviour upon exposure. Ashes give the minimum of trouble and can be stored wherever convenient. When dry they are easily scattered by high winds, but odours are not produced. Rubbish is almost as stable as ashes, but is likewise blown about by winds and creates unsightly areas. Garbage is by far the most difficult to handle. Its rapid fermentation with the production of odours when left exposed to the weather, creates the necessity for more frequent collection and more careful attention than is required of ashes or rubbish.

The house treatment of the refuse is the only part in which the producer is asked to co-operate with the general service. This duty lies in the care and preparation of the materials for collection. The necessity for this is created by the process through which the material passes after it has been delivered to the point of final disposal. The various methods of disposal now in general use require different degrees of separation and treatment of the refuse, all of which must be carried out at the point of production.

There are two general systems or methods of collecting refuse in American municipalities,—(1) the combined system, and (2) the separate system. The former is one by which all classes of refuse are stored together in the one receptacle and collected in the one wagon. The latter requires different classes of refuse each to be kept in individual containers and collected separately. The adoption of the combined or separate system will, like the house-treatment, be governed by the selection of the method of final disposal.

The collection of public refuse is a public utility. It is quite distinct and separate from the house treatment and final disposal, although it forms with them an organic whole. Under some conditions the special organization managing it may be a separate one. In small communities, the collection is frequently made by contract, but it is generally more satisfactory to have it done by the municipal forces because of the greater ease in adjustment of details and complaints.

By "refuse disposal" is meant the final disposition, utilization, or destruction of the materials after their collection and delivery. Several methods are in common use. To be satisfactory, the disposal must satisfy two requirements; it must be sanitary, *i.e.*, not cause a nuisance or danger to health; and it must be economical. The expense should be the lowest which will effect a sanitary final disposal of all the refuse materials.

One important purpose of refuse disposal works, and one which receives but scant attention, is to provide a definite place to which all the waste materials can be brought. This prevents that promiscuous dumping on or near places where it might become objectionable—a practice very common in small communities. At such works the materials must be so handled as to control the organic decomposition and to prevent objectionable odours. A further objective of such works should be the recovery of valuable parts, and the production of steam together with reduction of the final residue to the smallest quantity and least offensive condition.

From the various methods of final disposal which have been inaugurated from time to time, a limited number have been developed to a favourable degree of efficiency and economy. Present day processes may be divided into two classes as follows:—

(1) Natural Methods.

(2) Artificial Methods.

The former, in order to effect a disposal involves the utilization of those natural agencies which exist in large bodies of water, the soil, and the atmosphere. These agencies comprise chiefly the water and soil bacteria, the larger forms of vegetable and animal life, and the physical action of rain, frost, sunlight, and other factors. The artificial methods have been adopted through necessity where conditions do not permit the use of the natural. They aim at the disposal of the material in a sanitary manner, with the formation of valuable by-products.

The choice of a method for final disposal rightly requires the consideration of a number of factors. Some municipalities are subjected to unfavourable conditions in regard to this problem while others possess opportunities. Among the undesirable circumstances must be considered the adverse financial conditions of most small communities. Sparse settlements and small populations are usually found along with these low finances. Certain municipalities are favourably situated to use particular methods, while the larger towns and cities have populations which enable them to invest in disposal works which will not only give excellent results but may be almost self-supporting. These advantages are, however, sometimes offset by the lack of suitable sites, and the unwillingness of the public to carry out certain necessary requirements. With these, and other circumstances known, municipal officials are better able to choose a process adapted to their requirements.

Small municipalities, with scattered residences and poor financial conditions, invariably select a method of disposal which requires a low initial expenditure and a small annual upkeep. For these conditions natural methods are used, such as dumping into large bodies of water, dumping on land, filling in low areas, plowing into the soil and burial. The first mentioned requires a location near some body of water. The others are in very common use to-day. Not only do they require small expenditures but the disposal points may be so located as to lessen the length of hauls, and to reclaim for useful purposes land of low previous value.

The success of the natural methods of disposal on land is entirely dependent upon the care and treatment provided. Promiscuous dumping of garbage and other organic wastes without any covering or attention is sure to result in the production of objectionable odours, and the creation of ideal breeding grounds for flies, mosquitoes, and rats. Proper supervision of these methods requires the attention of some responsible party to destroy the insect larvae and see to the covering of the fermentable wastes. During the winter months with the production of ashes at a maximum, they may be stored at the dumps, and used as a covering material in the summer to allay odours. Much low and can in this way be reclaimed and made useful.

Garbage disposal by feeding to hogs, while considered as a natural method, requires a somewhat large initial expenditure. The purpose of the method is to offset the costs of disposal by utilizing the food value of the garbage. Success has been attained in many municipalities, although the process has a number of disadvantages. The garbage must be carefully separated and fed to the hogs while fresh. This in turn increases the frequency of collection. Epidemics of infectious diseases among the hogs are quite frequent, and these result not only in a serious financial loss, but in addition cause an interruption to the service which leaves on hand large quantities of decomposing wastes. Such a possibility seems to warrant the provision of some alternative disposal for emergency use.

The larger municipalities where sufficient capital is available for the construction and operation of expensive works, may be considered to have a choice between two artificial methods, namely—Incineration and Reduction. Both may be made self-supporting. Incineration will be chosen where the site is in a built-up district or a locality in which odours would be objectionable; and where the public are somewhat averse to separating the garbage from the remainder of the household refuse. Reduction works may be chosen where the wastefulness of the people make it profitable to extract the grease and prepare the remaining tankage for the market. The adoption of this method will necessitate a location some distance from residential sections where odours produced will not commit any nuisance.

Incineration is a method by which all combustible waste materials are burnt in specially designed furnaces. Such furnaces are of two general types, namely, the low-temperature or crematories, and high-temperature destructors. The former does not reach a sufficient temperature (1200°F.) to destroy the gases of combustion, with the result that the disposal is not free from odours. The high-temperature furnaces produce, under forced draft, a high degree of heat which destroys all odours. This heat may be used in the production of steam in order to offset the cost of disposal. A clinker of some value also results from this process.

Recent improvements in the high-temperature destructors which make for successful operation, include the provision of drying hearths to receive the wet material; charging devices which minimize the cooling of the furnace during this operation; the use of a pre-heated forced draft; and clinkering devices which permit of the removal of the clinker in one solid mass.

The reduction process—an American development—aims at the recovery of the valuable parts of the waste; namely, grease and tankage. To accomplish this the garbage is separated into four parts; water, grease, tankage, and volatile matter. The latter product is the cause of so much objection against this method. It is claimed by experts that even the best of these plants cannot be

operated without the escape of some objectionable odours. The introduction of the Cobwell system, similar to that installed to reduce New York's garbage, has done much to minimize this defect.

2.—REFUSE MATERIALS

(a) CLASSIFICATION.

Municipal refuse materials are the solid waste matters resulting from the natural activities of a community. They are distinct from the liquid portions of the community wastes—generally called sewage. The general term "municipal refuse" includes the following classes of waste material:—

(1) *Public Refuse*—The rejected material collected from streets and lanes.

(2) *Trade Refuse*—The solid wastes from slaughter houses, factories, and various business establishments.

(3) *Market Refuse*—That resulting from the operation of commission houses and public markets.

(4) *Stable Refuse*—Composed chiefly of manure and straw from stables.

(5) *House Refuse*—Wastes from houses, apartments, stores, schools, churches, hostel, etc. It is composed of garbage, ashes, rubbish, and night soil.

A detailed classification of these materials is given in Table No. 3.

House Refuse.

In municipalities which are chiefly residential the major quantity of refuse is produced at the homes. It may be placed all together and collected as mixed refuse, or it may be separated into the three common divisions, namely—garbage, ashes and rubbish.

Garbage.

The term garbage includes all animal and vegetable waste matter originating in houses, kitchens, restaurants, and hotels, and generally contains the tin cans in which part of the food was originally supplied. It is by far the most difficult part of household refuse to treat. Much of the organic matter in the presence of the normal moisture content readily decomposes and becomes foul. In warm weather this action may take place within twenty-four hours.

Ashes.

House ashes are composed of the residue from coal and wood fires in houses, schools, churches and other buildings. Frequently they contain other inorganic materials such as glass, crockery, metallic substances, bricks, dust, and similar refuse.

Rubbish.

Rubbish comprises those miscellaneous materials from houses, and stores which are not classified definitely with garbage or ashes. It consists for the most part of wood, paper, rags, straw, leather, rubber, glass, barrels, bedding, excelsior, and sweepings from buildings. Normally the decomposition is quite slow and the resulting odour is but slightly offensive.

Mixed Refuse.

In some municipalities the method of final disposal does not require the separation of household wastes into the three component parts: garbage, ashes, and rubbish. These may then be placed together in one receptacle and con-

sidered as "mixed refuse". From a sanitary standpoint mixed refuse is somewhat more desirable than the separated constituents. When mixed with ashes and rubbish, the organic parts of the garbage tend to decompose less quickly and the loose materials are less apt to be blown about when dampened with the moisture from the garbage.

Night Soil.

The term night soil is applied to the contents of privies and cesspools. The removal of this material and the prevention of flies from gaining access to it, may become a problem of serious concern in those districts where sewerage facilities have either not been extended or are not being utilized.

TABLE NO. 3

CLASSIFICATION OF REFUSE MATERIALS

MUNICIPAL REFUSE	PUBLIC REFUSE	{	Street manure and litter	
			Sweepings and dust	
			Leaves	
			Droppings from carts	
			Large dead animals	
			Snow	
	TRADE REFUSE	{	Steam ashes	
			Dry factory wastes	
			Slaughter house waste	
			Rubbish from office buildings and factories	
MARKET REFUSE	{	Cleanings from public catch basins		
		Garbage from markets		
		Rubbish and cleanings from markets		
STABLE REFUSE	{	Old boxes and barrels		
		Manure		
HOUSE REFUSE	GARBAGE	{	Straw	
			Cleanings from stables	
	ASHES	{	Fly maggots	
			Animal matter, including moisture	
			Vegetable matter, including moisture	
			Tin cans	
			Small dead animals	
			Coal and cinders	
	RUBBISH	{	Clinker and slate	
			Dust	
Glass				
Crockery				
Brick and stone				
Metal fragments				
NIGHT SOIL			{	Sweepings from buildings
				Boxes and barrels
				Wood
				Paper
	Rags			
	Excelsior			
	Straw			
	Leather			
	Rubber			
	Metalware			
Bedding				
Old furniture				
NIGHT SOIL	{	Contents of privies		

(b) QUANTITIES AND THEIR VARIATIONS.

House refuse is produced in varying quantities depending on the following main factors:

- (1) Geographical location.
- (2) Season of the year.
- (3) Character of population, *i.e.*, industrial, residential, rural, etc.
- (4) Efficiency of the collection system.

The average collection of refuse per capita per day in several American cities has been shown to be as follows:

Garbage.....	0.5 pds.
Rubbish.....	0.2 "
Street sweepings.....	0.5 "
Ashes.....	2.3 "

The above quantities are the average for a number of cities. To calculate the amount of refuse to be expected from a municipality, these amounts should be considered in conjunction with the factors previously mentioned.

TABLE NO. 4

QUANTITIES OF MIXED GARBAGE AND RUBBISH COLLECTED IN SOME ONTARIO MUNICIPALITIES

Municipality	Population	Tons of garbage and rubbish per week	Pds. per day per 1,000 population
Chatham.....	15,100	40 to 60	945
Cobalt.....	4,610	48	2,980
Fort William.....	20,451	150	2,100
Iroquois Falls.....	2,000	24 to 30	3,850
Kingston.....	22,000	150	1,950
Kitchener.....	23,571	100	1,210
London.....	54,144	210	1,100
	(garb. area)		
New Toronto.....	3,128	30	2,740
Niagara Falls.....	15,895	36	650
Peterboro.....	21,605	108	1,430
Sarnia.....	15,176	24	450
Sault Ste. Marie.....	23,039	40 to 45	530
Stratford.....	18,500	100	1,100
Sudbury.....	9,076	52	1,650
Timmins.....	10,000	75	2,140
Toronto.....	538,771	1,000 to 1,100 (Incinerated)	560
Walkerville.....	7,303	60	2,350

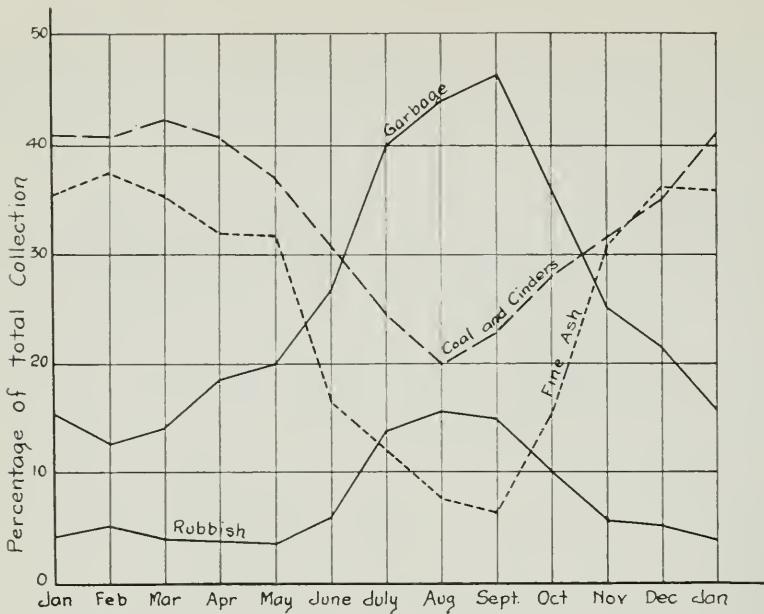


DIAGRAM NO. 1

Monthly variations by weight in components of household refuse for average municipality.

Geographical Location.

The per capita production of garbage and ashes is naturally affected by geographical location and climate. In the warmer areas to the south, more vegetables and fruits are consumed while the amount of coal required is quite small. Where natural gas is available for fuel there is a natural falling off in the quantity of ashes. In Europe the average per capita production of house refuse is approximately 380 pounds per year as compared with 860 pounds in American cities.

Season of the Year.

There is a marked difference in the quantities of refuse produced from one season to another. The maximum quantity of garbage occurs during the summer when fruit and vegetables constitute the principal diet. August or September usually yields the highest rate with February or March the lowest. The winter production of ashes is, on the other hand, greatly in excess of the summer amounts.

Character of Population.

Residential areas yield greater production of garbage than do manufacturing centres. The wealthier sections of a municipality similarly produce more refuse than do the poorer. Different nationalities may also have an important effect upon the production quantities.

Efficiency of Collection System.

Inefficient or inadequate collection systems tend to make untidy premises with a corresponding decrease in the amount of refuse collected. The more frequent and more thorough the collection service the greater will appear the per capita production of refuse for the municipality.

(c) WEIGHTS OF REFUSE.

The weight of a unit volume of house refuse varies according to several factors, the most important of which are: the class of population, the season, and the nature of the collection service. A heavy rainfall increases the unit weight of garbage even as much as 50 per cent. for separate loads. In cold weather the frozen garbage does not pack so tightly in the wagon, and therefore weighs less per unit volume. Long hauls tend to pack the material together and thus increase the unit weight. The following figures are frequently used as an average for the unit weights of the different constituents of household refuse:

Garbage.....	1,150	pds. per cu. yd.
Ashes.....	1,350	“ “
Rubbish.....	200	“ “
Garbage and rubbish mixed.....	1,050	“ “
Street sweepings.....	850	“ “

(d) THE COMPOSITION OF REFUSE.

The composition of refuse must be considered only through a knowledge of the physical and chemical analysis. The former indicates the proportions of the various materials, such as ashes, clinker, paper, shoes, organic material, etc. These proportions will naturally change greatly according to the factors bearing on the production of garbage. In an analysis of the mixed refuse from the City of Toronto in 1914, the two largest amounts were the vegetable matter, 48.5 per cent., and paper and cardboard, 22.1 per cent. Sawdust and dirt came next at 10.4 per cent., while only 5.13 per cent. of the total was ashes. All the percentages are by weight.

Chemical Analysis.

The most important information to be derived from the chemical analysis of house refuse, is the percentage weight of:—moisture, volatile matter, fixed carbon, and ash. To obtain best results truly representative samples should be collected over a wide range of time and conditions. Much other information can be had from the chemical analysis but the value of this will depend upon the process through which the material is to pass. The grease content will be important where the reduction method is used.

Table No. 5 may be considered as a representative chemical analysis:

TABLE NO. 5

	Moisture	Volatile Matter	Fixed Carbon	Ash	Calorific value in B.T.U. per pd.
Garbage.....	73.3%	16.9%	4.7%	5.1%	8,300
Household Ashes.....	1.0	6.3	25.7	67.0	8,500
Rubbish.....	12.5	52.4	20.5	14.6	7,200
Mixed Refuse.....	45.1	26.6	23.8	14.4	8,000

3.—HOUSE TREATMENT

The disposal of municipal refuse begins at the point of its origin. The first step in this process is known as the House Treatment. By this is meant the preparation of the refuse for collection. This preparation, which must be made entirely by the householder or producer, will be dependent upon the method in operation for final disposal. It may involve a considerable degree of separation, or the materials may be all placed together and collected as mixed

refuse. Other methods of special treatment, such as wrapping the garbage in paper, may be required of the producer. In any event, the householder will expect to be informed by circulars or other means just what is anticipated in this respect.

Those factors which may be considered to influence the house treatment of refuse are as follows:

- (a) Degree of separation.
- (b) Receptacles.
- (c) Flies.
- (d) Special house treatment.

(a) *Degree of Separation.*

The degree of separation required in the house treatment will depend upon the method of final disposal, and any sanitary regulations which the particular municipality may formulate. When garbage is disposed of by the reduction process, or by feeding to hogs, it must be kept apart from the ashes and rubbish. If the ashes are to be utilized as a fill for low land, they also must be kept separate from the rubbish or at least from the bulk of it. Such a separation would require three different receptacles—a feature which is not favoured by most householders. The most common house treatment in the larger American cities comes under the two-can system, one of which is used for the garbage and the other for ashes and rubbish. Where mixed refuse is destroyed by incineration, the house treatment is greatly simplified by placing all materials in one receptacle. This procedure is most desired by householders, and requires less supervision by the collection department.

(b) *Receptacles.*

A garbage can should not only be of such a size that it can be readily loaded by one man when full, but it should be easily cleaned, sanitary, and have a tight fitting cover to prevent the entrance of flies and small animals. At one time, wooden boxes were commonly used for the storage of garbage, but these were too difficult to clean and to keep tight. A galvanized iron pail



Garbage receptacles which are both inconvenient and objectionable in appearance.

or can is best suited for this purpose. Its capacity usually varies between $\frac{3}{4}$ and 4 cu. feet, depending upon the weight of the refuse it is to contain. For garbage or ashes the size should be comparatively small in order that it can be carried and hoisted to the top of the collection wagon by one man. A can for rubbish of small unit weight may properly be of larger dimensions. For the reception of ashes or other heavy refuse, the most serviceable can is one made of heavy galvanized iron, well reinforced with side strips to withstand rough treatment. Tight fitting covers should be provided for all containers, and these should be wired to the handle to prevent their being lost or blown away.



A good type of garbage pail for homes.

The location of the garbage can to facilitate the work of the collector is a question upon which different opinions exist. The cost of collection is unquestionably decreased by having the householder place the container at the street curb. This practice is, however, an inconvenience to the residents, and in addition creates an objectionable appearance. The back door or side of the house is the most convenient location for the householder, and this eliminates the unsightly appearance of the streets on collection days. Where there are back lanes, this difficulty may be overcome by requiring the collection to be made from here. Each municipality should, as far as possible, require a uniform location for the cans so that no time will be lost by the collector in discovering their whereabouts. In certain sections where some of the houses are a considerable distance from the street, a great deal of time is lost if the collector is obliged to go all the way after the full can and return the empty.

In most municipalities the parties producing the refuse are expected to provide their own receptacles. In others the collection department provide the cans as they are required and charge their cost against the householder. The latter method may be used to advantage where the cans are cleaned by the collectors. In making the collection, the full can is placed on the wagon and an empty one left in its place. This practice permits of a thorough cleansing and disinfection of all the cans. Where the cleaning is left to the individual householder, it is frequently neglected with the result that bad odours occur, and

putrefactive organisms thrive in the corners where material is allowed to collect. Decomposition of the fresh garbage is greatly hastened by the presence of this material.

(c) *Flies.*

Unless garbage receptacles are tightly covered, the odours from the fermenting materials will attract flies. This material forms a suitable nidus for the eggs, and larvae rapidly develop. Most collections are too frequent to permit of a full development to the adult stage in the garbage can. This stage will not be reached at all if the disposal method is a type which will sterilize the material. Where the garbage is placed on dumps or buried, this development will not be checked and the adult fly will very soon return to the original dwellings. Not only do flies lay their eggs in this exposed garbage, but when the can is emptied, they seek the inside of the house in search of food and warmth and carry with them parts of this decaying refuse. The simplest procedure in order to avoid this nuisance is to provide proper receptacles and see that they are always kept tightly covered. Larvae which have already hatched may be destroyed by spraying with a three to four per cent. creosote disinfectant solution.



Receptacles which readily attract flies.

(d) *Special House Treatment.*

Certain municipalities require the householders to specially prepare the refuse before it is collected. These special preparations include chiefly the screening of ashes, burning of combustible material, and wrapping the garbage in paper. The latter is the most important and most commonly used. Before the garbage is placed in the receptacle, it is drained and wrapped in paper. This procedure greatly assists in maintaining a clean can and in the prevention of the fly nuisance. Where the refuse is destroyed by incineration, the paper aids in the combustion. Objection is made to this, however, where the garbage is either fed to hogs or disposed of by the reduction process. Wrapping is

best adapted for those municipalities where incineration is used for final disposal. This practice is also a distinct advantage in freezing weather in that there is less danger of the material adhering to the container.

4.—COLLECTION

The collection of refuse is an intermediate stage between house treatment and final disposal, and an intimate relation exists between all three. The organization of the collection service must satisfy the popular needs. The special requirements of the various classes of people living under different conditions must all be considered as well as the influence of the season. The frequency of collection and the efficiency with which it is carried out are of more concern to the householder than is the method of ultimate disposal. This is because the entire municipality comes in contact with the collection service and defects are consequently felt over a large area, whereas the disposal process may affect only those adjacent to the works.

The conveying of refuse from the points of origin to those of final disposal may quite properly be divided into two parts. One pertains to the primary collection or gathering of the material from the houses into the wagons, and the hauling of it to defined points for subsequent transportation, or, as in small communities, direct to the places of final disposal; the other part pertains to transportation of the refuse by secondary means after the original collection. Such methods may include transportation by barges, motor trucks, street railways, or railroad cars, the necessity for which increases with the extension in area of the community served.

(a) *Methods of Collection.*

A great variety of methods and equipment for collecting refuse is found in American cities. Many styles of wagons for ashes and garbage are in use and their capacities range from 1.5 to 6.0 cu. yards. Some are covered and others are open. The interval between collections varies from daily to once a week or even longer for ashes and rubbish. Some municipalities require a more careful attention to the cleanliness of the collection wagons than do others. In some cases the work of collection is done at night, and the householder sets out his can in the early evening. Two main requirements, no odour and no dust, must control the collection of refuse regardless of which of these methods are in operation.

(b) *Frequency of Collection.*

The time interval between collections should be sufficiently short to prevent any nuisance from the storage of the refuse. Garbage which is kept separate must be collected more frequently than either rubbish or ashes because of its putrescible nature. This interval should, in addition to eliminating any nuisance, satisfy the householder and give opportunity for approximately one full can of refuse to accumulate under average production.

In the larger cities, and especially in the more thickly populated sections, it is customary to make collections daily. This frequency is not only advantageous in maintaining sanitation, but very often the method of final disposal, especially hog-feeding, requires that the garbage be as fresh as possible. In all cases there should be a daily collection for hotels, restaurants, and boarding houses, where there is a large accumulation of organic wastes. Garbage not

mixed with other refuse should be collected from all residences at least three times per week. More frequent collections become necessary in summer than in winter. Ashes need be removed only often enough to prevent undue accumulations, while rubbish should be collected at least every two weeks, or there will be a tendency to untidy premises. Mixed refuse does not require as frequent collection as garbage, but to be satisfactory it should be made regularly at least twice a week in summer from residences and daily from hotels, restaurants, and boarding houses. In winter, especially in the colder climates, the collections may be reduced to once a week for residences.

(c) *Equipment.*

There are very many different types of wagons employed in refuse collection, and the size of these is one of the most important features. The most suitable capacity can best be determined after a careful study of local conditions. The working time of a collector may be divided into two parts, namely, the productive time, *i.e.*, the time spent in loading; and the unproductive time, or that spent in driving the loaded wagon from the last point of collection to the point of transfer or final disposal. The size of the wagon should be such that this unproductive time will be a minimum. For short hauls the size of wagon is relatively unimportant, but when it extends to a number of miles, the size should be carefully considered. Theoretically a wagon should be of such size that the time required to fill it leaves just sufficient time in one working day



A convenient wagon for refuse collection, with tarpaulin cover.

for one trip to the point of disposal. Such a size is, however, not always possible because of the weight of the materials. The following capacities are commonly used in practice:

For Garbage.....	3 to 4	cu. yds.
For Ashes and Rubbish.....	5	"
For Mixed Refuse.....	5	"

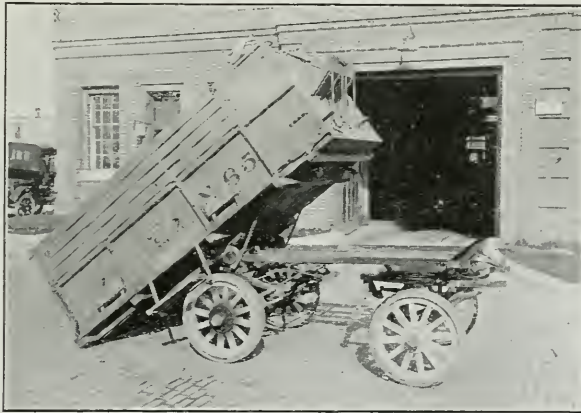
The loading height of a wagon should be such that the workman can conveniently turn into it the contents of the can. The top edge should be not more than six feet, and preferably not more than five feet from the ground. Where stepboards are placed at the rear and on the sides, a somewhat higher wagon may be loaded without difficulty.

Covering.

All refuse requires covering during transportation. Ashes and rubbish must be covered to prevent dust and loose papers from being blown about the street, while garbage should be protected from flies and screened from view. If flies are permitted to gain access to the garbage, they follow the wagons and spread over the entire community. Wagons used in some localities are provided with a hinged cover or lid. Difficulties are experienced with this type, however, in keeping pieces of refuse away from the lid, and in preventing garbage juices from adhering to the hinges and frames. The covering most commonly used at present is canvas or tarpaulins. These are quite satisfactory and enable the wagon to be piled up high without interference in the use of the top. They should be washed frequently.

Dumping.

Loaded wagons must be dumped as quickly and as conveniently as possible. The method of dumping depends partly on the method of disposal. Bottom dumping wagons are more serviceable where the refuse is placed on dumps, but they are more difficult to keep water-tight than others. Dumping at the rear by raising the forward end is particularly suitable where carts are used, and no difficulty is experienced in keeping them tight.



Rear dumping refuse collection wagon.

Horses vs. Motor for Primary Collection.

The large number of stops required in the primary collection of refuse has pretty well removed this from the field of the motor vehicle, except where more than one collector goes with each vehicle, and the length of stops is decreased. Lengthy hauls to disposal or transfer points may affect the use of motors in primary collection, but for average conditions, the horse, either with cart or wagon and team, seems best adapted for this purpose and is most extensively used.

(d) PRIVATE OR MUNICIPAL COLLECTION.

Collection by contract is frequently adopted by the smaller municipalities. The larger cities generally have their own department for this work, and are better able to exert proper supervision and care in carrying it out. In many

cases private collectors are permitted to collect from certain sections of the municipality. This is a practice from which serious complaints frequently arise, as these people are inclined to take only that part of the refuse which will be useful for their purpose. In every instance where collection is made by contract or privately, definite specifications should be drawn up and enforced by the local authorities to protect the interests of the householder.

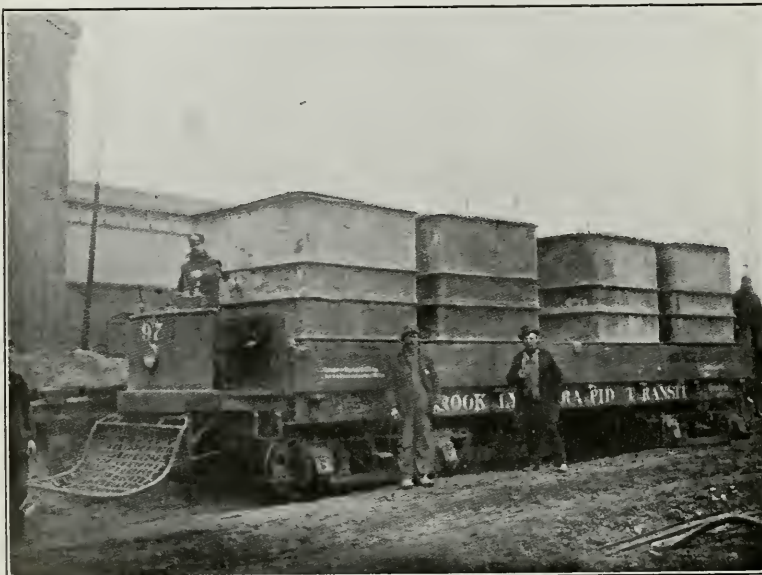
(e) SUPPLEMENTAL TRANSPORTATION.

In small municipalities the amount of refuse produced and the distance to the point of final disposal, seldom warrants the use of supplementary transportation methods. In larger communities, however, too much time would be lost in having the slow moving collecting vehicles transport the refuse over long routes. As municipalities grow, central sites for disposal works become scarce and hauls are consequently increased. Where the material is disposed of by feeding to hogs or by reduction, there is little opportunity of utilizing several disposal plants centrally located in the one municipality and greater transportation distances become necessary.

Under these conditions the common practice is to have the garbage collected in horse-drawn wagons or carts and brought to a relay, transfer, or loading station. The four principal methods of supplemental transportation in use are:

- (1) Boat.
- (2) Steam railroad.
- (3) Trolley car.
- (4) Motor truck or motor trailers.

Boats or barges are confined to a disposal at sea or on the Great Lakes, where the material is dumped from ten to fifteen miles from shore. Deck scows are used for transporting garbage short distances over water routes to reduction works or other disposal sites.



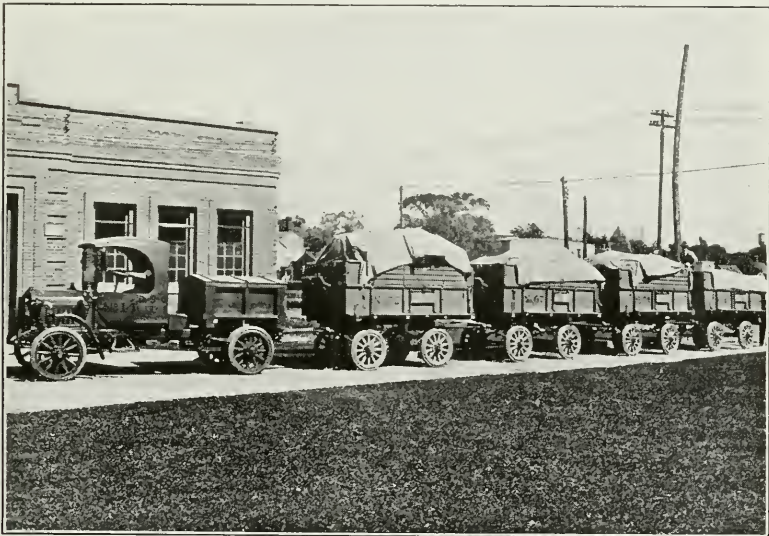
Supplemental transportation by steel bins on trolley cars.

Steam railroad transportation is used to a large extent at present. Three special types of cars are built for the purpose. Garbage may either be dumped into metal tanks on cars, or the entire wagon bodies be taken to the disposal works on flat cars. Mixed refuse is transported in standard freight cars of the "gondola" type.

Three kinds of trolley cars have been used successfully:

- (a) Flat cars upon which are carried large steel bins containing the refuse. The bins are loaded by means of travelling cranes.
- (b) Side-dumping cars for trailer service.
- (c) Triple-body steel dump cars—rocker type. These are made up of three bodies independent of each other and arranged to dump on either side.

Motor driven vehicles have been used extensively in the transportation of refuse, either by large trucks into which the refuse is loaded from the collection wagon, or by a number of trailers drawn by one tractor. Horses convey the wagons to the transfer station, where the shafts are removed and the wagon attached to the rear of the truck for conveyance to the point of final disposal.



Supplemental transportation by motor trailers.

(f) THE COST OF COLLECTION.

The collection of refuse materials is very frequently the most important and costly single element in the entire refuse problem. There is therefore great need for effective organization, proper equipment, and economical methods in this branch of the work. The unit costs of collection in the different municipalities vary a great deal. This, however, is not surprising when one considers the wide variation in the methods of collection, frequency of collection, density of population, and all the other factors which enter into the problem. To estimate the probable cost of any collection system on a large scale requires careful study of these different factors. Table No. 6 is inserted as a guide to the present day cost of collection in some of the Ontario municipalities.

TABLE

REFUSE COLLECTION DATA FROM ONTARIO

Municipality	Population	Number of Houses	No. of Collections per Week		Collection Equipment		Capacity of Equipment in Cu. Yds.	
			Summer	Winter	Wagons	Carts	Wagons	Carts
Belleville.....	12,243	3,500	2	2	3	1	2-3	1.5
Brantford.....	32,786	6,500	1	1	8	..	5	..
Brockville.....	9,254	..	2	2	..	1-2	..	1
Chatham.....	15,100	4,000	1	1	3-4	..	1	..
Cobalt.....	4,610	..	1	1	1	..	4½	..
Dundas.....	5,054	800	1	1	2	..	2.5	..
Dunnville.....	3,509	700	2	2	1	..	3	..
Ford City.....	5,800	400	2	2	1	..	2	..
Fort Frances.....	3,600	..	..	..	..	..	..	..
Fort William.....	20,541	6,000	1	1	3	..	3.5	..
Galt.....	13,092	3,200	1	1	..	2-3	..	2
Goderich.....	4,287	..	2	..	..	..	..	..
Guelph.....	18,000	4,340	1	1	4	..	4	..
Hamilton.....	120,234	..	1	1	20	..	4	..
Iroquois Falls.....	2,000	225	3	3	1	..	..	..
Kingston.....	22,000	5,000	2	2	..	7	..	5
Kingsville.....	1,827	510	2	1	1	..	..	..
Kitchener.....	23,571	5,778	1	1	8	..	4	..
London.....	54,144	13,741	2	1	9	8	4-5	2.5
Mimico.....	4,187	750	1	1	2	..	3	..
New Toronto.....	3,128	789	1	1	..	2	..	1.25
Niagara Falls.....	15,895	3,800	1	1	4	..	6	..
Niagara-on-the-Lake..	1,640	550	3	..	1	..	2	..
North Bay.....	10,924	..	2	2	1	..	..	..
Oakville.....	3,566	..	2	2	1	..	2	..
Oshawa.....	12,246	2,700	1	1	2-3	..	1.5-2	..
Ottawa.....	116,205	30,000	1	1	10	6	7	3
Owen Sound.....	12,013	..	1	1	..	..	1.5	..
Paris.....	4,346	750	1	1	1	..	..	..
Peterboro.....	21,605	5,000	2	2	5	..	4.5	..
Port Arthur.....	15,201	3,300	2	2	3	..	4-6	..
Port Colborne.....	2,956	..	1	1	..	..	..	..
Port Dalhousie.....	1,424	..	Once a month		..	..	..	..
Sandwich.....	4,153	1,250	2	1	..	2	..	2
Sarnia.....	15,176	3,000	1	1	..	6	..	..
Sault Ste. Marie.....	23,039	3,500	1	1	1	3	2	2
Smooth Rock Falls...	800	140	2	2	1	..	7	..
St. Catharines.....	21,194	4,883	2	1	5	..	6	..
Stratford.....	18,500	4,300	2	1	1	5	3	1.5
St. Thomas.....	17,850	..	1	1	0	5	4.5	..
Sudbury.....	9,076	1,350	1	1	1	1	6	1.5
Thorold.....	5,514	1,350	3	3	0	1	..	1.5
Tillsonburg.....	3,021	800	1	1	1	..	..	..
Timmins.....	10,000	1,200	2	Once in 2 weeks		2	3	..
Toronto.....	538,771	97,716	2	2	..	385	4	1¾
Walkerville.....	7,303	1,500	2	2	1	..	2.5	..
Welland.....	9,356	8,640	1	1	2	..	..	..
Weston.....	3,104	800	1	1	..	1	..	2
Woodstock.....	10,333	..	1	1	..	3	..	2.25

No. 6

MUNICIPALITIES FOR THE YEAR 1922

No. of Cans emptied in one day by one Man	Collections made by	Total Annual Cost	Per Capita Cost	Cost per Residence	Method of Disposal
.....	Contractor	\$6,200.00	\$0.51	\$1.77	Dumps
125	City	32,000.00	0.98	4.93	Dumps and Fills
.....	Town	3,300.00	0.36	.....	Hog Feeding
250	Contractor	7,000.00	0.46	1.75	Incineration
25	Contractor	7,842.62	1.70	.....	Incineration
75	do	Paid directly	by Household er.	.....	Dumps
200	do	1,080.00	0.21	1.35	do
190	do	.....	.....	.....	Incineration
.....	.....	1,230.70	0.34	.....	Incineration
.....	do	7,250.00	0.35	1.21	do
.....	City	7,000.00	0.53	2.19	Dumps
.....	Contractor	.....	.....	1.50 per month	do
200	Contractor	13,755.88	0.76	3.18	do
150	City	72,000.00	0.60	.....	Fill
75	Town	3,000.00	1.50	13.30	Incineration
125	Contractor	9,000.00	0.41	1.80	do
.....	Town	150.00	0.08	0.29	Dumps
115	Contractor	12,800.00	0.54	2.22	Incineration
300	City	60,000.00	1.10	4.35	do
300	Town	5,500.00	1.31	7.35	Incineration
200	Town	5,769.00	1.85	7.30	do
210	City	14,305.00	0.90	3.80	do
.....	Contractor	700.00	0.43	1.27	Dumps
120	Contractor	Paid directly	by Household er.	.....	do
.....	Contractor	2,756.00	0.77	.....	do
360	do	6,700.00	0.55	2.48	do
250	City	95,000.00	0.82	3.16	do
100	Contractor	5,700.00	0.47	.....	do
.....	do	1,200.00	0.28	1.60	do
200	do	9,000.00	0.42	1.80	Incineration
150	City	11,380.00	0.75	3.46	Dumps
.....	Contractor	4,200.00	1.42	.....	do
.....	Contractor	225.00	0.16	.....	Dumps
180	do	2,300.00	0.55	1.84	do
85	do	10,000.00	0.66	3.33	Inc. and Feeding
200	City	5,200.00	0.22	1.48	Incineration
140	Contractor	720.00	0.90	5.14	Incineration
.....	do	26,600.00	1.26	5.45	Dumps
120	do	14,000.00	0.76	3.25	Incineration
300	do	12,000.00	0.67	.....	Dumps
270	Contractor	4,200.00	0.46	3.10	Incineration
400	Town	1,800.00	0.33	1.33	Dumps
50	Contractor	2,000.00	0.66	2.50	Burial
.....	Contractor	8,225.00	0.82	6.85	Incineration
.....	City	831,000.00	1.54	8.51	Inc. and Dumps
.....	Town	.....	.....	.....	Incineration
330	Contractor	4,500.00	0.48	5.20	Dumps
.....	Town	2,010.00	0.65	2.52	do
300	Contractor	5,200.00	0.50	.....	do

5.—METHODS OF DISPOSAL.

Final disposition, utilization, or destruction of the refuse materials from a community should satisfy two important requirements:

- (1) It must be sanitary and not create a nuisance or a menace to health.
- (2) It should be as economical as possible consistent with sanitary results.

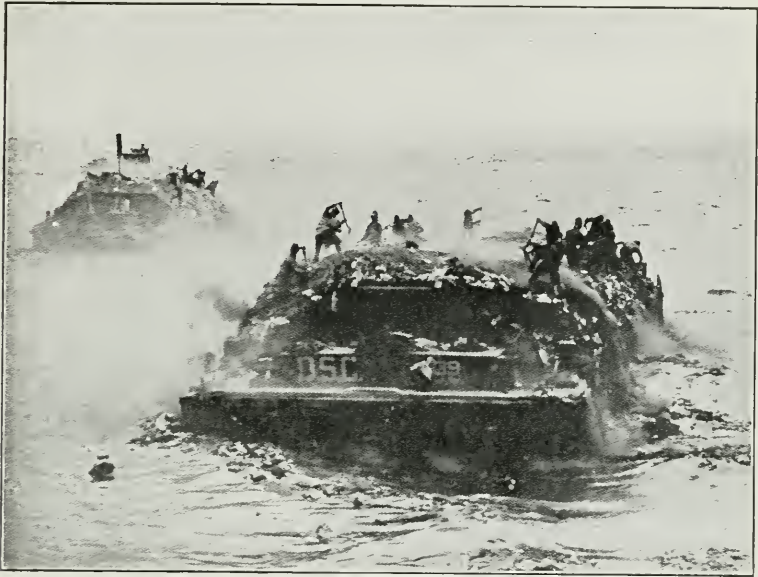
Disposal of refuse frequently has an indirect effect on public health produced through the agency of flies, mosquitoes, rats, and probably other causes. Simple methods may be sufficient for the small municipality but as the population increases, and the area becomes congested, a more adequate treatment is essential. Several methods of disposal have, from time to time, been tried out by various municipalities. The success of any particular one depends largely on local conditions. These different methods which have been developed to any appreciable extent are as follows:

- (a) Dumping into large bodies of water.
- (b) Dumping on land.
- (c) Disposal by sanitary fill.
- (d) Burial.
- (e) Plowing into soil.
- (f) Feeding to swine.
- (g) Reduction.
- (h) Sorting.
- (i) Incineration.
- (j) Grinding.
- (k) Becarri process.

The choice of any particular one of these methods is usually made with a view to fulfilling certain requirements or conditions which exist in the municipality. The small town is by necessity more interested in those methods which require only a small financial expenditure. Following an increase in population, these earlier systems may be abandoned, without loss, in favour of more serviceable works. Some of these larger municipalities are most anxious to have the disposal costs offset to some extent by the recovery or utilization of the valuable constituents. They select either hog-farming or reduction. Others choose incineration with a view to procuring most sanitary results with the minimum of trouble, and with a possibility of using the heat produced.

(a) *Dumping into Large Bodies of Water.*

This method of disposal has been practised to an appreciable extent in the past by those municipalities situated on the shores of large bodies of water, but its use is now becoming more and more restricted. It is a method which utilizes the natural agencies of purification in large bodies of water. The refuse is collected and delivered to a wharf where it is loaded on scows, and sent out to sea, frequently as far as ten to fifteen miles. Unfortunately in this method the least harmful material sinks while the foulest floats, and is eventually scattered along the beach unless the scows are sent so far to sea as to make the procedure impracticable for all weather conditions and at a reasonable cost. This practice is particularly objectionable where the material is washed back to bathing beaches, or to those areas from which drinking water supplies are obtained.



Garbage disposal at sea.



Refuse washed up on the beach as a result of dumping in the water.

(b) *Dumping on Land.*

The disposal of refuse by dumping is a practice which has been followed for many years and probably will always be used for some classes of wastes. Mixed refuse from small municipalities is very frequently deposited on dumps until a more expensive and more serviceable method can be financed. In cities, street sweepings, building excavation, rubbish, and ashes are generally, in part at least, disposed of in this way. The promiscuous dumping of all classes of refuse on low or waste land without any attention is a most objectionable one, and almost certain to produce offence to nearby dwellings. Solid inoffensive materials can be placed on dumps without objection, but when rubbish or combustible matter is included there is an additional danger of fires smouldering for lengthy periods.

The success of the dumping method depends almost entirely upon the care given to the dumps. Without continuous attention, they cannot be used satisfactorily in built-up districts. Where garbage and other organic materials are left exposed, decomposition results with the production of odours and the attraction of flies.

Refuse dumps with proper handling can be made entirely free from nuisance, and will provide a very economical disposal, as well as a means for reclaiming and beautifying much waste land. Unless care is used, however, these dumps may become a serious source of annoyance.

The following set of rules is suggested for the care of dumps:—

(1) The deposit to be made in layers not exceeding 6 feet in depth; and not more than 50 square yards to be left uncovered at any one time.

(2) Each layer to be covered on all surfaces exposed to the air, with at least nine inches of ashes, earth or other suitable substance. Each covered layer should be allowed to settle before another is applied.

(3) No refuse to be left uncovered for more than seventy-two hours from the time of deposit.

(4) If the material deposited at any one time consists entirely of fish, animal, or other organic refuse it must be covered forthwith with earth or other suitable substance at least two feet in depth.

(5) A fly larvicide to be kept on hand, and all maggots destroyed before the pile is covered.

(6) No refuse to be allowed to be scattered, but must be kept as compact and tidy as possible.

(7) No scavenging to be allowed at the dump, except by municipal employees.

Sufficient competent labour should be provided by the municipality to enable these rules to be carried out. A good arrangement is to have the work done under the direction of the town foreman, or other municipal official, whose duty it will be to arrange for the hauling and storage of earth and ashes as a covering for the dump. The approaches to the dump or fill should be kept in good condition by the use of ties and old timbers so that wagons with earth from building operations may readily enter and discharge their loads in the most convenient place for covering the exposed refuse.

(c) *Disposal by Sanitary Fill.*

This method is a development of dumping. The refuse is used for filling up low areas, and a sufficient quantity of inorganic materials is mixed with the garbage to insure a thorough digestion without the production of offensive

odours. In this way much valuable land can be reclaimed, and by selecting sites at convenient points in the municipality, the length of haul may be greatly reduced, with a corresponding decrease in cost. The success of these fills, like that of the dumps, depends very largely on the care which is given them. Some official should be in charge to see that the organic materials are thoroughly mixed and covered.



A well-kept sanitary refuse fill.

(d) *Burial.*

Shallow burial in the soil constitutes a fully sanitary and adequate method of disposal. This process is confined largely to manure, night soil, and garbage. The other materials are too bulky and can be disposed of more easily by other methods. The success of this practice depends on the aerobic bacterial decomposition in the soil, and the material should therefore be covered only with a



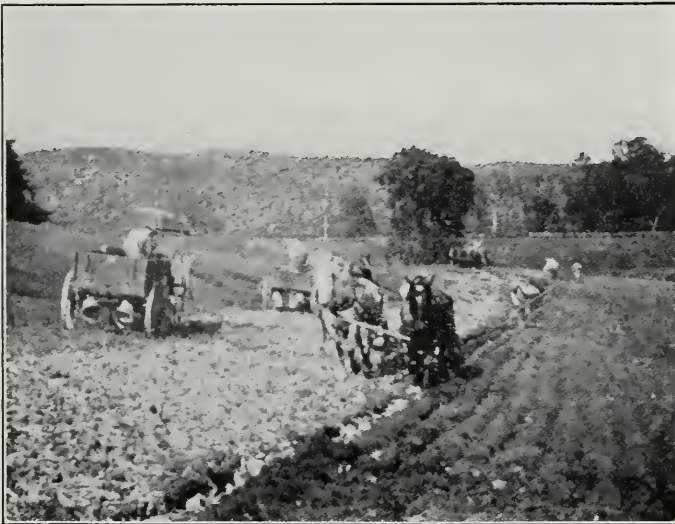
Garbage disposal by burial.

light layer—about six inches. The depth of garbage or refuse should not be too great for penetration by the bacteria—six to eight inches is sufficient. An open sandy soil is best adapted for this purpose; it decomposes the material more rapidly and can be re-used probably at the end of a year, while heavy clay soil, where the winters are severe, will not recover for about four years.

Burial in the soil is quite a successful disposal for night soil, and is used a good deal where the quantities are not large. For garbage and mixed refuse, however, the method is not used extensively, due no doubt to the difficulty in securing land for the purpose, and the amount of work involved in the operation. The material does not act as a good fertilizer. Care should be exercised in selecting a site for burial of this material that there be no drainage from the area into any water supply or wells used for domestic purposes.

(e) *Plowing into Soil.*

This method is quite similar to burial except that the refuse is spread in a thin layer over the ground and plowed in at intervals. A good deal of the



Refuse disposal by plowing into the soil.

material is normally not covered by the process, and may be blown about by the wind. It has not a wide application at present.

(f) *Feeding to Swine.*

There is in practically all household garbage some food value. With a view to utilizing this as far as possible, hog feeding has been practised in the United States for a number of years, not only in the smaller communities but in some of the largest cities. The present practice may be divided into the following groups:

- (1) Collection of garbage by the municipality and delivery to contractors operating hog farms.
- (2) Collection and disposal both by contractor.
- (3) Collection and disposal by the municipality in which case the farm is operated by the city.
- (4) Collection and disposal of the garbage by a large number of farmers.

Requirements for Hog Feeding.

The successful feeding of garbage to hogs is dependent upon certain requirements. One of these is that the garbage must be fresh and free from other refuse. This involves care in the house treatment in order to avoid including with the garbage materials of no food value to the hogs. The use of this food while fresh will require a more frequent collection especially during the warm weather. It is quite essential that the garbage be fed to hogs in summer within fifty or sixty hours after it is produced, or fermentation will have gone too far. Where the householders have been sufficiently instructed to properly separate the garbage from other wastes, and the hauls are not excessive, this method may be an economical one to the municipality in that the collection costs are considerably reduced by the profits from the hog farm. Difficulties are however, encountered in excluding from the garbage all foreign material except at hotels, restaurants, and boarding houses.

One of the chief reasons why this method of disposal has not been practiced on a larger scale is due to the susceptibility of hogs to such diseases as cholera, pneumonia, foot and mouth disease, and other infections which may be transferred through the agency of garbage. Sterilization of this food by cooking has been tried in some cases but does not appear to be very successful, due probably to the formation of certain organic acids which react unfavourably on the stomach of the hog. Cooking also increases the cost and makes the procedure more involved.

Diseases.

The susceptibility of the hogs to these infectious diseases can be greatly reduced by proper care and treatment.

Cholera.

Hog cholera can be largely controlled by vaccination. This is accomplished in different ways—either by the use of a virus or a serum or by both. The virus is essentially the blood of a hog actively suffering from cholera. When a small amount of this is inoculated into a healthy unimmunized hog, a slight attack of the disease occurs and antitoxins are produced. The serum is prepared from the blood of a hog which has received an inoculation of the virus. The serum alone will produce only temporary immunity because in itself it does not stimulate the organism to produce antitoxins. The common practice is therefore to treat the hogs with both virus and serum, which must be of good quality to be effective. This inoculation is made when the pigs are between four and ten weeks old.

Pneumonia.

Hogs die from pneumonia largely as a result of improper housing and protection against inclement weather.

Foot and Mouth Disease.

The foot and mouth disease has always been greatly feared in hog farming and as yet no remedy appears to be known. When this breaks out there is but one procedure available, namely, the destruction of the entire number, at not only a serious financial loss, but a grave interruption to the method of disposal.

Results of Practice.

The operation of piggeries in the United States on a large scale for a number of years, has resulted in the tabulation of a good deal of data in regard to the most successful methods—these are as follows:

(1) Location of Farm.

The pig farm should be located on soil that drains readily, preferably sandy or gravelly, and where possible, rolling. The pig houses should be located and so constructed as to permit of warmth in winter and coolness in summer. Plenty of good quality water should be available always. Where hogs are fed out of doors, the size of the farm should be sufficient to allow not more than fifty pigs per acre. When under cover this number can be increased to from four hundred to six hundred per acre.



Garbage platform for hog-feeding.

(2) Methods of Feeding.

Two different feeding methods are in use. The first is by feeding-lots where the garbage is deposited on platforms which can be moved from place to place. The hogs are not allowed to enter the lots until the garbage has been placed on the platforms. The material remaining after feeding is cleaned up and the ground is plowed at certain intervals.

The other method is to have feeding platforms near the railroad tracks or point of delivery and the hogs are brought to these at meal hours.

(3) Quality of Pork.

There is frequently some skepticism in regard to the quality of garbage-fed pork, but expert opinions seem to agree that this quality is in no way inferior to grain-fed pork. The packers do not differentiate between the two in regard to the price paid and medical experts have declared that no diseases are contracted as a result of using this meat.

(4) *Gain in Weight and Number of Animals Required.*

Numerous experiments indicate that a gain of about a pound per day can be expected of a growing hog. At Worcester, it has been found that about one hundred to one hundred and fifty pigs will consume one ton of garbage per day. This gives a gain of one pound in weight for every thirteen to twenty pounds of garbage. In other places, thirty-two to thirty-seven pounds of garbage were required to produce a gain of one pound. Hog garbage has higher food value and less is required to give a similar gain in weight.

(5) *Price Paid for Garbage.*

Various forms of agreement are made between the hog-farm contractors and municipalities. Some pay the city a definite price per ton of garbage delivered. Others pay an amount proportionate to the profits derived from the sale of hogs. Contractors are not, as a rule, inclined to pay more than \$1.00 per ton of garbage delivered. Such a figure is, in comparison with the expense for other methods of disposal, quite a favourable one. Table No. 7 gives the prices paid to a number of municipalities for garbage.

TABLE NO. 7

PRICES PAID TO CITIES FOR GARBAGE DELIVERED TO HOG FARMS

City	Year	Average tons of garbage delivered daily	Payment per ton at place of delivery
Minneapolis.....	1918	..	\$1.26
Grand Rapids.....	1917	..	0.45
Portland.....	1918	..	3.90
Newark.....	1920	..	1.20
St. Paul.....	1917	..	1.95
Anderson.....	1917	..	1.00
Baltimore.....	1920	33	0.52
Buffalo.....	1920	60	0.50 to 0.90
Akron.....	1920	47	1.00
Highland Park.....	1920	15	0.45

(g) *Reduction of Garbage.*

The reduction process is applicable only for garbage and dead animals. The chief advantage in the use of this method rests in the recovery of valuable by-products—grease and tankage. The procedure involves a breaking up of the garbage by the application of heat and mechanical agitation, so that those constituents of any marketable value may be recovered. By this method the material under treatment is separated into four main constituents, viz.: volatile matter (driven off as gas), water, grease, and tankage. The volatile matter contains foul smelling gases, which, if allowed to escape, will produce a serious nuisance. The reclaimed garbage grease is used in the manufacture of soap, candles, glycerine, etc., and has been selling at from three to ten cents per pound. The resultant tankage is used as a filler or base for certain fertilizers and sells at from \$5.00 to \$10.00 per ton according to its ammonia content.

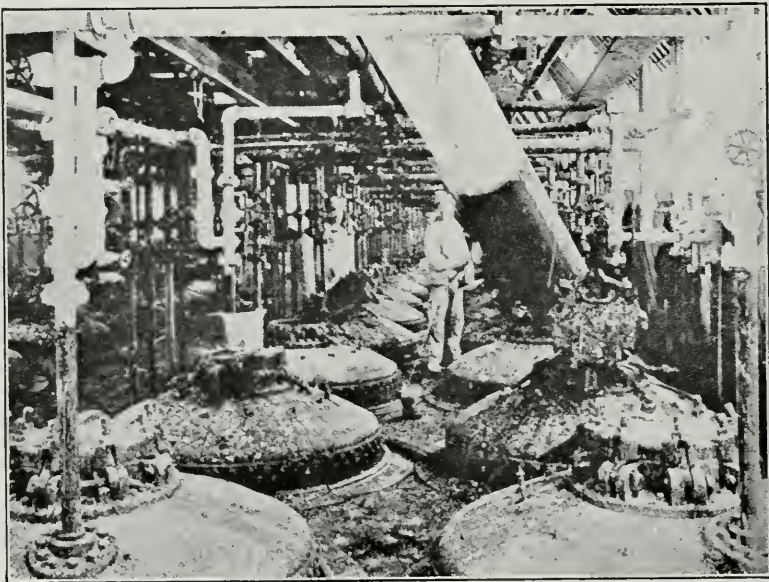
The necessity for expensive machinery and skilful operation, as well as the risks involved, have generally discriminated against the adoption of the process in cities having a population less than 100,000. It has, however, been

used with evident financial success in many of the larger places. Present day reduction processes may be divided into two classes:

- (1) The drying method.
- (2) The cooking method.

The drying method consists of crushing or grinding the garbage and passing it through direct heat driers to drive off the moisture and break down the cells. The dry solids are then placed in extractor tanks, and the grease recovered by percolation, using gasoline as a solvent.

The cooking method consists in first placing the garbage in digester tanks, where it is thoroughly cooked. The free grease and moisture is then extracted by pressure. The solids from the presses are dried, and in modern plants this dried tankage is percolated to recover any grease which has not been extracted by the presses.



Garbage digesters for use in the reduction process.

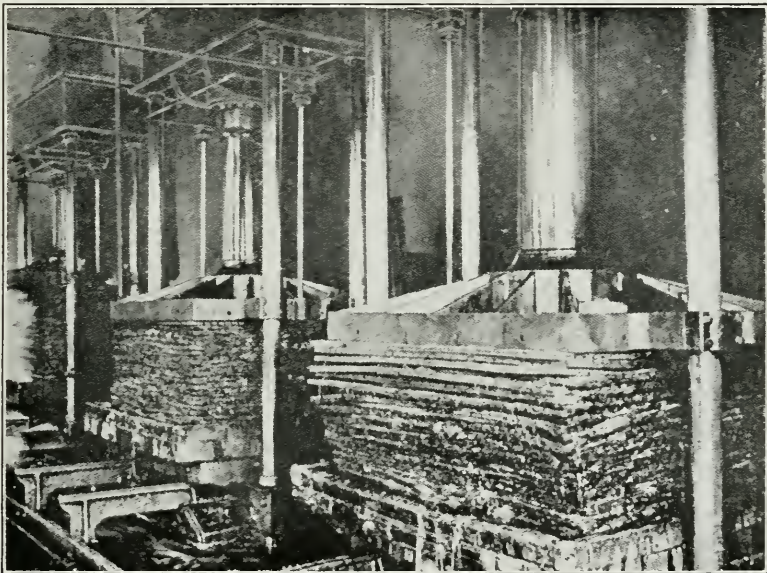
The location of a reduction plant is of first importance because of the possibility of the escape of objectionable odours. The odours resulting from the process must either be completely destroyed or the plant put in an area so remote as to cause no objection. Increased distances from the centres of population with transfer stations and supplementary transportation facilities, considerably augment the total cost of operation.

Reductive Processes.

Since the introduction to America in 1886 of reduction processes, many different types have been used. Some of these are as follows:

- | | |
|---------------|------------------|
| (1) Merz. | (5) Chamberlain. |
| (2) Simonin. | (6) Wiselogel. |
| (3) Arnold. | (7) Edson. |
| (4) Holthaus. | (8) Cobwell. |

The Cobwell process invented by Raymond Wells is the most recent development in garbage reduction. A 1,500 ton-per-day capacity plant of this type is used for the reduction of New York's garbage. The material is fed in a thin even layer to picking conveyors where all glass, crockery, cans, and other substances which might clog the machinery are removed by men working on both sides of the conveyor. The garbage is then fed directly to the reducers. These are made of cylindrical steel sheets whose height is about one-half the diameter. The bottom and sides of a reducer are double jacketed and so arranged that live steam, at about one hundred pounds pressure, can be admitted to the jacket without coming in contact with the material in the centre. Stirring paddles work in the centre compartment. Each reducer in the New York plant has a capacity of about five tons of garbage.



Pressing the grease from cooked garbage.

After the reducer is filled the charging door is clamped down and a solvent admitted until the mass is just covered. The steam is then turned into the steam jacket or outer compartment and the agitators started. The vapours from the garbage are carried to a condenser where the solvent is separated for further use. Cooking is continued until the material is completely dehydrated. This requires ordinarily about seven hours. The solvent and grease from the garbage is then drawn off through the bottom of the reducer to a still or treating tank from which the solvent is recovered by distillation. Three washings of the cooked garbage with solvent are usually required. The solvent in the grease is finally vaporized in steel tanks and the grease is left as residue to be drawn off to storage.

The mass left in the reducers is known as "tankage". It is discharged uniformly to a belt conveyor for transportation to the tankage house. During transportation the tankage is picked and screened after which it is taken to dry-grinding pans. From here it is re-screened and transferred to the storage-house ready for shipment.

PRODUCTS.

(1) *Grease.*

The most valuable product derived from the process is the grease. Ordinary garbage is considered to contain from 2 to 3 per cent. by weight of grease. During the war this figure was considerably lower on account of the greater saving by the public.

(2) *Tankage.*

Tankage is the second by-product of the process for which there is usually a fair market. The average amount which can be produced from garbage ranges from 10 to 20 per cent. by weight. Table No. 8 gives the percentage recovery of grease and tankage from two plants over a period of years.

TABLE NO. 8
REDUCTION PLANT RECORDS

Year	Recovery of By-products in per cent. of Total Garbage			
	Cleveland		Columbus	
	Grease	Tankage	Grease	Tankage
1905.....	2.63	.....	.....	.....
1906.....	3.07	.....	.....	.....
1907.....	3.14	.....	.....	.....
1908.....	3.46	9.2	.....	.....
1909.....	3.70	11.3	.....	.....
1910.....	3.75	13.2	.....	.....
1911.....	3.53	12.8	1.85	12.9
1912.....	3.38	11.5	2.72	11.6
1913.....	3.13	9.7	2.72	10.5
1914.....	2.95	10.5	2.73	9.7
1915.....	2.81	10.4	2.21	10.0
1916.....	3.06	11.2	3.08	10.3
1917.....	2.73	11.3	2.26	10.21
1918.....	2.36	11.0	2.16	10.26

Wastes.

Wastes from the reduction process are in the form of solids, liquids, and gases, all of which are capable of creating nuisances. The gases are the most objectionable. The satisfactory operation of such a plant depends very largely on the method of handling these wastes. The gases which dissolve in water may be taken care of in this way, while the present day procedure is to deodorize the insoluble gases by oxidation in a hot fire.

In the Cobwell process no insoluble gases are created because the garbage is not decomposed as in other systems. This factor is one of the chief advantages of the method. Reduction plants as a rule are not free from odours, and about half of the reduction works in America have been abandoned because of these offensive gases and vapours. Experts have testified, however, that while gases are given off from all reduction plants, the Cobwell system is much superior to those of earlier design.

The field of usefulness for the reduction process appears rather to be on the decline than the increase. The greater conservancy and waste prevention in the older European countries has always influenced against its adoption

there. The financial conditions in America may, in the near future, so curb the wastefulness of the people as to materially reduce the profits from grease extraction unless improved or new methods of lower cost are forthcoming.

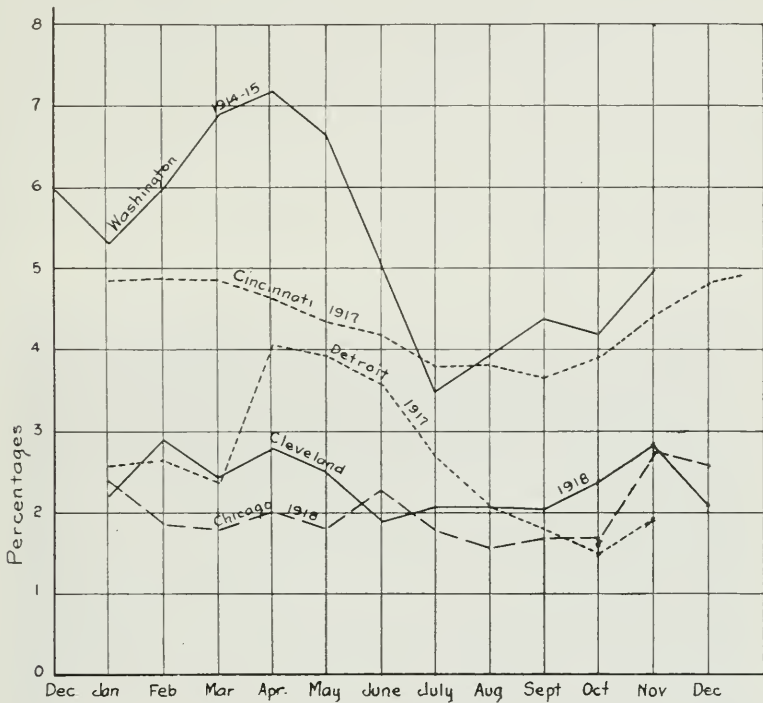


DIAGRAM NO. 2

Average monthly percentages of grease in raw garbage in some American cities.

Costs of Garbage Reduction.

The relatively small number of reduction plants in operation makes it somewhat difficult to obtain reasonably sound cost data. Many of the present plants are operated by contractors who pay the city an agreed price per ton of garbage delivered to the works. The cost figures for the operation of these plants are not only difficult to obtain, but cannot well be compared with city, owned works. Table No. 9 gives the cost of reduction over a period of years

TABLE NO. 9

COST PER TON FOR GARBAGE REDUCTION

City	Cost per ton of Garbage									
	1912	1913	1914	1915	1916	1917	1918	1919	1920	
Cleveland.....	\$1.97	\$2.00	\$....	\$2.04	\$....	\$3.18	\$4.40	\$....	\$....	
Columbus.....	....	1.90	1.86	1.94	2.21	4.19	5.47	5.19	5.54

for two representative city-owned plants in the United States, while Table No. 10 sets forth the prices received for the by-products.

TABLE NO. 10

MARKET PRICE OF GREASE AND TANKAGE FROM GARBAGE

Year	Grease in cents per pound			Tankage in dollars per ton		
	Chicago	Cleveland	Columbus	Chicago	Cleveland	Columbus
1913....	....	4.26	3.75	....	6.00	6.79
1914....	....	4.17	4.33	....	6.75	7.41
1915....	....	4.41	3.76	....	8.75	7.00
1916....	7.29	6.50	5.16	4.16	7.75	7.84
1917....	7.34	8.00	7.50	4.16 to 10.27	9.58	10.85
1918....	11.57	13.50	11.75	10.27 to 16.85	18.50	19.80
1919....	....	5.0 to 7.6	6.72	....	10.00	15.65



Refuse sorting.

(h) Sorting.

Sorting of refuse is a method of disposal which is frequently used in conjunction with some other process. The salable materials are picked out and marketed, while the remainder is disposed of by incineration or some other means. The practice of this method makes for economy. It should, however, be at all times under the supervision of some competent person and not be permitted by all who choose. To allow to the public the privilege of picking over the discarded refuse entails insanitary results, and the possibility of the spread of disease.

A well developed system of sorting requires suitable buildings provided with conveyors and up-to-date machinery. A desirable location requires proximity to a railroad station in order to facilitate shipping. All rubbish should be delivered to the plant in as dry and clean a condition as practicable.

Where the amount is large sufficient provision must be made for storage. The present day practice is for the collecting wagons to dump their load on to a platform from which the material is raked by hand to a sorting conveyor. Sorting platforms on which pickers stand are provided on either sides of the conveyors. All materials of any value are removed from the rubbish as it passes along these conveyors in thin layers. The picked materials are dropped into separate bins and later prepared for sale. The disposal of tin cans from sorting mills is always a serious problem, but pressing them into small bales appears to be the most convenient form for marketing.

The recovery of waste materials is justified only when the operation is entirely sanitary. In every case all picked materials should be disinfected before they leave the works. For sanitary reasons sorting is not generally favoured nor extensively adopted, but under certain circumstances it may be advisable.



Sorted refuse baled ready for shipment.

(i) *Incineration.*

Incineration is one of the various methods of disposal which gives opportunity for a revenue to offset the cost of such treatment. This process has a present day wide application both for small as well as large municipalities. It has been adopted more extensively in Great Britain and Europe than in America. In Europe it may be said to be the invariable practice to utilize the heat from the destruction of mixed refuse, and usually to show a profit over the cost of incineration. In America, where there are excellent opportunities for heat recovery, this source of revenue is almost entirely disregarded. Westmount, Quebec, is one of the few cases where the heat is utilized. Heat recovered from this process is usually applied in the production of steam for some near-by industrial plant or to generate electricity. In addition to actual power production there is a considerable revenue to be derived from the clinker and also from the marketable wastes.

Incineration is particularly advantageous as a means of eliminating the rat problem so frequently encountered in dumps. Where the combustible material in dumps is not burned regularly or properly cared for, these rodents rapidly increase and may result in a serious nuisance as well as spreading disease. Incineration burns their food, and destroys their hiding-places.

The choice of incineration for disposal should be governed largely by two factors:

- (1) The absence of objectionable house treatment.
- (2) Economics.

Incineration does not require any separation of household wastes—a feature which is greatly favoured by the public. Mixed refuse also necessitates a less frequent collection. Under the economics of the problem must be considered the location of the works, and the possibility of utilizing the heat of combustion. High-temperature destructor plants may be operated in built-up sections of a community without fear of incurring a nuisance. A central location which would materially reduce transportation costs may do much to disfavour the selection of any other method. In addition to this factor there is the value of recovered heat. A high-temperature destructor of a modern type will furnish sufficient waste heat for the evaporation of from one to two pounds of steam per pound of refuse burned, depending on the composition of the materials, in addition to any preheating of air required for the furnace operation. It is generally assumed that three-quarters of a pound of refuse should produce one pound of steam.

Plant Location.

Experts maintain that the waste products from high temperature destruction cause the least objection of any method of disposal. When it becomes advisable to locate such works in built-up sections, care must be exercised that no nuisance results from agencies not directly connected with the treatment. The concentration of loaded collecting wagons on streets adjoining the works waiting to unload, may result in a serious inconvenience as well as transportation difficulties. Rapid unloading facilities with the provision of extensive grounds will overcome this objection. The fly nuisance in the vicinity of such a plant cannot be lightly dismissed. Unless the refuse is well covered during transportation to the destructor, it will attract a large number of flies which eventually gain access to the adjoining houses. The furnaces in which the garbage and refuse are burned can be classified under two general types:

- (1) Those in which the temperature is generally below 1,200° F. and which are technically known as incinerators or crematories.
- (2) Those in which a temperature of over 1,200° F., usually 1,400° F., is maintained and technically termed destructors.

The crematories were chiefly developed in America and are sometimes called the American type. They have been designed to destroy the refuse in the cheapest way without considering the odorous fumes which are omitted. In the destructor type complete sanitary results are obtained, and the high temperature of combustion destroys the volatile gases. These require forced draft and special means for maintaining high temperatures.

Design and Construction.

The design of an incinerator plant may be discussed conveniently under the following divisions:

- (1) The furnace proper.
- (2) Charging apparatus.
- (3) Air supply.
- (4) Flues and furnace accessories.
- (5) Clinker and ash handling.
- (6) Dust.
- (7) Ventilation.

The design and arrangement of these essential parts of the plant depend on local conditions and the results desired, although the principles of design are somewhat similar for all types of furnaces.

(1) The Furnace Proper.

The furnace structure for a mixed refuse incinerator usually has walls of face-brick, backed with common brick and lined with fire-brick. The walls are kept in position, on the outside, by a series of vertical and horizontal channel-iron or I-beam back stays held at the top and bottom by heavy tie-rods. A furnace contains ordinarily from two to six grates with a common combustion chamber. The setting or arrangement of the grate depends on the general design and is partly controlled by the necessity for keeping the grate cool by contact with the forced draft. Preheated air comes to the grate at about 300° F., a temperature which is not high enough to burn out the grate bars.

The area of a grate depends on the character of the refuse, and has been determined largely by practice. A fixed grate ordinarily has an area of from twenty to thirty square feet, and is built up of bars of cast-iron channels. Uniform distribution of the air supply is maintained by spaces about 3/16 of an inch between the bars, and many small perforations. The forced draft air supply is usually introduced through the sides of the ash pit, and up through the grates. The division of the furnace into a number of grates, rather than one, produces a more uniform average fire and a more even heat in the combustion chamber.

Drying Hearth.

Furnaces designed to consume wet material must be provided with a drying hearth and a main grate. The size of furnace required is dependent upon the moisture content of the garbage and the consequent rate of drying. A common design of garbage furnaces provides a sufficient area of drying hearth to accommodate an amount equivalent to one day's collection of garbage. The whole quantity can then be stored within the furnaces and raked by hand on to the main grate as the moisture evaporates. To facilitate stoking and provide drainage the drying hearth is in some designs inclined to the main grate at an angle of 45°. Various types of hearths are employed. One device includes the use of perforated fire-brick arches. These arches must be well constructed to withstand warping caused by the wet refuse above and the intense heat below. Another device consists of a water cooled pipe basket set in a high brick furnace and in which the refuse is dried before dropping on to the grate.

Fire-bricks used in the construction of furnaces should be laid in fire-clay mixed to the consistency of cream. Each brick must be hammered into place to ensure proper contact with the others.

(2) *Charging Apparatus.*

Original furnaces were hand charged through openings in the top, front or back.

Apparatus for mechanically charging the refuse into the furnace from the top, have been successfully used of late. Various mechanical devices have been used at different plants. They are chiefly advantageous in that the charging door need be open for only a short time, and this prevents the inrush of cold air to the furnace, accompanied by a lowering of temperature.

(3) *Air Supply.*

Air must be supplied for the combustion of mixed refuse at a rate of from 4.5 to 6.0 pounds per pound of refuse. A velocity of air in the flues of not more than twenty feet per second and averaging about ten feet per second is desirable. This prevents the burning out of the exposed ironwork.

Five methods of supplying air can be made use of:—

- (a) Natural or chimney draft.
- (b) Forced draft by a steam jet set in or near the ash pit.
- (c) Forced draft by fans or blowers.
- (d) Induced draft by a steam jet or fan placed at the base of a chimney.
- (e) Combination of forced and induced draft.

The natural draft is the method adopted most frequently for supplying air to furnaces on account of its simplicity and small comparative cost. As a general rule the velocity of the up-draft in the chimney should not exceed ten feet per second.

Either fans or steam jets are used to produce artificial draft in practically all high temperature destructors. Present practice appears to favour the fan draft. Steam jets are cheaper than fans but they can only be operated by steam.

Induced draft is not used frequently. Combination of this with forced draft increases the capacity of the plant and the flexibility of the furnace to destroy refuse of different characteristics.

Temperature.

The temperature of the air as it reaches the grates is of prime importance. In all modern destructors the air is preheated to a temperature as high as 400° F. The value of preheating consists in reducing the volume of waste heat promoting more efficient combustion and increasing the temperature of the furnace. The temperature of the air must be kept at a point which will not burn out the grate bars, but will be high enough to efficiently aid in combustion.

The air supply may be preheated by any one of several methods: A common procedure is to install a battery of tubes in the outlets from the boiler or the main flue.

The waste gases pass through these tubes while the air is forced around the outside and takes up heat on its way to the ash pits. By this means the rate of transmission of heat from the gases to the air may be as much as 1 000 B.T.U. per hour per square foot of tube surface.

(4) *Flues and Furnace Accessories.*

The flues leading to the chimney should be of ample cross-sectional area to decrease the velocity of the gases as much as possible and so prevent dust being carried in suspension.

The combustion chamber is placed between the grates and the boiler or chimney. It serves to equalize and steady the temperature from the various grates as well as to afford time for complete combustion before the gases reach the comparatively cold boiler or chimney walls. It also serves as a pocket for catching dust.

(5) *Clinker and Ash Handling.*

Clinker and ash remain after the combustion. The clinker is a hard, vitreous mass and may cover the entire grate to a considerable depth. If the door is wide enough it can be removed in one piece, but otherwise it must be broken up. Clinkering is the name given to the process of removing this mass.

It should be done as quickly as possible in order to reduce to a minimum the rush of cold air to the furnace and to lessen the time in which the grate is out of service. Mechanical clinkering not only reduces this time, but makes the operation one of comparative ease. Two different methods known as the "pull" method and the "push" method have been used quite successfully. By these the clinker is removed in one piece and carried away by cranes to be broken up for use.

(6) *Dust.*

Much dust frequently comes from the dumping of the collection wagons, the charging and clinkering of the fires, and the disposal of clinkers. An effective remedy for this is a liberal use of water and the withdrawal of the dusty air from the building by suction of the forced air draft.

(7) *Ventilation.*

The ventilation of the building is closely associated with the dust problem and should be considered primarily with reference to the workmen. Fresh and clean air in large amounts is required for protection from the heat of the furnaces. Plenty of window and roof ventilation usually suffices rather than requiring a mechanical plant.

Incinerator Specifications.

Some of the older specifications and guarantees exacted from contractors were inclined to be too severe and unworkable. The present-day guarantee usually includes the following, or somewhat similar clauses in regard to the prevention of nuisances.

- (1) The temperature in the combustion chamber of each furnace shall not fall below 1250°F. for more than three minutes in any one hour.
- (2) That the average temperature shall be at least 1400°F.
- (3) That the gases of combustion from the chimney shall not be of a degree of darkness or density greater than chart No. 1 of Ringleman's smoke scale.
- (4) That the residue of the furnace shall not contain more than 1 per cent. of organic matter exclusive of carbon.
- (5) That no dust shall be emitted from the chimney.

Costs of Incineration.

Two incinerators operating in Canada furnish interesting cost data for this process. The Toronto destructor burning garbage and rubbish averaged a total charge of \$1.29 per ton of refuse destroyed, 87 cents of which represents the labour cost. In 1919 the total cost per ton at the Westmount, Que., incinerator was \$1.28 of which amount 83 cents was for operating charges. Cost figures and other information in regard to Ontario disposal plants are tabulated in Table No. 11.

TABLE

REFUSE DISPOSAL BY INCINERATION IN

Municipality	Population	Furnaces Designed by	Date Installed	Number of Cells	Capacity, Tons Daily
Chatham.....	15,100	Canadian Incinerator Co....	1922	2	15
Cobalt.....	4,610	.....	1910	..	10
Ford City.....	Refuse disposed of in the Walkerville incinerator				
Fort Frances.....	3,600	G. A. Overson.....	1914	1	2
Fort William.....	20,451	Ideal Incinerator Co.....	1913	3	50
Iroquois Falls.....	2,000	A. H. Reid & Co.....	1919	4	5
Kingston.....	22,000	G. C. Wright.....	1915	..	20
Kitchener.....	23,571	Canadian Incinerator Co....	1915	1	15
London.....	54,144	Heenan & Froude.....	1913	3	50
Mimico.....	Refuse disposed of in the New Toronto incinerator				
New Toronto.....	3,128	A. H. Reid & Co.....	1918	6	14
Niagara Falls.....	15,895	Sparks Incinerator Co.....	1919	2	24
Ottawa.....	116,205	Heenan & Froude.....	1912	..	75
Peterboro.....	21,605	A. H. Reid & Co.....	1913	..	20
Sarnia.....	15,176	Jarvis Engineering Co.....	1919	2	15
Sault Ste. Marie.....	23,039	A. H. Reid & Co.....	1914	..	..
Smooth Rock Falls...	800	N. America Incinerator Co..	1921	..	5
Stratford.....	18,500	A. H. Reid & Co.....	1914	..	20
Sudbury.....	9,076	Local.....	1915	1	5
Timmins.....	10,000	A. H. Reid & Co.....	1920	2	20
Toronto.....	538,771	Canadian Griscom-Russell Co., Limited.....	1917	12	180
Walkerville.....	7,303	Canadian Incinerator Co....	1913	1	10

(j) GRINDING.

Grinding or broyage, as a method of refuse disposal, was developed in France. It has not yet gained an extended field, especially in America, but has some advantages worthy of consideration. It is more generally applicable to mixed refuse, but may be used for garbage when this is sufficiently dry. Before treatment the larger materials such as bones, glass, iron, etc., are picked out and sold. The remainder is ground between two rotating steel-toothed plates from which it is screened, and delivered to cars for removal. The ground substance has an appearance not unlike leaf mould. It is used as a fertilizer. Analyses have shown the average composition to be as follows:—

Total nitrogen.....	9.31 parts per 1,000
Total phosphoric acid.....	7.12 " "
Total potash.....	5.28 " "
Total lime.....	54.90 " "

The odour of the final material is quite pronounced when it leaves the works, but this usually disappears in about three weeks. A recent modification of this process is a mixing of the ground refuse with coal dust to form briquettes for which there is a sale as household fuel. The cost of preparing the fertilizer has not permitted of a profitable sale, yet it has reduced the previous cost of disposal.

No. 11

ONTARIO MUNICIPALITIES FOR THE YEAR 1922

Flue Gas Temperature	Kind of Draft	Capital Cost	Annual Operating Costs				Tons Refuse burnt per w'k	Cost per Ton of Refuse
			Labour	Fuel	Capital Charges	Total		
1,000° F.	Forced	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	40-60	\$ c.
		30,000.00	2,000.00	500.00	4,500.00	7,000.00			3.36-2.24
		5,000.00				1,400.00	48	0.56
						125.00 per month		
		2,000.00	1,080.00	200.00		1,280.00		
1,000-1,800° F.	do	35,000.00	626.46	220.50	4,803.06	11,818.64	150	1.52
	Natural	4,500.00	1,200.00			1,200.00	24-30	0.96-0.77
1,200° F.	do	9,950.00	3,426.42	386.04	933.10	5,941.80	150	0.79
	Forced	19,500.00	1,500.00			1,700.00	100	0.33
1,700° F.	do	48,705.00	10,019.53			11,800.00	210	1.08
	Natural	15,000.00	1,380.00		1,990.00	3,370.00	30	2.16
1,800° F.	Forced	18,700.00				13,500.00	36	0.72
	do	34,650.00						
	Natural	10,000.00	2,197.50		835.82	3,649.60	108	0.65
	Forced	34,000.00	2,256.00	2,362.35	4,648.65	9,800.79	24	0.79
	Natural	16,000.00	1,165.00	605.00	1,308.23	3,242.14	40-45	1.56-1.38
	do	900.00				720.00		
600° F.	do	12,000.00	1,600.00		400.00	2,000.00	100	0.38
200° F.	Forced	2,400.00	1,080.00			1,122.12	52	0.41
	Natural	18,000.00	1,835.00	1,430.00	1,580.00	4,845.00	75	1.24
	Forced or natural					70,000.00	1,000	
1,600-1,800° F.		225,000.00				to	to	
	Forced	20,200.00	1,620.00	223.92	2,102.38	75,000.00	1,100	1.33
						4,000.00	60	1.28

(k) THE BECARRI PROCESS.

This method has not had any extensive adoption on this continent as yet, but in Europe there is a plant at Florence which deals with the mixed refuse of about 100,000 population, as well as some stable manure. The principle involved here is storage of the refuse in bins to allow natural rotting to take place, and to increase the fertilizing value of the material. The refuse is first freed of most of the heavy debris or rubbish by hand picking. At Florence there are 154 concrete cells approximately cubical in form and each of about 20 cubic meters capacity. Each is provided with a ventilating tower in which are trays of earth and sulphate of iron. At the bottom are grids over channels leading to a sump, and in each corner is a vertical air duct with outside connections and also with inside connections with several fillets which extend horizontally around the inner walls of the cells.

The sorted refuse is placed in a cell, wet with water if need be, and allowed to ferment for about 45 days, including the cooling period. The contents of the cells become quite hot and resemble farmyard manure in the process of rotting. The final product resembles humus, and the coarser particles are screened out. It is said to be a good fertilizer and to sell for about ten times the price of stable manure rotted in open pits. The plant appears to be free from odours and flies, both in the cells and in the screening shed.

6.—DISPOSAL OF MISCELLANEOUS REFUSE

Every municipality is confronted with a problem in the disposal of those waste materials which do not come under the treatment of household refuse. They are often very offensive and lead to the introduction of multitudes of flies and other insects. Miscellaneous refuse may be considered to include, principally, stable refuse, street refuse, night soil, dead animals, etc. In this connection street refuse rarely constitutes a problem so difficult of solution as do the others. Their disposal in order to avoid a nuisance, requires varying degrees of treatment and careful attention.

(a) STABLE REFUSE.

Stable refuse or manure consists of animal droppings, straw and the usual cleanings from stables. Horses, cows, sheep, and pigs are commonly found within the boundaries of municipalities. In the majority of towns and cities regulations are in force which forbid the keeping of animals other than horses within certain limits. The manure from these stables possesses excellent fertilizing qualities and is usually disposed of for this purpose. When allowed to accumulate in exposed piles, many complaints are frequently voiced in regard to the odours and fly nuisance resulting therefrom.

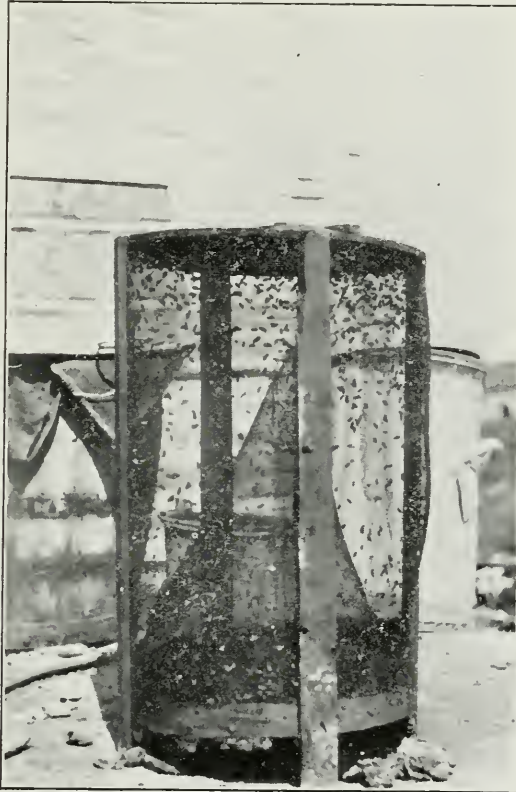
The most important object in the disposal of manure should be the prevention of a fly nuisance. All manure serves as a breeding ground for domestic flies. The different types each have their preference. Those generally found in greatest numbers about stables utilize the fresh horse manure whenever available, not only as food, but as a media in which to deposit their eggs. If this is not at hand, other fermenting substances will be made use of.

The types of flies most commonly found about stables include the following: The House fly (*Musca domestica*), the Stable fly or biting house fly, and the Blow flies in some localities. House flies are usually the more common about horse barns. The stable flies are inclined to be more numerous about cattle than horses. The blow flies do not molest cattle and horses, but they are frequently quite numerous about pig stables. The common house fly is a non-biting type, which can take in food only in a liquid condition. The stable fly is a blood sucking species, and is found in large numbers on the backs and sides of animals, where it becomes engorged with blood. The blow flies include the green bottles and the blue bottles, but are easily distinguished by the bright metallic appearance of their bodies. Their food is chiefly meat, but they have been found to feed and breed extensively in moist pig manure, and in privies or decaying vegetation.

