Annual report of the Provincial Board of Health of Ontario, Canada.

Contributors

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ANNUAL REPORT

PROVINCIAL BOARD OF HEALTH

1922

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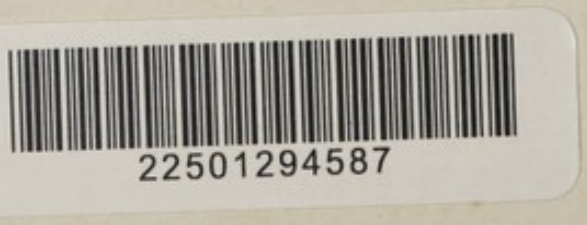
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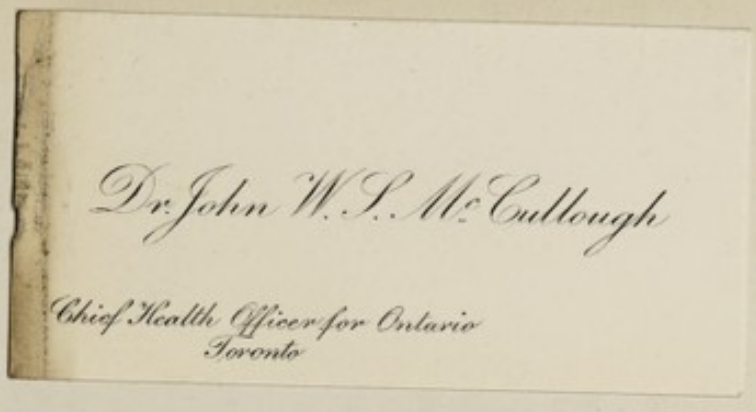
Dr. John W. S. McCullough
Chief Health Officer for Ontario
Toronto

Forty-first Annual Report

OF THE

Provincial Board of Health

OF

Ontario, Canada

FOR THE YEAR

1922

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1923

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1922

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-first Annual Report of the Provincial Board of Health for the year 1922.

Respectfully yours,

W. R. Rollo,
Minister of Labour.

Toronto, April 2nd, 1923.

To the Honorable Walter R. Rollo,
Minister of Labour.

Sir,—I have the honour to submit for your approval the Forty-first Annual Report of the Provincial Board of Health, made in conformity with and under the provisions of the Public Health Act, for the year 1922.

I have the honour to be, Sir,

Your obedient servant,

John W. S. McCullough,
Chief Officer of Health.

Toronto, April 2nd, 1923.

ORGANIZATION

MINISTER OF LABOUR AND HEALTH,

THE HONOURABLE WALTER R. ROLLO

The Provincial Board of Health

Adam H. Wright, B.A., M.D., M.R.C.S., Eng., *Chairman* ..... 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

District:	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.	Belleville
	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 — John Richardson — D. S. McKee — Wm. C. Millar

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

Branches

Hibbert W. Hill, M.D., D.P.H., *Director* ..... London
James Miller, M.D., F.R.C.S. (Edin.), *Director* ..... Kingston
N. O. Thomas, B.A., M.B., *Director* ..... Fort William
N. F. W. Graham, M.B., *Director* ..... Sault Ste. Marie
J. S. Douglas, M.B., *Director* ..... North Bay
A. Y. McNair, M.B., *Director* ..... Peterborough
G. Murray Fraser, M.B. ..... Owen Sound
F. L. Letts, M.B., D.P.H ..... Ottawa

Division of Preventable Diseases

R. R. McClenahan, B.A., M.B., D.P.H ..... Director
J. W. Hunt, M.B., L.R.C.P., M.R.C.S. ..... Clinical Specialist
A. L. McKay, B.A., M.B ..... Clinical Specialist
Edna L. Moore, A.R.R.C ..... Director

Division of Industrial Hygiene

J. G. Cunningham, B.A., M.B., D.P.H ..... Director
R. M. Hutton, B.A. (Oxon.) ..... Literary Research
A. R. Riddell, B.A., M.B ..... Clinical Specialist

Division of Public Health Education

J. J. Middleton, M.B., D.P.H ..... Director

Division of Maternal and Child Welfare and Public Health Nursing

Mary Power, B.A ..... Director
Beryl Knox ..... Associate Director
Marjorie Burgess, B.A ..... Statistician
Wm. J. Bell, M.B ..... Pediatrician

Division of Epidemiology

Consulting Staff

Public Health Administration ..... J. G. Fitzgerald, M.D., F.R.S.C.
Pediatrics ..... Alan Brown, B.A., M.B
Obstetrics ..... Wm. B. Hendry, M.D., D.S.O

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ANNUAL REPORT

OF THE

Provincial Board of Health

For the Province of Ontario

For the Year Ending 31st December, 1922

RESUMÉ OF THE TRANSACTIONS OF THE BOARD OF HEALTH BY THE CHIEF OFFICER OF HEALTH.

This is the Forty-first Annual Report of the Provincial Board of Health for the year ending the 31st day of December, 1922.

During the year there were four regular meetings and one special meeting of the Board, at which all the members were present.

Legislation.

1. During the Session of the Legislature for 1922 the following amendment to the Public Health Act was passed:

Section 35 of the Public Health Act is amended by adding thereto the following subsection:—

(5) The council of a city, town, township or village or a local board of health may appoint one or more public health nurses, and one or more duly qualified physicians and engage such other services as may, in the opinion of the council or local board be required for carrying out the provisions of this or any other Act administered by the Department of Public Health or the regulations made thereunder for the prevention or treatment of disease.

2. The Venereal Diseases Prevention Act was amended as follows:—

Subsection 2 of Section 13 of the Venereal Diseases Prevention Act is amended by inserting after the words "provide for" in the third line thereof the words "the payment of the expenses incurred in carrying out any regulations made under subsection 1 for the prevention, treatment or cure of venereal diseases, including," so that the subsection will now read as follows:—

(2) The Board, with the approval of the Lieutenant-Governor-in-Council may, out of any moneys appropriated by the Legislature for the purpose of the Board, provide for the payment of the expenses incurred in carrying out any regulations made under subsection 1 for the prevention, treatment or cure of venereal diseases, including the manufacture and free distribution to local boards and to medical practitioners and hospitals of any drug, medicine, appliance or instruments which the Board may deem useful or necessary for the alleviation, treatment or cure of venereal disease or the prevention of infection therefrom.

3. Section 14 of the Venereal Diseases Prevention Act is amended by adding thereto the following subsections:—

(3) The name of any person suffering or suspected to be suffering from any venereal disease shall not appear on account for services rendered in connection with the treatment therefor by any local board or medical officer of health or other officer or person, but the case may be designated by a number or otherwise and it shall be the duty of every board to see that secrecy is preserved so far as possible.

(4) Every person contravening the provisions of subsection 2 shall be guilty of an offence and shall incur the penalties provided by sections 9 and 12.

Regulations.

Under the authority of the Board in that behalf the following regulations were approved by the Lieutenant-Governor in Council.

REGULATIONS FOR THE TREATMENT OF VENEREAL DISEASE IN CLINICS AND BY PRIVATE PHYSICIANS.

A. *Clinics.*

1. Clinics may be established in municipalities considered suitable by the Board. Hospitals, laboratories or offices may be used for this purpose.

2. The Provincial Board will afford the following assistance to local Boards of Health in the establishment and administration of clinics:—

(a) One thousand dollars ($1,000.00) for special furnishings and apparatus and any necessary alterations. (See Appendix A.)

(b) Five hundred dollars ($500.00) per year towards the salary of the Social Service Nurse.

(c) Fifty cents (50c.) for each out-patient treatment for gonorrhoea, and fifty cents (50c.) for each out-patient treatment for syphilis. (No more than one treatment per day will be paid for.) A physician shall be present while each treatment is being given.

(d) Fifty cents (50c.) per day for each day of treatment while in the hospital up to three months and no longer if the clinic is established in a hospital. Such payment will begin as soon as the diagnosis has been made and treatment, satisfactory to the Board, instituted, but the Board will not pay for both in and out-patient treatment at the same time. Decision as to payment in chronic cases shall rest with the Board since the object of this payment is to encourage hospitals to admit early cases of gonorrhoea and syphilis who are especially infectious and exceedingly dangerous to the public.

(e) Phenarsenamine, for the treatment of clinic cases and also for the treatment of public ward cases in any hospital in Ontario, free of charge.

(f) Standard record forms for the clinics. The system of filing and record keeping shall be satisfactory to the Board.

(g) Five hundred dollars ($500.00) yearly to the physician in charge of the clinic.

(h) Such amounts as may be decided by the Board may be paid to the physicians working in the clinics.

On the part of the clinic the Board will require—

(*a*) The clinic shall be for the treatment of venereal diseases.

(*b*) The apparatus, furnishings and quarters shall be approved by the Board.

(*c*) The personnel of the clinic, subject to the Board's approval shall be:—

(1) One specialist in venereal diseases appointed by the hospital and acceptable to the local Board of Health if the clinic is in a hospital, and if not in a hospital, appointed by the local board of health. The appointment should receive the approval of the local Medical Society.

(2) Such medical assistants as, in the opinion of the physician in charge of the clinic, are necessary, these to be appointed on the same basis.

(3) One full time social worker who shall be a graduate nurse and be under the direct control of the local board of health.

(4) One clerk for each 40 cases treated per week.

(5) One male orderly.

(6) One graduate or senior undergraduate nurse to assist in the clinic in the hospital.

(*d*) No charge shall be made for any treatment or medicines given by the clinic. Out-patient treatment shall be given to cases from other municipalities when they apply for it.

(*e*) At least one night and two day clinics at hours satisfactory to the Board shall be held weekly.

(*f*) Men and women shall be treated in the clinic at separate hours. (This must be strictly adhered to). Separate hours shall also, if possible, be set aside for the treatment of cases of syphilis and gonorrhoea.

(*g*) Arrangements for daily irrigations for men and daily douches for women shall be made if considered necessary by the Board.

(*h*) Monthly reports on forms provided by the Board shall be furnished.

(*i*) The clinic, including records, apparatus, social service work, methods of treatment, and general administration shall be, at all times, open to inspection by the Board.

(*j*) At least six months' notice shall be given of the intention of a municipality to close a clinic. If the clinic is closed under two years from the time of establishment the apparatus shall be returned to the Board.

(*k*) The financial responsibility of the respective municipalities where one or more clinics are established is defined under Section 14, Venereal Diseases Prevention Act.

(*l*) The Social Service Nurse shall follow up cases and arrange for the examination of contacts under the direction of the Medical Officer of Health.

(*m*) Accounts for treatment shall be rendered monthly on the monthly report form.

(*n*) The Board reserves the right to modify the rules if deemed advisable.

B. *Treatment where Clinics have not been Established.*

1. Treatment for cases unable to pay shall be carried out by legally qualified physicians under the direction of the Medical Officer of Health.

2. Arrangements for the payment of these physicians for their services shall be made by the local Board of Health. (See Section 14, Venereal Diseases Prevention Act, and Section 58, Public Health Act.

3. The Board will supply:—

(*a*) An officer of the Board (if desired) to administer the first treatment and to suggest a line of treatment in the case of either gonorrhoea or syphilis.

(*b*) An apparatus for the administration of Phenarsenamine.

(*c*) Phenarsenamine required for the treatment of the case of syphilis as well as distilled water and sodium hydroxide required in the preparation of the drug for administration.

(*d*) Advice on any case not responding to treatment.

During the year the personnel of the Board suffered the loss of the consultant in obstetrics, Dr. B. P. Watson, F.R.C.S. (Edin.) who resigned his post in the University of Toronto to assume that of Professor of Obstetrics and Gynaecology in his Alma Mater. Dr. Watson's association with the Board has been a very valued one. His advice was always available and cheerfully given. The Board wishes him the prosperity he deserves in his new position. The place of Dr. Watson has been filled by the appointment of his successor in the University Chair, Dr. Wm. B. Hendry, D.S.O.

In the latter part of the year, Mr. James Taylor, one of our Sanitary Inspectors located at Sault Ste. Marie, died after an illness of some months. Mr. Taylor was an energetic officer who had given exceptionally good services.

The Laboratory Service.

A notable addition to our Branch Laboratories is the acquisition on very satisfactory terms, of the City Laboratory of Ottawa, which was secured late in the year, and which will afford a much needed service in the Ottawa Valley. All the other Branch Laboratories are in good running order and are affording satisfaction in the respective districts served by them. Full details of the laboratory work of the Board is contained in the Director's Report.

Division of Preventable Diseases.

The Venereal Disease clinics, fifteen in number, referred to in last year's report, have given this year 59,648 treatments in out-patients of which 33,354 were in males and 26,294 in females. This is an increase of approximately 18,000 treatments over last year. The number of in-patient treatments was 27,429.

All the clinics were closely inspected during the year and are doing good work.

In the smaller centres upwards of thirty demonstrations in treatment were given to medical practitioners, and the necessary drugs and apparatus for the treatment of syphilis supplied.

Close supervision of the Venereal Disease treatment in Institutions, such as the Ontario Reformatory, Guelph and Burwash Industrial Farm, Men and Women's Farms, adjacent to Toronto, the Mercer Reformatory and the Fort William Industrial Farm.

Our Social Service nurse and the officers of the Division have followed up six hundred and seventy-five delinquent cases. An average of at least two or three cases per day are seen and advised by the Division.

The manufacture and distribution of phenarsenamine (606), has been continued, and excellent results in its use are reported.

Samples of this preparation were submitted by the writer to the National Research Association of Hampstead last summer, and the report thereon is included herewith.

"I am forwarding you herewith a report on the tests which have been made on the samples of Phenarsenamine, which you left with me when I had the pleasure of seeing you recently. All three batches have been tested for toxicity, and the results are such as to indicate quite satisfactory properties in this direction. We are accustomed to pass samples of "606," which are tolerated by mice in a dose of 0.1 mgr. per gr., injected into the tail vein, in alkaline one per cent. solution. We allow the sample to pass if not more than one mouse dies, on this dose, out of five. You will see that all three batches of your product would pass on a higher dose than this. The results with No. 150 are somewhat irregular, but Nos. 163 and 172 would both pass our test, on a dose of 0.15 mgr. per gr.

"As regards the therapeutic test, we expect that a dose of 0.01 mgr. per gr. will remove trypanosomes from the peripheral blood of mice infected with *T. equiperdum*, in seventy-two hours. Batch No. 172, which was the only one tested for therapeutic efficacy, is quite satisfactory in this respect also. Doses down to 0.008 mgr. per gr. cleared the blood of trypanosomes, in the prescribed period, in the case of all the mice injected.

"If you can keep your product up to the level which you have attained, I think your therapeutic results ought to be thoroughly satisfactory. We shall be very pleased, at any time, to undertake a further test, if you desire it, and to put at your disposal any information which we may have.

"For the guidance of your colleagues, who are concerned in this matter, I enclose a copy of a note which we have just sent to all manufacturers of preparations of the *Neosalvarsan* type, announcing a small revision in the standard which we demand for the therapeutic efficacy of this product. I understand that your Department is at present not preparing Neosalvarsan, but those concerned might like to have the information to file for possible future reference."

Educational work is extensively carried on by the physicians and nurse of the staff by means of films, lectures, literature and exhibits.

There is close co-operation between the Division and the Ontario Social Hygiene Council which carries an extensive programme of education in respect to venereal disease. Various epidemiological investigations have been carried on during the year.

Efforts are being made to induce the various sanatoria for tuberculosis to establish clinics for tuberculous cases in cities and towns adjacent to the several institutions. While sanatoria for consumptives are carrying on excellent work, it is felt that greater efforts should be made to discover cases of the disease in the earlier stages. By this means a large expense for the care of such cases would be avoided and, what is of greater importance, the sources of infection and the consequent incidence of cases of tuberculosis would be lessened. The Government of Ontario pays $5.25 per week for some 3,314 cases of tuberculosis in sanatoria at an annual expense of nearly $300,000. This alone is sufficient reason for greater effort being made in the early diagnosis of such cases.

The Dominion Council of Health, comprising amongst others the executive health officers of Canada, have finally agreed to recommend to their respective governments the adoption of regulations for the control of Communicable Diseases, which when adopted will make these regulations practically identical for all Canada. It is expected that the Ontario Regulations will be issued early next year.

Division of Sanitary Engineering.

The work of the Division during the year was very extensive, the total number of applications in respect to water supplies and sewerage work being 419, involving an expenditure of $10,268,469.83.

Sanitary surveys were made in forty municipalities. These surveys involved the securing of data upon all sanitary matters in the municipality, the tabulation of this data and the preparation of maps showing in detail the information gained, together with a report for the guidance of the local authorities.

Investigations into specific insanitary conditions were made in numerous centres including studies in the control of the domestic fly in six municipalities in New Ontario. The information secured in respect to fly-control is now being compiled for publication.

Research work was carried on in our Experimental Plant in various matters.

During the year the Division published a valuable bulletin (No. 9) on Rural and Semi-Urban Sanitation which has been widely distributed.

More complete detail of the service of the Division will be found in the report of the Engineer which appears elsewhere in this volume.

Division of Maternal and Child Hygiene and Public Health Nursing.

The Division comprising in addition to the office staff, sixteen field nurses, one exhibit nurse and a supervisor carried on demonstrations in one city and in twenty-one towns and the adjacent rural areas.

Five nurses have carried on a general emergency nursing service in the Haileybury fire area since October last and are still on duty there. This service has been of the greatest value to the population in the devastated area and has received high praise on all hands.

The County of Lanark, including thirteen Townships and the Towns of Perth, Carlton Place and Alexandria, were worked as a Public Health demonstration including both school and infant work.

The entire Island of Manitoulin was covered by our nurses both as to schools and infant work.

Further West our nurses covered the district along the Canadian National Railway in the vicinity of Sudbury and from Fort William to Fort Frances, and along the Canadian Pacific Railway from Schreiber to White River inclusive, giving demonstrations of general public health work.

In the rural areas of New Ontario similar work was carried on in six Townships in the neighbourhood of Fort William and in six Townships of the Rainy River district and in the country about Dryden.

As the result of the efforts of the Division, five permanent nurses were appointed in the older part of Ontario. In the course of ten months of the year the nurses made 17,204 visits, held 115 clinics with 2,816 attendances, saw 4,726 cases and attended 308 meetings. Fourteen hundred school children were examined in the course of 2,278 visits and defects to the number of 15,848 were shown. Further detail is given in the report of the Division.

Division of Industrial Hygiene.

The Division has investigated during the year, ten different tvpes of occupational diseases. In addition, special investigations such as the subject of lead poisoning in painters and decorators and in paint manufacturing, and a further investigation to determine the effects of the inhalation of hard rock dust in the miners of New Ontario, the effect of volatile substances such as benzol, benzine, turpentine, etc., on furniture finishers, and further investigations into the effects of painting by spray machines. Full detail will be found in the Division report.

Division of Public Health Education.

The Division continued the supply of health articles in some two hundred weekly papers, managed the Board's exhibits at the Canadian National Exhibition, and in various places in Ontario carried on a programme of public addresses and moving pictures, supervised the issue and distribution of public health literature, edited the Annual Report and many other important details of educational work.

The District Officers of Health and Sanitary Inspectors.

During the year one of our earliest appointed District Officers, Dr. George Clinton, having reached the age limit, was superannuated. Dr. Clinton had given upwards of ten years of unselfish work to the public health affairs of Central Ontario. He had during that time formed close relationship with every quarter of the district and was a welcome assistant to the various medical officers of health, among whom he was much respected.

The value of the able advice and assistance of the District Officers of Health are more and more appreciated as the years go by. The extent of their work is enormous as may be judged by the size of the territories covered especially in New Ontario where each district is virtually a small country in itself. Attention is directed to the individual reports of these officers found elsewhere in the report.

Sanitary Inspectors.