The development of all these types of flies is by the following stages:—the eggs, the larvae, the pupae, and finally the adults. The duration of each stage varies with the type of fly, the weather, and the suitability of the breeding-grounds. In summer weather the house-fly will reach maturity in as short a period as eight days. The stable and blow flies each require about three weeks to pass through the entire process. All growth takes place in the larval period. The pupa stage is one of resting. The larvae, or maggots, are quite active but can move about only by crawling and in a limited zone. This restricted movement permits of an efficient application of control measures. In the adult stage the movements are too rapid and widespread to effectively apply remedial methods.

Remedial Measures.

A number of methods have been found most effective in fly control work under practical conditions. These include the use of larvicides, maggot traps, and storage bins.



The conical type fly-trap when well baited gives excellent results.

Larvicides.

As the term implies, larvicides aim at the destruction of the larvae or maggots. They may be classed in general as stomach poisons and contact poisons. The former has to be ingested by the larvae. Solutions of borax and hellebore are frequently used for this purpose. The application of contact poisons destroys the maggots very quickly. Such poisons include kerosene, creosote, and certain other commercial disinfectants. Stomach poisons cannot be expected to produce efficient results on account of the length of time required to act, and to the migratory habits of the larvae which carry them beyond the manure and to points not affected by the solution. Contact poisons, on the other hand, act very quickly, and immediately restrict these movements. They need moreover be applied only to those parts of the manure in which the larvae are present upon examination. This materially reduces the cost of treatment. The movement of larvae in a manure pile is always towards the bottom edge, prior to pupation. By applying the larvicide at the correct time only this area need be treated.

Some of the creosote disinfectants which have been successful for this purpose include the following:—

- (1) Lyman's Disinfectant.
- (2) Creonoid.
- (3) Pyxo'.
- (4) Creolin.
- (5) Carbonol.

Lyman's disinfectant has been used extensively in this work and found to be very effective. A solution of 3 to 4 per cent. strength is required to destroy house and stable fly larvae. It is applied by spraying the infested parts of the manure. The resulting action is rapid and the larvae are destroyed almost immediately. An examination within five minutes from the time of application will reveal any areas which have not been dosed. The other disinfectants act similarly and the choice of the particular one rests largely on the cost of each. To effectively treat a bushel of infested manure requires from one to one and one-half gallons of the solution.

Kerosene, when sprinkled on the manure at the rate of one quart to a bushel of manure and washed down with twice that amount of water, will rapidly destroy all larvae. The cost of this is somewhat higher than for the above mentioned disinfectants.

Maggot Traps.

Maggot traps have been recommended as an efficient means of destroying a high percentage of larvae found in manure. Such a trap consists of a tank of water, about six inches in depth over which is constructed a wooden platform, to support the manure. The principle involved is that the larvae while migrating to the dry edge of the pile will drop into the water and be drowned. The manure must be kept in place for about ten days and watered frequently. This method will probably destroy about 75 per cent. of all larvae, but the amount of attention required, and the size of tanks, place it at a disadvantage.

Manure Boxes.

The storage of manure in fly-tight bins, with periodic removal about every ten days or two weeks, has long been recommended for stables in towns and cities.

Unfortunately the majority of fly eggs are laid while the manure is fresh and in the stable. Storage in bins with removal to some outlying point does not prevent the complete development of the fly, and its subsequent return to habitation. Storage can only be made effective by providing bins in duplicate with a fly-trap fixed to the top of each. Each should be of sufficient size to store at least ten days' supply of manure from the stable. The bins are used alternately. One is filled with manure in ten days, and is allowed to stand full while the other is being used. In this period all eggs which were deposited before the manure was placed in the bin will have developed into adult flies. In attempting to reach the open, these are caught in the trap at the top of the bin. At the end of this period the manure may be removed and placed in the open without fear of being further infested by flies. It should be stacked in neat, tight piles with the drier material on top. The amount of manure to be provided for will depend on the quantity of bedding used. Where this is small and the horses are in the stable only at night and feeding hours, one to one and one-half bushels per horse will be the approximate quantity.

This method will be found entirely practical for stables where only a few horses are kept. For larger numbers too big a box is required and the use of larvicides must be recommended.

Pig manure frequently becomes a prolific breeding ground for blow flies. This can be prevented by spraying the infested parts with Lyman's disinfectant of 5 to 6 per cent. strength.

(b) NIGHT SOIL.

Night soil is the name given to excreta when it does not form a part of house sewage. It originates in municipalities without any sewers, and in the outlying districts of a sewered town. Where an organized collection system is in operation, the common practice requires each householder to provide a standard can. Collection is made about twice per month in a water tight wagon. Each wagon requires two men to empty the cans. In winter the cans are taken to the point of disposal and thawed out before emptying.

Final Disposal.

Final disposal of night soil may be effected in a number of ways. In a sewered municipality, it can be discharged into the sewers through a specially constructed and housed manhole. In non-sewered towns it should either be buried in shallow trenches or burned in conjunction with rubbish. Under no conditions should it be placed on dumps or left exposed to the action of flies.

Time of Collection.

Night soil collection should always be made at night in order to avoid complaints from the odours and offensive appearance. The wagons should not pass through the main streets where other roads are available. Care should be exercised to see that none of the material is scattered along the roads or in the yards adjoining the privies.

Treatment of Privies.

All privies should be effectively protected against the activities of flies. Both house and blow flies frequent these places in large numbers. The latter will hatch very readily in the contents, and carry infection to food supplies. Fly-proof privies are seldom possible, while removal of the contents every two weeks, will not prevent the development of the adult fly. The application of a light coat of chloride of lime every four or five days to the fresh and exposed contents of the privies will not only destroy all larvae, but will prevent the flies from coming in contact with the excreta.

(c) DEAD ANIMALS.

Dead animals, not larger than cats and dogs, may well be disposed of with the household refuse. Larger animals require special methods. In some places they are buried, but this requires a large pit and considerable labour, with no revenue in return. In many of the larger centres, they are reduced by private companies for grease and tankage—both marketable. Special provision can be made to handle these where an incinerator is in operation. In every case they should be removed as speedily as possible after death.

7.—SUGGESTED BY-LAWS

(a) A SUGGESTED SCAVENGING BY-LAW FOR.....

A By-law to regulate cleansing and scavenging within the Municipality of the of.....

Whereas it is deemed advisable to regulate the cleansing and scavenging of the area within the Corporation of the..... of.....

Therefore, the Council of the Municipality of the..... of..... enacts as follows:

(1) On and after the..... day of..... a system for establishing, maintaining and regulating within the said Municipality the collection and disposal of ashes, rubbish, refuse and garbage shall be put into force.

(2) The collection and disposing of ashes, rubbish, and garbage within the Municipality shall be placed under the control and management of the committee on.....

(3) All slops and liquid matter objectionable in the opinion of the Local Board of Health, Medical Health Officer or Sanitary Inspector, and all household refuse and garbage, excepting ashes, shall be placed in suitably covered receptacles of either tin, zinc or iron properly protected against the entrance of flies, and satisfactory to the Board of Health, and shall be placed in a convenient location so that the same may be readily collected by licensed scavengers as the Board of Health may direct.

(4) All necessary receptacles for the collection of refuse, garbage, ashes, etc., shall be supplied by the owner, tenant or occupant of the premises to meet the requirements of this By-law.

(5) No owner, tenant, occupant or person shall within the Municipality suffer the accumulation of, or deposit of, or permit the deposit upon his premises, or upon the streets, lanes and private lands in the rear of, or adjoining his premises of any garbage, manure, filth, boxes, paper or other refuse of a similar character, or anything which may be dangerous to the public health, or which may attract flies or permit their breeding therein, or which may in any way provide unnecessary cause for fires or the spreading of fires, nor shall such owner, tenant, occupant or person permit or allow any filthy liquid matter from any cesspool, stable or pig-pen to flow or drain upon such streets, lanes or private lands.

(6) When any dumb animal shall die within the limits of the said Municipality, the owner shall within 12 hours thereafter cause the carcass to be removed to the place provided by the Corporation, and if not done the same shall be removed by the scavenging department at the rate as per schedule attached, but nothing in this clause shall relieve the offender from the penalty imposed by this By-law.

(7) The Council of the said Municipality shall enter into contract with a person to be called the licensed scavenger, to aid in carrying out the provisions of this by-law, and the said licensed scavenger and all men, horses, vehicles and outfit used in the work shall be subject to the regulations of the Local Board of Health.

(8) All carts, waggons, sleds, sleighs or other vehicles used for the conveyance of manure, earth, ashes, or other material, which is loose and might drop upon the street, shall have boxes of such size and construction and shall be loaded in such a manner that the contents thereof shall not litter the streets.

(9) All refuse, garbage, ashes and other offensive matter collected by the licensed scavenger shall be deposited on the town dumping grounds, the site of the said grounds to be approved by the Local Board of Health.

(10) The town dumping grounds shall be kept in a tidy and sanitary condition and all deposits made upon the grounds shall be under the direction and control of the Medical Officer of Health, or Sanitary Inspector. The following set of rules shall apply to the maintenance of the town dumps:

- (a) Deposits shall be made in layers not exceeding six feet in depth; and not more than fifty square yards shall be left uncovered at any one time.
- (b) Each layer shall be covered on all surfaces exposed to the air, with at least nine inches of ashes, earth, or other suitable substance. Each covered layer shall be allowed to settle before another is added.
- (c) No refuse shall be left uncovered for more than 72 hours from the time of deposit.
- (d) If the material deposited at any one time consist entirely of fish, animal, or other organic refuse, it shall be covered forthwith with earth or other suitable substance at least two feet in depth.
- (e) A fly larvicide shall be kept on hand and all maggots destroyed before the pile is covered.
- (f) No refuse shall be allowed to be scattered, but must be kept as compact and tidy as possible.
- (g) No scavenging shall be allowed at the dump except by municipal employees.

(11) Nothing contained in this By-law shall prevent anyone from removing and transporting to the dumping grounds any ordinary garbage or ashes provided the same is done and deposited in the manner provided in this By-law.

(12) It shall be the duty of the Sanitary Inspector to keep vigilant supervision over all streets, lanes, and by-ways within the said Municipality, where animal dirt, manure, garbage, filth, refuse or other matter or thing may be found.

(13) Any person convicted of a breach of any of the provisions of this By-law shall forfeit and pay at the discretion of the convicting magistrate a penalty not exceeding the sum of \$25.00 for each offence.

(b) A SUGGESTED BY-LAW FOR THE COLLECTION AND DISPOSAL OF NIGHT-SOIL IN THE MUNICIPALITY OF.....

This By-law may be given two readings by the Council of any Municipality, and after approval by the Provincial Board of Health, may be read a third time, and become law as an amendment to Schedule B of the Public Health Act.

(1) No person shall construct or maintain in said Municipality any system of sewage disposal by means of privy vault, dry-earth closet or by broad irrigation, subsoil irrigation or otherwise, except upon a permit issued by the local Board of Health of the said Municipality. Application for said permit shall be made in writing to the local Board of Health, and shall be accompanied by a detailed description of the system and its location on the premises of said applicant.

(2) No privy vault, cesspit, or dry-earth closet shall be allowed to exist within the limit of the area defined as follows:

(3) On and after the.....day of....., a system for establishing, maintaining and regulating within the said Municipality, the collection and disposal of night-soil shall be put into force.

(4) The Council of the said Municipality shall at the first of each year appoint a contractor for the collection, transportation and disposal of night-soil from the Municipality of..... The cost of such collection shall be assessed and collected as taxes, against the premises where privy vaults, or dry-earth closets exist, or against any premises from which night-soil is collected.

(5) No person other than the contractor appointed by the Municipality shall engage in the business of collection or transportation of night-soil, or drive any cart for such purpose, in the Municipality of the..... of.....

(6) All carts or vehicles used in the transportation of night-soil, or other offensive substances, shall be so constructed and loaded as to prevent the escape of any such offensive material during transportation.

(7) No cart or other vehicle for carrying night-soil or any other offensive or noxious substance, or the contents of any privy, vault or cesspit, shall, without necessity thereof, be allowed to stand or remain before or near any building, place of business, or other premises where any person may be, nor shall any such cart or vehicle be allowed to occupy an unreasonable length of time in loading or unloading, or in passing along any street or through an inhabited place or grounds.

(8) Such carts, vehicles, and all implements used in connection therewith shall be kept in an inoffensive and sanitary condition, and when not in use shall be stored and kept in some place where no needless offence shall be given to any person.

(9) The contractor appointed by the Municipality shall make collections regularly from all closets once every two weeks, and all such collections shall be made between the hours of.....p.m. and.....a.m.

(10) Every owner, lessee or tenant of any property upon which there exists a privy shall provide galvanized or other approved containers for use in the same and shall provide means by which cans may be removed and replaced.

(11) The following code of rules and regulations for the maintenance of privies, cesspits and dry-earth closets shall constitute a part of this By-law and any person or persons violating or neglecting any of the said rules and regulations shall be liable to fines and penalties imposed by Section 12 of this By-law:

Rule 1. All earth privies, cesspits, dry-earth closets and other systems shall be so constructed, screened and maintained that flies neither find access thereto nor breed therein.

Rule 2. Every such earth closet shall be so constructed that adequate access may be had to every part thereof for the purpose of cleansing and disinfecting.

Rule 3. Every person who shall construct an earth closet in or in connection with a building within the limits of this corporation, shall provide, construct or fix in connection with such earth closet suitable means or apparatus for the frequent and effectual application of dry earth, ashes or other deodorizing substance to any filth which may from time to time be deposited in the receptacle of such earth closet.

Rule 5. Every owner, lessee, or tenant of any property upon which there exists a privy, shall have the fresh and exposed fecal matter of the said privy sprinkled with a coat of Chloride of Lime not less than one-quarter of an inch thick, at least every five days, for the period from May 1st to October 1st of each year.

(12) Any person or persons convicted of a breach of any of the provisions of this By-law shall forfeit and pay at the discretion of the convicting magistrate a penalty not exceeding the sum of \$25.00 for each offence.

NOTE.—The final disposal of night-soil will be governed by local conditions. The following three alternative clauses are submitted for this purpose:

(13) (a) To apply to a municipality in which a sewerage system has recently been constructed, but where the outlying areas are not yet served:

“The contractor shall dispose of all collected night-soil through a sewer manhole specially constructed for this purpose, and located at, and shall use sufficient water for flushing purposes to prevent any clogging in the sewer.”

(13) (b) To apply to municipalities where there are areas adjacent to an incinerator, and without sewer accommodation:

“The contractor shall transport all night-soil collected to the municipal incineration plant, and discharge the same in a convenient place ready for burning, as directed by the man in charge.”

(13) (c) To apply to municipalities without sewers or an incineration plant:

“The contractor shall transport all night-soil collected to such areas as the council may direct, and shall plow in or bury the same so that no part is left uncovered.”

SOME RESULTS OBTAINED FROM AERATION OF WATER SUPPLIES USING AN AIR COMPRESSOR AND DIFFUSER PLATES.

A. V. DELAPORTE, B.A.Sc., A.M.E.I.C., AND G. A. H. BURN, B.A.Sc.

The value of aeration for the removal of some objectionable properties from water has long been recognized by waterworks engineers. Aeration has hitherto generally been accomplished by some device which separates the water into fine streams or sprays, and brings the water into intimate contact with the air. These devices have not proven particularly satisfactory for the severe climate in Ontario.

During the year 1923, some interesting results were obtained by the Engineering Division in the aeration of municipal water supplies by bringing the air into intimate contact with the water. This result was accomplished by means of an air compressor and diffuser plates such as are used in the Activated Sludge Process for sewage treatment. Experiments were carried out at Essex, Forest, and Richmond Hill.

Experiment at Essex.

The town of Essex secures its water supply from three deep wells. One of these, the Garrow well, is located about a mile from the pump house. The other two, designated as the north and south wells, are located within the pump house in the centre of the town.

All three wells have to be pumped. The ground level at the Garrow well is three or four feet lower than that at the pump house and the water is pumped into a riser pipe until a head is developed sufficient to produce a flow through the six-inch cast iron pipe line to the pump house. This well is pumped continuously, and is estimated to produce 60,000 gallons daily.

The discharge from the north and south wells enters the reservoir through a common pipe line near the point of the Garrow well discharge. Their combined flow is estimated to be 80 to 90 gallons per minute, and they are pumped long enough to supply the amount of the daily consumption above the supply from the Garrow well. At the time of the experiments they were being pumped about eight hours daily.

There are two reservoirs at the pump house, one of these is circular, 25 feet in diameter and 50 feet deep. The second is elliptical, 25 feet in depth, and has a capacity of 27,000 gallons. A ten-inch opening connects the one with the other.

The pumping equipment consists of a centrifugal service pump, rated capacity 150 g.p.m., taking suction from the small reservoir, and two fire pumps whose suctions are in the large reservoir.

For some time previous to the aeration experiments the town tap had been showing considerable pollution and about the 1st of April, 1923, at the suggestion of the Provincial Board of Health, a Wallace and Tiernan Liquid Chlorine Apparatus of the M.S.A. type was installed. It was impossible, however, to detect any residual chlorine in the tap, even with this machine operating at its maximum capacity. The water from all three wells had a strong odour of H_2S and it was thought that the absorption of chlorine was associated with the presence of H_2S in solution. It was believed that the removal of this H_2S might be accomplished by aeration.

Accordingly, a small Curtis air compressor, $2\frac{1}{2}$ inches by 3 inch stroke driven by a 2 horsepower motor was installed on April 18th. This supplied

air to a square diffuser plate (Jones & Atwood) one square foot in area, located approximately in the centre of the large reservoir at a depth of 30 feet.

Daily tests were made on the north well, south well, a mixture of the north and south wells, the influent from the Garrow pipe line and the tap water. Analyses performed consisted of determination of dissolved oxygen, alkalinity, free CO₂, chlorine as chlorides, H₂S and iron. These analyses were made from April 17th to 28th, inclusive, the results are tabulated in Tables No. 1 to 5.

Laboratory tests were first made to determine the quantity of chlorine necessary to satisfy the demand of a mixture of the north and south wells, and of the Garrow well, and produce a residual after 15 minutes contact. A standard chlorine solution was used, and 100 c.c. samples were treated with various amounts of chlorine. These experiments indicated that it required 35 to 40 p.p.m. of chlorine to produce a residual in a mixture of the north and south wells, and from 7 to 9 p.p.m. in the Garrow well.

The dissolved oxygen in the tap and in the well water ranged from 1.4 to 2.0 c.c. per litre. The H₂S in the north and south wells varied from 9.0 to 10.5 p.p.m., and in the Garrow well influent from 2.0 to 3.0 p.p.m.

On commencing aeration, the chlorine solution, which heretofore had been applied at the point where the three wells discharge into the reservoir, was introduced into the small reservoir, first through a manhole at the side and later through a small hole in the floor beside the suction main of the service pump.

It was unfortunately impossible to obtain samples of the water immediately after aeration and before chlorination in order to determine the improvement due to aeration alone. However, the effect was at once evident in a lowering of the chlorine demand. The rate of application of the chlorine solution was changed until a rate of 4.1 pounds per 24 hours, approximately 3.0 p.p.m., was arrived at, which gave a residual at all times.

The dissolved oxygen in the tap water was increased from 2.0 c.c. per litre to 4.5 c.c. per litre. The free CO₂ and alkalinity were decreased materially and the H₂S was entirely removed. The fairly high amount of chlorine, 3.0 p.p.m., still required to produce a residual of .2 to .3 p.p.m. after 15 minutes contact may be attributed to the fact that the aeration equipment installed for the experiment was inadequate to remove all of the H₂S when the north and south wells were being pumped.

The value of aeration in treating a water supply such as that of the town of Essex was definitely established and undoubtedly with a larger air compressor, all of the H₂S could be removed by this means and the chlorine demand thereby cut down still further.

Experiment at Forest.

The work here was undertaken to determine the feasibility of aerating a highly carbonated deep well supply in order to eliminate objectionable taste and certain medicinal properties.

For the experiment, the town's elevated tank, 10 feet in diameter and 10 feet deep, was used. Three diffuser plates, each 3 feet by 4 inches, were placed in the bottom of the tank and connected with an air compressor capable of delivering approximately 15 cubic feet of air per minute. Water was pumped into the tank directly from the well, until it contained about 4,000 gallons. Air was then turned on and analyses for free CO₂ and dissolved oxygen were made to detect any changes which might take place. These results are given in Table No. 6.

The free CO_2 was entirely eliminated in 55 minutes and the dissolved oxygen increased from 2.1 to almost 9.0 c.c. per litre in the same period. This was accomplished with a complete removal of the objectionable properties of the water.

Experiment at Richmond Hill.

The town of Richmond Hill secures its water from a spring creek. The creek is dammed to form a shallow lake several acres in extent. This pond during the summer is filled with various types of aquatic plants, becoming practically a marsh. The surface becomes very warm and the heavy weed growth aids stratification by tending to prevent movement of the water. Water from this pond is passed through a mixing chamber, sedimentation tank, and gravity mechanical filters to a clear water well. From there it is pumped to a standpipe. The water consumption in the town is very small, so that the ordinary plant operation is to filter and pump a few hours on two or three days a week just enough water to fill the standpipe and clear water well. Consequently, the water is in the system for possibly a month and in the outer edges of the town probably six weeks.

During the winter, when the creek and pond were covered with ice, the water in the mains developed an objectionable colour, odour, and taste due to iron and organic matter. The application of alum to the raw water was discontinued and a diffuser plate, one foot square, was placed in the sedimentation chamber in such a position as to give a maximum of agitation, compressed air being forced through from a small gasoline engine which had been converted into an air compressor. The amount of air available was insufficient. The chemical results shows a slight improvement in the water, but the change noted in the physical properties of the water was very marked and out of all proportion to the chemical improvement noted. A portion of the iron in the raw water was precipitated and was removed on the filters. The dissolved oxygen was increased from an average of 0.3 c.c. per litre to 2.3 c.c. per litre and probably the organic matter was partially oxidized. This resulted in practically an entire removal of the objectionable physical properties of the tap water. The odours, taste, colour, and sediment which developed in the mains before aeration disappeared entirely, or were reduced to such an extent as not to be objectionable. Only once or twice since aeration was commenced has sediment or odour developed in the water in the mains.

In midsummer, the conditions noted in the winter also prevail, in part due to the lack of motion in the pond. The water at the bottom, protected from the heat of the sun and from circulation or mixing with the warmer surface water by the weed growth, presents all the characteristics of the water during the winter months.

Aeration is not carried to completion at Richmond Hill due to the small capacity of the air compressor. The results obtained indicate that with adequate aeration the objectionable constituents could be entirely eliminated. This supply would be materially improved if there were a greater consumption of water in the town so that the plant operation would be continuous and the water would not be standing in the system, producing what amounts to dead end conditions. The results of this experiment are given in Table No. 7.

TABLE No. 1.—ESSEX, NORTH WELL

Date	Time	D.O. c.c.p.l.	Temp. °C.	Bicarb. Alk.	Free CO ₂ as CaCO ₃	Chlorine as Chloride	H ₂ S	Total	Iron	
									Ferrous	Ferric
Apr. 17	10.00 a.m.	1.5	11.0	155	8.8	148	9.27	1.6	0.0	1.6
18	1.15 p.m.	1.8	11.2	154	11.0	151	9.22	0.2	0.0	0.2
19	1.20 p.m.	1.5	11.5	154	11.0	155	9.27	0.2	0.0	0.2
20	10.25 a.m.	1.8	12.0	156	9.9	150	9.48	1.3	0.0	1.3
21	10.30 a.m.	1.5	12.0	154	8.8	143	9.69	0.3	...	...
23	10.15 a.m.	1.7	11.3	154	8.8	152	9.27	0.3	0.0	0.3
24	11.20 a.m.	1.5	11.0	156	8.8	144	10.46	0.4	0.0	0.4
25	11.30 a.m.	1.9	11.1	156	11.0	146	10.29	0.2	0.0	0.2

TABLE No. 2.—ESSEX, SOUTH WELL

Date	Time	D.O. c.c.p.l.	Temp. °C.	Bicarb. Alk.	Free CO ₂ as CaCO ₃	Chlorine as Chloride	H ₂ S	Total	Iron	
									Ferrous	Ferric
Apr. 17	9.45 a.m.	1.8	10.5	154	13.2	134	9.14	1.0	0.0	1.0
18	11.35 a.m.	1.2	11.2	158	13.2	145	10.54	7.0	0.2	6.8
19	1.00 p.m.	1.7	12.0	150	9.9	140	9.05	0.4	0.0	0.4
20	10.00 a.m.	1.7	11.5	156	9.9	138	10.33	0.6	0.0	0.6
21	9.45 a.m.	1.5	11.5	156	11.0	142	10.88	0.7	...	...
23	10.35 a.m.	1.7	11.0	152	9.9	143	9.69	0.3	0.0	0.3
24	12.40 p.m.	1.9	11.1	154	11.0	140	9.95	0.2	0.0	0.2
25	11.50 a.m.	1.8	11.1	154	9.9	139	10.41	0.2	0.0	0.2

TABLE No. 3.—NORTH AND SOUTH WELLS

Date	Time	D.O. c.c.p.l.	Temp. °C.	Bicarb. Alk.	Free CO ₂ as CaCO ₃	Chlorine as Chloride	H ₂ S	Total	Iron	
									Ferrous	Ferric
Apr. 17	11.00 a.m.	2.5	10.8	150	8.8	139	8.92	1.0	0.0	1.0
18	11.15 a.m.	2.5	10.8	160	12.1	146	10.54	0.7	0.0	0.7
19	9.15 a.m.	2.0	11.1	158	11.0	138	10.29	1.4	0.0	1.4
20	9.20 a.m.	2.6	11.0	156	12.1	138	9.86	0.4	0.0	0.4
21	9.05 a.m.	2.5	11.3	156	9.9	141	10.46	0.6	...	...
23	11.00 a.m.	2.8	10.8	154	8.8	145	9.31	0.3	0.0	0.3
24	11.00 a.m.	2.7	11.0	156	11.0	140	11.05	1.0	0.3	0.7
25	11.15 a.m.	3.0	10.8	156	8.8	140	10.50	0.2	0.0	0.2

TABLE No. 4.—GARROW WELL INFLUENT

Date	Time	D.O. c.c.p.l.	Temp. °C.	Bicarb. Alk.	Free CO ₂ as CaCO ₃	Chlorine as Chloride	H ₂ S	Total	Iron	
									Ferrous	Ferric
Apr. 17	3.50 p.m.	1.5	7.0	154	3.3	55	2.17	0.2	0.0	0.2
18	9.10 a.m.	1.8	9.0	154	3.3	53	2.21	0.1	0.0	0.1
19	4.25 p.m.	1.4	9.5	150	3.3	52	2.55	0.0	0.0	0.0
20	1.50 p.m.	1.5	9.5	154	3.3	54	2.64	Trace	0.0	Trace
22	11.45 a.m.	1.8	9.5	154	3.3	51	2.51	...	...	...
23	9.00 a.m.	1.4	9.5	152	3.3	53	2.51	0.1	0.0	0.1
24	9.10 a.m.	1.6	9.5	152	2.2	52	2.64	Trace	0.0	Trace
25	9.15 a.m.	1.7	9.5	156	2.2	53	2.59	0.0	0.0	0.0
25	9.50 a.m.	2.4	11.4	154	2.8	53	2.93	Trace	0.0	Trace

TABLE No. 5.—ESSEX TAP

Date	Time	D.O. c.c.p.l.	Temp. °C.	Bicarb. Alk.	Free CO ₂ as CaCO ₃	Chlorine as Chloride	H ₂ S	Total	Iron Ferrous	Ferric
Apr. 17	1.25 p.m.	1.8	13.0	138	6.6	117	0.60	1.0	0.0	1.0
18	9.50 a.m.	2.0	10.0	142	6.6	92	0.34	0.3	0.0	0.3*
19	10.00 a.m.	2.7	10.5	138	4.9	89	0.34	0.4	0.0	0.4
	11.20 a.m.	3.0	10.4	...	4.4	...	0.00	...	...	...
	3.20 p.m.	3.5	11.0	...	4.4	...	0.21	...	...	...
20	9.40 a.m.	4.8	10.5	...	5.5	...	0.00	...	...	...
	11.20 a.m.	4.8	11.2	...	3.3	...	0.00	...	...	...
	1.15 p.m.	4.4	11.0	138	4.4	86	0.21	0.4	0.0	0.4
	3.45 p.m.	4.1	11.0	...	6.6	...	0.00	...	...	...
21	9.25 a.m.	4.9	10.5	...	3.3	...	0.17	...	...	...
	11.15 a.m.	4.5	11.0	138	4.4	82	0.00	0.3	...	...
	2.00 p.m.	4.4	11.3	...	4.4	...	0.00	...	...	...
	3.00 p.m.	4.3	11.5	...	3.9	...	0.12	...	...	...
22	11.20 a.m.	4.8	10.5	140	3.9	76	0.00	...	...	...
23	9.50 a.m.	5.0	10.5	140	5.5	78	0.00	0.4	0.0	0.4
	1.30 p.m.	4.7	11.0	...	5.5	...	0.42	...	...	...
	4.00 p.m.	4.9	10.4	...	5.5	...	0.00	...	...	...
	4.35 p.m.	4.8	10.6	...	4.4	...	0.00	...	...	...
24	10.50 a.m.	5.3	10.5	...	4.4	...	0.00	...	...	...
	1.00 p.m.	5.2	11.0	138	5.5	80	0.00	0.4	0.0	0.4
	3.20 p.m.	5.3	10.5	...	6.0	...	0.00	...	...	...
25	1.30 p.m.	5.4	11.8	140	5.5	82	0.00	0.3	0.0	0.3

*Aeration commenced 5.15 p.m., April 18th.

TABLE No. 6.—AERATION OF WATER SUPPLIES, FOREST, ONT.

Time	Free CO ₂ in p.p.m.	D.O. in c.c. per litre	Temp. °C.
Before aeration.....	4.5	2.1	10.0
5 minutes.....	4.3	2.1	10.0
10 ".....	3.0	...	10.0
15 ".....	2.5	6.8	10.0
20 ".....	2.5	...	...
25 ".....	2.5	7.9	10.0
30 ".....	1.7	...	...
35 ".....	1.7	8.1	10.0
45 ".....	1.7	...	...
55 ".....	0.0	...	...
65 ".....	0.0	9.2	10.0
2 hours.....	0.0	10.0	10.0

TABLE No. 7.—RICHMOND HILL
EFFLUENT FROM SEDIMENTATION BASIN

Date	D.O. c.c. per Litre	Temp. °C.	Free CO ₂ as CaCO ₃	Total Fe.	Total Alk.	
Feb. 16.....	0.1	2.5	8.0	Aeration started.
" 21.....	0.3	3.0	6.0	...	...
Mar. 1.....	0.7	3.0	10.0	3.0	...	
" 7.....	3.1	2.5	4.0	3.2	...	
" 14.....	1.3	4.0	6.0	1.8	...	
" 21.....	2.4	2.5	5.0	...	...
June 2.....	7.4	18.0	14.0	...	207	
" 2.....	6.7	18.0	14.0	...	...
" 2.....	6.0	18.0	...	...	...
" 2.....	6.2	19.0	...	...	...

SURFACE OF FILTERS

Date	D.O. c.c. per Litre	Temp. °C.	Free CO ₂ as CaCO ₃	Total Fe.	Total Alk.
Mar. 1.....	0.8	4.0	6.0	2.2	...
" 7.....	...	....	....	4.2	...
" 14.....	...	....	....	1.6	...

EFFLUENT FROM FILTERS

Date	D.O. c.c. per Litre	Temp. °C.	Free CO ₂ as CaCO ₃	Total Fe.	Total Alk.
Feb. 21.....	2.7	2.8	5.0	...	...
" 21.....	2.8	3.0	7.0	...	...
" 21.....	2.2	3.2	5.0	...	...
Mar. 1.....	1.0	4.2	9.0	1.2	...
" 1.....	1.3	4.5	5.5	2.2	...
" 7.....	2.1	2.7	5.0	4.8	...
" 7.....	1.5	3.0	4.0	2.4	...
" 14.....	0.8	3.2	9.0	2.3	...
" 14.....	0.3	3.0	6.0	1.5	...
" 21.....	2.2	3.5	5.0	...	...
" 21.....	2.7	2.8	5.0	...	...
June 2.....	7.1	17.5	6.0	...	...

Aeration started.

CLEAR WATER WELL

Date	D.O. c.c. per Litre	Temp. °C.	Free CO ₂ as CaCO ₃	Total Fe.	Total Alk.
Feb. 16.....	0.1	3.0	9.0	...	...
" 21.....	0.0	3.0	6.0	...	...
Mar. 1.....	0.8	4.2	9.0	3.0	...
" 7.....	0.6	2.0	4.0	2.0	...
" 14.....	0.3	4.0	7.0	1.5	...
" 21.....	1.9	3.0	4.0	...	...
June 2.....	7.4	16.2	4.0	...	178

TOWN TAP

Date	D.O. c.c. per Litre	Temp. °C.	Free CO ₂ as CaCO ₃	Total Fe.	Total Alk.
Feb. 16.....	0.1	5.8	9.0	...	...
" 21.....	0.4	1.5	5.0	...	...
Mar. 1.....	1.1	5.0	5.0	3.8	...
" 7.....	...	....	....	6.2	...
" 14.....	...	....	....	1.3	...

THE PROTECTION OF WELLS USED AS A SOURCE OF DOMESTIC WATER SUPPLY

The protection of well water against the admission of filth is always a problem to those who must depend upon domestic wells for the supply of drinking water.

Proper protection excludes from the water not only those organisms which are pathogenic to man, but in addition all other materials of foreign or animal

origin. Surface drainage, unless excluded, will introduce sufficient pollution to cause adverse water analyses. The top layer of the soil is invariably heavily impregnated with organisms which are of intestinal origin; and while these may not always be pathogenic their presence is an indication of a direct access to the well of surface drainage.

Well water may be adversely affected by surface drainage gaining access through the top or by faulty location in respect to other sources of pollution. A new well should be so located that surface water or drippings can be diverted way from that area. The next best protection is ground water storage, which is had in deep wells or in areas in which the soil, sand, etc., offers considerable resistance to movement.

One of the most common avenues of entrance of pollution to a well, especially a shallow dug one, is by means of the top and upper section of the lining. A covering made of planks is seldom watertight especially after being in use for a short period. In some rural districts it is the practice to dispose of the privy contents on the manure pile. The farmer's boots, stock, chickens, etc., may convey such germs and refuse to the top of the well, where it is washed into the well supply either by water from the spout or a rainstorm. When the well is in low land or on the side of a hill a heavy storm may cause a flooding of the well top, and if the protection is not adequate contamination is sure to follow. The most suitable well top is one made of concrete with a sufficient slope and gutter to carry off floodings and splashing from the immediate vicinity of the well. The lining of the well for a distance of ten feet from the surface should be made watertight, and the excavated material rammed back in place to provide a filtering medium. The tops of drilled, driven, and bored wells should be similarly protected to avoid drainage following down the well-casing to the water-bearing strata.

Proper location of a well will prevent contamination from underground sources. The dissemination of infectious materials is purely mechanical and is dependant upon the agencies which exist in the soil. The natural tendency is for disease germs to pass vertically downward through the soil and not laterally. Where horizontal transference takes place it is due in the majority of cases to fissures in rock or clay, coarse sand or gravel, and rapid movement of the ground water. The effect of this material upon the quality of the well water is chiefly a question of storage. Where it can be retained in the soil before reaching the well for a sufficient time to destroy the activity of infective material no danger will follow. The majority of typhoid and other germs, whose natural habitat is the human body, do not survive in the soil beyond ten days or two weeks. Consequently, location of the well should insure a sufficient storage period to accomplish this purpose.

In the accompanying table of well water analyses from the sanitary surveys of 1923, it is natural to expect that the number of dug wells of fair quality should be very small, where either no pumps or only wooden tops were provided. Dug wells with concrete tops show an improvement. This figure is not higher because the concrete tops have not always been supplemented by watertight walls and gutters. Drilled and driven wells show a decided improvement, since the construction of these types facilitate the protection against surface drainage. Here again the percentage of fair quality wells might be increased by better attention to the casings and tops.

PRIVATE WELLS—SANITARY SURVEYS OF 1923
TABLE SHOWING TYPES OF WELLS AND NUMBERS GIVING FAVOURABLE BACTERIAL ANALYSES

Municipality	Dug Wells No Pump		Dug Wells Wood Tops		Dug Wells Concrete Tops		Springs		Drilled Wells		Driven Wells		Totals	
	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality
Alexandria.....	57	4	67	9	1	..	..	..	3	2	..	..	128	15
Arnprior.....	..	..	17	1	..	..	..	..	8	2	..	..	25	3
Arthur.....	1	..	101	7	8	1	..	..	13	2	..	..	123	10
Brighton.....	29	2	34	..	10	2	..	..	2	1	1	..	76	5
Cardinal.....	..	..	7	..	3	..	..	..	3	..	..	..	13	..
Carleton Place.....	4	1	1	..	..	..	..	..	91	15	..	..	96	16
Chesley.....	1	..	17	2	1	..	1	..	..	..	..	..	20	2
Colbourg.....	6	..	74	..	10	..	..	..	4	..	..	..	94	..
Descronto.....	52	7	37	9	24	9	1	1	5	2	..	..	119	28
Durlham.....	..	..	97	4	15	1	..	..	4	1	..	..	125	7
Elmira.....	..	..	60	9	20	7	..	..	3	1	..	..	84	18
Fergus.....	..	..	19	..	20	..	..	..	22	3	..	..	62	4
Gananoque.....	3	..	45	3	8	..	..	..	68	17	..	..	128	23
Harriston.....	..	..	36	1	1	..	..	..	5	1	..	..	42	2
Hawkesbury.....	7	..	16	1	2	..	..	..	20	14	1	1	47	16
Humberstone.....	..	..	..	..	..	..	..	..	271	176	..	..	271	176
Iroquois.....	2	..	16	..	4	..	..	..	3	..	..	..	27	..
Kemptville.....	1	1	63	5	19	4	..	..	50	18	..	..	133	28
Lindsay.....	17	3	376	151	101	51	10	3	55	41	1	..	560	249
Listowel.....	..	..	67	13	4	1	..	..	3	1	1	1	75	16
Madoc.....	8	..	33	3	15	4	1	..	53	34	..	..	110	41
Markdale.....	..	..	6	1	..	..	1	1	9	6	..	..	16	8
Meaford.....	1	..	35	2	4	..	..	..	3	2	..	..	51	4
Milverton.....	..	..	44	1	3	..	..	..	3	2	..	..	50	3
Morrisburg.....	2	..	16	..	1	..	..	..	..	..	..	..	19	0
Mount Forest.....	2	1	11	..	1	..	..	..	..	..	..	..	17	1
Oakville.....	18	5	20	1	2	..	1	..	1	..	..	..	42	6
Owen Sound.....	8	1	26	5	6	2	..	3	7	5	..	..	62	16
Palmerston.....	..	..	4	..	..	..	..	..	4	3	..	..	8	3
Perth.....	12	..	48	..	7	2	..	..	9	1	..	..	77	3

PRIVATE WELLS—SANITARY SURVEYS OF 1923—Continued
TABLE SHOWING TYPES OF WELLS AND NUMBERS GIVING FAVOURABLE BACTERIAL ANALYSES

Municipality	Dug Wells No Pump		Dug Wells Wood Tops		Dug Wells Concrete Tops		Springs		Drilled Wells		Driven Wells		Totals	
	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality	Total Number	Number Showing Fair Quality
Picton.....	32	3	101	13	71	20	11	3	54	13	..	..	269	52
Port Colborne.....	..	..	1	1	..	..	1	1	34	15	..	..	36	17
Port Elgin.....	..	..	3	1	1	..	1	1	5	5	120	94	130	101
Shelburne.....	..	..	26	..	..	..	..	..	4	3	..	..	32	4
Trenton.....	54	3	169	13	78	7	7	..	83	12	..	..	391	35
Tweed.....	12	..	68	1	36	7	7	2	36	6	..	..	159	16
Vankleek Hill.....	5	..	124	5	15	2	..	..	9	4	..	..	153	11
Totals.....	334	31	1,885	262	493	121	86	20	948	408	124	96	3,870	939
Per cent. of Good Quality.....	..	9.3	..	13.9	..	24.6	..	23.3	..	43.0	..	77.4	..	24.2

STUDY OF PRETREATMENT OF THAMES RIVER WATER AT CHATHAM.

By A. V. DELAPORTE, B.A.Sc., A.M.E.I.C., and G. A. H. BURN, B.A.Sc.

The City of Chatham secures its domestic water supply from the Thames River. During the months of March and April, the river is subject to wide variations in turbidity, the satisfactory removal of which has offered serious difficulties in previous years under the existing facilities for treatment.

DESCRIPTION OF PLANT EQUIPMENT AND ARRANGEMENT.

The raw river water is pumped by means of low-lift pumps to a storage reservoir 765 feet by 75 feet by 14 feet deep (capacity 5,000,000 gallons.) The low-lift pumping equipment consists of a steam pump, rated capacity 750,000 gallons per 24 hours, which is operated continuously at varying rates and an electric pump, rated capacity 3,000,000 gallons per 24 hours, which is operated from 10 p.m. until the basin is full, usually about 7 a.m. Up to this year, it has been the practice to apply the alum dosage at the suction side of these low-lift pumps. The reservoir provides about three days' storage.

The service pumps, of which there are two, are electrically driven and will deliver 1,600 g.p.m. and 1,400 g.p.m. approximately. These pumps draw the water from the reservoir and force it through the filters into the mains; ordinarily one pump is sufficient to supply the domestic demand and maintain a pressure of 60 pounds. There are eight filter units of the horizontal pressure mechanical type, each 20 feet long by 8 feet in diameter. The filtering capacity estimated at 2 gallons per square foot per minute is 2,560 g.p.m. (3,686,400 gallons per 24 hours). The domestic consumption which varies from 1,000 g.p.m. to 1,600 g.p.m. is well within this range but the safe rate may be exceeded in case of fire and is exceeded when the filters are being backwashed. It is then necessary to turn on the second pump, water being forced through seven filters, capacity 2,240 g.p.m., at a rate of from 2,800 to 3,000 g.p.m.

To further safeguard the supply it is chlorinated. Chlorine is added at the rate of 5 pounds per 24 hours to the suction of the service pump. In addition, sufficient chlorine is pumped into the main after filtration to maintain a residual of .2 p.p.m. after 15 minutes contact.

Only the water passing out into the city system is metered. Water used in backwashing the filters must be estimated.

NEW BAFFLING SYSTEM.

During the fall of 1922, the baffling system as suggested by the Provincial Board of Health was constructed in the storage reservoir. It consists of a primary system located about one day's supply from the outlet and a secondary system at the outlet of the storage reservoir. Under average conditions it is about two hours from the time water entering the first system leaves it and the same interval elapses from the time water entering the second system leaves the basin.

ARRANGEMENTS FOR APPLICATION OF ALUM.

(1) *Suction of Low-lift Pumps.*

The alum feed apparatus in the pump house consists of two small solution tanks which discharge into a larger storage tank. The alum solution flows by

gravity into a float chamber into which the suction lines to the two low-lift pumps are introduced. There is no device provided to maintain a constant rate of flow of the alum solution, the float valve being attached to the domestic water system to insure maintenance of the level in the float chamber in case the alum feed should become blocked and guard against the sucking of air into the suction line. This apparatus has a capacity of between 2 and 3 grains per gallon when both low-lift pumps are being operated.

(2) *First Baffling System Entrance.*

A small frame cabin was erected on top of the piling and a tank arrangement consisting of a single dissolving tank and two feed tanks. At first the alum solution fed directly into a funnel and lead pipe which introduced the solution from 1 to 2 feet below the surface of the water in the reservoir. Later a float valve and small orifice box was added by means of which a constant rate of application of the alum solution was ensured. This apparatus has a capacity of about 5 g.p.g. under average conditions.

(3) *Second Baffling System Entrance.*

A temporary arrangement was set up in the open for adding alum at this point. It consisted of three barrels, one for mixing and dissolving the alum, the other two for feeding the solution. This, owing to the severity of the weather during the period of the investigation, could not be used continuously. The maximum quantity of alum added here was just over 1 g.p.g.

PURPOSE OF INVESTIGATION.

The purpose of the investigation was to determine the alum dosage necessary to remove the high turbidities in the raw water and establish if possible any relationship existing between the turbidity, alkalinity, Ph value and required amount of alum under actual working conditions. Laboratory experiments were also performed using H_2SO_4 , lime, soda ash and permutit in conjunction with alum.

PRELIMINARY OBSERVATION.

The work commenced on March 8th, 1923. At this time the river was subsiding and the turbidity in the raw water was between 350 and 400 as against over 800 on the day previous. Alum was being added at an average rate of from 2.0 to 2.5 g.p.g. to the suction of the low-lift pumps and at about 2.0 g.p.g. at the entrance to the first baffling system. Preliminary laboratory experiments showed that with a dosage of 2 or 3 g.p.g. in raw water with a turbidity of over 250 no appreciable floc was formed in 24 hours. It was thought that greater efficiency might be got from the alum if it were all added at the baffling system. The alum feed at the suction of the low-lift pumps was discontinued at 10 p.m., March 11th.

TESTS MADE ON WATER.

The chemical tests performed on the water consisted of Alkalinity, Free CO_2 and Ph value. Turbidities were also determined. Samples for analysis were secured of the raw water, water entering the first baffling system, water leaving the first baffling system, influent to filters and the tap.

Table Number 1 gives the result of analyses made from March 8th to 13th, inclusive. This covers the period that would be affected by the alum dosage at the suction of the low-lift pumps. Generally speaking there was a 50 per cent. reduction in the turbidity in passing from the river to the entrance

of the baffling system. The Ph value was lowered from 7.9-8.1 to 7.2-7.3. The maintenance of this lower Ph value was probably due to the fact that during this time the basin was covered with ice, thus preventing the ready escape of Free CO₂ liberated by the alum. The higher values of Free CO₂ obtained during this time would tend to confirm this theory.

The dosage of alum at the baffling system cut down the Ph value of the water from 7.3 to 6.8-6.9 under best working conditions. On March 12th and 13th, when the turbidity of the water entering the filters ranged from 30 to 45 with a Ph value of 6.8, the tap was practically free from turbidity.

Table Number 2 gives the results of analyses performed from March 12th to 28th. During this period an attempt was made to remove most of the turbidity by a single treatment of alum at the first baffling system. On some days, about 1 g.p.g. was added at the entrance of the second baffling system during the day, the idea being to produce a slight floc which would pass on to the filters and assist in the removal of any remaining turbidity. Varying dosages of alum were used, beginning with about 2.2 g.p.g. on March 12th and 13th, and increasing to about 5 g.p.g. March 25th to 28th.

The efficiency of the baffling system could be readily observed even by the casual observer by a comparison of the appearance of the water passing through the baffling system. The water passes first through a series of baffles designed to secure a good mixture of the alum solution with the untreated water and thence to an enlarged section through which the velocity is much reduced. On all days there was always an excellent floc showing by the time the water arrived at the end of the mixing baffles. Considerable settling took place at this point where the velocity was checked, there being a very marked ring of very turbid water extending a short distance into the clearer water in the enlarged section of the system. From here the water entered the upper section of the reservoir where there was a further check in velocity and consequently additional removal of turbidity.

DIFFICULTIES ENCOUNTERED IN APPLYING ALUM.

During the whole course of the tests, the work was hampered considerably by inclement weather conditions. On several nights there were severe frosts and, as there were no heating arrangements in the cabin on the baffling system, the alum solution feed was constantly freezing up and allowing untreated water to pass through the baffling system. At other times clogging of the feed line with dirt caused interruptions in the application of the chemical. It was not until March 23rd that this difficulty was finally overcome by keeping a man on duty at the basin continuously.

During the first ten days of the test also, the alum feed from the tanks was by gravity and necessarily varied with the head in the tank from which the solution was being drawn. On March 17th a smaller solution tank with float valve attachment was installed, thus ensuring the application of the alum solution at a constant rate.

In addition, the rate of flow through the baffling system is variable. It is affected by three factors: (1) consumers' demands, (2) present arrangements of pumping into the basin and (3) backwashing of filters.

The consumers' demands vary during the day from 1,000 g.p.m. to 1,600 g.p.m., the consumption from 6 a.m. to 6 p.m. being from 900,000 to 1,000,000 gallons. From 6 p.m. to 6 a.m. the consumption is from 500,000 to 600,000 gallons, and the rate of pumping is not subject to such great variations. In case of fire, the rate may increase to 3,000 or perhaps 4,000 g.p.m.

Under the present system of pumping from 1,000,000 to 1,200,000 gallons of water into the reservoir from 10 p.m. to 7 a.m., the basin is from 12 to 15 inches lower at 10 p.m. than at 7 a.m. The amount of water that passes through the baffling system from 7 a.m. to 10 p.m. is less than the consumption during this time by the capacity of 12 to 15 inches of that section of the reservoir past the baffling system. Similarly during the rest of the day the flow is greater than the consumption for the period by that amount (approximately 150,000 gallons).

The backwashing of each filter requires at least 1,500 g.p.m. Backwashing once in 24 hours requires about 20 minutes for each filter. Backwashing twice in 24 hours required from 12 to 15 minutes for each filter.

Owing to the distance of the baffling system from either end of the reservoir, changes in the rate of pumping into or out of it will not affect the flow through the baffling system immediately; i.e. the increased flow created by the filling of the reservoir will continue for some time after 7 a.m. when the electric low-lift pump is stopped. Similarly, increased flow at the outlet end due to backwashing the filters will not cause an increase in flow through the baffling system until some time has elapsed.

This varying rate of flow is responsible for the different Ph values that were obtained from samples secured from the outlet of the first baffling system at different times during the day but with the same application of alum. Owing to the unsatisfactory arrangements for adding alum at the upper baffle it was impossible to give the water a second treatment at this point continuously, consequently there were times when the load upon the filters was too great and they were unable to remove all of the remaining turbidity.

GENERAL OBSERVATIONS ON RESULTS.

A comparison of the tabulation of results in Tables Numbers 1 and 2 reveals the following:

(1) The application of about 2 g.p.g. of alum to the suction of the low-lift pumps together with the estimated storage of two days accomplished a reduction in turbidity of a little more than 50 per cent. at the inlet of the first baffling system. This result was obtained with raw water turbidities of from 400 to 190.

(2) The effect of storage alone gave a percentage efficiency which decreased to almost zero when the raw water turbidity was 200 or less. It would appear that these turbidities are due to finely divided particles of clay which settle very slowly, and which are probably in a colloidal condition.

(3) In order to secure a clear effluent that had a turbidity of less than 10, it was necessary to reduce the turbidity of the influent to less than 75 p.p.m. This required a dosage of 5 g.p.g. of alum. Incidentally, this dosage of alum reduced the Ph value to 6.8-7.0.

(4) A Ph value of 6.8-7.0 would appear to be the optimum for most economical filtration of the Thames River water when dealing with high turbidities.

RESULTS OF LABORATORY EXPERIMENTS.

In addition to the practical application of alum to the supply, several experiments were carried on in the laboratory at the waterworks plant.

One series of experiments was carried on to determine the effect of various dosages of alum. Eight samples taken on different days at the inlet of the first baffling system were treated with varying amounts of alum from a standard

solution. These samples were allowed to stand in long cylinders overnight. Observations were made of floc formation and the next day Alkalinity, Free CO_2 and Ph determinations were made on all cylinders.

The results of this experiment are tabulated in Table Number 3. It will be noted that with turbidities ranging from 250 to 600 in the original samples it required at least 4 g.p.g. to give a good floc in 18 hours, and 5 g.p.g. to give a good floc in 1 hour. These figures further bear out the results obtained in the work on a large scale on the city supply. The higher Ph values obtained in the laboratory experiments are probably due to the increase in temperature of samples in the laboratory from $2^\circ\text{-}3^\circ\text{C.}$ to $16^\circ\text{-}20^\circ\text{C.}$, resulting in a loss of the Free CO_2 developed in the alum reaction.

Table Number 4 gives the results of treating two samples of the raw river water with various dosages of alum. The results obtained are quite comparable with those of Table Number 3.

Table Number 5 shows that there is a variation of the Ph value with a different time interval. Unfortunately Free CO_2 determinations were not made so that the reason for the variations cannot be definitely stated.

Tables Numbers 6, 7, 8 and 9 give the results obtained in laboratory experiments using sulphuric acid, soda ash, permutit and lime in conjunction with alum. The results secured with any of these were not favourable enough to justify the construction of necessary equipment for the application of any of these chemicals on a practical scale.

Table Number 10 shows the daily consumption and the quantities of alum used during the period of the tests.

SUMMARY.

From the results obtained during this investigation, it is quite clearly shown that raw waters with wide ranges of turbidity as is typical of the Thames River can be successfully treated with alum and sedimentation so as to reduce the turbidity to such an extent that a filtration plant operating under average conditions will not be overloaded.

The correct dosage of alum would appear to be dependent upon the formation of a floc adequate in volume to carry down the turbidity with it. Sufficient alum should be added to reduce the turbidity of the water entering the filters to less than 75 and preferably to less than 50, in order to secure a clear effluent. With this supply, best results were obtained with a dosage of 5 g.p.g.

A second dosage of alum maintained continuously at the entrance to the upper baffle would materially increase the efficiency of the filters.

It should be noted, too, that at the beginning of the tests the filters were washed only once in 24 hours. This was changed to washing every 12 hours but, with turbidities of over 25 p.p.m., an improvement in the filter effluent might possibly be secured with a more frequent backwash of the filters.

TABLE NO. 1
RESULTS OF ANALYSES, CHATHAM, MARCH 8TH—13TH.

Date	Raw Water					Inlet, Baffling System						
	Time	Turb.	Alk.	Free CO ₂	Ph.	Alum g.p.g.	Time	Turb.	Alk.	Free CO ₂	Ph.	Alum g.p.g.
March 8th.....	2 p.m.	400	125	3.0	8.1	.....	11 a.m.	375	160	8.0	7.3	1.82
	4 p.m.	350	130	.....	8.0	2.19	.....	.....	.....	.....	.....	.....
March 9th.....	10.15 a.m.	200	124	3.0	8.0	.....	9.30 a.m.	180	120	7.0	7.2	.....
	11.30 a.m.	210	120	3.0	8.0	2.53	2 p.m.	140	126	6.0	7.3	1.84
	4.15 p.m.	200	122	3.0	7.9	.....	.....	.....	.....	.....	.....	.....
March 10th.....	9.10 a.m.	180	138	3.0	7.9	.....	10.15 a.m.	140	122	6.0	7.3	.....
	2 p.m.	190	140	4.0	7.9	2.46	3.15 p.m.	110	126	.....	7.3	2.32
March 11th.....	2.55 p.m.	190	150	4.0	8.1	2.56	3.50 p.m.	100	126	6.0	7.3	2.51
March 12th.....	9.30 a.m.	600	180	3.0	8.1	.....	10.10 a.m.	90	130	7.0	7.3-7.4	.....
	11.35 a.m.	500	176	3.5	7.9-8.0	.....	1.55 p.m.	95	136	5.0	7.3	.....
	2.45 p.m.	500	182	4.0	7.9-8.0	.....	4.05 p.m.	90	134	6.0	7.3	2.21
	4.45 p.m.	550	182	3.0	7.9-8.0	.....	.....	.....	.....	.....	.....	.....
March 13th.....	10 a.m.	600	220	3.0	7.9-8.0	.....	9.15 a.m.	110	145	6.0	7.5	.....
	2.30 p.m.	900	240	3.0	7.9-8.0	.....	11 a.m.	140	146	6.0	7.4-7.5	.....
	4.15 p.m.	1000	240	4.0	7.9-8.0	.....	2 p.m.	180	154	6.0	7.5	.....
.....	.....	.....	.....	.....	.....	3.50 p.m.	200	146	7.0	7.4-7.5	2.19	

March 8th—Alum feed frozen at baffling system, 8.00 a.m.
 March 9th—Alum feed frozen night of March 8th and 9th.
 March 10th—Alum feed frozen night of March 9th and 10th.

March 11th—Alum feed to suction of low-lift pumps discontinued, 10.00 p.m.
 March 12th—Backwashing of filters every 12 hours commenced.
 March 13th—Alum feed stopped night of March 12th and 13th.

TABLE NO. 1A
RESULTS OF ANALYSES, CHATHAM, MARCH 8TH-13TH.

Date	Influent to Filters				Tap Water				River Level Normal 574.50		
	Time	Turb.	Alk.	Free CO ₂	Ph.	Time	Turb.	Alk.		Free CO ₂	Ph.
March 8th.....	3.30 p.m.	250	145	8.0	7.3	3.00 p.m.	60	.....	.....	.....	579.0
March 9th.....	10.30 a.m.	110	136	.....	7.2	9.50 a.m.	45	134	6.0	7.3	577.5
	11.50 a.m.	110	140	8.0	7.2-7.3	3.40 p.m.	30	.....	.....	.....
	2.00 p.m.	130	140	9.0	7.2-7.3	.....	.....	.....	.....	.....
March 10th.....	10.15 a.m.	100	124	8.0	7.1	9.45 a.m.	25	140	.....	7.2	576.5
	11.35 a.m.	.....	122	.....	7.0	2.30 p.m.	25	138	6.0	6.9	
	2.45 p.m.	90	124	8.0	7.0	.....	.....	.....	.....	.....
	3.15 p.m.	85	128	.....	7.1	.....	.....	.....	.....	.....
March 11th.....	3.45 p.m.	60	112	9.0	6.9	3.10 p.m.	Less than 10	120	8.0	7.0	576.0
	4.35 p.m.	45	112	8.0	6.9-7.0	.....	.....	.....	.....	.....
March 12th.....	9.00 a.m.	45	108	9.0	6.9	9.20 a.m.	Less than 10	120	10.0	6.9	
	10.05 a.m.	35	120	7.0	6.8-6.9	11.30 a.m.	Less than 10	108	8.0	6.8-6.9	
	11.15 a.m.	35	110	6.0	6.9	3.00 p.m.	Less than 10	106	7.0	6.8-6.9	578.5
	1.50 p.m.	30	106	6.0	6.8	.....	.....	.....	.....	.....
	3.15 p.m.	30	110	8.0	6.8	.....	.....	.....	.....	.....
March 13th.....	9.10 a.m.	35	114	6.0	6.8	10.40 a.m.	Less than 10	110	6.0	6.8	577.5
	11.45 a.m.	45	112	7.0	6.8	3.35 p.m.	Less than 10	118	5.0	6.8	
	2.50 p.m.	45	116	7.0	6.8	.....	.....	.....	.....	.....
	4.30 p.m.	45	118	.....	6.8-6.9	.....	.....	.....	.....	.....

March 8th—Alum feed frozen at baffling system, 8.00 a.m.
 March 9th—Alum feed frozen night of March 8th and 9th.
 March 10th—Alum feed frozen night of March 9th and 10th.

March 11th—Alum feed to suction of low-lift pumps discontinued, 10.00 p.m.
 March 12th—Backwashing of filters every 12 hours commenced.
 March 13th—Alum feed stopped night of March 12th and 13th.

TABLE NO. 2A. Part 2.
RESULTS OF ANALYSES. CHIATHAM, MARCH 26TH-28TH.

Date	Influent to Filters						Tap Water						River Level Normal 574.50
	Time	Turb.	Alk.	Free CO ₂	Ph.	Alum g.p.g.	Time	Turb.	Alk.	Free CO ₂	Ph.	River Level	
March 26.	11.40 a.m.	60	116	5.0	6.9-7.0	.....	2.10 p.m.	5	114	4.25	7.0-7.1	576.50
	2.10 p.m.	55	112	4.0	7.0-7.1	.....	4.25 p.m.	5	116	5.0	7.0-7.1	
March 27.	11.15 a.m.	50	106	4.0	6.8-6.9	.....	10.30 a.m.	5	110	5.0	6.9-7.0	Alum feed upper baffle 1.1 g.p.g. 8 a.m. 27th-8 a.m. 28th 575.00
	1.30 p.m.	60	112	4.0	6.9	.....	1.30 p.m.	5*	112	3.5	6.9	
	2.25 p.m.	60	108	3.5	6.9	1.1	2.50 p.m.	5*	104	4.5	6.9		
March 28.	11.20 a.m.	50	106	3.5	6.9-7.0	1.1	10.45 a.m.	5*	108	4.0	6.9-7.0	*Turbidity less than 5	
	.....	.....	.....	.....	.....	.....	11.20 a.m.	5*	108	4.5	6.9-7.0	

TABLE NO. 2A.
RESULTS OF ANALYSES. CHATHAM, MARCH 12TH-28TH.

Date	Influent to Filters				Alum g.p.g.	Tap Water					River Level Normal 574.50	
	Time	Turb.	Alk.	Free CO ₂		Ph.	Time	Turb.	Alk.	CO ₂ Free		Ph.
March 12.....												578.50
March 13.....												577.75
March 14.....	11.40 a.m.	45	120	6.0	6.8	11.00 a.m.	10	122	5.5	6.8		
14.....	3.35 p.m.	60	124	5.5	6.9	3.45 p.m.	7	120	5.0	6.9		Alum feed stopped night of Mar. 12-13th.
March 15.....	10.00 a.m.	50	134	6.5	7.0	11.55 a.m.	10	136	6.0	7.0		
15.....	11.30 a.m.	50	140	4.5	7.1	1.0						Alum feed upper baffle 1.0 g.p.g. 10 a.m.-6 p.m.
15.....	2.50 p.m.	75	134	5.5	7.0							
March 16.....	11.00 a.m.	80	136	5.5		11.15 a.m.	12	132	6.5			
16.....	11.35 a.m.	80	138	4.5		11.30 a.m.	12	134	5.0			Alum feed upper baffle 1.0 g.p.g. 8 a.m.-6p.m.
16.....	3.25 p.m.	75	138	2.5		3.25 p.m.	12	136	4.5			
March 17.....	11.25 a.m.	80	126	5.0		11.25 a.m.	10	130	4.5			Alum feed upper baffle 1.0 g.p.g. 8 a.m.-12 noon.
Low duty electric pump not operated night of 16th-17th.			ted night of 16th-17th.									
March 18.....	3.45 p.m.	110	148	4.0		3.45 p.m.	20	140	4.0			Alum feed stopped night of Mar. 17-18th
Ice going out on river	from 1.30 p.m.		Basin	filled.		4.00 p.m.	25	138	4.0			
March 19.....	11.40 a.m.	100	134	4.0		11.30 a.m.	20	134	4.0			
19.....	4.00 p.m.	120	138	4.5		4.00 p.m.	25	140	4.5			
19.....						4.20 p.m.	25	134	4.0	7.1		
March 20.....	11.45 a.m.	120	134	4.0	7.1-7.2	11.10 a.m.	15-20	134	4.0	7.1-7.2		Alum feed upper baffle 1.0 g.p.g. 8 a.m.-6p.m.
20.....	2.00 p.m.	130	140	4.5	7.1-7.2	11.45 a.m.	20-25	136	4.0	7.1-7.2		Low duty elect. pump not operated night of Mar. 19th-20th.
20.....	4.05 p.m.	120	136	4.0	7.1	2.00 p.m.	20-25	136	4.0	7.2		
20.....						3.45 p.m.	15	132	4.0	7.1		579.25

March 21	130	132	4.0	7.2	.....	10.45 a.m.	30	116	4.0	7.3	.....	Alum feed stopped ngt. 20-21st. Basin filled.
21	120	122	4.0	7.2	.....	11.25 a.m.	25	128	3.5	7.2	.....	Alum feed upper baffle
21	150	122	5.0	7.3	1.0	1.25 p.m.	25	116	3.5	7.2	.....	1.0 g.p.g. 10 a.m.-2 p.m.
21	140	122	4.0	7.3-7.4	.....	3.00 p.m.	30	120	4.0	7.3	.....	578.00
March 22	150	120	4.0	7.4	.....	10.55 a.m.	25	118	4.5	7.3-7.4	.....	Alum feed stopped ngt. of 21st-22nd.
22	150	120	4.0	7.3	1.0	11.25 a.m.	30	122	4.5	7.4	.....	Alum feed upper baffle
22	160	118	4.0	7.2	.....	1.30 p.m.	30	118	4.0	7.3-7.4	.....	1.0 g.p.g. 9 a.m.-4 p.m.
22	.....	.....	.....	.....	.....	3.30 p.m.	30	112	3.0	7.2-7.3	.....	576.00
March 23	90	108	3.5	6.9-7.0	.....	10.45 a.m.	15	102	3.5	7.0	.....	.....
23	90	102	4.0	6.9-7.0	.....	11.45 a.m.	12	104	4.0	6.9-7.0	.....	.....
23	.....	.....	.....	.....	1.0	1.25 p.m.	12	104	4.0	7.0	.....	Alum feed upper baffle
23	.....	.....	.....	.....	.....	3.50 p.m.	15	100	4.5	7.0	.....	1.0 g.p.g. 8 a.m.-5 p.m.
March 24	90	108	4.5	7.0	.....	1.15 p.m.	10	110	4.5	7.0-7.1	.....	.....
24	.....	.....	.....	.....	.....	3.35 p.m.	10	112	4.5	7.0	.....	576.50
March 25	70	110	5.0	7.0	.....	3.35 p.m.	5	112	4.0	7.0	.....	.....
25	.....	.....	.....	.....	.....	3.50 p.m.	5	114	5.0	7.0	.....	577.50

TABLE NO. 3

Sample	No. 1						No. 2						No. 3						No. 4					
	Turb.	Floc	Alk.	Free CO ₂	Ph.		Turb.	Floc	Alk.	Free CO ₂	Ph.		Turb.	Floc	Alk.	Free CO ₂	Ph.		Turb.	Floc	Alk.	Free CO ₂	Ph.	
Original... 500	182	3.0	600	180	3.0	475	174	2.0	450	146	2.0	
2 g.p.g.	Very slight in 18 hours	156	3.5	Very slight, 18 hrs.	150	3.0	7.6	Very slight, 18 hrs.	124	3.0	7.6+	136	3.5	7.6+	
3 g.p.g.	Slight 18 hrs.	146	3.0	.....	.....	.....	Slight 18 hrs.	146	3.5	7.6+	.....	.....	Slight 18 hrs.	120	3.5	7.6+	.....	.....	130	3.0	7.6+	
4 g.p.g.	Good 18 hrs.	144	5.5	.....	.....	.....	Good 18 hrs.	142	3.0	7.6+	.....	.....	Good 18 hrs.	114	3.0	7.6	.....	.....	122	4.0	7.6+	
5 g.p.g.	Slight 1 hr. Good 18 hrs.	136	5.0	.....	.....	.....	Fair 1 hr. Good 18 hrs.	134	4.0	7.6+	.....	.....	Good 1 hr.	105	5.5	7.5	.....	.....	112	4.5	7.5	
6 g.p.g.	15 min.	138	4.5	.....	.....	.....	Good 30 min.	126	4.0	7.4 to 7.5	.....	.....	45 min.	100	4.0	7.4 to 7.5	.....	.....	104	4.0	7.5	
7 g.p.g.	15 min.	130	6.5	.....	.....	.....	25 min.	120	5.0	7.3	.....	.....	30 min.	96	5.0	7.3-7.4	.....	.....	96	7.0	7.3-7.4	
8 g.p.g.	15 min.	120	6.0	.....	.....	.....	20 min.	110	5.0	7.3	.....	.....	30 min.	94	5.5	7.3	.....	.....	92	4.0	7.4	
Alk. 16 g.p.g.	15 min.	100	13.0	.....	.....	.....	15 min.	82	14.0	6.7-6.8	.....	.....	15 min.	76	13.0	6.8-6.9	.....	.....	84	13.0	7.0-7.1	

TABLE NO. 3—Continued

Sample	No. 5						No. 6						No. 7						No. 8								
	Turb.	Floc	Alk.	Free CO ₂	Ph.	Turb.	Floc	Alk.	Free CO ₂	Ph.	Turb.	Floc	Alk.	Free CO ₂	Ph.	Turb.	Floc	Alk.	Free CO ₂	Ph.	Turb.	Floc	Alk.	Free CO ₂	Ph.		
Original	275	.....	144	1.0	...	250	.....	148	1.0	.....	350	.....	146	3.0	.....	250	.....	148	3.5	.....	.....	.....	.....	148	3.5	.....
2 g.p.g.	Very Slight, 18 hrs.	118	3.0	7.6+	.....	Very slight 18 hrs.	134	4.0	7.6+	.....	Slight 18 hrs.	132	3.5	7.6+	.....	Very slight 18 hrs.	136	3.5	7.6+	.....	.....	.....	136	3.5	7.6+	
3 g.p.g.	Slight, 18 hrs.	118	3.5	7.6+	.....	Slight 18 hrs.	128	3.5	7.6+	.....	Slight 18 hrs.	128	4.0	7.6+	.....	Slight 18 hrs.	132	4.0	7.6+	.....	.....	.....	132	4.0	7.6+	
4 g.p.g.	Good 18 hrs.	116	3.0	7.6+	.....	Good 18 hrs.	124	3.5	7.6+	.....	Good 1 1/4 hrs.	120	5.0	7.6	.....	Good 18 hrs.	128	4.5	7.6+	.....	.....	.....	128	4.5	7.6+	
5 g.p.g.	Good 1 1/4 hrs.	110	4.0	7.5	Good 1 1/2 hrs.	118	4.0	7.4
6 g.p.g.	Good 40 min.	100	4.5	7.5	.....	1 hr.	104	4.0	7.3-7.4	.....	40 min.	108	5.0	7.3	.....	45 min.	112	4.0	7.6	.....	.....	.....	112	4.0	7.6	
7 g.p.g.	30 min.	94	8.5	7.2-7.3	30 min.	98	5.0	7.3
8 g.p.g.	15 min.	86	6.0	7.3	.....	15 min.	94	6.0	7.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alk. 16 g.p.g.	15 min.	80	13.0	6.9	.....	15 min.	88	11.0	6.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—All samples taken at inlet of baffling system.

Analyses made from 18-22 hours after treatment.

Original temperature of samples 2°-3°C.

Temperature at time analyses were made 16°-20°C.

In all samples but No. 7, 2 g.p.g. and 3 g.p.g. samples were turbid on filtration; 4 g.p.g. filtered clear and remainder settled clear. No. 7 sample—3 g.p.g., 4 g.p.g. and 6 g.p.g. settled clear; 2 g.p.g. turbid on filtration.

TABLE NO. 4.

Sample	No. 1.						No. 2.					
	Turb.	Floc	Alk.	Free CO ₂	Ph.	Turb.	Floc	Alk.	Free CO ₂	Ph.		
Original	350	.....	170	3.0	.....	390	0	162	2.5	.....	
2 g.p.g.	Very slight 24 hrs.	156	3.0	7.6+	.....	Very slight 24 hrs.	136	4.0	7.6+	
3 g.p.g.	Slight 24 hrs.	150	4.0	7.6+	.....	Slight 24 hrs.	134	4.0	7.6+	
4 g.p.g.	Fair 1½ hrs.	146	4.0	7.6+	.....	Good 18 hrs.	130	4.0	7.6+	
6 g.p.g.	45 min.	134	5.0	7.6	.....	25 min.	114	4.0	7.6	

Initial temp. 2°-3°C.; temp. at time analyses were made 16°-20°.

In both samples 2 g.p.g. and 3 g.p.g. were still turbid on filtration; 4 g.p.g. filtered clear; 6 g.p.g. settled clear.

Analyses made 24 hours after treatment.

TABLE NO. 5.

Sample	No. 1.					No. 2.					No. 3.						
	Turb.	Floc	Ph. 1 hr.	Ph. 19 hrs.		Floc	Ph. 1 hr.	Temp.	Turb.		Floc	Ph. 1 hr.	Temp.	Ph. 4 hrs.	Temp.	Ph. 24 hrs.	Temp.
Original	200	.....	.....	.....	.....	.....	.....	.....	200	.....	.....	.....	.....	.....	.....	.....	.....
2 g.-p.g.	.....	Slight 18 hrs.	7.3-7.4	7.6+	.....	Good 15 min.	7.0-7.1	16°C.	.....	.....	Fair 3 1/2 hrs. Clear 24 hrs.	7.2-7.3	5°C.	7.3	19.5°C.	7.6+	16°C.
3 g.-p.g.	.....	Settled clear 18 hrs.	7.0-7.1	7.4-7.5	.....	.....	.....	.....	.....	.....	Good 1 1/4 hrs.	7.1	5°C.	7.1-7.2	19.5°C.	7.5-7.6	16°C.
4 g.-p.g.	.....	45 min.	6.9	7.0-7.1	.....	3 min.	6.8-6.9	16°C.	.....	.....	45 min.	6.9	5°C.	6.9-7.0	19.5°C.	7.2-7.3	16°C.

TABLE NO. 6. H_2SO_4

Sample	Alk.	Free CO_2	Acidity to Sulphates	Ph.	Floc 1 g.p.g. Alum
Original.....	230	4.0	.....	8.1	.....
80 p.p.m. H_2SO_4	76	52.0	8.0	6.0	Good, settled 3 hrs.
60 p.p.m. H_2SO_4	130	40.0	0.0	6.7-6.8	Nil 3 hrs.
40 p.p.m. H_2SO_4	154	22.0	0.0	7.3	Nil 3 hrs.
20 p.p.m. H_2SO_4	164	16.0	0.0	7.4-7.5	Nil 3 hrs.

Alum added 19 hrs. after H_2SO_4 .

TABLE NO. 7—SODA ASH.

Sample	Bicarb.		Normal Carb.		Ph.	Alum		
	Alk.	Alk.	Alk.	Alk.		2 g.p.g.	4 g.p.g.	6 g.p.g.
Original.....	170	0	0	0	8.0	.....	4 g.p.g.	6 g.p.g.
80 p.p.m.	588	12	12	12	7.8?	No floc	.....	.....
40 p.p.m.	175	10	10	10	7.8?	.....	No floc	.....
20 p.p.m.	172	16	16	16	7.8?	.....	.....	Good floc 30 min.

Ph. determination 18 hrs. after treatment with soda ash.

Alk. determination $2\frac{1}{2}$ hrs. after treatment with soda ash.

Alum added 18 hrs. after treatment with soda ash.

TABLE NO. 10.

Date	Consumption				Total	Alum Solution		First Baffling System		Second Baffling System	
	Meter Reading		Washwater Estimated	Grains per Gal.		Lbs.	g.p.g.	Lbs.	g.p.g.	Lbs.	g.p.g.
	U.S. Gal.	Imp. Gal.									
March 8	1,552,000	1,293,000	240,000	2.19	480	1.82	400	1.82	.....	.....
March 9	1,540,000	1,283,000	240,000	2.53	550	1.84	400	1.84	.....	.....
March 10	1,453,000	1,210,000	240,000	2.46	510	2.32	480	2.32	.....	.....
March 11	1,385,000	1,154,000	240,000	2.56	510	2.51	500	2.51	.....	.....
March 12	1,520,000	1,266,000	240,000	2.50	40	2.21	475	2.21	.....	.....
March 13	1,570,000	1,308,000	300,000	.....	.....	2.19	505	2.19	.....	.....
March 14	1,550,000	1,291,000	360,000	.....	.....	2.86	675	2.86	.....	.....
March 15	1,590,000	1,324,000	360,000	.....	.....	3.12	750	3.12	75	1.0
March 16	1,570,000	1,308,000	360,000	.....	.....	3.27	780	3.27	75	1.0
March 17	1,570,000	1,308,000	360,000	.....	.....	3.34	795	3.34	40	1.0
March 18	1,330,000	1,108,000	360,000	.....	.....	3.69	775	3.69	.....	.....
March 19	1,520,000	1,266,000	360,000	.....	.....	4.19	975	4.19	.....	.....
March 20	1,590,000	1,324,000	400,000	.....	.....	1.0	965	3.92	80	1.0
March 21	1,600,000	1,333,000	400,000	.....	.....	1.0	910	3.68	40	1.0
March 22	1,560,000	1,300,000	400,000	.....	.....	2.84	690	2.84	80	1.0
March 23	1,590,000	1,324,000	350,000	.....	.....	4.39	1050	4.39	80	1.0
March 24	1,640,000	1,366,000	350,000	.....	.....	4.28	1050	4.28	.....	.....
March 25	1,440,000	1,200,000	350,000	.....	.....	5.24	1160	5.24	.....	.....
March 26	1,640,000	1,366,000	320,000	.....	.....	4.98	1200	4.98	.....	.....
March 27	.....	.....	320,000	.....	.....	.....	1200	.....	140	1.1
March 28	.....	.....	320,000	.....	.....	.....	1200	.....	140	1.1

DIVISION OF LABORATORIES

*To the Chairman and Members
of the Ontario Provincial Board of Health:*

GENTLEMEN:

I have the honour to submit the following report and tabulated statements of the work of the Division of Laboratories for the year 1923.

It will be noted that the total number of specimens examined is slightly in excess of last year. This increase has largely been due to the increased number of diphtheria examinations. There were some small outbreaks among the school children in the localities bordering on the city, and with a view to locating diphtheria carriers numerous school children were examined.

Rabies has been held under complete control again during the past year. No rabid animals have been found in the Province for over two years.

In order to recognize early cases of typhoid fever your laboratories send reports on all specimens for examination for typhoid to the district officer of health and to the central office of the board whether the result is positive or negative. It is believed that in this way outbreaks of typhoid fever might be investigated early and the necessary preventive measures applied for their control.

The laboratory service in connection with diphtheria has been greatly improved during the past year. Arrangements were made with the post office management whereby we could collect the mail on the evenings of Saturdays, Sundays and holidays. This means that swabs arriving at the post office will be brought directly to the laboratory and cultured so that reports may be sent to physicians the following day without delay.

The branch laboratory directors were called to Toronto during the past summer for a series of lectures and demonstrations on the diagnosis and treatment of diabetes and the therapeutic application of Insulin. After the sessions we supplied the branch laboratories with the technique, apparatus and reagents for carrying out blood sugar determinations.

A suitable outfit is being prepared for physicians to send in blood from great distances. We were able to find a mixture of chemicals which would prevent clotting and preserve the blood sugar content four or five days, unchanged. This will be of great assistance to physicians in the outlying parts of the Province.

BRANCH LABORATORIES

All of our laboratories are in charge of graduates in medicine, thoroughly competent to carry on the work. Year by year the physicians in the districts in which a branch laboratory is located are using this laboratory service to a greater extent and as time goes on the routine work in the central laboratory should diminish; the work may be done quite as well and should be more expeditiously handled than at the central office on account of the shorter time consumed in transporting the specimens. The report of each laboratory is given in full in this report.

REPORT OF THE CHEMICAL DEPARTMENT DIVISION OF LABORATORIES FOR THE
YEAR 1923

The work conducted in the chemical department is of three distinct types, namely:

- (1) The analysis of submitted samples.
- (2) The manufacture of medicinal products.
- (3) Research.

The following is a brief outline of the work carried on under these three subdivisions during the year 1923.

ANALYSIS OF SUBMITTED SAMPLES

(a) *Water*.—In the course of the year forty-three samples of water were analyzed to ascertain chemical constituents. Of these forty-three samples fifteen were analyzed to learn the content and nature of the dissolved mineral salts; seventeen for a complete chemical analysis; four to determine the hardness; two for sulphuretted hydrogen and two for a quantitative determination of the arsenic dissolved.

(b) *Milk*.—During the year 185 samples of milk were submitted and tested to ascertain if they conformed with the regulations.

(c) *Liquors*.—The number of analyses of liquor for alcoholic strength conducted for the Board of License Commissioners, amounted to 2,430. This was a considerable increase over the preceding year when 1,417 samples were tested. In addition to the analysis for alcoholic strength considerable time was expended upon the analysis of six medicated wines, to ascertain the amounts of medicinal ingredients contained in them. The staff of chemists was not augmented during the year and this considerable increase of work affected the whole department by making it difficult to render as prompt a service as is desirable. However, a recent rearrangement with the Board of Liquor License Commissioners promises relief from this condition.

(d) *Coal*.—Two hundred and one samples of coal, as supplied to government institutions, were submitted by the departments of the Provincial Secretary and Public Works. These were analyzed and reported.

(e) *Miscellaneous*.—Analyses were conducted to ascertain:

- (1) If a bread sold for diabetics was a gluten bread.
- (2) The value of a proprietary disinfectant.
- (3) If a soap purchased by a government institution conformed with the specifications.

THE MANUFACTURE OF MEDICINAL PRODUCTS

(a) *Phenarsenammine*.—During 1923, sufficient phenarsenammine was manufactured to fulfil the requirements of the syphilitic patients receiving free treatment in this Province and in addition to supply the purchases of a sister province. There were distributed during 1923, 15,538 ampoules containing 8,270 grams of phenarsenammine.

(b) *Mercury Salicylate Suspension*.—This suspension was manufactured in sufficient quantity to meet the needs of the division providing free treatment to syphilitics.

(c) *Silver Nitrate Ampoules*.—On September 1st, the chemical department took over the manufacture of silver nitrate ampoules. Since that date this department has manufactured sufficient to fulfil the requirements of Ontario physicians and, in addition, to supply the order of 15,000 ampoules purchased by another province.

(d) *Administration Service*.—Sterile distilled water and sodium hydroxide solution are prepared and supplied when needed for the free administration of phenarsenamine. During the year 22,538 ounces of the former and 1,418 ounces and 372 ampoules of the latter were prepared.

RESEARCH

Small researches were conducted by this department in connection with:

- (1) The preparation of a mercury salicylate suspension.
- (2) The toxicity resulting from the use of certain rubber tubing in the administration of 606.
- (3) The estimation of blood sugar.
- (4) An outfit that would permit the transportation from a distance of specimens of blood for sugar determination.

All of which is respectfully submitted.

C. M. ANDERSON, M.D.,
Director of Laboratories.

A. R. BONHAM, B.A.Sc.,
Chief Chemist.

SUMMARY OF DIAGNOSTIC WORK

MAIN LABORATORIES—TORONTO

Disease	Year					
	1911		1922		1923	
DIPHTHERIA (Swabs).....		1,068		4,308		5,680
Release from quarantine.....	173		1,516		2,139	
Positive.....	91		354		848	
Negative.....	82		1,162		1,291	
Diagnosis.....	895		2,792		3,541	
Positive.....	226		560		680	
Negative.....	669		2,232		2,861	
TUBERCULOSIS (Sputum).....		1,650		2,232		1,924
Positive.....	402		290		260	
Negative.....	1,248		1,994		1,664	
TYPHOID (Blood).....		749		1,042		965
Positive.....	70		203		232	
Negative.....	679		839		733	
SYPHILIS						
Colloidal Gold Reaction.....				229		324
Wassermann Reaction.....				16,451		15,499
Very strongly positive.....			1,693		1,437	
Strongly positive.....			318		397	
Positive.....			1,144		1,104	
Negative.....			13,296		12,561	
GONORRHOEA.....				2,839		2,559
Positive.....			409		420	
Negative.....			2,430		2,179	
RABIES (Brains of animals).....				8		5
Negri bodies present.....			0		0	
Negri bodies absent.....			8		5	
MILK.....		168		242		185
WATER.....		1,718		2,608		2,618
Bacteriological.....	1,668		2,546		2,582	
Chemical.....	50		62		43	
COAL (For public institutions).....						201
LIQUOR (For license).....		241		1,417		2,430
MISCELLANEOUS.....		86		429		238
Totals.....		5,680		31,857		32,675

SUMMARY OF OUTFITS, VACCINE, PHENARSENAMINE AND TREATMENTS
SUPPLIED DURING THE YEAR 1923.

OUTFITS		
Syphilis (Wassermann).....	20,336	
Gonorrhoea.....	4,611	
Water.....	3,180	
Diphtheria.....	12,882	
Tuberculosis.....	6,859	
Typhoid.....	3,491	
		51,359
VACCINE		
Typhoid-paratyphoid.....	30,515	
Pertussis (Whooping Cough).....	40,742	
		71,257cc
SILVER NITRATE (for prevention of Ophthalmia).....		23,660
PASTEUR PREVENTATIVE (for Rabies)		
Cases.....		5
Injections.....		105
PHENARSENAMINE		
Ampoules.....		13,538
Grams.....		8,270.1
MERCURY SALICYLATE		
Ampoules.....		5,421
Grains.....		10,577
SODIUM HYDROXIDE		
Ampoules.....		372
Ounces.....		1,148
STERILE DISTILLED WATER		
Ounces.....		22,538

SUMMARY OF DIAGNOSTIC WORK
BRANCH LABORATORIES—1923

	Kingston	London	Fort William	Sault Ste. Marie	North Bay	Peterboro'	Owen Sound	Ottawa
Diphtheria (Swabs)	569	1392	2077	341	1041	522	155	6515
Release from Quarantine	104	323	246	74	446	223	30	1269
Positive	20	86	74	27	184	58	8	153
Negative	84	237	172	47	262	165	22	1116
Diagnosis	465	1069	1831	267	595	299	125	4246
Positive	409	88	318	60	125	55	16	604
Negative	784	981	1513	207	470	244	109	3642
Tuberculosis	102	836	237	156	301	350	354	527
Positive	682	129	38	18	47	68	84	107
Negative	463	697	199	138	254	282	270	420
Typhoid	86	358	138	14	286	221	99	773
Positive	377	71	46	5	129	72	11	45
Negative		287	92	9	157	149	88	128
Syphilis—	0	34	43	0	0	0	10	0
Colloidal Gold Reaction	2084	4472	952	368	724	415	41	0
Wassermann Reaction	300	969	118	74	118	33	13	0
Very strongly positive	70	174	28	39	57	8	12	0
Strongly positive	65	40	47	18	25	28	2	0
Positive	1649	3289	759	237	524	346	14	0
Negative	0		27	0	0	3	1	2
Spirochaeta Pallida	0		7	0	0	1	0	2
Positive	0		20	0	0	2	1	0
Negative	144	494	325	74	438	220	312	645
Gonorrhoea	46	129	85	26	127	140	54	275
Positive	98	366	240	48	311	80	258	370
Negative	0	1163	890	800	71	124	186	1097
Milk	702	1407	814	2371	1129	1037	395	2734
Water		915	814	1129		1037	395	2696
Bacteriological	0	492	0	8	0	0	0	38
Chemical	180	19	449	225	14	790	409	1314
Liquor (for license)		885						
Miscellaneous								
Totals	4,926	12,198	5,952	4,349	4,004	3,682	2,052	12,007

GRAND TOTAL ALL BRANCHES..... 49,170

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Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1923.

Municipalities	Outfits sent out							Doses of Typhoid-paratyphoid Vaccine supplied	Whooping Cough Vaccine	Silver nitrate for prevention of Ophthalmia	Pasteur Preventive Treatment	
	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T. B.	Typhoid				Total	Cases	No. of Injections
Algoma—												
Foleyet.....				12		10		22	120	10		
Gogama.....	10							10				
Marshville.....			1					1				
Richard's Landing.....									10			
Sault Ste. Marie.....									300	420	120	1 21
Spragge.....										70	15	
Brant—												
Brantford.....	610		24	25	240	175	12	1086	1010	1240	905	
Burford.....					12	5	6	27	10		10	
Oshweken.....	24				6			35		120		
Paris.....	36		6	5		10		57	190	220	100	
St. George.....											30	
Scotland.....			1					1				
Bruce—												
Cargill.....										60		
Chesley.....				5				5		30		
Holyrood.....				1				1				
Kincardine.....				31				31			90	
Lucknow.....										30		
Mildmay.....				2	6		6	14	10			
Paisley.....										20		
Port Elgin.....	2		4	2	12	4	6	30		30		
Ripley.....				2				2				
Tiverton.....				8				8	30		20	
Walkerton.....	6		33	10		4		53			5	
Warton.....				2				2		40		
Carleton—												
Kinburn.....					24			24		10	10	
Ottawa.....	3267		606	12	996	392	390	5663	1015	3550	2100	
Stittsville.....				1				1				
Dufferin—												
Grand Valley.....				4	12			16	10	100		
Orangeville.....					60	8		68				
Dundas—												
Iroquois.....			6		6			12	10		20	
Morrisburg.....	14		6	12	12	10	12	66	90	120	40	
Durham—												
Blackstock.....	9					10	6	25	30			
Bowmanville.....					60	10		70		120	50	
Canton.....				1				1				
Enniskillen.....				11	36	4		51				
Garden Hill.....											10	
Millbrook.....				25				25			20	
Newcastle.....				1				1				
Port Hope.....				78		25		103	20		40	
Elgin—												
Aylmer.....										20	25	
Port Stanley.....									20	20	10	
St. Thomas.....										160		
Essex—												
Belle River.....				1				1				
Essex.....						25		25	10			
Harrow.....	3							3				
Kingsville.....						12		12				
Leamington.....	18				12			30	20			
Newington.....	4				6			10				

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Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1923.

Municipalities	Outfits sent out							Doses of Typhoid-paratyphoid Vaccine supplied	Whooping Cough Vaccine	Silver nitrate for prevention of Ophthalmia	Pasteur Preventive Treatment	
	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T.B.	Typhoid				Total	Cases	No. of Injections
Essex—Cont.												
Pelee Island								10	20			
Sandwich	50						50					
Windsor	1484		900		696	700	96	3876	350	370	650	
Frontenac—												
Harrowsmith								10				
Kingston	423					200		623	1290	260	830	
Mountain Grove	4				6	5		15	10		10	
Sharbot Lake	18		12		6	9		45	10	40	15	
Glengarry—												
Alexandria			4		6	5	6	21		20		
Apple Hill	12				12			24				
Dalhousie Mills					12			12				
Dalkeith				4		5	6	15				
Martintown	6			2	24	5		37				
Maxville					36			36				
Williamstown					12	5		17				
Grenville—												
Kemptville	4		4	4	30	20		62				
Prescott	6						6	12				
Grey—												
Dromore				1				1	20			
Dundalk				1				1				
Durham				1				1	50	60	30	
Hanover				17	6	10	18	51	50		20	
Markdale				7				7	10			
Meaford				1				1				
Owen Sound				12				12	620	710	575	
Priceville					6			7				
Thornbury	1					5	6	13				
Haldimand—												
Canfield					5			5		50		
Cayuga							6	6		50	10	
Dunnville	6			32	48	15	24	125			25	
Hagersville	4			1	6	6		25				
Jarvis	24							24	20			
Haliburton—												
Minden				1				1				
Halton—												
Acton			6	1	48	10		65				
Bronte				3				3				
Burlington	12			61				73		10	15	
Freeman				1				1				
Georgetown	18		12	1	30	14	6	81	10	20	45	
Milton	6			2	12	5		25				
Oakville	12		12	73	24		18	139	20	20	20	
Port Nelson				8				8				
Hastings—												
Bancroft											30	
Belleville											60	
Deseronto	176		12	66	102	95	90	541	150		60	
Eldorado	12		12			8		32	30		40	
Frankford				1		35		36				
Harold				2				2		50	10	
Madoc				1				1				
Roslin	12				24		6	42	10			

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Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1923.

Municipalities	Outfits sent out							Total	Doses of Typhoid-paratyphoid Vaccine supplied	Whooping Cough Vaccine	Silver nitrate for prevention of Ophthalmia	Pasteur Preventive Treatment	
	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T. B.	Typhoid					Cases	No. of Injections
Hastings—Con.				6				6	20				
Shannonville											10		
Springbrook													
Stirling				1				1					
Trenton	72			3	48	30		153	60	280		25	
Tweed	6				12	5		23	20	30			
Huron—													
Brussels				1				1					
Blyth					12	8	6	26					
Clinton									25	25			
Ethel						10	12	22					
Exeter						5		9					
Goderich	24			18	30	13	24	109	50		175		
Kippen				2				2					
Seaforth	6			2	24		24	56	60	30			
Wingham	6					36	25	67					
Kent—													
Blenheim									40	50			
Charing Cross				2				2					
Chatham	96		6	48	70			220	290	400	445		
Dresden								36	70		80		
Mull				1				1					
Ridgetown				38		10	12	60	20		15		
Tilbury									20	10	25		
Wallaceburg	6					5		11					
Lambton—													
Alvinston									10				
Corunna				1				1					
Forest				5		5	12	22			5		
Petrolia									80		10		
Sarnia	102		60	12	42	83	18	317	130	20	105		
Watford											45		
Wyoming										10			
Lanark—													
Almonte									10		55		
Carleton Place				1				1					
Dalhousie Lake				5				5					
Lanark									90				
Middleville										10	10		
Perth	74				42	5	12	133	20				
Smith's Falls	8			6	6	8		28	50				
Leeds—													
Athens	6				6			12		20	5		
Brockville	48				30	49	24	151	100	190	210		
Charleston					6			6	10				
Elgin					18	10	12	40					
Frankville	4				12			16			20		
Gananoque	12							12			60		
Lansdowne					12		12	24	20				
Lyn										190			
Lennox and Addington—													
Napanee				27				27					
Odessa										40			
Tamworth									20				
Lincoln—													
Beamsville	12		12	12	12	10		58					

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	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T.B.	Typhoid				Total	Cases
Norfolk—Con.												
Port Dover.....	36		36			20	30	122	10		135	
Port Rowan.....	6							6	120	60	15	
Simcoe.....	18			21		5		44	70		45	
Vittoria.....				1				1				
Waterford.....	3		2	4	6		6	21		30	25	
Northumberland—												
Brighton.....	12		24	2				38		60		
Campbellford.....				26				26		10	10	
Castleton.....				1				1			5	
Cobourg.....	424		6	11		4		445	30	50		
Colborne.....				18				18				
Hastings.....					6	5		11			10	
Warkworth.....				1				1	20	90		
Ontario—												
Beaverton.....				3	66	5		74	40	20		
Brechin.....					48			48				
Brooklin.....				1				1				
Brougham.....				1				1				
Cannington.....	12			12		10		34				
Claremont.....					6	5		11				
Dunbarton.....				1				1				
Longford Mills.....				2				2				
Oshawa.....	100		100	52	988	129		1369	360	240	480	
Pickering.....				2				2				
Port Perry.....			6	27	30	24	18	105	100	10	5	
Sunderland.....				3				3	130	40		
Uxbridge.....			4	7	6	10	6	33	30			
Whitby.....	288			4	18	108		418			15	
Oxford—												
Bright.....				1				1				
Burgessville.....				6	18	10		34				
Drumbo.....				6	12	15		33		60		
Embro.....				1				1				
Innerkip.....				1				1				
Norwich.....					24	10		34			15	
Otterville.....			12	114	6	8		140			10	
Tavistock.....				1				1				
Tillsonburg.....				9		10	24	43	60			
Woodstock.....	12							12	20			
Peel—												
Alton.....	6							6			10	
Bolton.....					24	12		36		30	5	
Brampton.....	12			2	102	30		146		40	10	
Caledon.....	4			13		5		22	40	20		
Cheltenham.....				1				1				
Clarkson.....										20	45	
Cooksville.....				5				5				
Dixie.....				1				1				
Inglewood.....				1				1		30		
Lakeview Beach.....				1				1				
Lorne Park.....				3				3				
Mono Road.....				3				3				
Palgrave.....											45	
Port Credit.....	36		18	9	36	60	12	171		10	10	
Streetsville.....	48			1	12	10	12	83	10	10	5	

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Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1923.

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	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid					Cases	No. of Injections
Perth—													
Listowel.....	6		6	17		25	12	66					
Mitchell.....	12			10			6	28	40	10	45		
St. Mary's.....	30		6		36	30		102			30		
Shakespeare.....			14			5		19		50			
Stratford.....	12		6	10	12	10		50	55	30	470		
Peterborough—													
Baillieboro.....				1				1					
Havelock.....				12				12					
Lakefield.....													
Peterborough.....				3				3	1080	580	580		
Prescott—													
Alfred.....				24		5		29	20	60			
Hawkesbury.....									10	160	165		
Le Faivre.....	2					4		6					
St. Eugene.....	6				12	5		23					
Vankleek Hill.....	6		6		6		18	36	50	30	15		
Prince Edward—													
Bloomfield.....											10		
Consecon.....	6				12	5		23					
Demorestville.....				12				12					
Hillier.....											20		
Pictou.....	36			60	24		18	138			30		
Wellington.....	6			34				40					
Rainy River—													
Emo.....									20	50	65		
Fort Frances.....	48				24		24	96	140	530	50		
Renfrew—													
Arnprior.....	36			13	36	30		115			5		
Beachburg.....					12			12					
Calabogie.....				13		10		23	20				
Eganville.....	6			3				9		80	30		
Pembroke.....	42			24		6		72	60	210	90		
Renfrew.....					6		6	12		30	50		
Russell—													
Bourget.....									80	120	45		
Metcalf.....				1				1	35				
Osgoode.....	4		6			5		15					
Rockland.....	3							3					
Russell.....											30		
Vars.....	6		6					12		90	20		
Vernon.....										10			
Simcoe—													
Alliston.....	4			12				16			5		
Angus.....						10		10					
Anten Mills.....				2				2					
Barrie.....	48		60	12	240	60	84	504	120	100	95		
Beeton.....				1	12			13	10		10		
Belle Ewart.....				1				1					
Bond Head.....						10		10					
Bradford.....				2	36	5		43					
Camp Borden.....	30			24	12			66					
Coldwater.....	24				30	4		58			60		
Collingwood.....	192		86		138	82	66	564	10	50	70		
Cookstown.....	12			2		15	12	41					
Craigvale.....				4				4					

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Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1923.

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	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T. B.	Typhoid					Cases	No. of Injections
Simcoe—Con.													
Creemore.....	6					15	21						
Elmvale.....				1	12	5	30						
Everett.....	6			6	6	4	22				5		
Ivy.....				1			1						
Jackson's Point..				1			1						
Lefroy.....				1			1						
Midland.....	30			1		5	36	90	30				
New Lowell.....				1			1						
Nottawa.....				2			2						
Orillia.....	168		6	167	114	50	523	140					
Penetanguishene..	6		12		72	28	118		10	40			
Stayner.....					30		30						
Thornton.....				8			14						
Tottenham.....				1		4	5						
Victoria Harbour.	12			12		16	40	30					
Washago.....				1			1						
Stormont—													
Aultsville.....						5	5		10				
Cornwall.....	60			5	72	125	72	334	50		65		
Sudbury—													
Burwash.....	500			3	750		1253	60					
Chelmsford.....	18						18						
Copper Cliff.....	12				15		27		30				
Creighton Mine..			6	4	310	14	346						
Espanola.....	12			6	18	20	56	30			50		
Massey.....									340	80			
Sudbury.....								150	30				
Webbwood.....									20	45			
Thunder Bay—													
Dorion.....				1			1						
Fort William.....				2			2	1750	450	875			
Grant.....	12						12						
Hydro.....				3			3						
Nipigon.....				6			6						
Port Arthur.....				2			2						
Schreiber.....				4			4						
Timiskaming—													
Ansonville.....	10			2			12	20	10	5			
Cobalt.....				7		30	37	150	80	135			
Cochrane.....	12			6	12	10	40	3300					
Elk Lake.....				1			1			30			
Englehart.....	12						12		120				
Haileybury.....	12		17		12	12	65	10	30	20			
Hearst.....					6		6	40	75				
Iroquois Falls...						4	4	20					
Kapuskaing.....						35	18	53	2250	20	25		
Kirkland Lake...					30		30	450		25			
Larder Lake.....	30						30						
New Liskeard....				24		20	68	50					
Schumacher.....								50					
Silver Centre....				9			9						
Smooth R'k Falls.					12		12	400					
South Porcupine..	36		12	1		10	59	530	30				
Sutton Bay.....				1			1						
Timmins.....	18					4	22						

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	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhoea	Water	Diphtheria	T.B.	Typhoid				Total	Cases
Wentworth—												
Ancaster.....				2				2				
Bartonville.....				1				1				
Binbrooke.....									10			
Dundas.....				3				3			20	
Freelton.....									10	10	25	
Fruitland.....				3				3				
Hamilton.....	43			27	24			94	540	2280	1775	1 21
Lynden.....	12			12				24	10	10		
Stoney Creek.....				15	36			51				
Winona.....			24	2	24			50			10	
York—												
Agincourt.....	24			13	346	22		405	55	130	70	
Aurora.....				1	24			25				
Birchcliff.....	6			18				24				
Downsview.....				1				1				
Eglinton.....				1				1				
Humber Bay.....				4				4				
Islington.....	6		12	5	24	10		57				
Keswick.....					6	5	12	23				
King.....				1				1	25			
Lambton Mills.....				13	6	5		24				
Langstaff.....				2				2				
Lansing.....				7				7				
Long Branch.....	3			9				12				
Maple.....	3		12	1			6	22				
Markham.....				21				21				
Mimico.....	317		25		174	5		521	250	30		
Mimico Beach.....					42	20	6	68				
Mount Albert.....					12	17		29				
Mount Dennis.....				1	24	10		35		10		
Newmarket.....	40			13	48	5		106	10		40	
Newtonbrook.....			6	4				10		140		
New Toronto.....	12		12	4	162			190	50	60	10	
Oak Ridges.....				2				2				
Pefferlaw.....					18			18				
Queensville.....							12	12				
Richmond Hill.....	4		4	10	6	5	12	41			40	
Roches Point.....				3				3				
Scarboro.....				31	6			37			5	
Schomberg.....				1				1				
Sharon.....				1				1				
Sherwood.....				1				1				
Stouffville.....			4	14	24			42	110	30		
Sutton West.....										40		
Swansea.....					6			6				
Thornhill.....				18	18	10		46	245			
Todmorden.....				2				2				
Toronto.....	5224		1230	252	1476	528	239	8949	4770	17730	5000	3 63
Unionville.....				9		10		19			15	
West Hill.....				1				1				
Weston.....				37	138	30		205				
Woodbridge.....				2			6	8		10	5	
York Mills.....				4				4				
Totals.....	20336		4611	3180	12882	6859	3491	51359	30515	40742	23660	5 105

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis		+	-	+	-	Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-					Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-	
Algonia—																
Bruce Mines.....																
Collins Inlet.....								2								
Cutler.....						1										
Foleyet.....						2		1			1				9	
Gogama.....						1									3	
Hornepayne.....			1													
Marshville.....								1								
Providence Bay.....																
Sault Ste. Marie..											1				5	
Thessalon.....						1									2	
Tionaga.....																
Brant—																
Brantford.....	1			5	13	55	5	1		18	4	10		79		
Burford.....				1		6	2	3							1	
Cainsville.....				1						2					4	
Mount Pleasant..															1	
Oakland.....																
Oshweken.....					1					1		1			8	
Paris.....				1		7		6		1					9	
St. George.....				1		1		2							3	
Bruce—																
Cargill.....								1								
Chesley.....						1										
Kincardine.....							1	1		1						
Lucknow.....						1										
Mildmay.....							1	7				1				
Paisley.....						1									1	
Port Elgin.....		1	1		6		3	1	2						1	
Ripley.....	2					3	1	1							3	
Southampton.....												1				
Tara.....								1								
Teeswater.....			1													
Tiverton.....																
Walkerton.....			1	1	1	3	1								5	
Warton.....																
Carleton—																
Carp.....																3
Kinburn.....		1	1	2												
Manotick.....								1	2							
North Gower.....		1				2		1								
Ottawa.....						2	1	7		275	52	170	1603			
Westboro.....										1					1	
Dufferin—																
Corbetton.....																
Grand Valley.....	4	2	1					1								
Orangeville.....	4	4	1	12	1	4										
Shelburne.....				3				1								
Dundas—																
Chesterville.....	2	1	3													
Hallville.....																
Iroquois.....						3		3							3	
Morrisburg.....					2	10				1					1	
Winchester.....			3	1	4			3								
Durham—																
Bethany.....																
Blackstock.....				1		1	1	1								
Bowmanville.....	17	5	4	5	1	8	1	2		1				12		

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis						
	Release		Diagnosis						Wassermann Reaction				Spirochaeta Pallida		
	+	-	+	-	+	-	+	-	Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-
Durham—Con.															
Canton															
Enniskillen	7	8		3		1		1							
Hampton															
Newcastle															
Orono	4	7	2	3		5		2							
Pontypool															
Port Hope			1	2	3	24	2	4						7	
St. Christopher															
Elgin—															
Aylmer							1		1						
Port Burwell															
Port Stanley														2	
St. Thomas															
Straffordville						1									
Essex—															
Amherstburg							2		1						14
Belle River					1	1						1			
Comber									1						
Essex	1						11	1	1			1			2
Ford							1					4			8
Harrow				1		1									1
Kingsville	1			5	1	2		5							
Leamington	1	5				2		2		1		4			4
McGregor															1
Newington				1											2
Sandwich			1			3				2	1				13
Tecumseh															1
Walkerville										1					9
Windsor						8				33	6	18		242	
Woodslee	2	4		3										1	
Frontenac—															
Arden							1								
Mountain Grove				1		2									
Sharbot Lake				1		6		2		1					11
Glengarry—															
Alexandria							2								1
Apple Hill			1	1		2						3			2
Dalhousie Mills		6	1		1			1							
Dalkeith			1												
Dunvegan							1								
Martintown	5	5	3	9	1	4	1	2							
Maxville	1	11	4	5				2							
Williamstown	4	9		1	2	6									
Grenville—															
Kemptonville				1	5	4				1		1		12	
Prescott					1									5	
Grey—															
Ayton							2								
Chatsworth															1
Durham				1		1		1							
Flesherton						3									1
Hanover	6	4	3	3	2	4	8	18							
Holstein															
Markdale															
Meaford															1
Owen Sound										1				11	
Priceville				1		1								1	
Thornbury					2	1	1	4							

ONTARIO AT TORONTO FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis				Milk							Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year	
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples				Chemical	Bacterial
			+	-		Fats	Total Solids		+	-	+	-			+	-	+	
																1		1
																3		23
																1		1
																2		2
														1		4		28
	1															1		2
1																18	1	63
																2		2
																1		1
																	2	4
																		2
																9		9
																		1
																		17
																		3
																		1
																26	1	44
																		13
																		3
																		14
	2																	21
																		1
																		3
																		20
																		1
																		15
	1																5	15
																	2	338
																		10
																		1
4	7																	3
																		9
																		9
																		1
																		1
																3		33
																		23
																	1	23
																4		28
																	4	10
																		2
																		1
																5		8
																		4
																17		65
																1		1
																6		6
																2		3
																	28	41
																2		5
																3		11

ONTARIO AT TORONTO FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical	Bacterial				
			+	-		Fats	Total Solids		+	-	+	-					+	-	Count	
																1			11	
																			2	
2																20	15	1	112	
																			3	
																			8	
																5			19	
																			12	
	1																	1	26	
																1			3	
																			1	
1																1			81	
													2			3			5	
																30	6		60	
																1			1	
9	5															2			75	
																7	1		30	
																1			1	
1	4															54			113	
																9		6	9	
																			1	
5	7															55	3	12	307	
																			1	
																			3	
																		1	13	
																1			5	
																			2	
																2			2	
																6			21	
																			2	
																1			1	
																			2	
																2			2	
																			11	
																			1	
																			4	
																			1	
1																1			12	
																3			1	
																			4	
																			11	
																			3	
																		1	2	
																	11		80	
																			1	
																			2	
																1			1	
	1															5			13	
1																19			50	
																			2	
																			10	
																1	25		26	
																			3	
																1			1	

ONTARIO AT TORONTO FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
						Food Content		Preservatives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical	Bacterial				
						Fats	Total Solids		+	-	Tubercle Bac.	Pus Cells					+				-	Count
+	-	Animal	Negri Bodies		Animal Inoculations															
			+	-																
																			3	
																2			6	
																			7	
															1				1	
															1				1	
			Coal samples,		63										1	10			76	
															1				1	
		1													1				2	
																			4	
															3				1	
															1				1	
															2			2	26	
																		2	2	
															3				7	
															7				22	
															1				1	
		1													15				344	
															1			2	3	
															2				2	
															3				8	
															2				6	
															2				2	
															2				2	
															2				3	
		1	5												9	1			101	
																		2	3	
																		1	1	
															2				2	
																			6	
															3				9	
															1				16	
		2	2																4	
																			4	
																		1	4	
													2						3	
																		3	3	
																	3		1	
																	33		36	
																	8		9	
																			3	
																			106	
		16	14															2	75	
																			11	
		2	1													21	35	1	158	
																1			1	
		2	1																27	
																			1	
			31 dog												1	3		1	34	
																			1	
																			2	
																			7	
															1	6			2	
															1	18			21	

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis								
	Release		Diagnosis		+	-	+	-	Wassermann Reaction				Spirochaeta Pallida				
	+	-	+	-					Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-		
Northumberland—																	
Con.																	
Cobourg.....	2	1		8		13	4	4			2	2	411				
Grafton.....				1		1											
Hastings.....				8		1											
Roseneath.....				2		1		2									
Warkworth.....				1		2							1				
Ontario—																	
Ashburn.....																	
Beaverton.....	1		2	10	1	3		2									
Brechin.....	2	4	5	6		1											
Brooklin.....						2											
Brougham.....						1		2									
Cannington.....				2		6		2									
Claremont.....				2	1	1		1									
Dunbarton.....			1	1													
Oshawa.....	15	60	11	94		5	1	2		9	4	6	52				
Port Perry.....				6	2	7		2			1		2				
Sunderland.....								2		1							
Uxbridge.....			1	2	1	6	1	2					1				
Whitby.....		6	2	9		13		4		17	5	10	121				
Oxford—																	
Burgessville.....				3		1											
Drumbo.....			1	2		1											
Embro.....				3		1											
Ingersoll.....							1	1									
Mount Elgin.....						1											
Norwich.....						3											
Otterville.....						2	5	1									
Plattsville.....				3		4		1									
Tavistock.....				1		4		1									
Tillsonburg.....			2	4	1	8	1	4		4		1	7				
Woodstock.....				3			2	1				1	18				
Peel—																	
Alton.....			1	4				1					1				
Bolton.....		1	1		1	8											
Brampton.....	14	17	19	21	2	3		1					5				
Caledon.....			2			3		1									
Cheltenham.....																	
Clarkson.....		1															
Cookville.....	2	3	3	1		1		1					1				
Credit Forks.....																	
Dixie.....		2		2		2											
Inglewood.....																	
Lakeview Park.....																	
Lakeview Beach.....																	
Lorne Park.....																	
Malton.....																	
Meadowvale.....																	
Mono Road.....								1									
Palgrave.....						1											
Port Credit.....			3	2	12	1	11		2		3	2	12				
Streetsville.....						1											
Perth—																	
Atwood.....				1													
Listowel.....				2		7		5		1							
Mitchell.....		1		3	1	1	1	1					6				
St. Mary's.....						2											

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis								
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-						+	-	+	-	+	-	+	-
					Very Strongly Positive	Strongly Positive	+	-									
Perth—Con.																	
Shakespeare.....							1										
Stratford.....	3	3	1		1	1		3								2	
West Monkton.....																	
Peterborough—																	
Bailieboro.....				1													
Havelock.....				2													
Peterborough.....		2								3		1		18			
Prescott—																	
Hawkesbury.....				1	1			2		2					3		
Le Faivre.....												1			1		
L'Orignal.....																	
Plantagenet.....								1									
St. Eugene.....				6		3		2							4		
St. Isadore de Pres.					1	4		2									
Vankleek Hill.....	5	2	1		2	3	1	8							2		
Prince Edward—																	
Bloomfield.....				1		1											
Consecon.....	1	4	2	10		4									1		
Demorestville.....																	
Picton.....	8	9	1	9		4	4	3		1	1	2		7			
Wellington.....						1									2		
Rainy River—																	
Fort Frances.....												1		2			
Rainy River.....																	
Shenston.....																	
Renfrew—																	
Arnprior.....				1		8		2		1		2		8			
Beachburg.....						2											
Calabogie.....				2	1	1		4				1		2			
Cobden.....				1		7		2						1			
Eganville.....				1		2		1						3			
Pembroke.....					1	4		4		4	1	4		20			
Renfrew.....				1		3		2		2				1			
Westmeath.....						1					1	1		3			
Russell—																	
Bourget.....																	
Clarence Creek...	1	1															
Eastview Centre...										1							
Metcalfe.....						3		1						1			
Osgoode.....					1									3			
Rockland.....													3	2			
Russell.....					1	3											
Vars.....						1		5						3			
Simcoe—																	
Allandale.....											1	1		4			
Alliston.....	6	3	1	4	1	4		5		1				1			
Angus.....								1									
Anten Mills.....				4													
Barrie.....	11	19	6	31	5	22	6	18		7	1	1		20			
Beeton.....		2	2	11		3		2						2			
Bond Head.....						2		1									
Bradford.....	10	12	4	7	5	1		5									
Camp Borden.....				2								1		7			
Camp Couchiching																	
Churchill.....				1				1									
Coldwater.....	6	8	3	6	2	4	1	1			1			3			
Collingwood.....	10	21	12	31	7	41	1	7		7	3	1		106			

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tubercu- losis Sputa		Typhoid Bloods		Syphilis									
	Release		Diagnosis		+	-	+	-	Wassermann Reaction				Spirochaeta Pallida					
	+	-	+	-					Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-			
Timiskaming—Con.																		
Haleybury				1		1		1					1		1			
Hearst								4		3								
Iroquois Falls						1												
Kapuskasing				2		23		3		13							1	
Kirkland Lake																		
Larder Lake				1													1	
Monteith																		
Moonbeam																		
New Liskeard						1		2		6								
Schumacher																	1	
Silver Centre																		
Smooth Rock Falls								6		5							2	
South Porcupine	1					1		2				3		4		20		
Sutton Bay																		
Timmins				2		1		4		6		8		3		2		19
Victoria—																		
Bobcaygeon			1			2		1										
Coboconk					1			2		3		7						
Fenelon Falls																		
Kinmount				1		6												
Kirkfield																		
Lindsay				1		2		3		1		3					1	
Little Britain								1										
Lorneville																		
Omeme								1										
Pleasant Point																		
Woodville						1		2									1	
Waterloo—																		
Ayr				2		1		8		4							2	
Baden										3								
Bridgeport																		
Elmira	36	32	7	24	3	10				2								
Freeport						12						1					1	
Galt	9	9	5	15	9	33	1	8				2	2	5		44		
Hespeler				1	2	5	1	1				3		2		4		
Kitchener	45	80	18	77	8	104	5	6				5	3	2		169		
Linwood	1		1		1	1												
New Dundee								2										
New Hamburg				2	4	1	2											
Preston					2		4	2	1			2					4	
St. Jacobs	2																	
Waterloo	46	30	20	42	1	21			3			2	1	1		27		
Welland—																		
Bridgeburg	8	7	4	5	1	5	4	7					1			6		
Chippawa	1	2		2	1	2	2	6										
Fonthill									1									
Fort Erie					1													
Humberstone																		
Niagara Falls	2	6	2	5	5	23	7	25				34	4	15		185		
Port Colborne	1	1	3	2		4	2	5				3	1	2		7		
Ridgeway	2	2	3	7		4	2	3				1		1		9		
South End					2		1	4	3							1		
Stevensville					2													
Thorold							2					1		2		21		
Wainfleet							1									1		
Welland	17	20	5	5	3	20	5	15				13	6	4		109		

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis						Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-	+	-	+	-	Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-	
York—Cont.																
Richmond Hill.....				5		5	1	6		2					9	
Roches Point.....						1	2			1					2	
Scarboro.....							1			1						
Schomberg.....	1	2														
Sharon.....																
Stouffville.....		11	2	6		2	4	5					1		2	
Sutton West.....		2	1	12												
Swansea.....	1	7	2	1												
Thornhill.....			1	8	4	12	1	4		59	18	51	1123			
Toronto.....	247	192	101	313	31	186	11	40	324	595	181	557	5188			
Unionville.....					2	2										
Weston.....	24	36	10	43	1	4		1		1					4	
Woodbridge.....								3								
York Mills.....																
Totals.....	848	1291	680	2861	260	1664	232	733	324	1437	397	1104	12561			

Grand Total—32,675.

ONTARIO AT TORONTO FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Conorrhoea		Rabies Diagnosis				Milk									Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv- atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
			+	-		Fats	Total Solids		+	-	Tuber- cle Bac.	Pus Cells					Count		
2	1															13			44
																3			3
3	1												1			24		1	37
																			5
																1			1
																17			50
4																3			22
																			11
1	1															11			1,294
189	1771	1dg.											43	10	423	976	79		10767
																2			6
2	3															29		2	160
																7			10
																3			3
420	2179												185	43	2582	2430	238		32675

FORT WILLIAM.

Laboratories, Fort William, January 5th, 1924.

To the Chairman and Members of the Provincial Board of Health.

Sirs,—I have the honour to submit my annual report in connection with the work of this laboratory for the year 1923.

DIPHTHERIA

A marked increase in bacteriological work over any previous year is noted. This is largely due to our efforts in epidemiological work for the city of Fort William during the months of June, October, November and December. In these four months we examined about 1,500 nose and throat swabs, covering some forty cases of diphtheria. Most of these swabs were from school contacts. All positive contacts were isolated by the local Medical Officer of Health, and kept out of school until negative reports were received from us. We think this method of control, the most efficient in the prevention of epidemic diphtheria. We are now distributing toxin-antitoxin mixture and the local Medical Officer of Health, of this city as a start has already inoculated some 200 children. During the year 3,775,000 units of diphtheria antitoxin have been distributed throughout the district from this laboratory.

TYPHOID FEVER

Many of these cases occurring locally were taken off steamships plying into these ports. In each case blood cultures were taken by myself and positive results were obtained; this left no doubt as to the nature of the infection. Forty-five samples of drinking water taken from various vessels using these harbours were analyzed here and reports sent to the Federal Department of Health.

SYPHILIS

The amount of work has kept close to the level obtained last year. The local physicians continue to use the Wassermann test not only as a means of diagnosis but in following up treatment. The greatest of care in the technique in performing this test is used. We continue to follow the method recommended by the Medical Research Council of the United Kingdom; we believe it is good policy to stick to the same method, always providing it is a good one.

Twenty-seven primary sores were examined by the dark field method during the year; seven of these were positive, and six before the Wassermann reaction showed anything. These six cases received prompt and efficient treatment.

Considerable work has been done here in the examination of spinal fluids. During the year I read a paper to the local Medical Society, emphasizing the value of spinal fluid examinations in the differential diagnosis of lesions of the central nervous system. Many colloidal gold tests were made on spinal fluids during the year.

MILK

We are, I think, giving every assistance to the local health officers in impressing on the public the value of a wholesome and clean milk supply. We have done considerable work in the matter of bacterial counts on plated samples—carefully planned work—during the course of the past two years for both the municipalities of Port Arthur and Fort William. We believe this is a step in the right direction; and there is a long way to go before we can realize a clean milk supply. The bulk of the work on milk continues to be the control of the fat content.

WATER ANALYSIS

Although the total number of analyses made is not quite as high as for 1922, yet it will be noted that the municipalities as a whole have responded much better in sending samples for analysis than heretofore. Last year (1922) the Sanitary Survey provided about 50 per cent. of the total samples analyzed. This year the municipalities themselves supplied over 90 per cent. of the samples analyzed.

MISCELLANEOUS SPECIMENS

Under this head is included all pathological specimens, viz: tumours, blood counts and groupings, lumbar punctures, autogenous vaccines, analyses of stomach contents, etc.

In conclusion permit me to state that 1923 has been a good year for this laboratory. We have exceeded any previous record in the total analyses made by 15 per cent. This, I think, indicates something of the service we are giving the public through the physicians of this district as well as the local health officers.

I have the honour to be, Sir,

Your obedient servant,

N. O. THOMAS, M.B.

Director Branch Laboratory, Fort William.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis						Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-	+	-	+	-	Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+		-		
												+	-	+	-	
Atikokan.....																
Cameron Falls.....																
Chapleau.....						5							1			
Conmee.....																
Dryden.....			2	2						1					2	
Emo.....					2	4									1	
Foleyet.....				1												
Fort Frances.....		4	5	11	3	7		1		3	1			19		
Fort William.....	303	1454	48	113	21	124	25	54	39	90	26	36	559	3	13	
Hornepayne.....	7	20		3												
Ignace.....																
Jellicoe.....																
Kashabowie.....					2											
Keewatin.....	1	5	3	9	1	20	6	6							6	
Kenora.....					2	6	1	4							1	
Long Lac.....				2		3	1	2		1					6	
Loon.....																
Neebing.....																
Nipigon.....				3												
O'Connor.....																
Paipoonge.....																
Port Arthur.....	1	5	14	19	4	27	13	21	4	15	1	9	126	4	7	
Rainy River.....				1										1		
Redditt.....																
Rosspport.....																
Schreiber.....			2	2	3	2		2		2		1		5		
Silver Islet.....	6	25														
Sioux Lookout.....				6		1		2		6				33		
Steamships.....																
Stratton.....																
Unorganized.....																
Totals.....	318	1513	74	172	38	199	46	92	43	118	28	47	759	7	20	

ONTARIO AT FORT WILLIAM FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Conorrhoea		Rabies Diagnosis					Milk								Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
							Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical				Bacterial
		+	-	+	-	Tubercle Bac.		Pus Cells		Count									
						+	-	+	-		+	-							
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	2	3
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	2	14
1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	2	20
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	2	1
74	213	..	..	..	..	380	..	18	..	2	..	18	241	399	..	37	299	86	3930
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	..	..	42
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	..	1	87
2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	88	..	..	107
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	21
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	..	..	23
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	..	..	37
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	7
6	17	..	..	..	..	456	..	35	..	..	..	34	456	491	..	211	135	1130	1130
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	41	..	2	45
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	7
1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	..	..	25
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	..	2	63
..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	..	..	43
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	..	4	97
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45	..	..	45
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92	..	..	92
85	240	..	..	..	..	836	..	53	..	2	..	52	697	890	..	814	..	449	5952

N. O. THOMAS, M.B.

SUMMARY OF YEAR'S WORK

BRANCH LABORATORY AT FORT WILLIAM FOR THE YEARS 1922-23

SPECIMENS EXAMINED

TYPE OF SPECIMEN	Number of Positive Negative		Total Specimens	
	1922	1923	1922	1923
Diphtheria (Swabs).....			1,129	2,077
Diagnosis.....				
Positive.....	50	74		
Negative.....	320	172		
Release from quarantine.....				
Positive.....	216	318		
Negative.....	543	1,513		
Tuberculosis.....			255	237
Positive.....	40	38		
Negative.....	215	199		
Typhoid.....			91	237
Positive.....	37	46		
Negative.....	54	92		
Syphilis:—				
Colloidal gold test.....			45	43
Wassermann test.....			1,141	952
Very strongly positive.....	231	118		
Strongly positive.....	20	28		
Positive.....	90	47		
Negative.....	800	759		
Test for Treponema pallidum (dark field exam.).....			28	27
Positive.....	13	7		
Negative.....	15	20		
Gonorrhoea.....			392	325
Positive.....	107	85		
Negative.....	285	240		
Milk Analyses.....			530	890
Chemical.....	530	836		
Bacteriological.....	42	54		
Water Analyses.....			992	814
Chemical.....	0	0		
Bacteriological.....	992	814		
Miscellaneous Specimens.....			540	449
Total for year.....	5,197		5,952	

OUTFITS DISTRIBUTED, YEAR 1923

Bacterial water	Diphtheria	Typhoid	Tuberculosis	Wassermann	Gonorrhoea
850	2,100	155	245	980	315

BIOLOGICAL AND CHEMICAL PRODUCTS DISTRIBUTED, YEAR 1923

Typhoid No. of C.C.	Pertussis No. of C.C.	Silver Nitrate Ampoules	Diphtheria antitoxin units	Small-pox vaccine points
750	275	740	3,775,000	9,485

KINGSTON

Kingston, Ont., January 31st, 1924.

To the Chairman and Members of the Provincial Board of Health.

The salient feature of the years' work is increase in the usefulness of the Kingston branch laboratory in spite of the establishment of new centres in Eastern Ontario. A notable addition to the work has been the distribution of free insulin to poor diabetic patients. This distribution began in September, 1923 and is steadily on the increase.

A satisfactory and striking fact has been the reduction in the number of diphtheria swabs submitted. This undoubtedly shows a diminution in the prevalence of the disease in this part of Ontario.

The number of bloods submitted for the Wassermann test steadily rises. For nearly a year I have carried out parallel tests with the Kahn precipitation method and have found the latter to give results nearly identical with the Wassermann. The Kahn test has distinct advantages over the Wassermann in the matter of simplicity and with more experience it, or some similar test, may eventually replace the more complex and expensive complement deviation reaction. A large proportion of the bloods sent in (513) come from the Kingston Penitentiary.

During the very cold and very hot weather we have had trouble with haemolysis in the blood specimens submitted. To obviate this it is advisable that practitioners should study postal and railway facilities in order that the shortest possible time may elapse between drawing the blood from the patient and the examination in the laboratory.

The increase in the water examinations is in large part due to the carrying out, at the instance of the Dominion Government, of tests on the drinking water of the various passenger and freight steamers.

JAMES MILLER, M.D.,
Director Branch Laboratory, Kingston.

SUMMARY OF DIAGNOSTIC WORK
Year 1923

SWABS	Release		Diagnosis		Totals
	+	-	+	-	
	20	84	56	409	569
SPUTUMS					
	+	-			
	102	682			784
WIDALS					
	+	-			
	86	377			463
WASSERMANN'S					
	Vsp	sp	+	-	
	300	70	65	1,649	2,084
G.C.					
	+	-			
	46	98			144
WATER					
	702				702
MISCELLANEOUS					
	180				180
					<hr/> 4,926

ONTARIO AT KINGSTON FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis				Milk								Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year	
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preservatives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical				Bacterial
			+	-		Fats	Total Solids		+	-	Tubercle Bac.	+				-	Pus Cells	+	
																			2
8	16															2		7	276
																			5
																			1
3	1																	1	15
																			25
	1																		4
																			13
																			2
																		1	1
																5			11
																1			4
19	47														384		149	2390	
	1														61			880	
	1																	11	
																4			14
																			16
																			3
																			2
																			33
																3			9
																11			26
																			6
																15			20
																		11	148
	1															3			10
																4			18
																			19
																			1
	1																		4
	1																		5
1	1																		4
	2															18			33
																			1
																			27
2																10			14
	3															5			14
																1		2	90
																21			21
																18			38
																			12
																			2
																			7
																			105
																47			1
																			31
2	1															1			31
																5		1	23
																31			32

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida		
	+	-	+	-						Very Strongly Positive	Strongly Positive	+	-	+	-	
Leeds—Con.																
Mallorytown.....				3			3									
Newboro.....					1		3									
Westport.....				1			2			1	1			1		
Lanark—																
Almonte.....								1								
Carleton Place.....		4	3	9			5	6	11						5	
Lanark.....									2							
McDonald Crs.....							2									
Perth.....				7		2	4	1	5						3	
Smith's Falls.....	2	2	2	10	1	18	8	17		4			1	14		
Northumberland—																
Campbellford.....		1		1	3	1										
Cobourg.....				1		1	1	3		3	1				2	
Colborne.....						1	3			4					2	
Renfrew—																
Arnprior.....				3	5	8	2	2		1					4	
Calabogie.....										2					1	
Cobden.....		2	1	4		2		1								
Pembroke.....				1	4	11	2	5							6	
Renfrew.....				1	5	8	1				2				9	
Westmeath.....				2		2	1								2	
Stormont—																
Cornwall.....			8	4	12	32	1	4		12	4	1		18		
Finch.....						2										
Moose Creek.....																
Newington.....						1										
Prince Edward—																
Picton.....	1		2	16		6		2						2		
Totals for the year	20	84	56	409	102	682	86	377	.....	300	70	65	1649	.....	.....	.....

Grand Total, 4926.

ONTARIO AT KINGSTON FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Conorrhoea		Rabies Diagnosis				Milk										Waters		Liquors for Liecuse Department	Miscellaneous Specimens	Total for Year
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
			+	-		Fats	Total Solids		+	-	Tuber-cle Bac.	Pus Cells								
																				6
																				6
																	2			10
																				1
		1																		44
																				2
																				2
		1																		25
5		4															26		2	120
																				6
																				12
																				10
		1															18		1	46
																				3
																				11
		3																		33
		1																	1	27
																				7
		1																		102
		5																		2
																				2
																				1
																				33
																	4			33
46	98																702		180	4926

LONDON

Branch Laboratory, Provincial Board of Health,
London, January 31st, 1924.

The Chairman and Members of the Provincial Board of Health.

Sirs,—I have the honour to submit herewith the annual report of all specimens examined in my laboratory during the year 1923.

I have the honour to be, Sir,

Yours obedient servant,

H. W. HILL, M.D.,

*Director, Institute of Public Health, and
Branch Laboratory, London.*

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis								
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-						+	-	+	-	+	-	+	-
Brant—																	
Brantford.....		1		1		2	4	9	4	57	18	6	224 (19)				
Burford.....						4											
Cainsville.....				1									1				
Mt. Pleasant.....								1		2			4				
Paris.....						1	1	2									
Bruce—																	
Cargill.....						2											
Lucknow.....																	
Mildmay.....								1					1				
Walkerton.....						1							1				
Carleton—																	
Ottawa.....									27	7	2		26 (5)				
Durham—																	
Bethany.....																	
Millbrook.....													1				
Elgin—																	
Aylmer.....				1		3				2			3 (1)				
Bayham.....													1				
Dutton.....						1											
Harrietsville.....																	
Lawrence St.....		3		3	1	1	1	1		1	1						
Port Burwell.....						1											
Port Stanley.....						1				3			1				
Rodney.....						1											
Shedden.....				2				1									
Sparta.....						6							4				
Springfield.....													1				
St. Thomas.....					1	17			1	18			43 (1)				
Wallacetown.....			1	1		1		1									
West Lorne.....				3						1			1 (1)				
Essex—																	
Amherstburg.....				2									4				
Belle River.....						1							6				
Comber.....				3	1	1	1	2			1						
Essex.....					1			2		1			3				
Ford.....										1			1 (1)				
Kingsville.....		1	1	2		1		2					1				
Leamington.....				5		5		2		3	2		5 (1)				
Pelee Island.....																	
Sandwich.....										1			9				
Stoney Point.....						1											
Tilbury.....		1	3	52		1											
Walkerville.....						2				5	3		43 (5)				
Windsor.....									6	200	48	6	481 (35)				
Frontenac—																	
Kingston.....																	
Grey—																	
Hanover.....																	
Haldimand—																	
Dunnville.....		5		4				1									

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida		
	+	-	+	-						Very Strongly Positive	Strongly Positive	+	-	+	-	
Middlesex																
Adelaide																3
Ailsa Craig						1										
Appin																
Belmont				3						2						
Byron						1						7	1			8
Delaware				1												
Dorchester						9	1	1								1
Glencoe						1										1
Granton	2	9	3	15	3	9		1								
Hyde Park												1				9
Ilderton				6		3										2
Lambeth					1	10		1								3
London	77	121	38	518	49	273	16	76	187	403	66	22	1456			(182)
		(8)					(8)									
Lu'an				1												
Melbourne				2	2	3		2								
Mt. Brydges	1	9	2	8		8		2								3
Newbury					1	3		3								
Parkhill	1	3	2	4												1
St. John's				4		3	(2)					1				
Strathroy				2	3	6	2	6			2					9
Thorndale			1	3	1	4		3								
Muskoka—																
Severn Brydge						1										
Norfolk—																
Delhi				1												
Simcoe				1												
Ontario—																
Brechin				1												
Whitby				1	1		2	2	64	70	10	2	132			(19)
Oxford—																
Beachville				1				1								
Burgessville																
Ingersoll				6	1	10	1	2			1					10
Innerkip					1											
Lakeside				1		2		2								
Mt. Elgin						3										1
Norwich																
Oxford—																
Princeton						1										
Port Elgin																
Tavistock				3	2	4		1								1
Thamesford				1				1								1
Tillsonburg		1	1	4	1			2			1					7
Woodstock			1	4	6	45		2			7	1	1			58
																(3)
Peel—																
Brampton				1												
Perth—																
Atwood				1												
Dublin						1		(1) 2								
Listowell				2		1		2								
Milverton					1	4										
Mitchell		2		3	2	7	3	15			1					1

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida		
	+	-	+	-						Very Strongly Positive	Strongly Positive	+	-	+	-	
Perth—Con.																
Monkton																
Sebringville				4			1									
Stratford	1	10	5	27	11	28	1	4	4	15	1	1	57	(6)		
Shakespeare																
St. Mary's				3	6	6		3							2	
Renfrew—																
Golden Lake							1									
Simcoe—																
Collingwood		3	2													
Orillia		3		7												
Waterloo—																
Ayr				4				(1)								
Baden				2		3		2								
Galt		1					1	9		3			2	(3)		
Kitchener		1		10		1		3	1	9	4	2	47	(12)		
New Hamburg				5												
New Dundee		1	1	2				1							3	
Preston					2	5		1	1							
St. Jacob's																
Waterloo	1	1	1	3	1	3										
Wellesley		2	1	4		10	1	4								
							1 para									
Welland—																
Niagara Falls																
Wellington—																
Conn.					1			3							1	
Fergus					1											
Glenallan						1										
Guelph						1		(1) 1	49	61	4		(4) 178			
Harriston				8		3	1	1							1	
							1 para									
Mt. Forest				2				2	4	1					3	
Wentworth—																
Lynden						1				1					1	
Sheffield								1								
York—																
Toronto		1						(5 para)								
Totals	86	229	88	981	129	697	58	287	349	969	174	40	3070	(219)		
		(8)					(13)									

Under Diphtheria Swabs, numbers in parenthesis indicated suspicious specimens, contaminated specimens or no growth.

Under Typhoid Bloods, numbers in parenthesis indicate atypical reactions.

Under Wassermann Reaction, numbers in parenthesis indicated doubtful or anti-complementary reaction.

Numbers in Miscellaneous column include:—Free urines and chemical miscellaneous by Division of Chemistry and blood counts, blood cultures, blood groupings, blood coagulations, vaccines, exudates, free tissues and animal experiments, by the Division of Pathology.

ONTARIO AT LONDON FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis					Milk							Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year			
							Food Content			Preserv-atives	Bacteriological				Extraneous Matter				Number of Milk Samples	Chemical	Bacterial
							Fats	Total Solids			Tuber-cle Bac.	Pus Cells	Count								
+	-	Animal	+	-	Animal Inoculations	+	-	+	-	+	-	+	-								
																		2	2		
															3	2			10		
12	21					1												22	227		
																		2	2		
																		6	26		
																			1		
																			5		
																			10		
																			5		
																		2	9		
																		5	24		
	14																	8	112		
															7	7			19		
																			8		
																	2		11		
															2	2			4		
															1	1			13		
																	2		25		
																		3	3		
															1	1			8		
																			1		
															1	1			6		
															4	8			315		
															13	15			42		
													3								
															6	6			6		
															7	7			19		
															1	1			4		
																			1		
128	366					833									492	915	19	885	12198		

Approved
H. W. HILL, M.D.
Director.

Feb. 2, 1924

NORTH BAY.

North Bay, January 31st, 1924.

To the Chairman and Members of the Provincial Board of Health.

Sirs,—I have the honour to submit herewith the annual report of all specimens examined in this laboratory during the year 1923.

I have the honour to be, Sir,

Your obedient servant,

JOHN DOUGLAS, M.B.,

Director Branch Laboratory, North Bay.

ONTARIO AT NORTH BAY FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical	Bacterial				
			+	-		Fats	Total Solids		+	-	Tuber-cle Bac.	Pus Cells					Count			
1	4															16			27	
																			41	
																			1	
																18			53	
	3															27			49	
1																3			6	
																			1	
3	14															32			87	
3	6															130	1		226	
	1																		189	
	3																		25	
																			42	
																			16	
																1			1	
																			31	
																6			6	
3	7																		39	
	1															1			2	
																			3	
	3																		17	
																13			5	
11	11															4			150	
																78			32	
9	18															27			63	
	1															1			28	
1	15															10	1		100	
																51			3	
																3			45	
																21			50	
																			8	
																8			8	
																12			12	
	2																		14	
																1			1	
																12			16	
																7			23	
																1			1	
3																2			77	
																2	1		2	
47	106															2			1292	
																2			2	
																10			10	
	1																		52	
																			1	
																10			19	
																9			9	
1	1															40		4	84	
13	48															69		2	225	
																1			5	
	1																		4	
8	20															1			124	
8	20															57		2	284	
	1															3			73	
																8			13	
																1			3	
15	22															33			294	
																1			1	

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tubercu- losis Sputa		Typhoid Bloods		Syphilis						
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida	
	+	-	+	-						+	-	Very Strongly Positive	Strongly Positive	+	-
					+	-	+	-							
Trout Creek.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Whitney.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Worthington.....	4	2	1	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	184	262	125	470	47	254	129	157	.....	118	57	25	524	.....	.....

ONTARIO AT NORTH BAY FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis					Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year			
							Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical	Bacterial							
		+	-	Animal	Negri Bodies		Animal Inoculations	Fats		Total Solids	+	-	Tuber-cle Bac.					Pus Cells				Count		
					+	-			+				-	+	-									
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12
127	311	...	...	...	...	...	...	...	...	...	...	...	...	...	71	...	1129	...	...	...	...	14	4004	

OTTAWA

Branch Laboratory, 428 Slater Street,
Ottawa, Ontario, January 21st, 1924.

To the Chairman and Members of the Provincial Board of Health.

Sirs,—I have the honour to submit herewith a report of all specimens examined at this laboratory during the year ending December 31st, 1923.

The large number of miscellaneous noted under Ottawa consist chiefly of daily tests of the chlorinated lime and ammonia used in the purification of the city water supply.

I have the honour to be, Sirs,

Your obedient servant,

FRANK L. LETTS, M.B.
Director Branch Laboratory, Ottawa, Ont.

ONTARIO AT OTTAWA FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk								Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical				Bacterial
			+	-		Fats	Total Solids		+	-	+	-				+	-	
1																1		23
																33		18
																	1	68
																	2	9
																	3	17
1	1															2		11
1																		2
																		9
																8		10
1																13		13
																13		20
3	9																	12
																		14
1																	1	6
																		3
1																		7
275	370												1097	38	2696		1314	12007

OWEN SOUND.

Branch Laboratory, Owen Sound, Ont.,
January 31st, 1924.

To the Chairman and Members of the Provincial Board of Health:—

Sirs,—I have the honour to submit herewith the annual report of all specimens examined in this laboratory during the year 1923.

I have the honour to be, Sirs,

Your obedient servant,

G. M. FRASER, M.B.,
Director of Branch Laboratory, Owen Sound.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis						Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-	+	-	+	-	Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	-	+	-	
Bruce—																
Cargill.....				1		1										
Chesley.....				1		4	1	2								
Hanover.....	5	10	8	10	1	1	1	8							1	
Hepworth.....	1	2	1	3		2		2							2	
Kincardine.....				1	4	10	1	3							1	
Lion's Head.....				1												
Lucknow.....						1		2								
Mildmay.....						1		5								
Paisley.....						1		6								
Port Elgin.....		3	1	5	1	9										
Red Bay.....																
Ripley.....		2	1					1								
Sauble Beach.....																
Southampton.....	2	1		1	3	2		1								
Tara.....				3	2	4										
Teeswater.....				1	1	4		1								
Tiverton.....						1		1							1	
Tobermory.....				2												
Walkerton.....				3	3	2		2								
Warton.....			2	8	5	14									1	
Dufferin—																
Grand Valley.....						1		2								
Shelburne.....				4		2										
Grey—																
Ayton.....						4										
Chatsworth.....				6	2	6		1							1	
Clarksburg.....		1	1	1		2		1								
Clavering.....																
Desboro.....				2		3										
Dromore.....				1												
Dundalk.....		1	1	5		5		6							2	
Durham.....				4		7										
Flesherton.....						4									5	
Holland Centre.....					1	1										
Kilsyth.....																
Markdale.....				1	2	5		2								
Maxwell.....					1	1										
Meaford.....		2	1	3	4	5	1	5		1					2	
Owen Sound.....				38	53	157	7	33		12	12	2		96		1
Priceville.....				4		9		1							1	
Rocklyn.....					1											
Thornbury.....						1		1								
Manitoulin—																
Fitzwilliam Island.....																
Waterloo—																
Kitchener.....																
Waterloo.....						1		1							1	
	8	22	16	109	84	270	11	88	.....	13	12	2		14	.....	1

Total for Year 1923, 2052.

ONTARIO AT OWEN SOUND FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Conorrhoea		Rabies Diagnosis				Milk								Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year	
+	-	Animal	Negri Bodies		Animal Inoculations	Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples	Chemical				Bacterial
			+	-		Fats	Total Solids		+	-	Tuber-cle Bac.	Pus Cells				Count			
																			2
																7			17
1																4			50
2																8		7	30
																			20
																			1
																			3
																20			26
																1			8
																10		1	30
																2			2
		4																	8
																			3
																			17
													4					1	28
																		3	7
																			3
																			2
																			12
		2																	34
																2			3
																			6
																			5
																		1	19
		1														2			10
																4			1
																1			1
																9		2	16
																			1
																			23
		2																1	13
		1																1	36
																27			2
																			1
																1		2	15
																			2
																			36
																			2
																			1
																			2
																			36
51	237														1	11			1516
																			32
																			1
																			3
																			4
																			1
																			3
																			4
																			1
																			3
54	258															186		395	2052

G. M. FRASER, M.B.

PETERBORO.

Peterboro, January 3rd, 1923.

To the Chairman and Members of the Provincial Board of Health.

Sirs.—I have the honour to submit report of work done in Provincial Board of Health laboratories, Peterboro, for the year 1923.

The total number of specimens examined was 3,682, as compared to 4,197 in 1922, which shows a decrease of 535 specimens. However, it is also of interest to note that our total number of diphtheria swabs examined shows a decrease from 1,723 in 1922, to 522 in 1923, or a decrease of 1,201 specimens.

There has been a great increase in the number of Wassermann tests made and the work is steadily growing. It has been gratifying in many ways to see the facilities, provided by these laboratories here, being used more by this district as a whole, the area being covered being a very large one, and the number of physicians being served having also increased very materially.

There has been considerable activity along the lines of diphtheria immunization with toxin-antitoxin, and there have been a large number of Schick tests carried out and those susceptible, immunized.

The problem of venereal disease is one to which we have endeavoured to give a great deal of attention during the last year, and I am pleased to state that physicians are using laboratory facilities here very much more than during the preceding year.

The control of our city milk supply has not been carried out regularly during the year, 112 samples having been examined and they show a very great improvement, particularly in cleanliness.

The work of the venereal disease clinic, which is run in connection with the laboratories, has been greatly facilitated by being able to follow each case individually, and in carrying out the necessary control tests.

This immediate locality has been almost free from typhoid this year and there have been a great number of samples of water examined, both from the city and from the surrounding country. This has been largely due to the activity of Dr. N. H. Sutton, District Officer of Health, in his consistent efforts, as far as possible, to maintain a safe supply of drinking water in the various municipalities throughout this district.

Typhoid fever has been much more prevalent this year in other parts of the district having a very wide distribution. We have endeavoured to give, as far as possible, every available assistance in the control of the spread of this disease.

I am pleased to state that the free distribution of Insulin in these laboratories, has been steadily increasing and has been a great boon to many unfortunates, to whom treatment with insulin would otherwise be denied.

I have the honour to be, Sir,

Your obedient servant,

A. Y. McNAIR, M.B.,
Director of Branch Laboratories.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis								
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida			
	+	-	+	-						Very Strongly Positive	Strongly Positive	+	-	+	-		
Peterboro—																	
Peterboro.....	23	46	16	113	25	173	15	38		20	4	16	255	1	2		
Warsaw.....		1	1		1	1	1										
Lakefield.....				5	1	4	2	2									
Indian River.....				2													
Havelock.....	21	72	6	27	1	1											
Keene.....				5	4			9		1		1	1				
Bridgenorth.....																	
Burleigh Falls.....																	
Mount Julian.....																	
Norwood.....							1										
Durham—																	
Port Hope.....				6	8	12	2	5		2	1		2				
Pontypool.....	1	4	1	7		4		1									
Millbrook.....			1	10	2	6	1	9					9				
Bethany.....					3	1		5		1							
Bowmanville.....	2	1	3	2		21	2	1					8				
Northumberland—																	
Colborne.....			1		1	1	1	1									
Baillieboro.....	1	5	3	4		3	1	3									
Warkworth.....						1											
Cobourg.....	1	4	5	8			5	5				7	40				
Trenton.....																	
Hastings.....				1													
Brighton.....		1	2	1		2		3					2				
Roseneath.....				2	1	1		2									
Campbellford.....					5		1	1		4	1	1	2				
Victoria—																	
Lindsay.....	8	23	8	22	5	23	28	29		2	1	1	13				
Bobcaygeon.....				6	2	4	3	1					2				
Omemece.....				4		4	2	7					2				
Fenelon Falls.....				3	1	3		2									
Little Britain.....						4											
Coboconk.....				1		1	1	1									
Dunsford.....																	
Manilla.....		1		2													
Marlbank.....								1									
Cambray.....								2					1				
Haliburton—																	
Haliburton.....				1				7					5				
Minden.....							2	2									
Hastings—																	
Bancroft.....																	
Marmora.....	1	7	6	6		7	4	4									
Delora.....																	
Madoc.....					6	2		2									
Frankford.....			2	2		1	2	2									
Tweed.....				2	1					1			1				
Stirling.....				1	1	1		3		2	1						
Belleville.....				1								1	2				
Eldorado.....						1						1	1				
Prince Edward—																	
Consecon.....																	
Totals.....	58	165	55	244	68	282	72	149		33	8	28	346	1	2		

ONTARIO AT PETERBORO FOR THE YEAR 1923.—SPECIMENS EXAMINED.

Gonorrhoea		Rabies Diagnosis					Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
							Food Content			Preserv-atives		Bacteriological										Extraneous Matter	Number of Milk Samples
		+	-	Negri Bodies		Animal Inoculations	Fats	Total Solids	+	-	Tuber-cle Bac.		Pus Cells		Count						
				+	-						+	-	+	-		Chemical	Bacterial				
57	52					112	112	18		25	3	22	112	112	112		584		790	2342	
	3	1																			4
	1	0																			18
																					2
																					129
																					21
																					1
																					1
																					4
																					1
12	0																				83
1																					19
2															1						59
																					4
	3																				14
																					43
																					1
																					5
																					1
																					25
16	9																				2
																					102
																					1
																					1
																					2
15																					1
																					1
																					7
																					15
20	9					11	11					4	11	11	11		180				383
																					9
																					27
																					3
																					22
																					12
																					6
																					8
																					12
																					1
																					1
																					3
																					3
8	4																				25
2																					7
																					1
						1	1						1	1	1						117
																					80
																					30
																					4
																					14
																					2
	2																				11
																					7
	1																				10
																					4
																					4
																					3
																					5
140	80					124	124	18		25	3	22	124	124	124		1037		790		3682

SAULT STE. MARIE.

Branch Laboratories,
Sault Ste. Marie, Ont., January 3rd, 1924.

To the Chairman and Members of the Provincial Board of Health.

Sirs.—Enclosed please find yearly report on all specimens examined in this laboratory for the year 1923.

I have the honour to be, Sirs,

Your obedient servant,

N. F. W. GRAHAM, M.B.,
Director.

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis							
	Release		Diagnosis		+	-	+	-	Colloidal Gold Reaction	Wassermann Reaction				Spirochaeta Pallida		
	+	-	+	-						Very Strongly Positive	Strongly Positive	+	-	+	-	
					+	-	+	-								
Algoma—																
Sault Ste. Marie..	26	45	55	188	14	97	5	8	.....	63	35	17	216	.....	.....	.....
Echo Bay.....													1	.....	.....	.....
Bar River.....													1	.....	.....	.....
Portlock.....														.....	.....	.....
Desbarats.....														.....	.....	.....
Bruce Mines.....				1	1	1								1	.....	.....
Nesterville.....																.....
Thessalon.....						1		1						7	.....	.....
Blind River.....						10				6	1	1	5	.....	.....	.....
Espanola.....			3	12	3	22				1				.....	.....	.....
Spanish.....														.....	.....	.....
Massey.....	1	2		4		2				2	1		4	.....	.....	.....
Collin's Inlet.....														.....	.....	.....
Gore Bay.....						3								.....	.....	.....
Mindemoya.....						1				2				.....	.....	.....
Chapleau.....											1		1	.....	.....	.....
Goulais Bay.....														.....	.....	.....
Puckasaw.....														2	.....	.....
Goudreau.....														.....	.....	.....
Neebish.....														.....	.....	.....
Richard's Landing.....			2	2		1								.....	.....	.....
Totals.....	27	47	60	207	18	138	5	9	.....	74	39	18	237	.....	.....	.....

ONTARIO AT SAULT STE. MARIE FOR THE YEAR 1923.—SPECIMENS EXAMINED

Conorrhoea		Rabies Diagnosis					Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year		
							Food Content		Preserv-atives	Bacteriological				Extraneous Matter	Number of Milk Samples								
		+	-	Animal	Negri Bodies		Animal Inoculations	Fats		Total Solids	+	-	+			-	+	-	Count	Chemical	Bacterial		
21	44						400								392			2	2295		219	4142	
							2								2				1				2
																			1				1
							1								1				5		1		12
																			6				6
																					1		10
1	4														1								28
																		4	28				74
																			4				4
															1				1		2		29
																						1	1
																							3
																			7				10
																			9				2
																							9
																							2
																		2	3				5
																			2				2
																			1				7
26	48						403								397			8	2363		225	4349	

N. F. W. GRAHAM, M.B.

STATEMENT OF BIOLOGICAL PRODUCTS
 NOVEMBER 1ST, 1922, TO OCTOBER 31ST, 1923.

TABLE I.

Month	Smallpox Vaccine	Cost	Diphtheria Antitoxin	Cost	Syringes	Cost	Schick Test Outfits	Cost	Toxin Antitoxin in boxes.	Cost	Toxin Antitoxin 25 cc.	Cost	Anti-Meningitis Serum.	Cost.
November...	8,415	\$ 336 60	37,958,000	\$ 5,693 70	2,210	\$ 442 00	89	\$ 13 35	102	\$ 14 28	35	\$ 35 00	80	\$ 80 00
December...	9,675	387 00	21,676,000	3,251 40	1,307	261 40	114	17 10			35	35 00	49	49 00
January.....	5,590	223 60	29,661,000	4,449 15	1,657	331 40	9	1 35			78	78 00	82	82 00
February....	5,500	220 00	12,883,000	1,932 45	257	51 40	62	9 30	3	42	50	50 00	111	111 00
March.....	4,945	197 80	12,513,000	1,876 95	730	146 00	87	13 05	30	4 20	12	12 00	44	44 00
April.....	9,505	380 20	11,380,000	1,707 00	1,043	208 60	14	2 10	75	10 50			82	82 00
May.....	4,425	177 00	14,320,000	2,148 00	930	186 00	54	8 10	39	5 46	10	10 00	117	117 00
June.....	5,710	228 40	13,610,000	2,041 50	820	164 00	37	5 55			3	3 00	105	105 00
July.....	5,155	206 20	14,420,000	2,163 00	648	129 60	58	8 70	40	5 60	28	28 00	207	207 00
August.....	7,140	285 60	20,007,000	3,001 05	961	192 20	25	3 75	40	5 60	2	2 00	78	78 00
September...	6,364	286 38	16,982,000	2,377 48	583	116 60	7	1 40	61	12 20	12	12 00	34	34 00
October.....	6,984	314 28	25,068,000	3,509 52	1,665	333 00	159	31 80	75	15 00	98	98 00	181	181 00
	79,408	\$3,243 06	230,478,000	\$34,151 20	\$12,811	\$2,562 20	715	\$115 55	465	\$73 26	363	\$363 00	1,170	\$1,170 00

TABLE II.

Month	Intraspinal Outfits	Cost	Tetanus Antitoxin Units	Cost	Tetanus Outfits	Cost	Syringes	Cost	Pasteur Treatment	Cost	Pertussis cc.	Typhoid cc.	Silver Nitrate Ampules	Insulin	Cost	Total Cost
November.....	16	\$ 7 20	659,500	197 85	4	\$ 1 80	36	7 20			240	1,070	1,305			\$ 6,828 98
December.....	6	2 70	499,000	149 70		51	10 20				3,990	1,580	1,125			\$ 4,163 50
January.....	14	6 30	400,500	120 15		12	2 40	15 00	1		4,000	1,560	1,510			\$ 5,309 35
February.....	34	15 30	647,500	194 25	1	45 49	9 80				2,050	1,020	1,595			\$ 2,594 37
March.....	1	45	349,500	104 85	1	45 11	2 20				3,870	7,160	1,876			\$ 2,401 95
April.....	33	14 85	641,000	192 30	1	45 48	9 60				3,520	3,700	2,310			\$ 2,607 60
May.....	12	5 40	962,500	288 75	17	7 65	76 15 20				3,760	2,147	2,575			\$ 2,968 56
June.....	11	4 95	945,000	283 50	1	45 74	14 80	15 00	1	15 00	3,300	1,530	1,255			\$ 2,866 15
July.....	55	24 75	994,000	298 20	27	12 15	37 7 40				3,140	2,690	2,100			\$ 3,090 60
August.....	10	4 50	1,882,000	564 60	1	45 47	9 40	15 00	1	15 00	2,910	1,705	2,080			\$ 4,162 15
September.....	10	4 50	828,000	248 40		14	2 80	30 00	2	30 00	2,900	2,270	2,480	157,400	3,148 00	\$ 6,273 76
October.....	54	24 30	942,000	282 60		10	2 00				3,710	2,270	1,590	180,950	3,619 00	\$ 8,410 50
	256	\$115 20	9,750,500	\$2,925 15	53	\$23 85	465 \$93 00	\$75 00	5	\$75 00	37,390	28,702	21,801	338,350	\$6,767 00	\$51,677 47

Anti-pneumococcus serum..... \$2 50
 Total..... 51,677 47
 Grand Total..... \$51,679 97

	Diphtheria Antitoxin Syringes	Intra-spinal Outfits	Tetanus Antitoxin Syringes	Tetanus Antitoxin Outfits	Revenue
November.....	\$442 00	\$7 20	\$7 20	\$1 80	.....
December.....	261 40	2 70	10 20	.....	.....
January.....	331 40	6 30	2 40	.....	.....
February.....	51 40	15 30	9 80	45	.....
March.....	146 00	45	2 20	45	.....
April.....	208 60	14 85	9 60	45	.....
May.....	186 00	5 40	15 20	7 65	.....
June.....	164 00	4 95	14 80	45	.....
July.....	129 60	24 75	7 40	12 15	.....
August.....	192 20	4 50	9 40	45	.....
September.....	116 60	4 50	2 80	.....	.....
October.....	333 00	24 30	2 00	.....	.....
	\$2,562 20	\$115 20	\$93 00	\$23 85	\$2,794 25

Total cost..... \$51,679 97
 Revenue..... 2,794 25
 Net..... \$48,885 72

ANNUAL REPORT FOR 1923 OF DISTRICT No. 1.

To the Provincial Board of Health, Ontario:

I have the honour to submit the report for this district composed of the six western counties of the Province, and comprising a settled and fully organized area of 5,265 square miles, supporting a population of about 325,000. This area is subdivided into 117 municipalities, each presided over in regard to public health and sanitary affairs by a local board of health constituted as required by The Public Health Act.

Each of these municipalities has been visited by me during the year, and the local board or its executive officer interviewed in regard to the local sanitary conditions and public health activities of the Board; a survey made and such advice given as local conditions required.

Many of the townships and smaller villages have been reviewed a second time and all the larger towns and cities have received several visits.

These personal contacts of your district officer, I believe, have had more influence in bringing about a better understanding of present day methods of guarding public health by the local authorities than any other single agency, and the frequency of these interviews have been materially augmented by the use of the motor car supplied by the Department.

In this district 16,000 miles have been thus travelled, and when you consider that the motor makes it possible frequently to call upon several municipalities during the course of a day's driving it is easily apparent that your officer's efficiency is much enhanced by this method of travel.

Public Health Nursing.

During the year I arranged in this district for your Division of Maternal and Child Welfare to make an intensive demonstration of their work in Leamington, Essex, Kingsville and Tillsonburg and in the townships of Delaware and Westminster as well as to hold clinics at Tilbury, Belle River, Leiscelleville, Stoney Point, St. Jochim, Tecumseh and McGregor in conjunction with a course put on by the Agricultural Department representative. They also at each of these points organized and held classes of instruction in home nursing.

I also arranged for them to hold a clinic at each of the school fairs in Essex county. At all of these demonstrations and clinics, Dr. Bell, of the Department, was in charge of the medical examinations and so discharged the duties as to secure the entire confidence of the profession and the public. In the towns of Leamington, Kingsville and Essex I made earnest efforts to have a local public health nurse appointed, but the expense proved a barrier in each case.

Factories, Canning and Milk Products.

Sanitary conditions about these plants were closely checked up so that with the exception of a couple of cases there was not any cause for complaint by the public; it demands constant supervision on my part to maintain satisfactory conditions and have installed necessary improvements at these factories.

Nuisances.

I am pleased to report that local boards are largely taking up this phase of the work so that outside of my regular inspections of the municipalities I have only been called upon to make about a dozen special visits in connection with such conditions as become objectionable at fox farms, slaughter houses, laundries, piggeries, fair grounds, etc.

Milk Supplies.

Local authorities are now constantly supervising these supplies in regard to methods of production and distribution and each year sees pasteurization being more generally applied and the matter of tuberculin testing of dairy herds being given earnest consideration by urban municipalities and local boards of health.

Meat Supplies.

Slaughter houses are being kept in fairly satisfactory condition by the local boards and conditions of handling meat are being gradually improved under constant inspection. Scientific systematic examination of meat for local consumption is yet a vision of the future, although such inspection is carried out in all abattoirs, slaughtering for export from the Province, by the Dominion authorities.

Some such system of inspection of locally used meat, by the Dominion Pure Food Section as they employ for inspection of butter and cheese, by experts acting in conjunction with provincial and local board of health would materially improve conditions, and this appears to me both a practicable and fairly efficient method of control.

Rural Schools.

The inspection of the sanitary condition of these institutions by the local medical officer of health as now carried out in this district has very materially improved their sanitation, though through the exercise of false economy, indifference or neglect some trustees have failed to respond to our efforts up to the present.

The following quotation from a local medical officer of health's letter to me very fairly illustrates the effort being made and one of the methods being adopted:—"You remember suggesting to me a couple of years ago that once a year Mr. B. (the sanitary inspector) and I should personally meet at each school the trustees of the school section and go over the school situation together. This we have done each fall and arranged to have the report discussed at the next annual meeting of each school section

"This has worked out very fine, the trustees are each year taking more interest in the work: out of ten schools in 1923 we had installed three new heating and ventilating systems of the 'Waterbury' type, some new blackboards, some new water closets, one new-drilled well and many minor improvements. We made our last inspection in December, 1923, and arranged for further work for 1924 which Mr. B. was to oversee. For instance one school has fairly good closets but to remodel them to have them fly proof and ventilated, etc., they agreed to supply a carpenter to do it if Mr. B. would come and see that it was done properly."

Definite results as shown in the above quotation are not of infrequent occurrence so that while conditions are yet far from ideal there is encouragement in the progress being made from year to year and I believe this progress is the direct result of the personal contact of the district officer with the local authorities and his direction of their efforts so as to get action rather than official reports.

Educational.

It is very gratifying to find that the local officers of health are giving more attention to developing an intelligent interest in public health among the laity by giving addresses to local societies and to the pupils in the schools on their official visits.

On every possible occasion where I meet councils, boards of health or other official bodies an effort has been made to develop in them a true conception of the efforts being made to foster public health and prevent the occurrence of disease by the health department, and the duty of the individual to guard his health by at least annual medical examination by his family physician. This effort has been supplemented by several addresses given on invitation to social and other organizations.

Communicable Diseases.

Smallpox.—The incidence of this disease is more frequent than it should be considering the sure prevention available to all in vaccination. I was called upon to make four special visits to different municipalities to assist in control of outbreaks of the disease, though in only one case, that of Sombra, was the condition serious.

In this instance a maid at the hotel carried on her duties while suffering from the disease, she also attended a social gathering of about 150 persons, and, as though this was not sufficient damage, she took the morning train to Wallaceburg where she came under the notice of the health authorities who at once sent her back to the Sombra hotel by taxi, and notified the health officer there.

As a result of these contacts about thirty cases developed so far as known to me in the territory extending from Wallaceburg to Windsor, through quarantine and vaccination were applied as promptly as cases or contacts became known.

From investigation it appears that the girl referred to as spreading the disease contracted it from a visitor hailing from Detroit.

It appears to me that the time has arrived for the Provincial Board to adopt such measures as will curtail or stop this constant menace and financial loss from this disease. How? By insisting that each pupil before entering a public school or other institution of learning, receiving financial support from the Government, must present a certificate of successful vaccination satisfactory to the Department of Health.

We would thus soon have an immune population without inflicting any undue or unfair hardship on any person as the Vaccination Act already provides for the free vaccination of those unable to pay for this operation.

Diphtheria.—This, the most fatal of our acute communicable diseases, continues to claim its victims by the score, notwithstanding the generous supplying of free antitoxin to rich and poor both for treatment and prevention by your Board. While the death rate has been materially reduced its incidence and morbidity is practically unreduced. This being the case in spite of all our endeavours to educate the public to consult their family physicians immediately in every case of "sore throat," we are constrained to cast about to find some other practicable method for the control of its incidence.

I am of the opinion that if you required each local board to administer the toxin-antitoxin for immunization free to all those applying for this treatment, and our Department all along the line emphasized the protection thus given, that we would be making some progress towards solving the problem.

Venereal Diseases.—From enquiry and observation I am convinced that these diseases are not being as fully reported by the profession as their menace to the community demands. The system of clinics as established by your Board has materially improved conditions amongst those they are intended

to reach; they have also proven a large educative factor amongst the same class of the community as well as in a large measure removing the cloak of secrecy that formerly veiled the danger from them.

Scarlet Fever.—The type of this disease where it has appeared in this district during the year has been mild and its control by the local boards has been very satisfactory. I have been called upon in a few instances to support them in insisting on quarantine for the full period in all cases, even when mild.

Measles.—The local authorities are now insisting on quarantine of all known cases and most of the local medical officers are keeping a close watch for hidden cases or those missed.

Tuberculosis.—During the year I have succeeded in establishing consultation clinics in four centres, each presided over by an expert diagnostician and clinician in this disease.

These services are conducted and patients introduced by the medical men of the centre for early diagnosis in suspected cases of the disease, but recognized cases are also given free examination by the expert and his advice and outline of treatment furnished to the physician bringing the case.

In cases of those unable to pay, all service is free including X-ray, if required, but those in a position to do so are expected to pay their family physician for his examination of their case as well as for the X-ray. The expert's services are free to all. Where agreeable to the patient the family physician is expected to extend to one or more of his confreres the courtesy of examining the patient with the expert without extra cost to the patient.

The local physicians of the centre are expected to arrange for and bear the cost of providing suitable rooms and the services of a stenographer as well as the use of the X-ray where one is available.

The expert's service and his expenses being borne by The Ontario Red Cross has made the work possible. I was not aware that this opportunity was available until a few months ago, so that these centres have been opened very recently. They are very popular where established and I am hopeful for good results in an educative way and especially in the bringing of cases under early observation and treatment.

Typhoid Fever.—This disease, through your control of the water supply of urban municipalities, has, to a large extent, disappeared in this district.

Its appearance has been mostly in isolated cases and in rural and semi-urban localities where it has been difficult or impossible to locate the origin or source of infection.

The cases in Windsor, arising apparently from the Michigan Central Railway's private water supply in East Sandwich and Windsor as already reported upon, is the only condition so far as I am aware demanding your immediate attention.

Water Supplies.

I appreciate very much your action in requiring your laboratories to furnish me with a copy of all examinations of water for municipalities in this district as it enables me to check up conditions more closely, and thus assist in guarding against water-borne diseases.

If you would require all municipalities having a public supply to make periodic examination by your laboratories, in addition to their own private or local tests, it would add very materially to the efficiency of the safeguarding of supplies.

Summer Resorts.

It seems apparent to me that proper sanitary conditions and safe water supply in these communities will not be provided until some system of control, such as registration and licensing is required by your Board of those establishing or carrying on such places.

A Kaustine public system of conveniences, such as provided at the Government Rondeau Park, and a water supply approved by the department should be the minimum required.

The size of the systems should be governed by the number of people present at such resort on the day of their largest attendance during the previous season or as deemed sufficient by the department.

So as to have personal knowledge of conditions at these resorts during days of large attendances I made inspection of several of them on holidays and Sundays; the opinion stated above was formed after and founded on these inspections.

T. J. McNALLY,
District Officer of Health.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 2.

To the Provincial Board of Health:

Gentlemen:

I beg to submit report of Public Health activities in this District for 1923.

Among the advances made the past year may be stated the free distribution of Insulin by the Provincial Board. As pneumonia is often the terminal disease of diabetes as in other diseases it will be interesting to note if the death rate from pneumonia decreases.

The better reporting of communicable diseases, which is the first step toward better control. This is due to feeling of the physicians as to the need of it, the work of the Public Health nurses, and to the card system introduced by the Provincial Board whereby the district officer is notified at once of positive cases of diphtheria, typhoid and tuberculosis.

The low mortality from diphtheria. In the district there were recorded only six deaths, in a population of nearly 450,000. The free distribution of antitoxin deserves a large share of credit for this.

Water and Sewage.

Seventeen places took out permits for extensions and improvements to their water systems at a cost of nearly \$500,000. Twelve places for their sewerage systems at a cost of nearly \$400,000.

The bacteriological reports sent from the laboratories to the district officers are proving useful. In one town I was able to advise the local board of health before they were aware of any pollution of their water supply. They immediately saw the need of repairs to their reservoir. They are also useful as tangible evidence to show school trustees that the water from the school well is not fit for drinking.

The disposal of sewage in growing towns is still a vexed problem. Those places that made a beginning a few years ago are fortunate, when costs were more reasonable.

Assistance was asked for by the local board of health regarding drainage in the following places:—Meaford, Coldwater, Beeton, Everett, Kitchener, New Hamburg, Hanover, St. Clements. In these places the council needed the moral support of the local board of health before doing anything to correct the nuisance.

Special Visits.

Besides the special visits made *re* drainage, others were made *re* plumbing at Galt and Collingwood, garbage at Listowel and Guelph, water supply at Port Elgin, public schools at Wallace Township, Stanley Township, Morris Township, and Brussels, slaughter houses at Ayr, Meaford, Galt, and Wingham, cemetery in Bentiuck Township, church shed at Wingham, butter factory at Grand Valley, livery stable at Orillia. Reports of these were sent to the Provincial Board.

Communicable Diseases.

Smallpox.—While a great deal of new work is being done in Public Health, the work done in communicable diseases like smallpox and typhoid must not be neglected. These two diseases can be brought down to the irreducible

minimum, but both show a slight increase over last year. The benefits of vaccination and inoculation must be kept constantly before the public. The only offender in smallpox was threatened with discontinuance of its train service if it did not enforce the Vaccination Act. The only town where typhoid assumed epidemic proportions installed a new system of water-works under pressure of the Provincial Board.

Measles.—There were 1,650 cases of measles reported in the District. This large number is undoubtedly due to better reporting of the disease. Parents are beginning to realize the after effects of "only measles", but the greatest share of better reporting must go to the Public Health nurses.

Diphtheria.—Showed only 0.3 cases per 1,000 population, which is very low. There should be no such diagnosis as simple sore throat in children. The first case of diphtheria is quarantined and the contacts immunized. If this could be done in measles for example the number of cases could be immeasurably lessened.

Tuberculosis.—The cards sent by the branch laboratories of positive cases should result in better reporting in tuberculosis. Of the fifty-eight deaths in the district, fifty-three, or ninety per cent. of them were in sanatoria. The health officers throughout the district report a decrease in the number of cases. The travelling clinic being organized should further reduce these by getting early cases and contacts. The doctors interviewed regarding it are all enthusiastic.

Small outbreaks of communicable diseases were investigated at follows:— Investigation following request from the M.O.H. and from information supplied by the cards; smallpox at Palmerston, Brussels, Ethel, and Listowel; diphtheria at Waterloo and Greenock Township; scarlet fever at Linwood and Wallace Township; typhoid at Hanover; mumps at Guelph.

Schools.

Sanitary conditions in rural schools continue to improve, slowly, but surely. The health officers are doing their part. School trustees do what they are forced to do. If the teacher has a good idea of cleanliness and hygiene the school is all right. Some schools I have visited are very dirty, and around the teacher's desk is the worst. If the teacher is not imbued with a sense of hygiene and sanitation then parents should step in and see that where their children's characters are being formed, right habits should be taught by example as well as by precept. The school is the logical place to teach health habits.

Summer Resorts.

During July and August I inspected the summer resorts. These include Lakes Muskoka, Joseph and Rosseau, Lake of Bays, Fairy and Peninsular Lakes, Sparrow and Koshee Lakes, Georgian Bay and Lake Huron. Thousands of tourists visit these resorts every summer, more now than ever on account of the heavy motor traffic. Many expressions of appreciation are heard of the regulations enforced by the Provincial Board. The Board is ably assisted in these regulations by the Municipal Association of Muskoka and the Muskoka Lakes Association.

I was asked by the Association to investigate the sanitary condition of the cottages around Beaumaris. These are owned mostly by Americans, and they all seemed anxious that no pollution of the waters should occur. Some of them had spent large sums of money on their sewage disposal plants.

Public Health Nursing.

The nurses have been doing Public Health work in Dufferin County as a unit. Dufferin County is made up of six townships, one town and two villages, and has a total assessment of \$1,649,285. Valuable data will be available if the scheme of county health organization ever materializes.

Intensive work has been done in some of the townships. The schools have been visited and the pupils examined for defects. Many defects were found, so many, that in Orangeville, for example, a request was made that the report be published in the town papers to call attention to the need of the work.

Child Welfare Clinics were held in Orangeville and in Grand Valley, which were well attended and greatly appreciated. Classes in home nursing have been carried on at the same time and have been largely attended.

A survey of Waterloo County was made by Miss Campbell which brought out some interesting facts. There are Victorian Order nurses, Public Health nurses and school nurses all doing child welfare work there, though in different places.

Milk and Dairies.—

The most advance in pure milk supply seems to have been made from the producers' end. More herds are being tuberculin tested, stables are receiving more attention as regards light and ventilation. Dairymen are beginning to realize the importance of well ventilated stables for their herds.

The pasteurization of milk in small towns needs to be carefully watched, to see that the plants are kept clean.

More towns are paying attention to the inspection of stables, the Babcock test and the sedimentation test.

A mere list of what the Provincial Board is doing for the public shows its many-sided activities. One phase that is beginning to press for attention is the care of mental defectives. The statement has been made on good authority that between the ages of eight and fourteen, ten per cent. of children are mentally abnormal. The mentally abnormal child is of two types—the dull and backward, and the feeble-minded. A good beginning in the institutional care of these children has been made at the Ontario Hospital at Orillia. There the children are placed in graded classes and taught useful manual training. Instead of being a burden on the state they are learning something useful, and appear to be happy and contented.

All of which is respectfully submitted.

J. J. FRASER,
District Officer of Health, District No. 2.

ANNUAL REPORT FOR 1923 FOR DISTRICT No. 3.

To the Provincial Board of Health.

Gentlemen:

During the year 1923 epidemiological work loomed large in the activities of the District Officers of Health. The prevention of the spread of communicable diseases is very important. I shall take up the principal infectious diseases and give an idea of the incidence and the mortality of each one.

Smallpox.

There were 376 cases of smallpox reported in District No. 3, and no deaths. The city of Niagara Falls was responsible for 114 of the cases, and the City of Brantford twenty-six. Quite a number of people in Niagara Falls are opposed to vaccination and this I think accounts for the large number of cases in that city. With proper vaccination of children as the Public Health Act requires, smallpox becomes a negligible quantity, the methods taken for the control of smallpox are prompt isolation of patient, quarantine for fourteen days of all unvaccinated contacts, and the vaccination of all children in the community who have not been vaccinated within the legal time which is seven years. I am of the opinion that certificates of successful vaccination, or of insusceptibility to vaccination should be required of all children when they begin school life.

Such a procedure would, I think, practically eliminate smallpox. Some interesting situations developed out of some of the large number of cases of smallpox seen during 1923. The district officer is called to make a diagnosis when the local M.O.H. does not care to take the responsibility of saying that the disease is smallpox or there is a doubt as to the nature of the infection.

In April there was an outbreak of smallpox at Jordan, in the township of South-Lincoln County. There were about ten cases in all. I saw them with Dr. Addy, M.O.H., and confirmed the diagnosis.

Upon my recommendation he notified the teacher in the school to require certificates of successful vaccination. The Board of Education ordered the teacher to pay no attention to the notice. Dr. Addy telephoned me as to the situation. I went to Jordan and, with Dr. Addy, met the Board of Education and listened to what they had to say. I pointed out to them that they had no authority to back up their action in the matter. The Board of Health remained firm and the order was obeyed.

In August my attention was called to the fact that there were a number of cases of so-called chickenpox in Paris, in Brant County. Dr. Logie, M.O.H., assured me that they were chickenpox. On investigation, I found they were well-marked cases of smallpox. I think all the physicians in Paris, with the exception of Dr. Logie, thought they were smallpox. Dr. Logie, though not agreeing with the diagnosis, treated the epidemic thereafter as though it were smallpox and the epidemic was soon stamped out. There were about twenty-five cases in all. Earlier recognition of the disease as smallpox would have prevented, no doubt, a number of cases.