There are five Sanitary Inspectors covering the field of New Ontario. During the year, Alex. R. White, the oldest appointed Inspector, was made Chief Sanitary Inspector and through him all orders to and reports from the remaining four Inspectors pass. This plan has co-ordinated the work and made its results more satisfactory. One has only to consider the extensive area of this important part of the Province with its virgin wealth of mine, forest and fisheries, its industries of pulp, paper, lumber, gold, silver and nickel, the enormous capital invested and the army of men employed, to appreciate the service rendered by the Board's three district officers and five sanitary inspectors who maintain the splendid sanitary conditions which obtain there. The very efficient service rendered to the workmen in camp and mine and in railway construction by the contract physicians under the Board's Regulations, the increasingly improving conditions of camp life and the low sickness and mortality rate in camp operations, and the absence of labour troubles are eloquent tributes, too little appreciated, to the effort of the Board's officers in these regions.

General Administration.

During the summer months the writer visited England in order to study the methods of public health administration in that country. The visit was cordially received and every facility placed at his disposal, and the writer desires to express his cordial thanks to Sir George Newman, Chief Medical Officer of the Ministry of Health and his courteous associates as well as to various Medical Officers of Health in England for their ready and generous assistance. From Sir Arthur Newsholme, former Chief Medical Officer to the Local Government Board, much valuable information was obtained and is gratefully acknowledged.

The establishment of a Ministry of Health for England was advocated by that great pioneer in public health work, Sir John Simon, in 1854. This was finally accomplished in 1919 and from personal observation it would seem that the English organization is the basis of the finest public health system anywhere in existence.

The Public Health Service in the mother country is, because of local conditions, very much wider in its scope than that of a country like Canada. In England the administration of the Ministry of Health embraces the Poor Law Medical Service, the pure Public Health Service, Medical Inspection of Schools and a modified State Medicine—the health Insurance Service. Here we have concerned ourselves chiefly with the *preventive* side, although it must be admitted that circumstances have forced us to include to some extent the curative side in our venereal disease and tuberculosis clinics and in the work of supplying biological products for the cure of certain communicable affections such as diphtheria, etc. It seems an unfortunate circumstance that the medical inspection of school children is not included in the work of our public health service, but has so far been retained except in large cities by the Department of Education. In the Board's opinion such a plan adds to the expense of organization, and is likely to be wasteful in effort and productive of overlapping. A union of these services is desirable but is unlikely to be achieved until our general administration all over the Province is placed upon a more satisfactory basis. While the public health organization of Ontario, as already briefly outlined, is at least as efficient as any on this continent, its chief weakness is the part-time medical officer of health. There are 904 municipalities in Ontario, each of which has a medical officer of health. In but eight of these municipalities (cities, towns, villages and townships) is the Medical Officer of Health a full-time man. Public Health is a business. It may truthfully be said to be the most important business of any country, but while the head office of this business is reasonably well established and organized, the branches, except the few referred to, have no real head other than a part-time physician whose business in life is not public health, but the making of a living for himself and his family. Consequently the work of public health by the part-time medical officer is not only a very secondary proposition, but is in reality detrimental to his interests for the reason that the operation of such work is likely to make enemies not only among his clientele, but also among his confreres. No great business could be expected to prosper under such conditions, and the results are what might be expected from such a system. It must, in justice, be stated that in spite of this unsatisfactory state of affairs that many part-time medical officers have given a service beyond what could, from their poor remuneration, and slight support of the local authorities, have been expected.

The aggregate salaries of all the medical officers of health in Ontario amount to approximately $150,000 and the municipalities altogether spend almost one and a half million dollars in public health work, of which upwards of one and a quarter million dollars is spent in the eight cities with a full-time service. The balance (about $217,000) is spent in the places with a part-time service and the pay of a medical officer in these places averages from $30.00 per year (Haliburton) to $276.00 per year (Prescott and Russell).

Taking the population of Ontario (1921) as 2,738,407 it will be found that the eight cities with a full-time service average in public health expenditures $1.25 per head of population, while the remaining extensive area of the Province averages but 23 cents per head, and that according to an investigation made by one of the Board's officers (1919), thirty-eight out of fifty-four rural counties actually spent but 10 cents per head on public health work. It is generally conceded that 71 cents per head is the minimum amount required for a reasonable public health service.

Because of the inefficient direction of health work in a large proportion of municipalities the Board is of the opinion that a considerable proportion of the

money spent for public health purposes is not economically expended and therefore fails to give the results, which under proper administration might be expected. There is too much "locking the door after the horse has been stolen," or in other words large sums of money are expended not in preventing outbreaks of disease, but in clearing them up after they have spread far and wide. Although the results of our efforts in tuberculosis have been fairly successful, too little attention has been given to the early diagnosis of cases of this disease and in consequence our sanatoria are filled with the more or less advanced cases entailing a long period of treatment with its consequent expense. For this reason and for the more important one of lessening the chances of infection, every effort should be made to reach cases of tuberculosis in the earliest stage when the chances of cures are the highest and the danger of infection is negligible.

How may the public health service of Ontario be improved in order to obtain the satisfactory results?

In carefully examining the situation in respect to public health work, one is impressed by the fact *that in every place, with a full-time competent health officer, real public health work of a highly satisfactory character is being accomplished.* This is what one would expect. If there is a competent man on the job whose daily business is that of disease prevention from every angle, there is bound to be a service which will pay for the cost in less mortality, less sickness, and since disease is the highest cause of poverty, greater prosperity and individual comfort. For these reasons the logical course to pursue is the appointment of full-time medical officers of health. This, however, is too large and expensive an order, particularly in the smaller towns and municipal units of the rural areas. The solution seems to be the appointment of full-time qualified medical officers for a combination of municipalities such as a county or part of a county, or where adjacent counties are small, a union of counties. Many of the counties are now paying in the aggregate for the salaries of medical officers of health, a larger sum than would suffice to pay a full-time well qualified officer, and it is obvious that under a full-time officer the sums now spent on ordinary public health work would be disbursed to greater advantage. Public health work including, as it does, the pre-natal care of women, the care of infants, as well as the ordinary measures for the control of communicable diseases is of National as well as Provincial concern, and requires for its successful operation not only a competent full-time medical officer of health but an additional organization such as one or more nurses and one or two competent sanitary inspectors. Such an organization for the combined area already referred to would cost about $10,000 a year. At the present time it would be hopeless to expect a county to undertake so formidable a financial programme. If, however, the county or combined area could be shown the advantages of such an organization there is little doubt that ere long the local authorities would readily accept such a service and vote the necessary funds.

In order to demonstrate the value of county health work, it would be of great importance to establish in say half a dozen counties a complete organization such as that outlined for a period of from three to five years. This plan is being carried on in several of the United States with great success and the writer hopes ere long to see the same procedure adopted in Ontario, so that the general public and the local authorities may see public health work properly carried on and be in a position to judge of its real value. To adopt the language of Sir George Newman, it is not the central but the local authority in whose hands rests the main business of public health policy. It is in the city, town and rural areas that the actual battle with disease will be won or lost. The Pro-

vincial Board, as the central authority, can but point the way in maternity and child hygiene, in industrial hygiene, in the prevention of disease and in the education of the public—these matters can only be dealt with where the people are born and live and work and die.

REPORT OF THE LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH.

To the Chairman and Members of the Provincial Board of Health,

I have the honour to submit the following tabulated statements, summarizing the work of the Division of Laboratories for the year 1922.

Although the number of specimens in the routine diagnostic service at the Main Laboratories, Spadina House, is not as great as was expected, still, the total amount of work has shown an increase. During the year 1922 there were no extensive epidemics requiring laboratory examination. The laboratory work of the Department of Soldiers' Civil Re-establishment has been gradually diminishing. The laboratories at Spadina House are now through the construction period and can well be applied to investigations which concern the whole Division. The chief difficulty at the present time is that of maintaining sufficient staff in the Bacteriological branch. The present organization is efficient and capable of meeting immediate requirements, but there is very little reserve force to meet emergencies or to provide for expansion.

SUMMARY OF DIAGNOSTIC WORK.

MAIN LABORATORY—TORONTO.

	1911			1921			1922		
Diphtheria (Swabs)			1,068			16,705			4,308
Release from quarantine		173			7,228			1,516	
Positive	91			1,604			354		
Negative	82			6,624			1,162		
Diagnosis		895			9,477			2,792	
Positive	226			1,601			560		
Negative	669			7,876			2,232		
Tuberculosis (sputum)			1,650			2,421			2,284
Positive	402			324			290		
Negative	1,248			2,097			1,994		
Typhoid (Blood)			749			1,195			1,042
Positive	70			267			203		
Negative	679			928			839		
Syphilis:—									
Coloidal Gold Reaction						252			229
Wassermann reaction						16,781			16,451
Very strongly positive				2,011			1,693		
Strongly positive				422			318		
Positive				1,299			1,144		
Negative				13,049			13,296		
Spirochaeta Pallida						16			1
Positive				4			0		
Negative				12			1		
Gonorrhoea						2,097			2,839
Positive				493			409		
Negative				1,604			2,430		
Rabies (Brains of animals)						14			8
Negri bodies present				1			0		
Negri bodies absent				13			8		
Milk			168			182			242
Water			1,718			2,610			2,608
Bacteriological	1,668			2,561			2,546		
Chemical	50			49			62		
Liquor (for license)			241			818			1,417
Miscellaneous (specimens including coal for public institutions)			86			437			429

SUMMARY OF OUTFITS, VACCINE, PHENARSENAMINE AND TREATMENTS SUPPLIED DURING THE YEAR 1922.

Outfits		45,030
Syphilis (Wassermann)	22,930	
Gonorrhoea	4,812	
Water	3,582	
Diphtheria	7,961	
Tuberculosis	3,644	
Typhoid	2,101	
Vaccine		67,799
Typhoid-paratyphoid	19,395	
Pertussis (Whooping cough)	48,404	
Silver Nitrate (for prevention of Ophthalmia)		22,992
Pasteur Preventive (for rabies)		
Cases		6
Injections		126
Phenarsenamine		
Ampoules		17,075
Grams		10,130.1
Sodium Hydroxide (15% sol.)		
Ounces		767
Ampoules		412
Distilled Water		19,380

SUMMARY OF DIAGNOSTIC WORK.

Branch Laboratories, 1922.

	Kingston			London.			Fort William.			Sault Ste. Marie			North Bay.			Peterborough.			Owen Sound.		
Diphtheria (Swabs)			900			1,995			1,129			1,298			762			1,723			754
Release from Quarantine		242			446			759			427			226			757			181	
Positive	56			105			216			76			46			265			86		
Negative	186			341			543			351			180			492			95		
Diagnosis		658			1,549			370			871			536			966			573	
Positive	79			122			50			132			86			188			72		
Negative	579			1,427			320			739			450			778			501		
Tuberculosis			1,064			1,075			255			213			369			325			220
Positive	127			167			40			47			51			65			44		
Negative	937			908			215			166			318			260			176		
Typhoid			521			355			91			11			127			100			37
Positive	129			114			37			3			61			16			10		
Negative	392			241			54			8			66			84			27		
Syphilis:—																					
Colloidal Gold Reaction			nil			326			45			2			nil			nil			nil
Wassermann Reaction			2,017			3,823			1,141			299			524			111			130
Very strongly positive	178			719			231			57			99			6			12		
Strongly positive	81			189			20			23			22			3			2		
Positive	26			29			90			34			27			20			3		
Negative	1,732			2,886			800			185			376			82			113		
Spirochaeta Pallida			nil			nil			28			nil			nil			4			nil
Positive							13									1					
Negative							15									3					
Gonorrhoea			264			523			392			100			232			67			284
Positive	179			146			107			35			76			36			81		
Negative	85			377			285			65			156			31			203		
Rabies (brains of animals)			nil			nil			nil			nil			nil			nil			nil
Negri bodies present																					
Negri bodies absent																					
Milk			nil			1,701			530			849			39			436			129
Water			796			1,123			992			2,298			693			785			116
Bacteriological	796			688			992			1,935			693			785			116		
Chemical	nil			435			nil			363			nil			nil			nil		
Liquor (for license)			46			34			nil			17			nil			nil			nil
Miscellaneous (specimens including coal for public institutions)			173			873			594			300			9			611			82
Totals	5,761			11,828			5,197			6,387			2,755			4,197			1,752		

The excellent showing made by the Branch Laboratories is satisfactory proof that they are providing a real service to the people of their several districts. This year a Branch Laboratory was established at Ottawa, and it is hoped that others will follow in the near future.

All of which is respectfully submitted,

H. M. LANCASTER,
Director of Laboratories.

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	+	−	+	−
Algoma—															
Bruce Mines	1	1						1							
Collins Inlet				1				1							
Cutler															
Dalton Mills				1											
Elsas															
Foleyet				2				1					13		
Marshville				2		3							1		
Mindemoya						1									
Sault Ste. Marie													3		
Spanish															
Thessalon										1					
Brant—															
Brantford		2		5	9	56	4	11		19	5	10	115		
Burford				4		8							1		
Cainsville				1									1		
Mohawk															
Ohsweken				1						6	1	8	24		
Paris		2		2	2	7		1		6	1		13		
St. George					1	5		1					5		
Scotland						1		1							
Bruce—															
Cargill							1	2							
Chesley		1		1	1	6	3	2							
Hepworth			1										3		
Kincardine		1	3	11											
Lucknow			3	4	3	2				1		1	6		
Mildmay	1	4				1		1		2			6		
Paisley		1		2				4							
Port Elgin				6		9		5					2		
Ripley	2	4	1		1	5							1		
Southampton						3		2							
Teeswater				1		4		1							
Tiverton			1				1	1				1	2		
Walkerton				1	3	8	1						11		
Wiarton			2	1	1	1							1		
Carleton—															
Ashton						3									
Carp					1	4									
Kinburn				2											
Manotick				5	1	5		3							
North Gower				3		6		1							
Ottawa						2	4	4		328	33	108	2676		
Westboro													3		
Dufferin—															
Grand Valley			1	1		3		6					1		
Honeywood					1										
Mansfield															
Orangeville		1		8	1	17		3					1		
Shelburne			1	6		2	1	4							
Dundas—															
Chesterville		3	1	1											
Iroquois				1	1	8	1						3		
Morrisburg			2	1		6									
Mountain															
Winchester			1	1		1		1							
Durham—															
Bethany				1		2	2	2							

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
																					3
																					2
																			1		1
																		2			3
																		3			3
1	2																	3	8		30
																					6
																					1
																			23		26
																		3			3
																					1
2	23																	44	60	2	367
																		2			15
																					2
																		2			2
3	8																				51
																		18		1	53
																		1		1	14
																					2
																		2			5
																		5		1	20
																					4
																					15
																			2		22
2	2																				19
	1																	1			8
																		4		1	27
																		1			15
																		1			6
																					6
																					6
	2																	1	12	2	41
																		9	3		18
																					3
																					5
																					2
																					14
																					10
																		29	29		3267
																		16			19
																					12
																					1
																	2	2			4
																			3		34
																		9			23
																					5
1	1																	2			18
																			3	2	14
																		1			1
																		1			5
																		3			10

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.															
Blackstock				1				1							
Bowmanville	3	5	5	26	2	17	1	4		2			6		
Enniskillen	8	25	7	48		3	1								
Gardenhill				2											
Hampton															
Millbrook				2									1		
Newcastle		1													
Orono	9	16	7	7	1	17		1							
Pontypool	2	1	1					3							
Port Hope		1	1	9		24	3	6		3			4		
Elgin—															
Port Burwell								1							
St. Thomas								1					1		
Straffordville			2	4									1		
Vienna															
Essex—															
Amherstburg						4							3		
Belle River													3		
Comber						1									
Essex				1		7									
Ford							1			1	1		3		
Harrow	12	8	1	5											
Kingsville	1	2	1	7		9	1	5							
Leamington	9	72	5	5		2							8		
Newington				2			1	1					1		
Ojibway															
Sandwich										4			13		
Tecumseh											1		3		
Walkerville													6		
Windsor						5				33	9	33	260		
Woodslee													1		
Frontenac—															
Arden						2							2		
Kingston															
Portsmouth															
Sharbot Lake						1							5		
Glengarry—															
Alexandria	1	1		2		1		2							
Apple Hill		1	1	1		3				1		3	3		
Dalhousie Mills	1					7		1					1		
Dalkeith						1									
Dunvegan						3		1							
Lancaster				1											
Martintown		1		2		1		2							
Maxville	1			7		6	2	5							
Williamston				2	3	7									
Grenville—															
Cardinal															
Easton's Corners															
Jasper		2						1							
Kemptville		1	1	1		3				1	1		5		
Merrickville				1		1									
North Augusta				1											
Prescott					1	3		1		4		1	1		
Spenceville					2	2									
Grey—															
Ayton															

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
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2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	105
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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	+	—	+	—
Grey—Con.															
Cedarville				1											
Chatsworth						3							3		
Clarksburg				1		3		1							
Desboro												1	1		
Dromore													2		
Dundalk		1				5		5					8		
Durham				5		5		1					1		
Flesherton						1							2		
Hanover		5		2	1	2	4	7							
Heathcote						3									
Holstein						5									
Markdale				1											
McKellar	1	4		8		11									
Meaford	9	7	3	5	1	2	4	3							
Owen Sound				1				1		8	2	2	43		
Priceville			1	4		8									
Thornbury						2		1							
Haldimand—															
Caledonia				1	1	2	1	1		3					
Canfield				3		4									
Dunnville		6	4	16	2	11	6	21					5		
Fisherville				2		4									
Hagersville				1				1					2		
Jarvis	1	8	2	6		3							2		
Haliburton—															
Haliburton				1		4		1		1		1	36		1
Minden				2	1	9		1		1			4		
Halton—															
Acton	5	41	8	2	2	2							1		
Bronte															
Burlington	1	2	1	6	2	7		3		5		1	3		
Georgetown	2	11	3	21	2	4							2		
Milton					4	9		1		1			1		
Oakville		2		5		1	2	2		2			4		
Sheridan															
Hastings—															
Bancroft						5									
Belleville				23	12	60	17	58		12	4	4	71		
Bonarlaw															
Deseronto				1		1									
Eldorado						3		1		6			4		
Foxboro				1											
Frankford				1	1	3		4		1		1	3		
Glenmiller															
Madoc			1	1		2		3		1			3		
Marmora								1							
Roslin			1	9		8		7							
Shannonville								2							
Springbrook															
Stirling		2	2			2									
Trenton	2	5	6	8	3	12		1		4		3	6		
Tweed					1	1									
Huron—															
Auburn			1												
Bayfield															
Blyth					1	1									
Brussels				3	2	4	1	1							

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	1
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1	1	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	7	....	....	21
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...	1	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	1	32	1	92
...	2	fox	....	1	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	16
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1	3	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	1	....	....	14
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...	1	dog	....	1	...	...	...	...	...	...	...	...	...	...	...	....	....	14	17	....	104
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1	7	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	53
3	3	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	4	....	....	28
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2	3	....	....	....	...	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	50
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4	3	....	....	....	...	...	...	...	...	...	...	...	...	...	...	8	....	64	1	....	98
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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	+	−	+	−
Huron—Con.															
Dungannon				1											
Ethel				1		4	1	7							
Exeter				1	1	11									
Fordwich				3		2	1	2		1			2		
Goderich				12	1	12	2	8		1			5		
Gorrie								1							
Kippen															
Seaforth				2		1	1								
Wingham				8	1	2	1	3					3		
Wroxeter				1											
Zurich						1									
Kenora—															
Keewatin															
Kenora															
Kent—															
Chatham			1	5	2	23		4		2	2	1	14		
Dresden								3							
Merlin			1			1									
Northwood					1										
Ridgetown				1											
Tilbury			1			1							1		
Wallaceburg						7		1					5		
Lambton—															
Alvinston															
Camlachie								2							
Forest				1				2					1		
Inwood						3									
Mooretown				1											
Petrolia	4	5		2		1		1							
Port Lambton								2							
Sarnia		1	3	4	1	8	1	5		3	1	6	44		
Thamesville															
Thedford		5	1	2											
Lanark—															
Almonte						3		1							
Carleton Place			6												
Lanark				3				8					1		
Middleville						2									
Pakenham		1		3	1	4						1	3		
Perth		1		10		3				4		1	24		
Smith's Falls	8	19	11	31	1	4					1	1	10		
Leeds—															
Brockville	2	4	1	19	6	18		8		4		1	29		
Elgin						1		2							
Gananoque				2				1			1				
Lyn					1	1									
Lennox and Addington—															
Bath		1													
Camden East				1		2									
Napanee															
Tamworth	2			2				1							
Lincoln—															
Beamville		2		1		7							1		
Grimsby				2		1		1		1			6		
Jordan Station			1			2		1							
Lundy's Lane						1									
Merritton						6				1					