Scarlet Fever.

There were 137 cases of scarlet fever reported in District No. 3, and five deaths. In November there was an outbreak of this disease in the Institute for the Blind at Brantford. There were six cases in all. Five cases had been

taken from the Institute and sent to Brantford Isolation Hospital before I was called to consult with Dr. Hutton about the epidemic. The cases were all among the boys of the Institution.

Dr. Marquis of Brantford was the attending physician. I suggested that the top floor of the building should be used as a temporary hospital for the cases having the disease. An extra nurse was obtained and the pupils gone over every morning; those having a temperature or inflamed throat were put in a room by themselves as suspects. They were isolated there for ten days.

Classes were broken up so that the boys and girls did not mingle with each other and strict quarantine was put upon the inmates of the building. Utensils were sterilized. Dr. Hutton informed me that only one case supervened subsequent to my visit. This was rather an unexpected result, but was none the less gratifying.

I recommended in my report to the Provincial Board of Health that the Board of Education be asked to establish and equip a small building which might be used as an emergency hospital. Also that a mechanical dish-washer be procured.

Epidemics of scarlet fever occurred in December in Waterford, Simcoe and Brampton. At Waterford Dr. Alway, at my suggestion, recommended that a nurse should be placed temporarily in the school and the children examined every morning and those having a temperature, sore throat, or any indisposition should be sent home and quarantined after being seen by the M.O.H. This speedily ended the epidemic.

At Simcoe the epidemic was not so well handled and consequently more cases developed.

At Brampton Dr. Sharpe, M.O.H., used the nurse in the school and the disease was soon stamped out.

In December, also, I was called up by a citizen of Hamilton, who said he had information that a number of children at Millgrove in the Township of West Flamboro, Wentworth County, had suffered from a rash and sore throat. I went with Dr. McLean, M.O.H., to the school and examined the children. We found two peeling and came to the conclusion they were all cases of mild scarlet fever. A large number of the pupils had been affected. No doctor had been called as the children were not very ill, being only out of school about three days. The pupils who had been ill were quarantined and the houses placarded.

Diphtheria.

During the year 1923 there were 1,958 cases of diphtheria and ninety-seven deaths. I have included in these reports the cities of Hamilton and Toronto. Excluding these two cities there were 136 cases and twenty-one deaths. In Hamilton there were 585 cases and twenty-six deaths. In Toronto 1,237 cases and fifty deaths. Twenty-one deaths and 136 cases shows a very heavy death rate. The explanation is, I think, that all the cases were not reported while the deaths were.

Diphtheria should now be one of the easiest of diseases to control. The worst epidemic we had in my district of this disease during 1923 was at Agincourt. Dr. Farquharson of that place, M.O.H., handled the epidemic well. He visited the schools and with the assistance of nurses took swabs of the throats and noses of the children, and had them examined at the Provincial Laboratory. Those that were positive had the virulence test done.

If this was positive the cases were treated the same as regular diphtheria cases with symptoms. The prompt and vigorous measures taken by the M.O.H. were, I believe, instrumental in curtailing the epidemic and finally stamping it out.

The Schick test and in positive cases toxin-antitoxin injection should, I think, be used in all the larger centres.

Typhoid Fever.

In 1923 there were 132 cases of typhoid and thirty-five deaths. There were fifty-four cases and seven deaths in Toronto, and eleven cases and four deaths in Hamilton—leaving sixty-seven cases and twenty-four deaths. This again, I think, proves the lack of proper reporting.

We still have too many cases of typhoid fever, and we still have too many epidemics of typhoid.

In April an epidemic of typhoid occurred at Chippewa. In my opinion it was due to the water supplied to its employees by the Norton Mfg. Co. The water supply is taken from the Chippewa river. It is filtered and chlorinated.

The plant had been closed down for some time, and when it was reopened and resumed operations the chlorination through some oversight was not started. The epidemic was due, in my opinion, to lack of chlorination of the water. We got the chlorination plant in operation at once and the epidemic disappeared. There were ten cases in all, and two deaths. Here was a case where these two deaths and also much sickness and suffering might have been prevented if only proper precautions had been taken.

In July we had some cases of typhoid among the employees of the Ontario Paper Mill just outside of Thorold. The cause here was also the water supply. The water is taken from the canal and is, of course, grossly polluted.

Mr. Dallyn's department co-operated and a chlorinating plant was put in and the epidemic disappeared. Similar conditions existed at the Pilkington Glass Works and also at the Beaver Board Factory. These plants are quite near the Ontario Paper Mill. Chlorination plants were also put in at these two factories.

An interesting epidemic of typhoid occurred at Stouffville in September. A number of cases of continued fever had occurred and there was a difference of opinion as to their nature. Dr. Freel made the diagnosis of typhoid. I saw a number of the cases with Dr. Freel and Dr. Ball, M.O.H.

As the cases were a week or more old I took samples of the blood, and on examination at the Provincial Laboratory they all proved positive. The first case although attended by a physician had not been diagnosed as typhoid. The man affected was one who supplied milk to the milk vendor in Stouffville. He had handled the milk and assisted in milking right up to the time he went to bed. Milk was being sent for that three weeks, while his wife nursed him and also assisted in the milking.

The secondary cases occurred about the same time beginning about three weeks after the milk producer was stricken with the disease. There was also sickness in the milk vendor's house in Stouffville.

I made the following recommendations to the Board of Health in the village:—

1. Since there is sickness in the house of the milk vendor which may be typhoid, I would recommend that no one from his house be allowed to handle the milk, bottles, or cans. Some outside person should be pressed into service.

2. I would also recommend that milk bottles be sterilized. The cans should also be sterilized.

3. Careful supervision of the water supply.

4. The passing of a milk by-law by the Council.

5. Care must be taken to see that urine, fæces and bath water of the patients be properly disinfected with lime, carbolic acid, or bichloride of mercury. Bedding should also be disinfected before it is washed; soaking in carbolic solution will do very well. Portions of food left by patients should be destroyed and dishes boiled.

6. No milk bottles should be taken from houses where typhoid prevails.

7. The above precautions should be taken in all cases of continued fever which have occurred in Stouffville whether confirmed by the Widal test or not.

In this investigation I received the heartiest co-operation from the M.O.H., all the medical men, the Board of Health, and the public in general.

Great credit is due Dr. Freel for his astuteness in making the diagnosis, and to Dr. Ball, M.O.H. for his promptness in stamping out the epidemic. There were thirteen cases in all and no deaths.

Measles.

There occurred in my district during 1923, 6,395 cases and twenty-eight deaths from measles. In Toronto there were 5,008 and twenty deaths. In Hamilton 584 cases and one death. In Brantford 533 cases and two deaths. This leaves in the rest of the district 285 cases and six deaths.

Measles is a difficult disease to control because it is very infectious. Then again often times a doctor is not called and no report is received, the householder not realizing his responsibility.

In some municipalities the M.O.H. does not placard for measles or German measles as required by law.

Tuberculosis.

In 1923 there were reported in my district 823 cases of T.B. and 490 deaths. Of these Hamilton had seventy-two cases and seventy-two deaths, and Toronto 513 cases and 236 deaths, leaving 238 cases and 182 deaths for the rest of the district.

Tuberculosis still continues to be a scourge. In my district there are two excellent institutions for the care of the tubercular, one at Weston and the other at the Mountain Sanatorium at Hamilton. In addition there are smaller institutions, one at Brantford and one at St. Catharines.

There are also clinics held twice a month at Brantford and St. Catharines. Dr. Holbrook is the physician in attendance.

I expect to have inaugurated three other chest clinics under the supervision of Dr. Brink. The locations have not yet been definitely settled, but one will probably be at Welland.

A very extensive survey of children in the Town of Dundas and Township of West Flamboro was made during the year. Special attention was paid to the incidence of tuberculosis among children. The statistics of the survey have not yet all been compiled, but when completed the results should be very valuable. The survey was made by the co-operation of the Canadian Tuberculosis Association, the Canadian Red Cross Society, the Hamilton Medical Society, Hamilton Health Association, Local Board of Education, Provincial Education Department, and the Provincial Board of Health.

To obtain the full results of the survey a follow-up through the local health departments concerned should be carried out.

The co-operation of the local medical men of the district was excellent, and without this the survey could not have been made.

Money appropriated for sewers in my district for 1923 was as follows:—

Brantford	\$48,733 45
Chippawa	56,385 00
Dunnville	2,184 45
Hamilton	992,468 47
Leaside	45,918 85
Niagara Falls	49,682 88
Newmarket	5,363 93
Oakville	2,899 93
Port Dalhousie	38,658 47
Port Dover	30,000 00
Simcoe	10,647 26
St. Catharines	6,322 45
Thorold	750 00
Toronto	1,196,246 00
Welland	4,768 15
Weston	91,538 50
A total of	\$2,536,702 78

Money appropriated for water-works and purification during 1923 in District No. 3:—

Acton	\$2,300 00
Burlington	10,674 32
Chippawa	74,359 00
Grimsby	16,351 53
Hamilton	82,266 00
Leaside	12,253 77
Mimico	1,660 24
Newmarket	25,037 50
New Toronto	52,741 07
Niagara Falls	18,768 51
Oakville	1,400 00
Port Credit	33,800 75
Port Dover	29,790 00
Richmond Hill	35,000 00
Toronto	1,548,134 43
Weston	27,189 00
Woodbridge	22,000 00
A total of	\$1,998,726 12

Milk Supplies.

A number of municipalities in my District have not taken the necessary precautions for the safeguarding of the milk supplied to the citizens. Some of them have no milk by-law. I have always recommended that milk should be collected in as cleanly a manner as possible and then pasteurized. If the municipality is a small village and no one cares to install a pasteurization plant, then they should have a milk by-law and inspect the dairies supplying milk, and have the milk tested for butter-fat.

An interesting case in connection with milk supplies occurred at Oakville during May, 1923. The driver for the Calder dairy was charged with putting dirt in the milk of a rival dairy after it had been delivered. The case came before Magistrate Shields. The accused pleaded guilty and was fined \$50 and costs.

I recommended to the local board of health that this driver should not be allowed to deliver milk again, and that the owner be given a reasonable time to dispose of his business.

The Board gave effect to this recommendation.

Industrial Hygiene.

An interesting experiment was conducted in the town of Thorold. The town itself and a number of the industries combined and engaged a public health nurse. The nurse did school work, child welfare work among those of pre-school age, industrial work at the several industries, and general public health work. The plan seemed to work very well until Pilkington's Glass Works signified their intention of dropping out of the agreement. This was largely due to the policy of the Home Office in England.

At the same time the School Board appointed a nurse of its own, so that affairs at Thorold are in rather a muddle. We are hopeful of a readjustment in the near future.

At Simcoe, in Norfolk County, a number of cases of benzol poisoning were investigated by Dr. Cunningham, director of Industrial Hygiene. The cases occurred in a canning factory. Suggestions were made to try to prevent benzol poisoning and also that of lead. The appointment of a plant nurse was recommended, but no action has yet been taken.

At Niagara Falls a storage battery plant was investigated, also by Dr. Cunningham, following a number of cases of lead poisoning. The matter was finally referred to the Factory Inspection Department on account of the conditions being very bad.

Nuisances.

As in previous years a large part of the time of the D.O.H. is taken up with the investigation of nuisances. In my report of 1920 I pointed out the fallacy of allowing this work still to remain under the various Boards of Health. I am still of the same opinion and think that the so-called nuisances might be divided up between the Police Department and the Engineering Department. This would give health officials more time to devote to true public health work.

Child Welfare.

During the year the Public Health Nurses in District No. 3 were sent for duty to the Northern fire area, and Miss Smith only returned to her own district in the month of March. The Town of New Toronto was given a demonstration upon the request of the health authorities, with the result that a permanent local nurse has been appointed. Miss Smith later assisted in the survey of tuberculosis among children in the Town of Dundas and vicinity, which work lasted for three months. The balance of the year was spent in making a survey of the County of Wentworth.

York Township has received a great deal of attention as previously reported. Demonstrations of public health nursing (including schools) were carried on in several sections of the municipality, as a result of which the following appointments were made during the months of January and February, 1923.

Miss E. Willison, Municipal Public Health Nurse for the Township of York (this service includes schools where no local work has been arranged for).

Miss B. Lousley as Public Health Nurse for the Village of Swansea (school included in this service.)

Miss J. Y. Farquharson, Public Health Nurse, S.S. No. 7, York Township. (Schools are included in this.)

Miss Penneck came on the staff in the month of May, following which she spent five months in the Town of Paris, giving demonstrations of Public Health

nursing including schools. The next point of demonstration was the Town of Simcoe, which work is still in progress. In addition Miss Penneck completed a survey of Brant County, including the City of Brantford.

General.

I desire to express appreciation for the support of the Department at Spadina House, and also that of the various Directors of branches under the Provincial Board of Health. On my own part I promise if possible to enhance my co-operation with these departments in the ensuing year, 1924.

D. A. McCLENAHAN,

District Officer of Health.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 4.

To the Provincial Board of Health of Ontario.

Gentlemen:

I have the honour to submit my annual report covering my work in this District for the year 1923.

Communicable Diseases.

The following statistics compiled from the weekly report cards for my District.

	No. of cases	No. of deaths
Diphtheria	185	8
Measles	1,012	8
Tuberculosis	12	7
Pulmonary tuberculosis .....	...	5
Influenza	58	28
Acute infantile pneumonia	16	29
Typhoid fever	43	10
Smallpox	13	1
Infantile paralysis	2	1
Acute primary pneumonia	12	22
Pneumonia	3	8
Whooping cough	61	4
Whooping cough and measles .....	...	1
Tubercular meningitis	1	2
Broncho-pneumonia	5	16
Mumps	33	..
Cerebral spinal meningitis	6	7
Pleural pneumonia .....	...	1
Sleeping sickness	1	..
Chickenpox	88	..
Actinomycosis	1	0
German measles	1	..
Gonorrhœa	23	..
Syphilis	10	..
Scarlet fever	280	5
Rocky Mountain scarlet fever	1	..

These figures show on the face of them that they are in the main of little value, as to the prevalence of this class of disease. Only diphtheria, measles and scarlet fever, and possibly typhoid, bear evidence of any approach to thoroughness in reporting. Certain of the diseases show more deaths than cases reported, while in the case of tuberculosis, there have been since the 1st of August, when laboratory reports were commenced to be sent the D.O.H's., nearly twice as many positive findings for diagnoses, than there were cases reported all year. The reporting of the venereal diseases is practically a dead letter in this district. The reasons for this general condition are many, but I doubt if this is the proper place to discuss them. In passing, I must commend the Health Department of Oshawa for its example in this, as in many other aspects of Public Health work.

Subsequent to my appointment late in February, my work in the district commenced with an outbreak of typhoid in Coboconk, among the players of the hockey team, who had taken part in a tournament at Bobcaygeon. The team had stayed at the hotel for some two days and had apparently not at all strictly obeyed the instructions placed over all the taps, that that water was not for drinking purposes. In due course three of these young men were down with typhoid and one of them died. The other members of the team had been overseas and well inoculated. This is most interesting, as the protection had lasted well over four years in their case, with no apparent diminution. It goes

to prove the hope expressed to me while in France by a prominent bacteriologist, that three or four annual inoculations would be found to confer in most cases, a permanent immunity.

The hockey team from Havelock also engaged in the tournament, but were careful to drink only the water provided for drinking purposes, and no cases developed. There had been a case of typhoid develop in Bobcaygeon prior to this, and occasional cases continued to crop up for months there and in the Township surrounding it. This village is built on an island in and upon the north shore of a rapidly falling river. The rock beneath the fairly shallow layer of soil is limestone, the strata of which is honeycombed by the action of water so that wells sunk into it are apt to be subject to pollution from an unknown distance in various directions. They have had no typhoid for many years previously, when an epidemic was stamped out by a very painstaking and capable campaign, carried out by the M.O.H., who has now this year's outbreak apparently well in hand.

Cases of this disease cropping up widely throughout the district caused me to predict to many M.O.H's. that this would be a typhoid year—a prediction which unfortunately proved correct. Investigation during the spring of the year showed almost all of the larger centres and many small ones throughout the district to have had one or more cases of this disease which had fled from Cochrane. Later in the season, further cases cropped up. Such of these as I was able to investigate could not be at all connected, thus the most of these cases were too widely scattered to permit of my investigating them, and I adopted a form of questionnaire which I sent to the M.O.H. of each municipality, where a case was reported by the laboratories. The replies did not in any case go farther than wells, showing pollution or tainted food. In none was the search for possible carriers productive, and in some cases we seemed to be able definitely to rule out that source of contagion.

Measles and scarlet fever have shown brisk epidemics in many municipalities, during the winter and spring, but have been of a mild type, with low mortality and consequent difficult of control.

Diphtheria is always with us and maintains its characteristic of a "killer." In this disease, I think, the role played by the carrier is not sufficiently appreciated, nor the importance of taking release swabs from all the members of the family and from close contacts, before lifting quarantine. An instance shows this. A child on a farm in a part of the district where this disease is fairly frequently present, developed diphtheria and in a short time recovered. All the family had been given protective doses. After a negative swab from the patient, disinfection was carried out and they were released. The mother then made a deferred visit and left two of her children with a sister, one of whose children developed the disease. Here again general antitoxin and recovery of patient. Mother No. 1 returned from her visit before quarantine was lifted from her sister's house and removed her children, thus breaking quarantine and I was called in. I directed that they be again quarantined and that swabs be sent in from all children of each family. These showed another child in each family to be carrying the germs and I directed that quarantine be maintained in each case until these should be cleared up, by proper treatment of the noses and throats. The first was clear in a week, but the carrier in No. 2 family showed increased virulence of the germs and in the second week, virulent germs in pure culture. Painting the nose and throat with tincture of iodine, finally cleared it up. This was a lad of twelve years, who would have been going to school with probably dire results.

The use of the Schick test and toxin antitoxin is not too generally appreciated in the district. In Peterboro a campaign was started by the school physician, during the autumn, to interest the parents of school children in this procedure and leaflets, with consent slips, were distributed in one of the larger schools. This has met with considerable success, despite the opposition encountered from the anti-vaccination League, who put up a very active propaganda against toxin antitoxin. We were able, by spreading the real facts, to tear to pieces their tissue of falsehood and so counteract their interested efforts. So far, over one hundred children have been Schick-tested and some 86 per cent. of these have been found susceptible. None of these children have lost as much as one hour from school, as result of the Schick test. This work will be continued during the winter and spring terms and will succeed increasingly by its success.

Milk.

The nature of the milk supply is in the smaller municipalities in this district, a matter of individual concern, municipal control being not desired or thought of. Even in the towns and cities, it is very rare to have the boards of health give any adequate thought to this matter. Some have by-laws of their own, some depend on Schedule B of the Act. In few, is there anything like adequate enforcement of either. Vendors' license are issued in many places without question, and with no inspection of source of supply or methods of production or sale. In one case I found that a man, whose milk had been refused by a pasteurization plant, because of its dirty character, at once bought a vehicle, procured a license without question and proceeded to sell direct to the householders. On the other hand, I found two pasteurizing plants, whose product showed a higher bacterial count than that of any vendor in the town. I regard it as one of the important duties of the Department of Health in conjunction with the medical officer of health to show all municipal councils that they are as much responsible for the quality of the food supply, as they are for that of the water supply. I would recommend to the Provincial Board that some means be devised for adequate control of pasteurizing plants. In this way we can secure properly produced milk, rendered free from disease and sold in a sanitary manner.

Water Supplies.

Practically all the municipal supplies in the district are fairly well looked after, and laboratory control is to some extent maintained. In many of these a misguided fondness for well water keeps up a danger to the public health. Nearly all wells in cities, towns and villages are subject to constant or periodical pollution. The sanitary surveys, conducted by the Sanitary Engineering Division, are doing a very valuable work in bringing this fact home to the public. I have been taking, or having taken, samples from various supplies all over the district where these surveys have not yet been made, and the amount of contamination shown has been having a very appreciable effect. It has led to closing of wells where good supplies are available; to connections being made and demands for waterworks extensions to new areas, and to agitations for municipal supplies where not already existing. Coupled with this, is the increase in sewer connections and the removal of outdoor privies.

A cognate problem, the treatment of municipal sewage, has not had much attention, the pollution of streams in this way being very massive in many cases. All municipalities on the Trent water system pass their raw sewage into the stream. This includes the Bay of Quinte. That more disease has not been had from this source is due to the fact that the municipalities are far

enough apart to allow of the natural purification of running water. The conditions in Peterboro are especially bad, as the sewage from some large industrial concerns is allowed to pass directly into the river throughout its course through the city, and the city sewer system enters below the city where, for the next mile or so, there is a fairly dense summer population. Two municipal bathing beaches are maintained on the river as it passes through, and several cases of skin diseases and diarrhœa have been reported to me by physicians as, in their opinion, originating at the lower of these beaches. I do not see how the city can evade responsibility for these, and the townships below the city would seem to have exercised much forbearance in not pushing more vigorously for the carrying out of the order of the Provincial Board for the construction of a sewage disposal plant.

Summer Resorts.

These are very numerous and scattered all over the district, but those which present the greatest problem are on the Trent waterway. I selected for study the densest of them, Stoney Lake and Chemong Park. I spent five days surveying the former, as to sanitation; the hotels and cottages on islands especially. I found many things needing attention about the hotels and issued some very definite orders, failure to comply with which by next season would mean not being allowed to open for business. Several cottages on small and rocky islands were ordered to put in chemical closets before they could be allowed to be occupied next year. This will mean an inspection just before the season opens next year. Chemong Park is a resort of totally difficult character, and I was not able to arrive at a definite policy for it as yet.

School Inspections.

Throughout the district I was often met by complaints from the medical officers of health of rural municipalities, that they had turned in reports to the Board, year after year, and yet the same unsanitary closets, etc., continued without change. About the middle of school summer vacation I received from Dr. Middleton's division, digests of several of these reports. After studying these, I wrote to the medical officer of health who had sent them in, that the remedy seemed to be in their own hands and advised them, where conditions were bad to notify the school boards concerned that they were maintaining a nuisance by allowing such unsanitary conditions to exist, and that they must abate the same, or the schools would not be allowed to reopen in September. Those medical officers of health who adopted this procedure have nearly all reported universal success, and are much cheered and heartened in their work.

Child Welfare.

After demonstration by a provincial nurse in Cobourg, the question of a health nurse appointment was placed before the people at New Year's and defeated by a fairly narrow vote. Opposition to this appointment, due apparently to certain misunderstandings, was encountered where it would be least expected to be found, but some private organizations stepped into the breach and a very capable nurse was employed, and has done very good work during the year. Child Welfare Clinic established there, has been visited by me on two occasions during the summer and found it to be working smoothly and well. The work in general seems to be commending itself to the town and a better understanding is becoming established. The Child Welfare Clinic in Peterboro has been doing a great deal of work and with the wider experience, gained by

the nurse employed, is becoming steadily useful and the follow-up work and home visiting is becoming broader based and more effective. This clinic is under the auspices of the Local Council of Women. A baby contest was held in connection with the Exhibition this fall, which served its purpose of bringing the clinic more prominently before the public. The real work is, of course, done in the weekly clinics.

After visiting the Lindsay Board of Health and the representatives of the women's organizations there in the spring, a request was sent for a demonstration by a provincial nurse to start with September. Miss McEwen, who had been doing some work in the county of Northumberland, went to Lindsay at that time and this demonstration is now proceeding; is being well supported and, I think, commending itself most thoroughly to the public. Miss Edna Moore spent two days in Peterboro with the films, which she has shown to some of the groups of women.

The work of the Venereal Disease Clinic at Peterboro has shown a steady, if slow, growth and a good foundation is being laid. It is perhaps well to make haste slowly, but at times, one doubts if haste is being made at all. Looking at this and largely throughout my district, I am convinced that the medical profession is more responsible for this, than any other class of the community. Where there should be universal and active support, the amount of ignorance, indifference or even opposition encountered, is rather amazing. The profession must be educated in the importance of these diseases and the working of the Act, before any progress can be made with any rapidity. In only a very few municipalities in my district, is any attempt made to report these diseases. In only one place, is any adequate attempt made to follow up the contacts. The medical men are ignoring the Act as it applies to them, unless brought directly to their notice. Some medical officers of health made some attempts to carry out the provisions of the act, but met with no support from their brother practitioners and have given it up. These say the Act is unworkable; the others say they do not know how it can be worked. My experience of the past summer, leads me to believe that a great many medical men know little and care less about the diagnosis and treatment of venereal diseases by modern methods. During the autumn every physician appears to have received a copy of the pamphlet, dealing with venereal diseases diagnosis and treatment issued under Dr. Hegarty's name. I am sure that at least half of these have been put into the waste paper basket, often unread. I could wish that these pamphlets had been preceded by letters a week ahead, pointing out their importance and exceeding value. Certainly the facilities of the branch laboratory are not used at all to the extent they might be, nor is the use made of them, always intelligent. I would suggest that consideration be given to a system of rewards and punishments in the matter of reporting these cases, as tending to increase efficiency. These diseases are of such peculiar importance to the health of the public as to be worthy of a special effort on the part of all health officials and I purpose, during the coming year to keep this problem in all its aspects before the medical officers of health, local boards and medical societies.

In talking to the medical officers of health I find considerable support for the idea of county or area full time medical officers of health and sanitary inspectors. Most of these medical men feel that they are not getting the support and results that they would like, and antagonisms are created by this part of their work, which adversely effect their private practices so that it scarcely pays them from a monetary standpoint. From these two standpoints, therefore, they see that much good would come from the change.

In conclusion, I may say that my work so far has enabled me to get at a fair, general idea of the problems of the public health in the district; the great possibilities of the work and some fairly definite ideas and plans of how to go about it. In getting this far, I have been able to do a good deal of concrete work, some of which has already borne really good fruit.

All of which is respectfully submitted.

I have the honour to be, Sir,

Your obedient servant,

N. W. SUTTON,
District Officer of Health, District No. 4.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 5.

DR. J. W. S. McCULLOUGH,
Chief Officer of Health,
Toronto, Ont.

301 First Avenue, Ottawa, Ont.,

December 31st, 1923.

Dear Sir,

Annual Report for 1923 of District No. 5 to the Provincial Board of Health.

I have the honour herewith to submit my annual report for 1923. District No. 5 is made up of the Counties of Dundas, Stormont, and Glengarry, Leeds and Grenville, Frontenac, Lennox and Addington, Lanark, Renfrew, Carleton, Prescott and Russell and the City of Kingston.

The District has been thoroughly inspected in a routine manner during the year and a detailed report of the result of these inspections and also of the results of special inspections have been sent in monthly to the Department in Toronto. Much of the detail is omitted for the sake of brevity in the Annual Report. All the public institutions, thirty-four in number, have been inspected as to their sanitary conditions and reports sent to the Provincial Board and where indicated to the governing bodies. The request for the elimination of unsanitary conditions or for the installing of needed improvements have generally been promptly met by those in charge of the management. Calls for the investigation of special conditions arising at different localities in the district have been promptly responded to when at all possible and vigorous action taken if found necessary.

I wish to record the hearty co-operation and valuable assistance received from the Inspectors of the Ontario Department of Labour, the Provincial Public Health Nurses, the Mothers' Allowance Board, the Veterinary General's Department, the anti-Tuberculosis Association and the Departments under the control of the Provincial Board of Health.

Communicable Diseases.

This district during the year has had less disease epidemics than in any other for the last ten years.

Smallpox.—Except for a few sporadic cases the only outbreaks approaching an epidemic were at Vankleek Hill, Newington and Kemptonville. These were all of minor dimensions and were abated by the usual methods without much trouble.

The local officers, I think, are becoming more expert in controlling this disease and act now more vigorously than formerly at the beginning of the outbreak.

Diphtheria.—Besides the usual sporadic cases there was a persistent outbreak at Chesterville. I personally examined three hundred school children in this village and had seventy swabs examined from the suspects by the Laboratory at Ottawa, which latter is proving a great convenience to the Ottawa Valley municipalities.

Scarlet Fever.—The only persistent outbreak was at Arnprior which was not finally abated for about five months. Most of the cases were very mild but a few were severe and several deaths resulted. Every assistance was rendered the local medical officer and one of the Public Health Nurses was placed in this field for some time with this special object.

Typhoid Fever.—This disease except for a very few cases was confined to an outbreak at Arnprior and several cases in municipalities using the St. Lawrence River as a water supply. In Ottawa City I think there was a slight increase in the number of cases although the typhoid incidence in this city is now very good. In every outbreak we were able to discover the source of the outbreak with reasonable certainty.

In Arnprior we had seven cases. Mr. Berry of the Sanitary Engineers Staff, Miss Squires, Public Health Nurse, and the local authorities ably aided in a careful and thorough survey to discover the source of the outbreak. The water, although testing badly, was eliminated by a sanitary survey. All the cases were, however, found to be using the milk from one dairy. Careful inquiry, however, failed to discover any case in this family or those handling the milk. On questioning them, however, it was admitted that this man had typhoid many years ago and a blood test showed that he was at present a carrier. This milk supply was rigidly excluded from the town and no new cases developed.

At Cornwall a number of cases occurred among the employees of the paper mill. The company have a connection with the town water supply for drinking purposes, but use the canal water for commercial use. It was discovered on enquiry that the men used the canal water in the different rooms for drinking purposes and that every case could be traced to this practice. A complete and convenient system of cold drinking water, at an expense of three thousand dollars, was installed by the company and posters were set up throughout the mill warning the employees against drinking canal water. There were no cases since.

At Iroquois there were eight cases. This was evidently caused by the town pumping water for a period from the canal owing to some trouble with the intake pipe. All the cases synchronized with this period of use of the canal water. After the intake was repaired and the usual source of supply used there were no new cases.

Public Health Nurses.

The Public Health Nurses of the Department of Maternity and Child Welfare, Miss Mary Power, Director, have done exceedingly good work in this district during the year. The two nurses, Miss Squires and Mrs. Bricker, who have been here during the whole of the year and Miss Carr-Harris, who gave her services part of the time, have received well merited praise from the people in every locality in which they gave demonstrations of Public Health Nursing, especially from the more well informed and progressive in the communities. From my own observation I think there is no one arm of the service that can bring better and more immediate results, than this division. I would advise that the number of nurses be increased and to some extent that the district officer be made officially responsible for the success of their work.

During the winter season the two permanent nurses were engaged at their work in Hawksbury and Vankleek Hill. In the former town, owing to the depression caused by the closing down of the Riordan Company's mills, they found it imperative to do a good deal of bedside nursing as well as their regular work. A baby clinic was established with the active co-operation of the local physicians. Dr. W. J. Bell of the Department, gave his assistance and his work extending beyond the usual scope of a clinic was exceedingly valuable to the local physicians who so expressed themselves. This town was badly in need of Public Health Education and for this reason the results of the nurses' work were more evident. A pronounced decrease in the infant death rate for the period bore eloquent evidence of the success of their work.

In Vankleek Hill the work was not carried on so extensively, but Mrs. Bricker was able along with her other work to give assistance to the local authorities in abating a smallpox outbreak. Several of the surrounding schools and those of one whole township, Caledonia, were inspected.

In Arnprior Miss Squires gave valuable aid to the local Medical Officer in abating an obstinate epidemic of scarlet fever and also aided in discovering the source of an epidemic of typhoid fever referred to elsewhere.

The remainder of the year was spent by Mrs. Bricker in Morrisburg and Miss Squires in Lancaster Village. In connection with this latter field a large number of schools in Lancaster township and also in Williamstown were inspected. It is the intention to cover the whole of Glengarry County before leaving the field. Miss Squires is now in Alexandria and Mrs. Bricker in Prescott. Miss Carr-Harris has inaugurated a Public Health campaign at Sydenham, Frontenac County, and will extend her work to Harrowsmith and Verona later.

Public Institutions.

Two new hospitals have been completed during the year.

The Pembroke Cottage Hospital, in the Town of Pembroke, and the Great War Memorial Hospital at Perth. They are both well constructed and equipped with all modern appliances for the care and treatment of the sick. Extensive additions have been made to the Kingston General Hospital including a new isolation hospital. When the contemplated remodelling of the old buildings is carried out this institution should rank among the best of the large hospitals of the Province.

Among the other institutions which have made improvements and additions the most important is the Hotel Dieu Hospital, Kingston, which has added a splendid new nurses' home in connection with the main building.

Summer Resorts.

The following summer resorts have been thoroughly inspected and where required nuisances abated and sanitary improvements ordered or suggested: Rideau Lakes, Thousand Islands, Stanley Island, Hamilton's Island and Chaffie's Locks. I have encouraged the local health and sanitary officers to make more frequent and thorough inspections with good results. The summer residents usually welcome the visits of the sanitary officers and marked change in the attitude is now everywhere evident in this regard.

I have also impressed on municipal councils that this sanitary service is often the only return these summer residents receive from the taxes they pay to the different townships.

Milk.

During the year an active campaign was carried on to improve the milk supply of the urban centres. A special effort was made in regard to the Town of Cornwall.

The Council appointed an energetic veterinary surgeon as Milk Inspector and enacted an approved milk by-law. The actions of the Inspector has caused a good deal of friction with the dealers as this was the first genuine effort made in this town to control the milk supply in an effective manner. The results are very promising, however, as already one up-to-date plant has been erected and another in course of construction, where milk will be properly clarified, pasteurized and bottled. Competition has been developed among the farmers to supply clean milk by the public placarding of the results of the sedimentation tests.

Farmers have been encouraged to have their herds tested and those that have done so have received recognition in the press. I think during the coming year Cornwall will rank as a model town as far as milk supply is concerned.

Slaughter Houses.

A great difficulty exists in controlling the sanitary distribution of meat in the country surrounding Ottawa City. Many farmers are also butchers in a small and generally irregular way, and it is almost impossible to apply the Regulations to every case. With the co-operation of the city food inspector, and the appointment of some more reliable men as sanitary inspectors, by the township councils, considerable headway was made this year especially in the County of Russell in controlling the trade. The Boards of Health of Smith Falls and Perth have both decided to enforce the Provincial Regulations and this leaves all the towns in the Ottawa Valley with fairly sanitary slaughter houses.

Among Other Matters of Special Importance Noted During the Year.

Subdivision around Cornwall: A land boom has been going on around this town and a great number of sub-divisions are springing up outside the corporation without regard to future sanitary conditions. By consultation with the Councils of the town and township and with the advice of the Provincial Sanitary Engineer a town planning expert was procured to examine the whole area and report. I expect some action will be taken by the 1924 Councils to regulate building activities in the areas mentioned.

Change of Health Officers: One court decision was rendered fixing the salary of a township health officer, Township of Alfred, \$350.00. Also two health officers were removed by the Provincial Board on the petition of the local councils, Township of Alfred and Township of Caledonia.

The automobile supplied by the department has continued to be of very great service in my work and enabled me to accomplish much more than formerly when dependence was largely on train service. The total distance travelled (by auto) was 6,948 miles. Besides the visits made in the routine inspection of the different municipalities and institutions at least one visit was made and in some cases as many as ten to the following localities at the request of the local authorities or for special reasons; Kemptville, Smith Falls, Perth, Cardinal, Prescott, Brockville, Kingston, Gananoque, Odessa, Napanee, Merrickville, Lansdowne, Newington, Finch, Chesterville, Winchester, Morrisburg, Brinston, Westboro, Carleton Place, Almonte, Arnprior, Renfrew, Pembroke, Denbigh, Lancaster, Alexandria, Rockland, Plantagenet, Hawkesbury, Vankleek Hill, Caledonia, Alfred, L'Original, Russell, Embrun, Clarence Creek, Fournier, Avonmore, Jones' Falls, Yarker, Williamstown, Maxville and Eastview.

Obituary:

I regret to record the death of two very well-known physicians, who were also Officers of Health of District No. 5 for many years, Drs. McLaughlin and Vrooman.

Dr. McLaughlin was Officer of Health of Morrisburg for over twenty years. He was an efficient official and was of the better class family physician of the old school.

Dr. Vrooman, M.P.P. for Lennox, whose death occurred so unexpectedly, was one of the most prominent physicians of Napanee and vicinity. He died before Parliament assembled after the recent elections. The largest and most representative funeral ever seen in Napanee bore evidence of the high regard in which he was held.

P. J. MOLONEY,
District Officer of Health.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 6

North Bay, Ont., January 1st, 1924.

To the Provincial Board of Health Ontario:

I have the honour to submit herewith the eleventh annual report of District No. 6.

At the beginning I would like to express my appreciation of the Standard Annual Report Forms provided by the Department. These forms permit ample scope for the exercise of the individuality of the medical officer and at the same time make necessary the supplying of information on the basal matters that are of interest to every health department. The interest of neighbouring municipalities in each other's annual reports will in this way be enhanced. It is a publicity move, the benefits of which will be far-reaching and cannot be entirely foreseen. The principle can be carried far enough to aid the Department in collecting data for drafting new legislation. There are certain other questions which could with profit be added to the present form, but no doubt these will come in time. I cannot, however, too strongly recommend that all annual reports be sent to the Provincial Board through the district officer (first to the district officer, thence to the Board) so that the Department's officials will have the use of these statistics for the checking up, previous to the drafting of their annual reports.

Another matter which is deserving of mention and commendation is the arrangement which the Department has made with the laboratories to supply us with returns of water analysis as well as those of typhoid, diphtheria and tuberculosis. They have added considerably to the effectiveness of this office.

COMMUNICABLE DISEASES

I am pleased to report an increase in the frequency with which cases of communicable diseases in camps are being brought to the attention of the district officer by contracting physicians. We are looking forward with hope to the coming year for a still greater improvement in this direction and that ultimately all infections will be brought promptly and directly to the attention of this official.

The necessity for some one to supervise the recommendations of the district officer for the quarantining of such cases in unorganized territory is a further argument for co-ordinating the two offices of sanitary inspector and district officer under the direction of the district officer. The argument presented by the chief officer in support of the principle of this arrangement indicates that he is about to inaugurate this principle.

The inadvisability of the Provincial Board of Health allowing the lay officials of the Department to supervise camp physicians in their professional conduct to patients suffering from communicable diseases was brought to the attention of that body by this office early in the year.

My experience in this district during the past twelve months has increased my conviction that efficiency demands that all public health matters pertaining to the respective districts should be referred to the district officer before any action is taken at the Toronto office.

Below are the returns of communicable diseases for the district during the past year, made by the secretaries of local boards of health. It is very evident that this does not cover all the cases that have occurred as a very large part of

the northern districts is unorganized and therefore without boards of health and their secretaries. We are for this reason without statistical returns for communicable diseases for those sections without municipal organization. Although most outbreaks receive our personal attention, occasionally we have no intimation of an outbreak or receive the notice after the disease has run its course and all non-immune have been attacked.

Disease	Cases	Deaths
Smallpox.....	5	0
Scarlet fever.....	142	2
Diphtheria.....	139	14
Measles.....	62	1
Whooping cough.....	325	15
Typhoid.....	1,008	77
Tuberculosis.....	18	23
Infantile paralysis.....	5	0
Cerebro-spinal meningitis.....	1	1
Influenza.....	287	14
Acute influenzal-pneumonia or broncho-pneumonia	14	4
Acute primary-pneumonia.....	23	10
Chickenpox.....	33	0
Gonorrhœa.....	4	0
Septic sore throat.....	3	0
Mumps.....	1	0
German measles.....	2	0

Until secretaries of local boards of health discontinue the use of the old forms of return cards, we cannot hope to obtain satisfactory information regarding the large number of additional communicable diseases about which the Department is seeking data. Indeed, the information specified in the forms is conflicting when one form is compared with the other; for example I would mention pneumonia. The problem is a disappearing one as the percentage of old forms in use diminishes.

In the first month of the year two epidemics had their origin: whooping cough at Sudbury and typhoid at Smooth Rock Falls.

January.

The whooping cough was not typical, as a large proportion did not have more than a spasmodic cough. Quite a number of adults were attacked, but practically none of them developed a whoop. Because of the number of adults affected it is probable that there were two infections running concurrently, and that the situation was complicated by a bronchitis which attacked adults and produced a cough which simulated pertussis.

The typhoid epidemic began in Smooth Rock Falls shortly after the New Year and continued into March. The origin of the outbreak was thought by the medical officer, Dr. Clarence F. Wright, to be the sewerage of Timmins, which empties into the Mattagami River seventy-five miles above Smooth Rock Falls. Upon investigation, however, it was found that there had been no typhoid in Timmins, but that there had been an outbreak of typhoid among the working men on the power dam at Sandy Falls during December, the previous month. The occurrence of the disease two or three weeks later at Smooth Rock Falls and in the camps along the river between these two points appeared to your district officer and to Mr. Dallyn of the Sanitary Engineering Division to point overwhelmingly to Sandy Falls as the origin of the trouble. It was well known to your officials from the previous history that the Mattagami Power and Paper Company, who own the town of Smooth Rock Falls, had received an order from the Provincial Board of Health some two years in advance of the outbreak

to chlorinate their domestic supply of water and to separate it from the mill supply in order to save the excessive cost of chlorination. The neglect on the part of the responsible officials of the company to give effect to this order undoubtedly made them answerable for this neglect, if not entirely for its results. When the neglect was brought to their attention after the start of the epidemic the changes were promptly made with decisive effects on the termination. Because of the imputed responsibility of Timmins' sewerage as the cause of the epidemic, it is only fair to say that Timmins has shown a disposition to meet every suggestion of the Provincial Board of Health in the treatment of its sewerage. They have adopted the newest principles of sewerage treatment. When it was pointed out that a certain type of porous plate in use in their disposal plant would likely be a source of repeated trouble, they immediately discarded these and installed the best our engineering division could recommend. Altogether their attitude has been one of compliance, which was noticeably different to that of Smooth Rock Falls. The total number of cases was twenty-eight, with five deaths, which is distinctly different to the impression which the Department received from the returns, as these were made in an incorrect way due to a misunderstanding as to the intention of the forms.

February.

During February a form of influenza became prevalent at certain points. Gowganda reported the largest number of cases, although many places where the disease was prevalent reported none. Deaths that were ascribed to the disease were in nearly every instance due to complications.

March.

March made its contribution to history as far as communicable diseases in Ontario are concerned, because during this month there occurred the most severe outbreak of typhoid at Cochrane that has darkened the horizon of preventable disease control in this Province in many years. The epidemic continued to the end of May. The cause was found to be typhoid laden sewerage getting into the water supply. The sewerage could not have reached the lake, from which a large part of the water supply was taken, under ordinary conditions without accomplishing the impossible, namely, flowing uphill. The conditions, however, were exceptional. There had not been one day's thaw from the first of the year to the last day of February. The weather had been steady and cold, requiring from 33 to 50 per cent. increase in pumpage to supply waste necessary to prevent the freezing of water pipes. The result of the lake's share of this excessive demand was a drop in level of about five feet, so that instead of being two and a half feet above the outlet it fell actually two and a half feet below it, causing a reverse flow from Junction Lake which also received the run off from the lake that received the sewerage. One good day's thaw would have corrected the water levels. There was nothing in the previous history of the lake or of the springs that could have been a warning to the many engineers who have studied the problems. The number of engineers who have given consideration to this matter without once pointing out the menace indicated the elusiveness of the contributing causes. The municipality has had four engineers at different times acting for them, while the Provincial Board of Health has had three or four of its sanitary engineering staff on the ground. It is my opinion that the sanitary engineers of the Provincial Board of Health are second to none in Canada or the United States, and yet although several of them had gone over the levels or were familiar with them, the margin of safety was thought to be ample. The

Provincial Board was, therefore, as much without information as to this danger as was the town. It is only fair to the officials of the Provincial Board to point this out since many of the citizens of the town reached conclusions from statements in the press, purported to have come from those in a position to know, that the Department was aware of the danger and had neglected to force action. It is true that the chief officer of the Board had strongly recommended a chlorine plant for other reasons, but these did not appear to him of sufficient menace to require a compulsory order. To suggest that this Department was cognizant and forewarned of the danger and took insufficient action is as inconceivable as it should be from a consideration of the facts. The municipality was also free from warning so that the blame cannot be left at its door. It is entirely begging the question to hold the officials of the town responsible for such a catastrophe just because they had not immediately installed a chlorine plant which was recommended to them by the Board for the correction of another matter such as the pollution that would come from the banks and watershed of the lake. The town had not been neglectful of the recommendations, for they had gone some distance to implement them and had provided in a by-law for the extension of their water service funds for a chlorine plant. These money by-laws for the expenditure of large sums are not put through without careful consideration of the specifications in order to prevent waste in the quality and efficiency of the installations. They will, therefore, necessarily take time. Before the by-law was finally settled, the epidemic about which the town had no warning burst upon the municipality like a conflagration. The sewerage in itself could not act as a cause of typhoid without some direct infection from some source. The epidemic was preceded by a severe outbreak of dysentery without any cases of typhoid. The source of the typhoid organisms was carefully investigated and this office is of the opinion that several cases of typhoid from Smooth Rock Falls, which were treated in Cochrane, was most probably the source of the infection of the sewerage which ultimately reached the public water supply.

Up to Sunday, March 11th, there were 15 cases all told. On Sunday, March 25th, two weeks later there were 380 cases. The total number of cases of which the municipal officials had record was 835, with 57 deaths. We have been able to obtain information from many outside points which indicate that there were 13 deaths and 100 cases who got their infection in Cochrane and carried it to other places where they became ill. The grand total was, therefore, in the neighbourhood of 935 cases and 70 deaths. Because our statistical survey of the town was intentionally left until the close of the epidemic, we were unable to obtain records of many who had left for their homes in other places immediately upon convalescence. Below are the totals which were obtained from this survey:

Number of typhoids.....	792
Number of deaths.....	56
Number of secondary cases.....	217
Number inoculated only once.....	207
Number inoculated twice.....	777
Cases developing after first inoculation.....	99
Cases developing after second inoculation.....	75
Number inoculated where typhoid did not develop.....	810

One of the most frequent accusations made in regard to the control of the epidemic was that it dragged along unnecessarily. Let us consider the figures. The incubation period is usually stated from five to forty days, with the average being two weeks. In the outbreak in Cochrane we have evidence in one or two cases where the incubation was at least twenty-eight days. For example a school teacher who teaches in New Liskeard, but who lives in Cochrane, had

been away from Cochrane twenty-eight days when she showed the first symptoms of the disease. In company with Mr. Dallyn of the Sanitary Engineering Division, I visited the town on March 11th, where there had been up to that time fifteen cases all told. On the 12th, Mr. Dallyn wired to one of his staff to bring a chlorinating plant to Cochrane. The chlorine plant was in operation at Cochrane on the 15th. Now if the average incubation is two weeks, we are safe in saying that all the cases that occurred in the fourteen or fifteen days following the 15th likely had their infection prior to the starting of the chlorine plant. Now on the thirtieth day of the month there had occurred 505 cases, which, if added to the number of secondaries obtained in our statistical survey 217, gives a total of 722 cases. If these are deducted from the total of 835 cases reported in Cochrane, which includes the countryside about the town, we have only 113 cases to account for. The evidence from the weekly reports would indicate that the incubation period in the Cochrane epidemic probably averaged three weeks. In confirmation of this I give the weekly reports for those weeks which are affected by the deduction.

Total cases up to March 10th.....	15
New cases for week March 17th.....	50
“ “ “ 24th.....	301
“ “ “ 31st.....	152
“ “ April 7th.....	142
“ “ “ 14th.....	90
“ “ “ 21st.....	35

If three weeks was taken as the incubation, it would bring us to the 5th of April, upon which date the total number of cases reported was 621, which if added to the total secondary cases, 217, would amount to 638 cases. Because of the explosiveness of the epidemic, we were on this date ahead of nearly all secondaries while those few which may have been included in our figures would be to some degree balanced by cases with a longer incubation than three weeks and omitted from the numbers given. Our returns were collected daily and were recorded by days and weeks from March 24th until April 24th, when the daily incidence began to show frequent returns.

March 24.....	366	April 4.....	597	April 14.....	750
“ 25.....	380	“ 5.....	621	“ 15.....	755
“ 26.....	401	“ 6.....	643	“ 16.....	759
“ 27.....	427	“ 7.....	660	“ 17.....	766
“ 28.....	448	“ 8.....	677	“ 18.....	775
“ 29.....	477	“ 9.....	693	“ 19.....	776
“ 30.....	505	“ 10.....	713	“ 20.....	783
“ 31.....	518	“ 11.....	723	“ 21.....	785
April 2.....	564	“ 12.....	727	“ 22.....	786
“ 3.....	580	“ 13.....	739	“ 23.....	787
				“ 24.....	788

The many large families living in three or four rooms added difficulties which were insurmountable with present legislation. As it was found impossible to get a mother to allow her child to be taken to a hospital until she herself became ill by infection from the child, the difficulties in the way of preventing secondary cases became apparent. Under the circumstances it does not appear to your official that the number of secondary cases was excessive, although it is recognized that his opinion is at variance to some others. If we had enabling legislation, which upon the recommendation of the local board of health would force those who become infected with typhoid to go to an isolation hospital, a very large proportion of secondary cases could be prevented. I would strongly recommend such legislation as the most important means of preventing secondary

cases. Many would suggest that vaccination is the most important preventative against both primary and secondary cases, and I have some sympathy with the suggestion, but when considered from the standpoint of an explosive outbreak such as that in Cochrane because of the fact that it takes from four to six weeks for the immunity to rise to its height after inoculation, it is quite impossible even with the most aggressive measures to establish immunity before the end of the incubation period. You will note from the records of our statistical survey that seventy-five who had two inoculations came down with the disease. There were a great many more inoculated than are given in these figures, but they were temporary dwellers and were not to be found in the town at the time of the survey. Let me state here the measures that were adopted for the general vaccination of the public in Cochrane. Not only was a station opened for free inoculation, but a house to house canvass was made by a nurse and a returned soldier who had experience over-seas offering free vaccination in their homes to all who would accept. Unfortunately in the beginning the medical officer of health did not support this procedure, but he finally came around after our capable epidemiologist, Dr. Roy McClenahan, had exercised his powers of persuasion. Of course, there is not legal authority to compel vaccination for typhoid. Dr. McClenahan, who came to Cochrane at my invitation, for the purpose of giving us the benefit of his expert opinion in the way of measures for control and also in order to correlate statistics, strongly urged a supreme effort to get a great many more vaccinated. It was unfortunate that he was prevented from coming, through illness, until the epidemic was about ended. In this programme he was successful in obtaining the assistance of the medical officer of health, who put a statement in the press over his signature recommending vaccination to all those who had not already been done. Although a house to house canvass was made by our nursing staff, and the public vaccinators started out again, thirty-seven only were inoculated after this effort.

Early in the epidemic Miss Power, Director of the Division of Maternal and Child Welfare for the Provincial Board of Health, came to our assistance by borrowing from other districts eight public health nurses for duty in Cochrane. These were Miss Hally, Miss Heeley, Miss McEwen, Miss Veitch, Miss Squires, Miss Bowman and two emergency nurses secured for the epidemic only. Miss Hally and Miss Heeley are permanently attached to this health district. Their first efforts were directed toward making a complete sociological survey of the town. We obtained records of every home which were filed at the town hall according to streets and were available to the chairman of the Board of Health and to the mayor. These records gave information regarding number and age of members of household, number of patients, if any, physician, public health nurse in attendance on that street, occupation of the householder, his income, whether out of work or not, sanitary condition and if assistance was being supplied a record of what these consisted. There was also space for recording the nurses' visits. The public health nurses were responsible for seeing that these family records were kept complete. When a new case occurred in a family not previously affected the officials by reference to this file knew immediately the necessity, or otherwise, of help. Our nurses gave special attention to the homes of the sick, advising and supervising the disinfection of excreta and bed linen, also regarding the use of disinfectants for the hands. The attendants were warned of the danger of the children of the household coming in contact with the patient. The public health nurses confined their energies to matters which could properly be classed as preventive, only varying from this rule to deal with an emergency which did not present a solution in any other way.

Miss Hally gave her attention to follow-up work after the conclusion of the epidemic and continued the educational programme to the end of the year.

By a study of the completed records of the sociological survey certain important facts come to light. If we classify all families in groups according to the number in the family and indicate the total number of typhoids occurring in each group, we obtain a comparative table revealing the increase in incidence according to the increase in the number in the household. This, of course, is what might be expected and illustrates an important cause of secondary cases. It is unfortunate that our records were not sufficiently complete to enable me to further analyze the groups according to incidence per number of rooms in which the families lived. But the incomplete records available indicate that the larger the families and the fewer the rooms in their dwellings the higher the rate of incidence of typhoid.

Families of	Number	Total number of people	Number of cases
2	67	134	38
3	78	234	68
4	69	276	100
5	69	345	96
6	58	348	110
7	42	294	104
8	24	192	72
9	20	180	60
10	11	110	34
11	4	44	17
12	0	0	9
13	1	13	5

Spring Lake as a source of water supply was immediately discontinued as soon as the variation of the levels became known. The water from the springs was continued with efficient chlorination. What additional water was necessary to meet the town's requirements was obtained from Norman Lake and heavily chlorinated. Norman Lake receives no sewerage, but its water was known to show high bacterial counts.

Milk bottles were found in frequent use as drinking utensils by typhoid patients and for this reason, as well as the fact that the dairies have no mechanical appliance for the sterilization of bottles, dairymen were forbidden to allow bottles to enter houses. They were required to pour the milk into a container at the consumer's door.

Although one of their number was lying very ill, in the hospital with typhoid, the Provincial Police, Mr. Andrews, Mr. Fenwick and Mr. Bush, offered their services in any capacity. They came to us with a suggestion that we use them as sanitary officers. This was a splendid solution of a very difficult problem, as it was felt that it was necessary to have certain ones doing this work who would create the favourable impression of the police uniform. Their efforts are witnesses to the valuable co-operation we are consistently receiving from the Inspectors of the Provincial Police and their men. House to house visits were made by them and written instructions given for the correction of unsanitary conditions and for the collection into receptacles of frozen garbage and filth. Where typhoid existed in a house the excreta was ordered to be placed in water-tight containers to be removed within forty-eight hours by the municipal scavenger service, which was reorganized for the purpose. Particular attention was given to that portion of the town outside the sewer area. Every privy was thoroughly cleaned and disinfected with chloride of lime. I accompanied the police officers for the first day in order to see the difficulties which they would likely encounter and to assist them in adopting uniform and efficient measures for dealing with these difficulties.

The emergency hospital was established on March 19th. Mayor Russell in casting about for a suitable building for the purpose was met by a most generous offer from the Knights of Columbus in which Lake View Hall, with any part or all of its equipment that would be of service, was placed at the disposal of the Board of Health. Such an act is deserving of special mention and is worthy of the widest publicity and commendation. Their kind offer was promptly accepted. This institution at the high tide of the epidemic contained eighty-seven beds and a staff of twenty-two nurses. The work entailed in obtaining on short notice sufficient equipment and staff for an emergency hospital of these dimensions was a herculean task exceptionally well performed and entirely to the credit of the mayor, John Russell. Mr. Russell's devotion to duty for eighteen to twenty hours a day made very satisfactory provision for large numbers of typhoid cases which the following five weeks were to provide. He was the only functioning member of the local board of health and because this work rapidly increased daily it took most of his time. The medical officer of health was more than occupied professionally, while the third member of the Board of Health had not been appointed for the year 1923. The council and public utilities made increased demands on his consideration until finally his health broke down under the strain. For the balance of the year Mr. Russell was unable to follow his business as railroad engineer, and I am afraid but little thanks has been accorded him even by those who profited most from his wisdom, energy and efforts. This office is most grateful to him for courtesy and the prompt and effective manner in which recommendations were put into action. On March 27th, Mr. J. M. Beemans was appointed member of the local board of health, whereupon he was elected chairman. From this date to the end of the epidemic, Mr. Beemans assumed a man's share of the responsibilities connected with the control of the municipal health machinery. The business methods which were promptly introduced and the ability displayed in systematizing and correlating the records was striking confirmation that the council recognized the calibre of the man, and that their choice was made with due regard to the magnitude of the work which such a position entailed. Beside efficiency, Mr. Beemans brought with him a congenial temperament which made for confidence and security. Indeed, there promptly developed between all those connected with health effort in the municipality a feeling of stability based on mutual trust and understanding. Below is a list of a few of the many matters which occupied the constant attention of the Board of Health.

1. Maintenance of a bureau for securing private or district nurses.
2. Supervision of emergency hospital supplies.
3. Administration of municipal assistance to needy cases.
4. Direction of a sanitary squad, including night soil and garbage collection.
5. Control of the water supply including chlorination and careful bacteriological supervision of water carts which obtained their supply from artesian wells outside the town.
6. Protection of the milk supply from typhoid handlers.
7. Inspection of dining rooms, restaurants and refreshment parlours in order to prevent those who had typhoid from handling or preparing food.
8. Inspection of bakeries both from the standpoint of protection and delivery.

9. Provision of personnel and supplies for vaccinators.
10. Direction of the public health nurses.
11. Direction of the sanitary inspectors.

Early in the epidemic an arrangement was entered into between the physicians of the town and the council in which the physicians were to give prompt attention to all cases whether able to pay or not, for which the council agreed to come good for all accounts not collectible after sixty days. Certain other matters tended to influence this arrangement. The imposition which would have been placed on the Board of Health had they imported doctors at the time of emergency helped to decide them to encourage the local physicians to assume full responsibility for the medical service. There were two physicians in the town at the time, Dr. Biron, the medical officer of health, and Dr. Fraser. Dr. Biron imported one assistant and Dr. Fraser, five. Besides these another physician, Dr. Fortin, came to Cochrane and located during the height of the epidemic. As a large number of citizens were unable to pay for the service of a private nurses, each physician secured twelve to fifteen nurses, to each of which were assigned four to ten patients.

In concluding this reference to the Cochrane outbreak, it is necessary to explain that the Provincial Board of Health were granted authority by the Government to use \$20,000 of its appropriation for the purpose of assisting the town to meet some of the obligations which were directly attributable to the epidemic. The value of this help can hardly be estimated, but it most certainly relieved the town of the overwhelming responsibilities which would have blocked all progress until they were removed. The opinion has frequently been expressed that Government funds rarely are directed into channels that give more promise of large returns than obtained from the \$20,000 spent in preventing Cochrane being engulfed financially after the physical torture which it had endured. The money was placed in the bank to my order, and the responsibility for the supervision of its expenditure was placed on my shoulders. I may say that I appreciate the compliment suggested by this confidence. But from the standpoint of public health, when my whole attention and energies were being devoted and taxed in providing measures aimed at the speedy control of the outbreak, with sickness and death on every hand, with new problems coming before me every minute, to find it necessary to neglect these important considerations in order to superintend financial matters appears to this office to have been a serious mistake and one about which I feel it my duty, in view of this experience, to strongly caution the Department.

Regarding the bequest of \$20,000, allow me to say that \$16,518.63 was paid for emergency hospital nurses, orderlies, cooks and maids, also for district nurses and doctors, sanitary squad and bank credit. There were in the emergency hospital 22 nurses, 7 orderlies and 6 other help, while there were 24 district nurses and 5 doctors. There were 22 in the sanitary squad. No accounts were paid until the amount was checked and passed by the advisory committee. The balance of the bequest was used for incidentals such as drugs, supplies for the hospital, etc.

There was a small outbreak of scarlet fever in the township of Armour. The disease showed the usual characteristics of the mild type so prevalent in Northern Ontario since 1917. No doubt the prevalence is due to the difficulty of having the cases reported. There were no deaths.

Influenza was very prevalent in Parry Sound during this month. In fact, so many people were ill at one time that it became impossible to have each case properly reported. There were no deaths.

About the same time as influenza broke out in Parry Sound, it also became prevalent in the township of Hagerman. It was most probably an extension of the Parry Sound epidemic. There were no deaths.

Influenza of a rather severe type also broke out in New Liskeard. There were sixty-five cases reported with no deaths.

April.

During this month an epidemic of whooping cough began in Parry Sound, which extended into the month of July. There was one or two deaths. There were thirty-five cases reported, which was but a fraction of the total number.

September.

A number of cases of typhoid were reported from Timmins about the middle of September. Information regarding the outbreak came to me from several sources so that I had made arrangements to spend some days at Timmins at an early date. On the 1st day of October these arrangements were put into immediate action by a notice from the Department that fourteen cases had been reported from Timmins. I arrived in Timmins on the 2nd, where I found that a large proportion of the cases had not been reported by the physicians. Personal inquiry brought to light a list of eighty-four cases. In each case the water and milk supply was investigated and the wells and privies carefully inspected in those sections of the town not provided with sewer and water. Thirty homes, in which there was typhoid, were found to depend on the municipal system for their water supply, while eighteen homes had private wells. The investigation revealed further that most of these homes with private supplies had also access to town water either in the school or in the mine.

The mine as a factor in the cause of the epidemic was easily eliminated as there were twenty-one separate producers serving the typhoid population. No further evidence was necessary.

An investigation at the pump-house, outside of revealing some carelessness in the operation of the pumps during the changing of the chlorine tanks, gave little information which could condemn the water.

A joint meeting of the Board of Health and council was called, at which the evidence collected in the house-to-house investigation was presented to them. Finally they were told that their municipal water supply was the cause of the epidemic and the reasons were advanced for this conclusion. The town engineer then informed us that there had been a break down in the water system of the Hollinger mill early in August and that the municipality was asked to help them out by supplying their needs from the town mains. In order to do this two fire pumps were started which, when added to the delivery of the domestic pump, was more than could be chlorinated by the type of apparatus the town possessed. The municipality continued to supply the mine from the 5th to the 28th of August. On the latter date the Hollinger system was again put into operation and the fire pumps stopped. The explanation given by the engineer completely vindicated the conclusions of this office, which were formed entirely without any information but the epidemiological evidence. The engineer

promptly put into action recommendations aimed at preventing any operation of the pumps without the introduction of chlorine. The judgment of this office was promptly rewarded by the termination of the outbreak.

WATER SUPPLIES

It will be seen from the unenviable reputation of this district during the past year, because of typhoid fever connected with certain municipal water supplies, that the water problems are still far from solution. But, although the price has been excessive to Cochrane, Smooth Rock Falls and Timmins, the educational effect was not lost on these municipalities, and, indeed, other towns have been so impressed as a result of these lessons on unpreparedness that chlorinating plants have been installed as a form of cheap insurance against such catastrophes. In confirmation of these statements, let me present the evidence. Cochrane has discontinued the use of lake water and has obtained an abundant supply for all purposes from two large wells. These wells under test have given a steady run after eighteen hours of 370 and 480 gallons per minute, respectively. In the first, it is 90 feet to the turbine pump, while in the second, it is 176 feet. It will be seen, therefore, that the municipality has a safe and ample supply to permit of a good margin for growth and expansion. The chlorine plants installed at the time of the epidemic are still in use and will continue in use until bacteriological control indicates that chlorine is no longer necessary and until the wells alone constitute their entire supply. It is hoped that the council during the coming year will provide more than one electric wire route between their power plant and the pump house at Spring Lake in order to permit the complete elimination of Norman Lake as a source of water for fire purposes. I understand that the underwriters are opposed to this pump being dismantled under present conditions, since there is only one line of wire between the power plant at Norman Lake and the pump house. You will note the proximity of the power plant to the Norman Lake pump house is considered by them of great importance in case of fire, of which the town has had three serious experiences. The town pins its faith to the promise of abundance of cheap power from the Hollinger plant building at Island Falls. The transmission of the new power to the town will demand sufficient alternative wire routes to the pumping station to guard against fire hazards. I may say that there are over four hundred men on the Hollinger plant construction, so that the work is being rushed as rapidly as possible. Cochrane has, therefore, taken proper steps to protect herself against a repetition of her water troubles. These measures consist of a new ground water supply and two chlorinating plants of approved size and design.

Smooth Rock Falls came into disrepute in regard to its water supply earlier in the year than did Cochrane, but since the damage done was of such secondary importance I have chosen to place it in its relative position. Immediately upon the outbreak of typhoid measures were undertaken to correct the danger to their domestic water supply by complying with the recommendations of the Provincial Board of Health which had been issued to them two years previously. In short, these amounted to separation of the domestic from the mill supply and the provision of effective chlorination. To understand this point it is well to keep in mind that Smooth Rock Falls is a paper company's town. The prompt, though belated, effect given to the recommendations has placed the Smooth Rock Falls water supply among the safe ones of the district.

Timmins has been placed third on the list because their troubles have been entirely abuses of privilege, which were recognized at the time their type of chlorinating plant was approved. Let it first be known that Timmins has chlorine equipment. The criticism from the standpoint of safety rests in the fact that the capacity of the chlorine apparatus is insufficient to meet the demands which it is possible to put upon it, and which were actually demanded of it during an emergency at the Hollinger mine, whose interests are so inseparably connected with those of the town. The relief from the danger was obtained by the disappearance of the emergency and when the diminished quantity being pumped returned to proportions within the effective capacity of the chlorinator. The town has entered into agreement with the Hollinger Mine to take water from them as soon as their new water system can be completed, and the necessary connections made to the town service. The Hollinger has agreed to chlorinate the total output of their pumps. As soon as the connections are made to the municipal system and the chlorinating apparatus installed, the difficulties arising from the Timmins water should be at an end.

Cobalt, learning the havoc experienced by Cochrane because of inefficient protection against polluted water, decided that the warning issued by the Medical Officer of Health, Dr. Mitchell, could not be ignored with impunity. I am pleased to have had the opportunity of supporting his recommendation, and that Cobalt now has an approved insurance against water hazard.

North Bay has had for two years bacteriological evidence that their water supply is seriously polluted. The source of the pollution is not entirely apparent since water samples taken out of the lake opposite their intake pipe do not correspond, on analysis, with samples from the tap. This is sufficient evidence to suspect a break in the intake at a point that would permit of the admission of highly contaminated shore water. An investigation by a diver, upon the recommendation of the Medical Officer of Health, Dr. Brandon, corroborated this suspicion. A large break was found about sixty feet from shore. An attempt was made to patch it with concrete, but the work was either not effectively done or there was a break not located as the bacterial counts did not drop to the previously low records.

The municipality received a notice over a year ago from the Provincial Board of Health requiring chlorination of their water supply. The notice was ignored for some time, until the municipality required the approval of the board for the extension of their sewer system. The town found it impossible to obtain the approval until effect was given to the board's notice. This difficulty, along with the warning of the Cochrane epidemic, was successful in obtaining a much needed safety appliance in the form of a chlorinator for North Bay.

SEWERS AND SEWAGE DISPOSAL.

A new sewage disposal plant has been built at Cochrane which is intended to protect those who depend for a water supply on the creek through which the sewage of the town drains north to the Abitibi River. This protection will have more than ordinary value because of the large number of typhoid carriers which contribute to the Cochrane sewage.

The extension of the sewer systems at Timmins, Sturgeon Falls, Sudbury and North Bay is worthy of mention since it means a reduction of the number of outside privies with the consequent diminution of the fly nuisance and of

infantile disturbances. The rapid rebuilding of Haileybury has conformed mainly to the area supplied with sewers and for this reason the danger of the outside privy will not be the troublesome factor of former years. There has been no typhoid traceable to the municipality since the fire. This point is a distinct improvement in the history of the municipality.

PUBLIC HEALTH NURSES

Undoubtedly the best medium of public health education is the public health nurse. This district has been peculiarly blessed during the past year as we had the services of five nurses for several months in the fire area. We also had eight nurses to assist in the problems of the great typhoid epidemic in Cochrane.

In the fire area the time of the nurse was taken up in making a survey of the children in order to protect them from the spread of communicable diseases, made more accessible by the unavoidable overcrowding, also to discover their physical defects and if possible have them corrected. I may say that never have the efforts of the Provincial Board been so appreciated by the various municipalities in this district. Cobalt was particularly impressed with the efforts of Miss Corbman. Indeed, so effective were her efforts in that municipality that they decided that a public health nurse was a necessity and made the appointment accordingly, selecting their nurse from the recommendations of the Provincial Board of Health.

In Englehart and Charlton the people were greatly pleased with the efforts of the nurse. The physicians informed me that they were almost overwhelmed by the number of children referred to them for nose and throat troubles, bad teeth, defective vision, malnutrition, etc.

In the other areas the demonstrations were equally praiseworthy, but the response of the people was neutralized by the crushing effect of the fire.

In Cochrane during the epidemic the public health nurses were occupied in the investigation of household conditions, and in giving instructions for the prevention of the extension of typhoid in the home. The conditions referred to sociological matters as well as to those of prevention.

When the epidemic had terminated, Miss Hally, who is permanently connected to this district, continued her efforts in order to bring assistance to the defective child. Some idea of the difficulties with which she had to meet will be understood when I say that the people were sick and tired of nurses and doctors, although the necessities of the child life of the community were never so great. She held a clinic at which she had the expert assistance of our pediatrician, Dr. W. J. Bell. A diagnosis made by a skilled physician with special qualifications for the work is of the greatest help to the nurse when an effort is made in the home to persuade the parents of the serious consequences often resulting from prolonged delay. Over three hundred children attended the clinic. The prevalence of defects among children who had typhoid is almost double what it is in those who did not. Miss Hally, through the generosity of the Elks at Cochrane, has obtained a supply of milk for three months for the schools equal to a pint per pupil per day. The nurse expects a great improvement in the under-nourished.

A clinic was also held in Cobalt by Dr. Bell, under the direction of the local public health nurse, Miss Campbell. The number who turned out was most encouraging and gave the nurse a quantity of follow-up work which should get results.

Miss Heeley, who is attached to the southern half of the district, has been carrying on a demonstration in Parry Sound. During the autumn, Miss Heeley put on a series of exhibits of public health nursing at the local fall fairs. These were the centres of a great deal of interest and have been the cause of invitations to revisit the towns and villages and make a general survey of the municipalities including the schools. With Parry Sound as a centre, it is possible to give attention to a large area in which the villages are small, and the work mostly rural. The work is not nearly so spectacular as in the larger towns, but is real public health work as it brings instruction and advice to those in greatest need and farthest from reliable sources of information. Miss Heeley is operating in a most difficult section and under a great many discouragements, but so many expressions of appreciation have come to me that I feel that her sacrifices have been made with the larger interests in view.

Besides our two Provincial Public Health Nurses, we now have four whole time municipal public health nurses in District No. 6. We hope that the coming year will add to this number as we have the assurance that the addition of every properly qualified whole-time official assists the work and strengthens the hands of each one.

LABORATORY

A description of the increasing value of the laboratory is worthy of note. During the year with the help of the branch at North Bay we were assisted in the control of diphtheria outbreaks by the discovery of carriers at Grand Desert, Coniston and North Bay. There was an increase in the water samples partly due to the educational effect of the Cochrane epidemic. The co-operation of the laboratory in keeping the district officer posted on the bacteriological analysis of water samples, together with information regarding the indications of all Widal tests, of tubercular sputum and diphtheria swabs has established a grasp of the epidemiology of the district not previously had. The appreciation of the public of Northern Ontario is indicated in the great general increase in the business handled at the North Bay branch. There was approximately 50 per cent. increase over the previous year.

THE VENEREAL DISEASES CLINIC

The clinic which it was proposed to establish in North Bay finally got into operation early in the year. There has been a gradual increase in the number of patients presenting. The clinic has been under the capable control of Dr. J. S. Douglas and nurse, Vera Lindsay.

One of the difficulties of a free clinic for venereal diseases is to obtain not so much the transportation of the patient to the clinic, but rather the maintenance while there taking treatment.

CONCLUSIONS

Legislation is required providing for compulsory isolation of typhoid cases, with removal to hospital where advisable.

The Division of Public Health Education should have such additions to its staff as will permit assistance in the field when important problems are receiving the personal supervision of officers of the board. I believe that a great deal of

public support was lost to the Department by not having a publicity agent on the ground to present the views and describe the importance of the efforts which were made both in the fire area and in Cochrane.

Too much importance cannot be placed upon the fact that service to the people and protection of the interests of the Department are the main duties of the district officer. For this reason, efficiency demands the elimination of all direct measures taken in the field without his knowledge or consent.

Respectfully submitted,

W. EGERTON GEORGE,
District Officer of Health, District No. 6.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 7.

City Hall, Fort William, Ontario,
January 15th, 1924.

To the Provincial Board of Health:

Gentlemen:

I have the honour to submit the following report of work done during 1923 in District No. 7 which includes the Districts of Thunder Bay, Rainy River, Kenora, and Patricia.

Conferences.

The following visits were made to Toronto:—

1. District Officers' Conference, during month of March.
2. Annual Meeting Ontario Health Officers' Association, during month of May.
3. Course of instruction *re* "Insulin" treatment, during month of August.

Sanitary Inspections.

Routine sanitary inspections were carried on in municipalities and reports submitted to the Provincial Board of Health as follows:—

Municipality.	Dates of Inspections	Dates of Reports
(1) Fort William.....	April 18th-19th.....	April 20th
(2) Neebing.....	May 30th.....	June 1st
	June 13th.....	
	June 18th.....	June 16th
	July 5th.....	
(3) Nipigon.....	June 13th.....	June 14th
(4) Dryden.....	June 15th.....	June 14th
(5) Shuniah.....	June 11th.....	July 4th
(6) Kenora.....	June 29th.....	September 4th
(7) Keewatin.....	August 16th, 17th and 20th.....	October 18th
(8) Fort Frances.....	September 4th-6th.....	September 20th
(9) Emo.....	September 6th.....	September 18th
(10) Chapple.....	September 11th-13th.....	September 24th
(11) Rainy River Town.....	September 13th.....	October 3rd
(12) Schreiber.....	September 13th.....	October 3rd
(13) Ignace.....	September 14th-15th.....	October 3rd
(14) Port Arthur Dairies (McIntyre Twp.).....	October 16th.....	October 18th
(15) Sioux Lookout.....	October 22nd.....	November 28th
	November 1st.....	
	November 7th-10th.....	November 14th

The following is a list of special visits and inspections made during the year, with dates of reports to the Provincial Board of Health:

Community	Dates of Inspections	Dates of Reports
(1) Nipigon Village.....	January 5th <i>re</i> village water supply	{ January 10th January 11th
(2) C. W. Cox Lumber Camp, near Silver Mountain (unorganized).....	January 20th.....	January 31st
(3) Gillies Township.....	February 5th.....	February 8th
(4) Long Lac-Nakina Cut-off, C.N.R. (unorganized).....	April 11th-12th.....	April 16th
(5) Sioux Lookout.....	April 26th.....	May 7th
(6) Grant (unorganized).....	April 27th.....	May 7th
(7) Armstrong (unorganized).....	April 28th.....	May 8th
(8) Redditt (unorganized).....	April 30th.....	May 11th
(9) Minaki (unorganized).....	April 29th.....	May 10th
(10) Long Lac (unorganized).....	May 14th.....	May 18th
(11) Conmee Township.....	June 7th.....	June 8th

(12) Long Lac—Nakina Cut-off, C.N.R. (unorganized) and Nakina Yard Construction Camp.....	June 19th-23rd.....	June 27th June 27th
(13) Marks Township (unorganized).....	June 25th.....	June 28th
(14) Fort William City Abattoir and Fort William "Coal-Dock" Area.....	July 3rd.....	
(15) Chippewa Park (unorganized).....	July 5th.....	
(16) Silver Islet (unorganized).....	July 5th.....	
(17) Fort William "Coal-Dock" Area.....	July 7th (with Provincial Sanitary Engineer).	
(18) Provincial Industrial Farm, Neebing Township.....	July 7th (with Provincial Sanitary Engineer).	
(19) Port Arthur Waterworks Pumping-Station.....	July 12th (with Provincial Sanitary Engineer).	
(20) Chippewa Park (unorganized).....	July 9th (with Chief Sanitary Inspector).	
(21) Port Arthur Waterworks Pumping Station.....	July 12th (with Sanitary Engineer).	
(22) Atikokan (unorganized).....	July 13th-14th (with Sanitary Engineer).	
(23) Neebing Municipality re "J. I. Case" Nuisance.....	July 31st.....	October 1st
	August 13th.....	
	August 28th.....	
	August 30th.....	
	September 20th.....	
(24) Port Arthur Waterworks Pumping Station.....	September 29th (with Sanitary Engineer).	October 10th
	October 2nd.....	
	October 4th.....	
	October 8th.....	
	October 9th.....	
(25) Neebing Municipality re "J. I. Case" Nuisance.....	October 23rd.....	November 16th
	November 3rd.....	
	November 15th.....	
	November 16th.....	
(26) Chippewa Park (unorganized).....	November 5th (with Provincial Sanitary Inspector).	

It is to be regretted that a reasonable enforcement of those sections of the Public Health Act dealing with "Nuisances" should have made it necessary for me to visit the Municipality of Neebing fourteen times during the year. A sheep-feeding ranch—where 15,000 sheep were fed on elevator-screenings during the winter of 1922-1923—had been left in an unsanitary condition; and after considerable difficulty the property was finally cleaned up.

Dairies.

Forty-two dairies (including four milk-pasteurization plants) were inspected:

Port Arthur (McIntyre Township).....	4
Fort William.....	9 (including 3 pasteurizing plants).
Fort Frances.....	15
Kenora.....	10 (including 1 pasteurizing plant).
Keewatin.....	2
Sioux Lookout.....	2
Total.....	42

Sanitary conditions in the above-mentioned dairies varied to a considerable degree and were described in detail in the reports submitted to the Provincial Board of Health. The supervision over the sanitary quality of municipal milk supplies leaves much to be desired. It is a question whether some of the time spent by local health officials in attempting to maintain the required percentage of butter-fat might not better be utilized in efforts to improve the sanitary quality of the milk. The selling of milk below the required percentage of butter-fat appears to me to be largely a question of fraud and a logical problem for license inspectors and police departments. Except for the sediment test, and a few bacterial counts at intervals, no routine laboratory supervision has

been maintained during the year over the sanitary quality of municipal milk supplies in District No. 7. Fort William and Port Arthur at least have laboratory facilities available at the Provincial Board of Health Branch Laboratory in Fort William to enable the local authorities of these two cities to adopt some permanent system of bacterial counts. No system of milk-grading (as to sanitary quality) has been in use during the year in either city so far as I am aware. However, it is to be noted that recording thermometers have been installed during the year in connection with two milk-pasteurization plants in Fort William and one milk-pasteurization plant in Port Arthur. In my two previous annual reports I have specified what I believe should be the legal requirements governing the sale of pasteurized milk. The 1923 annual reports of the medical officer of health of the Town of Keewatin and the medical officer of health of the City of Fort William indicate what has been accomplished with a view to tuberculin testing of cattle from which the milk supplies of these two municipalities are obtained.

Water Supplies and Water Purification.

During the year the Department supplied a special mailing-tube and container for the purpose of facilitating the sending of water samples for bacteriological analysis. The next logical step is action by the Department to require the sending at stated intervals of samples from municipal water purification plants so that some degree of uniform bacteriological control may be maintained over the efficiency of such plants. The immediate supervision over the mechanical efficiency of water purification plants is a matter for the Division of Sanitary Engineering. Visits to municipal water-chlorination plants in District No. 7 have been made at intervals during the year by Sanitary engineers from the above-named division; but I believe these visits are not being made with sufficient frequency. I would recommend that every municipal water-chlorination plant in District No. 7 be inspected at least once every two months by a sanitary engineer from the Division of Sanitary Engineering.

Sewage Disposal.

Whatever may be the correct interpretation of Section 91 of the Public Health Act, the wording of that particular section is unfortunate if municipalities are "within the law" while discharging their sewerage without preliminary treatment directly into near-by streams, lakes or other waters. Possibly some solution of the sewerage-disposal problem may be arrived at in the course of time; but raw sewerage from a number of municipalities in District No. 7 is being discharged into near-by waters—some of which are sources of public water supply.

Nightsoil, Manure and Garbage Disposal.

I have endeavoured to impress upon local health authorities the importance of constant effort to keep municipalities free from uncovered heaps of manure and garbage, especially during the warmer months of the year. The maps prepared by the Division of Sanitary Engineering show the locations of outside privies in the municipalities surveyed during 1922 by the field party from that division. Inspections have shown that in some municipalities the local health authorities have not required householders to maintain their outside privies in proper sanitary condition.

Summer Resorts.

During the summer season, inspections were made of six summer resorts in the Municipality of Shuniah. I was accompanied on these inspections by Dr. C. N. Laurie, M.O.H., Shuniah, and by Mr. W. C. Millar, Prov. Sanitary Inspector. I also accompanied Mr. Millar during his inspections of the Chippewa Park and Silver Islet Summer Resorts situated in territory without municipal organization. Sanitary conditions at the Loon Lake and Ishkabibble Beach summer resorts in the Municipality of Shuniah were found to be bad. Ishkabibble Beach is situated on the shore of Thunder Bay a mile or so north of the Port Arthur Waterworks pumping-station. Temporary tents were found scattered along the shore for a distance of at least one mile; and many tents were crowded so closely together as to approximate temporary slum conditions. A few yards behind the line of tents was found a row of privies many of which were in a disgusting condition. This summer resort is difficult to control owing to many of the campers being here to-day and away to-morrow; but at a meeting of the local board of health of the municipality—held August 20th—the local authorities were notified as to the necessity of maintaining closer supervision over sanitary conditions at all summer resorts in the municipality. A revision of the Provincial Board's "Regulations Respecting Sewage Disposal in Summer Resorts" would appear to be desirable so as to permit or specifically forbid the construction and use of pit-privies. The present regulations are difficult of application, especially in summer resorts situated in territory without municipal organization; and a properly constructed pit-privy may be less of a menace to health than a carelessly-tended dry-earth closet.

Schools in Territory Without Municipal Organization.

During the year I was able to make sanitary inspections of six schools situated in territory without municipal organization. As there are more than sixty school sections in territory without municipal organization in District No. 7 it is evident that there is inadequate sanitary supervision over these particular schools. However, under present conditions it is a physical impossibility for me to personally inspect every school in territory without municipal organization, especially those schools in the unorganized agricultural townships thrown open for settlement. If adequate local health machinery existed for the supervision of the unorganized agricultural townships thrown open for settlement, there would remain about eighteen or twenty schools in organized communities along the railways; and an attempt could be made to annually inspect these eighteen or twenty schools. Otherwise a feasible plan to secure an annual supervision over sanitary conditions in the above-named schools would be: "That the School Board of each school in territory without municipal organization be required once yearly to employ a legally qualified medical practitioner to make a sanitary inspection of the school and school premises, and to send to the Provincial Board of Health a report of each inspection."

Communicable Diseases.

The following table has been compiled from the weekly returns of communicable diseases sent to this office as having been received by the Department from the secretaries of local boards of health in District No. 7 during the year 1923. The figures are not to be taken as the exact number of cases and deaths from communicable diseases, but they may have some value as an index of the communicable diseases reported from municipalities in the District:—

Disease	Cases	Deaths
Diphtheria.....	81 (one suspect)	8
Measles.....	296	0
Whooping Cough.....	48	1
Smallpox.....	34	0
Scarlet Fever.....	77	0
Typhoid Fever.....	46	1
Tuberculosis.....	21	12
Infantile Paralysis.....	1	1
Acute Lobar Pneumonia.....	46	8
Rubella.....	1	0
Gonorrhoea.....	1	0
Encephalitis Lethargica.....	1	0
Mumps.....	3	0
Chickenpox.....	117	2

The above table does not include communicable diseases reported from territory without municipal organization, except where cases may be included in reports from municipalities.

The following visits were made during the year in connection with the direct control of communicable diseases:—

Disease and Community	Dates of Visits	Dates of Reports
(1) Smallpox case in Fort William.....	January 3rd.....	.....
(2) Smallpox case in Fort William.....	January 13th.....	.....
(3) Atikokan (unorganized) <i>re</i> Scabies in School.....	March 21st.....	March 23rd
(4) Hillsport (unorganized) <i>re</i> V.D. case.....	April 12th.....	April 17th
(5) Marks Township (unorganized) <i>re</i> Scarlet Fever.....	May 31st.....	June 1st
(6) Marks Township (unorganized) <i>re</i> Scarlet Fever.....	June 25th.....	June 28th
(7) Silver Islet (unorganized) <i>re</i> Diphtheria.....	June 29th-30th.....	} August 13th
(8) Silver Islet (unorganized) <i>re</i> Diphtheria.....	August 1st and 2nd.....	
(9) Silver Islet (unorganized) <i>re</i> Diphtheria.....	August 5th and 8th.....	
(10) Lybster Township (unorganized) <i>re</i> Scarlet Fever.....	August 14th.....	August 15th
(11) Lybster Township (unorganized) <i>re</i> Scarlet Fever.....	September 7th.....	September 18th
(12) Dorion (unorganized) <i>re</i> Measles.....	September 25th.....	October 11th
(13) Macdiarmid (unorganized) <i>re</i> Scarlet Fever.....	September 27th.....	October 11th (October 11th October 18th November 10th
(14) Rossport (unorganized) <i>re</i> Typhoid Fever.....	October 5th.....	
(15) Lybster Township (unorganized) <i>re</i> suspect Measles.....	October 26th.....	October 30th
(16) Kenora Town <i>re</i> Smallpox.....	November 20th-23rd.....	November 24th
(17) Dryden Town <i>re</i> Smallpox.....	December 7th-8th.....	December 14th
(18) Kenora Town <i>re</i> Smallpox.....	December 10th-13th.....	December 15th
(19) Keewatin Town <i>re</i> prevention Smallpox.....	December 12th.....	December 15th
(20) Smallpox case in Fort William.....	December 14th.....	} January 3rd, 1924
(21) Smallpox case in Fort William.....	December 21st.....	
(22) Kenora Town <i>re</i> Smallpox.....	December 21st-23rd.....	
(23) Ignace <i>re</i> prevention Smallpox.....	December 23rd.....	January 4th, 1924
(24) Kashabowie (unorganized) <i>re</i> removal Tu- berculosis patient to Sanatorium (indi- gent patient).....	December 30th-31st.....	January 2nd, 1924
(25) Fort Frances <i>re</i> removal two indigent Tuberculosis patients to Sanatorium; and <i>re</i> Smallpox in Shelvin-Clark's Com- pany Camps south of Flanders (un- organized).....	December 30th-31st.....	{ January 2nd, 1924 January 4th, 1924

Many of the visits listed above were made to deal directly with communicable diseases occurring in territory without municipal organization. Until adequate local health machinery is created in territory without municipal organization—or at least in the unorganized agricultural townships thrown open for settlement—the direct control from this office over communicable

diseases occurring in territory without municipal organization will of necessity be more or less incomplete. However, I have endeavoured during the year to see that the Regulations have been complied with whenever information has reached this office of communicable diseases occurring in the above-mentioned unorganized territory.