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
																					1
																		1			14
	2	4																2			21
																		1			12
	2																		5	1	49
																		2		1	4
																		3			3
																					4
	1	2														5					26
																					1
																					1
																				1	1
																				2	2
		2																	4	3	63
																		2			5
																					2
																					1
																		13			14
	2	5																	2		12
																		7			20
																				1	1
																					2
																		28			32
																					3
																					1
																				1	14
																					2
	1	7																	35	3	123
																		2		1	3
		1																		1	10
																					4
																		146	29		181
																		1			13
																		21			33
																					13
																		1		1	45
																		11	5		102
																			9	2	113
																					3
	1	1																			6
																					2
																					1
																					3
																			3		3
																		1			6
		5														2		6			24
																		18			29
																	2				6
																					1
																					7

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	+	—	+	—
Lincoln—Con.															
Niagara-on-the-Lake						3							7		1
Port Dalhousie				4			2	6				1	4		
Queenston															
St. Catharines	11	39	11	32	12	62		14		57	16	32	367		
Smithville				2		2									
Vineland															
Manitoulin—															
Gore Bay															
Little Current		2				1									
Middlesex—															
Ailsa Craig			1	1		2									
Glencoe															
London						1						1	2		
Lucan															
Mount Brydges															
Strathroy															
Muskoka and Parry Sound—															
Bala				1	1	1		1							
Baysville															
Bracebridge			1	4	2	6		1					2		
Burk's Falls						3									
Byng Inlet															
Callander					1	2							1		
Depot Harbour								2					4		
Dwight															
Foxpoint															
Gravenhurst		3		2	1	1		5		2			20		
Huntsville			1	3		6						1	1		
Kearney								1							
Magnetawan								1							
Muskoka								1							
Pakesley						3	1	4					4		
Parry Sound		1		9	5	27	2	8		2			17		
Port Carling			2												
Port Keewaydin								1							
Powassan				1		1	1	2							
Rosseau								1							
Sanitorium										1			2		
Severn Bridge				1		4									
Shebishekong															
South River							1	2					2		
Sprucedale						3		2					4		
Sundridge				1		2	2	1							
Trout Creek				7						2			1		
Utterson															
Windermere															
Nipissing—															
Field						2									
North Bay													2		
Sturgeon Falls	1	1	2									1	3		
Norfolk—															
Courtland		2		4				1							
Delhi	1	4	3	4	2	12		3				1	2		
Langton								1							
Port Dover		1		6		6		2					17		
Port Rowan				1		4		4			1		1		

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9	....	....	24
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	18
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1	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	21	1	699
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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	+	−	+	−
Norfolk—Con.															
Simcoe	....	....	....	2	3	16	3	6	....	5	3	7	29	....	...
Vanessa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Waterford	....	....	....	1	1	8	1	2	....	....	....	....	5	....	...
Northumberland—															
Brighton	....	....	....	4	1	6	2	3	....	1	....	....	8	....	...
Campbellford	....	....	....	1	....	1	1	....	....	2	....	....	7	....	...
Castleton	....	....	....	....	1	1	....	....	....	....	....	....	....	....	...
Cobourg	....	4	1	15	1	30	8	19	....	10	1	5	54	....	...
Colborne	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Grafton	....	....	....	3	....	1	....	1	....	....	....	....	....	....	...
Hastings	1	1	1	3	....	3	....	....	....	....	....	2	1	....	...
Roseneath	....	....	....	7	....	....	1	5	....	....	....	....	1	....	...
Warkworth	....	....	....	1	....	2	....	4	....	....	....	....	2	....	...
Whitney	....	....	....	....	....	....	....	1	....	....	....	....	....	....	...
Ontario—															
Beaverton	....	....	....	1	1	2	....	1	....	....	....	....	1	....	...
Brechin	....	....	....	....	....	1	....	....	....	....	....	....	....	....	...
Brooklin	....	....	....	....	....	2	....	....	....	....	....	....	....	....	...
Brougham	....	....	....	....	1	....	....	2	....	....	....	....	....	....	...
Cannington	....	....	....	1	2	2	....	1	....	....	....	....	....	....	...
Claremont	....	....	....	6	1	....	1	....	....	....	....	....	....	....	...
Dumbarton	....	....	1	1	....	....	....	....	....	....	....	....	....	....	...
Oshawa	36	250	38	359	11	80	3	13	....	6	4	1	37	....	...
Pickering	....	....	....	....	....	2	....	....	....	....	....	....	....	....	...
Port Perry	1	1	8	7	2	5	....	2	....	2	....	1	2	....	...
Sunderland	....	1	1	....	....	2	....	....	....	....	....	....	....	....	...
Uxbridge	1	2	3	7	....	9	1	6	....	....	....	....	....	....	...
Whitby	....	1	....	1	1	5	2	2	....	4	1	3	70	....	...
Oxford—															
Bright	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Burgessville	....	....	....	1	....	....	....	....	....	....	....	....	....	....	...
Drumbo	....	....	....	....	....	2	....	1	....	....	....	....	....	....	...
Embro	....	....	....	....	1	....	....	1	....	....	....	....	....	....	...
Ingersoll	....	....	....	1	....	....	....	3	....	....	....	....	....	....	...
Mount Elgin	....	1	....	1	....	....	....	....	....	....	....	....	....	....	...
Norwich	....	....	....	....	....	1	....	....	....	1	....	....	1	....	...
Otterville	....	....	....	2	1	9	....	1	....	....	....	....	1	....	...
Plattsville	....	2	2	1	....	4	....	....	....	....	....	....	....	....	...
Princeton	....	....	....	....	....	1	....	....	....	....	....	....	....	....	...
Tavistock	....	....	....	....	....	5	....	1	....	....	....	....	....	....	...
Tillsonburg	6	14	5	15	2	28	3	11	....	1	....	2	7	....	...
Woodstock	....	....	....	2	1	8	2	13	....	....	....	....	12	....	...
Peel—															
Alton	....	....	....	5	....	6	....	....	....	....	....	....	1	....	...
Bolton	3	4	4	10	2	10	1	4	....	....	....	....	....	....	...
Brampton	....	1	....	2	....	1	....	1	....	....	....	....	4	....	...
Caledon	....	1	2	4	1	1	....	....	....	....	....	....	....	....	...
Clarkson	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Cooksville	....	2	....	....	....	....	....	....	....	....	....	....	3	....	...
Dixie	....	....	....	....	....	1	....	....	....	....	....	....	....	....	...
Inglewood	....	4	....	....	....	....	....	....	....	....	....	....	....	....	...
Lakeview Park	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Lorne Park	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Meadowvale	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Palgrave	6	10	1	2	....	5	1	....	....	....	....	....	....	....	...
Port Credit	....	3	2	3	2	11	....	1	....	....	....	....	5	....	...
Snelgrove	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...
Streetsville	....	....	....	1	1	1	....	1	....	....	....	....	....	....	...

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.—Con.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	15	1	95
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	21
1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	31
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	24
...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	...	...	19
5	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	8	5	4	193
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	15
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	11
...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	14
2	2	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	14
...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
27	70	...	...	...	...	.	...	...	...	...	...	...	...	...	...	43	...	35	10	2	1025
...	...	...	...	...	...	.	...	...	...	...	...	...	...	...	...	1	...	5	...	...	8
...	2	...	...	...	...	.	...	...	...	...	...	..	...	...	...	...	...	1	...	...	34
...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	38
...	2	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	10	...	76	178
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	4	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	.	...	...	...	...	...	...	...	4
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	...	28
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	..	...	..	...	...	...	...	...	...	...	...	...	...	...	...	2	3
...	...	...	...	...	...	...	...	...	...	...	...	...	.	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13	...	1	108
...	...	...	...	...	...	...	...	...	...	...	...	...	.	...	...	...	...	...	4	...	42
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	39
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	23	4	44
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	15
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	2	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	4	...	...	33
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	1	...	11

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	+	—	+	—
Perth—															
Dublin							1								
Listowel	1	1		1		14	3	3					3		
Millbank															
Milverton					1										
Mitchell				1		2	2	3					5		
Sebringville		2	1	3											
Shakespeare													1		
Stratford				2	1	8		2		3			15		
Peterborough—															
Birdsall's															
Havelock		1	1		1	3	1	3							
Keene										1	1		1		
Norwood					1	1									
Peterborough		1								10	2	1	59		
Prescott—															
Hawkesbury				1	1	2	1	11					4		
L'Original															
Plantagenet						3									
St. Eugene				2		4							2		
St. Isadore de Pres.			1	1		7		2							
Vankleek Hill				5		3	2	7					1		
Prince Edward—															
Bloomfield			1	1						2			1		
Consecon						1									
Demorestville															
Hillier															
Picton		1		17	1	6		3		2			1		
Rossmore															
Wellington						1		1					3		
Rainy River—															
Fort Frances												1	12		
Renfrew—															
Arnprior			1	2	2	3					1	2	4		
Beachburg			1	2		1									
Brudenell															
Calabogie	1		4	1		1									
Cobden			1	2	1	4							1		
Combermere						2									
Eganville			1	6	3	21		1							
Forester's Falls				1		1									
Pembroke	2		2	3		3	3	10		16	1	6	43		
Renfrew		2	1		2	4	1	2					1		
Russell—															
Bourget						1		1				1	1		
Clarence Creek	2	3	3	1											
Eastview Centre										1		1	3		
Embrun						2									
Metcalfe	1			1	1	4									
Orleans				1											
Osgoode													1		
Rockland				2							1	2	5		
Russell					1	5		6							
Vars		2		1		5	1	3				1	1		
Simcoe—															
Allandale				1						1	1		1		
Alliston				8		2	4	25					4		
Angus		2		2											

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk									Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological									
										Tubercle Bac.		Pus Cells							
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	25
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	8
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	3	6	48
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	22
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	5	...	80
...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	1	27
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	23
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	3	...	48
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	1	14
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	96	8	...	196
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	25
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	1	54
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4

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	+	—	+	—
Simcoe—Con.															
Barrie	16	50	16	72	2	24	4	18	....	3	....	1	16	....	....
Beeton	....	....	....	4	....	....	1	....	....	....	....	....	1	....	....
Bond Head	....	....	....	1	....	3	....	....	....	....	....	....	....	....	....
Bradford	....	....	....	3	....	1	....	1	....	....	....	....	1	....	....
Camp Borden	....	4	....	8	....	....	....	....	....	4	....	....	9	....	....
Coldwater	5	1	3	6	3	5	1	1	....	....	....	....	3	....	....
Collingwood	10	23	9	24	1	20	....	5	....	19	4	7	101	....	....
Churchill	....	....	....	2	....	....	....	1	....	....	....	....	1	....	....
Cookstown	....	....	5	12	....	1	1	4	....	....	....	....	4	....	....
Creemore	6	6	2	5	1	7	....	....	....	....	....	....	....	....	....
Edgar	....	....	....	1	1	1	....	....	....	....	....	....	....	....	....
Elmvale	1	2	4	5	....	14	1	3	....	1	....	....	....	....	....
Everett	1	7	1	2	....	2	....	....	....	....	....	....	4	....	....
Hector	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Hillsdale	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Jackson's Point	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lefroy	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lisle	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Midland	....	....	2	2	3	14	1	5	....	10	1	2	47	....	....
Orillia	7	40	13	55	3	17	6	14	....	3	....	4	16	....	....
Penetanguishene	....	2	2	9	4	16	1	3	....	....	....	1	6	....	....
Phelpston	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....
Port McNicoll	1	1	1	5	....	....	1	3	....	....	....	....	1	....	....
Shanty Bay	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Stayner	....	....	....	2	....	4	1	4	....	....	....	....	2	....	....
Stroud	....	....	....	2	....	6	....	4	....	....	....	....	....	....	....
Thornton	1	4	....	2	....	....	....	4	....	....	....	....	....	....	....
Tottenham	....	....	....	3	....	6	....	....	....	....	....	....	2	....	....
Victoria Harbour	....	....	....	8	1	8	2	3	....	1	....	....	1	....	....
Washago	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Waubaushene	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Stormont—															
Aultsville	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Avonmore	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....
Cornwall	....	....	5	4	2	2	2	5	....	3	1	2	10	....	....
Crysler	....	....	....	....	....	1	....	....	....	....	....	....	2	....	....
Finch	....	....	....	2	....	1	....	....	....	....	....	....	....	....	....
Moose Creek	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Sudbury—															
Burwash	....	....	....	1	....	8	....	2	....	45	16	33	487	....	....
Chapleau	....	....	....	1	....	....	....	....	....	....	1	....	2	....	....
Chelmsford	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Coniston	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Copper Cliff	....	....	2	1	1	5	....	....	....	1	....	....	1	....	....
Creighton Mine	....	2	4	7	2	....	....	....	....	3	....	....	2	....	....
Espanola	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....
Massey	....	1	1	3	....	....	....	....	....	....	....	....	....	....	....
Sudbury	....	....	....	1	3	6	1	1	....	5	....	2	18	....	....
Webbwood	....	....	1	....	....	....	....	....	....	....	....	....	2	....	....
Worthington	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Thunder Bay—															
Fort William	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
Grant	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....
Port Arthur	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....
Timiskaming—															
Cobalt	....	....	....	3	....	2	....	....	....	2	....	2	2	....	....
Cochrane	....	....	....	....	2	....	1	1	....	2	....	....	3	....	....

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.—Con.

Gonorrhea		Rabies Diagnosis				Milk											Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
13	26																	9		2	272
																					6
																		1			5
																					6
																		13			38
	1																	2		1	32
5	15															48		21	2		314
																		1			5
																		6			33
																					27
																		1			4
																					31
																1					18
																					1
																		2			2
																		2			2
																		2			2
																		1			1
2	3																			2	94
	2																	133	13	1	327
8	12																	5			69
																					2
																		6			19
																		2			2
																					12
																					12
																					11
																		9			20
2	2																	4			32
																		1			1
																		2			3
																					1
																					2
	2																		3		41
																					3
																		1		1	5
2	1																				5
9	37																	5			643
	1																		1		6
																				1	1
																		1	1		2
																					11
																					20
	3																	3	2		11
1	2																				8
																		3	12	2	54
																					3
																					2
																					1
																					2
																		20			22
	1																		2		14
																		2	4		15

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	+	−	+	−
Timiskaming—Con.															
Elk Lake	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Englehart	....	1	....	....	....	....	....	....	....	....	....	....	.....	....	....
Haileybury	....	1	....	....	....	1	....	2	....	....	....	....	2	....	....
Hearst	....	....	....	....	....	....	....	....	....	1	....	....	2	....	....
Homer	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Iroquois Falls	....	....	....	....	....	....	....	....	....	....	....	....	7	....	....
Kapuskasing	....	....	....	....	....	....	....	....	....	....	....	1	.....	....	....
Kirkland Lake	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Larder Lake	....	....	....	1	....	....	....	....	....	....	....	....	.....	....	....
New Liskeard	....	....	....	1	....	3	....	....	....	1	....	....	2	....	....
Schumacher	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Smooth Rock Falls	....	....	....	1	....	2	....	1	....	....	....	1	3	....	....
South Porcupine	....	....	....	2	....	2	1	5	....	1	....	....	20	....	....
Timmins	....	....	1	2	3	12	4	3	....	8	2	3	34	....	....
Victoria—															
Bobcaygeon	....	....	....	6	....	1	....	....	....	....	....	....	.....	....	....
Cambray	....	....	....	....	....	5	....	....	....	....	....	....	2	....	....
Coboconk	....	....	....	1	....	2	....	1	....	....	....	....	.....	....	....
Fenelon Falls	....	....	....	1	....	....	....	1	....	....	....	....	.....	....	....
Kinmount	....	....	2	19	....	2	....	....	....	....	....	....	.....	....	....
Kirkfield	....	....	....	1	....	4	....	....	....	....	....	....	.....	....	....
Lindsay	5	5	5	9	6	20	2	17	....	....	....	....	2	....	....
Little Britain	....	....	....	....	....	4	1	1	....	....	....	....	.....	....	....
Manilla	....	....	....	1	....	1	....	....	....	....	....	....	.....	....	....
Omemee	....	1	....	....	....	6	....	6	....	....	....	1	5	....	....
Sturgeon Point	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Woodville	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	....
Waterloo—															
Ayr	....	....	....	3	1	9	1	1	....	....	....	....	1	....	....
Baden	....	....	....	1	....	....	....	....	....	....	....	....	.....	....	....
Doon	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Elmira	....	....	....	1	....	3	....	1	....	....	....	....	1	....	....
Freeport	....	....	....	....	8	14	....	....	....	1	....	....	5	....	....
Galt	1	1	1	16	2	14	1	5	....	13	3	9	61	....	....
Hamburg	....	....	....	....	....	....	....	1	....	....	....	....	.....	....	....
Hespeler	....	....	....	2	1	3	....	1	....	....	....	1	8	....	....
Kitchener	15	88	11	68	14	106	3	3	....	14	4	6	126	....	....
Linwood	....	....	....	....	....	6	....	....	....	....	....	....	.....	....	....
New Dundee	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	....
New Hamburg	....	....	1	3	2	6	....	3	....	....	....	....	.....	....	....
Preston	....	....	1	4	4	5	....	2	....	1	....	2	2	....	....
St. Jacobs	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Waterloo	1	3	4	11	4	12	1	4	....	2	....	....	9	....	....
West Montrose	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	....
Winterbourne	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Welland—															
Bridgeburg	5	7	7	8	1	4	....	3	....	....	....	....	1	....	....
Chippawa	....	....	3	7	1	3	....	1	....	....	....	....	.....	....	....
Fenwick	....	....	....	....	....	1	....	1	....	....	....	....	1	....	....
Fonthill	....	....	....	....	....	2	....	....	....	....	....	....	.....	....	....
Humberstone	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Niagara Falls	1	3	4	9	8	30	4	16	....	29	5	20	124	....	....
Port Colborne	1	4	5	5	3	5	3	17	....	2	1	1	8	....	....
Ridgeway	....	....	1	1	....	2	1	2	....	2	....	3	11	....	....
Southend	....	....	....	3	....	....	1	4	....	....	....	....	.....	....	....
Stevensville	....	....	1	2	1	....	....	....	....	....	....	....	.....	....	....

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										Tubercle Bac.		Pus Cells							
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	2	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	8
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	1	....	4
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	7
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	2	3
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	1	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	1	9
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	2	....	....	....	10
2	10	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	2	....	2	47
1	19	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	2	1	96
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	3	....	....	10
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	7
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	4
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	1	....	9	....	....	12
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	23
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	1	17	....	....	23
1	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	13	5	2	92
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	6
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	2
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	19
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	2	4
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	6	....	....	22
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	1	7
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	1	29
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	41	....	4	172
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	5	....	22
11	44	....	....	....	....	...	...	..	..	...	...	...	...	...	....	1	3	36	51	7	611
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	16	....	....	22
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	13	....	....	28
1	2	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	2	....	27
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	1
5	13	....	....	....	....	...	...	..	..	...	...	...	...	...	....	1	....	....	....	2	72
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	11	....	....	12
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	2	2	....	40
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	4	....	....	19
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	3
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	3
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	2	....	....	2
13	47	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	1	12	25	2	353
5	3	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	9	1	....	63
1	4	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	32	....	....	60
1	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	9
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	4

REPORT FROM LABORATORIES OF THE PROVINCIAL BOARD OF HEALTH OF

Municipalities	Diphtheritic Swabs				Tuberculosis Sputa		Typhoid Bloods		Syphilis						
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	+	−	+	−	+	−	+	−	Colloidal Gold Reaction	Very Strongly Positive	Strongly Positive	+	−	+	−
Welland—Cont.															
Thorold				1		4						3	20		
Welland	1	10	3	8	2	29	4	13		16	2	12	143		
Wellington—															
Alma				1		3									
Arthur			1	1	2	3		2							
Clifford						4				1			1		
Conn															
Drayton				1		1		3				1	5		
Elora					1	5									
Erin	2	5	6	7	1	4									
Everton								1							
Fergus				2			1	1					2		
Glenallan				2	1	3									
Guelph	5	28	4	36	2	29	4	22		144	28	104	1061		
Harriston						2							1		
Hillsburg	2	1	4	6		6	1	3							
Moorefield				2											
Morriston								2							
Mount Forest				4		5	4	4							
Palmerston				2	1	2		2					3		
Rockwood	4	3	2	1											
Wentworth—															
Ancaster															
Dundas													2		
Freelton				1									1		
Hamilton										8	4	3	73		
Lynden				1											
Stoney Creek															
Winona				2									4		
York—															
Agincourt		2		6		8				1			9		
Aurora	2	10	3	2		2				2			5		
Birchcliff	3	3	3	1		1		1							
Fairbank		7	2	11		2									
Gormley															
Highland Creek															
Islington	3	4	1	7			1								
Jefferson															
Keswick				3				2							
King			1												
Kleinburg															
Lambton Mills						1									
Lansing			2	4		6									
Long Branch	4	4	1	3		2		1					1		
Maple							2	2							
Markham		1				1		1		2			4		
Mimico	3	3	9	138	1	7	1	5		7	1		24		
Mimico Beach	6	2	1	10	4	14		3					3		
Mount Albert		2	4	5		2									
Mount Dennis		4	2	3			2	2					2		
Nashville															
Newmarket	1		2	3		2				1			10		
Newtonbrook															
New Toronto	6	4	4	37		9	1	4		1		1	7		
Queensville				9		1		3							
Richmond Hill				2	1	9		1		2		1	5		
Roches Point															

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			Negri Bodies			Food Content		Preservatives		Bacteriological									
										Tubercle Bac.		Pus Cells							
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	....	36
3	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	21	19	....	304
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	6
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	11
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...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	15
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25
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1	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	8
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31	133	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	61	25	139	1856
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
...	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	26
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
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...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	....	22
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	13
...	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	10
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	29	221	9	348
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	2
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	3
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	20	....	....	48
6	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	....	....	42
1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....	20
...	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	3
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...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1
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...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	5	....	....	8
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	14
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	11	....	....	28
2	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	10
...	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	7	....	....	18
...	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	....	3	20	....	247
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	43
...	...	dog	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	19
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	2
2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	13	....	....	1	3	94
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	13
1	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	13	....	1	40
...	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9	....	....	9

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.															
Scarboro	....	....	....	4	....	....	....	....	....	....	....	....	.....	....	...
Schomberg	1	1	....	1	....	5	....	....	....	....	....	....	3	....	...
Stouffville	....	....	....	1	....	2	....	....	....	....	....	....	8	....	...
Sutton West	....	1	2	10	....	....	....	....	....	....	....	....	.....	....	...
Swansea	....	....	....	4	....	....	....	....	....	....	....	....	.....	....	...
Thornhill	....	....	....	11	3	13	1	1	....	89	17	44	1230	....	...
Todmorden	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	...
Toronto	71	150	63	355	14	152	2	27	229	634	131	621	4956	....	...
Unionville	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	...
West Hill	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	...
Weston	1	....	2	25	3	7	3	6	....	....	....	1	12	....	...
Willowdale	....	....	....	1	....	....	....	....	....	....	....	....	.....	....	...
Woodbridge	....	....	....	....	....	....	1	2	....	....	....	....	2	....	...
Totals	354	1162	560	2232	290	1994	203	839	229	1693	318	1144	13296	....	...

Grand Total, 31,857

ONTARIO AT TORONTO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	9	....	....	13
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	11
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	1	12
...	2	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	15
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	5
...	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	1411
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	6	....	....	6
176	1747	4dgs	....	4	...	...	...	...	...	...	...	...	...	...	....	50	12	326	437	64	10221
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	1
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	1	....	1
...	2	1dg.	....	1	...	...	...	...	...	...	...	...	...	...	....	2	....	22	....	....	87
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	4	....	....	5
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	1	7
409	2430	8	....	8	...	...	...	...	...	...	...	...	...	...	....	242	62	2546	1417	429	31857

YEARLY REPORT

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Algoma—													
Collins Inlet									50		10		
Dalton Mills				1				1					
Foleyet					12		12	24	50				
Hilton Beach										100	50		
Marshville	2			9		5		16			5		
Mindemoya										10	55		
Mond				4				4					
Saulte Ste. Marie									90		532		
Spanish					12			12					
Thessalon									20				
Brant—													
Brantford	556		212	84	216	131	12	1211	650	580	1186		
Burford							4		4				
Mohawk				2				2					
Ohsweken	36		12					48					
Paris	18			25	24			67	40	130	30		
St. George	16		6	12	5	6		45		20			
Scotland						4		4					
Bruce—													
Chesley			10					10		20			
Elmwood	6				6	9	12	33		10	25		
Kincardine	6		6	6	12			30			44		
Lucknow	12				12	8		32					
Mildmay			6	20	12			38					
Paisley	6			1	36			43					
Port Elgin	6			1	12	24	12	55	40	10	5		
Ripley	8			4	12			24					
Southampton				1				1					
Tara											16		
Tiverton											60		
Walkerton	4				6			10		10	31		
Wiarton	2		6	4	12	5	6	35					
Carleton—													
Ashton						4		4					
Kinburn	4				6			10	10	10	10		
Manotick					12	5	6	23					
North Gower					12	12	12	36					
Ottawa	3228		180	53	60	65	66	3652	1670	3325	3060		
Westboro				24				24					
Dufferin—													
Grand Valley					4			4	20	20			
Mansfield				1				1					
Orangeville						22		22		10			
Shelburne				6			6	12	10				
Dundas—													
Chesterville					18			18					
Iroquois	6		6	2		10	6	30	20		10		
Morrisburg	6			3	6	18	18	51	10		50		
Winchester	6		6	12	6	5	6	41			60		
Durham—													
Bowmanville			36	27		5		68	130	130	121		
Enniskillen				11	36	4		51					
Garden Hill											5		
Hampton				1				1					
Millbrook				17	36	12		65	10		10		
Newcastle				1				1					
Orono				12	24	18		54	20				

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Durham—Cont.													
Pontypool			6					6					
Port Hope	36			84	24	24		168			145		
Elgin—													
Port Burwell	4		6		6		6	22					
Port Stanley				2				2					
St. Thomas	6						6	12		10	10		
Springfield					6	5	6	17			8		
Straffordville				2				2					
Essex—													
Amherstburg						5		5					
Essex					12	27	6	45	20				
Harrow						48		48					
Kingsville				40	30	8	6	84					
Leamington	28			40	72			140	40				
Newington	4				6			10					
Ojibway				24				24					
Pelee Island									10				
Windsor	1232		500		120		204	2056	710	260	710		
Frontenac—													
Arden						4		4					
Kingston						290		290	870	560	160		
Sharbot Lake	6		6					12	20		20		
Glengarry—													
Alexandria					6	4		10					
Apple Hill	18				12	13	12	55					
Dalhousie Mills	6					10		16					
Dunvegan						4		4					
Lancaster				12	12			24					
Maxville			24		12	10	12	58			50		
Williamstown					18	9	6	33					
Grenville—													
Cardinal				4				4					
Easton's Corners				1				1					
Jasper					48		18	66			5		
Kemptville	6				6	4		16	10	20	5		
Merrickville						4		4					
North Augusta					24			24					
Prescott				24	12		12	48	50		160		
Spencerville											10		
Grey—													
Ayton						4		4					
Dromore				1				1					
Dundalk	6					4		10		60			
Durham				12				12	20				
Flesherton				4				4					
Hanover				6	6	12	18	42	75	95	30		
Heathcote						5		5					
Holland Centre				2				2					
Holstein											5		
Markdale			6	1		5		12					
McKellar					12	5		17					
Meaford	2			28	6	4	18	58	30				
Owen Sound				6				8	450	820	501	1	21
Priceville	6		6		12	8	6	38	30			2	42
Thornbury				6		4		10					
Haldimand—													
Canfield	3				30			33					

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Haldimand—Con.													
Cayuga										80	53		
Dunnville	24		6	13	18	8	24	93	10		100	1	21
Jarvis					36			36					
Selkirk				2				2					
Haliburton—													
Haliburton	36				12			48		10	26		
Minden	6		6	31	6	10	12	71	20		10		
Halton—													
Acton	4				54	4		62					
Bronte				4	6			10					
Burlington	8			25	24	9	12	78		25	52		
Georgetown	15		16		30	8	12	81		25	54		
Milton	6			12		8		26			20		
Oakville				65	6	10		81		50			
Sheridan				1				1					
Hastings—													
Bancroft				3				3			10		
Belleville	131		6	44	140	125	90	536	155	1300	150		
Bonarlaw				16				16					
Deseronto					6	5		11	35	10	39		
Eldorado	12		12			8		32	20		20		
Frankford				24	12		12	48					
Glenmiller				3				3					
Madoc	9			2			6	17					
Marmora									30				
Roslin				24			12	36	10		5		
Shannonville							6	6			5		
Stirling			2					2					
Trenton	25							25	50	350	108		
Turriff				1				1					
Tweed						5		5	50				
Huron—													
Auburn					6	4		10					
Bayfield				1				1					
Brussels				4		9	6	19					
Dungannon	12				12			24		60			
Ethel				2			6	8	20				
Exeter	12			6	24	5		47		24			
Fordwich									30		10		
Goderich	18			30	12	26	6	92			110		
Kippen				2				2					
Seaforth									40	70	15		
Wingham	3							3					
Zurich						8		8		30			
Kenora—													
Keewatin				2				2					
Kent—													
Blenheim									50	170			
Chatham	96			121	72	25	36	350	680	420	298		
Dresden						12		12	60	150			
Ridgetown				18		9	12	39					
Tilbury			12					12			15		
Wallaceburg	12			12		8	12	44		20	15		
Lambton—													
Alvinston				1				1					
Brigden				12	12	5		29					
Camlachie				4		4	6	14		70	10		

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diptheria	T.B.	Typhoid	Total				Cases	No. of Injections
Lambton—Con.													
Forest	12		12	48	10	4	18	104	20				
Mooretown	4				6			10					
Oil Springs					12			12					
Petrolia					24	30	12	66	110		36		
Sarnia	186		66	30	12	46		340	80	30	173		
Walford				24		8	24	56		35	10		
Wyoming										10			
Lanark—													
Almonte							6	6	70		45		
Carleton Place	6			192	24			222	50	70			
Lanark	12				48			60					
Middleville			6	38				44					
Pakenham					12	13		25					
Perth	30					8		38					
Smith's Falls	18		6	10	120	14	7	174					
Leeds—													
Brockville	60			1	30	22		113	80	120	244		
Frankville				3				3					
Gananoque			12	1	18			31		120	10		
Lansdowne									20				
Lyn									20	25			
Lennox and Addington—													
Camden East						4		4					
Napanee				24				24	50				
Odessa										30			
Tamworth	12		12	2		4		30			40		
Yarker									10	20			
Lincoln—													
Beamsville				4	6	8	6	24		20			
Grimsby	24			1				25		135	20		
Jordan Station				2				2					
Merritton											10		
Niagara-on-the-Lake	6		5		12			23		85	118		
Port Dalhousie	12				12	10	12	46		135	48		
Queenston				17				17					
St. Catharines	484		12	24	162	86	6	774	160	1595	970		
Smithville					18	5		23		30	10		
Virgil				2				2					
Middlesex—													
Ailsa Craig				1		5		6					
Glencoe				4				4					
London	3700			4		200		3904	780	2360	1637		
Mount Brydges				12				12					
Strathroy									30				
Muskoka and Parry Sound—													
Bala				2	1		1	4		140	5		
Bracebridge						4		4	40				
Burk's Falls											15		
Byng Inlet				5				5					
Depot Harbour				20				20					
Dwight				3				3					
Foxpoint				1				1					
Gravenhurst				27				27	10	35	16		
Huntsville				7	12			19	10	100			

YEARLY REPORT

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Muskoka and Parry Sound—Con.													
Kearney				12				12					
Muskoka							6	6					
Pakesley	6					8	12	26	10				
Parry Sound	36			24	42	28	24	154	20	20	40		
Rosseau				1				1					
Severn Bridge				1				1					
Shebishekong				2				2					
Sprucedale	12					5		17		145	48		
Torrence									10				
Trout Creek	6				12			18		10			
Utterson					10			10					
Windermere				1				1					
Nipissing—													
Field	6				6	9		21	20	20	8		
North Bay									1440	1760	60		
Norfolk—													
Delhi	6		6	20	2	14	12	60	10	70	10		
Langton							12	12			50		
Port Dover	72		54	15	60	31	24	256			111		
Port Rowan									105	135	69		
Simcoe	72			6	24	8	6	116	110		20		
Waterford						5		5	35	10	23		
Northumberland—													
Brighton	24			12		12		48		20			
Campbellford				18				18		30			
Castleton						5		5			8		
Cobourg	60		30	25	48	44	72	279	10	40	24		
Colborne				15				15					
Hastings	12			18		4		34		200			
Roseneath	6				18		12	36	20	40			
Warkworth						16		16			30		
Ontario—													
Ashburn				1				1					
Beaverton	6			6	4		6	22	50				
Brougham				12				12					
Cannington				14				14	40				
Claremont				3				3					
Oshawa	100		150	30	725	179	60	1244		240	440		
Pickering										20			
Port Perry			6	12	12	4		34	60				
Seagrave				1				1					
Sunderland				2		5	6	13	10	140			
Uxbridge			6	2	24	10	18	60	140				
Whitby	72		24	38	24	33	24	215	20				
Oxford—													
Burgessville					12	4		16					
Drumbo				6	6	4	6	22		40			
Embro				4				4					
Otterville				12		10		22	10	30			
Princeton				2				2					
Tavistock	6				24	13	18	61					
Tillsonburg	20			26	96	28		170	105	40			
Woodstock	6							6	30				
Peel—													
Alton						9		9			10		
Bolton			4	6	24	28	12	74		240	66		

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

Municipalities	Outfits sent out								Doses of Typhoid-paratyphoid Vaccine supplied	Whooping Cough Vaccine	Silver nitrate for prevention of Opthalmia	Pasteur Preventive Treatment	
	Syphilis (Wassermann)	Syphilis (Treponema Pallida)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Peel—Con.													
Brampton				2				2			40		
Caledon				12				12		20			
Cheltenham				1				1					
Clarksons											15		
Dixie				12	12	12		36					
Inglewood										35			
Lakeview Park				2				2					
Lorne Park				4				4					
Meadowvale				3				3					
Palgrave					24	10		34		10	75		
Port Credit	10			4	12	12		38		35			
Perth—													
Atwood					24	4	6	34					
Listowel	6			32	24	15		77			16		
Mitchell				14		9		23			42		
St. Mary's										20			
Sebringville				2				2					
Stratford	18			12	24	9	6	69	40	70	615		
Peterborough—													
Bailieboro									40		15		
Havelock				16	72	4	12	104					
Peterborough	24				1200			1224	60		442		
Prescott—													
Curran				24		8		32					
Hawkesbury				12	12		24	48	45	50	86		
L'Orignal				3				3					
Plantagenet				2	6	5	6	19					
Riceville							6	6	30				
St. Eugene	6					4	6	16	10	10			
Vankleek Hill	6		6		12	4	6	34	10	20			
Prince Edward—													
Bloomfield	6		6			4		16			15		
Demorestville				19				19	10				
Hillier										20	5		
Picton	12			15	54	5	6	92	20		20		
Wellington				7				7					
Rainy River—													
Emo									20	20	24		
Fort Frances										50	8		
Renfrew—													
Arnprior				27		10		37	50				
Calabogie	4		4		12		6	26	20				
Cobden	12			6	12	8		38	20				
Eganville	6				12	21		39		190	62		
Pembroke	70			108	108		6	292		150	108		
Renfrew							6	6					
Russell—													
Bourget						5		5	60	240	68		
Casselman										50			
Cumberland				1				1					
Embrun							40	40					
Metcalfe						4		4					
Orleans					12			12					
Osgoode	2							2					
Rockland	6							6			10		
Russell	12			30		23	12	77	50		24		
Vars						4	6	10		55	25		

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Russell—Con.													
Vernon										130			
Simcoe—													
Alliston	18		18	12	24	18	48	138	420	20	10		
Angus					12			12					
Barrie	48		48	5	186	81	84	452	100	455	120		
Beeton	16				30		12	38					
Bond Head				1				1					
Bradford					24		6	30					
Camp Borden	12			12	18			42					
Coldwater				2	6			8			15		
Collingwood	175			45	90	34		344		130	60		
Cookstown	6		6	3	24	5	6	50					
Creemore	4				48	13		65					
Edgar				3				3					
Elmvale					24	14	6	44					
Everett	6		6		24		6	42					
Hillsdale				2				2					
Lefroy				2				2					
Midland	42		24			8		74	60	80	10		
Orillia	18			168	60	17	12	275	40	60	24		
Penetanguishene	18		24	12	18	14	6	92	10				
Phelpstone						4		4					
Port McNicoll				6	12		6	24					
Shanty Bay				3				3					
Stayner	12		12		48	10	12	94	10		25		
Thornton										40			
Tottenham				6	1			7					
Victoria Harbour			4		24	10		38		30			
Waubaushene				2				2					
Stormont—													
Aultsville						4		4	10				
Avonmore	4						6	10	10				
Cornwall	30				12	40	6	88	40	10	88		
Finch					12			12					
Moose Creek			6			4		10					
Sudbury—													
Burwash	1003			6		12	12	1033					
Chelmsford	6							6					
Copper Cliff	6				24			30		300			
Creighton Mine	12				30			42					
Espanola	6					10		16					
Massey					48			48			32		
Sudbury									100				
Webbwood											70		
Thunder Bay—													
Fort William									700	650	550		
Grant	6						6	12					
Timiskaming—													
Cobalt									20	400	20		
Cochrane									20	20	50		
Elk Lake											26		
Gowganda						5		5					
Haileybury										30	10		
Hearst									20	75			
Iroquois Falls									20				
New Liskeard					6			6	40	100	70		
Schumacher									10				

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Timiskaming—Con.													
Smooth Rock Falls	12				12	4		28	20	20			
South Porcupine	12		12				12	36	20	830	15		
Timmins	30		18			4	12	64		40			
Victoria—													
Bobcaygeon				4	48			52			30		
Cambray	4		4		6	5		19	10				
Coboconk	2		2		6	5	6	21					
Fenelon Falls	12			3	12	8	12	47	40	30			
Kenmount					18			18					
Kirkfield				24				24	40				
Lindsay	2			15	12	30	6	65					
Little Britain									10	20			
Omemee										30			
Sturgeon Point				1				1					
Woodville						5		5					
Waterloo—													
Ayr				1		10		11					
Baden				1				1					
Doon				2				2					
Elmira	12							12			5		
Freeport	2					32		34					
Galt	84			24	48	40		196	60		170		
Hespeler	6			11		5		22	10				
Kitchener	190		78	36	220	121	18	663		130	374		
Linwood				15		4		19					
New Dundee						4		4	20				
New Hamburg				6		8	6	20	20				
Preston				1				1					
Waterloo	24			1		12		37		310	45		
Wellesley									20				
West Montrose				12				12					
Welland—													
Bridgeburg	10				24			34			8		
Chippawa				2	6	5	12	25					
Fenwick	3				12			15			48		
Fonthill				1		5	10	16			10		
Humberstone				2				2					
Niagara Falls	147		47	8	78	43	72	395	130		545		
Port Colborne	68		6	5		5	12	96	80	170	5		
Ridgeway	24			12	36	8	18	98	20	30			
South End	4		4		6	5	6	25					
Thorold	12			10				22		20	26		
Welland	170		48	25	24	38	42	347	140	110	290		
Wellington—													
Alma				1				1					
Arthur											5		
Belwood									10	20	16		
Clifford	3		3		6			12	20				
Drayton				2				2					
Elora						10		10					
Erin					24	8		32					
Glenallan						5		5					
Guelph	1410		270	64	130	23	24	1931	140	1000	175		
Harriston										10			
Hillsburg			6	12	12	9	6	45	10	100			
Mount Forest				2				2	30	350			
Palmerston					12			12		35			

YEARLY REPORT.