An outbreak of smallpox occurred during November and December in the Town of Kenora; and I found it necessary to make three visits to Kenora in connection with this outbreak. Section 12 of the Vaccination Act was brought into force by proclamation dated November 21st, 1923, issued by the mayor of Kenora. I also visited the municipalities of Keewatin, Dryden and Ignace in an endeavour to prevent the spread of smallpox infection; and at the time of writing it is hoped that the further spread of the disease has been prevented. I would say that Dr. A. D. Ferguson, M.O.H., Kenora, took every possible action to limit the spread of smallpox in the town, and the citizens of Kenora may be thankful for the efficient services rendered by their local medical officer of health. As long as the Vaccination Act remains upon the statute books of this Province, municipal authorities possess a weapon of defence that may be utilized even in the *absence* of smallpox; and will go far towards preventing outbreaks such as has recently occurred in Kenora. It is encouraging to note the smallpox prevention work done during the year by Dr. C. N. Laurie, M.O.H., Port Arthur, Dr. R. A. Caldwell, M.O.H., Gillies Township, and Dr. E. C. Arseneau, M.O.H., Conmee Township. I understand that during the spring of 1923 Dr. Laurie successfully vaccinated more than 2,000 children in the City of Port Arthur. Dr. Arseneau made a special trip into the Township of Conmee for the purpose of vaccinating the school children; and Dr. Caldwell made a similar trip into the Township of Gillies. All this was done in the *absence* of smallpox in the three municipalities.

Regarding the prevention of diphtheria, Dr. R. M. Boyd, M.O.H., Fort William, has been endeavouring to use the toxin-antitoxin mixture; and I understand that he has already given the complete series of toxin-antitoxin inoculations to approximately 250 Fort William children. Although the child population of Fort William is said to be between two and three thousand, Dr. Boyd's work is a good beginning at an attempt to utilize all our resources in an endeavour to prevent the occurrence of a preventable disease.

Isolated outbreaks of typhoid fever occurred at various points during the year. The total of cases reported from Fort William is due to the fact that a number of patients came from steamboats plying the Great Lakes; and other patients were brought into the city for treatment. During the month of October I visited the unorganized village of Rosspoint in an endeavour to trace the source of infection of two cases of typhoid fever occurring at that place. The infection could not be definitely traced to the water or milk supplies; and the most probable explanation is that the infection was contracted from a "carrier." Earlier in this report I have mentioned the necessity for closer supervision over uncovered manure heaps, garbage piles and outside privies; and the conditions observed in many communities are sufficient to warrant the supposition that sporadic outbreaks of typhoid fever during the late summer and early fall may be due to "fly-infection" from unsanitary outside privies used by typhoid "carriers."

During the spring and early summer I visited the railway construction camps (operated by Foley Bros. & Hervey) on the "Long Lac-Nakina Cut-off" in an effort to institute a system of anti-typhoid inoculation of all men applying for work at the camps. This company's officials and contracting physicians endeavouring to carry out the plan; and I was given to understand that between

two and three hundred employees received the anti-typhoid inoculations. It is impossible to state definitely that this measure had any appreciable effect in preventing the occurrence of typhoid fever in the camps on the Long Lac-Nakina Cut-off, as Mr. W. C. Millar, Provincial Sanitary Inspector, maintained strict supervision; and the standard of sanitation in these camps was very good. However, the season passed without an outbreak of typhoid fever on the Long Lac-Nakina Cut-off—with the exception of two or three cases who probably contracted their infection before coming to the camps.

The incidence of scarlet fever and measles in the district was not alarming during the year.

The need of a sanatorium in District No. 7 for cases of tuberculosis has been recently emphasized by the sending of three indigent patients to the Toronto Free Hospital for Consumptives. The three patients came from territory without municipal organization; and the expenses of their removal and maintenance are a charge upon the Department. Miss E. Corbman, Provincial District Health Nurse, had charge of the patients during their removal to the Sanatorium.

PROVINCIAL SANITARY INSPECTOR

Mr. W. C. Millar, Provincial Sanitary Inspector, has at all times co-operated with me in sanitary work in the municipalities visited during the year. I also accompanied Mr. Millar during some of his inspections of summer resorts in territory without municipal organization. Mr. Millar's annual report for 1923 indicates the extent of his work in connection with the sanitary supervision over the unorganized areas in District No. 7. Sanitary supervision over territory without municipal organization is an important feature of the public health work in the district.

PUBLIC HEALTH NURSING

During the year Miss Carr Harris, Provincial District Health Nurse,—assisted by Provincial Public Health Nurses: Miss Riddle, Miss Murphy and Miss Douglas—continued the work instituted last season in the “outlying” areas of that part of District No. 7 assigned to Miss Carr Harris. The result of this year's endeavour to give a minimum service of one yearly visit to each family in the “outlying” areas is well shown in the report submitted by Miss Carr Harris. Miss E. Corbman, Provincial District Health Nurse, carried on her work most efficiently in her division of the district which presents its peculiar problems and difficulties.

PROVINCIAL BRANCH LABORATORY

The 1923 annual report submitted by Dr. N. O. Thomas, Director of the Provincial Board of Health Branch Laboratory in Fort William, indicates the importance of the laboratory in the public health work throughout the district.

INSPECTIONS BY DIRECTOR, SANITARY ENGINEERING DIVISION

On July 7th I accompanied Mr. F. A. Dallyn, Director of the Provincial Board's Sanitary Engineering Division, during his inspection of the Fort William “Coal Dock Area”; also during his inspection at the Provincial Industrial Farm in the municipality of Neebing. On July 8th I accompanied Mr. Dallyn during his inspection of the chlorination plant at the Port Arthur Waterworks

Pumping Station. Mr. Dallyn then proceeded to Sioux Lookout for the purpose of inspecting the Canadian National Railway's water supply and sewage disposal systems in that town; and I understand that a similar inspection was made at Nakina. On July 13th I accompanied Mr. E. W. Johnston, sanitary engineer, during his inspection of the Canadian National Railway's water supply and sewage disposal systems at Atikokan; and Mr. Johnston then proceeded to Redditt for the purpose of making a similar inspection.

Inspections of the Fort William "Coal Dock Area" and above-mentioned Canadian National Railways' water supply and sewage disposal systems by technical experts from the Division of Sanitary Engineering have been greatly appreciated by me as district officer. It is my opinion that action should be taken by the Provincial Board of Health to require the Canadian National Railways to obtain a water supply at Sioux Lookout that is at all times free from pollution, or else to instal an efficient chlorination plant in connection with their present water supply in that town. There is also a crying need for proper sewerage facilities in the Fort William "Coal Dock Area" so as to eliminate the present system of outside closets in a thickly inhabited area. I would recommend that the Division of Sanitary Engineering be instructed to send a field party into District No. 7 during the season of 1924 for the purpose of making a sanitary survey of the municipality of Nipigon in the district of Thunder Bay, and the municipality of Ignace in the district of Kenora, as the water supplies in each of the above-named municipalities should be inspected by expert sanitary engineers.

I have the honour to be, Sir,
Your obedient servant,

G. L. SPARKS,
District Officer of Health, District No. 7.

ANNUAL REPORT FOR 1923 OF DISTRICT No. 8

Sault Ste. Marie, Ont., January 7th, 1924.

To the Provincial Board of Health, Ontario:

Sir,—

I beg to submit for your consideration the following report of public health activities in this district for the year 1923.

Owing to the fact that there is no unit of municipal or government organization corresponding to a health district in Northern Ontario, it is not possible to present a statement of vital statistics for the year which might be used to indicate the sickness or morality incidence for comparison with previous years or for comparison with other similar areas. The only figures available are those of reported cases of communicable disease requiring weekly returns from each municipality. These figures are only approximately correct even though each year indicates more careful attention from the responsible officers of the local boards of health and valuable assistance, voluntarily given, by physicians in reporting and supervising cases which come to their attention in unorganized places having no local health officer. A number of physicians in Northern Ontario have been willing to accept, without remuneration, appointments as medical officer of health for unorganized townships. Very valuable service has been rendered in this way.

The figures for communicable disease in District No. 8 as shown below are valuable in indicating the absence of any serious epidemic during the year 1923. The cases reported have been distributed over the whole of the large area of the district and the satisfactory control has been made possible by the regular assistance and co-operation of the physicians. Compared with previous years the following figures indicated about 30 per cent. decrease even though the reports have been more complete. These show a very decided improvement in nearly every instance.

Disease	Cases	Deaths
Cerebro-Spinal Meningitis.....	3	1
Chickenpox.....	31	0
Diphtheria.....	63	3
Measles.....	40	0
Scarlet Fever.....	53	1
Smallpox.....	2	0
Tuberculosis.....	10	4
Typhoid Fever.....	12	0
Whooping Cough.....	5	3

For several months the provincial laboratories have been forwarding copies of all positive reports on diagnosis of communicable disease, direct to the district officer of health. I very much appreciate this service and have found it valuable in bringing early information where previously reports would not have been received soon enough to allow of early precautions being taken. They have also been valuable in providing another means of checking cases which should be reported weekly by the local board of health.

During the year special attention has been required for investigation of communicable disease throughout the district as follows:

Typhoid Fever at Sandlake, Hearst, Little Current, Tehkummah, Manitowaning and Levack.

Scarlet Fever at Cutler, Biscotasing, Massey, Walford.

Suspected Smallpox in Serpent River Indian Reserve.

Diphtheria at St. Joseph's Island, Creighton Mines, Worthington.

Tuberculosis at Michipicoten, Goulais Bay and Espanola. These were cases in unorganized districts which required investigations and two were given government assistance in securing sanatorium treatment.

VENEREAL DISEASE CONTROL

During the past year we have been able to make some progress through propaganda and educational work on this subject. A treatment clinic was opened in Sault Ste. Marie for treatment of cases from the city and surrounding territory. Arrangements for the opening of this clinic had been delayed on account of difficulty in securing a suitable location until Dr. Graham, Director of the Provincial Laboratory, volunteered to provide space in the laboratory building at considerable inconvenience to himself and his work. He also took charge of the treatment and Miss Way accepted appointment as clinic nurse. Since the opening of the clinic excellent work has been done in providing treatment for many unable to pay for it in the usual way.

In connection with educational propaganda, a very successful public meeting was held on the occasion of a visit from Mrs. Pankhurst and her party during their motor trip to New Ontario. On this occasion a local branch of the Social Welfare Council was organized.

There is still a very difficult situation to be met in control of venereal disease in unorganized territory. Each season, large numbers of men come through employment bureaus in eastern cities to the lumber camps in the north. Many of these are chronic venereal cases and others are infected shortly before leaving the larger centres for the woods and become acute cases requiring treatment after arriving in camp. They are also the means of spreading infection at the towns along the line where they leave the railway to go back into the camps. When requiring treatment they are usually without funds and consequently try to get along without treatment or else come out to the towns on the line or railway. Frequently they are not within reach of a clinic even then, and the local physicians are obliged to treat them without remuneration. The situation is partly met by the Provincial Board of Health lending outfits, and supplying medicines for treatment to local medical officers of health. This service would be very much more valuable if a nominal fee were available for payment to physicians treating cases from unorganized territory when the patients are unable to meet the expense. This would also apply to cases that require further treatment after discharge from government institutions.

In the endeavour to carry out the regulations of the Provincial Board, difficulty is frequently encountered in connection with Indian reserves. In a general epidemic of any acute contagious disease it is possible to have the whole reserve under quarantine if required, but the difficulty arises with tuberculosis and venereal disease which are so prevalent among these people. There is no means for providing preventive measures or for carrying on general treatment. They are employed mostly in mills and camps and increase the difficulty of control of these two conditions particularly.

Efforts have so far failed to secure general co-operation of physicians and local medical officers in reporting the number of venereal disease cases coming under their care. With the better facilities for treatment available it may be less difficult to show the need for systematic reporting of cases and control of those cases where treatment is discontinued before completion.

During the year, cases reported as requiring treatment were investigated at the following points: Blind River, Thessalon, Cutler, Espanola, White Fish Falls, Korah Township, Dean Lake, Iron Bridge and Tarentorus.

PUBLIC HEALTH NURSING

During the year, Public Health Nursing, Maternal and Child Welfare, Industrial Nursing and School Nursing service has been demonstrated by Miss Grenville at the following places in Southern Algoma and Sudbury: Bruce Mines, the rural municipalities of Plummer, and Plummer additional, Iron Bridge, Parkinson, Thompson, Spragge, Cutler, Massey, Espanola and Thessalon.

In connection with this nursing service school clinics were held at each school fair throughout the district of Algoma. By the joint co-operation of the Provincial Board of Health Nurse, the Department of Agriculture representative and the district officer of health, it was possible to attend nine school fairs, representing forty-five schools and some twelve hundred pupils. This was probably one of the best opportunities we have had for health education propaganda, and it was satisfactory to note that after these demonstrations inquiries were made by teachers for literature and information for further use with their classes.

The number of places reached by the nursing service during the year has been much less than was planned for, owing to the fact that only one nurse has been available for the whole field. Two nurses were previously assigned to District No. 8 but since Miss Bagshaw resigned in April, 1922, no appointment has been made to fill the vacancy. The need for a more extensive demonstration service is very urgent. Points where demonstrations already have been made should now be reached a second time. It is over three years since this programme was started and many places have not yet been reached for the first time. As an example of the need for maternal and child welfare education, it was found in one divisional registration area, that in one year there were reported six births and seven deaths under one year of age, and the people were unaware that there was anything to be alarmed about. This is, of course, an unusual and extreme case. It is encouraging on the other hand to note that in the town of Blind River, where a Public Health Nurse was employed, the infant mortality rate was decidedly reduced during the first year of the service.

INDUSTRIAL HYGIENE

In the town of Espanola and surrounding unorganized townships a general public health programme has been carried out by the Spanish River Pulp and Paper Company with assistance from the Provincial Board of Health. There is now established an excellent health service which includes an industrial nurse, a public health nurse, who also does maternal and child welfare and school nursing. A School Dental Clinic provides free dental treatment for all school children. These various branches co-operate with the company physician and the labour supervisor of the plant.

Very early in this demonstration, some valuable and interesting statistics were secured to show how labour turnover could be reduced through prevention of sickness among employees and their families.

Espanola was particularly fortunate in securing two most efficient nurses. Miss McLeod had formerly been on the staff of the City of Toronto Board of Health, and Mrs. Oliver was Provincial Board of Health Nurse in District No. 7 when the service was first inaugurated in Ontario.

SUMMER CAMPS

An endeavour has been made during the summer to inspect the tourist camps throughout the district and visits were made to the following places: Bruce Mines, Thessalon, Algoma Mills, Richard's Landing, Hilton Beach, Pine Island, McGregor Bay, Campement D'Ours, Kensington, Island Lake, Point Aux Pins and Killarney. Sanitary conditions at these camps are mostly satisfactory. The most frequent cause of pollution of water supplies is boat traffic on the St. Mary's River and larger lakes and the discharge of sewage by cities and towns on the main waterways. In international waters this difficulty at present is not possible to control. Hotels providing accommodation for summer visitors are improving where it is possible to give proper sanitary supervision.

MILK SUPPLIES

Dairies have been inspected in company with local health officer of Sault Ste. Marie and Espanola. Improvement is usually noted but in some cases no effort is made to improve conditions until the dairyman is forbidden to sell milk. Improvement is then usually rapid, and the effect is not limited to the one individual.

Early in the year the municipal council of Sault Ste. Marie decided to ask for the assistance of the Federal Department of Agriculture for tuberculosis testing of all herds supplying milk to the city. Unfortunately the regulations relating to this service were being altered by the Department and the work is deferred until a new policy is presented. In the meantime the local Board of Health of the city continues to stress the need for general pasteurization.

SANITATION

Inspections were made in connection with complaints regarding sanitary conditions or assistance given on request to municipalities throughout the district, among them the following:

Hearst.—Garbage disposal, water supply and dairy inspection.

Goudreau.—Contamination of lake from which drinking water was taken.

Goulais Bay.—School sanitation and water supply.

Thessalon.—Slaughter houses.

Levack.—Water and milk supplies.

Richard's Landing.—Public school sanitation.

Desbarats.—Slaughter house location, and hotel sewage disposal.

During the month of May, Mr. R. B. McCauley assumed the duties of Provincial Sanitary Inspector for the area corresponding to District No. 8, which may be reached from the Soo branch of the C.P.R. and the Algoma Central Railway. I wish to express my appreciation of Mr. McCauley's assistance on all occasions when our work called for co-operation.

PUBLIC HEALTH EDUCATION

Advantage has been taken of frequent opportunities for public health education by means of talks on health subjects. Included in the list are municipal councils, school boards, public schools, boys' and girls' organizations, city community centre, summer camps, Rotary, men's civic club, women's institute meetings and farmers' club.

The Sault Ste. Marie Engineering Society very much appreciated an address given by Mr. Dallyn on "Sanitary Engineering."

By means of health films it was possible to reach a large number of people, and during the past winter arrangements were made for showing pictures weekly at three different points in the vicinity of Sault Ste. Marie, having the use of a picture machine loaned by the Provincial Boys' Work Board of the city. Films were also provided by the Provincial Board of Health for showing at school fairs in the district of Algoma.

The prompt action of the Government in providing for distribution of Insulin through the branch laboratories has been thoroughly appreciated by the public. This service has been so definite and the immediate value so obvious, that it has stimulated interest in other branches of health activities as well and consequently made it less difficult to interest the public in securing general health information.

In conclusion, I want to refer to Dr. Spark's reports of 1921 and 1922, where he states the physical impossibility of one officer being able to cover the very large territory assigned in New Ontario. The use of a motor car assists very much in this district, but there are very extensive areas which can only be reached by train or boat. In order to reach these outlying places long distances must be travelled, and the district officer, having to assume also the duties of a municipal health officer, is only able to touch superficially the requirements of his district. I am convinced that a district officer of health cannot properly attend to the necessary work in a district much larger than an average provincial judicial district, and that a health administration unit comprised of a medical officer of health, two public health nurses and one sanitary inspector in each judicial district of New Ontario, might be able to provide a fairly satisfactory public health service.

I have appreciated throughout the year the assistance which has been extended from every division of the Provincial Board. Personal visits to the district by the executive officers from the various divisions has provided first-hand information regarding our local conditions and requirements.

I have the honour to be, Sir,

Your obedient servant,

H. W. JOHNSTON,

District Officer of Health, District No. 8.

REPORT OF CHIEF SANITARY INSPECTOR

January 18th, 1924.

To the Provincial Board of Health, Ontario.

Gentlemen,—

I have the honour to submit for your consideration my seventh annual report showing work performed by your sanitary inspectors, together with such conclusions as may have been formed, during the year 1923.

It is perhaps proper to mention at the outset the nature of work to be performed and the responsibility carried by your group of inspectors in order that there be no overlapping with the work of other divisions.

The work carried on by your inspectors is chiefly among the industries of Northern Ontario and may be cited as elementary industrial hygiene.

These industries comprise lumbering, mining, construction, saw milling and paper-making. Other public health work is, of course, undertaken among the small towns and villages. We recognize, however, as our special responsibility, the care of the industries mentioned above.

The success which has attended our efforts and which has increased from year to year, still continues. Our services are sought eagerly by the contract physician, the employer and the employee alike. Industry seems to have awakened to a new sense of responsibility for we find competitive rivalry making its appearance particularly in camp building. I have had requests during the year for information concerning electric lighting systems to replace the oil lamp, and for some cheap chemical closet to replace the oftentimes unsanitary outdoor privy. These I contend are hopeful signs and should be fostered.

I contend it is not only the environment of the labourer in these camps which requires to be supervised, and protection increased for this or that particular industry, but that only by the painstaking supervision which is being provided against the pollution of our great rivers at their source, are epidemics of typhoid and dysentery headed off in towns and cities drawing their supply of water from the lower reaches of these same rivers. This one factor, aside from all other matters undertaken, is sufficient justification for the existence of your group of inspectors.

It is with regret I mention the death of our director, Dr. R. W. Bell, who passed away on June 8th last, having been in poor health for a considerable time.

Dr. Bell was regarded as the pioneer officer among the industries which we are discussing, and is frequently spoken of by captains of industry as a man who had a peculiar aptitude for undertaking the problems presented, and appreciated the difficulties which surround the pioneer. Perhaps the greatest service was in controlling outbreaks of smallpox so very prevalent ten years ago, particularly among lumber camps. I find many physicians scattered over the province and practising industrial medicine, who have many kind words to say regarding the doctor, and who claim the assistance and advice given them in connection with this disease have been of great lasting benefit.

We, the staff of inspectors, over whom he presided, recognize the loss of a friend who was ever patient, and willing to help us.

During the year steady progress has been made with no particular outstanding feature save the typhoid epidemic at Smooth Rock Falls, and which will be dealt with under the head of communicable diseases. Since the death

of Dr. R. W. Bell the inspectors have now been included in the Division of Industrial Hygiene of which Dr. J. G. Cunningham is the director. This change I believe to be justified, as it brings all public health industrial interests within one group, and therefore, prevents overlapping.

The work carried on by the division and that of your inspectors should link together admirably, the force of inspectors carrying on and improving sanitary conditions, making needed improvement in housing and living conditions and with the assistance of the contract physician (if present) dealing with such communicable diseases as may arise.

All of these matters dealt with, however, and which include the care of water supplies, the outside conveniences, ventilation of buildings, the milk supply, living accommodation, together with the food supplied and the collection and disposal of garbage, might be regarded as basic public health endeavour, and while considerable success has attended our efforts in standardizing these very important matters, yet there are other problems to be dealt with which, if solved, in whole or in part, would be welcomed gratefully by industry—for example, the labour turnover in logging camps is said to be almost 20 per cent. This may be due to a number of reasons, some of which when due study of the question is made, may be found curable. Lost time from sickness should have some attention and some attempt made at reduction. A careful study should be made to determine the extent of occupational disease and some determined effort made to reduce our very considerable losses from dysentery during the fall months. These matters should have the attention of the division and provide ample opportunity for profitable study.

Information supplied through the various Crown timber agents and by employers of labour, show a total of 172 lumbering companies in operation. These control together with the jobber and sub-jobber 751 camps and provide employment for 28,595 men.

In addition we have:—

- 50 mining companies with 2,700 men.
- 4 paper mills with 2,775 men.
- 55 sawmills with 3,657 men.
- 18 construction companies with 5,550 men and 82 camps.
- 26 road camps with 875 men.
- 2 fishing companies with 175 men.

We have, therefore, a grand total of 243 companies, operating 960 camps and employing 44,327 men.

These industries, together with the small villages, which as a rule spring up near by, and for which a direct responsibility is carried, and with the addition of our northern summer resorts, comprise approximately 100,000 people.

Of the companies mentioned above, 217 have contracted with a qualified physician in the manner provided by our regulations.

These physicians who visit the camps or works monthly as a routine, I find have made 414 inspections and have forwarded 414 reports to the Board, and have also provided 252 sketches of camp sites. It is to be understood these monthly reports sometimes embrace the examination of as many as 30 camps being operated by one company, in connection with which 1,000 men may be seen.

It should be noted that statistics herein shown cover a period from May 1st, 1923, to December 31st. Therefore, as the lumbering industry is a winter

operation and the present season does not expire until May, 1924, complete statistics will not be available until that date.

Your inspectors have made 482 camp inspections during the year, and in addition have visited 79 small towns and villages giving the district officer in each instance whatever assistance was necessary. Thus we have a grand total of visits made by contract physicians added to those of your inspectorate of 965 for the year.

In the total number of visits made your inspectors are well over the total visits made last year even with full consideration of the fact that 75 per cent. of my time is taken up with office duties here.

The total number of visits made by physicians are slightly greater than that of last year. The quality of monthly statements from these physicians has, however, increased very materially and signs are not wanting to prove that the advent of younger men who have a liking as well as a suitable physique for such strenuous work, will bring the solution we seek.

COMMUNICABLE DISEASES

Our case record for communicable diseases would appear to be much higher than that of last year. However, after reviewing the facts I find that aside from the serious epidemic of typhoid fever which occurred in the town of Smooth Rock Falls early in the year and in the bush camps near by, our record of last year has been easily surpassed.

The following diseases occurred in the camps and in one of our industrial centres:—

	Cases	Deaths
Typhoid Fever.....	53	4
Smallpox.....	5	0
Scarlet Fever.....	9	0
Diphtheria.....	3	0
Chickenpox.....	4	0
Totals.....	74	4

Thirty-one of the fifty-three cases of typhoid occurred in connection with the operation of the Mattagami Pulp and Paper Mills at Smooth Rock Falls, the cases being divided equally between the mill town and the woods camps up stream. Thorough investigation of the outbreak proved as far as is possible the town of Timmins to be the cause thereof. Previous to the outbreak at Smooth Rock Falls the disease was prevalent in Timmins and along the Mattagami River below the town. It is believed that as the disposal plant was not at this time functioning properly, untreated discharges from typhoid cases gained entrance to the river and the disease developed among the camps and at Smooth Rock Falls as a consequence. Effective chlorination of the water supply together with the liberal use of vaccine, quickly brought relief. In the meantime some thousands of dollars were lost to this company through no fault of its own.

Among the camps of the Abitibi Power and Paper Company we had eleven cases. Most of these, however, occurred in men within two weeks after employment, proving that they had been infected before coming to the neighbourhood and occurred during fall. When the camps congregate such cases are difficult to trace and do not present any particular problem. The balance of the cases occurred sporadically and did not develop beyond the initial case.

One of our chief sources of worry in connection with temporary camps, is the prevalence of dysentery during August, September and the early part of October (recognized as our fly months). Reference to the reports of industrial physicians during this period invariably show, that while the camps or works are apparently in reasonable sanitary condition, yet diarrhoea and dysentery are causing considerable sickness and therefore a great deal of lost time.

The physician in his report, places the reason for these epidemics on a number of causes. Some imagine that meat has been served which is partially spoiled. Others speak of some strong soap being used for dish washing purposes, and the utensils being left to dry, considerable soap adheres to the plates, etc. The water supply is also frequently blamed for the trouble. Considerable thought has been given this question and a great many investigations made and while in some few instances the water supply we believe has been the source of infection, we find that in the majority of cases it is a question of too many flies.

These flies, of course, breed in the heap of horse manure usually to be found outside the stable—visit the public closet which is oftentimes little better than a shelter, in the middle of the day when the sun is warm, and in the evening when the fall nights begin to get chilly, invade the cook-house and dining-room attracted by the heat and the smell of cooking food, depositing fecal matter, which they have carried in with them, upon the evening meal set out upon the table. I am convinced most of our dysentery and a proportion of our sporadic outbreaks of typhoid arise from this source.

Your inspectors have, of course, been discussing this matter with industry for some years, but with varying success. The management seem to have contented themselves with the purchase of reams of tanglefoot and almost every chemical and insect powder obtainable to exterminate the fly, but only after gaining access to the buildings, no thought being given to destroying the breeding places or to the removal of manure at stated intervals. To deal with the question, in a more practical way, we have changed our tactics somewhat, and now demonstrate to the management on every possible occasion as near as possible just what happens. This is not difficult, as fly larvae and pupae are easily noted in millions by reference to almost any heap of manure. After finding the breeding places we now visit the open closet also swarming with flies—then proceed to the unscreened kitchen, with the same result.

I am reasonably sure this procedure will, to a great extent, eliminate much of these annoying and dangerous attacks of both diarrhoea and dysentery and should reduce much of the present preventable lost time.

Since my removal to Toronto and with the burden of carrying on office duties in connection with the group, my activities in the field are, of course, lessened. This, to some extent, will reflect upon the total inspections made annually. However, I find to administer the office and do justice to the correspondence, which is enormous, as well as to keep the necessary statistics, seventy-five per cent. of my time is taken up with office work.

And while I can usually find time to visit some of the fields near by, I cannot visit all the divisions oftener than twice each year. However, this would seem to be sufficient. I have called attention a number of times to the Division of Cochrane. This is presided over by our Mr. Richardson who is resident at North Bay. The Cochrane area, as has been amply proved by statistics, requires a great deal more attention than it is receiving. It is my opinion that if possible the Board must place a resident inspector there. Fifty per cent. of our time is lost travelling to and from the work at present. Moreover it is sometimes necessary to make quick visits when outbreaks occur.

It is also necessary that industry visit the office (if near by) and consult with your officials on many matters before spending money, often in the wrong direction. We have had many instances of such happenings during the last two years. It is not my desire to unduly hasten this adjustment, but rather as your presiding inspector to point out the weakness of our present arrangement and to provide a remedy.

Through each of your inspectors' reports may be found the spirit of co-operation and good fellowship. All are convinced that excellent progress is being made and that the Regulations which govern are sufficient for our present needs at least.

It is true we have had complaints during the year, some of which were quite justifiable. Others might be regarded as petty spite after being dismissed from service. The receiving of complaints might easily be regarded as a desire on the part of the individual for something better—something which we have long tried to foster in the minds of the shantymen.

In conclusion let me again say the old unsanitary industrial camp is rapidly passing and that this should have been accomplished with the co-operation of industry, is commendable. The absence of sickness or other labour troubles in connection with these great Northern industries is a tribute to both capital and labour alike.

Many such cordial relations continue. Much of our success is due to the increased interest of the contract physician who at times has his patience severely tried. I also wish to thank each of your divisional inspectors for the painstaking manner in which he has discharged his many duties during the year, and in concluding would say the interest shown by the Board through our chief officer leaves nothing to be desired.

ALEX R. WHITE,
Chief Sanitary Inspector.

SANITARY INSPECTOR'S REPORT

Fort William, Ontario,
December 31st, 1923.

To the Provincial Board of Health, Toronto, Ont.

Gentlemen:

I have the honour to submit for your consideration my annual report for the year ending December 31st, 1923, as Sanitary Inspector of unorganized territory in District No. 7.

With the various industrial operations, summer resorts and towns in unorganized territory in this district stretching over seventeen railroad divisions, it has been impossible for me to inspect every summer resort, camp and town. Points where unsanitary conditions prevailed being visited first, the balance of my time being taken up on routine inspections.

I have endeavoured to have your regulations complied with by advising those responsible for same, showing them where it was to their own advantage to do so. At no time in the past year have I had the necessity to call on the assistance of the law.

The following is a list of summer resorts, unorganized towns and operations in District No. 7, where labour is engaged, with a report of my work on same.—

15 Summer Resorts, with a four-month population of.....	5,000
10 Provincial Government Road Camps, employing, for five months.....	275
7 Construction companies with 28 camps, employing, for nine months.....	2,000
18 Right-of-way gangs on the Grand Trunk, Canadian National, Canadian Pacific, Trans-Continental and Port Arthur and Duluth Railways, employing for five months.....	1,000
7 Towns in unorganized territory, with a population of.....	1,100
26 Gold and silver mines, employing for nine months.....	500
2 Fishing stations, employing for six months.....	175
5 Saw mills, employing for five months.....	350
12 River drivers' camps, employing for five months.....	250
44 Lumber companies with 144 camps, employing for five months.....	6,600

SUMMER RESORTS.

Owing to the unusual length of the warm weather which prevailed in this district in 1923, the summer resorts were visited by twenty-five per cent. more people than usual. Conditions in most of these were good, the exception being in the camping grounds on the shore of Lake Superior, east of Port Arthur. Out of the seven summer resorts there, only two were found reasonably sanitary. The others were filthy and a grave danger to the health of those who visited them. Owing to the fact that the campers were squatters on property owned by people in distant parts, great difficulty was found in enforcing your regulations. I was accompanied on those inspections by our Dr. Sparks, D.H.O., and the M.H.O. of the township in which the camps were built. We met the local Board of Health for this township and laid the whole matter before them, the result being that a plan to overcome the above conditions was devised, namely: the township to charge each camper a nominal fee for rent, this fee to go to pay the services of a sanitary policeman and scavenger during the months the particular five summer camps are being used.

Chippewa Park.—This park is owned by the City of Fort William and is patronized by most of the people of the twin cities as well as American tourists. Conditions are now of the best, sanitary latrines having been installed and good wells dug, which give a plentiful supply of pure water.

Silver Islet.—Sanitary conditions at this resort show a slight improvement. The hotel, which is run on a community style, is, in my opinion, a danger point, as with about six families all cooking and dining in the same combined kitchen and dining room, disease is readily spread. This was shown by the epidemic of diphtheria which developed amongst the children at this hotel this past summer. Sanitary conveniences have not yet been installed at this hotel, although I have endeavoured by talking with and writing to the tenant to have same installed. I intend next season to take other means.

Fort Frances Summer Resort.—This resort was closing down when I made my inspection. It is a new resort built on the Rainy River, two miles east of the town. I found that a mile above the point where the water supply is taken, the sewage of the Indian school was emptied, with the additional danger from the American town of Renier across the river. I have made the necessary recommendation, which I shall see carried out next season.

Canadian Pacific Railway Camps at Nipigon and Lake of the Woods.

These camps were built this past summer. Everything in connection with them was of the best with the exception of the sewage disposal which was intended to empty into the Nipigon River and Lake of the Woods without being treated. As both camps are built in a district where a great many private summer homes are, the danger to their occupants was obvious. Septic tanks and disposal areas were installed in both cases when the matter was pointed out to those in charge of the erection of the camps.

Canadian National Summer Resort, Minaki Inn.

With the development of the pulp and paper industry at the Town of Kenora and the natural increase of its population from same, the water supply for this hotel is in great danger, as are also the hundreds of private summer homes built on the English River, from the raw sewage which empties into the river. This matter is being taken up by Dr. Sparks, D.H.O. and myself and the Division of Sanitary Engineering. Our Mr. White, Chief Sanitary Inspector, accompanied me on my inspection of the above resort.

All other summer resorts in this district show a steady improvement in their sanitary conditions.

Provincial Government Road Camps.

The Provincial Government road camps in the Thunder Bay District are in the same first-class condition as reported in my 1922 report, but very little improvement is noticeable in the Dryden and Kenora districts. In the latter district in particular, the camps were found in a filthy and dilapidated condition. I was under the necessity on the occasion of my inspection there, of having to notify the Department responsible that I would have to shut down their camps should conditions not be changed. Mr. Sinton, of the Northern Development Company, has since that date visited this district and made many necessary changes, and I expect that in the future, conditions will be good all over the Government road camps.

Railroad Construction Camps.

This has been a busy year in this district in railroad construction work with the National Railroad's new cut-off at Long Lac and Rowan being put through.

The Long Lac cut-off had on an average of 1,000 men for nine months in their 17 camps. This contract was done by the Foley, Lock and Harvey Company of Minneapolis. I had a meeting with the Superintendents of this firm before operations began and laid out their camps, water supplies and the necessary sanitary conveniences. Dr. Sparks, D.H.O., accompanied me twice to Long Lac, at one time going over the 17 camps. He initiated a system of inoculation against typhoid fever, with the resident physician, Dr. Eymann, of all men as they entered the camp. This very necessary precaution was particularly needed at Long Lac in view of the Cochrane typhoid epidemic then raging three divisions farther down the line.

I gave the company a sketch of a latrine which I have found most suitable for summer construction work. This class of latrine was installed all along the line. It is to the above preventive means taken on this construction work, along with the great co-operation given your Department by the contractor's staff that I credit the fact that the whole operation was put through without one case of typhoid fever developing amongst any of the workmen.

I am attaching a copy of the above-mentioned latrine which I would recommend be taken as a standard for latrines on summer operations. The use of this class of latrine would go a long way to checking the fly-borne sporadic cases of typhoid fever which crop up every summer.

Right-of-Way Railroad Gangs.

I spent considerable time supervising right-of-way gangs in the past summer. Owing to the temporary nature of their work, they were hard to keep check upon, but with the list of foremen and their gangs which were supplied to me by the railroad companies, I had considerable success, particularly in educating the different foremen to the fact that they could be held personally responsible for the complying with of your regulations.

Only one case of typhoid fever developed amongst this class of work. This occurred in the camp of a foreman who had been warned the month before of the danger of not installing a latrine for his men. The latrine already mentioned in my report would be an ideal one for "extra gang" work and has been favourably commented upon by one of the National Railroad Superintendents who has promised to have same supplied next season. I would strongly recommend that Section No. 2 of the Regulations be enforced on all railroad extra gang work.

Towns in Unorganized Territory.

I made an inspection of all towns in unorganized territory, accompanied by Dr. Sparks, D.H.O., in most cases.

At the town of Redditt, where the water supply was being grossly polluted, the necessary recommendations were put in by Dr. Sparks and myself.

Conditions are very poor in most of these towns, the menace of the open privy being always present. It will take considerable time to have these conditions changed.

Mining Camps.

Very little has been done in mining operations in this district other than improvement work. A great many small mines have been opened all over the district. The Lake of the Woods and Schreiber District are expected to have a busy time in the coming year. Five mines of known value are to be developed on a big scale there. I have written the different owners enclosing regulation pamphlets.

Fishing Stations.

The Fishing Stations of McDermid and Rosspport are in a fairly good condition, McDermid in particular being good, since the very necessary water supply was installed and the intake pipe lengthened.

Rosspport Fishing Station, where two cases of typhoid fever developed this summer, could be improved upon, the drinking of water from out of the bay being highly dangerous. Notices warning the public against this were posted up this summer. The privies at this station are all open to flies and to this source I think can be traced the outbreak of typhoid referred to.

Sawmills.

All sawmills in this district have now been brought up to a good standard and with a certain amount of routine inspection will, I am sure, remain so.

River Drivers' Camps.

As mentioned in my 1922 report, I intended to look into the cause of the yearly outbreak of typhoid fever which has been in the Keewatin Lumber Company's log-driving camps. I had a consultation this spring with the superintendent of the above company and their contracting physician. An examination of the time books of the company showed that one cook in particular had worked in camps where typhoid fever had broken out five times, both in summer and winter. This man had had typhoid fever seven years ago. As he was an old employee of the firm, they were loath to discharge him. I recommended the inoculating of all river-drivers against typhoid fever before going out and this was done. No case developed this season.

Lumber Camps.

The lumber camps in this district show a steady improvement. Owing to the poor quality of the timber stand in some parts of this district, I have used my discretion in enforcing some of the regulations bearing on the camp building as long as the health and comfort of the men were adequately protected. This applied to some parts where old camps were and where this was the last year on the limit. I have had the very best of co-operation from contracting physicians with one exception, the same thing applying to lumber operators, who now look upon your inspector more as a sanitary advisor than inspector.

Twenty-two new camps after "B" class have been built; ten after "C" and ten with a little of each class. The ventilating system which is, in my opinion, one of the best points in the new regulations have been overlooked in most cases. This is the floor part. Next year I intend to enforce this regulation to the letter. Owing to the open nature of the season, this fall, very few camp inspections have been made to date, owing to the dangerous condition of the ice.

Communicable Diseases.

In the past year there has been a considerable increase in communicable diseases in the camps in this district. The following have come under my notice:—

	Cases
<i>Smallpox</i>	
Backus-Brooks Camp, Kenora.....	10
Shevlin-Clarke Camp, Flanders.....	2
S. Swanson, Dinorwic.....	1
<i>Typhoid Fever.</i>	
Laroche Camp, Yonde.....	1
C.N.R. Extra Gang, Mabella.....	1
Long Lac Headquarters Camp (from Cochrane).....	2
A. Shaw Camp, Glenorchy.....	1
<i>Scarlet Fever.</i>	
Foley, Lock and Harvey.....	1

Any matters regarding communicable diseases which have come to my attention have been at once reported to Dr. Sparks, D.H.O., who has in every case given them his immediate attention. In most cases I accompanied him.

Inspections Made.

In the past eleven months, I have made 144 inspections, of lumber camps, construction works, summer resorts, and towns. I have also accompanied Dr. Sparks, D.H.O., on his inspection of Ignace, Dryden, Fort Frances, Emo, Rainy River, and Nipigon.

Plumbing Inspections.

In the past year I made six inspections of the plumbing work and sewage disposal being installed at the Mount Yards Terminal for the National Railways. Those inspections were made at the request of the works superintendent. A first-class system was installed at this terminal. I also inspected the plumbing of the Red Cross Hospital at Dryden. This work was installed in a crude and poor manner and will cause great inconvenience to those in charge of this hospital at some future date. In all public buildings where a Government grant has been given, all sanitary conveniences should, in my opinion, be passed upon by qualified inspectors, this inspection to be made before the piping is covered up.

Dr. Sparks also accompanied me on many of my inspections where certain difficulties had arisen. In my opinion, without the D.H.O.'s co-operation and assistance, the Sanitary Inspector's work, especially in a district as large as this, could not be done justice to.

I have the honour to be,

Sir,

Your obedient servant,

W. C. MILLAR.

Provincial Sanitary Inspector.

Room No. 4, City Hall,
Fort William, Ontario.

SANITARY INSPECTOR'S REPORT.

Sudbury, Ont., January 12th, 1924.

To Provincial Board of Health, Ontario.

Gentlemen:

I have the honour to submit my third annual report for you consideration, for the year 1923.

The year which has just closed has shown an extraordinary reform in industrial operations in the unorganized territory throughout this district. This might be said more especially of the lumbering industry which has steadily increased during the past twelve months. While a considerable portion of my time was chiefly directed to this industry alone, I was compelled to visit the gold, nickel, and feldspar mining camps, along with the several small towns and communities in the unorganized territory during the year.

Lumbering Statistics.

During the past year in this District, which now includes the Parry Sound District Crown Timber Agency, we had 45 different companies operating. From their information sheets forwarded through this office to the Board, and from the monthly reports of their contract physicians, I find we have a total of 237 bush camps operating in the unorganized territory, employing on an average, 32 men in each camp, approximately 7,584 men throughout the lumbering season. Out of the 45 companies operating, 44 have supplied the Board with a copy of their Medical Agreement, conforming to Section No. 2 of the Camp Regulations, and 22 companies have sent in their information sheets conforming to Section No. 1. The latter information was not sent in till such times as each company received a letter from me demanding this information to be sent in to the Board, complying with the law in this respect. While these information sheets sent in by the different companies might have fallen a little short of what your Regulations demand in Section No. 1, there is a vast improvement this season over that of 1922, and I feel assured that these reports from the several companies operating can be brought up to 100 per cent. efficiency during the next year. As it is most important that this information should reach your Board during the early part of the lumbering season, I have made a point where possible, to have the companies forward this information to the Board, along with a copy of their Medical Agreement on the commencement of the season's operations. I am of the opinion that if a definite information sheet or form could be drawn up by the Board with the information required specifically stated thereon, these could be sent out to each company to be completed and returned to the Board on the commencement of operations. The sending out of these forms alone would be considered as a notice and would also place in the hands of the operator just what information is required in detail, leaving no omissions for not complying therewith immediately, this, in my opinion, would eliminate the usual excuse "we have lost the copy of your Regulations." "What information does the Board require?" Throughout this District in the unorganized territory we had a total of 24 mill camps operating from around May 1st up to September 30th, employing approximately 2,000 men during the summer months.

Camp Statistics.

The number of camp inspections made by me during 1923 were 132, which includes lumber, mining, construction, and summer mill camps. The lumber

camps visited were located at such points as Elsas, and along the Kapuskasing and Chapleau Rivers, Argolis, Foleyet, and along the Pishkonagami River, Gogama, Stackpool, Tionaga, Nicholson, Dalton, Biscotasing, Metagama; and in the Chapleau District, Nemegos, Sultan, Devon, Pardee, Balkow; and along the Windmere and Jackpine Rivers, Benny and the pulp camps located on the Onaping Lake, White River, Foote's Bay, Bala, and several other points along the C.N. and C.P. Railways, which are usually known as mileage points. I was also compelled during the early part of the year to spend a considerable portion of my time investigating complaints and routine inspections in the Sault Ste. Marie District, pending the appointment of your Inspector, Mr. R. McCauley, during which time I visited the McFadden and Malloy's camps along the Clear Lake and White River sections, fifty-four miles north of the railway, Dean Lake, also the camps operating in from Nairn, Whitefish, Webbwood, and the Manitoulin Islands. During the month of March I was compelled to visit lumber camps being operated on Fitz William Island by the John Harris Co., without a contract physician. Typhoid fever was apparent at one of these camps, and the patients were allowed to drift throughout the country to their respective homes, etc., without medical attention. I made arrangements with the Company to have Dr. R. W. Shaw, of Manitowaning, appointed contracting physician. With very close co-operation and the doctor's very able assistance by rendering free use of vaccine, the disease apparently was checked. The mining camps visited during the year were at Shiningtree, Creighton, Garson, Nickelton, and Wanapitei, also the Wanapitei Power Company's construction camps, and railway and road improvement camps. Taking on the whole throughout the District I find most of the Lumber Companies have adopted either one of your standard plans when constructing new camps, and I feel assured that most of these operators now realize the benefit derived from your revised Regulations, which illustrates plans and specifications for all operators, small or large. These plans give the operator something to work from, conforming to Health Regulations, eliminating sickness of employees; more efficient work is turned out by the employee, while the operator is conforming to law, and, what is most important to the average operator, a financial economy is derived. Up to the present date I cannot give the exact number of new camps constructed this season, conforming to either of the standard plans, as we are now in the middle of the lumbering season, and there are several companies I have not visited yet. From what companies I have already visited up to date, 37 new camps were constructed, reasonably conforming to Regulations, and exceptionally well constructed over that of past years. Only 3 new camps were constructed which I was compelled to condemn as not conforming to either of your standard plans, and owing to location and construction of the buildings and the condition of the interior, were a menace to the health of employees and the general public. I advised the operators, of which two were contractors and one sub-contractor that these camps would have to be closed down immediately and re-constructed to conform to your Regulations.

Re Contracting Physicians.

During the past year a total of 49 Medical Agreements were either renewed or drawn up between physicians and operators, copies of same being forwarded through this office to your Board and apparently all conforming to the Regulations. The services rendered to the employee and employer by the average contracting Physician cannot be overestimated by the Board, both from a medical and a sanitary standpoint. Having in view the point of keep-

ing down disease, especially such as typhoid and other epidemics, he is thus curtailing his hospital expenses, and reaping a financial benefit. The co-operation of the contract physician should be highly appraised in his endeavour to improve sanitary and living conditions for employees in bush camps, and I feel assured an earnest endeavour is being put forth to comply to your Regulations under the difficult and hazardous conditions in which some of the monthly visits have to be made. While there are still grounds for improvement in the monthly reports received from the physician under contract there is a very satisfactory improvement over that of last year, both in the number of reports to the Board and the nature of the reports. During the year a total of 114 monthly reports on the different companies were received by me and forwarded to your Board. This does not include the number sent in direct by the physicians under contract throughout the District to your Board. This shows a great improvement over that of past years. Where a company has drawn up a contract with a qualified physician this contract should cover all their contractors' and sub-contractors' camps, more especially when operating in the same district. This, in my opinion, would have a tendency to improve medical and sanitary supervision of these small jobbers' camps, which are so often overlooked, and operating under very unhealthy conditions, it would also curtail a considerable amount of correspondence if the company was held responsible in this respect.

Communicable Diseases.

In the camps in the unorganized territory in this district, there was only 1 case of communicable disease, which had my attention during the past year.

An employee at August Daoust's camp at Mileage No. 81, Ruel Sub-Division, C.N.R., developed typhoid fever, this patient being taken into hospital by the contracting physician immediately, and a sanitary survey made of the camp surroundings. Apparently the disease developed from drinking polluted water from a well close to the camp. This well was closed down and a fresh water supply located, with apparently no further development of the disease.

Inspection of Small Towns and Communities.

From my sanitary survey during the past two years of small towns up to 1,000 population, I found sanitary conditions very poor indeed and in many places sanitary conditions existed which would not be tolerated in our bush camps, sometimes located fifty miles from the railway. This might be said especially concerning public places such as hotels, boarding-houses, and restaurants, and I regret to say worse still at our public and separate schools, where the child receives the first lesson on hygiene and sanitation. I have endeavoured with a considerable amount of success throughout the summer months to have these conditions improved by getting in touch with the different School Boards, and others responsible for the healthfulness of these different institutions. While a start has only been made at this work with very satisfactory results, and the co-operation of the public, there is still a lot to be done and a broad field for this end of Public Health Work. During the year I visited such places as Hornpayne, Foleyet, Gogama, Laforest, Selwood, Coniston, Creighton, Garson, White River, Chapeau, Benny, Biscotasing, Cartier and Chelmsford, sometimes being compelled to visit some of these points two or three times, either by request of the inhabitants or routine inspection.

Re Railway Improvement Temporary Camps.

As stated in my annual report of last year, the sanitary condition of these camps is far from satisfactory from a health point of view. The improvement

in this type of camp life, if any, has been achieved only by a personal visit, and the improvements only of a temporary measure owing to the short life of these camps in one location, as there is no standard definitely laid down which these camps must be operated under. This might also be said of the road construction camps which are very often operated regardless of health laws, while a temporary improvement may be made in one location, on the removal of a camp to a new location, the sanitary conveniences and healthfulness of the camp is often overlooked.

In concluding I would suggest that the Board come to a satisfactory understanding with the different railway authorities, also the Northern Development Branch of Road Construction, and in that way come to a more satisfactory conclusion whereby these camps could be operated under more sanitary conditions and thus afford further protection against disease both for employees and the public.

All of which is respectfully submitted,

DAVID MCKEE,
Provincial Sanitary Inspector.

SANITARY INSPECTOR'S REPORT

North Bay, January 14th, 1924.

To the Provincial Board of Health of Ontario.

Gentlemen:

I beg to submit herewith for your consideration my third annual report, for the year ending December 31st, 1923.

In the first place, I wish to express my sincere regret in bringing to your notice the death of Dr. R. W. Bell, Provincial Medical Inspector, which occurred early this summer. I feel sure that I am voicing the sentiments of the Inspectors that not only have the Board lost a valuable official, but that we have lost a true and faithful friend. In spite of indifferent health and growing weakness during the last three years of service, he never faltered in his fidelity to duty, never lost interest in his work, and as an official of the Board he knew instinctively what pertains to the position of an official of the Board and filled that position with a dignity and efficiency all his own.

Lumbering Statistics.

From the reports of the Crown Timber Agents of South Porcupine and Cochrane, the territory over which my jurisdiction extends gives a return of 12 companies with 112 camps, giving employment to approximately 3,500 men. During the year I have made over 125 camp inspections.

The camps built this year, while not complying with the standard plans "to the last nail," show a marked improvement over those of other years and can reasonably be classed as follows:—Plan A, 1; Plan B, 20; Plan C, 25; Combination Plan, 20.

Mattagami Pulp & Paper Co., Smooth Rock Falls.

The camps of this company are located on the Mattagami River and the east and west branches of the Muskego River. The number of camps in operation is 28. I am very much pleased with the great improvement shown by this company in camp construction. Much more attention has been paid in regard to the locating of camps on suitable sites. Cleanliness and general sanitation are also well maintained and credit must be given to the company, who have endeavoured to comply with the Board's Regulations in so far as what is reasonable and practicable.

Abitibi Power & Paper Co., Iroquois Falls.

The number of camps in operation by this company totals twenty-six, ten of which are located on the company's railroad between Iroquois Falls and Stimson on the Grand Trunk Pacific Railway. Eight are located on the Abitibi River and Edwards Creek, and eight on Abitibi Lake, Lightning River and Rabbit Creek. The camps constructed by this company are far in advance of those built in the past and can comply reasonably with the standard plans. Mr. Schanche, the woods manager, has co-operated with your Inspector in every way, and in conjunction with Dr. R. D. Menzies has spent considerable time and trouble to bring the camps of the woods department up to their present standard.

Following is a list of communicable diseases which occurred in the camps of the company during the year:—

Typhoid.....	11
LaGrippe.....	7
Meningitis.....	1
Conjunctivitis.....	1
No deaths.	
Diseases other than communicable:	
Pleurisy.....	3
Pneumonia.....	4
Furuncle.....	1
Abscess.....	1
Herpes Zoster.....	1
Rheumatism.....	1
Myalgia.....	1
Cystitis.....	1
Tonsillitis.....	1
Quinsy.....	1
Bronchitis.....	1
Diarrhœa.....	1
Enteritis.....	1
No deaths.	

Spruce Falls Pulp & Paper Co., Kapuskasing.

This company is operating six camps, which are located on the Kapuskasing and Woman Rivers.

I am pleased to state that much more attention has been paid to the locating and construction of camps by this company in comparison with last year's operations. All camps are built to comply as closely as possible to Plan B.

New Ontario Colonization Company, Jacksonboro.

The number of camps operated in the woods by this company totals seven. I am very much disappointed with the camps of this company and with one exception they do not come anywhere near the requirements of our standard plans either in construction or location. The chief reason for the indifference shown to the health regulations is the lack of co-operation in this respect by certain officials of the company. At the time of my inspection of the camps it became necessary for me to issue orders to close one of the camps down and also to advise the carrying out of necessary improvements on other of the camps.

Summer Camps and Construction.

During the summer and fall I have made a number of inspections of saw-mills and rossing plants. Speaking generally, I find that there is much improvement in sanitary conditions and the various companies show more inclination to follow out the advice and instruction of your officials in regard to sanitary measures than in former years.

Reconstruction.

The past year in the North Country has been a very busy one. The T. & N.O. extension was still being carried on and it is gratifying to note that only two cases of a communicable disease occurred, viz.: one case of typhoid and one of diphtheria. Owing to the death of the senior member of the company, Mr. Grant Smith, in the latter part of October, and under whose personal supervision this work was carried on, the contractors decided to discontinue this work. The construction of the extension has been taken over by the T. & N.O. Commission and the work will be carried on early in the spring.

The Northern Canada Power Company are constructing a dam and power plant at Des Quince Falls in Quebec. This work is for the purpose of supplying the mines of the Porcupine District with power and necessitates the building of a transmission line from that point to Timmins, a distance of over 125 miles, of which eighty or ninety miles are in Ontario. I have inspected the camps of the company, over which our jurisdiction extends. The camps consist of tents and are provided with board walls and floors, and single bunks. The water supply is from a flowing well. General sanitation of the camps is well looked after. A resident physician is engaged on this work.

I have also inspected the camps of the Sinclair Construction Company, who are the contractors of the branch line of the T & N.O. Railway from Swastika to the Kirkland and Larder Lake Mining areas. The camps are fairly well located and constructed. The supervision of which is ably looked after by the contracting physician, Dr. G. M. Cameron, of Kirkland Lake.

Sir Wm. Arrol & Company, St. Catharines.

Contractors for the Hollinger Mine power construction on the Abitibi River, three miles east of Mileage 43 on the T. & N.O. extension. The camps of this company are built according to our Plans A and B. Strict attention is paid to sanitation, a man and team being specially engaged on this work and makes a daily round of all camps and removes all garbage and other refuse, which is burnt. A physician is resident at the camp. In the fall a case of smallpox was reported to me. Immediate instructions were given to have the patient isolated and all contacts vaccinated and the camp placed under quarantine. My instructions were so effectively carried out that no other case of this disease developed. This I consider a most satisfactory performance.

Northern Ontario Developing Branch.

I have made a number of inspections of the camps of the above Division and regret to report that with very few exceptions I found that the same care and attention is not paid to the locating, construction and sanitation as that of other concerns operating in unorganized districts. On pointing out this fact to the engineer in charge he promised to give more attention to the camps of this department on future work.

Mining Companies.

Throughout the year I have made a number of inspections of the mining companies' camps located in the Porcupine, Kirkland Lake and Gowganda Mining districts. The camps in the mining districts are in most instances well constructed and located, and I see no reason why it should be otherwise. Unlike the pulp wood jobber, whose camp is only in use from five to six months at the most throughout the year and in all probability never occupied again, the mining camp is looked upon more or less as a permanent building. Sanitary measures are reasonably well carried out.

Following is a list of communicable diseases brought to my notice in the unorganized districts:—

	Cases	Deaths
Typhoid Fever.....	45	4
Scarlet Fever.....	7	0
Diphtheria.....	3	0
Smallpox.....	1	0
Chickenpox.....	numerous	0
Whooping Cough.....	"	0
Totals.....	56	4

Out of the total of 45 cases of typhoid fever, 31 cases with 4 deaths occurred in the bush camps and town of the Mattagami Pulp & Paper Company at Smooth Rock Falls. As I am largely responsible for the sanitary conditions and the health of the people in lumber and construction camps and unorganized towns in the District under my supervision, I was greatly concerned in the epidemic in the camps and town of Smooth Rock Falls and made a reinspection of the town and bush camps, but did not find conditions such as to warrant the placing of the epidemic to this source. My attention was then drawn to the camps of the Northern Canada Power Company at Sturgeon Falls and Sandy Falls on the Mattagami River. My inspection eliminated both places as being the cause of the trouble. Following up stream and carefully noting the information which I had previously gathered in the town of Timmins, as to the number of cases, and the location of same, treated in the town from September, 1922, to February, 1923, I found that thirty cases, with eight deaths, had occurred during the above mentioned dates. Practically all the cases were treated in the hospital at Timmins. My attention was then drawn to the activated sludge disposal plant, which I had previously stated on more than one occasion as not functioning properly, I made a further examination of this plant on February 10th, 1923, and collected two samples of the effluent, the bacteriological examination of which is as follows:—Samples 1 and 2, B. Coli present in 1/10,000 c.c. On March 26th, 1923, I made a further examination of the plant and collected two more samples, one from the sewer inlet and one from the sewer outlet. The bacteriological examination showed colon bacilli present in 1/10,000 c.c. in each instance. This I considered to be sufficient proof that the activated sludge disposal plant at Timmins was by no means working satisfactorily, and in view of the fact that practically all the cases of typhoid fever originated from four to twenty miles down the river, below the disposal plant, among the people who were in the habit of using the raw river water for domestic purposes, I am of the opinion that the unsatisfactory working of the plant was the cause of the epidemic. I may say that the first case to come under observation in the town of Smooth Rock Falls occurred on the 6th of January, 1923, and continued intermittently until the end of March, 1923.

During the year I have also visited the following places:

Cochrane.	4 visits
Iroquois Falls	3 “
Smooth Rock Falls.	4 “
Kapuskasing.	4 “
Kirkland Lake	3 “
Timmins.	3 “
Porquois Junction	3 “
Dane.	2 “
Daventry.	1 “
Cobalt.	1 “
Monteith.	1 “

The following is a list of the approximate number of men employed in the various operations under my supervision:—

Bush camps.	3,500
Sawmills and Rossing plants.	700
Mines.	1,000

Railroad construction	1,200
Power construction and transmission line	1,000
	<hr/>
Grand total.	7,400

Contracting Physicians and Reports.

As stated in my annual report for the year 1921, the reports and contracts of this official, according to the regulations, should be forwarded direct to the Board. I again reiterate that this is a mistake. Much better service and the more complete computing of statistics would be obtained if all documents from the physicians and companies in connection with the industries in the unorganized territories were handled in the first instance by the inspectors in their respective districts, as under the present arrangements I find that much time and trouble and unnecessary travelling expenses could be avoided by having these matters dealt with by the inspectors in the first instance, when all data could be noted and first-hand information obtained, thus eliminating the necessity of having to wait for this information from our head office, or to make special trips to obtain this information. This is becoming more and more apparent each season.

There is also another matter on which I wish to touch, and that is the salary of the inspectors. I find that it is impossible, and I am sure that the other inspectors will agree with me, to clothe, maintain and educate a family on the present rate of salary. I trust that the Board will bring this matter to the notice of the powers that be, and use their best endeavours to obtain for us a substantial increase or at least a living allowance.

In conclusion, I wish to tender my sincere thanks to the other members of the staff for their unfailing support and co-operation.

Respectfully submitted,

JOHN RICHARDSON,
Provincial Sanitary Inspector.

SANITARY INSPECTOR'S REPORT FOR 1923 OF DISTRICT No. 8

Sault Ste. Marie, Ont., December 31st, 1923.

To the Provincial Board of Health, Ontario:

Gentlemen,—

I have the honour to submit to you my first annual report as your inspector for District No. 8.

I took charge of this district on June 1st, 1923, after spending three months working out of the North Bay office where I had an opportunity of visiting and inspecting a number of lumber and mining camps in company with Inspector Richardson from Cochrane District. The time I spent in North Bay familiarizing myself with the nature of the work in the field and usual office routine work, I found was of great benefit to me after returning to my own district.

Number of Camps and other Inspections Made.

During the time I have been on your staff I have visited and inspected sixty camps, this is including lumber, mining and construction camps. A large number of these camps were located as far as twenty-five and sixty miles from the railroad, which means a lot of walking and driving, and very often several days to inspect one or more camps.

Along with camp inspections I visited forty-three small towns and villages in connection with reports I received of unsanitary conditions. In a good many places it was necessary to make several visits before any very promising results were obtained.

I also accompanied Dr. Johnston, the district officer of health, on an inspection tour of the dairies supplying milk and cream to the town of Espanola. I visited these dairies again on two different occasions and found that they had made very extensive improvements and on my last visit I was pleased to find all these dairies in good sanitary condition.

Lumber Camps.

During the season I find we have had 27 lumber companies carrying on operations in the district. This number of companies have in connection with these operations 137 camps, which employ 6,604 men. In addition we have 18 sawmills, employing 507 men, as well as the paper mill at Espanola, where 575 men are employed.

Thus it may be seen the total number of men employed by industry in the unorganized portion of my district is 7,686. This total I imagine is greater this year than in former years.

Summer Sawmills.

The sawmills in this district are on the whole in fairly good shape, with the exception of the Bishop Lumber Company's mill at Nesterville on the C.P.R. I spent considerable time in trying to get conditions improved at this mill, but did not meet with much success. This town has lately been incorporated, and I am hoping that the new council will have the sanitary conditions of the town much improved this coming season.

Mining Camps.

The mining industry has not been carried on to any great extent the past season in this district. The greater part of the work going on was small prospecting parties.

Railway Right-of-Way Extra Gangs.

I inspected a few of the extra gang boarding cars the past season, and I found that latrines were not generally provided. I also found that the sleeping quarters were overcrowded and poorly ventilated. I hope to be able to give more time to this class of work next season.

Provincial Government Road Camps.

During the summer I made a number of inspections of these small road camps and gave instructions to the different overseers in regards to the disposal of garbage and night soil. Owing to the small amount of money spent in each place and the temporary nature of the road camp it is difficult to get the same results as we expect in lumber camps. However, I found the district engineer willing to co-operate in bringing the camps up to a better standard.

Communicable Diseases.

During this season in the unorganized territory very little communicable disease was brought to my attention. Three cases of typhoid fever developed at one of the Beck Lumber Company's camps near Collins Inlet. Dr. C. R. McLean, of Collins Inlet, the contract physician, dealt with these cases, checking the disease before a serious epidemic might have developed. No further development of this disease was reported.

Contract Physicians' Reports.

As requested in section 1 of the regulations it is necessary that the contract physician send to the head office at Toronto, a monthly report of sketches of camps, also date of visit. I believe if the sanitary inspector was allowed to receive these reports he would be better able to know exactly what condition the camps were in at the time of the physician's last visit. These reports would then be forwarded on to the Toronto office. There are a great number of camps that the inspector is not able to visit in each season and by having these reports come to the inspector he could arrange to visit where he was most needed.

If the Provincial Board of Health saw fit to have more inspectors in the field, I believe we would get much better results, as it is often necessary for an inspector to make two or more visits to different camps. The result is that a large number of camps have to be overlooked and not much follow-up work done.

In conclusion, I wish to point out that while the number of inspections made may not seem to be large, it should be borne in mind that owing to the long illness and death of the late inspector, Mr. Taylor, the district had been neglected in a sense. There are even yet considerable arrears of work to be caught up with and this I hope to do during the coming year.

I wish to express my sincere thanks to the many contracting physicians with whom I am associated and who carry out suggestions made from time to time with commendable speed.

I am also indebted to the members of our staff of inspectors and the district officer of health for the many hints and valuable advice given me when required and who have made possible the writing of this report.

Respectfully submitted,

REUBEN B. MCCAULEY,
Provincial Sanitary Inspector.

BRANTFORD

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.

(Schedule B, Clause 1, Public Health Act)

Municipality, Brantford. County, Brant.
 Name and address of M.O.H., W. L. Hutton.
 Date, November 15th, 1923.
 Estimated population, 29,148.
 Number of births per annum (exclude "still births"), 672.
 Number of still births, 32.
 Number of infant deaths under one year, 56.
 Infant mortality rate per 1,000 living births, 82.9.
 Number of deaths from all causes, 324.
 Death rate per 1,000 of the population, 11.1.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	23	0
Diphtheria.....	15	0
Typhoid.....	9	0
Measles.....	534	1
Chickenpox.....	141	0
Smallpox.....	67	1
Tuberculosis.....	40	11
Whooping cough.....	31	4
Influenza.....	5	5

Any special outbreak of communicable disease during the year?

Measles and chickenpox were epidemic.
 Considerable smallpox.

Methods adopted to combat the outbreaks?

Quarantine of cases and contacts.
 Six hundred people were vaccinated against smallpox.

MILK SUPPLY

- (a) Source, 114 farms surrounding Brantford.
 (b) Character, exceptionally clean.
 (c) Is supply pasteurized? 86 per cent. is pasteurized. The remainder is from tuberculosis-free cattle under the Dominion Government scheme.

WATER SUPPLY

- (a) Source, Grand River.
 (b) Character, fairly clean.
 (c) How purified? Filtration and chlorination.
 Any special public health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?
 Child welfare clinic conducted through Social Service League.
 Tuberculosis clinic conducted by Board of Health.
 Venereal disease clinic at Brantford General Hospital.
 Any public health education by M.O.H.?
 Public addresses.
 Newspaper articles.
 Did M.O.H. carry out sanitary inspection of schools during the year and make report?
 Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H., \$3,600.
 (b) Expenditure for other Public Health work, \$17,000.
 Total expenditure for public health, \$21,000.
 N.B.—School medical inspection under M.O.H. as chief School Medical Officer.

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

BRANTFORD

BRANTFORD, ONT., Nov. 15th, 1923.

To the Chairman and Members of the Brantford Board of Health.

GENTLEMEN:

In accordance with the Public Health Act, I beg to submit my Annual Report for the year ending October 31st, 1923, upon the Sanitary and Health conditions of the City of Brantford.

We have had a birth rate of twenty-three per thousand, the lowest in four years and the very low death rate of eleven per thousand, which is one point lower than the death rate last year. This low death rate, a generation ago, would have been considered absolutely unattainable. Frederick L. Hoffman has said: "During the early 90's it was an assumed basis of sanitary argument that a crude death-rate of eighteen per thousand of population might safely be relied upon as an index of physical well-being approached by few communities." The most sanguine never contemplated a death rate as low as eleven per thousand of population. Cancer and pneumonia have maintained their prominent position as causes of death. Poisonous alcohol appears as the cause of death in three cases.

DIPHTHERIA

We have passed through a whole twelve months without a single death from diphtheria. As far as my records go, this is the first time in the history of Brantford City that there have been no deaths from diphtheria. This is the result which the Provincial Board of Health aimed at, when in the year 1914 they started the policy of the free distribution of diphtheria antitoxin through the local Boards of Health to qualified physicians. Since that date there has been a progressive decline in diphtheria mortality. In order to successfully and continuously combat diphtheria the co-operation of the public is essential. Any sore throat may be diphtheria, and it is only by the early reporting of the disease and the early administration of anti-toxin that the disease may be controlled and deaths eliminated.

TYPHOID FEVER

For the second consecutive year I beg to report a record of no deaths from typhoid fever and of the nine reported cases of this disease three were definitely known to have been contracted while away from this city. One case was contracted through drinking unpasteurized milk obtained from a private source just outside the city limits where one of the members of the family suffered from typhoid fever. As soon as it was reported that typhoid existed in the family and that milk was being supplied to parties in the city, Dr. Cutcliffe at once investigated. He found that Brantford citizens living near by were going to the above premises to obtain their milk. Dr. Cutcliffe had no power to prevent their obtaining their milk in this manner but through the co-operation of the township M.O.H., Dr. C. D. Chapin, the supply was stopped but unfortunately not in time to prevent infection in the family of one of the consumers. Had the milk from this source been pasteurized this infection would have been prevented.

INFANT MORTALITY

Our infant mortality rate this year is 82.9, that is to say, that for every one thousand births eighty-two died before reaching their first birthday. Last year our infant mortality rate was only sixty-three and it therefore becomes of extreme interest to discover if possible the explanation for the increased number of baby deaths for the year 1923. During the year there were 672 births and fifty-six deaths of children under one year of age.

Analyzing these births and deaths we find that 371 children were born to fathers of Canadian nativity and twenty-three of these infants died. The infant mortality rated in this group is therefore sixty-two.

Two hundred children were born to fathers of English, Irish and Scottish nativity and fifteen of these infants died. The infant mortality rate in this group is therefore seventy-five.

The third largest group is composed of children whose fathers came from Poland, Armenia, Italy, Hungaria, Greece, Malta, Rumania, China, Russia and Austria, *i.e.*, from either Eastern Europe, Southern Europe or Asia and in this group seventy-eight children were born and seventeen of these infants died. The infant mortality rate in this group is therefore 218. In other words one out of every sixteen in group I died; one out of every thirteen in group II died; and one out of every four in group III died.

These figures are illuminating. They undoubtedly indicate that the foreigner in our midst has not become Canadianized, and they point to the obvious necessity for education, if these people are to become real assets to our community.

New Zealand has the lowest infant mortality rate for any country in the world. In 1919 only forty-five babies died for every thousand births, and the rate is still lower now. New Zealand has been described as more English than the English, and undoubtedly one of the reasons for their splendid health record lies in the fact that the Health and Educational authorities have a pure Anglo-Saxon stock to deal with.

Dr. Emmett Holt says the preventable causes of infant mortality may be grouped as follows:—

I. Those but little influenced by treatment.

Malformation.

Extreme feebleness or prematurity (before the seventh month).

Certain accidents during birth.

II. Those capable of considerable reduction, chiefly through proper hygiene, sanitary isolation and medical treatment.

Tuberculosis, syphilis.

Acute respiratory diseases.

Acute contagious diseases—whooping cough, measles, etc.

III. Those capable of a very great reduction through proper feeding and care.

Acute gastro-intestinal diseases.

Marasmus and inanition.

Prematurity, after the seventh month.

Analysing the infant deaths in Brantford during the year we find that thirty-seven or sixty-six per cent. belong to class I; ten or eighteen per cent. belong to class II; and nine or sixteen per cent. belong to class III. The causes of death as given in the Death register record only the last thing which happened to the child. More important than the final cause of death, is the conditions

which led to the final result. If malnutrition and marasmus can be overcome and if ignorance and neglect can be wiped away, then as certain as day follows night the infant mortality rate will fall and the lives of children will be saved. The Department of Public Health's booklet "The care of the Infant and the Young Child" has been sent into every home where a child has been born during the year, but unfortunately where the mother is foreign born and unable to read English no good is accomplished. The Social Service League have continued to conduct their Baby Clinic; their two nurses Mrs. Anguish and Miss Griffiths have paid over four thousand social service visits in follow-up work. Educational work of this nature is essential if diseases and death are to be kept within bounds for it is in the education of the mothers that the hope of the future lies.

SMALLPOX

We have had sixty-seven cases of smallpox during the year. Fifty-six of these cases had never previously been vaccinated. Four were vaccinated during the incubation period of smallpox; that is to say after they had been infected with smallpox and when it was too late to prevent the disease from developing. Five cases had been vaccinated forty or more years ago, but not since, and two had been vaccinated twenty years ago, but not since.

Since becoming Health Officer of Brantford I have seen 606 cases of smallpox and only one of this large number had been successfully vaccinated within ten years, previous to infection with smallpox. This experience has convinced me that any city may remain free from smallpox, provided its citizens do not neglect vaccination and I am certain of this that in the future as in the past smallpox in Brantford will continue to search out those who through prejudice or indifference have neglected vaccination.

SMALLPOX HOSPITAL

This building is located in the grounds of Mount Hope Cemetery. It is a well constructed brick cottage but it is not built as a hospital should be. There is no provision for separating the males from the females and there is only one toilet. The City Council have promised to provide additional toilet facilities but before this is done I would recommend that a committee of the Council and the Board of Health view the building and decide as to its suitability as a smallpox hospital.

DIAGNOSTIC CHEST CLINIC

The outstanding development in the Public Health sphere during the year was the establishment of a Diagnostic Chest Clinic with Dr. J. H. Holbrook, Superintendent of the Mountain Sanatorium, Hamilton, as clinician-in-charge. The clinic was declared open on Friday, September 14th by Ald. W. H. Freeborn, acting in the place of Mayor Fred Billo who was absent on holidays. The establishment of this clinic was unanimously supported by the City Council, the Board of Health and the physicians of the city, and is an outstanding development in the progressive health conserving and life-saving work of a public health nature in Brantford. That the clinic has filled a long needed want is evidenced by the fact that the number of applicants for admission has always exceeded the capacity of the clinic to handle, and that the clinic is serving its rightful purpose is assured by the fact that patients are only admitted by order

of the family physician. We hope and believe that these activities will in the future materially reduce the amount of tuberculosis in Brantford. Already several early cases have been discovered, and through the co-operation of the physicians and nurses follow-up work is being carried on.

THE SWIMMING POOL

One of the outstanding achievements of the 1923 City Council has been the construction of a public swimming pool on the banks of the Grand River. The sanitary conditions of the pool were excellent, thanks to the constant supervision of the responsible Council Committee. Thousands of people availed themselves of the facilities offered. The development of a green algae in the water was overcome by the addition of approximately ten pounds of copper sulphate each week and by the frequent changing of the water, and the water was kept pure by the daily addition of bleaching powder in doses of ten pounds.

A public swimming pool is a good example of an institution designed to improve hygienic conditions which itself may become a hygienic menace. If the water is not changed frequently; if chemicals to check the growth of germs and vegetation are not added regularly, and if dirty or diseased persons are permitted to use the pool, then instead of a hygienic asset we may quickly have a health menace of the first order. I, therefore, beg to recommend that in the future the pool should be completely emptied, at least, once every two weeks and once a week for preference, and that when emptied the tank be scrubbed, flushed, aired and dried before refilling; that a system of continuous dilution of the pool with fresh water be installed; that ten pounds of copper sulphate be added each week and ten pounds of bleaching powder be added each day; that the supervisors be given authority to exclude from the pool any person showing signs of skin diseases, running ears, ulcers, sore eyes or common colds and finally that shower baths for males and females be erected, and that every person using the pool be required to take a shower bath with the liberal use of soap before entering the tank. Without these safeguards I am of the opinion that there will be always an element of danger in the operation of this public utility.

CONCLUSION

In concluding this report I wish to thank the Board of Health, the members of the department, the staff of the School Medical Department, the Social Service nurses, Mr. F. W. Thompson and the physicians of the city for their unflinching help and co-operation during a very busy year.

I remain,

Your obedient servant,

W. L. HUTTON,
Medical Officer of Health.

BRANTFORD, ONT., Oct. 26th, 1923.

To the Chairman and Members of the Brantford Board of Health.

GENTLEMEN:

I herewith submit for your consideration a report on my work during the past year.

The inspection of the milk supply has been carried on under similar lines as last year. A great improvement has been found in the cleanliness of the milk produced during this year which is shown in the comparison between the amount refused at the dairies during the present year and the amount refused during the previous year. Cooling quickly and to the proper temperature is improving, although a small percentage of the producers require to be more particular in this respect. Six hundred and twelve gallons of dirty milk has been refused as against eleven hundred and ninety-two gallons last year. Nine hundred and fifty-eight gallons not properly cooled have been refused. The total last year was ten hundred and fifty-six gallons.

The licenses of three producers have been suspended on account of low butter fat content and the license of one producer for want of cleanliness and proper cooling.

The total number of vendors of milk and cream is nine. One of these retails cream only and two live outside the city limits and retail their own production.

The number of producers total one hundred, and one thousand three hundred and thirty-eight cows produce, approximately, nine thousand two hundred and ninety-six quarts, daily, for sale in the city.

Six hundred and ninety-two tests for butter fat and regular tests for sediment and temperature have been made during the year.

The premises of the producers have been well kept during the year. General cleaning and whitewashing the stables being done more frequently than formerly. With the exceptions of two or three premises very little fault can be found. The premises of these two or three are being repaired and put in better sanitary condition.

BUTCHER SHOPS AND RESTAURANTS

Restaurants have been well kept and two that were carried on in buildings that were hard to keep sanitary have given up business during the year. The remainder are in premises in good repair and well lighted.

Butcher shops are also well kept and premises in good repair.

Inspections at irregular intervals have been made of restaurants and butcher shops during the year.

Fourteen hundred and ninety-two pounds of beef, five hundred and ninety-six pounds of pork, one hundred and four pounds of mutton, and ninety-six pounds of veal have been condemned and destroyed, unfit for human consumption. Sixteen rolls of butter, short weight, were confiscated and given to the City Relief Officer for disposal. Eleven dogs that have bitten persons have been inspected and quarantined when necessary.

I remain,

Your obedient servant,

A. B. CUTCLIFFE, V.S.,

Inspector.

BRANTFORD, ONT., Nov. 7th, 1923.

To the Medical Officer of Health of the City of Brantford.

DEAR SIR:—

I beg to report the facts of work carried on against venereal disease in Brantford during the past year:

Patients continuing treatment from last year.....	67
Patients referred to clinic by doctors.....	16
Patients referred to clinic through hospital wards.....	4
Patients who came to clinic of their own accord.....	13
Patients referred by Police Department.....	1
Patients referred by the Department of Health.....	27
Total.....	128
Patients dismissed as cured.....	10
Patients dismissed for treatment elsewhere.....	24
Patients left town.....	31
Patients unable to locate.....	15
Total number of patients taking treatment Nov. 1st, 1923....	48
Total.....	128
Source of infection placed under treatment.....	32
Number of patients referred to private doctors.....	35
Total number of hours outdoor clinic open.....	261
Average attendance at each clinic.....	12
Calls made by Social Service nurse.....	725
One child taken to the Government School for Feeble-minded at Orillia.	

Total number of treatments at the out-door clinic during the past year:

Male syphilis.....	252
Male syphilis children.....	80
Female syphilis.....	339
Female syphilis children.....	42
Male gonorrhoea.....	205
Female gonorrhoea.....	510
Female gonorrhoea children.....	190
Total.....	1,618

Total number of days patients in General Hospital wards for treatment:

Male syphilis.....	94
Female syphilis.....	53
Male syphilis children.....	48
Male gonorrhoea.....	191
Female gonorrhoea.....	115
Ophthalmia neonatorum.....	72
Total.....	573 days

The Out-door Clinic was closed for two weeks during the year while the General Hospital was under quarantine. With the assistance of a few interested friends and the help of the Dorcas Society, we have been able to assist a few who were out of work and needed clothes.

The constant changing of boarding and rooming houses at times makes the visiting of patients in their homes difficult as they are frequently very hard to find and keep under treatment.

Doctors attending the clinic regularly three months at a time are E. R. Secord, M.D., L. Coates, M.D., R. W. Digby, M.D. and D. A. Morrison, M.D. These doctors not only give of their time, two evenings and one afternoon a

week, but care for the patients who are sent to the hospital wards from the clinic, and at all hours have helped me with the work answering many calls in their offices and by telephone.

Faithfully yours,

FERN L. KEEFER,
Social Service Nurse,
Department of Public Health.

VITAL STATISTICS YEAR ENDING OCTOBER 31st, 1923
Population (Assessor's figures), 29,148

	1923
Births.....	672
Birth rate.....	23
Deaths.....	324
Death rate.....	11.1
Marriages.....	308
Infant mortality rate.....	82.9

COMPARATIVE RATES

	1918	1919	1920	1921	1922	1923
Births.....	24	20.36	25.31	25.63	26	23
Deaths.....	27.7	14.5	12.78	10.42	12.28	11.1
Infant mortality..	128.6	106.1	90.4	64.67	63.85	82.9

- NOTES.—1. Stillbirths were excluded in compiling the above figures.
2. Two deaths that took place outside of the Municipality of Brantford were excluded.
3. No reductions were made of deaths that took place in the Brantford General Hospital where homes were outside of the city of Brantford.

DEATHS AT VARIOUS AGE PERIODS

	1922	1923
Still-born.....	37	32
Under 1 year.....	50	56
One year and over and under 5 years.....	13	13
Five years and over and under 15 years.....	14	8
Fifteen years and over and under 25 years.....	14	10
Twenty-five years and over and under 45 years.....	43	41
Forty-five years and over and under 65 years.....	85	90
Sixty-five years and over.....	151	106
Age not reported.....	0	0
Totals.....	370	324

DEATHS GROUPED ACCORDING TO INTERNATIONAL LIST OF CAUSES

	1922	1923
Group 1—General diseases.....	79	76
2—Nervous system, etc.....	16	10
3—Circulatory system.....	71	64
4—Respiratory system.....	51	43
5—Digestive system.....	31	33
6—Genito-urinary system.....	18	14
7—Puerperal state.....	5	3
8—Skin and cellular.....	3	0
9—Bones, etc.....	1	3
10—Malformation.....	1	5
11—Early infancy.....	31	18
12—Old age.....	34	31
13—External causes.....	26	13
14—111 defined.....	3	11
Totals.....	370	324

AMONG THE SPECIFIC CAUSES OF DEATH NOT REPORTABLE ARE THE FOLLOWING

	1922	1923		1922	1923
Cancer.....	29	23	Old age.....	34	31
Apoplexy.....	7	5	Pneumonia.....	39	29
Heart affections.....	30	44	Bronchitis.....	3	4
Nephritis.....	9	8	Premature births.....	5	13
			External causes.....	26	13

STATISTICS OF CONTAGIOUS DISEASES—CASES REPORTED YEAR ENDING OCTOBER 31ST, 1923

	1920	1921	1922	1923
Scarlet fever.....	52	114	10	23
Diphtheria.....	103	65	90	15
Typhoid.....	19	5	8	9
Measles.....	249	12	3	534
Chickenpox.....	29	134	50	141
Smallpox.....	73	214	..	67
Tuberculosis.....	12	32	47	40
Whooping cough.....	51	28	8	31
Mumps.....	3	189	3	..
Cerebro spinal meningitis.....	1	1	1	1
Influenza.....	366	..	..	5
Venereal diseases.....	48	100	167	128
Infantile paralysis.....	..	..	17	..
	1,006	894	404	994

DEATHS FROM REPORTABLE DISEASES

	1919	1920	1921	1922	1923
Diphtheria.....	8	10	5	6	..
Typhoid fever.....	1	1	1	..	..
Measles.....	..	3	1	..	1
Whooping cough.....	2	3	4	..	4
Meningitis.....	4	4	5	2	1
Tuberculosis.....	26	18	19	6	11
Infant paralysis.....	..	..	..	1	..
Influenza.....	89	34	..	8	5
	130	73	35	23	22

RECORD OF WORK ACCOMPLISHED

Water samples examined—58, as follows:—

City water o.k.....	50
Private wells o.k.....	5
Private wells polluted.....	3
Milk samples examined.....	692
Diphtheria swab examined.....	212
Results positive.....	12
Results negative.....	200
T.B. slides examined.....	20
Results positive.....	12
Results negative.....	8
V.D.G. slides examined.....	42
Results positive.....	22
Results negative.....	20
Urine slides examined.....	20
Urine for albumen.....	12
Vaccinations, office.....	600
Schick test performed.....	20
Positive for diphtheria.....	12
Negative for diphtheria.....	8
Toxin-antitoxin administered.....	10

HOUSES PLACARDED, FUMIGATED AND RELEASED

23 for scarlet fever.
 15 " diphtheria.
 141 " chickenpox.
 534 " measles.

Exclusion notices and release certifications issued to cover 600 school children.

Notices to abate nuisances (all complied with).....	41
Notices to make sewer connection.....	40
Complied with.....	35
Number of earth closets inspected.....	462
Earth closets reduced during year 1922.....	111
All laundries periodically inspected—conditions normal.	
All stables periodically inspected—conditions normal.	
All alleyways and lanes frequently inspected—in good condition.	
Prosecutions, 4; convictions, 4.	

As usual many hundred complaints have been received and the necessary investigations and adjustments made. These complaints come by phone, personal interview and by letter.

Free bacteriological supplies in the nature of serums, anti-toxins, and the various test outfits have been kept on hand and given to the medical profession and hospital on request.

Seven houses were closed as unfit for human habitation. Three of these were finally demolished. The others were subsequently repaired or remain closed.

CARLETON PLACE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1924

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Carleton Place. County, Lanark.
Name and address of M.O.H., D. H. McIntosh.
Date, December 1st, 1923.
Estimated population, 4,323.
Number of births per annum (exclude "still-births"), 81.
Number of still-births, 4.
Number of infant deaths under one year, 2.
Infant mortality rate per 1,000 living births, 24.7.
Number of deaths from all causes, 46.
Death rate per 1,000 of the population, 10.64.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	7	None
Diphtheria.....	13	None
Typhoid fever.....	1	None
Measles.....	103	None
Chickenpox.....	1	None
Tuberculosis.....	2	Two
Venereal disease.....	6	

Any special outbreak of communicable disease during the year?
Measles.

Methods adopted to combat the outbreaks?
Usual method.

MILK SUPPLY

- (a) Source, licensed dairies.
(b) Character, clean.
(c) Is supply pasteurized? No.

WATER SUPPLY

- (a) Source, tap and spring.
(b) Character, varies.
(c) How purified— Not.
- Any special Public Health work carried on, such as Child Welfare?
No.
- Ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?
None.
- Any public health education by M.O.H.?
Attempting to enforce Venereal Act.
- Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H., \$300 salary.
(b) Expenditure for other public health work, \$40.
Total expenditure for public health, \$387.

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

VENEREAL DISEASES

I regret to be compelled to report that venereal disease has been on the increase, judging from the number reported; four summonses were issued

under Venereal Disease Act, reports showing that three out of four were suffering from venereal disease, and I am compelled to believe that cases are not reported. Should information be received to this effect I will have no hesitation in putting Act into force.

Efforts are being made to organize a Social Service Council, and I trust this may be accomplished, and a strong effort made to educate the public.

RE TUBERCULOSIS

Two cases were reported and two deaths recorded. If cases were reported, early measures might be taken to secure safety of household. Much would be accomplished to retard the spread of this dread disease.

MILK

Four licensed dealers are supplying milk. All local dairies have been inspected and with one exception, conditions were found satisfactory, and after notice of cancellation of license the owner made such a decided improvement that the license was continued. Samples of milk, as to cleanliness and butter fats for one week, were shown in window for information of the public.

SLAUGHTER HOUSES

Were inspected and after some slight improvement were found fairly satisfactory.

The butcher shops were kept clean and meat handled in fairly sanitary manner.

Some measure should be enacted to examine meat sold by pedlars in town and that it is handled in a sanitary manner.

TYPHOID FEVER

Only one case was reported this year. This was a decided change from last year.

MEASLES

An epidemic of measles, 103 cases being reported, originated from pupils attending high school from municipalities where measles were prevalent, and were not discovered until many cases had developed symptoms.

WATER SUPPLY

Samples of tap and well water were sent for examination and reported to Public Utilities, and I again strongly recommend that a chlorinating system be installed.

The Provincial Board of Health sent inspectors to collect samples from town wells and to make a sanitary survey of the town.

SCHOOLS

These were visited and report of same with recommendations sent to School Board, to receive the usual fate—"Placed on File". When will the health of our children receive the attention it should from School Boards, Sanitary Schools with proper ventilation and lighting. The health of our future citizens should be considered above money. When?