Outfits, Vaccines and Treatments supplied by Laboratory at Toronto during the year 1922.

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)	Gonorrhea	Water	Diphtheria	T.B.	Typhoid	Total				Cases	No. of Injections
Wentworth—													
Ancaster				1				1					
Dundas	4							4			25		
Hamilton	164			31				195	1100	2740	3147		
Lynden				4				4			15		
Stoney Creek				1				1					
York—													
Agincourt	12			14	24	4		54	30	360	61		
Aurora			24	11	30	15		80		10			
Birchcliff				2	30			32					
Concord				12				12					
Gormley				1	18			19					
Highland Creek				1				1					
Humber Bay				2				2					
Islington	12			3	12	8	12	47		10			
Keswick				1				1					
Lambton Mills				2				2					
Langstaff				1				1					
Lansing	16		4	4	24	21	24	93	40	40	16		
Leaside				12				12					
Long Branch				6			4	10	75		5		
Maple							6	6			5		
Markham				1				1					
Mimico	6			1	96			103	260	30			
Mimico Beach	3			1	24	12	6	46					
Mount Albert	6		6		12	4	6	34					
Mount Dennis	12			1	6		24	43					
Newmarket	18		6		6	4	6	40		140	50		
Newtonbrook				1				1		140			
New Toronto	24				24		12	60			10		
Oak Ridges				1				1					
Queensville						10		10					
Richmond Hill	12			9		10	12	43		15	15		
Roches Point				5				5					
Scarboro				3				3					
Schomberg					12	10		22					
Stouffville	18		12		12	24	36	102			30		
Sutton West			6	8	36			50		20			
Thornhill	3			2	12	15	6	38					
Todmorden				1				1					
Toronto	7903		2581	477	901	335	78	12275	4685	20650	2168	1	21
Unionville											40		
Weston	12			13	192	30	6	253	20				
Total	22930		4812	3582	7961	3644	2101	45030	19395	48404	22992	6	126

Grand Total—45,030.

Owen Sound, Ontario, 30th January, 1923.

DR. J. W. S. MCCULLOUGH,
Chief Officer of Health,
Spadina House, Spadina Crescent,
Toronto.

SIR,—I have the honour to submit herewith a report of the work done in the Branch Laboratory of the Provincial Board of Health of Ontario in Owen Sound during the year 1922 and including the month of December, 1921:—

Valuable service has been rendered to the City of Owen Sound and the surrounding district since the laboratory was opened on December 1st, 1921. Specimens for examination to the number of 1,996 have been received from thirteen municipalities in the County of Bruce and thirteen in the County of Grey. Of the total number approximately 51% were received from Owen Sound.

When the laboratory was opened diphtheria was epidemic in this city. The services of the laboratory in the early diagnosis of diphtheria swabs and distribution of diphtheria antitoxin were greatly appreciated by Dr. Murray, the Medical Health Officer. The delay previously experienced through the necessity of sending swabs to Toronto was eliminated, thus greatly assisting the Board of Health in reducing the epidemic.

During the month of August the water supply of Owen Sound became contaminated with bacilli of the colon and paratyphoid intermediate groups. This was discovered in the laboratory and action was taken immediately by the Board of Health to remedy this condition.

Samples of milk from all sources of supply in Owen Sound have been received each month for examination. As a result of this the standard of milk supplied has been raised to a satisfactory level.

The venereal disease clinic under the direction of Dr. Murray is located in the same building as the laboratory. It is thus able to make convenient use of the laboratory for the diagnosis of venereal disease and for noting the progress of patients under treatment.

The standardization of the General and Marine Hospital in Owen Sound has recently been undertaken and completed. Without the laboratory this would have been almost impossible, due to the requirements of the Standard Hospitals Commission of the American Surgical Association.

A few cases of diphtheria developed during October in the village of Tobermory, County of Bruce. The presence of carriers was suspected and swabs were taken of all the available school children and adults. By this means two carriers were discovered and the Board of Health was enabled to take the necessary steps to prevent an epidemic.

The distribution of fresh biological products by the laboratory has been of great convenience to the doctors of Owen Sound and the surrounding district and is of benefit both to them and the community in the treatment and prevention of disease.

I have the honour to be, Sir,

Your obedient servant,

G. MURRAY FRASER,
Director Branch Laboratories.

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—															
Allenford	....	....	....	1	....	3	....	....	....	....	....	....	1	....	....
Chesley	....	....	....	8	1	2	....	....	....	....	....	....	.....	....	....
Hanover	4	3	....	....	....	....	....	1	....	....	....	....	.....	....	....
Hepworth	1	2	2	11	....	2	....	1	....	....	....	....	5	....	....
Lion's Head	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Mildmay	4	3	1	1	....	....	....	....	....	....	....	....	.....	....	....
Oliphant	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Paisley	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Port Elgin	....	....	....	1	....	4	....	1	....	....	....	....	.....	....	....
Southampton	....	....	....	1	....	....	....	....	....	....	....	....	.....	....	....
Tara	....	1	....	3	....	3	....	....	....	....	....	....	1	....	....
Tobermory	1	3	3	183	....	....	....	....	....	....	....	....	1	....	....
Walkerton	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	....
Wiarton	....	....	....	6	2	9	....	....	....	....	....	....	.....	....	....
Grey—															
Chatsworth	2	6	4	23	7	14	....	....	....	....	....	....	2	....	....
Desboro	....	....	....	....	2	1	....	....	....	....	....	....	1	....	....
Dundalk	....	1	....	1	....	2	....	....	....	....	....	....	.....	....	....
Durham	....	....	....	1	1	....	....	....	....	....	....	....	.....	....	....
East Linton	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Elmwood	....	....	....	3	....	....	....	....	....	....	....	....	.....	....	....
Flesherton	....	....	....	....	1	2	....	1	....	....	....	....	1	....	....
Keppel	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....
Kilsythe	....	....	....	....	1	....	....	....	....	....	....	....	.....	....	....
Markdale	....	....	....	2	....	5	....	4	....	....	....	....	.....	....	....
Meaford	7	4	2	3	....	....	....	....	....	....	....	....	.....	....	....
Owen Sound	67	72	60	252	19	128	10	19	....	12	2	3	101	....	....
Simcoe—															
Collingwood	....	....	....	1	....	....	....	....	....	....	....	....	.....	....	....
Totals	86	95	72	501	44	176	10	27	....	12	2	3	113	....	....

ONTARIO AT OWEN SOUND FOR THE YEAR 1922—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	5
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	11
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	8
3	3	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	3	....	....	33
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	1	1
1	2	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	18	....	....	30
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	1
...	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	1
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...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	2
2	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	12	....	1	24
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	191
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	2	3
...	8	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	26
1	3	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	2	34
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	5
1	2	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	7
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	2
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	1
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	5
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	14	....	....	19
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	2
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	1
1	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	13
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	1	17
72	182	....	....	....	...	...	...	...	...	...	...	...	...	...	....	129	....	60	....	75	1263
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	1
81	203	....	....	....	...	...	...	...	...	...	...	...	...	...	....	129	....	116	....	82	1752

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	+	—	+	—
Algoma—															
Bethnal															
Copper Cliff				2	1	8	1	2		2			2		
Creighton Mine				1											
Dalton															
Espanola															
Foleyet													3		
Gogama															
Gore Bay						1									
Little Current	3	38	20	241				1							
Manitowaning				1											
Shining Tree															
Turbine															
Nipissing—															
Burwash													1		
Cache Bay						1									
Capreol			1	3		2		2		3	1		3		
Coniston			1	3	1	1							2		
Field					1	3									
Garcon Mine						1									
Mattawa													1		
Nickleton															
North Bay	31	41	16	57	11	99	8	17		32	8	13	129		
Sellwood				3						1			1		
Sturgeon Falls	6	75	22	18	2	7		2			1	1	5		
Sudbury			2	6	1	19	1	7		27	4	5	81		
Verner													1		
Whitney															
Parry Sound—															
Burk's Falls				11		5				1	1		2		
Callander			1							1	1		1		
Pickerel				2											
Powassan		9	9	23	1	8	1	1							
South River		3	1	21		14									
Sundridge		8	2	6	4	16	5	6					1		
Trout Creek				1		1				1					
Renfrew—															
Cobden	1	3	1	4		1				1			3		
Thunder Bay—															
Grant															
Timiskaming—															
Ansonville				1									3		
Cobalt		2		12		3		1		7			10		
Cochrane				1	1	5	3	3		6			18		
Elk Lake															
Englehart	1		4	15	1	5	1				1		2		
Gowganda						3									
Haileybury				2	5	15	17	4			1		7		
Hearst								2							
Iroquois Falls			1	1	5	13	3	3		2			7		
Kapuskasing					2	4	1	2							
Kirkland Lake				1			1	1					7		
Larder Lake													2		
Matheson				3	1	2	1	1							
New Liskeard			1	5	3	21	6	3		4		1	20		
Schumacher					5	8		1					6		
Silver Centre															

ONTARIO AT NORTH BAY FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
																		3			3
																		17			35
	1																	3			5
																		2			2
																1		34			35
																					3
																		1			1
																					1
																		8			311
																		10			11
																		2			2
																		5			5
																					1
																					1
1	1																	35			52
																2					10
																					4
																					1
																					1
																		2			2
39	75															24		334		4	938
																		3			8
10	11															1		1			162
3	11																	67		3	237
																					1
	2																				2
1																1		27			49
																		1			5
																					2
																					52
	1																				40
																		4		1	53
	2																				5
																					14
	1																				1
																					4
	2																	33			70
																		25			62
																		3			3
3	3																				36
																		6			9
7	19															8		18			103
																		2			4
1	5																				41
																					9
	3															1		17			31
																					2
1	2																				11
1																		2			67
																		2			22
																		2			2

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	+	—	+	—
Timiskaming—Con.															
Smooth Rock Falls	....	....	....	....	....	1	1	....	....	....	....	....	1	....	...
South Porcupine..	....	....	....	2	2	4	1	....	....	1	1	1	5	....	...
Swastika.....	....	....	....	....	....	3	....	1	....	....	....	....	....	....	...
Timmins.....	4	1	4	4	4	44	10	6	....	10	3	6	52	....	...
Totals.....	46	180	86	450	51	318	61	66	....	99	22	27	376	....	..

Total for year—2,755.

ONTARIO AT NORTH BAY FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	1	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	4
2	5	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	24
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	5	....	1	10
7	11	....	....	....	...	...	...	..	..	...	...	...	...	...	....	1	....	19	....	....	186
76	156	....	....	....	...	...	...	..	..	...	...	...	...	...	....	39	....	693	....	9	2755

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	+	—	+	—
Algoma—															
Aberdeen Tp.															
Bar River															
Belleview						3									
Blind River						2									
Bruce Mines		6	1	4		3				1			1		
Chapleau				2	2	5						1	3		
Cutler															
Desbarats	15	243	13	231		3							5		
East Korah															
Espanola			10	62	5	28									
Foleyet															
Frater															
Gordon Lake															
Gore Bay	2	9	4	37		48									
Goudreau															
Hilton Beach						1									
Laird Tp															
Little Current						1									
Massey		5	9	49	1	1									
McDonald Tp.															
McLennan Tp.															
Nesterville						1		1							
Richard's Landing				1											
St. Joe's Island															
Sault Ste. Marie	59	88	95	348	39	114	3	7	2	50	23	30	174		
Thessalon				4						6		3	2		
Walford															
Webbwood				1											
Totals	76	351	132	739	47	166	3	8	2	57	23	34	185		

Total for the year—5,387.

ONTARIO AT SAULT STE. MARIE FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	2	2	...	2	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	1	7
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	4	1	22
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	16
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	6
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	7	...	4	529
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	15	15	...	...	141
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	57
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29	29	...	...	58
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	6	...	...	12
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	1	1	...	...	71
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	12
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14	14	...	...	29
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	833	243	1815	10	287	4317
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	11	3	1	41
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	3	3	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5	...	...	11
35	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...	849	363	1935	17	300	5387

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—															
Paisley	....	....	....	1	....	2	....	3	....	....	....	....	.....	....	...
Carleton—															
Orleans	....	2	....	1	....	....	....	....	....	....	....	....	.....	....	...
Ottawa	....	....	....	....	....	1	....	....	....	15	13	7	136	....	...
Stittsville	....	....	....	....	1	5	....	....	....	....	....	....	1	....	...
Richmond	....	....	....	....	....	1	....	....	....	....	....	....	.....	....	...
Westboro	....	....	....	....	....	....	....	....	....	....	....	....	3	....	...
Dundas—															
Chesterville	....	....	1	3	....	7	....	....	....	2	....	....	9	....	...
Iroquois	....	....	....	....	2	7	....	3	....	....	....	....	1	....	...
Winchester	....	....	....	1	1	....	....	1	....	....	....	....	2	....	...
Essex—															
Essex	....	....	....	....	....	2	....	2	....	....	....	....	.....	....	...
Frontenac—															
Harrowsmith	....	....	....	1	....	14	....	....	....	....	....	....	.....	....	...
Inverary	....	....	....	....	1	1	....	....	....	....	....	....	.....	....	...
Kingston	24	128	27	378	58	558	13	141	....	70	27	17	775	....	...
Portsmouth	1	....	....	11	3	13	45	44	....	31	30	1	654	....	...
Sharbot Lake	....	....	....	1	....	4	1	2	....	....	....	....	.....	....	...
Sydenham	....	....	....	....	....	2	1	1	....	....	....	....	.....	....	...
Verona	....	....	1	2	....	6	....	3	....	....	....	....	.....	....	...
Wolfe Island	....	....	....	....	....	6	....	....	....	....	....	....	.....	....	...
Glengarry—															
Alexandria	....	....	....	....	....	....	....	2	....	....	....	....	.....	....	...
Lancaster	....	....	3	5	....	....	....	....	....	....	....	....	.....	....	...
Grenville—															
Cardinal	....	....	1	3	....	4	3	4	....	1	....	....	10	....	...
Jasper	1	2	2	3	....	....	....	2	....	....	....	....	.....	....	...
Kemptville	....	....	1	4	1	8	1	1	....	....	....	....	.....	....	...
North Augusta	1	1	2	5	....	2	....	2	....	....	....	....	.....	....	...
Prescott	....	....	....	....	....	4	1	1	....	....	....	....	.....	....	...
Hastings—															
Belleville	1	2	5	27	6	41	6	25	....	12	2	....	28	....	...
Deseronto	....	....	....	5	....	6	....	2	....	....	....	....	1	....	...
Eldorado	....	....	....	....	....	....	....	8	....	....	....	....	.....	....	...
Foxboro	....	....	....	5	1	8	4	5	....	....	....	....	.....	....	...
Lindsay	....	....	....	....	....	....	....	....	....	....	....	....	1	....	...
Mailbank	....	....	....	....	1	1	....	....	....	....	....	....	.....	....	...
Shannonville	....	....	....	....	1	1	1	1	....	....	....	....	.....	....	...
Tweed	....	....	....	....	3	6	1	4	....	....	....	....	3	....	...
Lennox and Addington—															
Adolphustown	....	3	1	2	....	....	....	....	....	....	....	....	.....	....	...
Bath	1	7	3	3	....	3	....	1	....	....	....	....	.....	....	...
Flinton	....	....	....	....	1	3	1	2	....	....	....	....	.....	....	...
Napanee	....	2	5	17	2	17	7	40	....	2	....	....	7	....	...
Newburgh	....	....	1	....	1	4	....	....	....	....	....	....	.....	....	...
Odessa	....	....	2	....	....	5	1	....	....	....	....	....	2	....	...
Tamworth	2	4	....	3	....	2	....	1	....	1	....	....	2	....	...
Yarker	....	....	1	3	....	2	....	3	....	....	....	....	2	....	...
Lanark—															
Almonte	....	....	1	....	....	2	....	....	....	1	....	....	1	....	...
Carleton Place	....	4	2	9	3	3	8	14	....	2	....	....	11	....	...
Lanark	....	....	....	....	....	1	....	1	....	....	....	....	.....	....	...
McDonald's Cnrs.	....	....	....	....	....	2	....	....	....	....	....	....	.....	....	...
Perth	....	2	3	10	....	5	1	7	....	....	....	....	1	....	...
Smith's Falls	2	14	5	14	4	29	8	14	....	4	....	....	15	....	...

ONTARIO AT KINGSTON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk									Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives	Bacteriological										
									Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
																				6
																				3
26	26																2		7	233
																				7
																				1
																				3
																				22
3	1																			17
1	1																			7
																				4
																	5	3		23
																				2
101	31																381	43	155	2927
32																	60		2	927
																				8
																				4
1																				13
																				6
																				2
																				8
																	4			30
																	6			16
																	16			32
																	24			37
																	16			22
																	2		3	160
	1																3			18
	1																			9
																	1			24
																				1
																				2
																				4
	2																23			42
																				6
																	5			23
																	12			19
4	1																21		2	127
																				6
																	18			28
																				15
																				11
																				5
	1																			57
																				2
																				2
	1																3			33
6	4																27		3	149

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	+	−	+	−
Leeds—															
Brockville	....	3	1	7	1	4	6	11	....	4	1	....	26	....	...
Delta	....	....	....	1	1	1	....	....	....	1	....	....	2	....	...
Gananoque	3	6	3	5	2	16	1	6	....	....	....	....	.....	....	...
Lansdowne	....	1	....	1	1	4	4	2	....	....	....	....	.....	....	...
Lyn	....	....	....	2	....	....	....	....	....	....	....	....	.....	....	...
Mallorytown	....	....	....	1	....	3	....	....	....	....	....	....	.....	....	...
Newboro	....	....	....	....	1	1	....	....	....	....	....	....	.....	....	...
Seeley's Bay	....	....	....	2	2	5	....	1	....	....	....	....	2	....	...
Westport	....	....	....	2	....	2	....	....	....	1	1	....	2	....	...
Northumberland—															
Campbellford	....	1	....	3	....	3	....	....	....	....	....	....	.....	....	...
Colborne	....	....	....	2	....	1	3	4	....	....	....	....	.....	....	...
Cobourg	....	....	....	....	....	....	1	4	....	....	....	....	.....	....	...
Prince Edward—															
Picton	....	1	2	9	1	19	....	2	....	2	....	....	3	....	...
Renfrew—															
Arnprior	....	1	....	3	3	6	2	4	....	....	....	....	6	....	...
Cobden	....	2	2	16	....	5	....	....	....	....	....	....	1	....	...
Pembroke	....	....	....	1	6	21	2	4	....	1	....	....	.....	....	...
Renfrew	....	....	....	2	1	7	2	4	....	8	....	....	1	....	...
Westmeath	....	....	....	1	4	5	4	1	....	3	3	....	4	....	...
Stormont—															
Cornwall	....	....	4	3	14	40	1	8	....	17	4	1	20	....	...
Finch	....	....	....	....	....	2	....	....	....	....	....	....	.....	....	...
Moose Creek	....	....	....	1	....	1	....	1	....	....	....	....	.....	....	...
Newington	....	....	....	....	....	3	....	....	....	....	....	....	.....	....	...
Totals	36	186	79	579	127	937	129	392	....	178	81	26	1732	....	...

ONTARIO AT KINGSTON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial			
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	67	....	....	131
...	2	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	4
2	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	48
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	11	....	1	28
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	31	....	....	33
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	3	....	....	7
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	2
...	1	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	21	....	....	34
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	10
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	1	....	....	8
2	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	12
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	....	....	....	5
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	41
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	11	....	....	36
...	...	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	28
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1	8	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	2	....	....	123
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179	85	....	....	....	...	...	...	...	...	...	...	...	...	...	....	....	....	796	46	173	5761

Laboratories, Fort William, January 11th, 1923.

DR. J. W. S. MCCULLOUGH, D.P.H.,
Chief Officer of Health,
Toronto, Ont.

Sir,—I have the honour to submit herewith summarized report of the work done in the local laboratory during the year 1922. A summary of the last quarter of 1922 is also enclosed. Permit me to make the following remarks:

1. Marked increases over the previous year in diphtheria swabs, Widals, Wassermanns, dark fields, smears for gonorrhea, milk analysis, and water analysis, making a total increase of over 41% as compared to the 1921 figures.

2. The quality of the work has not suffered with the increase in quantity.

3. Sterile containers for all analyses have been prepared and sent out by this laboratory.

4. The Wassermann test is not only used by local practitioners as a means of diagnosis in Syphilis but also to check up the results of specific treatment. Our Wassermanns are done according to the method recommended by the Medical Research Council of the United Kingdom. I am a firm believer in using the same method consistently, always providing it is a good one; in that way sources of error are more easily detected and avoided. I have found the above method very satisfactory and have used it continuously for over five years.

5. Of the 28 dark fields examinations of suspected syphilitic sores made during the year, only one case has had a positive Wassermann. The 13 positive dark fields were from sores in cases seen early, within a few days of onset; prompt and efficient treatment was undoubtedly responsible for continued negative Wassermanns in 12 of the 13 cases. The one positive sore returning a positive Wassermann, we consider, was due to insufficient treatment, only four injections having been given in a period of over two months. The fifteen negative cases returned negative Wassermanns; these all remained negative without treatment, indicating the efficiency of dark field examination of sores in the early diagnosis of syphilis.

6. The increase in the number of bacteriological examinations of water indicate the result of perseverance in the policy of our District Health Officer to give constant and consistent attention to the purity of the various municipal water supplies for drinking purposes. "An ounce of prevention is worth a pound of cure."

Faithfully yours,

M. O. THOMAS,
Director of Laboratory.

LABORATORIES, FORT WILLIAM, ONT.

Summary of Analyses Made	Year 1922		Year 1921	
Diphtheria		1,129		688
Release swabs from quarantine				
Positive	216		97	
Negative	543		140	
Diagnosis				
Positive	50		101	
Negative	320		350	
Tuberculosis		255		347
Positive sputa	40		54	
Negative sputa	215		293	
Typhoid Fever		91		77
Positive, Widals	37		27	
Negative, Widals	54		50	
Positive blood cultures	6		..	
Syphilis:—				
Colloidal gold test		45		16
Wassermann test		1,141		886
Very strongly positive	231		151	
Strongly positive	20		13	
Positive	90		20	
Negative	800		702	
Treponema pallidum (dark field exam.)		28		13
Positive	13		7	
Negative	15		6	
Gonorrhea		392		266
Positive smears	107		75	
Negative smears	285		191	
Rabies (cases inoculated)	..		1	1
Milk Analyses		530		334
Fat content	530		326	
Total solids	..		1	
Preservatives	36		2	
Bacteriological count	42		5	
Water Analyses		992		390
Bacteriological	992		390	
Miscellaneous Specimens	594	594	611	611
Total for year		5,197		3,629

Biological Products Distributed.

	1922	1921
Diphtheria antitoxin	4,030,000 units.	5,195,000 units.
Tetanus antitoxin	185,000 units.	65,000 units.
Antimeningitis serum	45 vials.	10 vials.
Smallpox vaccine	3,500 points.	7,250 points.
Typhoid vaccine	60 bottles.	55 bottles.
Influenza vaccine	.....	25 bottles.
Pertussis vaccine	40 bottles.	80 bottles.
Silver nitrate ampoules	95 boxes.	85 boxes.

M. O. Thomas, M.B.

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															
Chapleau															
Conmee															
Dorion	1		1	40											
Dryden															
Emo						2	1	2							
Foleyet			1	1			1						1		
Fort Frances			2	24	1	6	2	3		2		2	7		
Fort William	199	524	25	203	23	148	25	39	39	179	17	78	617	12	14
Hymers															
Hornepayne															
Ignace						1									
Keewatin	10	11	10	14	4	16	3	5					3		
Kenora						1							1		
Murillo															
Neebing															
Nipigon										6	1		60		
Paipoonge															
Port Arthur	6	8	9	29	11	37	3	3	6	38	2	9	96	1	1
Port McDiarmid															
Rainy River						3		2							
Redditt															
Schreiber			2	3						1					
Sioux Lookout				6						5		1	15		
Stanley					1										
Stratton						1	2								
Sanitary Survey															
Unorganized Terr															
Totals	216	543	50	320	40	215	37	54	45	231	20	90	800	13	15

ONTARIO AT FORT WILLIAM FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk											Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological											
										Tubercle Bac.		Pus Cells									
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	3	....	....	3
1	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	...	....	....	1
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102	278	....	....	....	237	...	...	..	..	...	...	...	...	...	154	237	....	89	....	415	3263
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	2	....	....	2
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...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	4	....	....	4
2	4	....	....	....	293	...	...	36	..	...	...	...	...	42	282	293	....	120	....	149	827
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2	2	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	2	....	11	44
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...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	87	....	....	87
107	285	....	....	....	530	...	...	36	..	...	...	...	...	42	436	530	....	992	....	594	5197

M. O. THOMAS, M.B.

Branch Laboratories, Peterboro, January 4th, 1923.

H. M. LANCASTER,
Director of Laboratories,
Spadina House, Toronto.

Dear Mr. Lancaster,—

I beg to submit a report of work done by these laboratories during the year 1922. The total number of specimens examined and reported during the year is 4,197 as attached report. I trust that you will find this correct and in good order, and meets with your approval.

In connection with this work here, it has been gratifying to me to have had the co-operation of the medical profession of this district. I feel that it has filled a long felt need, and that it is going to justify its existence. There are many things which will adjust themselves in time, as the laboratories here are better known.

The work on diphtheria here has been a very important one. A total of 1,723 swabs were examined. Numbers of these cases I saw personally, and gave antitoxin intravenously with very beneficial results. I am pleased to report that the number of cases the last few months have been very few, indeed.

There was one case of cerebro-spinal meningitis in this area last spring. This case I saw with the attending physician, examined the fluid, gave a positive diagnosis almost immediately, and it was successfully treated, with apparently no ill effects.

The venereal disease problem here will soon be receiving more attention. So far the laboratory work has not been extensive, but the work is increasing and will do so from now on.

The milk supply to the city is about 60% raw milk. The examination of milk from time to time has been undertaken and I am pleased to report a vast improvement in its quality and cleanliness.

The problem of examining water supplies is ever one that needs to be carefully watched. There has been a large number of samples both from the city and the surrounding country examined last year, and this is largely due to the activity on the part of the Medical Officers of Health.

In submitting this I wish to thank you for your help and co-operation during the past year. I am,

Yours very truly,

A. Y. MCNAIR,
Director of Branch Laboratories.
Peterboro, Ont.

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	+	—	+	—
Peterboro	262	450	160	582	61	224	5	29	....	6	3	16	72	3	3
Otonabee	1	18	9	9	....	3	1	16	....	....	....	....	.....	....	...
Durham	....	1	....	1	....	1	....	....	....	....	....	....	.....	....	...
Lakefield	....	2	8	163	1	4	....	....	....	....	....	....	.....	....	...
Millbrook	....	10	5	3	1	6	2	4	....	....	....	....	.....	....	...
Marmora	1	6	2	6	....	7	2	2	....	....	....	....	.....	....	...
Omemee	....	....	1	3	....	3	1	7	....	....	....	....	.....	....	...
Smith	....	3	1	1	....	....	....	4	....	....	....	....	.....	....	...
Emily	....	....	....	4	....	6	1	12	....	....	....	....	.....	....	...
Cavan	....	1	2	2	....	4	3	7	....	....	....	....	2	....	...
Verulam	....	....	....	1	....	....	....	1	....	....	....	....	.....	....	...
Belleville	....	....	....	....	....	....	....	....	....	....	....	3	4	....	...
Ops	....	....	....	....	....	....	....	....	....	....	....	....	1	....	...
Burleigh	....	....	....	....	....	....	....	1	....	....	....	....	.....	....	...
Lindsay	1	1	....	3	2	2	1	1	....	....	....	1	3	....	...
Totals	265	492	188	778	65	260	16	84	....	6	3	20	82	1	3

ONTARIO AT PETERBORO FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
34	29	....	....	....	378	378	...	15	..	75	4	52	436	424	436	....	785	....	....	611	3769
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	2	....	....	59
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	....	....	....	3
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...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	4	....	....	35
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	6	....	....	32
...	2	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	18
...	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	1	....	....	10
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1	...	....	....	....	...	...	...	..	..	...	...	...	...	..	....	....	....	16	....	....	38
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1	...	....	....	....	...	...	...	..	..	...	...	...	...	...	....	....	....	2	....	....	19
36	31	....	....	....	378	378	...	15	..	75	4	52	436	...	424	436	....	785	....	611	4197

INSTITUTE OF PUBLIC HEALTH, LONDON, ONTARIO.

Summary of Quarterly Reports, 1922.

To the Provincial Board of Health:—

In reviewing the work done by the Institute of Public Health (the Faculty of Public Health of Western University, London, Canada), in one of its numerous capacities, acting as a branch laboratory of the Provincial Board of Health for Western Ontario, each of the four quarters of the year show some interesting items, as well as do the total figures for the whole year.

The figures for totals of each quarter are:

First	2919.
Second	2983.
Third	2561.
Fourth	3352.

The winter months naturally run higher in certain items than the summer months, as the following comparisons of certain main items (omitting specimens unsatisfactory for any reason) show:—

	Syphilis.	Diphtheria.	T.B. Sputa.	Milk Counts.	Water.	Misc., including liquor exams.
First	990.	528.	303.	240.	152.	242.
Second	998.	348.	355.	284.	297.	240.
Third	939.	204.	225.	230.	307.	170.
Fourth	1,042.	867.	183.	195.	381.	237.
	3,969.	1,947.	1,066.	949.	1,137.	889.

The heaviest single item numerically and involving much work is syphilis, the tests approximating 4,000 (omitting 180 unsatisfactory results which, however, involved just as much work and expense). Of these syphilis tests, rather more than 90% were Wassermann tests, the rest (326) being Colloidal Gold tests of spinal fluid. These tests at $5.00 are commercially worth nearly $20.00 but are supplied absolutely free of expense to the patients or physicians concerned.

In this single and relatively small item alone, then, of its total operations, the Institute earns, commercially, nearly one-half its total cost.

In addition to the laboratory work thus done, free to the public and also at no expense to the Provincial Board of Health, about 4,000 specimens, not recorded here, were examined for clinical diagnosis, at cost or less, these including all forms of examination *not* offered free by the Provincial Board of Health in any of its laboratories. These examinations, however, are not reportable to the Provincial Board and do not appear in any of the reports made at any time, to the Board.

The increase in the work done at the Institute for the Provincial Board of Health but without cost to the said Board and covering about 150 municipalities, averages about 10% annually. As previously pointed out, it will soon be impossible, without additional help, to cover this work. Attempts are now being made to secure such additional help from University sources.

The Institute acts also as a depot for the Biological products of the Provincial Board for this part of Ontario, this service also being free of expense to the Provincial Board, as well as to the local boards, physicians and public.

Very sincerely yours,

(Sgd.) H. W. HILL,
Director.

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	+	−	+	−
Brant—															
Brantford	....	....	....	....	....	1	11	5	1	43	14	1	147	....	....
Cainsville	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Mount Pleasant	....	....	....	....	1	....	....	....	....	2	....	....	1	..	....
Paris	....	....	....	....	....	1	....	2	....	....	....	....	3	....	....
St. George	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Bruce—															
Cargill	....	....	....	....	....	....	3	1	....	....	....	....	....	....	....
Hepworth	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Kincardine	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....
Lucknow	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Mildmay	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Ripley	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
Teeswater	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Tiverton	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Walkerton	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carleton—															
Ottawa	....	....	....	....	....	....	....	....	22	3	....	....	22	....	....
Dufferin—															
Grand Valley	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Durham—															
Bethany	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Elgin—															
Aylmer	....	1	....	1	1	4	....	....	1	1	....	1	18	....	....
Dutton	....	....	....	3	....	1	....	....	....	....	....	....	2	....	....
Fingal	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Harrietsville	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lawrence Sta	....	1	....	1	....	....	1	2	....	1	....	....	1	....	....
Port Burwell	....	....	....	1	....	1	....	....	....	....	....	....	11	....	....
Port Stanley	....	....	....	....	....	3	....	....	....	1	....	....	1	....	....
Rodney	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
St. Thomas	....	....	....	....	2	14	....	1	6	16	3	....	48	....	....
Shedden	....	....	....	2	....	2	....	....	....	....	....	....	1	....	....
Sparta	....	....	....	....	1	5	....	....	....	....	....	....	1	....	....
Springfield	....	....	....	....	....	....	....	1	....	....	....	....	2	....	....
Wallacetown	....	2	....	....	....	2	....	....	....	....	....	....	....	....	....
West Lorne	....	2	....	2	....	1	....	3	....	....	....	....	1	....	....
Essex—															
Amherstburg	....	1	....	3	....	....	....	1	....	....	1	....	2	....	....
Belle River	....	....	....	....	....	....	....	....	....	....	....	....	5	....	....
Comber	....	....	....	2	....	....	....	1	....	....	....	....	....	....	....
Cottam	....	....	....	2	....	9	....	....	....	....	....	....	5	....	....
Essex	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Harrow	....	3	2	2	....	....	....	....	....	....	....	....	....	....	....
Kingsville	1	1	1	5	....	....	....	1	....	....	....	....	1	....	....
Leamington	1	6	....	3	1	....	1	....	....	3	....	....	4	....	....
Stoney Point	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
Tilbury	1	5	....	164	....	2	....	1	....	....	....	....	....	....	....
Walkerville	....	....	....	....	....	....	....	....	....	5	7	....	29	....	....
Windsor	....	....	....	....	....	1	....	....	3	111	31	10	393	....	....
Grey—															
Hanover	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Huron—															
Bayfield	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Blythe	....	....	....	1	1	3	....	....	....	....	....	....	1	....	....
Clinton	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Crediton	....	1	....	2	1	5	....	....	....	....	....	....	....	....	....
Dashwood	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....
Ethel	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....

ONTARIO AT LONDON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial		
2																			5	230
																				1
																				4
																	2	2		7
																				1
																				4
																				1
																				6
																	7	8		16
																				2
																				1
																			1	2
																	1		1	2
																			3	3
	3																		1	51
																			1	1
																			2	2
																	29	29		86
	1																		2	9
																				1
																	3	3	1	7
																		1		8
1	1																			15
	1																		1	7
																				1
																			7	97
																			1	6
	2																			9
																	1	1		5
																			2	6
																	1	1	3	14
	1																			9
																				5
																	4	4		11
																			6	24
																	38	35		74
																				7
																	7	7	1	25
1	1																4	4	3	32
																	9	9		19
2																	2	2		179
4	1																			46
																			3	542
																	2	2	1	5
																1	1			2
																				5
																				1
																	13	13		34
																				3
																			1	3

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	+	—	+	—
Huron—Con.															
Exeter	1	1	1	3		3									
Goderich				3	1	6	4	2		1			4		
Hensall		1		6		4									
Kirkton	1	3	1	1		2									
Seaforth	2	6	1	3	1	1	1	2	1				1		
Wingham				2	3	12		4					1		
Zurich				1		9		1					1		
Kent—															
Blenheim					2	9	1	6		2	4		3		
Chatham		6	8	21	4	30	6	11		28	1		66		
Dresden				1		6	1	7							
Duart						3		1					1		
Highgate										1			2		
Merlin		2	5	12		2	1						5		
Ridgetown	1	9	2	5	3	16		9		1			1		
Thamesville						6	1	7	1	1			9		
Tupperville						3			1	2			10		
Wallaceburg			1		1	12	1	3		2	1		22		
Wheatly				1		3		1	1				1		
Lambton—															
Alvinston						1			1						
Arkona				1			2						2		
Brigden						1				1			2		
Camlachie				5		1		3							
Courtright						1									
Florence					3										
Forest			1	11	1	6	4	2					2		
Oil Springs				1		1									
Petrolia	1	5	3	11		10	1	3							
Port Lambton								1					1		
Sarnia	1	4	3	16	1	15	1	6		17	7		56		
Thedford				4		3									
Watford						7	1	3					2		
Wyoming				1											
Middlesex—															
Adelaide															
Ailsa Craig		1	1												
Appin				1											
Arva		3		59									1		
Belmont				3		1		1							
Byron										4			3		
Delaware															
Dorchester				2	1	6		5		2			4		
Glencoe						1									
Granton				6		5	1	7							
Hyde Park						2				1			13		
Ilderton								1					2		
Komoka															
Lambeth				1	6	2				2			3		
London	86	235	72	930	87	430	38	66	178	322	88	12	1498		
Lucan				2		1	1	3							
Melbourne								2					2		
Mount Brydges		3	1	5	3	7	1						4		
Newbury				1	1	4									
Parkhill				2		2	4	1					1		
Putman						1									
St. Johns						3							2		
Strathroy				1	3	11	1	1			1		4		

ONTARIO AT LONDON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhea		Rabies Diagnosis				Milk										Waters				
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial	Liquors for License Department	Miscellaneous Specimens	Total for Year
...	3																2	2	....	5	22
4	1															96	20	12	....	5	158
...	...																...	...	....	1	12
...	...																3	3	....	....	14
...	1																5	5	....	4	34
...	3															1	1	1	....	4	28
...	...																1	1	....	....	13
...	...																1	1	....	....	28
7	5															1	6	157	....	17	374
...	...																...	...	....	1	16
...	2																11	11	....	....	29
...	...																...	...	....	....	3
...	...																...	...	....	1	28
...	1																4	4	....	6	62
1	8																10	10	....	....	54
...	...																...	...	....	1	17
1	3															9	11	11	....	....	78
...	...																...	...	....	....	7
...	...																28	28	....	....	58
...	...																...	...	....	1	6
...	...																2	2	....	....	8
...	...																2	2	....	....	13
...	...																2	2	....	....	5
...	...																...	...	....	....	3
2	3																2	2	....	5	49
...	...																...	...	....	2	4
...	...																4	4	....	....	42
1	1																...	...	....	1	5
7	19															45	14	21	....	5	238
...	...																...	...	....	1	8
...	2																23	23	....	5	66
...	...																...	...	....	....	1
...	...																...	...	....	1	1
...	...																1	1	....	....	4
...	...																...	...	....	....	1
...	1																1	3	....	2	70
...	...																...	...	....	1	6
...	...															12	...	...	....	9	28
...	...																1	1	....	....	2
1	...																...	...	....	1	22
...	...																1	1	....	2	5
...	...																...	...	....	....	19
...	4																...	...	....	2	22
...	...																...	...	....	....	3
...	...																5	5	....	....	10
...	...																2	2	....	2	20
77	262															1535	39	145	34	574	6707
...	...																2	2	....	1	12
...	...																...	...	....	3	7
...	...																3	3	....	3	33
...	3																...	...	....	1	10
...	...																1	1	....	1	12
...	...																...	...	....	....	1
...	...																...	...	....	2	7
...	...																6	6	....	13	47

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	+	—	+	—
Middlesex—Cont.															
Thorndale	7	21	5	15	....	8	1	7	....	....	....	....	....	....	....
Wardsville	....	....	....	....	....	3	....	....	....	....	....	....	2	....	....
Muskoka and Parry Sound—															
Huntsville	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Parry Sound	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....
Severn Bridges	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
Norfolk—															
Courtland	....	....	....	....	....	1	....	....	....	....	....	....	4	....	....
Port Dover	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Simcoe	....	....	2	1	....	....	1	2	....	....	....	....	....	....	....
Northumberland—															
Campbellford	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ontario—															
Foley	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....
Whitby	....	....	....	....	....	1	....	....	30	21	1	....	28	....	....
Oxford—															
Beachville	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Brownsville	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....
Burgessville	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....
Drumbo	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....
Embro	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ingersoll	....	1	2	12	2	18	1	5	1	5	2	....	15	....	....
Innerkip	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Lakeside	....	....	....	3	....	1	....	....	....	....	....	....	....	....	....
Mount Elgin	....	2	1	2	....	1	....	....	....	....	....	....	....	....	....
Plattsville	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Princeton	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Tavistock	....	....	....	....	1	2	....	....	....	....	....	....	1	....	....
Thamesford	....	....	1	3	....	....	....	1	....	1	1	....	2	....	....
Tillsonburg	....	....	....	4	....	....	2	8	....	1	....	....	1	....	....
Woodstock	....	....	....	10	3	54	4	5	1	11	2	....	44	....	....
Perth—															
Atwood	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dublin	....	....	....	3	1	2	....	1	....	....	....	....	1	....	....
Listowel	....	1	1	1	....	2	....	3	1	2	1	....	3	....	....
Milverton	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....
Mitchell	....	....	....	5	....	1	6	4	1	....	1	....	5	....	....
St. Mary's	....	....	....	3	3	9	1	3	....	....	....	....	1	....	....
Sebringville	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....
Shakespeare	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Stratford	....	3	4	17	10	46	5	9	4	12	3	1	66	....	....
Simcoe—															
Cookstown	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Waterloo—															
Ayr	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Baden	....	....	....	1	....	3	....	....	....	....	....	....	....	....	....
Galt	....	....	....	....	....	3	1	3	....	2	....	....	7	....	....
Hespeler	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Kitchener	2	10	1	8	2	8	1	3	2	16	5	2	85	....	....
New Dundee	....	....	....	1	1	6	....	....	1	1	....	....	1	....	....
New Hamburg	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....
Preston	....	....	....	....	1	1	....	....	....	....	....	....	1	....	....
Waterloo	....	....	....	7	1	3	1	1	....	1	....	....	2	....	....
Wellersley	....	....	....	5	1	8	....	2	....	1	....	....	1	....	....
Welland—															
Chippawa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Niagara Falls	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

ONTARIO AT LONDON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial		
	1																1	1		24	81
																					5
																	4				4
																					2
																					1
																					5
																				1	1
																					6
																				1	1
																					2
	1																			1	83
																					1
																					2
																					2
																					2
																	1	1			2
1	1																7	7		7	87
																					1
																					4
																				2	8
																				1	1
																					2
2	3																			1	10
																				2	11
	6																18	18		1	59
2	3															1	35	35		10	220
																				1	1
																					8
3																	16	16		6	36
																	1	1		2	6
																				2	25
																				2	22
																					3
																				1	2
24	19																			24	247
																					1
																					1
																					4
1	1																6	6		9	37
																					1
	7																			27	179
																					10
																	2	2			6
																					3
																				1	17
																				2	20
																				1	1
																				3	3

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	+	—	+	—
Wellington—															
Glen Allen	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
Guelph	....	....	1	....	....	....	....	2	66	67	13	....	173	....	....
Harriston	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....
Morriston	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....
Mount Forest	....	....	....	....	....	....	....	1	5	1	1	....	6	....	....
Wentworth—															
Lynden	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Sheffield	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Totals	105	341	122	1427	167	908	114	241	326	719	189	29	2886	....	....