PUBLIC HEALTH NURSES

Again I would strongly urge the necessity of engaging a Public Health Nurse. What service will they render? Let me quote the following: The Public Health Nurses are pre-eminently the educators in any department of health. Their entire chain of activities is largely of an educative character in the instruction they give to the expectant mother, to the mother as regards the care of the new born infant; to the parents in regard to the care of their children before they enter school, to the homes in which tuberculosis exists. As regards the ways and means of preventing the spread of this disease and to afford the individual affected with the best possible opportunity for recovery. The instruction to the children as they come in contact with them in the public schools, and in their follow up work in the house. The nurses entering dozens of homes each week, convey valuable messages along these lines of hygiene and preventive medicine.

Thousands of dollars are spent in this town each year to educate the minds. The Board of Health, outside of paying salary of M.O.H., practically spend nothing to educate the public regarding health. Why? Cannot we employ a Public Health Nurse?

Yours respectfully,

D. H. McINTOSH,
Medical Officer of Health.

CHARLOTTEVILLE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually (Schedule B, Clause 1, Public Health Act)

- Municipality, Charlotteville. County, Norfolk.
- Name and address of M.O.H., E. W. Zumstein, Delhi.
- Date, November 15th, 1923.
- Estimated population, 2,500.
- Number of births per annum (exclude "still-births"), 41.
- Number of stillbirths, 2.
- Number of infant deaths under one year, 4.
- Infant mortality per 1,000 living births, 146.34.
- Number of deaths from all causes, 47.
- Death rate per 1,000 of the population, 18.8.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Diphtheria.....	6	0
Typhoid.....	6	1
Syphilis..... reported	2	0
Measles..... Uncertain		0
and many others not reported—possibly of minor nature.		

Any special outbreak of communicable disease during the year?

Most interesting was typhoid in the village of Normandale. This is second or third outbreak within past five years in that village.

Methods adopted to combat the outbreaks?

Schools closed, infected people isolated and placarded, premises disinfected after disease.

MILK SUPPLY

- (a) Source—None.
- (b) Character—.
- (c) Is supply pasteurized?—

WATER SUPPLY

- (a) Source—None.
- (b) Character—.
- (c) How purified?—

Any special Public Health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Unfortunately, the M.O.H. was unable to carry on any special Public Health work the other than Public Health education to the school children.

Any Public Health education by M.O.H.?

Yes. Every school was given one-half hour's talk on "How disease travels."

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Fees of M.O.H.....	\$340 00
(b) Expenditure for other Public Health work.....	47 00

Total expenditure for Public Health..... \$387 00

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Appended to this report will be found a brief outline of the activities of the M.O.H. and the local Board of Health.

E. W. ZUMSTEIN, M.D.

DELHI

DELHI, ONT., Nov. 14th, 1923.

*To the Board of Health,
Township of Charlotteville, Vittoria, Ont.*

GENTLEMEN:

REPORT FROM DEC. 15th, 1922 TO NOV. 14th, 1923.

During the current year all the public schools of the municipality were visited by the Medical Health Officer and in addition to the ordinary medical inspection on the premises, an educational feature was carried out.

This was in the nature of a lecture in simple language to the children on "How Diseases Travels". It has long been the opinion of the M.O.H. that a golden opportunity was being allowed to slip away when children of the public school age do not receive adequate public health instruction. The lectures included descriptions of the spread of typhoid, diphtheria, scarlet fever, small-pox, scabies, influenza and other diseases. The importance of fingers, food and flies as carriers was emphasized. The ease with which streams might bear infection was noted, and the old idea of air-borne infections was discouraged and it is now quite generally discarded by the foremost workers in Public Health lines. An attempt was made to encourage the co-operation of the children in matters such as placarding, vaccination, and reporting contagious diseases so that they might be more in sympathy with these unpopular proceedings than some of the past generation. The illustration of fire, the comparison of disease to fire was used to draw out the truths: first, prevention is better than cure; secondly, a little disease like a little fire, if neglected on the start, may cause untold damage. Public Health work in the Panama zone against yellow fever and malaria, as well as other brilliant triumphs along this line, were pointed out. This plan has been carried out for five years with very gratifying results. The present generations will know more about the prevention of disease than did their fathers and mothers.

No ante-natal or baby clinics were held. No lectures on venereal disease were given. No public lectures on public health were given by the M.O.H.

Dr. McClenahan, Provincial Medical Officer of Health, visited the municipality once during the year. Four meetings of the local Board of Health were held. During the year, outside of routine work three incipient epidemics were called to our attention; first, an outbreak of diphtheria, S.S. No. 7, with one death—Master Kohl died very suddenly under the care of Drs. McGilvery and Bowlby. The Medical Officer of Health inspected and disinfected the premises of the school-house and thoroughly fumigated same on January 10th. On January 19th, he swabbed the throats of the pupils in attendance, and on January 21st, swabbed the throats of those not present on the 19th. Two diphtheria carriers were located. In the meantime, two other families, Kuchar and White, were stricken with diphtheria. These yielded readily to treatment and no fatalities occurred, and the epidemic was at an end.

Venereal disease was reported by Dr. Boyd among certain Polish residents on the 9th Concession. These either took treatment or left the municipality.

Typhoid again made its appearance in Normandale with at least six cases, and one fatality. The Board held a meeting and energetic measures were taken to restrict the extent of the outbreak with satisfactory results.

I was requested on several occasions by the Provincial Board to make blood examinations of the relatives of children dying of syphilis. This was done and the expense charged to the municipality, according to the Public Health regulations. It is the hope of the Medical Officer of Health that in spite of the scattered nature of this municipality that the educational campaign may be extended to include Public Health lectures, pre-natal and baby clinics, venereal disease clinics, and many others, as these undoubtedly are the order of the day.

The Medical Officer of Health wishes to express his thanks for the co-operation extended to him by the other members of the Board, and to the energetic work of Mr. R. W. McCall, who has assisted the Board in every possible way in carrying out the work of the local Board of Health.

E. W. ZUMSTEIN,

Medical Officer of Health.

DERBY

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Derby. County, Grey.
Name and address of M.O.H., Dr. A. B. Rutherford, Owen Sound.
Date, October 15th, 1923.
Estimated population, 1,530.
Number of births per annum (exclude "stillbirths"), 31
Number of stillbirths, 2.
Number of infant deaths under one year, 4.
Infant mortality rate per 1,000 living births, 130.
Number of deaths from all causes, 18.
Death rate per 1,000 of the population, 12.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Measles.....	13	None
Scarlet fever.....	1	None

Any special outbreak of communicable disease during the year?
Measles in the spring.

Methods adopted to combat the outbreaks?
Isolation and quarantine.

MILK SUPPLY

- (a) Source, all home supply.
(b) Character, strictly a rural Municipality.
(c) Is supply pasteurized?

WATER SUPPLY

- (a) Source, all wells.
(b) Character—
(c) How purified?—

Any special Public Health work carried on, such as child welfare?
No.

Ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?
No.

Any Public Health education by M.O.H.?
Talks in schools during the annual inspection.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$125 00
(b) Expenditure for other Public Health work.....	175 50
Total expenditure for Public Health.....	300 50

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

After spring inspection of the schools and reports sent to School Boards with recommendations, a second inspection is made in the fall by the sanitary inspector. The Board deals with this report and makes further effort if necessary to have requests carried out by School Boards.

A. B. RUTHERFORD, M.O.H.

FORT WILLIAM

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B. Clause 1, Public Health Act)

Municipality, Fort William. District, Thunder Bay.
Name and address of M.O.H., R. M. Boyd, M.D., 178 East Amelia Street.
Date, November 1st.
Estimated population, 21,000.
Number of births per annum (exclude "still-births"), 777.
Number of still-births, 32.
Number of infant deaths under one year, 59.
Infant mortality rate per 1,000 living births, 75.93.
Number of deaths from all causes: Resident in Fort William, 182; non-resident, 19.
Death rate per 1,000 of the population of all deaths registered, 9.57.
Death rate, excluding non-residents and out-of-town deaths, 8.66.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Chickenpox.....	51	0
Diphtheria.....	46	2
Erysipelas.....	9	0
Measles.....	133	0
Mumps.....	2	0
Pneumonia.....	71	13
Puerperal septicaemia.....	1	1
Rubella.....	35	0
Scarlet fever.....	9	0
Typhoid fever.....	27	1
Tuberculosis.....	19	7
Whooping cough.....	5	0

Any special outbreak of communicable disease during the year?
No.

Methods adopted to combat the outbreaks?

MILK SUPPLY

- (a) Source, Districts of Slate River and Murillo.
(b) Character, good.
(c) Is supply pasteurized? Over 50 per cent.

WATER SUPPLY

- (a) Source, Loch Lomond.
(b) Character, good.
(c) How purified? No purification necessary.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Child Welfare, yes.
Ante-natal clinic, yes.
V.D. clinic, yes.
Tuberculosis clinic, no.

Any Public Health education by M.O.H.?

Yes.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$3,000 00
(b) Expenditure for other Public Health work.....	9,209 88

Total expenditure for Public Health..... \$12,209 88

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Fort William, Ont., November 1st, 1923.

*To the Chairman and Members of the Local Board of Health,
Fort William, Ont.*

GENTLEMEN:

I have the honour of presenting to you for your consideration and approval my first Annual Report of the Department of Health of your city.

I took charge of your department on October 15th, 1922, and owing to the high standard of efficiency which had been obtained by my predecessor, the late Dr. Oliver, particularly in respect to the mechanism, so to speak, of the machinery of the department, I found no difficulty in keeping the different parts in unison all working towards the one end—the keeping under control of all communicable diseases, the betterment of sanitary conditions and the education of your people in matters pertaining to the general health of the community. I am pleased to be able to state that the machinery has not broken down during the past twelve months, though at times it needed, as all good machinery does, some oiling and cleaning. Absolute co-ordination exists at present not only among the different parts of your department, but also in its relationship to the other departments of your municipal government. I wish to mention that since my tenure of office I have received the greatest assistance in the performance of my duties not only from the Provincial Board of Health directly from Toronto, but also from its efficient staff, Dr. N. O. Thomas and Dr. Sparks their local representatives.

Early last winter a survey of the milk production of the city was made and in due course completed. We found that at that time some 1,052 gallons of milk were being consumed daily, of which some 623 gallons were pasteurized or supposed to be pasteurized. Steps were taken at once to see that the necessary recording thermometers were installed by the firms pasteurizing, and since then a daily chart is obtained from the different plants operating.

In connection with the milk supply I wish to call your attention to the facts given by your sanitary inspector in his report. Owing to the intensive campaign carried on, satisfactory results were obtained and the dairy barns have been limewashed, the cattle kept cleaner and the butter-fat increased from 3.22% to 3.56% during the year. The dairy firms have been advised to buy milk on a butter-fat basis. In October, your department was successful in having the new milk by-law passed by the council of the municipality and later the same was ratified by the Department of Agriculture and the pasteurization clause in particular approved of by the Provincial Board of Health. This by-law calls for either (a) raw milk being from tuberculin tested cattle or (b) milk being scientifically pasteurized.

It also calls for the testing of privately owned cattle within the limits of your municipality. I consider this by-law one of the most important measures passed by your municipality in recent years, ensuring as it does the positive elimination of tubercular milk, the consuming of which is so detrimental to the welfare and health of our infantile life, especially those who may be ill nourished or not having good resisting powers.

We had the pleasure of having Dr. Monahan, Veterinary Inspector of the Department of Agriculture of Ottawa and also Miss Campbell, Milk Expert of Ottawa with us during the season, who rendered valuable aid to your executive officers in their work.

Toxin-Antitoxin and its Prevention of Diphtheria:

Early in January I gave an address to the Local Medical Society on the above subject, calling their attention to its efficacy and asking for their co-operation.

Early in the year all the children in the Children's Shelter were protected against diphtheria. During the three series of inoculations there was no local or constitutional reactions and no school time lost. I am pleased to say that not one child has ever developed a sore throat since. I have lately been granted permission to protect all the children of our other charitable institution in this city, the St. Joseph's Orphanage, and this will be done at once. I hope to see the time when all our children will be so protected. Dr. Osler once stated that the intelligence of a community can well be judged by the percentage of typhoid it has in its midst and I will state to your Board that the intelligence can now well be judged by the percentage of typhoid, smallpox and diphtheria it has in its midst, because we have the absolute means without doubt or suspicion, while causing little or no constitutional disturbance, of preventing these three diseases. Diphtheria should not exist any more than smallpox or typhoid, and it only remains for the education of the public to the efficacy of the use of toxin-antitoxin, when they will demand that their children be protected from this horrible disease.

During the spring months a survey was made, through the kindness of the Board of Education, of the cases of hyper-thyroidism in the schools and some 950 cases were reported; added to this some 200 cases in separate schools making a total of 1,150 cases existing within your public schools. Definite steps are being taken to have the school children placed under the influence of idostarine, a preparation of iodine (tartric acid diiodide), which will prevent the hypertrophy of the thyroid gland. Its efficacy is undoubted and has proven itself repeatedly, one instance being in Switzerland where the percentage of goitre in school children was as high as 97, and where it has been reduced to 27.5 within three years. I strongly advocate its use and the results obtained would a hundred times compensate any financial outlay.

The V.D. Clinic has been doing excellent work throughout the year under the guidance of Dr. W. P. Hogarth, whose standing is unquestioned in this work. The city is indeed to be congratulated not only in having such a clinic, but in having a man of Dr. Hogarth's ability at its command. In May, we had a special visit from Mrs. E. Pankhurst and Dr. Gordon Bates, both of whom gave excellent addresses on the Social Evil, and as a result, a committee of citizens was appointed to work in accordance with their views.

I am pleased to report to your Board that no diseases were traced to any contamination at any of your public parks. Chippewa Park, however, must be safeguarded continually and steps taken to see that sanitary measures be enforced in every respect.

I attended the M.O.H. Convention in May in Toronto and received many benefits from the different papers which were presented, those of special interest being those on milk, Toxin-Antitoxin, and Insulin in Diabetes.

The sanitary condition of the east end coal dock section received much attention in the early summer, and until such time as it is possible to install a pumping sewer system, I would recommend that a special sanitary officer be employed every year for two or three months, devoting his entire time to the inspection of the privies, etc. However, we succeeded in having many made fly proof this year. Our infantile death rate this year is so much lower in this section that I may safely say that it is partly due to improvements in this district.

During the year many addresses were given to various organizations amongst which were the Ministerial Association, Women's Institute, Kiwanis Club and others, all pertaining to matters of public interest in health work.

Your death rate per thousand in your municipality is 8.66 which is the lowest in the city records. Your infantile death rate is 75.93 per thousand living births, last year being 89.6, a decrease of nearly 14%. I wish to call your attention to the gradual elimination of the gastro-enteritis mortality rate in the past few years; in 1920 there were forty-two deaths from this cause; in 1921, thirteen; 1922, twelve and 1923, four. This is due to the gradual absorption of the necessary knowledge imparted in matters pertaining to the care of infants by your public health nurse, and also to the cool summer months as well as to improved sanitary conditions. These are the lowest records in your city.

In 1913-14, one hundred and three plumbing installations were made; in 1922-1923, fifty-five, there is no doubt that there are many residents of your city who could afford to put in such installations and these should be put in, especially in those streets where there are already sewers, and the owners of the property had petitioned to have the sewers placed in the said streets.

The abattoir, which is under your department's jurisdiction, has been greatly improved during the year, a refrigerator plant having been installed and other sanitary measures adopted, making it a fully modern plant.

Your water supply has been safely guarded throughout the year, many samples being taken directly by Dr. Thomas, the results being to show that Loch Lomond water cannot be excelled. With regard to the installation of the double check valve system, which system is necessary by order in council of Provincial Government, connecting our municipal and other waters, to be used in cases of fire emergency, I am pleased to say that all connections with the exception of one have been made and inspected and found satisfactory. I have assurance that the last one will be installed this month.

During the year an inspection was made of all the public buildings, schools, hospitals, charitable institutions, etc., and they were all found to be in a good sanitary condition. In connection with the Children's Shelter, however, I found it overcrowded and the Board of Directors were notified of this condition. Steps were taken to see that this condition was rectified, but up to the present no definite results have been obtained.

Child welfare work has been excellently done under the auspices of the Wesley Institute who have confined their attention principally to that part of the city where it was most needed, namely, in what is known as the Coal Dock Section. This institution is deserving of the highest commendation as is also such bodies as the Women's Institute and Willing Workers, the value of whose work is not sufficiently recognized by the general public. I have made fifty indigent calls and ten consultations during the year.

During three months our Isolation Hospital was empty of patients and the nursing staff was at that time placed on the general staff doing work where it was mostly needed, however, it has been occupied ever since. Your Isolation Hospital maintenance account is \$5,550 yearly, a big overhead expense and I have advocated the placing of it upon the McKellar Hospital site, but this plan does not seem feasible at the present time, though I am hoping to see some plan adopted whereby this large expenditure can be reduced materially and the efficiency of the service not lowered.

It will be seen by the 1921-1922 Annual Report of the Provincial Board of Health just received that the eight cities of Ontario with a full time service, average in public health expenditure \$1.25 per head of the population. For the same year the per capita cost was 68.9 cents in Fort William.

The per capita cost for the City of Fort William for the year just ended was 58.13 cents, which taking into consideration with the amount of work done and the service rendered is very low, this of course includes the maintenance of the Isolation Hospital.

The introduction of milk into your schools by the I.O.D.E. is a step in the right direction provided that the system is efficiently carried out from a sanitary point of view and is properly supervised. The ingestion of poor milk or impure contaminated milk to an ill-nourished child would defeat the object sought and would only be detrimental to the child whose resisting power is already lowered. I am heartily in accord with the aims and objectives sought, as no stone should be left unturned in seeking to develop and to maintain that physique of our rising generation which is characteristic generally speaking of our young national life.

In conclusion, I wish to take this opportunity of publicly expressing my appreciation of the interest shown, and the support given by the chairman and members of your Board. I sincerely hope that such interest and support shall in the future be as great as it was during the past twelve months.

SMALLPOX

There were no cases of this disease reported. Statistics follow:

Year	Cases	Deaths
1919.....	0	0
1920.....	24	0
1921.....	10	0
1922.....	6	0
1923.....	0	0

SCARLET FEVER

There were nine cases of this disease reported as compared to 105 cases last year.

Cases	M.	F.	Under 5 years	5-9 years	10-14 years
9.....	3	6	3	5	1

DIPHTHERIA

There were forty-six cases of diphtheria reported with two deaths.

Year	Cases	Deaths
1919.....	22	1
1920.....	22	1
1921.....	54	2
1922.....	23	1
1923.....	46	2

MEASLES

There were 133 cases of measles reported.

1919.....	0	0
1920.....	384	5
1921.....	662	7
1922.....	0	0
1923.....	133	0

WHOOPING COUGH

There were five cases of this disease reported as compared to twenty-one cases last year with one death.

Year	Cases	Deaths
1919.....	0	0
1920.....	60	3
1921.....	104	3
1922.....	21	1
1923.....	5	0

ERYSIPELAS

There were nine cases of this disease reported.

1919.....	1	0
1920.....	19	0
1921.....	16	0
1922.....	7	0
1923.....	9	0

CHICKENPOX

1920.....	72	0
1921.....	193	0
1922.....	86	0
1923.....	51	0

MUMPS

1920.....	0	0
1921.....	5	0
1922.....	28	0
1923.....	2	0

PULMONARY TUBERCULOSIS

There were nineteen cases of tuberculosis, of which four cases came from other municipalities There were seven deaths.

There were no cases of influenza reported. There were three deaths.

There were no cases of poliomyelitis reported.

TYPHOID FEVER

There were twenty-seven cases of this disease reported with one death. The source of these cases were:

Cases	Cases
Schreiber..... 3	S.S. Assiniboia..... 1
Port Arthur..... 1	S.S. Harmonic..... 1
Nurses' Home..... 2	S.S. Canadian Engineer..... 2
Cochrane..... 1	S.S. Canadian Sailor..... 2
Winnipeg..... 1	S.S. Berryton..... 4
S.S. Devereux..... 1	Slate River..... 1

The source of infection were traced in the other seven cases. The case which came from Winnipeg died.

CEREBROSPINAL MENINGITIS

There were no cases of this disease reported.

PRIMARY PNEUMONIA

There were seventy-one cases of this disease reported with thirteen deaths.

PUERPERAL SEPTICAEMIA

There was one case of this disease reported, which proved fatal.

Fort William, Ont, November 1st, 1923.

*Dr. R. M. Boyd, Medical Health Officer,
Fort William, Ont.*

DEAR DOCTOR:

I beg to report as follows on the work of the venereal clinic for the year. As you know the clinic receives cases not only from Fort William but the whole district.

New patients admitted November 1st, 1922 to October 31st, 1923:

Male.....	27
Female.....	14
Boy.....	1
Girl.....	0
	42

Syphilis.....	11
Gonorrhoea.....	16
Double infection.....	5
Non-venereal.....	10
	42

Resident in:

Fort William.....	7
Port Arthur.....	25
District.....	9
Indian.....	1
	42

Disease contracted in :

Port Arthur.....	13
Winnipeg.....	5
Montreal.....	2
Hurkett.....	1
Port Colborne.....	1
Sudbury.....	1
Nipigon.....	1
Kabeka Falls.....	1
Ottawa.....	1
North Bay.....	1
Duluth.....	1
Boston.....	1
Italy.....	1
Russia.....	2
Fort William.....	0
	32

During the year we have discharged:

For treatment elsewhere.....	14
Cured.....	6
Died.....	1
Lost.....	9

Patients who have been discharged as lost are those who have failed to continue treatment until such time as they can be pronounced cured. The Social Service nurse has been unable to locate them and their names have been reported to the respective medical officers of health.

During the year we have given the following treatments:

For syphilis.....	647
For gonorrhoea.....	310
Hospital in patient days.....	492
Treatments of phenarsenamine.....	325

On roll October 31st, 1923—

Syphilis—Male.....	32
Female.....	27
Boy.....	2
Girl.....	1
Gonorrhoea—Male.....	4
Female.....	5
Double infection—Male.....	1

Of the patients on the roll for syphilis, twenty-seven have negative Wassermanns, and are being held for observation and repeated Wassermanns before being discharged as cured.

We have found it a little easier to keep infected persons coming regular for treatment. Our greatest difficulty is with the transient male patient who comes regular until comfortable and then disappears. The Indians are also very irregular in reporting.

WALTER P. HOGARTH.

ISOLATION HOSPITAL REPORT.

Patients admitted:

Scarlet fever.....	2
Diphtheria.....	14
Measles.....	1
Rubella.....	1
Total.....	18
Hospital days.....	426

One case admitted to the Isolation Hospital died, the cause of death being diphtheria.

FINANCIAL STATEMENT

Debit:

Salaries of staff.....	\$3,516 00
Maintenance account.....	2,035 66
Total.....	\$5,551 66

Credit:

Accounts collected.....	\$1,388 50
Garden produce.....	150 00
	<u>1,538 50</u>

Net cost of operation..... \$4,013 16

VISITING HEALTH NURSE'S REPORT.

Miss Gerry made 2,276 calls during the year and attended a three weeks' Public Health Extension Course at Toronto University in June.

Month	New-born Babies	Breast Fed	Cows' Milk	Miscellaneous	Special Calls	Re-visits
1922						
November.....	25	21	1	3	11	187
December.....	21	13	4	4	7	138
1923						
January.....	50	45	3	2	6	148
February.....	47	42	4	1	5	114
March.....	43	38	5	0	4	155
April.....	48	42	5	1	6	153
May.....	32	27	4	1	10	108
June.....	..	..	..	..	..	..
July.....	55	45	5	5	8	107
August.....	62	46	7	9	18	132
September.....	38	37	1	..	14	141
October.....	45	37	6	2	6	141
Totals.....	466	393	45	28	94	1,524

Other calls not classified were:

Prenatal calls.....	180
Taking swabs.....	12

SANITARY INSPECTOR'S REPORT, 1922-1923.

Dr. R. M. Boyd,
Medical Officer of Health,
Fort William, Ont.

Alfred J. Bolus, M.R.S.I.,
Sanitary Inspector,
Fort William, Ont.

DEAR SIR:

I have the honour to submit herewith my Annual Report for the year ending 31st October, 1923.

MILK SUPPLY

A considerable amount of time has been expended on work in connection with our dairies. Public opinion is steadily but surely moving in the direction of a purer milk supply, and it is some satisfaction to be able to record the fact that our supply has been remarkably free from sediment, and, without exception, each dairyman is retailing milk richer in butter fat than last year when 115 samples tested showed an average of 3.22 per cent. butter fat as against 144 samples this year with an average of 3.56 per cent.

One hundred and eighty-six visits were made to dairy farms, city dairies and pasteurizing plants. Two hundred and forty-three samples of milk were collected for test in the Provincial laboratory, in addition to which I tested 149 samples myself at the dairies.

Notices to dairymen in respect to their milk, and bulletins *re* the methods necessary for production of clean milk numbered 150.

One hundred and forty-three letters and circulars together with 100 copies of the bulletins issued by the Health of Animals Branch were sent to Milk Producers interested in the Tuberculin Test of Cattle.

During the past year two of our pasteurizing plants have installed recording thermometers, and have also effected some improvement in other directions. The demand for pasteurized milk has shown its influence in the greater care as to cleanliness exercised in our other dairies.

One dairyman who failed to come up to standard required was closed out of business and two others were taken before the magistrate and fined for selling dirty milk. Two other persons were likewise fined for selling milk without a license.

ABATTOIR.

Business at the abattoir continues to increase, the figures given below show that the citizens are assured of an ample supply of fresh killed meat. The grade of animals slaughtered is also better than in former years and the condemnations less.

Many minor improvements tending to better sanitary conditions have been effected, and in addition, a refrigerator plant has been installed; this together with the storage capacity will need to be enlarged in the near future.

ANIMALS SLAUGHTERED

Cattle.....	1,453
Calves.....	1,602
Hogs.....	345
Sheep.....	303
Total.....	3,703

During the past year 1,806 pounds of meat was condemned as unfit for food, of this amount 1,100 pounds was tubercular.

Two hundred and thirty-eight visits were made at the abattoir during the year.

BAKESHOPS

One hundred and sixty-eight visits were made to bakeries, conditions in which were much improved. One bakeshop which became closed was ordered to remain unused until renovated.

COMMUNICABLE DISEASES.

Eighty-seven visits were made to homes in connection with communicable diseases.

Arrangements were again made whereby it was possible to have printed on some 60,000 electric light account forms, information to the public in regard to fly control and other preventive measures.

NUISANCES.

All nuisances found received the attention necessary to abate same, 181 notices were served.

In the east end coal dock particularly, an effort was made to lessen the danger from flies, and in this connection 556 notices were served *re* manure, 518 notices to repair dilapidated privies and in addition, warnings were printed in five different languages and posted, these together with your article in the Finnish newspaper have shown good results. Many of the repairs done to privies were of a flimsy character, but I am satisfied that more interest will be shown in future by the people living in this section of the city, some work along the same lines was also done in the west end of the city and has shown results to a smaller extent.

One hundred and forty-five complaints by the public were investigated and dealt with as found necessary.

Police court proceedings *re* the above are given in summary under that heading.

One complaint in regard to living conditions on a boat was investigated.

INSTALLATION OF PLUMBING.

During the year fifty-five old premises were connected to sewer and plumbing installed in accordance with the city by-law governing same, of this number twenty were done by the city at the request of the owners and charged on taxes of the owner, the remainder were done at the direct expense of the owner.

LICENSES.

During the year two new licenses were granted to retail milk and three applications for restaurant licenses were refused, premises found unsuitable. Three transfers were made in bakehouse licenses. One temporary permit was given for the storage of hides.

BUSINESS PREMISES.

Business premises and apartment blocks have been inspected during the past year, and with very few exceptions have been found in good order. A close watch has been kept on all places where food is sold or stored for sale. One so-called lung-testing machine was ordered out of use as insanitary.

MARKET.

The City Market opened on Friday 18th May, and was open each Tuesday and Friday until Friday, 2nd November. A supply of good foodstuffs always found plenty of buyers and no condemnations were necessary.

GENERAL.

Several visits were made to the C.P.R. boarding-houses and dining-rooms.

I accompanied Dr. Sparks and yourself on inspection of the Police Court cells, Children's Shelter, St. Joseph's Orphanage, Isolation Hospital and Annex, McKellar Hospital and all the dairies.

Visits were also made to the east and west end sections of the city at the time of Mr. Dallyn's visit subsequent to the survey made by the Provincial department men.

POLICE COURT CASES

Selling milk without license.....	Fined \$10 and costs
“ “ “ “	“ 5 “ “
Selling dirty milk.....	“ 15 “ “
“ “ “ “	“ 10 “ “
Throwing manure on lane.....	“ 10 “ “
Depositing garbage on street.....	“ 5 “ “
Transporting meat exposed to dust.....	“ 5 “ “
Keeping pigs after notice re same.....	“ 10 “ “
Depositing garbage on lane.....	“ 10 “ “
Failing to repair dilapidated privy.....	“ 5 “ “
“ “ “ “ “	“ 5 “ “
“ “ “ “ “	“ 5 “ “
Total fines.....	\$95

CONVENTION.

With the sanction of the Board, I attended the Annual Convention of the Sanitary Inspectors' Association of Canada, held at Calgary early in September, a report of the proceedings being handed to the Board. The convention in 1924 is to be held in Fort William.

RECOMMENDATIONS

I would respectfully urge upon the Board for their careful consideration the necessity of securing a sufficient appropriation next year for use in the installation of plumbing in old premises where the owners cannot themselves find the money; also the formation of a definite programme in respect to the enforcement of this section of the Public Health Act on streets already provided with sewers.

The elimination of the privy closet and provision of proper sanitary arrangements tends greatly to reduce our infant mortality.

In conclusion, Sir, I beg to acknowledge with thanks the valuable co-operation and assistance you have given me during the past year.

All of which is respectfully submitted,

ALFRED J. BOLUS, M.R.S.I.,
Sanitary Inspector.

DIVISION OF LABORATORIES
THE PROVINCIAL BOARD OF HEALTH OF ONTARIO.
YEARLY REPORT.

Branch Laboratory
at Fort William, November 1st, 1923.

SPECIMENS EXAMINED FOR THE MUNICIPALITY OF FORT WILLIAM.

Type of Specimen.				
Diphtheria (Swabs)—				
Diagnosis.....	Positive.....	46		
	Negative.....	87		
Release from quarantine.....	Positive.....	375		
	Negative.....	1,139		
	Total.....			1,647
Tuberculosis.....	Positive.....	23		
	Negative.....	140		
	Total.....			163
Typhoid.....	Positive.....	30		
	Negative.....	51		
	Total.....	81		
Syphilis—				
Colloidal gold test.....				53
Wassermann test.....	Very strongly positive.....	114		
	Strongly positive.....	29		
	Positive.....	50		
	Negative.....	604		
	Total.....			797
Dark field test for Treponema pallidum.....	Positive.....	5		
	Negative.....	5		
	Total.....			10
Gonorrhoea.....	Positive.....	91		
	Negative.....	123		
	Total.....			214
Milk Analyses.....	Chemical.....	385		
	Bacteriological.....	6		
	Total.....			391
Water Analyses.....	Chemical.....	0		
	Bacteriological.....	24		
	Total.....			24
Miscellaneous specimens.....				318
Total for the year ending 31st October, 1923.....				3,698

(Sgd.) N. O. THOMAS.

BIRTHS REGISTERED IN THE CITY OF FORT WILLIAM

For year ending October 31s, 1923

Month	Total	Males	Females	Twins
1922				
November.....	59	29	30	..
December.....	59	33	26	1
1923				
January.....	66	31	35	..
February.....	61	31	30	1
March.....	80	45	35	..
April.....	61	34	27	..
May.....	64	29	35	..
June.....	67	35	32	..
July.....	74	37	37	2
August.....	65	33	32	1
September.....	51	29	22	..
October.....	70	41	29	2
Totals.....	777	407	370	7

STILLBIRTHS

	Total	Males	Females
1922			
November.....	3	1	2
December.....	1	1	..
1923			
January.....	..	..	..
February.....	7	4	3
March.....	4	3	1
April.....	2	1	1
May.....	3	1	2
June.....	1	1	..
July.....	5	4	1
August.....	4	1	3
September.....	1	..	1
October.....	1	1	..
	<hr/>	<hr/>	<hr/>
	32	18	14

No. on International List:

DEATHS

151	Congenital debility, etc.....	25
79	Organic diseases of the heart.....	5
28	Tuberculosis of the lungs.....	7
92	Lobar pneumonia.....	13
104	Diarrhoea and enteritis (under two years).....	4
81	Diseases of the arteries, etc.....	8
150	Congenital malformations.....	4
175	Traumatism by other crushing.....	7
120	Bright's disease.....	8
185	Fractures.....	8
10	Influenza.....	3
91	Broncho-pneumonia.....	10
169	Accidental drowning.....	1
40	Cancer of the stomach, liver.....	3
45	Cancer of other or unspecified organs.....	4
61	Meningitis.....	3
109	Hernia, intestinal obstruction.....	3
42	Cancer of the female genital organs.....	1
50	Diabetes.....	1
64	Cerebral hemorrhage.....	6
71	Convulsions of infants.....	3
152	Other diseases peculiar to early infancy.....	5
154	Senility.....	2
24	Tetanus.....	2
43	Cancer of breast.....	2
60	Encephalitis.....	3
78	Acute endocarditis, myocarditis.....	2
105	Diarrhoea and enteritis (over two years).....	1
108	Appendicitis.....	1
113	Cirrhosis of the liver.....	1
115	Other diseases of the liver.....	1
167	Burns.....	2
189	Ill-defined.....	1
1	Typhoid fever.....	1
9	Diphtheria.....	2
48	Chronic rheumatism.....	2
53	Leukemia.....	2
54	Anemia, chlorosis.....	1
80	Angina pectoris.....	1
82	Embolism and thrombosis.....	1
89	Acute bronchitis.....	1
117	Simple peritonitis.....	1
137	Puerperal septicaemia.....	1
146	Diseases of the bones.....	2
174	Traumatism by machines.....	1
110	Paresis of bowels, etc.....	3
56	Over-indulgence of alcohol.....	1
156	Suicide by drowning.....	1
160	Suicide by stab wounds.....	1
63	Insular sclerosis.....	1
138	Puerperal albuminuria and convulsions.....	2

No. on International List:	DEATHS	
30	Tubercular meningitis.....	1
166	Crushed by falling wall.....	1
84	Acute lymphatitis in thymic gland.....	1
134	Attempted criminal abortion.....	1
102	Gastric ulcer.....	1
37	Syphilis.....	1
46	Tumour of the brain.....	1
Total.....		182

There were fifteen deaths of non-residents in this municipality. The causes of death were as follows:

No. on International List:		
92	Lobar pneumonia.....	2
109	Intestinal obstruction.....	2
10	Influenza.....	1
151	Premature birth.....	2
151	Inanition.....	1
37	Syphilis.....	1
168	Asphyxiation in bed.....	1
9	Diphtheria.....	1
91	Broncho-pneumonia.....	1
185	Fractured skull.....	2
81	Arterio-sclerosis.....	1
Total.....		15

There were four deaths which occurred in other municipalities but were registered here. The causes of death were:

No. on International List:		
56	Over-indulgence in alcohol.....	1
185	Fractured cervical vertebrae.....	1
156	Suicide by drowning.....	1
81	Arterio-sclerosis.....	1
Total.....		4

FINANCIAL STATEMENT FOR YEAR ENDING OCTOBER 31ST, 1923

Salaries of City Hall staff.....	\$6,874 77
Special clinic nurse.....	350 04
Carfare.....	90 00
Printing and stationery.....	88 58
Antitoxin syringes.....	11 92
Conventions.....	375 00
Phone and ice.....	111 50
Office equipment.....	42 72
Automobile.....	300 00
Incidentals.....	107 1)
Salaries of Isolation Hospital staff.....	3,516 00
Maintenance of Isolation Hospital.....	2,035 66
\$13,903 29	

Credits:

Isolation Hospital accounts.....	\$1,387 50
Garden produce.....	150 00
Police Court fines.....	95 00
Antitoxin syringes.....	17 15
Abattoir.....	43 76
1,693 41	

Net cost of Department.....	\$12,209 88
Per capita cost—Department.....	31.697 cents
Per capita cost—Isolation Hospital.....	26.436 "
Total per capita cost operation of Board.....	58.133 "

Respectfully submitted,

R. M. BOYD,
Medical Officer of Health.

HAMILTON

To His Worship the Mayor, the Chairman and Members of the Board of Health for the City of Hamilton.

Gentlemen:

For the nineteenth year in succession it is my privilege to submit for your consideration my annual report on the health of the City of Hamilton.

Through this report I wish to direct your attention to the many activities of the Department of Health as evidenced by the reports from the Public Health Laboratory; from the Division of Dental Hygiene; from the Division of Food Inspection, including Dairy Inspection; from the Division of Public Health Nursing, including the report of the visiting nurse dealing with Tuberculosis, and the report of the nurse dealing with Social Service and the control of venereal diseases; from the Division of Sanitary Inspection, including the report of the Chief Sanitary Inspector on smoke nuisances and their prevention; from the inspectors dealing with isolation and quarantine; from the health centre clinics detailing the activities of these in anti-tuberculosis work, child welfare work, particularly the immunization of children of school and pre-school age against diphtheria, and in addition a special reference to our work in this direction in connection with the city schools.

The findings of our Chief Sanitary Inspector in connection with the sanitary survey of schools, public, separate and private, is made the subject also of a separate report.

The concluding pages of the report will comprise a detailed analysis of vital statistics for the year beginning November 1st, 1922, and ending October 31st, 1923, showing births and deaths for the year by months; the deaths from individual diseases for the year, grouped under appropriate headings, with a special table relating to the causes of death in infancy. Communicable diseases reported and deaths from these latter are indicated fully in a table showing the monthly record for each disease. Comparative statistics of former years are given in some instances to enable the interested public to see in a general way only the results achieved in the saving of the lives of our citizens.

Population.—The estimated population for the year was 120,945, showing an increase of 690 over the previous year, when the population was estimated at 120,235.

Births.—The registration of living births during the year, or excluding still births and premature (used synonymously with still births by many physicians), totalled 3,117; this number is equivalent to an annual birth rate of 25.5 per thousand, as compared with 25.8 in 1922.

A table recording the births for each month in the year will be found at the end of this report.

Deaths.—The actual number of all deaths registered in the city reached a total of 1,424; this total, however, includes 186 premature and still births; by properly excluding these, the total is reduced to 1,238, and is equal to a rate of 10.2 per thousand, as compared with 9.8 for the previous year. This is a fraction higher than the rate for 1922.

Influenza was responsible for 42 deaths in 1923. During the month of February we had a serious epidemic of this disease. A large number of cases were designated simply as gripe, but in too many instances the disease assumed a pneumonic type. The question once more arises, of course, whether in some of these outbreaks we are dealing with pneumonia in epidemic form or not. How-

ever, deducting the influenzal deaths, of which there was only one in 1922, the total deaths for 1923 would make the death rates of 1922 and 1923 practically identical.

Infant Mortality Rate.—In my report for 1922, I remarked on the very low infantile mortality rate for that year, it having reached the lowest point on record for Hamilton, of 58 per thousand.

It is with much gratification that we are able to report the rate for the year under consideration as being 53.6.

The significance of this remarkably low rate will be better appreciated when compared with former years, as shown in the table of infantile mortalities at the end of this report. It will there be noted that for 1906, the second year of my incumbency as health officer, the rate was 128.9 per thousand, or nearly two and a half times greater than in 1923.

If this same number per thousand of living births had died in 1923, the number of infant deaths would have been 401 instead of 167. Or if the average mortality for the eighteen previous years, including the low rate of 1923, had been maintained, at least 307 infants, instead of 167, would have died.

A study of the before-mentioned table will show that except in one year, 1910-11, the infantile mortality rate was always well over one hundred per thousand births registered, in the first decade of the table.

One's curiosity is naturally aroused to inquire as to the factors which have been instrumental in bringing about this very desirable improvement in the preservation and care of our infant population.

The cause of this decrease in infant mortality is to be explained, no doubt, in part by the growing movement for the protection of child life and the movement for the furtherance of public health measures generally, as well as by the desire on the part of the people individually and by the community at large for a more sanitary and hygienic environment than was demanded by our forefathers.

A remarkable stimulus has been given in recent years to the work of educating mothers in the duties and responsibilities of maternity.

The distribution of popular newspaper and magazine literature on the subject of caring for expectant mothers and babies, particularly during the first year of life, has been very general. Health bulletins nowadays abound with information on child hygiene, and there has been a wide circulation of baby books, pamphlets, and leaflets by federal, state, and municipal health authorities, calculated to enlighten the general public on this very important branch of public health work.

In all populous centres and some of the smaller ones of Canada and the United States, child hygiene divisions are a part of the health departments with well baby clinics and prenatal clinics in connection therewith for the proper instruction of mothers in the care of their off-spring. In many cities (including Hamilton), voluntary organizations have taken an enthusiastic interest in the promotion of this excellent work. Among these the work of the Babies' Dispensary Guild and the Victorian Order of Nurses deserves special mention.

Our medical schools are devoting more and more attention to the training of physicians in the diagnosis of the diseases of infancy and childhood, so that pediatrics is becoming a popular field on the part of students of medicine for special attention, and for exclusive practice by many doctors. In Hamilton the improvement in methods of production, handling, and distribution of our milk has been very great within recent years. Almost the entire supply is scientifically pasteurized and this, together with the general enlightenment of the people as to the necessity of cold and cleanliness in the preservation of milk in good con-

dition, has been a big factor in lessening the gastro-intestinal diseases of babyhood during the trying seasons of summer and early fall.

Improved sanitary conditions in homes; better ventilation; access to parks and open spaces and healthy surroundings generally, are items of importance in the saving of infant life.

While the infantile mortality rate of 53.6 may be regarded by less favoured municipalities as an enviable one, yet when we consider that 28 deaths of infants are referred to malnutrition, and 24 to gastro-intestinal diseases, it becomes at once apparent that our figures might have been even lower if infant care had been better understood by some of the mothers of these 52 children.

Even the low rate of 1923 cannot be accepted as a final and unbeatable minimum. By comparing our infant mortality rate for 1923 with that which has obtained in New Zealand and Scandinavian countries for some years past, an idea can be formed of the possible further reduction in the loss to this young country, physically and economically, by the conservation of the infant lives needlessly wasted through ignorance and carelessness.

The value of child welfare work has been amply demonstrated, but in many centres it is still in the incipient stage. The growth and expansion of the work along practical and properly established lines should result in a further considerable decrease in our infant mortality.

General Death Rate.—The general death rate of 10.2, only .4 above the record death rate for the previous year, may be regarded with satisfaction, although some of the causes of death are worthy of special consideration.

In the groups of diseases, 252 deaths were referred to diseases of the circulatory system, in which are included diseases of the heart; this number represents 20.4 per cent. of the deaths from all causes which occurred during the year, as compared with a total of 197, or 16.6 per cent. of deaths from all causes for 1922.

To the respiratory system 141, or 11.4 per cent. of deaths from all causes, were referred, as against a total of 159, or 13.4 per cent. of all deaths in 1922.

Tuberculosis was responsible for the death of 48 persons, or 3.9 per cent. of deaths from all causes; in the previous year the number of deaths from this disease totalled 53, or 4.5 per cent. of deaths from all causes.

Cancer.—Cancer caused the death of 118 persons during the year, or 9.5 per cent. of deaths from all causes. This disease in Hamilton has been making steady progress for at least two decades. This condition, however, is in common with the rest of the civilized world. In a recent bulletin to the local press on this disease, I mentioned the fact that its cause and the reasons for its increasing prevalence have not been determined; various theories have been advanced, but our knowledge, even in the light shed upon the subject by modern laboratory investigations, of the true character and cause of cancer is so slender, that it would be unwise to advocate any of the theories advanced with any degree of dogmatism. The steady advance of the disease in Hamilton will be visualized by the following record:

In 1914 cancer caused the death of 72 persons, or 6.5 per cent. of the deaths from all causes; in 1919 exactly 100 deaths were referred to this disease, or 6.8 per cent. of all causes of death; in 1920 cancer was responsible for the death of 107 persons, representing 7.0 per cent. of all deaths registered; in 1921 the number of deaths was 87, or 6.9 per cent. of the deaths from all causes—a slight reduction as compared with the previous year; in 1922 cancer caused the death of 111 persons, or 9.3 of the total number of deaths from every cause; and, as already shown, in 1923 no less than 119 persons died from this disease, representing a percentage of 9.5 of all deaths.

It will thus be noted that cancer as a single cause of death was more fatal than any other during the year 1923.

The attention of the public has already been directed to the ravages of cancer in a series of articles in the *Health Officer's Corner* of the local press. The special points brought out in the articles were that cancer was showing signs of increasing, that it was a curable disease if treated in its early stages, that knowledge of the disease was not the thing to be feared the most, but ignorance, for a knowledge of the disease would mean early treatment while, if ignorant of its presence, the cancer may run its course over a period in which an incurable condition may develop. Some of the causes, signs, and symptoms of cancer and other points were dealt with in the *Health Officer's Corner*.

Certain parts of the body are more prone to develop cancer than others; the disease may result, however, on any part of the body which is subjected to frequent irritation. Moles and warts are often the site of cancer, on account of the irritation occasioned by clothing.

Cancer of the lip is often caused by holding an irritating pipe stem in one place between the teeth; in fact, cancer in any part of the body is perhaps more frequently caused by irritation than by any other known cause.

Cancer of the tongue is of simple origin, generally resulting from broken or decayed teeth, but is a type most difficult to be dealt with.

It has been stated that some person on the North American continent dies of cancer every five minutes throughout the year.

In many cities of the United States, one week in the year is set apart for the special study and treatment of cancer. Public attention is directed to the subject by preachers from the pulpit, by lecturers from the platform, through the press, by the medical profession and public health authorities, by special activities at the clinics, and by any means possible to attract the attention of the public to this important subject.

This practice has been productive of many beneficial results; many of the cases dealt with at the clinics were on the average seen earlier than the usual run of such cases are seen in routine practice; this, of course, is one of the objects of the annual drive. Many of the cases rendered considerable study necessary to make accurate diagnosis; these were content to suffer mildly and were not concerned about themselves until aroused by the publicity of the campaign, but the fact is emphasized that the cases were seen earlier, and the diagnosis was correspondingly more difficult, but the cures effected were more frequent and more lasting.

Much publicity has very properly been given in our own city to the causes and cure for tuberculosis, and to the danger resulting from the neglect in the proper treatment and care of tuberculous persons. Similar publicity is advocated for cancer. I am confident that if an organized campaign of education were directed against cancer as has been carried on against tuberculosis during the last three decades, a remarkable reduction in the incidence of this fatal malady would result. The laity should know some of the signs and symptoms of the disease, e.g., that the appearance of moles and warts should be regarded with suspicion, as skin cancer may develop therefrom. Attention should be paid to bleeding from any orifice of the body, broken or decayed teeth, ulcerations, lumps, thickening or any other signs or symptoms of cancer, and the family physician or specialist should be consulted without any delay.

Cancer is even more fatal than vital statistics show. Competent surgeons have informed us that patients suffering from cancer, on account of leaving a locality or from some other cause, are frequently passed on from one physician

to another, and are tempted to try all sorts of advertised remedies, and when the end comes death is attributed to an intercurrent disease which should properly have been referred to as cancer.

A cure for cancer depends on early treatment; delay may cause the spread of the growth beyond possibility of cure.

COMMUNICABLE DISEASES.

Diphtheria.

It has been the custom of the department to designate as "*positive Klebs Loeffler*" those cases in which typical diphtheria bacilli have been found with no accompanying history of illness or actual evidence of diphtheria. The term diphtheria "*carriers*" has been restricted to cases in which, with the persistence of diphtheria bacilli in the nose or throat, there is a previous history of quarantine or a previous history of illness of which the department has had no notice.

There were reported to the department during the year 381 cases of diphtheria, as compared with 747 cases for 1922 and 608 for 1921. Of the cases reported 26 died, making a case fatality of 6.8 per cent., which was a much higher percentage mortality than in 1922, and approximately the same as occurred in 1921.

The seriousness of diphtheria as a cause of morbidity and mortality in Hamilton may be realized from the records of this disease for the past sixteen years, according to a table showing the cases and deaths occurring during this period. For the years 1908 to 1923, inclusive, 4,298 notifications as a result of clinical or laboratory findings, or both, have been received.

In 1908 there were 92 cases with 8 deaths; in 1909, 182 cases, 18 deaths; 1910, 152 cases, 23 deaths; 1911, 89 cases, 9 deaths; 1912, 130 cases, 10 deaths; 1913, 126 cases, 12 deaths; 1914, 194 cases, 16 deaths; 1915, 210 cases, 20 deaths; 1916, 223 cases, 35 deaths; 1917, 255 cases, 27 deaths; 1918, 128 cases, 20 deaths; 1919, 185 cases, 14 deaths; 1920, 596 cases, 44 deaths; 1921, 608 cases, 41 deaths; 1922, 747 cases, 32 deaths; 1923, 381 cases, 26 deaths.

The tremendous and rather sudden increase in the case incidence, together with the lower percentage of case fatalities, beginning with 1920, is doubtless to be explained by a very frequent use of the laboratory (practically in all cases) as an aid to correct diagnosis where the type of the disease is less virulent, and the symptoms are mild in character, resulting, of course, in a much more complete record.

In the past sixteen years there have been 355 deaths distributed with reference to age and sex as shown below:

	Total	Female	Male
Under 1 year.....	23	9	14
1 year to 2 years.....	26	13	13
2 years to 3 years.....	46	23	23
3 years to 4 years.....	32	12	20
4 years to 5 years.....	45	24	21
5 years to 6 years.....	34	16	18
6 years to 7 years.....	26	13	13
7 years to 8 years.....	35	18	17
8 years to 9 years.....	14	10	4
9 years to 10 years.....	16	10	6
10 years to 11 years.....	14	5	9
11 years to 12 years.....	12	6	6
12 years to 13 years.....	5	1	4
13 years to 14 years.....	3	1	2
14 years to 15 years.....	3	2	1
15 years to 16 years.....	1	1	..
16 years.....	1	..	1

	Total	Female	Male
18 years.....	1	..	1
19 years.....	1	1	..
22 years.....	2	1	1
25 years.....	1	1	..
27 years.....	2	2	..
30 years.....	1	1	..
31 years.....	1	..	1
34 years.....	1	1	..
35 years.....	1	1	..
38 years.....	2	1	1
39 years.....	1	..	1
40 years.....	1	..	1
43 years.....	1	1	..
54 years.....	1	..	1
Age not given.....	2	1	1
Total.....	355	175	180

From these figures it will be seen that diphtheria is essentially a disease of childhood, over 90 per cent. of deaths occurring in Hamilton being under the age of twelve years, and more than 75 per cent. of the children who succumb being under eight. The proportion of males to females dying appears to be approximately equal.

Diphtheria is relatively infrequent under one year. Although most of the deaths occur between the ages of two and seven years, in persons of older years a good deal of illness occurs, which incapacitates the patients for longer or shorter periods and results often in serious complications, with accompanying loss of valuable time. The Health Department has been able to accomplish a great work in preventing the spread of diphtheria in families, institutions and, to some extent, in schools, but the frequency of the carrier condition after mild attacks, and the reappearance of positive cultures in those temporarily free and released from isolation, render the control of epidemics exceedingly difficult. Treatment early and efficiently in all cases, it cannot be too often repeated, reduces the death rate to an insignificant minimum.

Because parents do not call in a doctor during the early days of illness, and less often because doctors lose valuable time by not giving antitoxin at once, the mortality from diphtheria remains high beyond any possibility of excuse.

With the object of educating the general public to the value of immunization by toxin-antitoxin against this dangerous enemy of our child population, we have undertaken an active campaign in school and home in favour of this procedure.

The Schick test consists in the injection of a small quantity of diphtheria toxin between the layers of the skin, and the result is tabulated in three or four days. The injection produces no constitutional effect. The resistance to diphtheria is obtained by injecting on three occasions one week apart a 1 c.c. dose of the toxin-antitoxin mixture. In from three to six months—a small percentage of individuals require longer—a resistance to diphtheria is got, which, in more than 90 per cent. of those injected, so far as is known, lasts for life.

Since January, 1922, a clinic for carrying out immunization of school and pre-school children has been carried on at the health centre under the direction of Dr. Deadman, assisted by Drs. Eaton, Farmer, and MacGregor, and has been well attended in consequence of the active interest of the public health nurses who are constantly, in their routine visits to the homes, calling the attention of parents to the advisability of having all children protected. Through the co-operation of the Board of Education and the School Medical Officer, Dr. J. E. Davey, the work has been started in the public schools and a comprehensive programme will be undertaken during 1924. The report of Dr. Deadman, in

part, with a table of results appended on the work already accomplished in the schools and at our clinic, is here given.

"The initial step taken was a general talk to the teachers of the school on the principles and value of diphtheria immunization. This was followed by the distribution to the children of a descriptive pamphlet and a permission slip. These the children were asked to take home for the information and consent of the parents or guardians. When signed, these permission slips were brought back to school, collected by the teachers, and passed on to the Health Department nurse. From these, triplicate rolls were made, the children being grouped according to classes. One roll was kept at the department, one was sent to the principal of the school, and one was used for checking at the time of the performance of the test. These rolls were found to be of great value in handling the children, as by this means confusion and delay were reduced to a minimum. I cannot speak too highly of the co-operation and assistance afforded us by the principals.

"On the day decided on for the Schick test, a room previously chosen was prepared with due reference to the principles of asepsis. The doctors worked in pairs, one applying the actual test, and the other applying the control test. The arms were in the meantime being prepared with ether by the nurse. In this way, with the services of four doctors and five or six nurses, it was possible to apply the Schick test to as many as 400 children in a little over an hour. Five days after the application of the Schick test all the arms were inspected, and all those showing positive reactions were given their first dose of toxin-antitoxin. For this injection the arms were prepared with iodine. The remaining two doses were administered at intervals of one week.

"It is interesting to note that the children from the poorer districts gave a lower percentage of positive reactions and especially those from the districts where diphtheria is most prevalent. In one school, out of 203 children, only 36 gave a positive reaction. This is no doubt due to the widespread immunity acquired by frequent contact with the disease."

TABLE OF RESULTS.

Place	Schick Reading	Positive Schick	Completed Treatments
Murray School.....	99	26	26
Fairfield.....	203	36	31
Memorial.....	465	233	201
Queen Mary.....	363	157	153
Lloyd George.....	Schick not done	...	222
Gibson.....	Schick not done	...	372
Health Centre.....	650	236	486
Total treatments.....			1,491

At the time of going to press the number of immunizations done at the Health Centre and in the public schools has reached a combined total of nearly 5,000. The great majority have been children between the ages of three and nine years; a few babies have been brought to the clinic.

Among the total number receiving the protective injections there were five positive cultures in children receiving the treatment less than one month previous to the culture. There was a diagnosis of diphtheria in two cases receiving treatment less than one month previous, but with negative cultures. Four were diagnosed as being mild diphtheria in less than two months after treatment, although the cultures in these cases were negative; and in three similar cases three months after injections, the cultures were also negative. One girl contracted mild diphtheria six months after having received three injections, and a positive culture was obtained.

These figures require no comment and, in my opinion, no further elaboration is necessary to emphasize the value of toxin-antitoxin in the treatment of diphtheria. They are more significant when the incidence of diphtheria among the children of school and pre-school age in a city of 120,000 persons for the past year is considered.

Scarlet Fever.

Scarlet fever was more or less prevalent in each month during the year, the least number of cases notified in any month being ten in July, and the greatest number being fifty cases notified in October. The total for the year was 305 cases, with six deaths attributed to this disease.

The number of cases notified would not represent the number actually occurring throughout the year, for we are convinced a number of mild cases of scarlet fever escape detection, and it is from these undetected cases that danger from the spread of infection from this disease is the most difficult to control.

The undetected cases are usually of a mild type. No serious illness is noted by the parents, and the children mingle with others in the home, the street, and at school, exposing large numbers of children to infection.

Many of these cases have been discovered by our nursing staff in their visits to homes and schools. In some instances the nurses have noted the hands of the children, when sitting in the class rooms, actually peeling, and very little, if any, history of illness has been forthcoming, except that in a few cases the parents have admitted a slight indisposition without suspecting scarlet fever or other communicable diseases and, as no physician was called in to see the patients, and the parents had no suspicion of scarlet fever, the children were permitted to mix with others before recovery and so spread infection, with the possibility of more serious cases resulting.

In 1922, two hundred and forty-five cases of scarlet fever were notified, with three deaths.

Typhoid Fever.

Twelve cases of typhoid fever were notified during the year; infection in nine of these cases was traced to sources outside the city, while in the other three cases the infection was of doubtful origin. Two deaths were caused by typhoid.

Bacteriological examinations made by the city bacteriologist show that in 1921 *b. coli* was present in the city drinking water on nine occasions; in 1922, eighteen times, and in 1923 the figures jumped to seventy-two times present, viz.: three times in January, one in February, six times in March, once in April, eleven times in May, ten in June, ten in July, eleven in August, ten in September, eight in October, and once in the last two months of 1922.

The chlorine content ranges from two parts to four or five parts per 100,000, but at times is greatly in excess of this amount.

In addition to these conditions, the bacterial count has within recent years increased enormously over that prevailing ten years ago, and counts of 400, 500 and over 1,000 per c.c. were frequently recorded during the year. For instance, in 1912, when *b. coli* was not found throughout the year, the chlorine was steady at 1.1 part per 100,000, and the bacterial count at 37°C. never reached 100.

Results, as shown by our laboratory tests, indicate a marked increase in the pollution of the drinking water of the citizens of Hamilton, and measures are necessary on the part of the city council, without delay, for rendering it absolutely safe throughout the year. Steps should be taken forthwith for the installation

of the necessary equipment to accomplish this. In the previous year 21 cases of typhoid fever were notified, nine of which were traced to infection outside the city; three deaths were referred to this disease.

The small number of cases of typhoid fever reported during the year is a tribute to the almost general pasteurization of our milk supply, as the typhoid bacillus is one of the pathogenic organisms in milk which is destroyed in the process of efficient pasteurization, when present.

Influenza.

During the months of January and February a slight outbreak in influenza occurred, eleven cases being notified in January, and 103 cases in February; no cases were notified in the subsequent months of the year. A total of 115 cases were reported, with 42 deaths.

Chicken-pox.

Five hundred and twenty cases of chicken-pox were notified during the year, but no deaths were referred to this disease; in the previous year 530 cases of chicken-pox were notified.

Smallpox.

Ten cases of smallpox were notified during the year, as against fourteen cases in 1922. No deaths resulted from this disease.

Measles.

In the prevention and control of measles, sanitary science has so far been unable to record more than limited success.

This disease was prevalent in the city during the summer time; only one case was notified in February; the numbers in each month increased as the summer advanced, there being 42 cases in April, 140 cases in May, 228 cases in June, and a maximum number was reached in July, with 278 cases; then a considerable drop to 58 cases occurred in August, and only two cases in September. The total number of cases of measles notified throughout the year was 783, as compared with 669 cases in 1922. Three deaths were referred to measles in 1923.

During the spring months, as the annual school closing approaches, we are confronted with the possibility of considerable disruption of school classes and consequent loss of examinations from the appearance of measles in epidemic form.

The children attending kindergarten being practically all susceptible to this disease constitute the chief source of danger in this regard. An effort was made by the department to minimize this danger by closing the kindergarten classes for sixteen days when cases occurred among this group of children.

This action was taken at several schools during the year, with good results, as the dismissal of these little tots appeared to prevent the spread of the infection among the advanced classes. This procedure was further justified by the appearance, during the incubation period of those exposed and kept under daily observation in the home, of a considerable number of subsequent cases which would, had prompt measures not been taken, served as foci for rapid distribution of the disease.

Tuberculosis.

The duties in connection with the treatment of tuberculosis in the city have been ably carried out by the nurse in charge of this particular work. Details of the work so performed will be found in the report of the nurse.

The problem of the prevention of tuberculosis still remains one of the most difficult to solve, but as housing conditions continue to improve, and the cause and treatment of the disease by parents is better understood, particularly as to the danger of the disease being contracted in early child life,—in these, coupled with a ban placed on promiscuous spitting on the streets and in public places, lie our greatest hope of its solution.

I desire at this point to express my appreciation of the excellent work already accomplished, and still in progress, by the Hamilton Health Association. The untiring efforts of the association have undoubtedly been responsible to a very great extent for the manifest reduction of tuberculosis in the city during the past few years. I also greatly appreciate the hearty co-operation of the association with the Department of Health, which has at all times been in evidence.

Whooping Cough.

Whooping cough was prevalent throughout the year; the least number of cases notified in any month was ten in September, and the greatest number 179 in the month of March. The total number of cases for the year was 828, with eleven deaths, as against 758 cases and seven deaths in the previous year.

Other Diseases.

Of other diseases, only one case of anterior poliomyelitis was reported; this case terminated fatally. Particulars relating to mumps, erysipelas and other diseases will be found in a table at the end of this report.

The nurses and inspectors dealing with communicable diseases have been diligent in their work, and no instance of neglect in dealing promptly with cases has occurred during the year.

Sanitary Inspection of Schools.

On the re-opening of the schools after the summer vacation, a sanitary inspection was made of every school in the city; these include twenty-eight public, eighteen separate, six private and one normal, making a total of fifty-three schools.

The schools generally throughout the city may be regarded with satisfaction in respect of health conditions obtaining therein. Exception, however, to some details may be made in regard to at least five public and six separate schools, where conditions exist demanding further attention of the respective boards. These details have been duly noted on forms provided by the Provincial Board of Health, and the attention of the boards directed to the requirements.

Reports on each school were made in triplicate, one copy of each being sent to the Provincial Board of Health, one to the respective school authorities, and a copy of each report retained at the office.

The unsanitary conditions of two of the public schools in the city have been engaging the attention of the Department of Health for some time. One of these, Cannon Street School, has been remodelled on up to date lines and is now quite satisfactory as viewed from a health standpoint; the other, Murray Street School, is being entirely rebuilt, and on completion will rank with the most healthy school buildings in our city.

A few extracts from the reports on the different schools inspected will illustrate the necessity for a thorough sanitary inspection of the premises.

SCHOOL A:

1. Thoroughly overhaul the ventilating system in the old part of the premises (preferably to replace existing defective methods, with a plenum

system), so that the two systems be evenly balanced, and fresh air distributed in the class rooms of the new and old parts of the premises.

2. Provide means in the four class rooms referred to in the report for a correct view of the blackboards.

3. It is desirable that the bubble fountains be so formed as to preclude the possibility of the mouths of pupils being in direct contact with the orifice of the fountain.

SCHOOL B:

All conditions are satisfactory; the interior of the school building has been entirely renovated during the past year (as recommended).

SCHOOL C:

(1) Remove the foul glass urinals, provide separate stall stoneware fittings. (2) Remove the iron sinks and replace same with glazed stoneware fittings.

SCHOOL D:

On inspecting the school this day, it was noted that five of the W. C.'s were out of repair (early attention requested). (1) Increase number of electric light bulbs in darkened rooms. (2) Remove glass urinals. (3) Replace with separate stall glazed stoneware fittings. (4) All walls and ceilings throughout the premises should be painted or kalsomined.

SCHOOL E:

It is very desirable that the foul slate urinals be removed without further delay and that separate stall glazed stoneware fittings be provided.

While many of the public and separate schools as well as the Normal School are very satisfactory as viewed from a sanitary standpoint, and in some instances almost ideal conditions in respect of school hygiene have been attained, in others conditions still exist which demand the careful consideration of the respective boards, who have already been advised by me. I would particularly mention some of the types of bubble fountains in use at many of the schools. Some of the most expensive fittings are amongst the most unsatisfactory, inasmuch as the mouth of the pupil is in contact with the orifice of the fountain at each time of drinking; in others, a cup is formed around the bubble, and little tots have been seen drinking from this cup, being unable to reach the bubble. An ideal fountain head is found in the following conditions: (a) a uniform flow of water made possible by a controlling valve, irrespective of the pressure of water in the mains; (b) the fountain head so formed as to render it an impossibility for the mouth of the person drinking the water being in direct contact with the orifice; (c) the water not falling back on the orifice.

The respective school boards have been advised along these lines, and it is hoped improved conditions will be possible in the near future.

The Health Officer's Corner.

Through the courtesy of the management of our local daily papers, the *Spectator* and the *Herald*, the attention of the public is directed to the number of cases of communicable diseases notified each week, in each Saturday's publication. The part allotted for the purpose is known as the *Health Officer's Corner*. Weekly articles on live health subjects are written for the *Corner*.

I desire to thank the management of each of the papers for this courtesy so afforded, and for the many privileges extended to the Department at all times in being able to utilize the columns of the Press in bringing matters of health before the attention of the public.

Housing and Social Welfare.

An authority of repute has stated that "infantile mortality is twice as great in homes without bathtubs, although the infants do not use them. Housing is also not to be separated from typhoid and respiratory disease. Health, education, standards, inspection, control of rent, profiteering and a living wage are health factors related to housing."

The relation of housing to health and social welfare comprises various factors influencing the physical, mental and moral development of the family and the family life. Whatever benefits each unit of family life must of necessity be beneficial to the general community. Housing conditions are largely determined by the family income; some of these conditions are unsatisfactory as viewed from a public health standpoint.

The necessity for adequate air space, ventilation and the window area in relation to floor space, are matters well understood by the average citizen. That dirt, overcrowding and the lack of clean and well-fitted sanitary appliances, are factors in the spread of respiratory and other forms of diseases, may be well known to the majority of persons. Still the fact remains that housing conditions in many parts of our city leave much to be desired. The above quotation would indicate that bath tubs in homes exert an influence on the infantile mortality rate. There are other features in some of our city homes which militate against the comfort and possibly the health of the people in an even greater degree than the absence of a bathtub, such as a lack of a proper foundation; in some instances the floors of the rooms being actually laid on the ground, precluding any possibility for air to pass under the floor.

It is true that several houses in the city where this, among other unsanitary conditions, existed, have been closed by order of the Board of Health. In other houses general dilapidation and original poor construction mark these shelters as being poor specimens of what homes should be. It is also true that houses which at one period might have been regarded as comfortable homes, with all modern conveniences, have deteriorated to such an extent as to render them eligible for admission to the lowest category of sanitary dwellings.

In this latter classification might be included many large ten and twelve-room houses of three stories in height, and built on twenty-five foot lots, with very narrow passages between them, in some instances the eavetroughs being only a few inches apart. Very little natural light filters through the windows at the sides of the houses, while some of the rooms are in a darkened condition, and the occupants forbidden to use them for day or night occupation.

Our sanitary inspectors and nurses are frequent visitors to such homes, and, although overcrowding is seldom in evidence, other conditions which militate against the health and comfort of the occupants are frequently met with. This latter class of residence is situated in a section of the city which might have at an earlier period been fittingly described as residential, and in view of green pastures and pleasant scenery; as the years went by, the character of the district underwent a slow process of change. Factories and business premises were erected on the green pastures, and the pleasant scenery became outlined with tall chimneys, railway trackage and other utilities. The residential district had evolved into a factory and industrial locality, and the former residents removed to suburbia or to parts of the city where restriction against the erection of factories had been placed.

An outstanding feature in the type of house above outlined is the number and large size of rooms it contains; it is frequently the home of two families with boarders for each family. These houses are let at a comparatively low rental;

very little money is spent upon them for repairs; except when improvements are demanded by the Department of Health, the painter and decorator is practically unknown at these dwellings. The neglect of the owner is reflected in neglect by the tenant, very few of which make any attempt to keep their yards or fronts tidy or bright with flowers.

The process of house degeneration goes on apace until what were at one time bright, well-built villa residences, have degenerated into undignified-looking, untidy places where people just live in. While there is no specific or general overcrowding in this class of residence, mental health is undoubtedly threatened, through lack of privacy, impaired opportunity for home study, and that ever present irritation due to imperfect physical surroundings.

The mental, moral, and physical health of the people must be closely linked up with home surroundings, and the general unattractiveness evident in homes such as here outlined, together with the attendant poverty frequently met with therein, undermine the possibility of children brought up under these conditions becoming possessed of the higher standards of living, and moral qualities essential for effective citizenship.

It is therefore the duty of the Department of Health to, as far as practicable, correct conditions in homes which militate against the mental as well as the physical health of the community.

There has been marked improvement in housing conditions since the publication of my report for 1922. Many houses have been improved in their sanitary conditions, while others have ceased to be occupied as dwellings. New homes have been erected in every quarter of the city during the year, but the necessity for the provision of better housing for the artisan population in parts of our city is still very real.

Good housing conditions may be regarded as essential to successful health administration, and while Hamilton compares very favourably with any of the large cities of Canada, it is hoped that a large number of ideal artisan dwellings, which may be obtained at a reasonable rental, will be erected in Hamilton during the coming year.

General Remarks.

I would direct attention to the general activities of the Department of Health, as evidenced by the reports from the various divisions; these are self-evident, but I would briefly refer to some of the work which could only have been possible by the establishment of the Health Centre.

The success of the dental clinic at the Health Centre has been almost phenomenal, and it will be my privilege through the Board of Health to make application for dental equipment for the second room, which has already been partly prepared for dental service. An epitome of the work actually accomplished at the clinic will be found in the dentists' report.

The expectation of success for the Division of Child Hygiene has been more than realized. The nurses in charge of this work have in their report thereon shown most conclusively that a very great need has been met by the establishment of the various clinics and activities consistent with the prosecution of this important branch of preventive medicine.

Health Centre.

In my report for 1922 reference was made to the routine work being accomplished at that time, at the Health Centre, and as the operations of the clinics

established at that time were mentioned in detail, brief reference only will be necessary in this report.

The Tuberculosis Clinic.—The work of this clinic continued with unabated energy under the capable administration of Drs. Holbrook, Wilson, Morgan, Bray, and Johnson. Clinics are held on Mondays, Wednesdays, and Fridays for adults, and on Saturday mornings for school children, the latter being attended to by Dr. C. R. L. Morgan; Miss Mason, a graduate nurse, is in constant attendance.

Tuberculosis in all stages is dealt with at the clinics, and the attendance throughout the year has been well sustained.

The Dental Clinic.—The dental clinic under the direction of Dr. J. L. Stewart and Dr. J. E. Dores, two qualified dentists, together with Miss E. M. Brey, a trained and qualified nurse, has had a very successful year.

The number of treatments and details of the work accomplished are recorded in the dentists' report.

Division of Child Hygiene.—Clinics for Child Hygiene are held every Tuesday and Thursday under the care of Drs. Cannon, Cooke, and Kenny. The clinics which have been described in my report for 1922, have continued to meet with great success, the work of this department has been further extended during the year by the opening of clinics in other parts of the city, in order that mothers may be relieved of the necessity of carrying their children over long distances to the clinics. The report of the nurse in charge of this particular branch of child hygiene will show the attendance at the clinic has been well sustained throughout the year.

Toxin-Antitoxin Clinic.—Drs. J. MacGregor and A. Eaton have charge of the toxin-antitoxin clinic. This clinic is held every Wednesday, and large numbers of persons attend to avail themselves of the protection against diphtheria, possible by treatment at the clinic. This subject is more fully dealt with in this report under the heading of diphtheria.

These represent some of the activities in constant operation at the Health Centre. These activities will be increased in the near future, by the addition of a mental clinic and other channels of preventive medicine as time and opportunity afford

On behalf of the Board of Health as well as for myself personally, I desire to express our very great appreciation for the courtesy and kind consideration which His Worship the Mayor has manifested at all times, and for the great interest he has always taken in public health work. We also wish to thank the Board of Control and the City Council individually and collectively for their assistance so generously afforded in the accomplishment of our work.

I would embrace this opportunity on behalf of the Board of Health as well as myself to thank the medical practitioners of this city who have so nobly and generously given their time, help, and skill to the work of this department, and contributed so markedly to the success of the work at our various clinics; without this gracious aid our success would have been impossible. In this respect I would particularly mention: Drs. J. H. Holbrook, G. W. Wilson, C. R. L. Morgan, M. E. Johnston, M. C. Bray, J. C. MacGregor, A. T. Eaton, G. R. D. Farmer, O. A. Cannon, K. E. Cooke, W. G. Kenny, D. A. McLeod, P. T. H. Wythe.

In conclusion, I desire to place on record my heartfelt thanks to Alderman R. B. Spera, chairman, also to Controller Calvin Davis and Dr. Wythe, members of the Board of Health, for the kind and able manner in which they have conducted the business of the board during the year. I also thank these gentlemen

for the consideration and appreciation always manifested towards me, and to every member of my staff.

I have the honour to be, gentlemen,
Your obedient servant,

JAMES ROBERTS,
Medical Officer of Health.

REPORT ON LABORATORIES.

To James Roberts, Medical Officer of Health.

Dear Sir:

I am presenting herewith the report of the work done in the city laboratories for the year ending October 31st, 1923, and I must again extend my thanks to yourself and to the chairman and members of the Board of Health for your assistance and co-operation during the year. This year as usual has shown a considerable increase in the amount of work performed and with the increasing skill of the staff of technicians, it is hoped to constantly improved the efficiency of the laboratory.

The work in connection with venereal disease has shown an increase, and we are now doing very nearly 4,000 Wassermann reactions per annum. The work in connection with typhoid diagnosis remains about the same, the city being remarkably free of this disease. The examination of sputa for bacillus tuberculosis shows a slight decrease. The bacteriological examinations of samples of milk and water continues to increase, and we are now doing examinations for the organism of ringworm as a routine. The number of cultures examined for bacillus diphtheria shows a slight decrease and this, in my opinion, is at least partially due to the good effects of diphtheria immunization work carried out in the public schools. This year there are 227 less positive diphtheria cultures taken for diagnosis than last year. A very much enlarged programme of work in the public schools is under way this year.

There has been a very marked increase this year in the number of chemical examinations of urine and blood due to the introduction of the insulin treatment of diabetes. The urine examinations were increased from about 12,000 to about 21,000, and the chemical examinations of the blood were increased from 400 to over 1,400. This entails not only a great deal of time, but also requires a high degree of skill in order to have them carried out properly. There is every indication of this work continuing to increase. The distribution of insulin and the performance of the necessary laboratory work has now been undertaken by the Provincial Board of Health, so that this part of the work in so far as it relates to diabetes is to all intents and purposes public health work.

The present alterations and additions now being made to the General Hospital have made it necessary for the laboratory to vacate its present quarters which have become hopelessly inadequate, and new quarters specially planned for laboratory work have been allotted in the new outdoor wing on Victoria Avenue. Separate rooms are provided for the various departments of the work and the efficiency of the laboratory will be much improved. These quarters should be ready for occupation about midsummer and will necessitate a certain amount of new equipment, while the increasing demands on the laboratory may necessitate further technical assistance.

Sincerely yours,
WM. DEADMAN, B.A., M.B.,
Director.

CITY LABORATORIES' REPORT FOR YEAR ENDING OCTOBER 31ST, 1923.

	Wassermann Reactions			Spirochaete Examinations		Conococcus Films		Widals		Stools for Typhoid		Urine for Typhoid							
	Strong +++	Weak +	Neg.	Total	+	-	Total	+	-	Total	+	-	Total						
November, 1922.....	45	21	254	320	0	1	1	18	95	113	0	12	12	0	7	7	0	6	6
December, 1922.....	37	8	200	245	0	0	0	16	63	79	3	8	11	0	4	4	0	1	1
January, 1923.....	57	18	343	418	0	0	0	20	91	111	3	5	8	0	9	9	0	8	8
February, 1923.....	34	15	260	309	0	1	1	7	91	98	1	1	2	0	0	0	0	1	1
March, 1923.....	56	10	262	328	0	0	0	9	82	91	1	13	14	0	1	1	0	1	1
April, 1923.....	43	6	296	345	0	0	0	9	70	79	1	5	6	0	0	0	0	0	0
May, 1923.....	44	4	304	352	0	0	0	11	91	102	2	7	9	0	1	1	0	0	0
June, 1923.....	70	7	299	376	0	0	0	17	90	107	1	13	14	0	2	2	0	1	1
July, 1923.....	40	10	227	277	0	0	0	11	71	82	2	8	10	0	1	1	0	1	1
August, 1923.....	48	14	254	316	0	0	0	16	90	106	10	6	16	0	2	2	0	0	0
September, 1923.....	32	9	246	287	0	0	0	15	91	106	2	13	15	0	11	11	0	4	4
October, 1923.....	31	9	247	287	0	0	0	17	113	130	2	6	8	0	1	1	0	1	1
Totals.....	537	131	3,192	3,860	0	2	2	166	1,038	1,204	28	97	125	0	39	39	0	24	24

CITY LABORATORIES REPORT FOR YEAR ENDING OCTOBER 31st, 1923.

	Sputum for T. B.			Diphtheria Cultures				Waters	Milks	Urinés	Chemistry of Blood
	+	-	Total	D+	R+	Neg.	Total				
November, 1922.....	7	63	70	180	251	1,614	2,045	24	28	1,835	53
December, 1922.....	7	71	78	91	314	1,302	1,707	26	15	1,764	57
January, 1923.....	6	69	75	132	178	1,165	1,475	21	29	1,937	66
February, 1923.....	1	54	55	41	31	1,000	1,072	24	17	1,673	46
March, 1923.....	4	64	68	33	48	1,038	1,119	30	28	1,693	101
April, 1923.....	9	126	135	5	9	586	600	27	27	1,664	89
May, 1923.....	7	95	102	37	13	646	696	55	31	1,660	119
June, 1923.....	2	62	64	52	16	761	829	40	34	1,586	118
July, 1923.....	8	72	80	63	23	638	724	49	45	1,605	95
August, 1923.....	1	43	44	9	12	526	547	47	40	1,895	228
September, 1923.....	3	35	38	38	7	645	690	39	23	1,814	237
October, 1923.....	1	43	44	36	15	1,426	1,477	39	27	2,072	198
Totals.....	56	797	853	717	917	11,347	12,981	421	344	21,198	1,407

CITY LABORATORIES REPORT.

BOARD OF HEALTH WORK FOR THE YEAR ENDING OCTOBER 31st, 1923.

Wassermann Reactions.....	3,860
Spirochaete Examinations.....	2
Gonococcus Films.....	1,204
Widal Reactions.....	125
Stools for Typhoid.....	39
Urine for Typhoid.....	24
Sputum for T. B.....	853
Diphtheria Cultures.....	12,981
Water Examinations.....	421
Milk Examinations.....	344
Ringworm.....	11
	<hr/>
Urine Examinations (chemical).....	19,864
Blood Examinations (chemical).....	21,198
	<hr/>
	1,407
	<hr/>
	22,605

DIPHThERIA IMMUNIZATION WORK.

Schools	Schick Reading	Positive Schick	Completed Treatments
Murray.....	99	26	26
Fairfield.....	203	36	31
Memorial.....	465	233	201
Queen Mary.....	363	157	153
Lloyd George.....	Schick not done	...	222
Gibson.....	Schick not done	...	372
Health Centre.....	650	236	486
			<hr/>
	Total Treatments.....		1,491
			<hr/>
	TOTAL EXAMINATIONS FOR THE YEAR 1922-23.....		46,781
	(Including Hospital and Board of Health Work.)		
	TOTAL EXAMINATIONS, 1921-22.....		40,499
			<hr/>
	Increase.....		6,282

or 15 p.c.

FOOD INSPECTION—REPORT OF CHIEF INSPECTOR.

To James Roberts, Esq., M.D., Medical Officer of Health, Hamilton, Ont.

Sir:

I submit for your consideration the report on food and dairy inspection, for the year ending October, 31st 1923, as follows:

Much of the work of the food and dairy division has to do with sanitary conditions under which every variety of food is produced, prepared, handled, distributed, cooked, and served. The personal hygiene of the individuals coming in contact with foods is a factor in food inspection, and the capacity of such individuals to appreciate the importance of bacteriological cleanliness and the consequence of carelessness, are points which have to be taken into account in the course of efficient food inspection. There has been a very marked improvement in the business of storing and handling foods, as well as in the preparation of the same for human consumption in recent years.

With the object of giving the Board some idea of the system followed by the division of food inspection in the daily routine, we may roughly divide the work under several appropriate headings, viz.:

General Food Inspection.

This includes such establishments as: Central market, retail markets, fish stores, groceries, milk depots, delicatessen stores, restaurants, bakeries, fruit stores, confectioners, ice cream factories, candy factories and other manufacturing, producing or distributing establishments. The following are points of importance in the inspection:

- (a) Structural condition of the building, all rooms used for sale, manufacture of products or storage, or rooms used by the employees for dressing or toilet purposes.
- (b) Light and ventilation.
- (c) Cleanliness of floors, walls, ceilings, shelves, cases, counters, refrigerators, and utensils.
- (d) Conditions of cellars, yard, water closets, and general surroundings.
- (e) Cleanliness of employees.
- (f) General condition and cleanliness of food stock or materials used in the manufacture of foods.

The Protection of Foodstuffs.

In the protection of foodstuffs due regard is paid to certain considerations. Foodstuffs which are not washed, peeled or cooked, before being eaten must be protected from street dust, dirt, flies, promiscuous handling by public, and other contaminating influences. Old newspapers recovered by junk dealers and old dirty baskets or other containers must not be used for wrapping or carrying foods. Milk must be kept in separate refrigerators or in compartments separate from other foodstuffs. No person is allowed to sleep in rooms where foodstuffs are manufactured, stored or handled, and in no such rooms is a toilet permitted to be installed. No room in which articles of food are kept stored, sold, or offered for sale can be used for domestic purposes.

All shops and stores used for the sale of foods must be supplied with proper lavatory accommodation.

Restaurants.

The inspection of restaurants includes all rooms and appurtenances used for storing, preparing, cooking or serving foods; the condition and cleanliness of employees, of all utensils, and of all adjoining rooms directly connected with the establishment. All rooms must be light and well ventilated; walls, ceilings and floors in good repair and clean; tables, counters and shelves must have clean surfaces; all utensils including containers for milk, cream, and water must be of material easily cleaned and if necessary sterilized. Ranges, steam tables, shelves, racks, blocks and machinery or tools used for cutting, grinding, and cooking or preparing the foods must be kept scrupulously clean at all times. There must be a sufficient supply of water for all washing purposes, and all sinks, wash sinks, etc., must be adequately trapped and covered with or constructed of impervious non-absorbent material. Examination is made of all meats, canned goods and other foods to determine their purity and wholesomeness.

Bakeries.

The rooms where baking is done should be kept clean and sanitary. The floors, walls and ceilings should be in good repair and have smooth surfaces, so as to be easily cleaned. The tools, utensils and machinery should be clean and kept free from accumulations of old material. No new bakery should be established without the inspector having approved the structural conditions and location. All bakeries must be light and well ventilated. Every bakery is required to have sufficient wire screening over all windows and doors and must be kept free as possible from flies and other vermin.

All bakeries since the revision of the Provincial Factories Act in 1913 are required to be built above the street level, thus doing away with the close and unsanitary habitations formerly occupied for the business of baking, and what is of much greater importance to employees in this industry, and to the general public as well, eliminating a fruitful source of tuberculosis and other respiratory diseases in an otherwise not unhealthy occupation.

Milk.

Measures to ensure a good milk supply for the city start with the farmer. The city by-law requires that he shall obtain a license from the Health Department before he can sell his milk to the distributor. Before he can obtain this license his cattle, stables, utensils and method must meet the requirements of the Health Department. The department inspector visits the dairy farm at intervals without warning, to see that proper methods are followed at all times. He constantly moves about among the farmers, assisting them with suggestions and advice to become better dairy farmers, and checking carelessness and wrong methods.

Dairy farms are scored for cleanliness and sanitary methods. On the score card a certain number of points are allotted for location and surroundings of the stable, the milk house utensils, water supply, cattle and methods of handling milk.

Clean surroundings, the use of clean utensils in milking and the previous cleaning of the flank and udder with a damp cloth are the precautions necessary on the part of the farmer to ensure a clean milk supply; as are also the cooling, covering and removing of the freshly drawn milk to the milk house ready for

shipment to the city by carrier or train. The responsibility of the farmer does not end until the milk is taken into the city plants, and he must see that the milk arrives in the city at a temperature required by the milk by-law.

At the city dairies the milk is measured or emptied into weighing pans; the cans are washed and returned to the farmer or carrier for the next day's shipment. Samples of this milk as received in the city dairies from the producer, are taken by the Health Department Inspectors and are tested for adulteration, skimming, butter-fat content, solids not fat; total solids, preservatives, sediment, acidity, bacterial content and methylene blue reduction. During hot weather temperatures of milk are taken, warm milk being condemned.

Milk showing less than 3.25% butter-fat is below standard (government and municipal standard is 3.25% butter-fat,) and the producer is notified to reach the standard; if below this figure his supply is excluded from the municipality. Samples of milk are at times taken at the dairy farm, when a test in the city has shown a low result, to assist the dairy farmer in locating the cause, and enabling him to remove low testing cows from his herd.

The sediment test is made by forcing one pint of milk through a cotton disc under pressure, whereby the dirt which is not visible in milk ordinarily is left on the disc; this test detects any carelessness on the part of the milker or dairy farmer and he is at once notified to remedy this condition. The farm is visited and should local conditions be bad the Health Department excludes the supply from the city.

Thus far the problem of serving a satisfactory milk has related almost entirely to the production. The handling and distribution in the city involves a much more complicated system. In the pasteurizing plants the milk is inspected, tested, weighed, clarified, pasteurized, cooled and bottled, placed in cooling rooms and kept cold until delivered to the consumer. In the plant care must be taken to ensure its cleanliness and purity, machinery must be kept clean and in perfect condition, employees must make sure that their hands do not come in contact with the milk; pipes, pasteurizer, bottling machines, and bottles must be thoroughly cleansed and sterilized, nothing can be left to chance for the reason that every precaution must be taken to keep the milk clean and wholesome.

Pasteurization of milk means heating it to a temperature of from 142 to 145 degrees Fahrenheit and holding for thirty minutes. Heating milk this way kills the germs of tuberculosis, typhoid fever, scarlet fever, diphtheria, dysentery, septic sore throat and others that are dangerous to health.

The status of any milk supply is judged by the samples taken. It is, therefore, imperative to procure proper and representative samples; nearly all of the city's supply is delivered in bottles to the consumer. In this case the collection of samples is comparatively simple. The samples, consisting of two one pint bottles, are selected at random from a delivery wagon of each dealer, or from several wagons in the case of the larger dealers. This method procures a fair representation of the dealer's whole supply. If the tests made of these samples do not show a fairly uniform result the dealer is instructed as to the findings. Samples are taken frequently from the delivery wagons. In addition samples are taken from stores and restaurants, a check being made upon the character of the milk, and the care given it at such stores and restaurants. Methods used for keeping it cold, and the protection against contamination, time of delivery and sale are matters of importance to the inspector.

At a meeting of the Board of Health held on January 15th, 1923, a communication was received from the Board of Control enclosing copies of recommendation

from the Hamilton Health Association. Recommendation "A" of the communication was as follows:

"Whereas a certain amount of meat is dangerous for food on account of tuberculous infection, and whereas under present regulations the supervision of slaughtered animals applies only to export meat, we would recommend that such supervision of abattoirs and slaughter houses be extended to all meat used for food for Hamilton citizens."

Recommendation "B" was as follows:

"Also in the matter of milk, whereas we believe that one of the causes of the spread of tuberculosis in children comes from milk from tuberculous cows, and whereas tuberculosis is very general, we would suggest that the Board of Health be requested to prevent the sale of milk unless it is from tuberculosis free herds or has been properly pasteurized."

The Board resolved that in the matter of recommendation "B," consideration should be given to the advisability of introducing a by-law compelling pasteurization of all milk. It might here be mentioned that the question of the compulsory pasteurization of milk had engaged the serious attention of the Board of Health long before the above communications were received. On two former occasions, at least, by-laws authorizing the pasteurization of all milk sold in Hamilton have been submitted by the Board of Health to the city council. After preliminary discussions between representatives of the Board of Health and the Board of Control, all parties interested both for and against pasteurization were invited to attend a meeting on November 23rd, 1923. The arguments against the scientific pasteurization of the civic milk supply dwindled down to the ordinary street vernacular against this and other progressive measures, with no semblance even of plausible evidence in support of the everyday contentions in opposition to this great safeguard against the transmission of infectious diseases by milk.

Dr. John W. S. McCullough, Chief Officer of Health for the Province of Ontario, Dr. D. A. McClenahan, and other authorities on pasteurization were present at the meeting, and much expert evidence was submitted. The occurrence of several recent outbreaks of typhoid as a result of the consumption of milk were recited, and other convincing data submitted in favour of the process. No decision was reached at the meeting, and the question is being held in abeyance in the meantime. The following is a summary of inspections made and notices served by my department:

TOTAL NUMBER OF INSPECTIONS.....	6,209
TOTAL NUMBER OF MILK EXAMINATIONS.....	5,233
Inspections of Central Market.....	293
" " butcher shops.....	410
" " abattoirs.....	14
" " fruit and vegetable stores.....	210
" " butter and egg stores.....	22
" " grocery stores.....	545
" " ice cream and confectionery stores.....	585
" " ice cream factories.....	14
" " ice cream cone factories.....	2
" " candy factories.....	28
" " bottling works.....	17
" " restaurants and lunch rooms.....	1,170
" " bake shops.....	281
" " fish stores.....	84
" " dairy farms.....	4
" " city milk dairies.....	597
" " milk depots.....	416
" " milk wagons.....	215
" " for licenses, milk, butcher, restaurants, etc.....	594

Number of milk licenses refused	54
“ “ milk samples tested (chemical)	2,769
“ “ milk samples tested (bacterial)	311
“ “ cream samples tested	42
“ “ milk temperatures taken	717
“ “ sediment tests made of milk	1,193
“ “ M. B. reductase tests made	201
“ “ water samples collected	17
“ “ times weighing market products	29
“ “ complaints regarding food investigated	25
“ “ times attending at police court	12
“ “ miscellaneous inspections	661

NOTICES WERE SERVED AS FOLLOWS:

Notices to clean butcher shops	64
“ “ “ fruit and vegetable stores	43
“ “ “ grocery stores	78
“ “ “ ice cream and confectionery stores	43
“ “ “ ice cream cone factories	2
“ “ “ candy factories	13
“ “ “ restaurants and lunch rooms	409
“ “ “ fish stores	18
“ “ “ milk dairies	52
“ “ “ bake shops	88
“ “ cover and protect food stuffs	46
“ “ screen doors and windows, food premises	18
“ regarding premises unfit for handling food	19
“ to discontinue sale of milk	9
“ take milk license	211
“ regarding low chemical test of milk	101
“ “ high temperature of milk	207
“ “ sediment in milk	575

SEIZURES.

Number pounds beef	1,952
“ “ veal	150
“ “ pork	50
“ “ fish	705
“ dozen ice cream wafers	3
“ dozen straws	5
“ dozen ice cream cones	7
“ paper bags	100
“ gallons of milk	94

Respectfully submitted,

C. SHAIN,
Chief Food and Dairy Inspector.

REPORT OF DAIRY FARM INSPECTOR.

To James Roberts, Esq., M.D., Medical Officer of Health, City of Hamilton.

Sir:

I have the honour to submit the following report on my work as Dairy Farm Inspector from November 1st, 1922, to October 31st, 1923.

During the above-mentioned period the number of producers who shipped milk to Hamilton varied from 430 to 450, the milk being shipped in from within a radius of twenty-nine miles.

The number of visits to dairy farms during the year was 2,434, some of the farms being visited more frequently on account of existing conditions which required improvements.

Three producers were excluded from shipping milk to the city for not complying with the city regulations.

One producer was refused a license to ship milk on account of unsanitary conditions.

Improvements on dairy farms within the past year were made as follows:

Number of milk houses built	29
“ “ milk houses repaired	16
“ “ barns built	5
“ “ stables repaired	5
“ “ stables whitewashed	390
“ “ inspections for dairy farm licenses	37
“ “ milk licenses refused	1
“ “ milk licenses cancelled	3
“ “ milk licenses suspended	3
“ “ stable tests taken	21

Notices were served as follows:

To build milk houses	37
To repair milk houses	30
To repair stables	9
To whitewash stables	210
To remove hogs	9
To remove accumulations of manure	32
To clean cattle	76
To discontinue use of milk:	
On account of disease in cows	3
On account of sediment in milk	98
On account of high temperature in milk	323
On account of low test of milk	32

I have the honour to be, sir,

Your obedient servant,

J. T. ARRELL,
Dairy Farm Inspector.

REPORT OF THE DENTAL CLINICS.

Dr. James Roberts, Medical Officer of Health, City of Hamilton.

Sir:

The annual report herewith submitted shows a considerable increase in the number of children cared for in the two dental clinics located in the public schools. The requests for treatment are continually increasing, keeping the clinics running to capacity every day.

The annual dental inspection of children in the public schools entrusted to our supervision during the past year showed a remarkable improvement in the dental condition of the children as compared with conditions noted in our initial survey three years ago. At that time ninety per cent. of the children examined required treatment, whereas in our last survey less than sixty per cent. were found to be dentally defective.

It is hoped that means may be provided for increasing the number of dental clinics in the schools to care for this work, so essential to the health and comfort of the children.

(Signed) H. A. THOMPSON, D.D.S.
W. G. MANNING, D.D.S.

Below is submitted a detailed report of the year's work at King George and Cannon Street Schools.

Total treatments	7,655
Total extractions	5,396
FILLINGS:	
Amalgam (silver)	3,349
Petroid cement	1,817
Copper cement	1,701
Gutta percha	3,213
Synthetic (enamel)	399
Temporary	320
Silver nitrate	4,905
Miscellaneous operations	420
New cases	3,232
Completed cases	2,458
Pupils inspected	18,500

HEALTH CENTRE DENTAL CLINIC.

To James Roberts, Esq., M.D., Medical Officer of Health, City of Hamilton.

Sir:

The annual dental inspection of the separate schools and the following public schools: Stinson, Queen Victoria, Victoria Avenue and West Avenue, shows a great improvement in the condition of the children's teeth. This is indeed very gratifying to those in charge of the work, the Board of Health and the school nurses; also the interest that the parents of these children are taking in the care of the teeth is appreciated.

The public is realizing the great part a clean mouth plays in the general health of the child. It is very necessary that children of pre-school age should be taught the regular use of the tooth-brush and when a cavity develops to have it attended to immediately. Many of the parents have the impression that the temporary teeth should not be treated. The Board of Health nurses and the school nurses have taken a great interest during the past year in popularizing preventive dentistry.

During the past year approximately 2,500 children have been treated at the Health Centre Dental Clinic. The 1923 inspection shows 70 per cent. of the children needing dental attention; the previous year showed 82 per cent. Included in this 70 per cent. many are completed cases returning to have additional work done, showing the vast improvement over the preceding year.

Below is submitted a detailed report of the year's work:

Total treatments	7,575
Total extractions	3,254
FILLINGS:	
Amalgam (Silver)	4,216
Synthetic (enamel)	254
Copper cement	2,973
Petroid cement	55
Gutta percha	831
Root fillings	231
Silver nitrate	222
Pulp removed	62
New cases	2,125
Completed cases	1,648
Gas cases	52

Individual statement of each school surveyed in 1923:

School:	No Inspected	No. requiring Treatment	Percentage in Good Condition
St. Ann's.....	338	226	33
St. Stanislaus.....	270	222	17
Holy Family.....	216	174	19
St. Thomas.....	195	126	35
St. Lawrence.....	318	231	27
Holy Rosary.....	296	192	35
Sacred Heart.....	348	233	33
St. Mary's.....	324	197	39
Holy Angels.....	151	114	24
St. Thomas Aquinas.....	185	123	33
St. Joseph's.....	187	118	36
St. Patrick's.....	297	205	31
Mount Carmel.....	32	26	18
Queen Victoria.....	526	380	27
Victoria Avenue.....	614	365	40
West Avenue.....	396	280	29
Stinson.....	785	623	20
	5,478	3,835	30%

Respectfully submitted,

J. L. STEWART, D.D.S., and J. E. DORES, D.D.S.

REPORT OF THE PUBLIC HEALTH NURSES.

(For the Year Ending October 31st, 1923.)

Dr. James Roberts, Medical Officer of Health, Hamilton.

Sir:

It is my privilege to report on the work accomplished by the nursing staff of your department during the year ending as above.

As in former years changes have occurred in the personnel of the staff, but, as will be observed by the tabulation of work submitted, the work of the nursing staff is marked by progressive improvement over former years.

Reports are furnished separately by the nurses in charge of tuberculosis and social service, the other divisions, such as child hygiene, communicable diseases, mental hygiene and general public health work, being shared by all other nurses of the department.

Nurses are in attendance at each of the department of health dental clinics; their work, however, being exclusively dental, service is not recorded in the report of the general nursing staff.

In relation to communicable diseases, scarlet fever, measles and whooping cough were endemic, becoming epidemic at various times throughout the year, diphtheria remaining generally insistent.

Scarlet Fever.

Although 305 cases of scarlet fever were notified, the number would not represent the actual number of cases occurring during the year, because of the mildness of the disease. Many instances have come to the knowledge of the nurses whereby the children were actually attending school while suffering from the disease. A case of scarlet fever is reported to the department, the nurse visits the home, inquires the source of infection. Frequently the mother is unable to tell except that the child contracted the disease at school. On examination of the children in the class, a child is found to be desquamating,

the child is excluded from school and the home visited. The mother will give a history of the child having a slight sore throat and of being unaware that her child had any serious illness.

To further illustrate the mildness of the disease occurring this year, a young lady contracted the disease and on questioning her we were able to ascertain that the source of infection must have been her place of business. Examination of the clerks revealed one young man with desquamating hands, giving a history of having had a slight sore throat a few weeks previously.

This work of visiting the cases, finding the source of infection, examining school children, visiting contacts and having them observe quarantine, entailed 1,526 visits to homes.

Measles.

The nurses try to impress upon the mothers the great necessity of endeavouring to prevent the spread of the disease among children. The school children are examined and absentees visited. The visiting of absentees is a very important part of the work because many a child kept home with a cold can be kept under observation, and if measles develop, the other children are not unnecessarily exposed to the disease. Total number of visits to cases and contacts was 1,226.

Whooping Cough.

This disease was epidemic during the months of March and April, many visits and revisits being made by the nurses, teaching the mothers the danger of the disease among little children and how best to prevent the spread of the disease. A total number of 1,181 visits were made.

Influenza.

I am very glad to be able to state that we had only a slight epidemic of this disease. A total number of 149 visits were made, including quite a few cases at which bedside care was given.

Diphtheria.

When a case of diphtheria occurs considerable work is involved. All contacts are cultured, to try and ascertain the source of infection. The children in the classroom exposed to the disease are cultured. Occasionally a child gives a positive culture. He may be well, or he may have had diphtheria, but he is quarantined until two negative cultures are obtained. Old cases of diphtheria are cultured at intervals to see whether the child is harbouring the K. L. bacilli or not. To illustrate how the nurses undertake to ascertain the source of infection three cases of diphtheria were reported in children under five years and in the same neighbourhood. All the children in the neighbourhood were cultured and one boy among 73 cultures obtained, who had diphtheria three months previously, showed a positive culture and was the probable origin of the three cases. In all, 3,041 visits were made for diphtheria and symptoms suspicious of the disease with a total of 6,789 cultures being obtained and 520 visits to the laboratory.

Other diseases such as typhoid fever, smallpox, mumps, chicken-pox and minor communicable diseases, including scabies, pediculosis, etc., necessitated 1,298 visits.

The nurse, when visiting a home, not only looks for a communicable disease, but teaches to prevent the spread of disease; teaches personal hygiene, such as the

care of the teeth and, if the service of a dentist is required, a dental card is filled out and given to the mother with instructions for the child to attend one of our dental clinics. Dental investigations and absentees totalled 586 visits.

The nurse looks around the home to see if the place is sufficiently ventilated, clean, sanitary in every detail and warm in the winter. Any unfavourable conditions discovered are reported to the sanitary department. The Red Cross Society advises us of all the new arrivals in our community. These are attended by the nurses; all the clinics are explained. One immigrant was in tears when the nurse arrived. She could not get the fire to burn; the nurse promptly showed her how and she is now a welcome visitor. Visits of this nature and visits to the relief department connecting up families for hospital treatment totalled 884.

Health Survey.

During the early part of the year, a house-to-house survey was made to ascertain the necessity of having another chest clinic opened in the north-east section of the city. Owing to pressure of work, only 350 families were visited, but the information obtained was nevertheless accurate and formed a fairly reliable foundation on which an estimate of health conditions along certain lines could be based. The information sought was as follows:

Rental value of premises (classified); living conditions; education of parents; monthly incomes; particulars of communicable diseases; morbidity and mortality information relating to children in the homes visited. Particulars of British and non-British nationality were obtained. Information of results have been duly tabulated, of which the following constitutes a summary:

Families owning their own homes—British, 83; non-British, 73.	Total	156
Families renting homes—British, 94; non-British, 100.	Total	194
	Total	350
Living conditions.—Good—British, 96; non-British, 96.	Total	192
Fair—British, 48; non-British, 79.	Total	126
Bad—British, 6; non-British, 26.	Total	32
	Total	350

Of the homes visited no family received over \$100 per month; some of them as low as \$50. Particulars relating to communicable disease are recorded. One of the most important features recorded in the table of mortality among children of the non-British population under two years of age, is the number of deaths of which the cause is unknown.

In the course of the health survey, family histories were obtained of an interesting and instructive character. Instances may be given here which in some respects might be regarded as extreme, but are an evidence of some of the conditions confronting a public health nurse.

(1) Child in hospital, ready for sanatorium. Child, age fifteen years, three times in sanatorium; is now home. Child, age twelve years, in sanatorium two years; is now home (has nasal condition). Another is sick. Mother in sanatorium two years ago. Husband in Brant House—chest condition. Another girl—positive T. B. (this family want to keep a grocery store).

(2) Father has been an inmate of Hospital for Insane. One girl died of scarlet fever and diphtheria, and one boy of erysipelas and pneumonia. Physician was called to this home by public health nurse.

(3) Father healthy. Mother gives a T. B. history, negative sputum. Baby delicate. All under care of physician.

(4) Father has been in sanatorium three years. Now at home. Is visited by D. S. C. R. nurse. Others in family have no apparent illness.

(5) Father a mental case returned from insane asylum in July—incurable; moulder; condition harmless. Mother has a leg infection of fifteen years' standing. Five children had tonsillectomy.

(6) Mother has a hernia since birth of child, two years ago. Boy aged fifteen has been in hospital with strangulated hernia. One child has poliomyelitis; attends the hospital clinic for treatment. Girl has enlarged tonsils.

(7) Father had an accident ten years ago, and since that time complains frequently of headache. One child has a chest condition; will be taken to the clinic. The baby has a hernia (strapped).

(8) One child had pneumonia—resection of rib (age two years). Last year had diphtheria; is now in the sanatorium. All attend the chest clinic. Family give a T. B. history.

(9) One brother-in-law died at home, of T. B. Wife examined, and found to be in normal health. Others in family look anaemic. Under observation.

(10) Father has been a patient at the sanatorium; children are apparently well. Under observation.

(11) Mother died of T. B.; children delicate; chest clinic advised.

(12) Mother died of influenza four years ago. A child of ten years is the housekeeper, attending school in the morning only. Has an ear condition. Nurse visits every day to irrigate the ear.

As to establishing a chest clinic in this section, we were unable to complete sufficient data at the time and a more complete survey will be undertaken. Many of the above families were visited and revisited from time to time and corrections made which undoubtedly resulted in improved living conditions.

Immunization.

Our immunization clinics continue to be well attended. The nurses distribute literature explaining immunization, also slips whereby the parents give their consent for this treatment to be carried out; in all 445 visits have been made during the year. This work has been referred to in another report.

Examination of School Children.

In relation to communicable diseases, several thousand children were examined for the presence of infection, and absentees visited in their homes. Many of these latter were found suffering from a communicable disease, and in all probability if these children had not been visited by the nurses, the cases would never have been brought to the attention of the department.

Child Hygiene.

One of the main activities of the public health nurse is the care of the child and its conservation throughout every stage of life,—pre-natal, infancy, pre-school age, school age and adolescence.

The year opened with the child welfare clinic at the Health Centre fully maintaining the success of the previous year, and early in the year it was felt that in order to meet the increasing needs of this service, the establishment of other clinics became a necessity. As a consequence, four additional clinics were established, three being near the confines of the city, and the other at the Health Centre.

The attendance at the clinics continues to increase. The majority of the mothers bring their babies to be weighed, charted and instructed along the lines of preventive medicine, such as the proper feeding of the infant, the advantages of vaccination and immunization. Medical treatment is not administered at the clinics, but where nutritional service is needed such help is rendered as circumstances permit.

The nurses of the department visit the homes of babies born in the city as soon as practicable after registration. This is an important duty of the child hygiene bureau in all up to date health departments. A baby book is left and an invitation extended to attend one of our well-baby clinics.

This work entailed a total of 4,094 home visits throughout the year.

The infant and maternity boarding homes were frequently visited during the course of the year and all returns found to be correct and in accordance with statutory obligations.

Fresh Air Camp.

In all 355 children were examined as to their fitness to attend the summer camp at Burlington. Thirty visits were made to the camp and playgrounds by the nurses.

Bedside Nursing.

During the visits to the homes, the services of the nurses are frequently required for bedside nursing. For this work 315 visits were made. Throughout the year 15,970 visits were made to the homes of the people, to the schools and other places in the daily routine of the nurses' work.

We are greatly indebted to the City Relief Department and the Central Bureau of Social Agencies for their kind and prompt attention to many cases referred to them.

Respectfully submitted,
ANNIE B. BOYD.

TUBERCULOSIS—REPORT OF VISITING NURSE.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

I beg to submit the following report in connection with the chest clinic for the year ending October 31st, 1923.

During the past year no changes have been made in the routine work of the dispensary. Three clinics have been held each week throughout the year, Monday, Wednesday and Friday afternoons, on which days any person suffering from a chest disability may attend, be examined, and receive advice free of charge. A clinic is also conducted on Saturday mornings for children, which enables school children to be examined without losing time from school; eight to ten attend each morning. As a rule, children who are infected do not have extensive trouble, but by giving them special care while young, serious trouble which might develop in adult life is averted.

During the routine examination of the children, many cases of adenoids, diseased tonsils, and defective eyes and teeth are found; where there is no attending physician these cases are referred to the City Hospital and the dental clinic for treatment, and in almost every case where the parents carried out the advice improvement in the child's condition was marked.

The following statistics are submitted relating to our work throughout the year:

Total number of cases receiving attention.....	2,298
New patients under supervision.....	565
Old cases under supervision.....	1,375
Re-examinations.....	754
Total number of examinations.....	1,319
Suspected cases under observation.....	181
Cases of active tuberculosis found.....	123

The new patients discovered with active trouble may be classified as follows:

	Men	Women	Children	Total
Incipient.....	17	24	43	84
Moderately advanced.....	16	9	0	25
Far advanced.....	8	5	1	14
Total.....				123
Children with bronchial gland infection.....				30
Recommended for Sanatorium treatment:				
Men.....				25
Boys.....				42
Women.....				21
Girls.....				20
Children examined—school age and under.....				762
Patients were referred to the clinic by:				
Physicians.....				269
School nurses.....				80
Public health nurses.....				79
By friend, or without reference.....				116
Other sources.....				21
Positive cases of sputum from City Laboratory.....				56

The following particulars relating to the nationality of patients attending during the year may be of interest:

Canadians.....	394
English.....	82
Scotch.....	13
Irish.....	6
Americans.....	15
Others, including Russian, Italian and Chinese.....	55

During the year 1,757 visits were made to the homes of patients, 329 of these being new calls; there were also 133 miscellaneous calls. These include occasional visits made to patients after discharge from the sanatorium, visits to those who are under regular supervision, and visits to doubtful cases who are being kept under observation. Those cases that have been diagnosed as active tuberculosis are recommended for treatment in the sanatorium, and are as a rule admitted in a comparatively short time, thus lessening the danger to other members of the family and of the community.

At each visit advice is given the patient as to the conditions under which he should live, and he is given assistance in carrying out the instructions received at the clinic. Advice is also given as to the disposal of sputum, the proper method of disinfecting dishes, linen and anything that is used for the patient, and he is also told about the danger of infection to children, and how to avoid this.

Besides supervising the treatment advised by the doctor, it is the privilege and duty of the nurse to do what she can to make her patient more comfortable, and to relieve any hardships which she may come in contact with. In this work we have been greatly aided by the Miss Doolittle Trust Fund, Junior Health League, and by donations received from other sources. Both of these organizations have responded nobly during the past year to the many calls that have been made upon them. The Miss Doolittle Fund has supplied 200 quarts

of milk, 140 dozen eggs, quantities of fruit and groceries; two families have been supplied with extra coal and clothing; \$95 has been drawn from this fund during the year.

The Junior Health League has supplied 10,621 quarts of milk; one quart daily has been supplied to twenty-five families; other families were also given extra milk. The members of the Junior Health League also visited a number of families during the year, taking them a few extras and in a number of ways doing a great deal to relieve suffering.

EXPENDITURES

By balance from 1922	\$ 1 70
Cash for sale of thermometers	33 25
	<hr/>
Expenditures	\$34 95
	27 95
	<hr/>
Cash on hand	\$7 00

Respectfully submitted,

G. A. MASON,
Tuberculosis Nurse.

REPORT ON SOCIAL SERVICE

(And Other Work in Connection with the Control of Venereal Diseases).

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

In submitting my report on Social Service, particularly in relation to the work entailed in connection with the control of venereal diseases in the city of Hamilton, I would deal more explicitly with the cases passing through the clinic at the General Hospital during the year ending October 31st, 1923.

The treatments at the clinic may be summarized as follows:

CARRIED OVER FROM 1922:	
Syphilis	216
Gonorrhoea	96
	<hr/>
Total	312
NEW CASES REPORTING FOR TREATMENT FOR 1923:	
Syphilis	180
Gonorrhoea	112
Non-V. D.	87
	<hr/>
Total	379
TOTAL CASES REPORTED AT THE CLINIC:	
Syphilis 216 + 180	396
Gonorrhoea 96 + 112	208
Non-V. D.	87
	<hr/>
Grand Total	691
DISCHARGED—SYPHILIS:	
Apparently cured	2
Without permission	125
Transferred for treatment elsewhere	48
	<hr/>
Total	175

DISCHARGED—GONORRHOEA:	
Apparently cured	46
Without permission	70
Transferred for treatment elsewhere	26
Total	142
Total discharged 175 + 142 = 317	
REMAINING UNDER TREATMENT:	
Syphilis	221
Gonorrhoea	66
Total	287
Number of cases pregnant, 6.	

Four of these have been confined, the babies are doing well, and are apparently healthy.

Temporary reactions following phenarsenamine treatment have been noted in some instances. Jaundice resulted also in several cases; three of these were admitted to the hospital for treatment.

Forty-one patients had negative Wassermanns periodically during the year.

It will be noted that the number of patients under treatment was less than in 1922, in which year the number was lower than in 1921.

The totals being, for 1921	474
1922	399
1923	287

I would again urge the necessity of parents to warn their children, when approaching on or entering the adolescent period of their lives, against the danger of youthful indiscretions which may lead to disease and even death.

Much of the misery and shame resulting from venereal diseases might have been avoided if parents had been more faithful in the discharge of their responsibilities, and had given warning word, or administered the judicious advice which might have prevented the step being taken on the downward path by their offspring.

A social service nurse frequently meets with instances which serve as illustrations of these conditions, and when opportunity affords she renders help and advice that is invariably accepted with gratitude.

I have the honour to be, sir,

Your obedient servant,

C. E. FLOCK,
Social Service Nurse.

REPORT OF THE DIVISION OF SANITARY INSPECTION FOR THE YEAR ENDING OCTOBER 31ST, 1923.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

I have the honour of reporting on the work accomplished by the division of sanitary inspection for the year ending October 31st, 1923.

The following represents a summary of the work attended to by the sanitary inspectors throughout the year:

Complaints received and attended to	2,057
Statutory Notices	2,091
Verbal or Informal Notices	7,116
Total of notices	9,207

PREMISES INSPECTED.

Dwelling houses.....	9,615
Tenements and apartment houses.....	652
Hotels, lodging, boarding and rooming houses.....	445
Workshops, factories and offices.....	563
Restaurants and stores.....	329
Stables.....	554
Laundries.....	288
Second hand stores and junk yards.....	41
Yards, sheds, areas, outbuildings and alleyways.....	9,196
Vacant lots.....	157
Schools and public buildings.....	229
Other premises.....	2,946
Inspections for communicable diseases.....	1,106
<hr/>	
Number of inspections.....	26,121
Number of re-inspections.....	6,872
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Total of inspections and re-inspections.....	32,993

DEFECTS AND NUISANCES DISCOVERED AND REMOVED OR ABATED.—PLUMBING.

Defective or choked drains.....	360
Defective or choked sinks, urinals or washbasins.....	384
Defective soil pipes and other sanitary fittings.....	308
Defective ventilation of plumbing.....	124
Frozen plumbing or water pipes.....	87
Defective eavetroughs and leaders.....	997
Insufficient or improper plumbing.....	276
New plumbing or water services installed.....	469
<hr/>	
Total of plumbing defects.....	3,005

PARTICULARS RELATING TO SMOKE NUISANCES.

Observations of chimneys and smoke stacks.....	306
Inspections of boiler rooms, power houses and equipment.....	327
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Total of observations and inspections.....	633
Statutory or informal notices.....	163

OTHER NUISANCES OR DEFECTS DISCOVERED AND REMEDIED.

Dirty yards, courts, sheds, areas and alleyways.....	3,252
Dirty walls, ceilings and floors of dwellings and other premises.....	2,980
Inadequate natural light.....	77
Insufficient ventilation of premises.....	157
Keeping animals in or near dwellings.....	516
Lack of proper receptacles for manure, garbage and other waste.....	987
Accumulations of manure and other refuse.....	1,541
Defective and insanitary cellars or basements.....	670
Dilapidated and generally insanitary dwellings or other premises.....	93
Insanitary conditions in factories, offices or stores.....	25
Insanitary conditions in halls and theatres.....	11
Insanitary conditions in schools or public buildings.....	8
Overcrowding.....	182
Defective chimneys.....	97
Defective roofs.....	785
Defective gas stoves and fittings.....	119
Defective furnaces or stoves.....	107
Earth closets or privies.....	5,046
Miscellaneous.....	773
<hr/>	
Total.....	17,426
Plumbing defects brought forward.....	3,005
<hr/>	
Total of all defects remedied.....	20,431

I have the honour to be, sir,

Your obedient servant,

W. F. THORNLEY,
Chief Sanitary Inspector

REPORT ON SMOKE NUISANCES: THEIR ABATEMENT AND PREVENTION FOR THE
YEAR ENDING OCTOBER 31ST, 1923.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

I have the honour of submitting my report on smoke nuisances, their abatement and prevention, together with information respecting observations of chimneys and smoke stacks, with records of visits paid to boiler rooms, and other details incidental to the general question of smoke prevention, as affecting the city of Hamilton for the year ending October 31st, 1923.

The following details represent a summary of results actually accomplished:

Observations taken of chimneys and smoke stacks totalled	306
Inspections of power plants, boiler rooms, fuel supplies, boiler equipment, the testing of smoke-preventing apparatus, and visits for instruction as to firing boilers, reached a total of	327
Observations and inspections taken together totalled	633
Notices, either statutory or informal, were served in respect of premises	163

While it is claimed that improvement in the smoke situation of the city has been affected as compared with previous years, it is to be regretted that conditions in this respect may not be regarded as ideal at the present time.

The improvements recorded in previous reports, and the various installations of smoke-preventing equipment referred to in past years, have been well sustained, but in many apartment blocks, store premises, office blocks, church buildings, school premises, as well as at several of the factories, conditions exist which still demand the attention of your officials.

In many instances the owners of the premises have evinced a disposition to meet the demands of the Department of Health to effect an improvement in their methods of controlling the fuel situation for their plants, but have claimed that suitable fuel has not been obtainable.

It is a most regrettable fact that the worst possible coal for evolving smoke was brought into Hamilton from the United States, presumably by the coal dealers of the city, and that the atmosphere was being fouled by the smoke evolved from this objectionable fuel, because the owners of the premises at which these nuisances existed appeared to be in the humiliating position of being compelled to accept it, as no other more suitable fuel was available at the time.

It is a further regrettable fact that the article responsible for at least 95 per cent. of the smoke discharged into the atmosphere above our city is the bituminous coal imported from the United States, and for which many millions of dollars are poured into the coffers of United States mine owners, which could be diverted into the channels of Canadian products if a little more enterprise were manifested by responsible parties. In former reports Canadian coal has been advocated for Hamilton use.

Most commendable attempts have been made by the city fuel controller and W. O. Sealey, Esq., amongst others, to procure a supply of Alberta coal for this city. Success in a measurable degree has attended their efforts, but palpable obstructions have been placed in their way; it is not difficult to trace the cause for this obstruction. Coal has been moving from the States to Canada for many years past, and no determined effort, until recently, has been made to supply Ontario in general and Hamilton in particular with the splendid fuel available at the wealthy mines of Alberta.

Those who have been able to procure some of this Western product speak in glowing terms as to its quality and heat-producing properties. It is gratifying

to note that the users of this first supply of the Western article are well satisfied. It might here be stated, however, for the benefit of those who might think the Alberta coal has not reached the standard expected, if there be such, that the highest grades of Western coal have not as yet arrived in Hamilton. This applies to the enormous available quantities of anthracite from the Banff, Bankhead and other districts of Alberta. This bountiful anthracite coal supply for Hamilton, and Ontario in general, is only limited by the facilities for its transportation to these eastern parts.

The same observations are relatively applicable to the vast semi-anthracite and semi-bituminous fields awaiting development in those rich mineral regions of Western Canada; the territories from which they are available have been mentioned in the local press and in open correspondence. While many thousands of tons of coal have during the summer months been brought from Alberta into Ontario, with a limited amount actually arriving at Hamilton, the coal for the most part has been of the lignite order; this coal is not of uniform grade. It is not intended in this report to mention the various fields from which the different grades of lignite are procured, but coal importers are reminded that some of this order is of very poor grade, and care should be exercised to bring into the province high-grade fuels only.

All lignite coals disintegrate when exposed for any length of time to the elements. The higher grades will hold together for a greater length of time than will those of a lower order. Lignite coal, if stored, should be kept under cover, properly protected from the influence of sunlight and rain. If exposed in the open, a load of poor grade will, in a few weeks or months, instead of appearing as a heap of bright, shining lumps of coal, be reduced to a pile of dirty-looking slack, by a certain process of deterioration. This heap of slack, although shorn of its bright appearance, still retains many, if not all, of its thermal units, and is still available for fuel. The higher grades of lignite are also affected by the elements, but to a less serious degree.

The object, however, of importers should be to obtain anthracite, semi-anthracite and semi-bituminous coal for this province, and only bring in the lignites for special use, or in the event of any difficulty occurring in the shipment of the higher orders of Alberta coal.

It might be here noted that immense and unlimited supplies of lignite coals are available in the nearer western provinces of Saskatchewan and Manitoba; but the use of lignite in Ontario is not being advocated either from these or the further west provinces, as it is believed the other orders of coal, although a few cents higher per ton, are more suitable for local requirements.

In the report of the Department of Mines for Canada, it is stated that for the ten months ending October 24th, 1923, 19,450,000 tons of coal were imported into Canada, including 4,315,800 tons of anthracite. This quantity, based on the low average cost of \$7.50 per ton, f.o.b. in Ontario, means that during the first ten months in 1923 no less a sum was sent into the United States for coal than 145,875,000 dollars.

The significance of this lies in the fact that our own rich coal fields were capable of supplying every ton of coal required in Canada, and further they were and still are able, if required, to supply the needs of the whole world for the present and future generations. This output of the mines of Western Canada is only limited by the facilities available for transportation.

This is a question that demands the intelligent consideration of our federal, provincial and civic governments, as well as all bodies corporate and incorporate

who claim to possess any interest in the growth and development of our own resources.

While Western coal is receiving consideration at the present time, it is well to remember that vast coal fields exist in Nova Scotia; this coal, however, is of the bituminous order, and is an excellent coking coal; large quantities produced are converted into coke, and during the process many by-products, such as gas, tar and ammonia, are recovered.

Many of these products and by-products are actually shipped to Hamilton in this form rather than the actual coal. There is, however, no reason why coal from Nova Scotia should not be delivered in this city and used here in competition with other imported bituminous coal, or coked in by-product ovens.

It will be seen that Ontario is, above all other provinces in the Dominion, the most heavily handicapped in respect to coal deposits, but it is urged that her importations should as far as practicable include coal produced from the mines of Canada.

The reduction of smoke emissions has been secured, as in former years, by the substitution of a non-objectionable smoke-evolving coal for the more offensive bituminous order, or by the equipment of boilers with smoke-preventing apparatus.

Attention has been directed in previous reports to smoke emissions from locomotives. During the year under review, such emissions have been of frequent occurrence, particularly in the neighbourhood of Stuart Street Station and yard. Many of the locomotive engines operating in various parts of the city are equipped with devices which, if properly attended to, should produce better results than have been obtained throughout the year. High volatile coal is invariably used in the locomotive engines entering and passing through the city, and is responsible for the objectionable smoke emissions referred to.

The most satisfactory solution for locomotive engines in the city of Hamilton is that coal firing be dispensed with entirely, and that electrification be adopted. There is no engineering difficulty existing which could prevent this very desirable change being effected in the near future.

I have the honour to be, sir,

Your obedient servant,

W. F. THORNLEY,

Chief Sanitary Inspector.

REPORT OF THE INSPECTOR IN CHARGE OF QUARANTINE AND ISOLATION, FOR THE
YEAR ENDING OCTOBER 31ST, 1923.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

In submitting this report on quarantine and isolation for the year ending as above, I would direct attention to the large number of visits paid to homes in connection with the work of quarantine and isolation, apart from other details, as compared with previous years; the number of visits recorded total 3,233, against 1,182 for the previous year.

The considerable increase in the number of premises placarded is also worthy of note.

The work in general has been most strenuous throughout the year, and its accomplishment has only been possible by the assistance and co-operation rendered by all other divisions of the Department of Health.

Miscellaneous renovations.....	427
Measles cards removed.....	512
Chicken-pox cards removed.....	110
Whooping cough cards removed.....	83
Mumps cards removed.....	7
Houses renovated after diphtheria cards removed.....	145
“ “ “ scarlet fever cards removed.....	132
“ “ “ poliomyelitis cards removed.....	5
“ “ “ smallpox cards removed.....	2
Number of visits in connection with smallpox contacts.....	500
“ “ “ diphtheria contacts.....	11
“ “ “ scarlet fever contacts.....	33
“ “ “ measles contacts.....	151
“ “ “ quarantine and isolation.....	3,233
“ “ “ erysipelas.....	2
“ “ “ meningitis.....	1
“ “ “ tuberculosis.....	17
“ “ “ typhoid fever.....	1
Number of investigations of cases where persons were bitten by dogs.....	74

I have the honour to be, sir,

Your obedient servant,

C. J. ROBERTSON,
Quarantine Enforcement Officer.

VITAL STATISTICS.

	1922		1923	
	Births	Deaths	Births	Deaths
November.....	277	123	246	109
December.....	305	127	261	110
January.....	310	140	283	147
February.....	297	110	254	189
March.....	292	126	294	127
April.....	272	128	286	136
May.....	288	107	312	125
June.....	249	100	293	93
July.....	287	99	287	86
August.....	255	96	296	93
September.....	233	117	287	113
October.....	230	111	204	96
	3,295	1,384	3,303	1,424

COMPARATIVE TABLE.

SHOWING NUMBER OF DEATHS WITHIN THE FOLLOWING AGE PERIODS.

	1922	1923
Under 1 year.....	376	353
From 1 to 5 years.....	72	69
From 5 to 10 years.....	27	29
From 10 to 20 years.....	34	51
From 20 to 30 years.....	62	65
From 30 to 40 years.....	94	90
From 40 to 50 years.....	99	79
From 50 to 60 years.....	142	147
From 60 to 70 years.....	215	217
From 70 to 80 years.....	179	201
From 80 to 90 years.....	72	110
From 90 to 100 years.....	12	11
From 100 to 110 years.....	..	1
Age not given.....	..	1
	1,384	1,424

TABLE

Showing causes of death in children under 1 year, exclusive of premature and stillbirths:

Malnutrition.....	28
Gastro-Intestinal Diseases.....	24
Asphyxia Neonatorum.....	5
Toxæmia.....	2
Injury at birth.....	5
Meningitis.....	5
Atelectasis.....	2
Hæmophilia.....	1
Malformations.....	1
Cerebral Hæmorrhage.....	4
Imperforate Anus.....	2
Congenital Syphilis.....	4
Tetany.....	1
Patent Foramen Ovale.....	6
Asthenia.....	4
Cretinism.....	1
Convulsions.....	2
Septicæmia.....	2
Erysipelas.....	5
Whooping Cough.....	3
Diphtheria.....	2
Lobar Pneumonia.....	7
Bronchitis.....	2
Broncho Pneumonia.....	23
Leukæmia.....	1
Pyrexia.....	1
Spinal Bifida.....	5
Hydrocephalus.....	3
Epilepsy.....	1
Influenza.....	2
Cerebral Tumor.....	1
Appendicitis.....	1
Congenital Heart.....	3
Hæmorrhage Neonatorum.....	7
Drowning.....	1
	<hr/>
	167

DEATHS.

I.—GENERAL DISEASES.

Influenza.....	42
Measles.....	3
Typhoid Fever.....	2
Erysipelas.....	9
Whooping Cough.....	11
Scarlet Fever.....	6
Diphtheria.....	26
Sleeping Sickness.....	1
Epidemic Anterior Poliomyelitis.....	1
	<hr/>
	101
TUBERCULOSIS—	
Lungs.....	37
Meninges.....	6
Intestines.....	1
Spine.....	3
Bones.....	1
	<hr/>
	48
CARCINOMA—	
Stomach and Liver.....	26
Abdominal.....	1
Intestines.....	17
Breast.....	11
Uterus.....	13
Neck.....	9
Jaw.....	3
Kidney.....	1

CARCINOMA—*continued.*

Bladder	5
Tongue	1
Rectum	7
Throat	4
Lip	1
Ovary	4
Pancreas	1
Not specified	5

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SARCOMA—

Thoracic Cavity	1
Abdominal	1
Bladder	1
Brain	2
Hip	1
Jaw	2
Not specified	1

9

Rheumatism (Inflammatory)	1
Septicæmia	7
Exophthalmic Goitre	5
Anæmia, Pernicious	18
Anæmia	1
Leukæmia	1
Diabetes Mellitus	17
Addison's Disease	2
Syphilis	2
Thyroidism	1
Hodgkin's Disease	1
Anthraxis Deformans	1
Septic Sore Throat	3
Pyæmia	1
Potts' Disease	1

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II.—DISEASES OF THE NERVOUS SYSTEM.

Meningitis	2
Cerebro Spinal Meningitis	2
Cerebral Hæmorrhage	33
Cerebral Tumor	1
Paralysis (General)	4
Paralysis (Agitans)	4
Disseminated Sclerosis	1
Epilepsy	1
Cerebral Abscess	2
Apoplexy	33
Hemiplegia	7
Paraplegia	1
Otitis Media	3

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III.—DISEASES OF THE CIRCULATORY SYSTEM.

Aneurism	4
Endocarditis	21
Chronic Valvular Disease	8
Angina Pectoris	10
Arterio Sclerosis	70
Myocarditis	79
Heart Failure	17
Fatty Degeneration	4
Acute Dilatation	17
Mitral Insufficiency	4
Embolism	5
Cardiac Insufficiency	5
Thrombosis	2
Heart Disease	2
Cellulitis	3
Pericarditis	1

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IV.—DISEASES OF THE RESPIRATORY SYSTEM.

Bronchitis.....	14
Broncho Pneumonia.....	53
Lobar Pneumonia.....	30
Hypostatic Pneumonia.....	3
Pleuro Pneumonia.....	3
Pneumonia.....	24
Oedema of Lungs.....	3
Pulmonary Abscess.....	3
Asthma.....	3
Pulmonary Embolism.....	4
Hæmatemesis.....	1

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V.—DISEASES OF THE DIGESTIVE SYSTEM.

Abscess of Liver.....	1
Duodenal Ulcer.....	5
Appendicitis.....	12
Peritonitis.....	4
Strangulated Hernia.....	3
Cirrhosis of Liver.....	4
Jaundice.....	1
Intestinal Obstruction.....	9
Gastro Enteritis.....	2
Gastritis.....	1
Gastric Ulcer.....	3
Convulsions (Gastritis).....	2
Cholecystitis.....	4
Starvation.....	2
Colitis.....	1
Cholelithiasis.....	2
Intestinal Hæmorrhage.....	1
Volvulus.....	1
Acute Indigestion.....	3
Pancreatitis.....	5
Status Lymphaticus.....	1
Dilatation of Stomach.....	1
Gall Bladder.....	1
Convulsions not specified.....	1

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VI.—DISEASES OF THE GENITO-URINARY SYSTEM.

Hysterectomy.....	2
Nephritis.....	43
Bright's Disease.....	9
Uræmia.....	4
Uterine Fibroid.....	3
Prostatic Hypertrophy.....	7
Ovarian Tumor.....	1
Prostatism.....	1
Albuminuria.....	1
Hæmorrhage of Kidney.....	1
Abscess of Kidney.....	1
Cystitis.....	1

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VII.—DISEASES OF THE PUERPERAL STATE.

Eclampsia.....	1
Abortion.....	1
Septicæmia (Childbirth).....	2
Childbirth.....	2

6

VIII.—DISEASES OF THE SKIN.

Gangrene Leg.....	1
Gangrene Foot.....	1

2

IX.—DISEASES OF THE BONES.

Osteomyelitis.....	2
Mastoiditis.....	1
	<hr/>
	3

X.—MALFORMATIONS.

Spina Bifida.....	5
Hydrocephalus.....	3
Congenital Heart.....	3
Malformations.....	1
	<hr/>
	12

XI.—DISEASES OF EARLY INFANCY.

Malnutrition.....	28
Gastro Intestinal Diseases.....	24
Stillbirths.....	119
Premature.....	67
Asphyxia Neonatorum.....	5
Injury at Birth.....	5
Toxæmia.....	2
Meningitis.....	5
Atelectasis.....	2
Hæmophilia.....	1
Cerebral Hæmorrhage.....	4
Imperforate Anus.....	2
Tetany.....	1
Patent Foramen Ovale.....	6
Asthenia.....	4
Hæmorrhage Neonatorum.....	7
Syphilis.....	4
Cretinism.....	1
Convulsions.....	2
Septicæmia.....	2
Leukæmia.....	1
Pyrexia.....	1
Epilepsy.....	1
Cerebral Tumor.....	1
Appendicitis.....	1
	<hr/>
	296

XII.—DISEASES OF OLD AGE.

Old Age.....	29
Debility (General).....	1
Senile Decay.....	29
	<hr/>
	59

XIII.—EXTERNAL INJURIES.

Accidental Injuries—Falls, Burns, Poisonings.....	30
Drowning.....	3
Suicide.....	10
Fracture Skull.....	6
Fracture Femur.....	2
Fracture Hip.....	2
Killed—Train, Auto, Street Car, etc.....	17
Accidentally shot.....	3
Alcohol poisoning.....	2
Sunstroke.....	1
Murder.....	2
Suffocation.....	2
	<hr/>
	80

XIV.—ILL-DEFINED CAUSES.

Found dead.....	1
Cause not given.....	4
Cause not known.....	1
	<hr/>
	6

GENERAL DEATH RATE FOR NINETEEN YEARS

Deaths per thousand of population, based on assessment population for the current year:

1904-1905	14.1
1905-1906	13.4
1906-1907	13.4
1907-1908	13.4
1908-1909	13.1
1909-1910	13.8
1910-1911	12.2
1911-1912	12.8
1912-1913	11.5
1913-1914	11.9
1914-1915	11.6
1915-1916	11.7
1916-1917	10.9
1917-1918	12.8
1918-1919	13.6
1919-1920	13.2
1920-1921	10.6
1921-1922	9.8
1922-1923	10.2

INFANTILE DEATH RATE FOR CORRESPONDING PERIOD.

Deaths in children under one year per thousand of living birrths:

1904-1905	144.7
1905-1906	128.9
1906-1907	117.2
1907-1908	133.7
1908-1909	115.6
1909-1910	128.3
1910-1911	97.8
1911-1912	119.1
1912-1913	109.1
1913-1914	103.4
1914-1915	97.6
1915-1916	98.3
1916-1917	86.2
1917-1918	81.8
1918-1919	81.6
1919-1920	86.3
1920-1921	77.6
1921-1922	58.0
1922-1923	53.6

SUMMARY OF COMMUNICABLE DISEASES

REPORTED FROM NOVEMBER 1ST, 1921, TO OCTOBER 31ST, 1922.

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
Diphtheria	130	117	104	67	76	34	58	34	18	19	21	69	747
Measles	6	10	7	3	33	5	171	251	138	38	2	5	669
Chicken-pox	44	59	64	78	61	58	41	50	19	6	10	40	530
Whooping Cough	3	2	9	9	6	5	22	48	46	69	49	268	
Scarlet Fever	44	24	36	16	15	6	7	5	8	8	9	32	210
Tuberculosis	10	14	12	11	20	14	11	13	18	9	13	17	162
Epidemic Anterior Polio- myelitis	..	..	..	..	..	..	..	2	30	27	11	4	74
Mumps	..	2	6	6	3	9	8	2	..	3	1	..	40
Erysipelas	..	5	8	..	2	..	..	..	..	..	2	..	17
Typhoid Fever	1	1	..	1	..	..	2	..	1	3	4	2	*15
Influenza	..	..	..	1	2	1	..	..	..	..	..	2	6
Smallpox	..	..	1	..	1	..	1	7	2	2	..	..	14
Meningitis	..	..	1	..	..	..	..	..	..	..	..	..	1
	238	234	239	192	222	133	304	386	282	161	142	220	2,753

*Includes 7 Typhoid Fever cases infected outside of the city.

POSITIVE KLEBS LOEFFLER.

	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
	7	9	18	7	14	3	10	10	8	..	15	22	123

SHOWING DEATHS FROM COMMUNICABLE DISEASES
 REPORTED FROM NOVEMBER 1ST, 1921, TO OCTOBER 31ST, 1922.

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
Diphtheria	7	1	6	2	4	1	3	1	1	..	3	3	32
Whooping Cough .....	..	..	2	2	..	..	..	..	1	..	1	1	7
Measles	1	..	..	..	..	..	..	1	..	..	..	..	2
Scarlet Fever .....	..	..	1	1	..	..	1	1	..	..	..	..	4
Typhoid Fever .....	..	..	..	..	..	..	..	..	..	..	..	1	1
Erysipelas .....	..	..	2	1	1	2	..	..	1	1	1	..	9
Influenza .....	..	..	..	..	..	1	..	..	..	..	..	..	1
Epidemic Anterior Polio- myelitis .....	..	..	..	..	..	..	..	..	3	2	2	..	7
Consumption	4	9	6	1	1	5	..	4	2	2	4	4	42
Tuberculosis (other forms) ..	..	1	1	3	2	1	..	1	2	..	..	..	11
Total	12	11	18	10	8	10	4	8	10	5	11	9	116

SUMMARY OF COMMUNICABLE DISEASES
 REPORTED FROM NOVEMBER 1ST, 1922, TO OCTOBER 31ST, 1923

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
Diphtheria	64	40	44	28	21	15	29	23	31	12	31	43	381
Measles	4	9	2	1	8	42	140	228	278	58	2	11	783
Chjcken-pox	55	95	84	19	22	47	42	59	35	27	4	31	520
Whooping Cough	98	71	131	164	179	50	36	32	24	13	10	20	828
Scarlet Fever	34	20	32	28	11	21	31	16	10	17	35	50	305
Tuberculosis	7	9	11	4	13	15	20	5	15	13	10	4	126
Cerebro-Spinal Meningitis ..	..	..	..	..	1	1	..	..	..	..	..	..	2
Epidemic Anterior Polio- myelitis .....	..	..	..	1	..	..	..	..	..	..	..	..	1
Mumps .....	..	2	1	..	..	1	..	1	..	1	2	5	13
Erysipelas .....	..	1	1	2	3	3	2	..	..	..	..	1	13
Typhoid Fever	1	..	1	..	2	..	2	1	..	3	1	1	*12
Influenza	1	..	11	103	..	..	..	..	..	..	..	..	115
Smallpox	3	1	2	4	..	..	..	..	..	..	..	..	10
Anthrax .....	..	..	..	..	..	..	1	..	..	..	..	..	1
Total	267	248	320	354	260	195	303	365	393	144	95	166	3,110

*Includes 9 Typhoid Fever cases infected outside of the city.

POSITIVE KLEBS LOEFFLER.

	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
	78	39	41	6	18	1	2	12	1	..	2	6	206

SHOWING DEATHS FROM COMMUNICABLE DISEASES

REPORTED FROM NOVEMBER 1ST, 1922, TO OCTOBER 31ST, 1923.

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sep.	Oct.	Total
Measles .....	..	..	..	..	..	..	..	1	1	1	..	..	3
Scarlet Fever	1	..	..	1	1	2	..	1	..	..	..	..	6
Diphtheria	2	1	..	4	2	1	3	1	7	1	..	4	26
Typhoid Fever .....	..	1	..	..	..	..	1	..	..	..	..	..	2
Influenza .....	..	..	6	26	7	1	1	..	..	..	..	1	42
Whooping Cough .....	..	1	3	4	..	2	1	..	..	..	..	..	11
Consumption	2	3	2	4	4	1	4	2	5	3	4	3	37
Tuberculosis (other forms) ..	..	3	2	4	..	..	1	..	..	..	1	..	11
Cerebro-Spinal Meningitis ..	..	..	..	..	1	..	..	..	1	..	..	..	2
Epidemic Anterior Polio- myelitis .....	..	..	..	1	..	..	..	..	..	..	..	..	1
Erysipelas .....	..	..	1	..	2	4	1	..	..	..	1	..	9
Total	5	9	14	44	17	11	12	5	14	5	6	8	150

HANOVER

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Hanover. County, Grey.
Name and address of M.O.H., Dr. G. B. Stalker, Hanover, Ont.
Date, November 13th, 1923.
Estimated population, 2,800.
Number of births per annum (exclude "stillbirths"), 70.
Number of stillbirths, 4.
Number of infant deaths under one year, 11.
Infant mortality rate per 1,000 living births, 157.
Number of deaths from all causes, 45.
Death rate per 1,000 of the population, 16.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Typhoid fever.....	48	3
Diphtheria.....	8	1
Measles.....	4	0
Scarlet fever.....	3	0
Tuberculosis.....	1	1

Any special outbreak of communicable disease during the year?

Typhoid fever.

Methods adopted to combat the outbreaks?

MILK SUPPLY

- (a) Source, farmers' herds.
(b) Character, good.
(c) Is supply pasteurized? About half supply pasteurized.

WATER SUPPLY

- (a) Source, wells.
(b) Character, a lot of the wells are known to be highly polluted.
(c) How purified? Not purified.
Any special Public Health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

None.

Any Public Health education by M.O.H.

None.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Schools inspected, no report.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H..... \$125 00
(b) Expenditure for other Public Health work..... 903 41

Total expenditure for Public Health..... \$1,028 41

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

The Sanitary Inspector, after his survey of the town, reported the sanitary condition to be good, with a few exceptions, which were later remedied. Slaughter houses, dairies, stables, etc., were inspected and kept in a sanitary condition. A few complaints came before the Board, which were dealt with.

November 13th, 1923.

RE TYPHOID FEVER.

We have had during the past year a serious outbreak of typhoid fever, forty-eight cases having been reported, with three deaths, and probably several other doubtful cases which were really typhoid, but not reported as such.

Mr. Berry of the Provincial Board of Health made an investigation into the cause of the epidemic and came to the conclusion that it was due to contamination of the milk supply by our municipal water. I think this conclusion is open to criticism.

The most of the cases occurred in families supplied by either the Rense or Gateman dairies. In the forty cases investigated by Mr. Berry, thirty-one were supplied by the Rense dairy and eight by the Gateman dairy, one was not supplied by either. The Rense dairy supplies nearly twice as many families as the Gateman dairy. Both dairies have the town water on their premises. The Rense dairy used this water for washing purposes (bottles, etc.) the water is first heated. All their milk is pasteurized. The Gateman dairy do not use the municipal water at all, but use either well or cistern water for washing bottles, utensils, etc.

Mr. Berry considered that the technique at the Rense dairy in handling and pasteurizing the milk was very good, but that raw water was used for washing up floors, etc., so that pails or utensils standing on the floor and then used in handling the milk might be the means of infecting the milk by drops of water dropping off the bottom of these containers into the milk.

In the case of the Gateman dairy it was presumed that both the well and cistern both went dry in the spring or early summer, and that town water was then used. Mr. Gateman denies that this was the case.

From the above it will be seen that the conclusion arrived at presumes and takes a good deal for granted.

At the time of Mr. Berry's investigation a new chlorinator was installed at the pump house, and since that time the water supply has been kept continuously over-chlorinated and yet we have had fresh cases of typhoid. (Not contacts).

This, in my opinion, suggests that we look elsewhere for the cause of the outbreak. It will be remembered that from one factory we had seven cases (adult males) develop within a short time. This pointed very strongly to infected drinking water. The factory obtained its water from wells (usually one, sometimes two) one of these wells which was under suspicion was closed, no more cases developed from that factory. Now if one well may become infected why not two or many.

On the other hand shortly after the epidemic broke out, people were warned to boil or treat their drinking water with chlorine, where this was done, no case of typhoid developed. It may seem strange that so many wells should become polluted, but still I think it is a possibility when you consider that this town has been having more or less typhoid every year for many years back. No doubt there are many typhoid carriers scattered about the town.

I understand that for the most part the subsoil of the town is a dense clay. Now as the town is filled with cesspools, septic tanks, closets, etc., it is not unreasonable to suppose that the soil in many places is highly charged with sewage and that during a wet season this pollution must find its way into many wells. This past spring was an exceptionally wet season. In the second week in May we had heavy snowfall, and later heavy rains so that the rivers overflowed their banks and many wells which ordinarily held only a small quantity of water were filled to the top.

It would therefore favour as the cause of the epidemic an infected condition of many of our wells, and in some instances (more especially children) the municipal water supply (but not through the milk).

Our new water system which is now nearing completion will, I trust, have a very beneficial effect on the incidence of typhoid fever here.

Respectfully submitted.

G. B. STALKER,
Medical Health Officer, Hanover.

KINGSTON

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Kingston. County, Frontenac.
Name and address of M.O.H., A. R. B. Williamson, Kingston, Ont.
Date, November 14th, 1923.
Estimated population, 21,659.
Number of births per annum (exclude "stillbirths"), 577.
Number of stillbirths, 34.
Number of infant deaths under one year, 48.
Infant mortality rate per 1,000 living births, 83.
Number of deaths from all causes, 427.
Death rate per 1,000 of the population, 19.71.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	143	3
Diphtheria.....	10	2
Typhoid fever.....	2 (Outside)	2
Chicken-pox.....	5	..
Measles.....	62	..
Sleeping sickness.....	3	..
Tuberculosis.....	30	16
Whooping cough.....	25	2

Any special outbreak of communicable disease during the year?

Measles in May and June.

Scarlet fever throughout the whole year.

Methods adopted to combat the outbreaks?

Isolation of patients in home or hospital. Exclusion of contact from schools and public assemblies generally during the stated incubation period. Repeated school inspection in classes where cases have appeared. Exclusion from school of cases of sore throat and coryza until diagnosis was made.

MILK SUPPLY

- (a) Source, dairy farmers near the City.
(b) Character, good.
(c) Is supply pasteurized? Part is pasteurized.

WATER SUPPLY

- (a) Source, Lake Ontario.
(b) Character, good.
(c) How purified? Chlorine.

Any special Public Health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

A child welfare station is conducted by the Victorian Order of Nurses.

A venereal disease clinic is conducted at the General Hospital.

Any Public Health education by M.O.H.?

Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H..... \$1,200 00
(b) Expenditure for other Public Health work..... 2,400 00

Total expenditure for Public Health..... \$3,600 00

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

LONDON

London, Ontario,
November 27th, 1923.

*The Chairman and Members of the Board of Health,
London, Ontario.*

SIRS:

I beg to submit the Secretary's report for the year, ending November 30th, 1923.

The attendance of the members of the Board at the Board's meetings was as follows:

Mayor Wenige.....	5
Ald. Douglas, (Chairman).....	12
E. R. Seabrook.....	11
C. H. Mitchell.....	14
Dr. W. S. Downham.....	14

The city water supply was tested by the Hygienic Institute 168 times, and with a small number of exceptions found of "excellent sanitary quality."

The Plumbing Inspector reported 1,360 permits granted, 2,034 inspections required, 1,785 total inspections, 131 defects discovered and 117 defects made good, and greater co-operation between the Plumbing Inspector, the Building Inspector and the Engineer is sought respecting sewer connections. The plumbing by-law is being revised.

The sanitary inspections are exceptionally well looked after.

Mr. Sanders reports the following inspections: Restaurants and cafes 429, butcher shops 448, Chinese merchants 34, dairies and milk wagons 564, toilets 529, stables, yards, cellars and lanes 535, bake shops 185, hotels 81, fish shops and wagons 41, billiard rooms 67, barber shops 275, laundries 200, grocery shops, fruit and candy 531, theatres 5, insanitary houses 107, dye houses 5, chicken complaints 5, dumps 10, miscellaneous 420, police court 5.

Mr. Boss, Assistant Sanitary Inspector, reports the following inspections: quarantined 453, yards, lanes and cellars inspected 1,273, and toilets 1,063.

London's milk supply is well looked after. Dr. Tamlin inspected and reported on 532 dairies (including re-inspections) and 708 samples of milk were examined and reported upon by Dr. Slack. Wherever inspections showed unsatisfactory milk, the dealers were prohibited from selling in London.

Dr. Downham reported the following communicable diseases: Diphtheria 49, scarlet fever 231, chicken-pox 278, whooping cough 121, tuberculosis 61, gonorrhoea 87, syphilis 50, typhoid fever 11, infantile paralysis 2, mumps 17, measles 125, German measles 11, influenzal pneumonia 1, pellagra 2, encephalitis lethargica 4, lobar pneumonia 1, smallpox 1, goitre 1.

Dr. Downham reported with respect to indigent sick as follows: Admitted to Victoria Hospital, 118; admitted to St. Joseph's Hospital, 15; admitted to Sanatorium, 8; admitted to Preventorium, 10; not admitted to any institution, 89; total cases referred to medical officer of health, 245.

Dr. Gunn reported respecting the venereal disease clinic as follows: Number of patients admitted, 105; number of patients under treatment, 257 and number of nurses' visits, 787.

Miss Raymond reported as to tuberculosis, namely: Number of patients at dispensary, 919; number of new cases, 89; number of old cases, 826; number of deaths, 13 and number of nurses' visits, 4,411.

Mrs. Patterson reported attendance on the following: Ringworm 58 calls, impetigo 527, scabies 289, whooping cough 254, mumps 26, infective conjunctivitis 46, chicken-pox 19, measles 15, scarlet fever 9, miscellaneous 182, calls not home, 47.

Dr. Hill of the Hygienic Institute was appointed consultant.

The Milk By-law was amended so as to authorize and direct the Veterinary Inspector for the City of London to enforce the provisions of the Tuberculosis Order, providing assistance to dairies under municipal control by order-in-council, dated April 16th, 1917, and to seek the assistance of the Veterinary Director-General, as provided in that order, and to classify all dairies supplying this municipality into two classes, viz.: (a) Raw milk dairies; (b) Pasteurized milk dairies, and the by-law, as amended, was approved by the Hon. Manning Doherty and the Federal authorities.

The following sanitary sewers were recommended: Waverley Place, Cheapside Street, King Street, Vauxhall Street, Holman Street, Teresa Street, York Street, Florence Street, Ashland Avenue and Cheapside Street.

The fruit by-law was amended to provide:

"1. No person shall expose for sale upon any highway in the city of London or upon the Market Square, in the said city, any meat, poultry, game, flesh, fish or fruit, unless the same be covered by gauze or other covering to protect the same from flies and dust.

2. No person shall expose for sale upon the Market Square in the said city any meat, poultry, game, flesh, fish, fruit or vegetables and all foods used for human consumption unless the same be kept at least twenty-four inches above the level of the ground."

The Board dealt with the following complaints: (a) Sanitary conveniences during building construction; (b) Mr. Boyd *re* manure pile; (c) London and Port Stanley Railway Station sanitary conveniences; (d) Public Comfort Station; (e) drinking fountain condition; (f) Peterman plumbing by-law enforcement; (g) Adelaide St. dump; (h) river bank pollutions; (i) Sunshine Park conveniences; (j) Carefree Crescent dump; (k) Campbell dump; (l) Front St. dump; (m) the fertilizer plant.

The question of grading eggs was considered.

The Board has been aggressive in its work of the care of the public health.

All of which is respectfully submitted.

Your obedient servant,

S. BAKER,

Secretary Board of Health.

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, London. County, Middlesex.
Name and address of M.O.H., W. S. Downham, City Hall.
Date, December 5th, 1923.
Estimated population, 65,000.
Number of births per annum (exclude "stillbirths"), 1,474.
Number of stillbirths, 82.
Number of infant deaths under one year, 98.
Infant mortality rate per 1,000 living births, 66.4.
Number of deaths from all causes, 1,089.
Death rate per 1,000 of the population, 16.7.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Diphtheria.....	54	4
Scarlet fever.....	280	2
Whooping cough.....	124	1
Tuberculosis.....	63	31
Gonorrhoea.....	92	0
Syphilis.....	51	2
Typhoid fever.....	11	1
Infantile paralysis.....	3	0
Measles.....	186	0
Influenza pneumonia.....	1	0
Encephalitis Lethargica.....	5	1
Smallpox.....	1	0
Chicken-pox.....	345	0
Pellagra.....	2	0
Mumps.....	26	0

Any special outbreak of communicable disease during the year?

We have had a moderately large number of cases of scarlet fever all year.

Measles cases were present in epidemic form in November and December of 1923.

Methods adopted to combat the outbreaks?

Quarantine and isolation. Items of warning in daily paper.

WE ARE AGAINST DISEASE AND DEATH!

We assist you to keep your health

LONDON BOARD OF HEALTH

BUSINESS—Your Health.

ORGANIZATION—Mayor, Medical Officer of Health, Three Ratepayers.

EXECUTIVE—One M.O.H., One Contagious Nurse, Two Tuberculosis Nurses, One Venereal Disease Nurse, One Dairy Inspector, Two Sanitary Inspectors, One Plumbing Inspector, One Clerical Assistant.

SERVICES—Contagious Hospital Service, Smallpox Hospital Service, Tuberculosis Service, Venereal Diseases Service, Vital Statistics Service, School Epidemic Inspection, Water Inspection—City Water Tested Every Week.

INSPECTIONS—Dairy, Milk, Plumbing, Restaurants, Hotels, Boarding Houses, Grocery, Butcher and Fruit Shops, Bakeries, Laundries, Lavatories, Stables, Junk Shops, Dumps, Sewers and Miscellaneous Nuisances.

ENFORCING—Meat By-law, insuring clean and disease-free meat; Milk By-law, insuring clean milk pasteurized or milk from tuberculosis-free cows; Plumbing By-law, insuring sanitary and efficient plumbing.

DISEASES REPORTED AND ATTENTION GIVEN LAST YEAR

Diphtheria.....	126	Measles.....	17	Scabies.....	228
Scarlet Fever.....	155	Whooping Cough.....	541	Ringworm.....	85
Smallpox.....	1	Mumps.....	12	Conjunctivitis.....	76
Tuberculosis.....	187	Meningitis.....	1		
Venereal Diseases.....	124	Typhoid Fever.....	5	Total.....	2,442
Chickenpox.....	202	Impetigo.....	686		
Sanitary Inspections..	7,000	Dairy Inspections.....	700	Milk Samples Tested..	900

REPORT ALL COMMUNICABLE DISEASES PROMPTLY

New regulations for each province in Canada concerning communicable diseases are now in operation. The following diseases are now reportable to M.O.H. by attending physician and parents or guardian:

1—Anthrax	15—Glanders	29—Scarlet Fever
2—Actinomycosis	16—Leprosy	30—Septic Sore Throat
3—Botulism	17—Malaria	31—Smallpox
4—Cerebro-Spinal Meningitis	18—Malignant Oedema	32—Syphilis
Epidemic	19—Malaria Fever	33—Tetanus
5—Chancroid	20—Measles	34—Trachoma
6—Chicken-pox	21—Mumps	35—Trichinosis
7—Cholera	22—Paratyphoid Fever	36—Tuberculosis
8—Conjunctivitis, Acute In-	23—Plague	37—Typhoid Fever
fections	24—Pneumonia, Acute Lobar,	38—Typhus Fever
9—Diphtheria	Bronchial or Lobular	39—Whooping Cough
10—Dysentery	25—Polionyelitis, Acute	40—Yellow Fever
11—Encephalitis Lethargica	Anterior	41—Goitre
12—Gonorrhoea	26—Puerperal Septicaemia	42—Pellagra
13—Influenza Epidemic	27—Rabies	
14—German Measles	28—Rocky Mountain Spotted	
	Fever	

CO-OPERATE—Report to the Department any condition you think insanitary or unhealthy. Your report will be absolutely confidential.

Members Board of Health:

L. H. Douglass, M.D., chairman. G. A. Wenige, mayor.
C. H. Mitchell. E. R. Seabrook. W. S. Downham, M.O.H.

Staff:

W. S. Downham, M.D., D.P.H., Medical Officer of Health. J. C. Young, Plumbing Inspector.
C. S. Tamlin, V.S., dairy Inspector. R. H. Sanders, Sanitary Inspector.

W. S. DOWNHAM, M.D., D.P.H., Medical Officer of Health. ALD. L. H. DOUGLASS, M.D.,
Chairman.

MILK SUPPLY

- (a) Source, surrounding country.
(b) Character, mostly of good quality.
(c) Is supply pasteurized? About four-fifths pasteurized and one-fifth from cows tested and found to be free of tuberculosis.

WATER SUPPLY

- (a) Source, springs and wells.
(b) Character, generally good.
(c) How purified? Light chlorination. Two or more samples tested weekly.

Any special Public Health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Tuberculosis clinic jointly with Byron Sanatorium. Twice weekly at Victoria Hospital with three nurses. Child Welfare Association conducts baby clinics at several schools in city and have four nurses. Ante-natal clinic at Victoria Hospital. Venereal disease clinic at Victoria Hospital. There is a branch of the Victorian Order of Nurses here. School nurses work in close co-operation with M.O.H. and communicable disease nurse.

Any Public Health education by M.O.H.?

Attached advertisement appeared four times during past year.

M.O.H. lectures to medical students and nurses.

Several items in local papers at various times.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H. \$5,000 00
(b) Expenditure for other Public Health work 12,100 00

Total expenditure for Public Health \$17,100 00

Scarlet fever and diphtheria wards are maintained by Victoria General Hospital and cost does not appear in Board of Health estimates.

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Members of Board of Health for year 1923—Alderman L. H. Douglass, Chairman; Mayor Geo. A. Wenige, C. H. Mitchell, E. R. Scabrook, and Medical Officer of Health. The Board of Health met sixteen times during the year. There was a full board at practically every meeting.

The activities, other than general business, were briefly as follows:

The final arrangements for the passing and getting into operation of the milk by-law whereby the milk must be pasteurized or be from cows tested and found to be free of tuberculosis. About four-fifths of the milk used in the City is pasteurized. There are sixty tuberculosis-free herds sending milk into the City.

The passing of the fruit by-law regulating exposure and sale on the city market and public highways of fruit, meat, poultry, game, vegetables, etc.

A number of insufficiently signed petitions for sewers were brought before the Board of Health. In most cases construction was recommended on sanitary grounds.

The Board of Health recommended to the City Council that all sewage now entering the river be collected and properly treated, also that a new sewage purification system be constructed at the present sewage filter beds where the larger portion of the city sewage is now conveyed.

The plumbing by-law was amended in order to make it more efficient.

Miss M. Hanson reports that the following work has been done at the Tuberculosis Clinic at Victoria Hospital for year ending November 30th, 1923:

Number of patients at Dispensary.....	1,018
Number of new cases—Incipient.....	31
Moderately advanced.....	15
Far advanced.....	3
Infected (not active).....	14
Non-T.B.....	18
Under observation.....	25
	—
	106
Number of old cases.....	912
Number of nurses' visits.....	5,095
Number of deaths.....	15
Number of individuals on visiting list during year (this includes observation and contact cases).....	694
Number of patients leaving city during year.....	36
Number of patients admitted to Sanatorium.....	18
Number of patients admitted to Preventorium.....	18

Clinics are held on Tuesday and Thursday afternoons each week, and histories are taken of each patient and examinations made by doctors. Patients are visited in homes by nurses and instructed regarding precautions, etc. Sanitary sputum cups, flasks, paper handkerchiefs and literature regarding precautions are supplied to patients. Relief is sent to many houses, milk being sent to fifty families and groceries weekly to a large number. Clothing, etc., also being supplied to many families and rent and fuel paid for in some cases. This is made possible through the Sanatorium Aid Society. Homes, where an open case has been, have been fumigated by the Board of Health and contact cases are advised to come to Clinic for examination and visited in homes by the nurses.

London, Ontario, December 6th, 1923.

DR. W. S. DOWNHAM,
Medical Officer of Health,
London, Ontario.

Dear Doctor:

Following is a brief report of the Venereal Disease Clinic:

Number of patients admitted.....	111
Number of treatments given to out-patients.....	2,340
Number of days for in-patients.....	2,351
Blood tests taken.....	254
Smears taken.....	54
Prescriptions.....	47
Number of visits made by Social Service nurse, nine of which were to jail	952

A large number of notices were given out by M.O.H. for patients to be examined or to continue treatment. It was necessary to bring fifteen of these before the Police Magistrate for not complying with the notices. Two people disobeyed summons to appear and were arrested. The Clinic is growing steadily.

Yours truly,

(Sgd.) J. G. GUNN, V.D.

DR. W. S. DOWNHAM,
Medical Officer of Health,
London, Ontario.

Dear Doctor:

I hereby submit report of work done as public health nurse during the year 1923.

Total number of calls during year being one thousand six hundred and eighty-two (1,682). This includes calls made by public health nursing students doing field work.

Total number of cases for year being five hundred and forty-nine (549). The larger number of calls being made on impetigo cases.

Only a small number of these cases go to the family physician, making it necessary for nurse to make frequent calls.

Nine cases sent home from school during the year, reported as skin disease, were found to be chicken-pox.

Total number of miscellaneous calls were two hundred and three (203), which were mainly undiagnosed cases.

Yours truly,

(Sgd.) (Mrs.) M. PATTERSON,
Public Health Nurse.

London, Ontario, December 10, 1923.

DR. W. S. DOWNHAM,
Medical Officer of Health,
London, Ontario.

Dear Doctor:

MILK INSPECTION

I have visited and inspected 532 herds and dairies on farms with approximately 6,000 head of cattle. Sixty herds have been tested by Dr. Bovaird, Federal Inspector.

Over 700 samples of milk have been taken to the Institute of Public Health for analysis. Over 500 samples have been taken at the dairies and from the wagons and examined by Mr. Sanders and myself and that found unfit was sent home or destroyed. The eleven pasteurizing plants in the city take care of about four-fifths of the total supply.

MEATS

About 450 shops and wagons containing meats were examined during the year. That which was found unfit for any reason was destroyed and in some cases the owners were prosecuted.

Total number of visits, 1,649.

Respectfully submitted,

(Sgd.) C. S. TAMLIN, V.S.

London, Ontario, December 6, 1923.

DR. W. S. DOWNHAM,
Medical Officer of Health,
London, Ontario.

Dear Doctor:

The following is a brief report of the inspections done by me as sanitary inspector, and also by Mr. H. Boss, assistant sanitary inspector.

Restaurants and cafes.....	500
Butcher shops.....	448
Chinese merchants' stores.....	34
Dairies and milk wagons.....	564
Toilets.....	529
Stables, yards, lanes, cellars.....	535
Bakeshops.....	185
Hotels.....	81
Fish shop and wagons.....	41
Billiard halls.....	67
Barber shops.....	275
Laundries.....	200
Grocery, fruit and candy stores.....	531
Theatres.....	35
Insanitary houses.....	107
Dye houses.....	5
Chicken complaints.....	5
Dumps.....	10
Miscellaneous.....	429
Attended police court.....	40

Total..... 4,621

About 1,000 outside toilets have been done away with and new toilets connected with the city sewer. A number of people have been to police court for refusing to connect with the sewer. A large quantity of putrid meat has been destroyed and a number of butchers fined during the year.

H. Boss reports the following:

Quarantines.....	453
Releases.....	450
Inspections—	
Yards, lanes and cellars.....	1,273
Toilets.....	1,063
	3,239
Total inspections.....	3,239

Respectfully submitted,

(Sgd.) R. H. SANDERS,
Sanitary Inspector.

London, Ontario, December 3rd, 1923.

DR. W. S. DOWNHAM, M.O.H.
London, Ontario.

Dear Sir:

In reviewing the work of the plumbing department for the past year, I am pleased to report that a great deal has been accomplished in ridding the city of insanitary conditions by the installation of sanitary plumbing conveniences.

While a great deal of modern plumbing has been installed in old buildings, a large number of new buildings have been erected this year into which plumbing has been installed.

During the year about 1,500 permits have been issued, 2,000 inspections made and 135 defects discovered and rectified.

Your obedient servant,
(Sgd.) JAS. C. YOUNG, S.E.

Your obedient servant

W. S. DOWNHAM, M.D., D.P.H.,
Medical Officer of Health.

MINDEN

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually
(Schedule B, Clause 1, Public Health Act)

Municipality, Minden. County, Haliburton.

Name and address of M.O.H., Dr. W. S. Patrick, Minden, Ont.

Date, November 16th, 1923.

Estimated population, 839.

Number of births per annum (exclude "stillbirths"), 17.

Number of stillbirths, none.

Number of infant deaths under one year, 2.

Infant mortality rate per 1,000 living births, 117.6.

Number of deaths from all causes, 9.

Death rate per 1,000 of the population, 10.7.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Chicken-pox.....	2	None
Gonorrhoea.....	3	None
Erysipelas.....	1	None
Measles.....	2	None
Impetigo.....	5—plus	None
Mumps.....	1	None
Scarlet fever (mild type).....	11	None
Goitre (rough estimate).....	over 100	None

Any special outbreak of communicable disease during the year?

Methods adopted to combat the outbreaks?

Several cases of children with impetigo attending school investigated, treatment given and ordered away from school until cured.

See note re goitre.

MILK SUPPLY

- (a) Source, all direct from farm.
(b) Character—.
(c) Is supply pasteurized? No.

WATER SUPPLY

- (a) Source, Minden village supply from Gull River, farm supply wells.
(b) Character, Gull River—good. Wells.
(c) How purified? Some wells chlorinated. Several wells and river supply tested. One well condemned.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Goitre prophylaxis demonstration under direction of Dr. Phair of the Department of Education, taking in all schools in Haliburton county.

Any Public Health education by M.O.H.?

Talks to school teachers in connection with inspection of schools, and special attention given to individual cases where required.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.: Retaining fee.....	\$25 00
(b) Expenditure for other Public Health work.....	48 00
Total expenditure for Public Health.....	\$73 00

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Owing to small amount allowed for retaining fee and expenses, very little can be done in the way of Public Health work. We are going ahead with the goitre prophylaxis work and a grant has been allowed for this purpose.

In this connection I would like to call your attention to the number of mental defectives in this county that have casually come to my attention. There are a great number. Possibly close intermarriage and illegitimacy is a cause (or a result). This is a very serious problem, and if you wish I shall be pleased to take the matter up further with you. Next year I intend to collect some reliable statistics in this connection, picking out certain families. This will include a determination of mental age, physical examination and other tests. This work I am doing at my own expense.

In connection with my remarks *re* mental defectives in Haliburton County, I would like to point out that this is a very serious problem, which has a direct bearing on other problems here. I have for a long time been deeply interested in psychological medicine, and on coming here two years ago was at once struck by the mental condition of a number of the people—especially of the younger generation.

The original settlers were apparently of good stock, but they have remained here more or less isolated from the rest of the world, and have intermarried to a considerable extent. So far I have nothing beyond a few cases of actual insanity that have come directly to my notice. But from casual observation I am led to believe that there are a great number of mentally defective children.

With your sanction I shall be pleased to investigate this matter more thoroughly and give you a reliable report. As a preliminary, I suggest that I make a report on a few families, examination including psychological tests to determine mental age, physical examination noting particularly stigmata of degeneration, and history. This work I shall be pleased to make a start on at my own expense—as a demonstration. Should you think a more extensive survey advisable, I shall be pleased to offer my services.

The state of affairs may be alarming, but I am asked as to a remedy. Possibly the only feasible plan would be in connection with some scheme of reforestation (another serious problem) and buying up of farms and scattering the people. Sterilization of the mentally unfit would be an ideal method—but we are hardly advanced enough for that. At any rate I would like to collect for you some actual statistics, to show that I am not in the least exaggerating conditions.

The tragedy of it all is, that children are being born with inherent mental weakness, and these grow up and again produce their kind. This, of course, is a world problem, but I really believe that in this county conditions are particularly bad in this respect. I have already taken this matter up with Dr. Phair and others.

You will be interested to know that I am purchasing a Jones metabolimeter, this will be very useful for determining basal metabolism ratio in connection with our goitre work.

In the matter of goitre—another condition that is very frequent here—we are already taking active measures as far as the school children are concerned. But to my mind, the matter of mental defectives is a far more serious problem.

Yours sincerely,

W. S. PATRICK,
Medical Health Officer.
Minden Township.

OAKVILLE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Oakville. County, Halton.
Name and address of M.O.H., Dr. J. H. Stead, Oakville, Ont.
Date, November 15th, 1923.
Estimated population, 3,566.
Number of births per annum (exclude "stillbirths"), 84.
Number of stillbirths, 1.
Number of infant deaths under one year, 1.
Infant mortality rate per 1,000 living births, .28.
Number of deaths from all causes, 33.
Death rate per 1,000 of the population, 9.25.

COMMUNICABLE DISEASE

Disease	No. of cases	No. of deaths
Scarlet fever.....	17	2
Diphtheria.....	7	0
Chicken-pox.....	3	0
Scarlatina.....	2	0
Spinal meningitis.....	2	2
Smallpox.....	1	0
Measles.....	17	0

Any special outbreak of communicable disease during the year?

There was no special outbreak of communicable disease during the year. In fact, Oakville was conspicuously free of infectious disease, especially when one considers how intimately the social and business life of its citizens is related to the larger communities of Toronto and Hamilton.

Methods adopted to combat the outbreaks?

In all cases isolation of the patient was insisted on. In the case of smallpox, the patient was isolated and the unvaccinated inmates of the household were vaccinated and quarantined for fourteen days.

MILK SUPPLY

- (a) Source, from neighbouring farmers.
- (b) Character, fair to good.
- (c) Is supply pasteurized? Two of the three milk vendors sell pasteurized milk.

WATER SUPPLY

- (a) Source, Lake Ontario.
- (b) Character, fair.
- (c) How purified? Sedimentation and chlorination.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

No.

Any Public Health education by M.O.H.?

No.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H..... \$100 00
- (b) Expenditure for other Public Health work..... 683 97

Total expenditure for Public Health..... \$783 97

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Four regular meetings of Local Board of Health are held each year, at which general problems affecting the health of the town are discussed. Special meetings are also called from time to time to consider any emergency that may arise. A close supervision is kept on the drinking water, and the milk supply is regularly inspected with a view to maintaining cleanliness and ascertaining if the requirements of the by-law respecting the amount of total solids and the percentage of butter fat are carried out.

This year an unfortunate circumstance occurred, when a young man, who was a driver for one of the milk dairies, in a fit of commercial jealousy introduced dirt and filth into the milk bottles of an opposition dealer. This young man admitted his guilt, and was dealt with by the local magistrate.

Quite recently the water supply became polluted with colon bacilli to a degree dangerous to health. An order to boil all drinking water was issued by your Board, and remained in force for several weeks. It is thought that the pollution was due to the fact that the drinking supply was pumped directly from the lake during the time that the cleaning operations were being carried out on the sedimentation basin. The development of one case of typhoid fever at this time occasioned some alarm, but the fact that no other case developed would lead to the assumption that the infection in this case was not water-borne, and probably arose from individual causes.

It is a matter of regret that up to the present time, the by-law respecting water closets recently drawn up has been found to be of no effect. Four property owners have applied for redress under the by-law, and after estimates have been made by several plumbing firms, the work still remains undone. It is to be hoped that whoever is responsible for the delay in bringing this matter to a point, where it is workable will be seized with the importance of this question, and do what is necessary to overcome the difficulty which at the most appears to be a very trifling one.

I would like to make, in closing, some suggestions relative to the collection of garbage. It would be a matter of great convenience to householders, if garbage, rubbish and ashes were collected from the rear of the house, instead of from the street line. It would also do away with the unsightly garbage receptacles which appear on the street on the days of collection. A more suitable wagon should be provided for refuse collection. There is one obtainable for \$390.00, which holds six cubic yards, and is so designed that one horse can operate it. This vehicle has a good appearance, and is provided with a water-proof cover, which unrolls from the driver's seat, and prevents to a large extent the escape of disagreeable odours, and the scattering about the roadway of refuse and waste papers. This wagon is also provided with a rear dumping device. Finally, a new method should be found of disposing of refuse, other than the present one of dumping it in the marsh. This method of garbage disposal, apart altogether from rendering a very conspicuous part of the town very unsightly, is, in addition, contrary to the provisions of the Public Health Act, which forbids the dumping of garbage on the banks of a running stream.

JOHN H. STEAD,

Medical Health Officer.

OSHAWA

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1913

To be presented to Local Board of Health before 15th November, annually.

(Schedule B, Clause 1, Public Health Act)

Municipality, Oshawa. County, Ontario.

Name and address of M.O.H., T. W. G. McKay, M.D., 58 King Street East, Oshawa, Ont.

Date, November 15th, 1923.

Estimated population, 15,565 (from assessor's roll).

Number of births per annum (exclude "stillbirths"), 488.

Number of stillbirths, 24.

Number of infant deaths under one year, 55.

Infant mortality rate per 1,000 living births, 112.7. A decrease of 25 per cent. since Public Health nursing service has become well established.

Number of deaths from all causes, 177.

Death rate per 1,000 of the population, 11.22.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Measles	468	4 (pneumonia)
Diphtheria (active)	46	3
Diphtheria (inactive)	59	0
Scarlet fever	48	2
Whooping cough	31	3 (pneumonia)
Chicken-pox	30	0
Mumps	14	0
Erysipelas	8	1
Typhoid fever	8*	0
Tuberculosis	69†	10‡

Any special outbreak of communicable disease during the year?

Outbreak of measles commencing about April 1st, 1923, and lasting until the first week in June. All other contagion, less than the average appearance for the last three years, but more cases have been reported proportionately, this being due to a better understanding of Public Health work, and an appreciation of departmental service. Frequent reporting of contagion by householders, without doctor in attendance, is to be favourably commented on.

Methods adopted to combat the outbreaks?

We have no isolation hospital at present. We give an intensive watchfulness to each case and contact reported. An investigation is given every case. Educative work of all kinds is persistently carried out and is our main endeavour. The whole municipality is treated as if it were a scattered isolation hospital, and we consider each room in which a patient is isolated as a ward in such a hospital. Efficient supervision is the watchword, as well as insistence on absolute conformity with the requirements of provincial regulations.

MILK SUPPLY

- Source, Three local dairies, all selling bottled milk; (two pasteurized as well). A few small supplies are allowed, but under control.
- Character, consistently up to standard.
- Is supply pasteurized? Ninety per cent. of all milk sold is pasteurized.

WATER SUPPLY

- Source, Lake Ontario.
- Character, unexceptionable. Repeated collection and examination is made.
- How purified? Drifting sand filters, with chlorination (3 lbs. per million gallons), exceptionally in rough water alum has to be added as a coagulant, usually in the spring only.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Two Public Health nurses doing ante-natal visiting work, maternal and infant and Child Welfare, tuberculosis visiting, and control of contagious disease, nursing, isolation and quarantine. Surveillance of female V.D. cases under the attending doctor's advice, Social Welfare work and educative work. Male V.D. work under surveillance of M.O.H., all cases being kept track of

*Seven in Oshawa hospital, 1 at home. Case incidents: None from Oshawa; 4 in Whitby; 1 in Cochrane; 1 on island in Lake Simcoe; 2 in country district.

†Twenty-seven new cases; 42 cases carried.

‡Six at home; 4 in sanatorium or hospital.

and treatment provided, if unable to pay for same. Public Health laboratory, under competent doctor as director, doing work on a similar plan to the Provincial Laboratories in Toronto, and providing laboratory facility for study and report of pathological specimens, urine, blood, stomach contents, etc., on a pay basis, as indicated by schedule enclosed. In every case where people are unable to pay, or are indigents, the work is carried out at the expense of the local Board. The Board of Education provides two Public School nurses, not under our control, but working in correlation.

Any Public Health education by M.O.H.?