ONTARIO AT LONDON FOR THE YEAR 1922.—SPECIMENS EXAMINED.

Gonorrhœa		Rabies Diagnosis				Milk										Waters		Liquors for License Department	Miscellaneous Specimens	Total for Year
			Negri Bodies			Food Content		Preservatives		Bacteriological										
										Tubercle Bac.		Pus Cells								
+	—	Animal	+	—	Animal Inoculations	Fats	Total Solids	+	—	+	—	+	—	Count	Extraneous Matter	Number of Milk Samples	Chemical	Bacterial		
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	1
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	5	5	6	238
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	2	2	3	9
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	1	3
1	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	1	16
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	1	2
...	...	....	....	....	....	...	...	..	..	...	...	...	...	...	....	....	....	....	....	1
146	377	....	....	....	....	...	...	..	..	...	...	...	...	...	....	1701	435	688	34	873	11828

ANNUAL REPORT, DIVISION OF INDUSTRIAL HYGIENE.

The provision of facilities within plants for the prevention of sickness and accident by industry itself is the most important step in the progress of industrial hygiene. It is calculated that in the United States about 8,000,000, or 20% of the total number of wage earners now enjoy the benefits of such service.

It is significant that once established, employers have seldom, if ever, discontinued their efforts in sickness prevention even in times of industrial depression. It has been shown repeatedly in Great Britain and the United States, that the establishment of such service is in every way practicable, yielding adequate returns for the investment involved but not before a waiting period of probably two years following its installation. Under industrial conditions, such as have predominated during the past two or three years, this proves a stumbling block to many who realize at least in part the importance of the loss to worker and employer brought about by an average of eight or nine days' sickness per wage earner per year.

During the past year the Division of Industrial Hygiene has attempted in various ways to stimulate an interest among employers, employees, and physicians in what can be accomplished in this field.

Meetings with prominent employers have been arranged and means of promoting this phase of the work discussed. With improvement in industrial conditions this should bear fruit.

No new full-time physicians have been appointed to industry.

A number of plants having hazardous processes now employ the services of physicians for the periodic examination of their employees.

The number of nurses in industry in Ontario has increased.

A number of employers are now providing facilities for keeping record of lost time due to sickness among their wage earners. This is the first step toward the reduction of a loss, the magnitude of which is little appreciated by most employers.

A small demand has been created among employers and physicians for information on special problems dealing with health in industry. This phase of the work should grow rapidly now that a beginning has been made.

This demand emphasizes again the need for an addition to the staff of the Division in the person of one with basic training in engineering or architecture, who will study the health requirements of industry from a structural stand point, familiarize himself with the application of recent knowledge added to the subjects of ventilation, heating, lighting, etc., to different conditions obtaining from plant to plant, and with information regarding the different types of equipment on the market intended to meet the requirements. Too often employers place orders for such special equipment without regard for the work it should do; but, what is of even more importance, under such conditions the order may be filled by the manufacturing establishment in the same haphazard manner. Attention of employers is being drawn to the fact that firms manufacturing sanitary equipment especially for ventilation purposes maintain a staff of engineers who will study their individual problem and manufacture the equipment to meet it.

The attention of physicians is constantly drawn to the importance of the occupational factor in diagnosis.

A compilation of the literature dealing with lead poisoning, including the main processes in which it is used, points in diagnosis, means of prevention,

and legislation has been completed. This is a big undertaking but should be of interest and value to physicians and maintain for us closer contact with others working in the same field.

As a result of information obtained regarding the amount and kind of occupational disease existing, certain recommendations for additional training in toxicology for medical students at the university have been made.

Examples of the type of problem submitted to us, include:

(1) Ventilation of a foundry.

(2) Poisoning from the use of lead arsenate to kill the Tussock moth on trees.

(3) Skin eruptions in the dye room of a woollen mill.

(4) Effects of sulphur dioxide in the pulp and paper industry.

(5) Metol poisoning in photography.

(6) Skin eruptions from the use of ursol in fur dyeing.

(7) Precautions against poisoning in the proposed construction of a plant for lead smelting and refining.

(8) Dermatitis in the use of cutting oils.

(9) Information as to whether more infection arises from splinters in the handling of oak than from handling other hard woods in the woodworking industry. In this connection a concentrated effort is being made in a small group of woodworking plants to show the extent to which it is possible to reduce the lost time from infection of minor injuries.

(10) Suggestions for first aid in mines.

(11) Skin eruption among chocolate dippers.

In such cases examinations of the employees affected and of conditions of work are conducted and recommendations to avoid recurrence made.

Investigations of Poisoning in Certain Hazardous Occupations.

These have dealt mainly with the incidence of lead poisoning and, what is in some industries inseparable from it, poisoning from the use of volatile substances such as benzol, benzine, turpentine, wood alcohol, etc., as follows:—

1. *House Painters and Decorators.*

132 men were examined, 33% were over 50 years of age and 60% had been for 20 years or more at the trade. Complaints and defects which might be due to the substances used in the work were found in 61% of the men examined. But only 10 (or 7.5%) had these complaints or defects in sufficient number or severity to present a clinical picture of a case of trade poisoning. Opinion varies as to what constitutes lead poisoning. The United States Public Health Service has suggested a standard classification for cases and has used it in its investigation of cases of lead poisoning among pottery workers.

(1) Positive
  (a) Acute
  (b) Chronic
(2) Presumptive
(3) Suggestive
(4) Negative for lead poisoning.

In accordance with this classification, there was one acute case and nine cases which would be called suggestive. Although some of the signs and symptoms were those of lead poisoning, these cases should be considered to be complicated by the volatile bodies used. In no case was lead found in the urine, nor basophilic granules in the red blood cells, nor a blue line on the gums. 13 painters

(or 10%) gave a history suggestive of a previous attack of lead poisoning; 11 having had colic and 2 paralyses; all but 3 had occurred 15–20 years ago and none had occurred since 5 years ago. It was about 10 years ago that ready mixed and leadless paints became fairly common on the market.

Slight but acute intoxications from volatile bodies were numerous. The use of "flat" paint in small, poorly ventilated rooms gave the highest number; 30 cases, or 23% were found. The volatile bodies in this work were turpentine and benzine. In addition, 9 cases, or 8%, gave a history of acute attacks from turpentine not used in "flat" paint. 50% of all the painters examined complained of the effects of turpentine and flat paints. Shellacing, with its use of methylated spirits, wood alcohol, or denatured alcohol, was next on the list for acute intoxications, but no cases were found where the eyes had been seriously affected, as shown by mistiness or cloudiness of vision. A few acute cases occurred in the use of varnish and volatile paint removers.

The outstanding complaints and defects found in painters were poor appetite, indigestion, constipation, pyorrhoea and bad teeth, frequent coughs and colds (but with few physical signs in the chest), nocturnal polyuria, high blood pressure, hardened arteries, pallor of the face but with normal hæmoglobin readings, headaches and neuralgia.

2. *Furniture Finishers.*

Twenty-four furniture factories were visited in Ontario towns and 195 finishers were examined. The majority were between 20 and 40 years of age; 18% were over 40 and 8% over 50 years of age. 32% had been over 20 years at the trade.

70% of the men examined showed no signs and had no complaint to make of the substances with which they worked. 30% had complaints or showed defects which might be due to the nature of their work. But only 10% of all the finishers had enough associated symptoms or signs to be considered affected to any extent by these volatile bodies used, and of these, 19 men, 6 were mild cases.

Over 40 men who used the spray painting machine were included in the 195. 58% of these men had complaints to make of the work, but the complaints and the physical defects found were milder than for finishers in general. Of the 10% referred to above as more seriously affected, over half were spray painters.

Few complaints could be referred to any one special substance used; general fumes must be given as the cause. This differs very much from the findings in painters and decorators. Again no eye symptoms from methylated spirits were found. Owing to the similarity of the effects of different volatile substances, the exposure to combined fumes in the finishing rooms, and the absence or scarcity of physical findings to corroborate the subjective symptoms, no definite diagnosis of acute or chronic poisoning from any one substance could be made.

But the finding of suggestive symptoms in work where poisonous substances were known to be used, called for precautions to be taken and every possible means used for keeping the concentration of such poisons as low as possible.

The outstanding complaints and defects noted were poor morning appetite, indigestion, constipation (the teeth and gums were very healthy as compared with the painters) throat irritation and expectoration, pallor of face with normal haemoglobin; headaches, dizziness and change in weight.

3. *Spray Painting.*

With further reference to the spray painters, a report of the hazard to the health from the use of lead paint in spray machines was published in "The Journal of Industrial Hygiene," Vol. III, No. 12. Further experiments were carried out to complete the investigation by determining the hazards to the health in outdoor spray painting. The risk was found to be very small where plain surfaces were being painted provided the operator took advantage of the prevailing air currents. But where the surface to be painted had numerous angles and jutting parts (e.g., in painting the under structure of railway cars) there was danger from the backspray and air currents even when a long handle was provided for the spray nozzle.

Coincident with this investigation some experiments have been conducted with mice to study the effects of exposure to volatile substances in concentrations lower than that which produces acute symptoms and the effect of repeated exposures to concentrations which produce acute poisoning but from which the animal was removed as soon as any signs were noticed. These conditions more nearly approach those met with among house painters and furniture finishers. So far the experiments point to a fairly high degree of poisoning from such conditions of high concentration and exposure. They have not been completed yet, however.

4. *Storage Batteries.*

There are three plants in Ontario where storage batteries are made. The risks in this trade are lead poisoning, poisoning from arseniuretted hydrogen, and acid fumes. The two latter were not found. Fifty-five men were examined. There were three cases of previous lead poisoning (one a sawyer of lead plates, one engaged in cleaning up the room in which lead paste was used, and one assembling plates.) Two men showed lead absorption by the blue line on their gums but had no symptoms. Two others had suggestive symptoms of lead absorption but no corroborating physical signs. Analysis of the air were made in all branches of the work to find out how much lead was being breathed in by the workmen. Near the saws and the grinders or buffers dangerous amounts were found.

Recommendations for the prevention of lead poisoning in the individual plants have been forwarded.

5. *Paint Manufacturing Plants.*

Investigation among this group of workers is not yet complete.

6. *Acute Benzol Poisoning.*

A case of acute benzol poisoning was studied. A large tank was being painted with a coal tar paint diluted with benzol. One painter died and one recovered. The autopsy showed that there was no tendency for the blood to coagulate, no pathological condition and death was caused by asphyxia. The one who recovered was normal when examined. This case was interesting for, by proper precautions and the testing of the concentration of fumes by rabbits, which are very sensitive to the fumes, the work was finished without trouble. Estimations of the concentration of benzol in the air under the new conditions showed a non-toxic amount.

Miners' Phthisis.

Report of the Miners' Phthisis investigation has been completed. During the past year this work was extended to other large mines. The dust counts showed similar conditions to be existing. The cases of incipient Miners' Phthisis discovered have been followed up and are all engaged in other occupations in the mining camps.

Desirable Future Development.

One outstanding feature in the reports of investigations submitted to date has been the part played by "history of exposure" and "symptoms" in the diagnosis, and the frequent absence of "physical signs" which can be detected by any known means. For the purpose of keeping the employee in health accurate knowledge of exposure to poisoning with the presence of two or three major symptoms might justify the physican in recommending a temporary change of job. For purposes of compensation, however, and for a determination of the influence of daily exposure to minute doses of poisonous substances on the incidence and severity of intercurrent disease, more accurate knowledge is necessary. This cannot be obtained until provision is made for their study in special industrial or general medical clinics. It is hoped that some move in this direction may be made here soon.

Acknowledgment is gladly made of the repeated assistance which the Division has received from other Divisions in the Board of Health and from District Officers. The help of physicians, employees' representatives and certain employers has been no small factor in accomplishing what it has been possible to do.

J. G. CUNNINGHAM, M.B.
Director.

ANNUAL REPORT DIVISION OF PUBLIC HEALTH EDUCATION

I have the honour to submit the following report of the Division of Public Health Education for the year ending December 31st, 1922.

The motto of the Provincial Board of Health "Ne pereat populus scientia absente," let not the people suffer through lack of information, has been the guiding principle of this Division all through the year. All the available means for getting health information to the people have been tried out, and though there is still much work to be done, the response to our efforts has been very gratifying.

I have again to thank the Women's Institutes throughout the Province for their hearty co-operation in all our efforts. Whenever we want any assistance in health publicity, distribution of literature, etc., Mr. Putnam, the Superintendent, and all the local presidents of Institutes scattered far and wide throughout the province willingly offer their assistance.

One of the chief difficulties Public Health Officials have to deal with in educational work is to get in contact with that class of people who are most in need of Health Education. Time and time again we find ourselves holding a Public Health meeting and the audience is to a large extent made up of people who are already enthusiastically in favour of the reforms proposed. I find the same difficulty in every centre of Public Health activity and yet the problem of getting the ear of the unconverted still remains unsolved.

Even in Medical Society meetings there is a tendency for the local physicians only to come to the meetings when the particular subject in which they are interested is up for discussion. There should be more broadening out by diffusing the information we have to those who have it not, and yet somehow or other practising physicians do not, as a class, have the time or the inclination for keeping abreast of the latest developments in Public Health work. Still though there is room for new and hitherto untried methods of public health education we must not minimize the importance of those already in use.

One of the most effective means of carrying public health information to the rural districts is through the columns of the local newspaper. Consequently over 220 weeklies are now supplied with our article of interest to health and the number of weekly newspapers is for ever being added to. That these articles reach many people whom it would be otherwise impossible to reach is abundantly proved by inquiries from correspondents, who are continually writing for information on health matters.

Once in a while this correspondence also shows how much education is necessary, for certain people do not as yet seem to realize the difference between preventive and curative medicine. One inquirer, after writing how much he appreciated my articles on Public Health, asked if I could suggest a cure for a floating kidney. But on the whole the public seems to be becoming acquainted with the nature and purpose of Public Health and Hygiene as they have never been before.

During the month of June a demonstration was carried out in Lanark County by the Division of Child Welfare with a view to the appointment of one or more Public Health Nurses for the county. In connection with this demonstration I addressed meetings at Maberly, Innisville, Perth, Smith's Falls and Montague. Much interest in the question of Child Welfare was in evidence as the result of these meetings, but the most lasting benefits to the people came through the work of the Public Health Nurses themselves who

carried on their educative work in Lanark County for many weeks, going into the homes of the people, examining school children for physical defects, advising mothers regarding the feeding and care of their children. It is only by such direct contact with the people that we may hope for success in getting the co-operation of the public in the work that is being done in the interests of Child Welfare.

An innovation in Health Education was introduced last year at the Canadian National Exhibition, in the form of radio talks. Through the courtesy of the Exhibition management, and the Toronto Daily Star, arrangements were made to broadcast a health talk every day as part of the radio programme at the Exhibition grounds. This was so successful that the talks were broadcasted at all the Fall Fairs which were held during the weeks following the Toronto Exhibition.

Practically everybody realizes that prevention is better than cure. It is more advisable from a health point of view to be warned in time as to how one's health and physical condition may be maintained, than wait until sickness lays one low. With this end in view a number of booths were erected in the Public Health Exhibit where those anxious to gain information about their health could make inquiries. Physicians were in attendance to answer questions, and though no diagnoses were made, advice and literature were freely offered. Such a procedure cannot do anything but good, as it interests the public in the condition of individual health and provides an opportunity for detecting early symptoms and having them commented on before the condition becomes too serious. How often we hear the remark, "Oh, he wasn't sick enough to call a doctor," when the doctor should have been in attendance from the start. The value of periodic physical examinations cannot be overestimated if the health of the people is to be kept up to a satisfactory level.

The Division of Child Welfare, Industrial Hygiene, Laboratories, Preventable Diseases, Sanitary Engineering and the Registrar General's Department, all had attractive booths which made this year's exhibit at the Exhibition one of the finest displays yet held. Visitors from U.S.A. commented very favourably on the diversity of subjects touched upon and said that nothing they had seen at any of the State Fairs in United States was in any way equal to the exhibit of the Provincial Board of Health.

Much assistance in the work of visual education in health matters has been effected by the purchase of a new Pathescope machine and one or two new films. One of these films is entitled "Baby's Bath and Toilet", and is especially interesting for publicity in the Division of Child Welfare. Two of the nurses have been instructed in the use of the Pathescope machine so that they will be able to show the films at public meetings throughout the province.

The eighth annual conference of the Ontario Health Officers' Association held in Toronto on May 29th and 30th was a great success. The programme included an address on "Food Poisoning" by Dr. M. J. Rosenau, professor of Hygiene at Harvard and a number of papers dealing with the problem of providing a clean and safe milk supply. An interesting discussion followed.

Dr. J. W. Shaw of Clinton, the president of the Ontario Health Officers' Association, gave a forceful address and urged the necessity for immediate action in bringing about much-needed reforms. Other interesting papers were:—"Public Health Organization," by Dr. Jas. Roberts, M.O.H., Hamilton; "Some suggestions from the Ontario Medical Association," by Dr. F. J. Farley; "Some Modern Fallacies," by Dr. H. W. Hill, London; "Pre-Natal Care," by Dr. W. W. Lailey, Toronto; "More efficient care for Mothers," by Dr. C. J. O. Hastings;

"Squint," by Dr. Colin Campbell, Toronto; "Soil Pollution," by Mr. F. A. Dallyn, C.E.; "How to Control Diphtheria in a Small Country Village," by Dr. J. A. Morgan, Peterborough.