Talks on Public Health matter at home and school clubs, club meetings, social meetings of different kinds, and extensive use of the public press for propaganda work, publishing of reports, etc.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes. Report in preparation.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

Budget, \$8,000; expenditure, \$8,200; salaries, \$6,500; expenditure, \$1,700. Laboratory carries its own expense.

- (a) Salary or other remuneration of M.O.H., salary per annum..... \$500 00
Is also indigent medical officer, but apportioned all cases to other doctors.
- (b) Expenditure for other Public Health work, doctors, Board of Education, Public School nurses and dentists..... 4,972 54

Total expenditure for Public Health (as above).....	\$13,172 54
Expenditure of Relief Department of the town of Oshawa....	\$2,813 79
Community Welfare Association relief work.....	487 80
Lake Shore Convalescent Home.....	210 00

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

1923.

Population—Total, 15,565. Foreign speaking, 4,000 (approximately).

BOARD OF HEALTH

Salaries:

M.O.H.....	\$500 00
Director of laboratory.....	500 00
Sanitary inspector.....	1,800 00
Senior Public Health nurse.....	1,600 00
Junior Public Health nurse.....	1,400 00
Office clerk and stenographer.....	700 00

Total of salaries..... \$6,500 00

Office expenditures:

Doctor's attendances—Intra-natal.....	\$2 00
Emergency.....	4 00
Diphtheria.....	32 00
Whooping cough.....	2 00
Venereal disease.....	238 00

\$278 00

The Public Health laboratory has carried its own expenses and is no charge.

Office supplies and printing..... \$1,422 00

Total expenses of Board of Health..... \$8,200 00

Annual per capita cost of Board of Health.....

cts.
55.19

BOARD OF EDUCATION

(Medical and Nursing Inspection)

Salaries:

Senior Public School nurse.....	\$1,400 00
Junior Public School nurse.....	1,300 00
Senior dentist.....	800 00
Second dentist.....	800 00
Third dentist.....	400 00
Office expenditures and supplies.....	272 54

4,972 54

Annual per capita cost of the Board of Education Health programme.....

31.95

MUNICIPAL RELIEF

Grant to Relief Officer.....		\$500 00	
Grant to Oshawa Hospital.....	\$800 00		
Cases at Oshawa Hospital.....	261 00		
Cases at Home for Incurables.....	132 00		
Cases at Sanatoria—Muskoka.....	22 65		
King Edward.....	891 64		
Cases at Hospital for Sick Children.....	700 50		
Ambulance service.....	6 00		
Total expenses for hospital service.....		2,813 79	
Total cost of above services.....	\$16,486 33		cts.
Annual per capita cost of hospitalization.....			18.07
Per capita cost of Relief Officer grant.....			3.21
Relief orders for illness—Material Relief. Municipal orders were not issued, except through Community Welfare Association.			
Total expenditures for municipal relief by Council....			
The annual per capita cost for relief, less hospitalization			
The annual per capita cost for total municipal relief...			21.28

COMMUNITY WELFARE ASSOCIATION

Total expenditures.....	\$487 80		
If paid for by the town the per capita cost would be....			3.13

RED CROSS ACTIVITIES

Appropriations for Public Health Department.....	\$115 00		
Fresh-air cottage at the lake.....	210 00		
Milk for school children (one year).....	900 00		

MUNICIPAL RELIEF WORK

No municipal relief work required this year.

PUBLIC HEALTH AND RED CROSS TENTS AT OSHAWA FAIR

Paid for by Mrs. Fred Cowan.....	\$30 00		
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JUNIOR RED CROSS ACTIVITIES

Supplies, glasses, etc.....	\$25 00		
Sum total of Red Cross activities.....	\$1,280 00		
Per capita cost if paid by the town would have been....			8.23

SUMMARY OF TOTALS

Board of Health.....	\$8,200 00		
Board of Education.....	4,972 54		
Municipal Relief.....	3,313 79		
Community Welfare Association Relief.....	487 80		
Red Cross Activities.....	1,280 00		
Grand total.....	\$18,254 13		
Total of per capita costs if all were paid by the Municipality.....			119.78
Total of per capita costs paid by the Municipality....			108.42

LABORATORY ACTIVITIES

Laboratory operating expenses for the year	\$114 84		
Receipts from pay work done.....		\$205 00	
Credit balance for the year.....	90 16		
No. of specimens examined through the laboratory....			1,564
Examined free.....	1,445		
Specimens charged for.....	119		
Schick tests made.....	12		
Toxin antitoxins given.....	2		

SANITARY INSPECTOR'S ACTIVITIES—1923

First five months of the year (Mr. F. C. Palmer):	
Water samples for analysis.....	8
Milk samples for analysis.....	9
Plumbing inspections, fixtures and installations (also included in Mr. Hubbell's report).....	126
Communicable diseases visited.....	185
Placarded.....	72
Indigent calls.....	10
Fumigations.....	49
Houses inspected.....	56
Dairy inspections.....	17
Bakery inspections.....	15
Butcher shops.....	8
Cafes.....	8
Town dump.....	16
Septic tank.....	11
Inspections re nuisances, etc., including junk yards and poolrooms, etc.....	107
Next two months of the year—Inspection for these two months were done by the kindness of the Town's Engineer's foreman and the Relief Officer.	
Last five months of the year:	
Water samples taken.....	30
Milk samples taken.....	15
Plumbing installations, including inspection of 337 stacks and 1,307 fixtures.....	333
Plumbing inspections.....	530
Communicable diseases placarded.....	387
Fumigations—House.....	48
Rooms.....	51
Inspection re nuisances, etc., for the last five months of the year from June 15th to November 15th.....	695
According to Mr. Hubbell's records over 2,000 inspections were made.	

VACCINATIONS DONE

Fifty-six at foreign clinic.

As a little indication of the value of Public Health control of contagious diseases it is found:	
Scarlet fever in 1923.....	Scarlet fever reported was 48 cases—2 deaths.
Diphtheria in 1923.....	Diphtheria reported was 46 active, 59 inactive—3 deaths
Tuberculosis in 1923.....	63 active cases—10 of these being indigents. 6 suspect cases—10 deaths. 14 cases received sanatorium care. 7 cases received hospital care.
Typhoid fever.....	8 cases—no deaths. 7 cases in Oshawa Hospital—1 at home. 4 Whitby. 1 Cochrane (place of origin). 2 country district. 1 on island in Lake Simcoe.
Measles.....	468—4 deaths (pneumonia).
Whooping cough.....	31—3 deaths (pneumonia).
Chicken-pox.....	30.
Mumps.....	14.
Erysipelas.....	8—1 death.

1923—PUBLIC HEALTH NURSES' ACTIVITIES—TOTAL CALLS MADE

Contagious diseases.....	1,966
Child Welfare.....	1,152
Bedside care and treatment.....	453
Social Service and Welfare.....	208
Birth registration.....	366
Prenatal welfare.....	313
Tuberculosis.....	244

Total number of calls..... 4,702

Total number of separate individual patients directly under observation in one year, ---, not including any contacts observed in home or abroad.

WELFARE CLINICS

Total attendance:

- (1) English-speaking..... 1,356 babies
- (2) Foreign-speaking..... 722 babies and pre-school age children
- Average weekly attendance, English-speaking..... 50
- Average weekly attendance, foreign-speaking..... 14

Total number of separate individual children under observation in the English-speaking clinic during the year, 284; foreign, 192.

Total number of separate individual children under observation and not at clinics, 960.

Year	1920	1921	1922	1923
Population	12,246	11,582	12,780	15,565

Disease	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Diphtheria—Active	77	6	70	6	53	2	46	3
Inactive	2	..	64	..	23	..	59	..
Scarlet fever	82	1	22	1	80	2	48	2
Measles	151	2	3	0	84	0	468	4
Typhoid fever	6	0	6	3	1	0	8	0
Mumps	3	0	64	0	2	0	14	0
Whooping cough	..	..	51	0	73	0	31	3
Chicken-pox	11	0	110	0	131	0	30	0
Smallpox	69	0	7	0	0	0	0	0
Encephalitis lethargica	0	0	2	2	0	0	0	0
Meningitis	0	0	3	1	2	1	0	0
Anterior poliomyelitis	0	0	0	0	1	1	0	0
Tuberculosis—Active	0	0	23	5	36	6	63	10
Erysipelas	0	0	7	1	8	1	8	1
Venereal disease—								
Chancroid	0	0	0	0	1	0	1	0
Gonorrhoea	0	0	29	0	57	0	60	0
Syphilis	0	0	13	0	12	0	24	1

STATEMENT OF REVENUE 1921-22-23, DERIVED FROM PLUMBING PERMITS AND RELATIVE MONTHLY STANDINGS

Month	1921	1922	1923	Increase Over 1922	Decrease Under	Over all
January	\$16 00	\$11 25	\$8 50	.....	\$2 75	.....
February	6 50	9 75	6 25	.....	3 50	.....
March	2 25	12 75	29 50	\$16 75	.....	\$10 50
April	34 75	26 75	48 00	21 25	.....	31 75
May	10 50	48 50	75 00	26 50	.....	58 25
June	19 75	87 50	124 00	36 50	.....	94 75
July	72 50	52 00	128 00	76 00	.....	170 75
August	15 25	40 50	108 75	68 25	.....	239 00
September	21 50	43 50	105 25	61 75	.....	300 75
October	11 25	60 75	69 50	8 75	.....	309 50
November	10 00	33 75	65 00	31 25	.....	340 75
December	6 25	36 50	76 00	39 50	.....	380 25
Total	\$226 50	\$463 50	\$843 75	.....	.....	.....

1923—Increase in revenue over 1922..... \$380 25
 1923—Increase in revenue over 1921..... 617 25

The present revenue for the first 14 days of 1924 give an increase of \$39 more than was received from the total of the same period for the three years, 1921, 1922, 1923.

STREET MAINTENANCE FROM PUBLIC HEALTH SERVICE ASPECT

Flushing of streets	\$2,800 00
Cleaning and pick-up on paved streets	3,600 00
Snow removal	1,030 00
Cleaning catch-basins on paved streets	683 00
Cleaning sanitary sewers	477 00
Cleaning storm sewers	203 00
Cleaning out-fall	90 00
Cutting weeds	525 00
Oiling dirt roads	1,625 00

Total..... \$11,033 00

SCAVENGING

Scavenging, removal of garbage and waste material. . . . \$6,700 00

WATERWORKS DEPARTMENT

New mains installed, 16,000 feet.

Total of mains in town, 192,000 feet, valued at \$530,000.00.

WATER PUMPAGE

Water pumped, 1922	289,500,000 gallons	
Water pumped, 1923	368,400,000 gallons	
Average, 1923, per diem	1,000,900 gallons	
Minimum pumpage any day	786,600 gallons	
Treatment of water and allowing cost for capital investment	\$17.70 per million gallons	
Total cost of treatment of water per annum		\$6,262 80
Cost of treatment per 1,000 gallons		1 77
Capital up-keep	\$1 20	
Wash water	02	
Filter repair and renewal	20	
Alum	12	
Chlorine	02	
Filter power	21	
	<hr/>	\$1 77
Total cost of operating, including engineer, wages, coal power, pumps, teaming, etc., per 1,000 gallons		\$5 20
Treatment of water	1 77	
Pumphouse engineer	1 02	
Power	2 19	
Sundries	04	
	<hr/>	\$5 20

Water pumpage per capita:

62.9 gallons per diem per capita
 48.79 for public usage (revenue producing)
 29.4 domestic consumption
 17.4 industrial usage
 1.99 public services, street washing, fountain, etc.

Total.....48.79

14.11 water used for operating purposes, losses, etc. (non-revenue producing).
 4.65 operating water
 9.46 loss, overflow at tank, leaky main, etc.

Total.....14.11

Revenue producing water	77.5%	of total pumped
Non-revenue producing water	22.5%	of total pumped
	<hr/>	100%

Total cost street maintenance, sanitary service, scavenging, and waterworks department		<hr/>
		\$23,995 80

Average per capita charge would be		cts.
	\$1.54.16	

SEWERS

Approximately 5 miles of new sewers laid this year. Cost of same, \$42,000-43,000.

Oshawa, Ont., November 15th, 1923.

*Dr. T. W. G. McKay, Medical Officer of Health,
Oshawa, Ont.*

DEAR SIR:

Permit me the honour of submitting a report of the work done by your Sanitary and Plumbing Inspector for the year 1923.

The duties of this office having been delegated to three different inspectors during the past year, it has been more difficult to arrange a suitable report of work done than it would have been under one inspectorate. Regarding the work done during the four and one-half months of my appointment, I have endeavoured to comply with the by-laws of the town, as well as the Public Health Act of Ontario, by enforcing as much as possible, with consistency, its laws and edicts pertaining to the health of the general public, by visitations, inspections, etc., of back yards, public places, and in many cases private homes, where with some attention much benefit would be derived; also restaurants, butcher shops, bakeries, laundries, pool rooms, schools, etc., where the public are frequenters, and to prevent as far as possible any danger of contamination, by urging the necessity of cleanliness and sanitation.

During the period of my appointment, I have been fortunate indeed to acquire the co-operation of the various officials of the town, not forgetting your untiring efforts and assistance, which have been so willingly and ably administered. In fact, the citizens of the town generally have assisted very materially by their endeavours to comply with our regulations, and in many cases where notices have been served the request has been speedily agreed to and remedied.

From records in my possession, over two thousand inspections have taken place during 1923, and the general conditions of the town are as follows:

STREETS

The town's history of street cleanliness is greatly in advance of former years. Different reasons for this condition exist. *Namely*, a better and more durable street surface, and the system of flushing instead of sprinkling, and on the dirt streets oil has been used quite freely to prevent dust from entering the homes through the screen windows, which are the chief means of ventilation in the homes during the summer months. No complaint of this nature has been presented to me.

SIDEWALKS

As concrete sidewalks are considered the most sanitary, we are pleased to inform you of the extensions of sidewalks during the year. Some three miles have been added this year, making a total of 54½ miles.

SEWERS

It is a great pleasure to inform you of the wonderful advancement in laying sanitary and storm sewers. We still have with us the trouble of tree roots clogging the sewer connections.

Eighteen inspections of choked or defective sewer connections and drains were made, which were attended to at the earliest possible time.

Forty-nine inspections were made of general conditions of sewers during the year. In some cases privies were placed at man holes on streets where there was not sufficient fall for the effluent to be taken away. In cases of this type the companies concerned were notified to remove the nuisance, and this was complied with immediately. Such cases occur usually when streets are being resurfaced, and then only for a short time.

Two inspections where the main sewer had backed up were made, and the cause has been remedied.

Some 16,028 feet of sanitary sewer have been added this year, making a total of $21\frac{1}{4}$ miles.

Some 10,908 feet of storm sewer have been added this year, making a total of miles.

WATER SUPPLY

In all districts where water mains are being installed, the use of well water is being abolished and the wells filled in.

Four wells were found, through laboratory analysis, to be supplying water unfit for human consumption, and were ordered to be filled in.

Thirty samples were sent to the Provincial Laboratories for analysis, and I am pleased to state in every case samples of our town supply show consistently free from contamination.

NUISANCES

One hundred and fifty-eight inspections of back yards and lanes were made investigating conditions, and a stated time given for the abatement of nuisance. Some two or three were summoned to court through their neglect in complying with the necessary request.

Forty houses have been inspected by request, and occupants notified of the necessity of cleaning up, and such repairs made as should be in order to comply with Public Health laws.

Seven inspections of junk yards were made and proper instructions given as to what would be expected done.

Sixteen horse stables were inspected, with the result that in every visit the party owning same was handed a copy of the Provincial Act regarding the same.

DUMPS

Twenty-six inspections of town dumps were made.

POOL ROOMS

All pool rooms have been regularly inspected, sixty-one visits being made during the year. The one on the base line is not up to standard as yet, but the proprietor assures us of a speedy transformation, and also his intention of keeping strictly to our By-laws governing the same.

COMMUNICABLE DISEASES

Three hundred and eighty-seven inspections and investigations were made, including placarding and quarantine.

Forty-eight fumigations owing to communicable disease.

PLUMBING

Five hundred and thirty plumbing inspections have been carried out.

Three hundred and nine permits have been issued representing 337 stacks and 1,307 fixtures.

Revenue turned over to Town Treasurer, \$773.25.

	Stacks	Fixtures	Revenue
November, 1922.....	14	61	\$33 75
December, 1922.....	16	63	36 50
January, 1923.....	4	12	8 50
February, ".....	3	9	6 25
March, ".....	11	65	29 50
April, ".....	16	56	48 00
May, ".....	34	121	75 00
June, ".....	56	208	124 00
July, ".....	58	216	128 25
August, ".....	49	182	108 75
September, ".....	46	189	105 25
October, ".....	30	125	69 50
Representing for 12 months.....	337	1,307	\$773 25

Twelve septic tanks have been installed and inspected.

One hundred and eighteen plumbing installations were in old houses where old earth closets had been in use.

FOOD

Seventeen inspections of dairies were made.

Fifteen samples of milk were sent to Toronto laboratories for analysis.

Sixty-two inspections of restaurants and cafes were made, and where neglect of duties regarding the keeping of same was practised, they were notified to immediately comply with our by-law.

Fifteen inspections of bake shops were made.

Fifty-seven inspections of butcher shops were made.

SCHOOLS

Twenty inspections of Public and High schools were made, and defective conditions reported to the Board of Education which were duly rectified.

NOTICES

One hundred and thirty-two official notices have been served.

SUMMONSES

Three summonses were issued to delinquents and three convictions recorded for non-compliance in the time given.

The aforementioned report indicates the various branches of the Public Health work, which come under the supervision of your Sanitary and Plumbing

inspector, but does not include the many minor interviews and requests for advice and the many telephonic communications which are not recorded, but which take a certain amount of valuable time.

The relief and indigent interests have been most creditably handled by Councillor Brown as Chairman of the Relief Committee. Much credit is due Mr. Brown for his untiring efforts, not only in securing relief, but in determining who should bear the expense. By his energetic detective ability he has saved the Town of Oshawa several hundred dollars, besides rendering necessary relief to parties in distress.

Respectfully submitted,

D. A. HUBBELL,
Sanitary Inspector.

Oshawa, Ont., November 29th, 1923.

DR. T. W. G. MCKAY,

Medical Officer of Health, Oshawa, Ont.

Dear Sir:—

Herewith is presented the most outstanding activities of the Nursing Service of the Department of Public Health from November 1st, 1922 to October 31st, 1923.

COMMUNICABLE DISEASES

Almost every type of contagious disease common to our climate and section of the province has been present, with the exception of smallpox, and at certain seasons of the year the entire time of one nurse is employed combating these diseases. Each case is visited in the home, isolation made as complete as possible, and members of the family are instructed in the care of the patient and quarantine measures. Many cases of the more serious types, such as diphtheria and scarlet fever, are given bedside care through the illness, and especially so where it is impossible for the mother to give the care so essential. The much vexed question of an isolation hospital has not yet been answered by our municipal authorities, nor has any solution been proffered for any of our difficult problems this past year; nor yet has the housing problem made isolation measures less difficult. The over-crowded two and three room apartments, sublet, in houses already overcrowded make one think at times that any effort directed toward isolation might be followed by a question mark, for with the care of the sick must go a preventive healthy programme for each member of the family.

Infectious diseases reported for the year are as follows:—

Measles.....	468	....	4 deaths.
Diphtheria (active).....	46	....	3 deaths.
Diphtheria (inactive).....	59	....
Scarlet fever.....	48	....	2 deaths.
Whooping cough.....	31	....	3 deaths.
Chicken-pox.....	30	....
Mumps.....	14	....
Erysipelas.....	8	....	1 death.
Typhoid fever.....	7	....	5 of these from outside municipalities in Oshawa Hospital.
	711		
Tuberculosis (active).....	63	....	10 deaths.
Tuberculosis suspect cases.....	6		

With the exception of measles, all types of contagion have been lighter the past year. Immunization of all diphtheria contacts has done much to lessen

the spread of this disease. The laboratory we have in connection with the Department of Public Health has hastened the diagnosis of suspect cases, and no case has been released without two successive negative swabs.

Three cases have refused to respond to antitoxin and treatment alone, necessitating then the removal of the tonsils and adenoids. This operation was carried out in the patient's home by the doctor, with the assistance of the Public Health Nurses before the isolation could be removed. An attitude of intelligent responsibility is being shown by all toward measures adopted by the Department of Health, and an understanding co-operation in measures which four years ago seemed but imperfectly understood.

TUBERCULOSIS

The tuberculosis work has branched out considerably since the previous report. Concentrated attention has been given sixty-nine cases, and these have been treated in the same way as our other communicable cases in the above list. The education and examination of contacts is our chief point of interest, and with all we have managed to get done, it must be admitted the Public Health workers have never felt satisfied with the results of this work, and how inefficient is the control over the spread of this disease. The insidious onset of tuberculosis, the often great delay in the appearance of marked symptoms even after the infective organism has well established itself, is one of the great causes of our difficulty in handling this disease. Through the year, fourteen cases have received sanatorium care, and seven hospital care, ten of whom were indigent cases.

CHILD WELFARE

Realizing the vast importance of Child Welfare work in all its branches, Pre-natal, Maternity, Infant and Pre-school, each nurse has missed no opportunity to make this work tell its story in the history of infant mortality and its prevention.

PRE-NATAL

More concentrated work has been given to this branch, and approximately 150 mothers were safe-guarded. Admitting that the mothers are the most vital factors in the community—its very growth and development depending on them—the community should offer them the best that our knowledge of the importance of pre-natal care can give. Good pre-natal care should be made as popular a custom as infant welfare work is at present.

INFANT MORTALITY

Infant mortality is given in the following:

Intestinal.....	6	....	4 of which occurred in the foreign population.
Premature.....	19		
Stillborn.....	24		
Other causes.....	30		

79 deaths registered.
 512 births registered.
 173 of the above were born in the Oshawa Hospital.

The decrease in the intestinal infection of infants is further marked this year. A reduction to six infants under one year, four of the six being among the non-English speaking population, which indicates there is still much to do along preventive lines among these people. The co-operation of others in reporting

sick babies to us has been splendid, and if the lay public would only realize the importance of getting medical assistance early, no doubt all of these babies could have been saved. The number of premature births and stillbirths is still appallingly large. We cannot hope for better results until we have been placed in touch with the majority of the pre-natal cases of the municipality. Not only is the pre-natal care instrumental in reducing the infant mortality, but the care given during the period of maternity adds much to this. As yet we have not the trained maternity worker with us, and when we consider that 350 births out of 512, occurred in the homes, such a worker is the natural professional link between our pre-natal and infant welfare work.

INFANT WELFARE CLINICS

The greatest attraction and interest in the field of Public Health relates to the fate and welfare of the babies. No greater guarantee of health can be suggested than the baby clinics, where in one session we come in contact with a large number of mothers and infants. Here the mothers come for advice regarding infant feedings and physical defects. If a baby is found to be ill, the mother is immediately referred to her physician. The clinics are for prevention only, not for treatment of disease. One of the most satisfactory activities in our programme is the Well Baby Clinic for English-speaking mothers, established three and one-half years ago. It has gradually but surely grown in numbers and interest until now our weekly attendance hovers around fifty.

Total attendance for the year (English) 1,356 babies.

Total attendance for the year (Foreign) 722 babies and pre-school age children.

The clinic for babies of foreign-speaking mothers remains a problem. Whether it is difficult for them to understand our methods in this country, or whether they are influenced constantly by racial trends and customs which they cannot easily throw aside, or whether our methods are at fault, is a question. Much appreciation and excellent results are being obtained among a few families, but, nevertheless, it continues a discouraging proposition to cope with. The attendance is good during the summer months, but very slack during the colder seasons.

PRE-SCHOOL AGE

In each clinic considerable attention is being directed to the pre-school age. The two to six period of child life. Before now, the pre-school age child has been almost neglected in the concentration on school health and infant welfare, but at last he is given a place. Talks on cleanliness, nutrition, and teeth are given special attention, and many corrections of physical defects have been made by the family physician.

CRIPPLED CHILDREN

During the year a survey of crippled children of Oshawa was made by the nurses upon the request of the local Rotary Club. Several names and histories were handed to the Rotary committee, with the result that two cases have already received expert attention available, and perfect results. The Rotary Club are continuing their philanthropic work the value of which can never be estimated in monetary return, but can be estimated in value of citizenship.

RED CROSS CO-OPERATION

An ever busy organization, the Red Cross increased its active interest in Child Welfare by establishing a Fresh Air Cottage at Lake Ontario for six weeks during the summer vacation. By courtesy of the Oshawa Paris Commission, the use of this cottage was given to the Red Cross Society, and the continuance of this general attitude in the cause of humanity may grow into establishing a permanent Fresh Air Home during the summer months. This rounded out our programme of Public Health work, in as much that we were able to select twenty-four children who were much underweight and in need of a change of air, following serious illnesses. Without any exception, each child made a creditable gain. Next year it is the purpose of the Red Cross to increase the time allotment and to give accommodation to more of the little ones in need.

EDUCATIONAL METHODS ADVERTISING OF PUBLIC HEALTH WORK

To further health work in its educational and advertising purpose, we erected a Public Health tent at the local Fair Grounds. Here hundreds of babies and pre-school age children were weighed, and the mothers advised upon care and feedings. The instructive panels "Silent Salesmen of Health" were given due attention by the visitors at the tent. Five hundred glasses of milk were given to children, who thereby learned and appreciated the value of this beverage as a food.

Every opportunity of carrying the Public Health message to the people of the town, and outside has been seized. Talks have been given to groups, schools, home and school clubs, private and religious organizations.

Newspaper publicity means much, and it has constituted an important medium of reaching the larger public. Through notices, news items, reports of monthly meetings, the public is kept in frequent touch with activities of the nursing services, and no doubt many new conceptions of health work have come thereby.

RELIEF WORK

As in previous years the Red Cross has contributed to the welfare of many families and children in the relief work. Not least among this is their contributions to the up-keep of a loan cupboard in which pneumonia jackets, layettes, linen and bedding are kept for emergency needs.

For cases of contagion, in a community where there is no isolation hospital, this exchange of bedding fills a great and dire need.

A total of 4,702 calls has been made by two Public Health nurses; below are the details of visits.

Contagious diseases.....	1,966 calls.
Child welfare.....	1,152 "
Bedside care.....	453 "
Birth registration.....	366 "
Pre-natal.....	313 "
Tuberculosis.....	244 "
Social welfare.....	208 "

SOCIAL WELFARE

Just here is an opportune place for a few remarks on the social problems which are thrust upon the members of public organizations such as ours in an industrial town. The certain unfolding of much social misery indicates the

necessity of developing the strongest liason with social relief agencies. Such will in time, no doubt, make its most effective expression in the appointing of a social case worker, working hand in hand with the Department of Health, and charity organizations of every type.

Respectfully submitted,

B. E. HARRIS, R.N.
Public Health Nurse.

Oshawa, Ont., December 3rd, 1923.

Mayor and Council, Oshawa, Ont.

Gentlemen:

I hereby submit to your honourable body, my report for the second year in which I have been acting as Relief Officer for the Town of Oshawa.

Although the position is without honorarium, no less attention has been given, on that account, to any case reported as requiring assistance.

The work for the year ending November 30th, 1923, has been of a very strenuous character and has taken so much of my time as to make it impossible for me to give much attention to my own affairs, and as a result I have been put to a considerable loss. The work has involved three visits to Toronto, six visits to Whitby, and one to Campbellford. In the months of March and April much of my time was taken up with work in the Police Court, watching the Town's interest in affiliation cases and also cases of non-support.

Eighty-nine cases of indigency have been reported, necessitating over 300 visits before these were ultimately disposed of. Owing to several of these cases coming before the local magistrate, they have meant ten to twelve visits and many hours in the police court.

The applications for relief have been definitely found to vary greatly in their character and the justification entitling them to benefit. There have been citizens who have fought nobly against sickness and adversity, and in some cases have refused even to ask for relief, until my attention has been called to their case by other citizens who knew the circumstances. While I have been proud of these people as citizens for their reticence and personal pride, still I have been glad to render all the assistance possible.

I may say that I have had quite a large number of cases where it has been necessary to take strong measures in dealing with their applications, and have had to give evidence in police court against many for their apparent wilful neglect in providing the necessities of life for their families. This has meant taking up the cases with the Children's Aid Society, and even necessitated the taking away of their children from them in order to protect these young lives. The fathers and mothers in these cases have been of a low type, needing constant watching to keep them at work and making provision for their families.

We have still with us those people, who, while they work, apparently live much beyond their income. One week out of work, or a little sickness, finds these people applying to the town for assistance. Such people must expect to be met with pertinent questions from the relief officer before being assisted.

Forty cases have been investigated, granted relief, hospital care, or medical attendance, amounting to \$1,763.15.

Forty-three other cases have been investigated in which it was found that the town had no legal responsibility. These investigations alone have

saved the town a considerable sum of money. The actual amount cannot be arrived at as some are hospital, some are sanatorium, and some are asylum cases, varying in length of time from a few weeks to months, and in some cases, years.

The average cost in the hospital for an indigent case for one year is approximately \$560.00. The same is true of a sanatorium case. In asylum cases the average cost is \$260.00 per annum. The cost to the municipality for cases sent to institutions, as well as the amount saved to the municipality in the case of cases not sent to institutions, may be readily computed from such figures. All that is required is the number of individuals and the time of stay in the different institutions. This information is on record in the Treasurer's office.

In six cases asking for relief I gave a point blank refusal, as I considered that they were cases of real imposition.

PARENTS NOT WANTED

I am sorry to say that I have had five cases coming under this heading; that is children who have sought to get rid of their aged parents, and have applied to the town to do something for them on purpose to be relieved of any responsibility connected with the same. Happily, I am well versed in the law covering such cases, and am able to get the parties concerned together and put the matter squarely before them with the result that I have only had to take one to the House of Refuge who is being paid for by children who are out of town. This, as you are aware, gives me much work in getting relatives together. I will not guarantee secrecy in these cases, as I feel that the painfulness of some demands made publicly will only serve to shame the parties concerned. "He that wasteth his Father and chaseth away his Mother is a Son that causeth Shame and bringeth Reproach."

One interesting case has been overlooked in this summary. With reference to the estate of Mrs. Fisher, deceased, I have succeeded in getting the Town Treasurer in touch with the solicitors for the estate. And as a result the town will be reimbursed to the amount of \$1,391.00 with interest, as per an agreement arranged.

I would like to draw your attention to the fact that there are some very peculiar cases to be dealt with. One instance:—a man, an American citizen, seventeen years in Canada, but not having taken out papers to become a Canadian citizen, comes to Oshawa two years ago, works steadily, falls sick, becomes a serious case after a long time in the local hospital. It is ultimately decided that his case is one for the House of Refuge. The question in my mind was "Is this man chargeable to Oshawa?" I worked on the case and found that he had a sister in Buffalo. I got in touch with her and put the case before her. Finding also that he had a nephew I got him interested in the case. The question arose, "Would they receive him over the border as the man had to be taken over in an ambulance?" After much exchange of correspondence, I finally got Mr. Disney to take him over on chance. Happily they received him in Buffalo, and the nephew became responsible for the bill which was a considerable one. This would altogether likely have been lost money but for my relationships to the case.

Owing to the resignation of the sanitary inspector, I acted in that capacity for two months, thus saving the town an interim expenditure of \$300.00 the salary which would have been paid for that time.

During the two months fifty-four notices were served and two cases taken to court and convictions obtained.

Before closing, I would like to place on record my appreciation of the splendid assistance rendered to me by Dr. McKay, Nurse Harris, and of also the Police Department and the heads of the various firms who continue to give me every assistance in my investigations.

In conclusion, permit me to say that no effort has been made to shirk responsibility, either my own or the town's. Applications for relief have been always treated with all the courtesy necessarily due them.

Respectfully submitted,

A. W. BROWN,
Relief Officer.

PRESENT STATE OF THE McLAUGHLIN BEQUEST TRUST FUND

DR.		
Total expenditures to date.....		\$1,492 31
Balance on hand in bank.....		268 59
		\$1,760 90
CR.		
Dec. 29, 1921—By Bequest.....		\$1,200 00
June 30, 1922—Interest.....		18 00
Dec. 31, 1922—Interest.....		8 50
June 30, 1923—Interest.....		3 05
Nov. 24, 1922—Credit by refund on McAinsh account, books for Department.....		18 50
Mar. 21, 1923—Refund from Municipality on Marlowe account for re-decorating Board of Health rooms.....		121 85
Feb. 7, 1923—Refund on loan.....		100 00
Dec. 31, 1922—Cash from Municipality of East Whitby. Re-imburement for work done by the Department; collecting water and milk samples and laboratory work.....		35 00
Cash receipts for laboratory work done, deposited in the Dominion Bank.....		256 00
		\$1,760 90
Bills outstanding for laboratory work done.....	\$63 00	
Accounts collectable.....	53 00	
Indigent.....	10 00	

Oshawa, Ont., November 29th, 1923.

DR. T. W. G. MCKAY,
Medical Officer of Health, Oshawa, Ont.

Dear Sir:—

The following work was done at the laboratory of the Department of Public Health, during the twelve months ending November 15th, 1923.

Material	No. of examinations	
Sputum—for the diagnosis of tuberculosis, etc.....	98	Free.
Throat swabs—for the diagnosis of diphtheria, etc.....	930	Free.
Sent to Provincial Laboratory.....	290	Free, except postage.
Urine—for the diagnosis of diabetes, Bright's disease, pyelitis, etc....	85	
Blood—for the diagnosis of anaemia, etc.....	14	
Blood—for the diagnosis of typhoid fever.....	14	Free.
Exudate—for the diagnosis of venereal disease, gonorrhoea.....	113	Free, except postage.
Miscellaneous—pleural fluid, spinal fluid, etc.....	10	

There were ten Schick Tests done and Toxin-Antitoxin administered in two cases.

Respectfully submitted,

GRANT L. BIRD, M.B.
Director of Laboratory.

Oshawa, Ont., January 26th, 1924.

DR. JOHN W. S. McCULLOUGH,
Chief Health Officer of Ontario,
Spadina House, Spadina Crescent, Toronto, Ont.

Dear Sir:—

The enclosed four papers are properly 1922 report, but their presence, accompanying this report, is of value in giving a rapid historical review of the work done by the Department of Public Health in Oshawa in the past four years, therefore, I have felt it wise to send them along with this report, feeling that it was the wiser place for them to turn up.

Yours truly,

T. W. G. McKAY, M.D.
Medical Officer of Health.

Oshawa, Ont., November 30th, 1922.

The following work has been done at the laboratory of the Department of Public Health, Oshawa:

Examination	No. of cases
Sputum—for the presence or absence of bacillus of tuberculosis.....	12
Throat cultures—to detect the presence or absence of diphtheria.....	220
Urine—the diagnosis of diabetes, Bright's disease, pyelitis, cystitis, etc.....	15
Blood—for the diagnosis of anaemia.....	2
Blood—for the diagnosis of typhoid fever.....	4
Exudate—venereal disease, gonorrhoea.....	35
Spinal fluid, including lumbar punctures—for the diagnosis of infantile paralysis, cerebral spinal meningitis, tubercular meningitis, etc.....	6

The above work was done for diagnostic purposes at the request of eighteen medical doctors of the municipality and surrounding district.

G. L. BIRD, M.B.

As a little indication of the value of Public Health control of Contagious Diseases it is found:

Scarlet fever in 1921—Scarlet fever reported was.....	22 cases.....	1 death.
“ “ 1922 “ “ “ “.....	80 “.....	2 deaths.
Diphtheria in 1921—Diphtheria reported was.....	70 “ (clinical or active)	6 deaths.
“ “ 1922 “ “ “ “.....	64 “ (carriers or inactive)	
“ “ “ “ “ “.....	53 “ (clinical or active)	2 deaths.
“ “ “ “ “ “.....	23 “ (carriers or inactive)	

All these were under continued supervision of Public Health nurses.

Tuberculosis in 1921—Tuberculosis reported was.....	23 cases.....	5 deaths.
“ “ “ “ “ “.....	36 “.....	6 deaths.

While through Public Health Nursing Service and a more humane understanding of the proper care of such cases, twenty-four of these cases were admitted to Sanatoria for treatment.

Typhoid Fever. Thanks to our water supply from Lake Ontario and an efficient filtration plant and chlorinating system

In 1921	In 1922
6 cases reported.	1 case only was reported.
4 imported from outside Municipality to hospital.	
3 of these died.	

Besides these diseases, measles, chicken-pox, whooping cough, and other contagious diseases were also being looked after in the same intensive way.

Beside nursing care in many of these cases, as well as in ordinary illness cases, was freely given.

TOWN OF OSHAWA POPULATION

	1920	1921	1922
Population.....	10,146	12,248	12,780
(Approximately 2,500 to 3,000 non-English speaking population.)			
Average per capital cost of Board of Health....	58.68 cents	56.88 cents	60.89 cents

LOCAL BOARD OF HEALTH SUMMARIES

	1920	1921	1922
Salaries:			
Medical Officer of Health.....	\$100 00	\$100 00	\$500 00
Sanitary Inspector (6 months at \$1,350.00, 6 months at \$1,800.00).....	1,575 00	1,800 00	1,800 00
Office Clerk and Stenographer.....	*450 00	500 00	500 00
First Public Health Nurse.....	1,200 00	1,500 00	1,500 00
Second Public Health Nurse.....	.....	*1,500 00	†1,500 00
Board of Health office expenses.....	2,628 82	1,567 68	2,106 97
" " total expense.....	5,503 82	5,467 68	7,781 97
Grand total.....	5,953 82	6,967 68	7,781 97
*Paid by Red Cross.			
†Less \$125.			

BOARD OF EDUCATION HEALTH EXPENDITURES

	1920	1921	1922
Public School Nurse.....	\$1,100 00	\$1,300 00	\$1,350 00
First School Dentist.....	960 00	960 00
Second School Dentist.....	720 00
Nurse's supplies.....
Dental supplies.....
Total.....	\$2,260 00	\$3,030 00

Average per capita cost of Board of Education health expenses.....	10.841	18.453	23.78
Grand total of Board of Health and Board of Education health expenses.....	69.5 per cap.	75.3 per cap.	84.6 per cap.

PUBLIC HEALTH NURSES' ACTIVITIES

	1920 10 months	1921 12 months	1922 12 months
Total calls made.....	1,362 (1 nurse)	3,293 (2 nurses)	4,617 (2 nurses)
Contagious diseases.....	900	500	1,471
Child welfare.....	212	1,200	1,252
Beside care and treatments.....	250	754	639
Social Service.....	.....	450	429
Calls re birth registration.....	.....	.....	250
Pre-natal welfare of mother.....	.....	100	217
Tuberculosis.....	.....	288	165

Total number of separate individual patients directly under observation in one year, 1,883, not including any contacts observed in home or abroad.

WELFARE CLINICS, TOTAL ATTENDANCE

	Last six months		
(1) English speaking.....	427	966	1,184
(2) Foreign speaking.....	No clinic this year	920	824
Average weekly attendance, English speaking.....	26		
" " " Foreign speaking.....	16		

Total number of separate individual children under observation during the year 1922: English, 155; Foreign, 131.

Total number of separate individual children under observation in the English-speaking clinic during two years, over 250.

Total number of separate individual children under observation and not at clinics, fully as many more as at both clinics.

N.B.—Annual calls considered a good average for a Public Health nurse in Public Health Welfare Work in other municipalities, 1,500 to 2,200.

SANITARY INSPECTOR'S ACTIVITIES

	1920	1921	1922
Water samples taken.....	55	106	63
Milk samples taken.....	18	43	51
Cream samples taken.....	...	...	10
Plumbing installations.....	201	90	174
Plumbing inspections.....	610	303	304
Communicable diseases placarded.....	323	166	209
Rooms fumigated.....	478	396	76
Inspection re nuisances, etc.....	1,800	1,493	1,670
Total.....	3,485	2,597	2,557

During part of the year 1920 Mr. Philip Chaney placarded cases of contagion, released and fumigated.

OTTAWA

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Ottawa. County, Carleton.
Name and address of M.O.H., T. A. Lomer, City Hall, Ottawa.
Date, November 15th, 1923.
Estimated population, 117,239 (Assessor's census).
Number of births per annum (exclude "stillbirths"), 3,081.
Number of stillbirths, 127.
Number of infant deaths under one year, 436.
Infant mortality rate per 1,000 living births, 141.51.
Number of deaths from all causes, 1,748.
Death rate per 1,000 of the population, 14.909.

COMMUNICABLE DISEASES

Disease	No. of cases reported	No. of deaths
Tuberculosis (pulmonary).....	152	91
Typhoid.....	32	6
Scarlet fever.....	300	15
Diphtheria.....	320	33
Smallpox.....	24	0
Measles.....	763	8
German measles.....	361	0
Chicken-pox.....	187	2
Mumps.....	44	0
Whooping cough.....	637	56
Erysipelas.....	17	4
Poliomyelitis.....	1	0
Cerebro-spinal meningitis.....	4	0
Influenza.....	1	64
Lethargic Encephalitis.....	1	3

Any special outbreak of communicable disease during the year?

Whooping cough especially during January, February, March, April, and May.

Methods adopted to combat the outbreaks?

Following up school absentees by Public Health nurses.
Quarantining cases and keeping contacts under observation.
Encouraging use of Pertussis vaccine for contacts.

MILK SUPPLY

- Source, dairy farms in 25-mile radius.
- Character, very good.
- Is supply pasteurized? Over 90 per cent.; remainder from tuberculin-tested herds.

WATER SUPPLY

- Source, Ottawa River at Lemieux Island.
 - Character, varies; turbid and very polluted in spring.
 - How purified? Chloramine, with liquid chlorine in reserve.
- Any special Public Health work carried on, such as child welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?
- Three child welfare stations, where infant feeding and pre-natal clinics are carried on.
Venereal disease clinic.
Tuberculosis clinic, operated by private charity and assisted by Health Department.
- Any Public Health education by M.O.H.?
- Occasional lectures to mixed audiences in schools.
Infant welfare educational publicity in connection with Central Canada Exhibition, when annual baby show conducted by M.O.H.
- Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Not yet completed.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$5,300 00
(b) Expenditure for other Public Health work.....	50,081 52

Total expenditure for Public Health..... \$55,381 52

(This does not include expenditure for Isolation and Smallpox Hospitals, both of which are under Health Department.)

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Printed report will be forwarded.

Chairman and Members, Board of Health, Ottawa.

Gentlemen:

This year has shown a slightly higher general death rate and infant death rate than the preceding year and also a considerable decrease in the birth rate.

The outstanding feature in regard to the increased death rate is the severe outbreak of whooping cough during the winter and spring which caused fifty-six deaths directly due to this disease and a considerable number in addition where the cause of death was given as respiratory disease but where whooping cough was the primary factor.

TUBERCULOSIS, 1923

A noticeable increase in deaths due to pulmonary tuberculosis, as well as in the number of cases reported, was recorded during the year.

Month	Cases reported	Deaths from pulmonary tuberculosis	Deaths from other forms of tuberculosis
November.....	7	5	2
December.....	6	9	1
January.....	13	11	2
February.....	13	5	2
March.....	12	9	0
April.....	6	14	2
May.....	11	4	2
June.....	10	6	2
July.....	10	9	1
August.....	13	7	0
September.....	22	5	4
October.....	29	7	1
Totals.....	152	91	19

Scarlet fever showed fewer cases but about the same number of deaths.

Diphtheria showed a very gratifying decrease amounting to about 25 per cent. both in the number of cases reported and in the mortality.

Influenza was unusually prevalent during the late winter and early spring and, though never reaching epidemic proportions, it caused sixty-four deaths, almost all occurring during the months of February and March. This, together with the increased number of deaths from pulmonary tuberculosis and whooping cough, accounts for the slightly higher general death rate.

Small-pox occurred only in scattered cases during the first six months of the year, twenty-four in number of which twelve were reported in January. All cases were treated in the Hopewell Hospital. Since the month of April no cases have appeared and the hospital has been closed.

Typhoid fever has been almost entirely absent, only six cases having developed in the city during the year, none being fatal.

Twenty-six cases from outside points were treated in the local hospitals, six being fatal.

TYPHOID FEVER, 1923

Origin	Cases reported	Deaths
Ottawa.....	6	0
Other points in Ontario.....	17	3
Province of Quebec.....	9	3
Totals.....	32	6

VENEREAL DISEASE

The Venereal Disease Clinic has been in operation throughout the year at the Water Street Hospital for free treatment of these diseases. The amount of work done at this clinic is shown in attached table.

VENEREAL DISEASE CLINIC

Cases admitted to Out-patient Department—				
Male.....	Syphilis, 54,	Gonorrhœa 31,	Double infection 18	
Female.....	“ 46	“ 5	“ “ 5	
Total.....	100	36	23	Grand total 159
Patients admitted in Hospital wards—				
Male.....	Syphilis 19,	Gonorrhœa 41,	Double infection 10.....	70
Female.....	“ 15	“ 30	“ “ 5.....	50
Total.....	34	71	15	Grand total 120
In-patients.....				120
Out-patients.....				159
Total.....				279
Treatments given to out-patients.....				3,115
Syphilis, 2,125, gonorrhœa 990.				
Treatments given to in-patients.....				1,541
Total treatments.....				4,656

INFANT MORTALITY

This year has shown an increase in the Infant death rate which is attributable to two factors: the diminished birth rate and the outbreak of whooping-cough.

The infant deaths for the year totalled 436 as compared with 417 last year, an increase of nineteen or 4.5 per cent.

Deaths from diarrhoeal diseases showed a new low mark being only 13.5 per cent. of the infant deaths as compared with 14 per cent. in 1922 and 25 per cent. in 1921.

Deaths from contagious disease and respiratory disease shows a large increase due, as previously pointed out, to whooping cough.

The proportion of infant deaths to total deaths was 24.9 per cent., the same figure as in 1922.

The principal causes of infant mortality are shown in the subjoined table:—

Deaths	Under Six months	Six months to One year	Total
Convulsions of infants.....	5	5	10
Diarrhoea and enteritis.....	34	25	59
Respiratory diseases.....	37	42	79
Contagious diseases.....	24	32	56
Prematurity.....	67	5	72
Congenital malformation.....	7	5	12
Congenital debility.....	20	3	23
Marasmus, etc.....	12	3	15
Other diseases.....	77	33	110
Total.....	283	153	436

At the beginning of the year the city laboratory was turned over to the Provincial Board of Health to operate as a Branch Provincial Laboratory under an agreement whereby the city was to provide quarters, light and heat and one-fifth of the salary of the staff. The city also undertook to erect certain additional accommodation necessary for carrying out Wassermann tests.

SPECIMENS EXAMINED AT PROVINCIAL BRANCH LABORATORY OCTOBER 31, 1922,
TO NOVEMBER 1, 1923

Type of Specimen	Number of Positive Negative	Total Specimens
Diphtheria (swabs).....		5,087
Diagnosis.....	3,798	
Positive.....	439	
Negative.....	3,359	
Release from quarantine.....	1,289	
Positive.....	134	
Negative.....	1,155	
Tuberculosis.....		397
Positive.....	69	
Negative.....	328	
Typhoid.....		74
Positive.....	16	
Negative.....	58	
Gonorrhoea.....		545
Positive.....	231	
Negative.....	314	
Milk Analyses.....		
Chemical and Bacteriological.....		1,180
Water Analyses.....		2,491
Chemical.....	45	
Bacteriological.....	2,446	
Miscellaneous Specimens.....		
Chiefly Chlor. Lime for Cl. and Ammonia Sol. for NH ₃		1,202
		10,976

The laboratory work of the city has been very efficiently carried out by the Provincial Branch Laboratory under this arrangement at a considerable financial saving to the city, but it is a matter for regret that the promised

addition to the building has not yet been started. As a result Wassermann tests cannot yet be undertaken by the laboratory and blood specimens still have to be sent to Toronto for examination with the inevitable delay, loss and damage to specimens due to transit. It is to be hoped that the city will carry out its agreement in regard to this building in the near future so that this necessary work can be done here.

It is with deep regret that I have to record the death of Mr. J. A. Seguin, for two years a most valued member of the Board of Health.

In conclusion I wish to thank the members of the Board of Health, the staff of the Health Department, and the physicians in charge of the Child Welfare stations for their assistance and co-operation throughout the year.

Tables of vital statistics and the reports of the various sub-departments are appended.

All of which is respectfully submitted.

T. A. LOMER,
Medical Officer of Health.

OWEN SOUND

REPORT OF MEDICAL OFFICER OF HEALTH

Owen Sound, November 1st, 1923.

*To the Members of the Local Board of Health,
Township of Derby:*

Gentlemen: In accordance with the Public Health Act, I herewith present to you my annual report of matters pertaining to the health of this township.

The population of the township is 1,530. Births 31; deaths 18. Death under 1 year 4. Death rate per thousand of population was 12.

There were thirteen cases of measles reported during this year and one case of scarlet fever. However, there is a mild epidemic of scarlet fever at present in the adjoining City of Owen Sound, and doubtless it will spread to this municipality. I would urge the greatest vigilance in checking the spread of this disease.

During the month of May, I inspected all the school premises in company with the Sanitary Inspector. During this inspection, I gave health talks in some of the schools. A copy of this report was sent to each School Board. These reports for the most part were well received and acted upon; but some of the School Boards still pay no attention to our requests. It is about two years since the Trustees of U. S. S. No. 2, Derby and Sydenham promised to put in a proper urinal, but up to the latest reports nothing has been done. The school grant should be withheld till this matter is attended to.

Kilsyth School Board have not put new roof on closets, but have made repairs to roof. The next six months will show whether these repairs are sufficient or not.

The Board of S. S. No. 4 have not placed a new urinal as requested. Complaints are made that this school is very cold in winter—too cold, some days, for teaching. Surely the School Board will attend to these matters.

I am glad to say that all of this report is not in the fault-finding tone.

Kilsyth School Board have put a new metal ceiling and walls in the school at a considerable expense, thus settling once for all the falling of plaster and adding very materially to the appearance to the school room.

The Trustees of S. S. No. 2 (Dunn's School) deserve great credit for alterations made this year. The school floor was raised and a basement excavated under the whole school, with plenty of windows installed. A new furnace was put in, and tables and benches provided for the pupils to use at noon. During the winter months hot meals are served in the basement. This school in every respect is a fine model for the other schools to copy.

We want the trustees of the various Boards to believe that the efforts of the Board of Health are in the interests of the health of the children; and we would ask their best co-operation to this end.

All of which is respectfully submitted.

A. B. RUTHERFORD, M.O.H.

FURTHER REPORT OF M.O.H.

Since my regular Annual Report of November 1st, there have been a number of cases of scarlet fever reported in the township, nearly all being from Kilsyth School. I am convinced that these cases all arose from an unreported case, perhaps unreported because not recognized. Fortunately the cases have mostly been mild; but there is no guarantee how long the epidemic will remain so.

The law is strict and the penalties severe for not reporting contagious disease. The first symptoms of scarlet fever are headache, vomiting, sore throat, fever, with a fine red rash appearing inside of one or two days. The tongue is usually badly coated. No one can help suspecting a patient with this group of symptoms. Be fair and report the case to your doctor or to the M.O.H. and steps will be taken to protect other members of your family and the general public.

I trust the people of this township will be good citizens and help in stopping the spread of this disease.

A. B. RUTHERFORD, M.O.H.

PORT HOPE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Port Hope. County, Durham.
Name and address of M.O.H., Geo. A. Dickinson, Port Hope, Ont.
Date, November 8th, 1923.
Estimated population, 4,575.
Number of births per annum (exclude "stillbirths"), 110.
Number of stillbirths, 1.
Number of infant deaths under one year, 2.
Infant mortality rate per 1,000 living births, 18.
Number of deaths from all causes, 71.
Death rate per 1,000 of the population, 15.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	1	0
Chicken-pox.....	1	0
Typhoid fever.....	1	0
Tuberculosis.....	1	0
Measles.....	249	0
Pertussis.....	14	0
Venereal diseases.....	16	0

Any special outbreak of communicable disease during the year?

There was an epidemic of measles. In the month of February 26 cases were reported, in March 156, in April 65, and in the month of May 2 cases.

Methods adopted to combat the outbreaks?

Notification, placarding and isolation of cases.

MILK SUPPLY

- (a) Source, dairy farms.
(b) Character, good.
(c) Is supply pasteurized? About one-third of the supply.

WATER SUPPLY

- (a) Source, Lake Ontario.
(b) Character, fairly good.
(c) How purified? Filter basins.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

No.

Any Public Health education by M.O.H.?

Reports on milk supply, inspection of milk reports, condition of water supplies, distribution of pamphlets and publications of the Provincial Board of Health.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$600 00
(b) Expenditure for other Public Health work.....	167 20
Total expenditure for Public Health.....	<u>\$767 20</u>

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

Inspection of dairy farms, dairies, analysis of milk, supervision of water supplies and analysis of water as per reports attached hereto.

REPORT OF ANALYSIS OF WATER FOR YEAR 1923

J. W. S. McCULLOUGH, ESQ., M.D.,
Toronto, Ont.

During the year eighty-one samples of water from the town supply were taken for analysis and of these there were forty-six samples absolutely pure. Thirty-five samples showed pollution while ten of these thirty-five samples showed an amount of pollution that is usually considered dangerous. Although on the whole the condition of the town water seems fairly satisfactory.

The following table shows the number of samples taken each month and the results of analysis, viz:—

	Number of Samples	Colon bacilli in						Samples pure	Totals
		0.03 cc.	0.1 cc.	1 cc.	10 cc.	20 cc.	30 cc.		
1922									
December.....	6	0	0	0	0	3	3	0	6
November.....	6	0	0	0	0	0	0	6	6
1923									
January.....	6	0	1	2	2	0	0	1	6
February.....	6	0	0	0	0	0	3	3	6
March.....	4	0	0	0	0	0	3	1	4
April.....	8	0	2	1	2	1	2	0	8
May.....	8	0	0	0	0	0	1	7	8
June.....	6	0	0	0	0	0	3	2	6
July.....	9	0	0	0	0	1	4	4	9
August.....	8	0	0	0	0	0	0	8	8
September.....	8	0	0	0	0	0	0	8	8
October.....	6	0	0	0	0	0	0	6	6
Total.....	83	0	3	3	4	6	19	46	81

MILK INSPECTION

During the year the premises of the licensed vendors have been inspected several times, and the dairies supplying these vendors have also been inspected.

Cleanliness. In making the inspection one of the chief points insisted upon was cleanliness. Of the twenty-one premises visited the conditions were excellent in fifteen, fairly good in five and not good in one case. The milk from this dairy is no longer being sent to town and unless the improvements considered necessary are made we will try and prevent the product of this dairy being consumed in Port Hope.

Stables. Eighteen of the stables visited were in good shape; they were clean, well lighted, well ventilated and well constructed.

Ice. In order to keep milk in satisfactory condition it should be cooled soon after being milked. For this purpose sixteen producers use ice. One dairyman has an excellent spring while two use cold water from good wells.

Milk-houses. Quite a number of the best producers use a separate building for storing, cooling and preparing the milk for the vendors. These milk-houses are very satisfactory and we urge upon the producers the desirability of providing good milk-houses.

Cows. The dairy herds from which Port Hope receives its milk supply are among the best in this district. And I think in every case the cows were

in good condition, they were clean and seemed to be in the best of health. The best dairymen keep the cows clean by clipping the hair from the udders flanks and the tail, and many of them regularly use a curry comb to clean the cows.

One or two dairies use a milking machine and they seem to be very satisfactory. They are clean and labour saving and it would seem to be very beneficial if they were used to a much greater extent than they are.

From year to year there is a steady improvement in the condition of our milk supply. Where we find a producer who is not inclined to make very necessary improvements we usually succeed in inducing the vendors to discontinue buying milk from him. We do everything to encourage the progressive dairyman while the man who is not inclined to make improvements soon finds he cannot get sale for his product.

All the samples of milk examined for dirt sediment were found to be very clean.

The average per cent. of butter fat for each month of the year was, viz:—

November, 1922.....	3.18	May, 1923.....	3.12
December, ".....	3.10	June, ".....	3.16
January, 1923.....	3.22	July, ".....	3.15
February, ".....	3.20	August, ".....	3.23
March, ".....	3.11	September, ".....	3.22
April, ".....	3.17	October ".....	3.15

The average per cent. of butter fat for the year was 3.17 per cent.

SCHOOL INSPECTION

The report of the sanitary inspection of the public schools in this municipality have been sent to the secretary of the boards interested for their perusal.

Extensive improvements are being made to the West Primary School. These improvements seem most complete and satisfactory and make this school quite up-to-date.

It would be very desirable if improvements along the same lines could be made to the East Primary School.

SUPPLIES

During the year the usual supplies of diphtheria antitoxin, vaccine points, notification cards, Widal slides, pertussis vaccine, nitrate of silver ampoules, etc. have been obtained from the Provincial Board of Health and distributed among the physicians in the municipality.

Port Hope, November 10th, 1923.

GEO. A. DICKINSON,
Medical Officer of Health.

SAULT STE. MARIE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

January 1st—October 31st

To be presented to Local Board of Health before 15th November, annually.

(Schedule B, Clause 1, Public Health Act)

Municipality, Sault Ste. Marie. County, Algoma.

Name and address of M.O.H., A. S. McCaig, Sault Ste. Marie, Ont.

Date, November 15th, 1923.

Estimated population, 22,000.

Number of births per annum (exclude "stillbirths"), 638.

Number of stillbirths, 25.

Number of infants under one year, 44.

Infant mortality rate per 1,000 living births, 69.9.

Number of deaths from all causes, 220.

Death rate per 1,000 of the population, 10.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Cerebro-spinal meningitis.....	2	2
Chicken-pox.....	34	0
Diphtheria.....	35	3
Gonorrhoea.....	5	0
Measles.....	10	0
Mumps.....	2	0
Septicaemia.....	1	1
Scarlet fever.....	19	1
Smallpox.....	2	0
Syphilis.....	11	0
Tuberculosis.....	18	13
Whooping cough.....	3	0
Typhoid fever.....	5	0

Any special outbreak of communicable disease during the year?

No.

Methods adopted to combat the outbreaks?

MILK SUPPLY

- (a) Source, local dairies.
- (b) Character, generally good.
- (c) Is supply pasteurized? Sixty per cent. or more.

WATER SUPPLY

- (a) Source, St. Mary's river and wells.
 - (b) Character, good except for boat contamination.
 - (c) How purified? Chlorination.
- Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?
- Well-baby clinic, ante-natal clinic, venereal disease clinic, little mother classes.
- Any Public Health education by M.O.H.?
- Well-baby and ante-natal clinics. Addresses to Farmer clubs and other organizations on Public Health matters, particularly tuberculosis, milk supplies, water supplies, venereal diseases, etc.
- Did M.O.H. carry out sanitary inspection of schools during the year and make report?
As required for investigation of complaints.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$1,200 00
(b) Expenditure for other Public Health work.....	3,127 61

Total expenditure for Public Health..... \$4,327 61

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

The local Board of Health was active during the year. It carried out a complete inspection of all dairies during the year, supervised the work of the sanitary inspector, assisted the public health nurse and was instrumental in having the clinic for the treatment of venereal disease established here. The members of the Board were: Mr. G. J. Saunders (chairman), Miss G. B. Way, Mr. J. J. O'Connor, Mr. James Dawson, Mayor, and the Medical Officer of Health.

A. S. McCaig,
Medical Officer of Health.

Sault Ste. Marie, Nov. 15th, 1923.

To the Mayor and Aldermen of the City of Sault Ste. Marie.

Gentlemen:

As required by Schedule "B" of the Public Health Act, I beg to submit for your consideration a statement of the sanitary condition of the city for the year 1923, including the annual report of the Medical Officer of Health.

The members of the Board of Health were: Mr. G. J. Saunders, Chairman; Miss G. B. Way, Mr. J. J. O'Connor, The Mayor, Mr. James Dawson and the Medical Officer of Health, Dr. A. S. McCaig.

• There has been no serious epidemic of disease during the year though the communicable diseases have been more or less prevalent, diphtheria causing three deaths, scarlet fever one, cerebro-spinal meningitis two and tuberculosis thirteen. The mortality from tuberculosis is alarming and discouraging and gives the health authorities a great deal of anxiety. As a means of preventing the disease the Board of Health early in the year placed before your honourable body the necessity of taking all possible means to cut off every avenue of infection, and asked your council to pass a by-law, as provided by the Animal Contagious Diseases Act, providing for the free testing for tuberculosis of all dairy herds supplying milk to the city, and this having been done that all milk thereafter sold in the city must either be pasteurized or come from herds certified as being free from tuberculosis. The need for such a measure is apparent when statistics shows that seven per cent. of all forms of tuberculosis is of bovine origin, and that from 25 to 33 per cent. of tuberculosis in children under five years of age is due to infection with the bovine type of tubercle bacillus. We hope that the by-law will be pushed along as rapidly as possible and that a safer milk supply for the city will soon be assured.

At the beginning of the year all dairies supplying milk to the city were inspected by members of the Board of Health. The majority was found in a satisfactory condition but in some cases changes in the manner of handling the milk and in the stables were required before a license to sell milk was granted. The frequent examination of milk samples at the laboratory is a good check upon the quality of the milk being sold in the city. Examination often shows gross contamination and the vendor is warned or his license cancelled as circumstances warrant.

The sanitary condition of the city was well looked after by the sanitary inspector and all complaints of nuisances or insanitary conditions were promptly investigated by the sanitary inspector, Medical Officer of Health or other members of the Board of Health.

Hotels, restaurants, boarding-houses, butcher shops, grocery stores, bakeries, ice cream parlors and laundries were all kept under close supervision during the year.

The work of the public health nurse is meeting with much favour. Under the supervision and with the assistance of the Medical Officer of Health, Well Baby clinics were conducted once a week and Ante-natal clinics once a month. This branch of the public health work is beginning to show excellent results. Our infant mortality rate has been reduced to 69.9 per thousand living births. This is an excellent record. We will soon need another nurse. We are receiving a great deal of voluntary assistance in our child welfare work, otherwise we would be greatly handicapped in carrying on. The most generous gift to the Board of Health was a Ford coupe from the Rotary Club of the city, for the use of Miss Miller, the public health nurse.

During the year a clinic for the treatment of venereal diseases was established at the laboratory of the Provincial Board of Health and the number of cases now receiving treatment there shows that the establishing of the clinic in the city has been in the interests of the public health.

All of which is respectfully submitted.

G. J. SAUNDERS,
Chairman of the Board of Health.

SIOUX LOOKOUT

Sioux Lookout, Ont., 1924.

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

Chairman and Members of Local Board of Health.

I hereby present to you my Annual Report for the year 1923.

Municipality, Sioux Lookout. County, Kenora.
 Name and address of M.O.H., Gordon L. Bell, Sioux Lookout, Ont.
 Estimated population, 1,353.
 Number of births per annum (exclude "stillbirths"), 41.
 Number of stillbirths, 3.
 Number of infant deaths under one year, 5.
 Infant mortality rate per 1,000 living births, 120.
 Number of deaths from all causes, 16.
 Death rate per 1,000 of the population, 12.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	2	0
Typhoid.....	2	0

Whooping cough was quite prevalent during October, November and December.
 School cases of same were sent home and kept there until recovered. Also children with whooping cough were kept away from the local theatre.

MILK SUPPLY

- (a) Source, numerous dairies.
 (b) Character, mostly good; some need improving.
 (c) Is supply pasteurized? No.

WATER SUPPLY

- (a) Source, well, Pelican lake and town spring.
 (b) Character, good.
 (c) ———.

In conjunction with the Provincial Health Nurse, Miss Corbman, all school children were examined and advised as to any deficiencies. A large number of goitre cases were found and these have been advised for special treatment. An oculist on invitation tested any eye cases suspected of being below normal. We hope to continue this work yearly.

A Child Welfare Clinic was conducted by Dr. Bell of Toronto in December and should prove a great benefit to the community. An endeavour was made to have as many sources of drinking water as possible tested. Notices were posted to this effect, which had good response, about thirty sources in all being tested.

The public school was inspected both in spring and fall.

EXPENDITURE PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of Medical Officer of Health, \$75.00 per year.
 (b) Expenditure for other Public Health Work, (nil).
 Total expenditure for public health, \$75.00.

An endeavour has been made to improve the standard of milk supplied in this town. The result of a series of milk tests were published in the local press and had, I feel sure, good results as the latter tests showed a marked

improvement over those shown first. There is still much to be desired in this line however and a milk by-law, now being drafted, will be submitted for your consideration at your next regular meeting.

A general health inspection of the town was made twice in 1923 by Dr. Sparks and myself. I may say that Dr. Sparks gave much useful advice towards bettering the sanitary conditions, especially our water supply. I would like to suggest that some improvements be made to the spring in the East and in view of the fact that so many people are supplied from it. The top is practically useless and there is seepage from the road around it.

Numerous samples of lake water from the railroad supply were examined and these showed contamination. The intake should be extended further out into the lake where tests have proved that the water is pure. This matter has been put before the railroad officials.

Once again the question of sewage disposal from the railroad buildings comes up. The present state of affairs is a disgrace but it seems impossible to compel the companies to deal with this matter in a satisfactory manner. The condition of the creek leading from the roundhouse is a menace to the health of the community. I would suggest that you take some action to compel, if possible, a proper disposal of this eyesore.

I would like to bring before you for discussion the question of garbage disposal. At present there is neither regular collection of garbage nor any supervision of the "Nuisance Ground". If it were possible for the town to have the garbage collected and disposed of by a town employee, it would, I think, be an improvement.

I would like to say in conclusion that great assistance has been given by Mr. T. Cunningham. He has collected through the year many water and milk samples and has accompanied me on inspection rounds.

Yours very respectfully,

G. L. BELL,
Medical Officer of Health.

ST. CATHARINES

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, St. Catharines. County, Lincoln.
Name and address of M.O.H., D. V. Currey, St. Catharines, Ont.
Date, November 21st, 1923.
Estimated population, 21,141.
Number of births per annum (exclude "stillbirths"), 621.
Number of stillbirths, 41.
Number of infant deaths under one year, 46.
Infant mortality rate per 1,000 living births, 74.1.
Number of deaths from all causes, 282.
Death rate per 1,000 of the population, 13.4.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Chicken-pox	39	0
Diphtheria	8	1
Measles	688	3
Mumps	3	0
Scarlet fever	27	0
Small-pox	3	0
Tuberculosis	18	13
Typhoid fever	13	2
Whooping cough	42	3
Venereal	116	3

Any special outbreak of communicable disease during the year?

Measles—Six hundred and eighty-eight cases of this disease were reported, with three deaths.

Typhoid fever—Thirteen cases of this disease were reported, with two deaths.

Most of these cases were admitted from outside city and placed in hospital for treatment.

Methods adopted to combat the outbreaks?

MILK SUPPLY

- (a) Source, 28 vendors.
- (b) Character, regulations well observed.
- (c) Is supply pasteurized? About 50 per cent.

WATER SUPPLY

- (a) Source, by feeder from Lake Erie.
- (b) Character, good.
- (c) How purified? Chlorinated.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Child hygiene clinic held each week; average attendance—20.

Tuberculosis clinic held twice monthly; average attendance—7.

Venereal disease clinic held four days per week.

Any Public Health Education by M.O.H.?

Health films brought from Provincial Board shown to six audiences; M.O.H. spoke at each showing. Literature from Provincial Board of Health distributed to physicians and others.

Articles on Public Health have been written by the M.O.H. for the local newspapers.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes, reports are attached.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

- (a) Salary or other remuneration of M.O.H. \$ 1,200 00
- (b) Expenditure for other Public Health work

10,240 17

Total expenditure for Public Health

\$11,440 17

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)
See attached report.

MILK

During the past summer, besides the usual monthly test for butter fat, temperature and sediment by the Sanitary Inspector, samples of milk from all vendors have been sent to the Provincial Board of Health Laboratories for bacterial count. The results of this were very far from encouraging and show that much of the milk in this city has too many bacteria per cubic centimetre; an effort will be made to materially lower this count during another year. We never will have safe milk until we insist on all milk either being pasteurized or come at least from tuberculin-free cattle.

The Lions Club of this city has been supplying milk for infants and expectant mothers unable to otherwise buy it, and the milk tickets have been distributed by the Health Nurse.

CHILD WELFARE

A change has been made in checking up stillborn and premature births this year. Although in many instances, the physicians signified the death as premature, it has been entered in the list of stillbirths unless the child lived; and if a card showed that the child only lived for a few minutes, it has now been entered in the list of deaths.

Our infant mortality rate is 74.1, an increase of 14.8 over last year. However, it is gratifying to note that there were only two cases of deaths from diarrhoea and enteritis reported.

More intensive work in Child Welfare Work is being done here than was ever done before, and much credit must be given to the Victorian Order of Nurses and the different women's organizations for their splendid co-operation with Miss Read, the Health Nurse, without which it would be impossible to carry on effectively. The Child Welfare Centre had an average weekly attendance of twenty. To Dr. Lindsay and his assistants, we owe a debt of gratitude, and we are very grateful to the Board of Directors of Alexandra Hall for the use of their rooms. The Centre has, however, outgrown its quarters and some other provision should be made for it.

The work of the Rotary Club among crippled children is a wonderful work and should show good returns.

TUBERCULOSIS

A splendid step was taken this year by the Sanatorium Board when a free diagnostic clinic for chest cases was opened last June. The clinic rooms at the General and Marine Hospital are used the first and third Friday afternoons of each month and Dr. Holbrook, the Superintendent of the Mountain Sanatorium, Hamilton, is in attendance. All cases must be referred from the family physicians or some health agency, and a report on each case is sent to the physician interested in the case.

It would appear that this work should be carried on by the Board of Health, and I would ask you to consider this matter when making up your estimates.

It is unfortunate, as far as our statistics are concerned, that not all cases of this disease are reported to your Board. You will notice in our statistics, that there were eighteen cases with thirteen deaths; this rate, of course, is far too high, and I am sure that many cases were not reported by the physicians.

SPECIAL CLINIC

There has been considerably more work done at the Clinic this year. In fact, the work is increasing all the time. Dr. Zumstein the physician in charge, has been very regular and conscientious; and Miss Wilson, the Clinic Nurse, has given excellent satisfaction.

VICTORIAN ORDER OF NURSES

The Victorian Order of Nurses continues to do excellent work by home visits, and at the present time, they are doing practically all the prenatal work.

SEWERS

During the year, 201 houses were connected up and Westchester Avenue sewer laid. I am pleased to state that the whole city is now sewered, and there is no excuse at all for outside toilets, these will be done away with as speedily as possible.

GARBAGE DISPOSAL

Each summer, there are numerous complaints about flies, odor and smoke, from people living near the dump; and the only solution appears to be the building of an incinerator.

SALARIES

During the year, the salaries paid Health Nurses in other places have been investigated, and it seems that this city is paying the smallest salaries of any place in the Niagara district.

The work of the Nurses has been entirely satisfactory in every way, and I would recommend that a substantial increase be given each of them.

SOCIAL HYGIENE

The Lincoln County Social Hygiene Council was formed last spring, and under its auspices, several health films have been shown to large audiences in St. Catharines. This very important prevention work should receive the co-operation of all citizens, especially those having growing-up families. The proper place, of course, to teach anything about sex matters to the children is the home.

CANCER

The number of deaths from cancer recorded this year is very high, and it seems that the only way to cut down this rate is by annual examination by the family physician. Early cancer might easily be removed, but unfortunately, most cases are only seen by the physician in the very latest stage.

PRENATAL WORK

Owing to the number of still and premature births, it would be an excellent thing if some arrangement were made for a prenatal clinic in this city. Many of these lives might be saved if the expectant mother had proper prenatal advice.

FOOD INSPECTION

This city has now reached the state where it is essential to have a milk and food inspector who can devote all his time to this work, not only in the

city but in the dairies and abattoirs in the surrounding country. There is no doubt that much of the meat and food sold here is not fit for use, and some of it may be very dangerous. An energetic and well-trained inspector would eliminate to a very great extent, this condition. It seems a peculiar condition of affairs when meat which is to be exported must be inspected but meat which is to be used locally is not inspected at the present time.

SUPPLIES FROM PROVINCIAL BOARD OF HEALTH DISTRIBUTED

Anti-meningitis serum.....	140	c.c.
Anti-typhoid vaccine.....	80	c.c.
Diphtheria antitoxin.....	23,000	units
Tetanus antitoxin.....	90,000	units
Pertussis vaccine.....	550	c.c.
Small-pox vaccine.....	370	capillary tubes
Silver nitrate.....	410	ampoules
Diphtheria diagnostic tubes.....	50	"
Wassermann diagnostic tubes.....	265	"
Tuberculosis sputum bottles.....	68	"
Widal slides.....	4	"

CONSUMPTIVE SANATORIUM

Admissions.....	31
Discharged.....	19
Deaths.....	9

ISOLATION HOSPITAL

Admissions.....	28
Scarlet fever.....	4
Diphtheria.....	6
Measles.....	15
Small-pox.....	1
Whooping cough.....	1
Septic sore throat.....	1
Deaths.....	None

DEATHS—INTERNATIONAL CLASSIFICATION

No.		Cases
1	Typhoid.....	2
6	Measles.....	3
8	Whooping cough.....	3
9	Diphtheria.....	1
10	Influenza.....	14
18	Erysipelas.....	1
20	Septicaemia.....	1
	Infected glands (neck).....	1
	Carbuncle.....	1
28	Tuberculosis, lungs.....	13
30	Tubercular meningitis.....	3
37	Syphilis.....	3
39	Cancer of tongue.....	1
	" jaw.....	1
	" oesophagus.....	1
	" larynx.....	1
40	Cancer rectum.....	1
	" of stomach.....	4
	" intestines.....	2
	" liver.....	3
42	" uterus.....	1
43	" breast.....	1
44	" face.....	1
45	" prostate.....	3
	" lungs.....	1
	" mediastinum.....	1
50	Diabetes.....	2
54	Pernicious anaemia.....	3

60	Encephalitis.....	2
61	Meningitis.....	4
63	Bulbar paralysis.....	1
	Amiotrophic sclerosis.....	1
64	Cerebral hæmorrhage.....	20
65	Softening of brain.....	1
66	Paralysis agitans.....	1
67	General paralysis, insane.....	2
71	Convulsions, infants.....	1
77	Pericarditis.....	1
78	Otitis media.....	1
79	Chronic valvular heart disease.....	13
	Endocarditis.....	8
	Myocarditis.....	17
80	Angina pectoris.....	1
81	Atheroma.....	1
	Arterio sclerosis.....	5
	Aneurysm.....	2
84	Lymph adenoma.....	1
	Hodgkinson's disease.....	1
89	Bronchitis—acute.....	7
90	Bronchitis—chronic.....	1
91	Broncho-pneumonia.....	13
92	Lobar pneumonia.....	14
93	Pleurisy.....	1
94	Pulmonary embolism.....	1
96	Asthma.....	2
101	Stricture oesophagus (lye).....	1
102	Ulcer, stomach.....	2
104	Diarrhoea and enteritis.....	1
108	Appendicitis.....	4
110	Intussusception.....	1
	Multiple polyposis of sigmoid.....	1
	Strangulation bowels.....	1
115	Cholecystitis.....	2
117	Peritonitis.....	1
118	Indigestion.....	1
	Malnutrition.....	1
119	Acute nephritis.....	2
120	Chronic nephritis.....	5
124	Cystitis.....	1
126	Prostatitis.....	1
128	Uterine hæmorrhage (non-puerp.).....	1
129	Fibroid uterus.....	1
132	Salpingitis.....	2
138	Puerperal albuminuria.....	3
	Puerperal toxæmia.....	1
144	Abscess, jaw.....	1
145	Eczema.....	1
	Fungoid granuloma.....	1
150	Congenital malformation.....	
	Mouth.....	1
	Heart.....	2
	Incomplete development.....	1
151	Prolapse umbilical cord.....	1
	Cervical adenitis.....	1
	Icterus neonatorum.....	1
	Marasmus.....	1
	Premature birth.....	4
152	Atelectasis.....	2
	Hæmorrhage of newborn.....	3
153	Injury at birth.....	2
154	Senility.....	11
158	Drowning, suicidal.....	1
165	Accidental poisoning.....	1
167	Accidental burns.....	2
169	Accidental drowning.....	2
174	Traumatism by machine.....	3
175	“ electric railway.....	1
	“ automobile.....	4
170	“ firearms.....	1

176	Injuries by animals.....	1
185	Fracture, femur.....	3
	Not known.....	1
	Total.....	282

No.

D. V. CURREY,
Medical Officer of Health.

SIMCOE

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.

(Schedule B, Clause 1, Public Health Act)

Municipality, Town of Simcoe. County, Norfolk.

Name and address of M.O.H., Dr. J. C. C. Grasett, Simcoe, Ont.

Date, November 15th, 1923.

Estimated population, 4,041.

Number of births per annum (exclude "stillbirths"), 80.

Number of stillbirths, 1.

Number of infant deaths under one year, 6.

Infant mortality rate per 1,000 living births, 77.5.

Number of deaths from all causes, 59.

Death rate per 1,000 of the population, 14.6.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Scarlet fever.....	16	0*
Typhoid fever.....	2	0
Dyphtheria.....	2	0
Measles.....	1	0
Encephalitis lethargica.....	1	1
Tuberculosis.....	0	0
Whooping cough.....	3	0
Chicken-pox.....	4	0

*Up to November 15th, which is end of Public Health year.

Any special outbreak of communicable disease during the year?

Yes. Scarlet fever raged in a more or less epidemic form during the last three months of the Public Health year. It appears to be of a mild type, as no deaths have occurred up to this date, November 15th, 1923, and no complications have been reported.

Methods adopted to combat the outbreaks?

The public schools, Sunday schools and Saturday afternoon children's entertainment at the Lyric Theatre were closed for a period of nearly two weeks. Quarantine regulations were made more strict, one measure being to include the bread winners and the friends visiting the homes as subject to quarantine for one week, which covers the incubation period.

MILK SUPPLY

(a) Source, derived from 13 dairy farms.

(b) Character, certified, pasteurized, and raw.

(c) Is supply pasteurized? Yes, all milk is pasteurized except the certified milk and a small quantity of raw milk to meet the requirements of some patrons.

WATER SUPPLY

(a) Source, Simcoe Waterworks.

(b) Character, analysis of this water has always shown a perfectly pure and healthy water.

(c) How purified? It has not been found necessary up to the present to use any such measure.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

A Public Health nurse has been engaged to give a two months' demonstration on Public Health work, after which it is hoped the town officials, school trustees and public generally will have an opportunity of witnessing the many benefits to be derived from such an official. This question has been before the local Board for some time back and the only obstacle in the way of having such an appointment made has been the one of expense and, as the present Council were pledged to economy and retrenchment, this question was one that had to suffer up to the present time in abeyance to such policy.

Any Public Health education by M.O.H.?

No definite educating measures beyond sending out a pamphlet each year of advice and instruction for a better sanitary condition of the town. Improving the sanitary situation by doing away with the outside closets. This year all that part of the town known as the "fire-limits," which includes all of the business and more thickly populated section of the town, has to be cleared of all outside closets. The property owners being obliged to connect up with the water and sewer system. It is hoped to extend this area until all outside privies are eliminated so far as possible.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?

Yes; the report of each school is a part of this report.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.....	\$150 00
(b) Expenditure for other Public Health work.....	419 70
Total expenditure for Public Health.....	\$569 70

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

GENERAL REMARKS

The water and milk system are two of the most important items that should receive the attention of health officials. Simcoe is fortunate in having a service in both of these supplies that is not generally the case in towns of a similar population. The water that is derived from our waterworks system is and always has been of a pure and healthy character. Derived as it is from a soil that is most favourable for a good filtration and secured from an area that is devoid of most of the usual sources of pollution such as populative towns, factory sites, etc., accounts principally for the fact that the frequent analyses made have on no occasion failed to show a perfectly pure drinking water.

Our milk supply is obtained from the one single depot. The character of the milk may be obtained by those who may have a preference for it. The supply is secured from fifteen dairy farms, which are subject to inspection from time to time. The milk of each dairy farm is tested monthly. When found deficient in butter-fat and dirt test the supply from this farm is cut off or perhaps advised to improve the quality of his herd. Most stables are kept in good condition with walls whitewashed and kept clean, manure removed to a proper distance from the stables, etc. The certified milk is obtained from Jersey herds, which are subjected to the tuberculosis test every six months, the defectives when found are, of course, removed. The milk is tested about once a month, the last test being made on October 9th, in which the highest in butter-fat reached 4.6 and the lowest 3.8. The batch test reached 3.8 at this particular analysis, four dairies were found excessive in the dirt test and each one notified. Persistence in this particular renders their supply being cut off.

Licenses to two "Maternity boarding-houses" were issued and both were kept under inspection, all regulations being lived up to properly.

An attempt was made this year to require each stable owner where a horse or cow was kept to secure the manure in properly constructed fly-proof bins and removed at frequent intervals during the warm season, especially. Owners of horses and cows were all advised of the necessity of living up to this regulation and a time limit placed for completion of the same. For obvious reasons the matter did not meet with the success that was expected and quite a number are still in the same condition as formerly.

Respectfully submitted,

J. C. C. GRASSETT, M.D., M.O.H.,
Municipality of the Town of Simcoe, County Norfolk.

WELLAND

ANNUAL REPORT OF MEDICAL OFFICER OF HEALTH, 1923

To be presented to Local Board of Health before 15th November, annually.
(Schedule B, Clause 1, Public Health Act)

Municipality, Welland. County, Welland.
Name and address of M.O.H., J. H. Howell, Welland.
Date, November 15th, 1923.
Estimated population, 8,705.
Number of births per annum (exclude "stillbirths"), 212.
Number of stillbirths, 21.
Number of infant deaths under one year, 19.
Infant mortality rate per 1,000 living births, 89.6.
Number of deaths from all causes, 105.
Death rate per 1,000 of the population, 12.06.

COMMUNICABLE DISEASES

Disease	No. of cases	No. of deaths
Measles	25	0
Scarlet fever	16	0
Diphtheria	15	4
Small-pox	7	0
Whooping cough	6	1
Typhoid fever	10	1

Any special outbreak of communicable disease during the year?
No. Cases scattered throughout the year.

Methods adopted to combat the outbreaks?
Isolation, quarantine, and disinfection.

MILK SUPPLY

- (a) Source, two dairies.
(b) Character, good.
(c) Is supply pasteurized? Yes; all from both dairies.

WATER SUPPLY

- (a) Source, Welland Canal.
(b) Character, turbid and contains colon bacilli.
(c) How purified? Chlorination.

Any special Public Health work carried on, such as Child Welfare, ante-natal clinics, tuberculosis clinics, venereal disease clinics, etc.?

Weekly Child Welfare clinic, well attended; active Public Health nurse who makes a large number of visits to children of pre-school age, and ante-natal cases.

Any Public Health education by M.O.H.?
No special.

Did M.O.H. carry out sanitary inspection of schools during the year and make report?
Schools inspected, and all in first-class condition.

EXPENDITURE FOR PUBLIC HEALTH PURPOSES

(a) Salary or other remuneration of M.O.H.	\$1,000 00
(b) Expenditure for other Public Health work	2,781 69
Total expenditure for Public Health	<u>\$3,781 69</u>

GENERAL REMARKS

Brief outline of activities of M.O.H. and local Board of Health. (Additional sheets or printed report may be attached.)

WELLAND

REPORT OF PUBLIC HEALTH NURSE FOR THE YEAR NOVEMBER 1ST, 1922, to
OCTOBER 31ST, 1923

Number of visits made during the year, 2,575. Of these, 1,276 were child welfare visits (babies under one year); 2,445 were pre-school age visits and 198 prenatal visits. 375 different homes were visited during the year.

We had a total clinic attendance of 2,048, a weekly average of forty. There are 215 mothers registered at the clinic with a total of 260 babies and pre-school children. Some of the mothers bring more than one child. We have reason to be proud of our clinic. A great deal of the success is due to the faithfulness in attendance of Dr. Reive and Dr. Boyd. We are indeed grateful to them for their help and advice. We are also grateful to Miss Webb, the school nurse, Miss Jones, the nurse at the Empire Cotton Mill, and to Mrs. A. Hanna for their help at the clinic each week.

We have had our clinic tea served each week by the ladies of Queen St. Home and School Association, Central Home and School Association and the Imperial Order the Daughters of the Empire, and the Crowland Women's Institute. This social cup of tea has been much appreciated by the mothers, and I believe has helped materially in the clinic work.

It has been said "Within natural limitations, any community can determine its own death rate." No one can estimate what it has meant to some homes in Welland that Welland decided to try to lower the death rate in babies. And too, no one can estimate in dollars and cents the value to some little ones of real good health, due to the campaign of "Better Babies for Welland." We are proud of our babies, and we have every reason to be.

(Sgd.) ANNA M. ORAM,
Public Health Nurse.

As the report to the Provincial Board of Health indicates, we have had no special outbreak of disease during the year. While there were ten cases of typhoid fever reported, practically all the cases on investigation show that the diseases were contracted outside of the city, and were brought to the hospital for treatment. Not one of them could fairly be attributed to our city water. The single death, was in a man who had been working in Port Colborne. While the canal water always shows colon bacilli, chlorination makes it safe, even if it is not so pleasant.

The seven cases of smallpox were very mild, with the exception of one. It was impossible to locate the source of the disease, but as there had been a few cases in the surrounding district, they probably arose from some mild case which had not been quarantined. However, our cases were isolated and quarantined and as a result we had no further spread.

As the report shows, our death rate was fairly low, being 12.04 per thousand as compared with 12.8 a year ago. Of the 105 deaths reported, forty-seven occurred at the hospital, a large number of whom were non-residents. The diseases causing the most deaths were: heart disease, 14; pneumonia, 13; apoplexy, 10. There were ten deaths as the result of accidents.

The death rate among children under one year of age was 89.6 per thousand births, slightly higher than a year ago, but only about half the rate before we began child welfare work. As the appended report of the Public Health Nurse, Miss Oram, will show, our baby clinics have been well attended and there is no doubt our low death rate among babies is largely due to the valuable work of the clinic, and the efficient oversight of the babies by Miss Oram.

Owing to some changes in the milk supply of the city, numerous examinations, both for the percentage of butter fat and total solids, have been made at intervals during the year, also the dirt test to ascertain the cleanliness of the milk supplied by the producers. All the milk supplied to the citizens is pasteurized, and in respect to quality and cleanliness is first-class.

The sanitary condition of the city is good, and where nuisances are reported they are promptly investigated and the Sanitary Inspector, Mr. Geo. Lee, endeavours to have them abated.

A year ago I referred to the fact that the Public Health Act provided that there shall be supervision of all plumbing, and advised the City Council to pass a Plumbing By-law and appoint a competent man to enforce it. This has not been done, and I would again urge that the matter receive the attention of the Council.

The Chairman and Members of the Board of Health have been ready and prompt in dealing with problems before the Board, and I wish to acknowledge their valuable assistance.

I have the honour to be,

Your obedient servant,

J. H. HOWELL,
Medical Officer of Health.

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