The Sanitary Condition of rural schools in some parts of the Province still gives rise to anxiety. Especially as regards the water supply for drinking purposes, much remains to be done if epidemics of typhoid or other communicable diseases are to be prevented. In many cases marked improvement has been noted in the M.O.H.'s report on the Sanitary Conditions of schools but in other instances the conditions are just about as bad as they were ten or fifteen years ago. Who is responsible for these conditions? Is it the school trustee, the teacher, the parent or the M.O.H.? There is one thing certain—drinking water should be clean and free from infection otherwise there are sure to be outbreaks of communicable diseases.

New pamphlets have been prepared for distribution, among which are: "Mouth Hygiene," "Care of the Eyes," "Value of Quarantine in Communicable Diseases" and the "Schick test for Diphtheria." Another edition of the Public Health Almanac has been printed and already thousand of copies have been distributed. Requests for bundles of copies come in daily for weeks after the first batches are sent out. These requests come from Medical Officers of Health, School Boards, Women's Institutes and private individuals.

I would again recommend the appointment of one or more teachers in the Division of Public Health Education. What is urgently needed is continual propaganda in the field, for though sporadic demonstrations and speech-making do much good, the public lose enthusiasm when the demonstration is over and no follow-up work is carried on. Particularly is this the case where attempts are made to have a public health nurse appointed, but wherever public health education is needed, there must be reiteration and more reiteration before the health message is adequately impressed on the public.

J. J. MIDDLETON, M.B., D.P.H.,

Director.

DIVISION OF PREVENTABLE DISEASES, PROVINCIAL BOARD OF HEALTH.

I have the honour to submit the following report of the activities of the Division of Venereal Diseases for the year ending December 31st, 1922.

1. *Name.*

The name of the Division was changed to the Division of Preventable Diseases by Order-in-Council on October 10th, 1922. The Division has therefore as yet done very little work under the latter heading but the work, as in other years, has been practically confined to the prevention of venereal disease.

2. *Personnel.*

The personnel of the Division during the past year has fluctuated slightly. Dr. Guyatt, one of the clinical specialists, resigned in April on account of ill-health. During the summer months until September there were only two physicians but in September, Dr. A. L. McKay was added to the staff in place of Dr. Guyatt. The Division, therefore, now has three physicians, one social service nurse, and one stenographer.

3. *Finance.*

The amount of money available for the work of the Division during the year was $120,000, of which $57,473.68 was advanced by the Dominion Government.

4. *Diagnosis.*

(a) Laboratories.

There are now nine Provincial laboratories in the Province where, in addition to other public health laboratory work, Wassermanns, dark field examinations for spirochaetes and examinations of smears for gonococci are carried out free of charge. These laboratories are much appreciated by the practicing physicians and are kept very busy. The number of venereal disease examinations made by these laboratories follows:—

Laboratory.	Wassermanns			Dark Field Examinations			G.C. Examinations			
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Susp.	Total
Toronto	1,386	4,956	6,342	.....	8	8	176	1,747	.....	1,923
London	389	1,475	1,864	.....	.....	.....	77	271	5	353
Kingston	760	2,596	3,356	.....	.....	.....	110	290	4	404
Fort William	341	800	1,141	13	15	28	107	285	.....	392
Sault Ste. Marie	114	185	299	.....	.....	.....	35	65	.....	100
North Bay	154	374	528	.....	.....	.....	77	158	.....	235
Owen Sound	17	112	129	.....	.....	.....	81	202	.....	283
Peterborough	29	82	111	1	3	4	36	31	.....	67
Total	3,190	10,580	13,770	14	26	40	699	3,049	9	3,757

The laboratories also report that the following new cases were diagnosed as cases of syphilis or gonorrhoea by Wassermann test or smear examination made during the year.

Laboratory	Gonorrhoea	Syphilis
Toronto	343	1,017
London	119	589
Kingston	69	384
Fort William	96	120
Sault Ste. Marie	29	77
North Bay	90	111
Owen Sound	47	25
Peterborough	24	8
Ottawa	9	....
Total (1923)	826	2,331
(1922)	674	1,996

Laboratory examinations for syphilis and gonorrhoea are also made in the city laboratories of Toronto and Hamilton. The figures for these laboratories are, unfortunately, not to hand but they represent a substantial total, perhaps 500 cases. There are also a number of examinations made by private laboratories and also by physicians in their own laboratories. These figures are not available but should not represent a large total except in the case of the examination of smears for gonorrhoea.

(b) Reporting of cases by physicians.

The number of cases of venereal disease reported by physicians during the year 1922 was as follows: (For purposes of comparison the figures for 1920 and 1921 are given.)

Diseases	1922 Cases	1921 Cases	1920 Cases
Syphilis	2,136	2,477	1,740
Gonorrhoea	2,270	2,554	2,158
Chancroid	39	61	82
Total	4,445	5,092	3,980

It will be noticed that during the past year the number of cases reported has been less than in 1921 and more than in 1920. This may be due to better reporting in 1921 due to the strenuous efforts made by the Department or to the more efficient treatment now carried on in clinics. There are, however, still many cases which are treated by private physicians which are not being reported so that it is as yet impossible to draw conclusions of value.

Although the reporting by number has not improved as expected, there has been a more gratifying improvement in the reporting by name of patients who have discontinued treatment while still infective. After all, from a public health view point, the latter reporting is the more important.

5. *Treatment.*

(a) Clinics.

There are now 15 treatment centres in Ontario situated in the following cities:—Toronto, Hamilton, Brantford, London, Windsor, St. Catharines, Owen Sound, Ottawa, Kingston, Fort William. Two new clinics were opened during the year, one at St. Catharines at the General and Marine Hospital and one at Kingston at the Kingston General Hospital. The clinic at Kingston had been held up for some time over the question of a social service nurse to

do the follow-up work but this was adjusted temporarily by the Provincial Board paying her salary as a part-time official. It is hoped that when her year is completed the Kingston Board of Health will be satisfied that she should be full-time and will pay the remainder of her salary.

Early in 1923 two new clinics will be opened at North Bay and Peterborough in connection with the Provincial Branch Laboratories.

Speaking generally, the clinics have been very successful and have treated many individuals who otherwise would have had no or at least insufficient treatment due to lack of money. I cannot speak too highly of the interest and enthusiasm of the medical practitioners in charge of the clinics as well as their assistants who have given so freely of their time, experience and skill in treating the patients. I feel that some monetary recognition should be given to these medical assistants in the various clinics as a slight mark of appreciation of the work they are doing. The work of the social service nurses has been very arduous and at times discouraging, but there is no doubt in my mind that without their assistance the clinics would have been very greatly handicapped. The follow-up work and rehabilitation work these nurses are trying to do is very intimately bound up in the whole question of social conditions to-day.

The following figures from the reports of the nurses in the various clinics will give an approximate idea as to what is being accomplished in locating sources of infection and contacts as well as the number of visits being made by the nurses.

Referred by—

Self, 724; Doctors, 435; Hospital, 254; Public Health Department, 321; Social Service Agencies, 199; Medical and Surgical, etc., Clinics, 127; Police, 61; Indian Agents, 22; Cases where other members of the family were infected, 311. Total, 2143.

Alleged Sources of Infection investigated

Positive,259; Negative, 48.

Total, 307.

Visits by Social Service Nurses, 5,101.

Patients born in Canada, 1257.

Patients born elsewhere, 886 (including British Empire.)

The nurse of the Hospital for Sick Children reports as follows:—

664 visits made during the year.

40 patients, who, on examination were found to be positive, were placed under treatment during the year.

I must again admit that while the treatment of syphilis is excellent, that for gonorrhoea has not been so successful. However, the attendance for treatment for gonorrhoea, in men especially, has been increasing and the clinics are filling a long-felt want among men so infected.

The number of out-patient treatments given in the clinics during 1922 was 59,648. The number of male out-patient treatments was 33,354 while the number of female out-patients treatment was 26,294. This would show that there are almost as many treatments being given to women as to men. The number of treatments given in 1921 was 41,707. There has, therefore, been an increase of 18,000 treatments in 1922 over 1921. During 1922, 2,882 new patients were treated in the clinics; of these 1,785 were men and 1,095 were women. The number of treatments given in the hospitals where there are clinics was 27,429. These treatments were divided according to sex as follows:—Men, 11,539; women, 15,890. In the case of in-patients treatments

really mean days under treatment in hospital. The reason the number of women here exceed the number of men is that it is often more satisfactory to treat venereal disease, especially gonorrhoea, in women in a hospital rather than in an out-patient department.

Some fifty trips of inspection were made to the out-of-town clinics during the year by the physicians of the Division to ensure that proper treatment was being carried on. The clinics in Toronto were visited and inspected practically every month to check up the records and supervise the treatment given. This was a very important part of the work carried out by the division.

(*b*) *Treatment in Smaller Centres.*

During the year over thirty trips to smaller centres were made by specialists of the Division. Advice and treatment were given to physicians concerning the treatment of venereal disease among their poor patients. On each trip at least two or three medical men were present to observe the methods of treatment. These trips are therefore of very great interest and importance to country practitioners as well as to their patients.

The main laboratory at Toronto has been sending sterile distilled water and sodium hydrate to assist physicians in administering phenarsenamine to their poor patients. Some of the clinics have also obtained sterile distilled water from the Provincial laboratory. The following figures give the amounts prepared and sent out:—

19380 ozs. sterile distilled water
767 ozs. standardized 15% solution of sodium hydrate
412 ampoules " 15% " " " "

Approximately 4—6 ozs. of distilled water are used for each injection of phenarsenamine.

(*c*) *Treatment in Institutions.*

This work has been carried on as in previous years. The treatment of venereal disease has been supervised at the Men's and Women's Farms, Concord. Weekly trips have been made to Guelph Reformatory and to the Mercer Reformatory. Syphilitic treatments at the Mercer are carried out by the specialists of the Division; at Guelph, Dr. Wallace, the jail physician, is assisted each week in the treatment of his venereal cases by one of the specialists of the Division. Frequent trips are also made to Burwash Industrial Farm and the treatment of venereal patients there is closely supervised.

There has been during the year the closest co-operation between Dr. McCuaig of Burwash, Dr. Wallace of Guelph, and the specialists of the Division. I cannot speak too highly of the interest these physicians have taken in this side of their work.

You may remember that last year I strongly urged the appointment of a female physician for the Mercer Reformatory. I am glad to say that this physician has now been appointed and that Dr. Edna Guest, who is the physician in charge of the clinic at the Women's College Hospital, Toronto, has been doing exceedingly excellent work in her new position. I feel that her appointment represents a real advance as she is technically well equipped for her position, and has gained the confidence of the inmates through her broad-minded understanding of their condition.

The venereal treatments given at the Men's Farm and the Women's Farm have been very satisfactory. These Institutions were only visited twice during the year.

The following figures give in graphic form an idea of the work done in the Institutions.

Institution	No. of Visits	Syphilis Treatments	Wasser-manns	Gonorrhoea Treatments
Burwash Industrial Farm	18	309	...	152
Mercer Reformatory	50	1580	455	...
Guelph Reformatory	51	1627	...	159
Women's Farm, Concord	2	10 (supervision)	...	...
Men's Farm, Langstaff	2	12 (supervision)	...	...
Ontario Jails	2 (inspection)	....	...	...

Several of the jails in the cities now send their venereal inmates to clinics for treatment when the clinics are available.

The following figures taken from monthly reports of the Institutions show fairly accurately the total number of treatments given during the year:

Institution	Syphilis Treatments	Gonorrhoea Treatments
Mercer Reformatory	3,025	2,984
Burwash Industrial Farm	927	6,560
Guelph Reformatory	1,665	4,813
Concord (Women)	639	1,938
Langstaff (Men)	575	414

The result of the examination of prisoners for venereal disease has been very interesting. The following figures show the extent of these diseases among the inmates at Burwash, Guelph, and the Mercer Reformatory. The figures for 1921 are given for comparison:

Mercer Reformatory	1922	1921
No. of admissions	137	173
No. of syphilis cases	48 (including D.I.)	65 (including D.I.)
No. of gonorrhoea cases	65 (including D.I.)	45 (including D.I.)
No. of double infections (D.I.)	24	24
% Syphilis	36%	38%
% Gonorrhoea	47%	26%

Burwash Reformatory	1922	1921	1920
No. of admissions	746	1306	1301
No. of syphilis cases	90	89	130
No. of gonorrhoea cases	37	..	
% Syphilis	12%	8.4% (comb. 1921 and 1920)	
% Gonorrhoea	5%	..	

Guelph Reformatory	1922	1921
No. of admissions	960	927
No. of syphilis cases	78	99
No. of gonorrhoea cases	16	77
% Syphilis	8.1%	10.6%
% Gonorrhoea	6.3%	8.3%

From these figures it is seen that 36% of the admissions to the Mercer are suffering from syphilis and 47% suffering from gonorrhoea. Among the men at Burwash and Guelph the figures are about 10% suffering from syphilis and approximately 6% suffering from gonorrhoea. These figures provide food for thought for those who have not yet realized the danger to the public of such girls as are confined in the Mercer Reformatory. The future course of conduct and the rehabilitation of these girls is a very real and pressing problem which must be met.

(*d*) *Manufacture and Distribution of Phenarsenamine.*

The Board through the Toronto Laboratory has continued the manufacture and distribution of phenarsenamine (Salvarsan) according to the terms of its license. This license does not, however, allow the Board to supply its product to private physicians. This preparation has now been in use for over two years and has been giving good satisfaction. A questionnaire was sent out to all the physicians in clinics who had used it asking for their opinion of the drug. These replies are being received and speaking generally all are highly pleased with the product and especially with the absence of reactions following its administration. Some physicians have suggested that the Board might manufacture a neo-preparation, but for various reasons this has not yet been done.

The amount of phenarsenamine distributed during the past year is as follows:

	Ampoules	Grammes
(a) Distributed in Ontario—		
(1) To Institutions	1,305	806.4
(2) To clinics and physicians, etc.	14,047	8032.5
Total	15,352	8838.9
(b) Sales to other Provinces—		
(1) To British Columbia	1,507	859.2
(2) To Quebec	216	432
Total	1,723	1291.2

The Board has been experimenting with a mercury salicylate preparation, and it is hoped to have this preparation available for use in clinics and institutions very shortly.

The co-operation between the Division of Laboratories and this Division has been very close. Unless the Division had received this co-operation, its work would have been greatly hampered. Special research work in connection with both phenarsenamine and mercury preparations is being carried on continuously.

(*e*) *Follow-up Work.*

During the year letters were received concerning 675 individuals suffering from venereal disease. Some of these had been lost, some had moved, some had been discharged from Institutions, etc. Arrangements were made for continuity of treatment in the large majority of these cases through the local Medical Officers of Health. This work has been especially important and has been remarkably successful.

6. *Education.*

(*a*) *General.*

Education of the general public has been carried on by means of lectures, films, literature, newspaper articles, etc. Pamphlets are being sent out daily and lectures and film exhibitions are frequently given. The Division has three films on venereal disease and allied subjects, and expects shortly to have another film available.

Literature for medical practitioners has been sent out at various times throughout the year.

The Canadian National Exhibition afforded an excellent opportunity to reach a large section of the general public and the exhibit of the Division excited a great deal of interest and favourable comment. Several men were given advice by the physicians of the Division and a great amount of useful information given to those interested.

There has been very close co-operation along educational lines with the Canadian Social Hygiene Council which is doing such good work in the education of the general public. I feel that the education of boys and girls along the line of right living is of the greatest importance in connection with the venereal disease problem. Those who should give this instruction are the fathers and mothers of the children. This is the attitude of both the Council and this Division and this is the line along which educational work is being carried on.

A special bulletin on the best methods of treatment of gonorrhoea and syphilis is being prepared by the Council; the specialists of the Province as well as this Division are assisting in this work. When complete, this bulletin of treatment will be printed by the Department of Health, Ottawa, and will then be distributed to medical men throughout Canada.

During 1922 some 1,500 latrine signs were sent to Medical Officers of Health, who had these signs placed in public lavatories and also in the lavatories of hotels, pool-rooms, etc. These signs (which pointed out the dangers of self and quack treatment for venereal disease and advised individuals to take treatment from physicians or at free clinics) have undoubtedly persuaded many young men as to the necessity of efficient treatment. The posters have been one of the best of the Division's educational appeals.

(*b*) *Social Service Nurse.*

The work of this nurse has been very arduous. She has assisted in training the various nurses in the clinics throughout the Province and has kept closely in touch with them at all times. She has investigated the circumstances in connection with venereal patients in the Mercer Reformatory and the information she has gained has been of very great value. She was of very great assistance at the exhibit at the Canadian National Exhibition as she was able to talk to many women and mothers who wished advice. She has also shown films to gatherings of women and young girls throughout the Province.

In the following up the returns of deaths from syphilis and still births (which she has done under the direction of one of the physicians in the Division), the brief report below summarizes what has been done.

11 still births

- 4 cases, mother and father both positive—placed under treatment.
- 1 case, mother positive; father negative—mother placed under treatment.
- 6 cases not yet completed.

52 death returns (congenital syphilis)—

- 3 cases, mother, father and two children positive—all placed under treatment.
- 11 cases, mother and father positive—placed under treatment.
- 10 cases, mother and father negative.
- 8 cases, mother positive; father not located (cases of illegitimacy); mothers under treatment.
- 1 case, gonorrhoeal ophthalmia—mother positive—placed under treatment.
- 1 case father, positive; mother not located—father under treatment.
- 1 case father, positive; mother negative—father under treatment.
- 13 cases, mother and father not located.
- 2 cases, mother negative; father not located.
- 1 case, mother dead; father negative.
- 2 families had each lost two children previously.

This work, as can be seen, is exceedingly important as it bears directly on the birth rate of the Province. Treatment of infected fathers and mothers will probably mean future healthy children.

7. *General.*

(1) The regulations respecting treatment of venereal diseases by clinics and physicians were passed on December 28th, 1922, and are now in force. These regulations govern the treatment and assistance given by the Division; liberal help is given to municipalities who all appear eager to avail themselves of the assistance given.

(2) The work of the Division is increasing and now that its scope has been broadened will continue to increase. Special investigations have been carried on in connection with typhoid fever in various places in Ontario. Special survey work in connection with the health of children of pre-school and school age is under way in co-operation with the Canadian Tuberculosis Association, the Red Cross Society, and the Department of Education.

(3) Work contemplated includes a more determined attack on the tuberculosis situation in Ontario, and a more thorough investigation into the cause of outbreak of communicable diseases throughout the Province.

(4) I wish to thank the members of the Division for their whole-hearted and cheerful co-operation during the year. This spirit has certainly made the round of duties a pleasure and helped to smooth the rocky path to success. The office work during the year has increased over 1921. Approximately 2,400 letters were received during the year and about the same number sent out. This has meant a great strain on the clerical staff, but this has so far been met.

R. R. McCLENAHAN, B.A., M.B., D.P.H.,
Director, Division of Preventable Diseases.

ANNUAL REPORT, 1922, 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 the following summary of the activities of the Division of Sanitary Engineering for the year, 1922:

Re Waterworks	Applications	Estimated Cost
Extensions to existing systems	144	$3,066,745 11
Purification of water supplies	2	87,000 00
New Systems	17	1,933,379 65
Total	163	5,087,124 76
Re Sewerage		
Extensions to Existing Systems	247	4,647,697 26
Treatment Works		
New Sewerage Systems	9	533,647 81
Total	256	5,181,345 07

The total number of applications favourably reported upon re waterworks and sewerage for the year was 419 and involves an estimated expenditure of $10,268,469.83. The list of municipalities affected and the specific amounts are dealt with in detail in the accompanying tables.

SANITARY SURVEYS.

Forty municipalities were completely surveyed during the year. The tabulation of the data obtained and the preparation of maps for the local authorities, showing the significant sanitary information in detail, has necessitated the maintenance of a somewhat larger winter staff, especially in view of the fact that field work was continued up to freezing weather.

SANITARY SURVEYS—1922

40 Surveys Covering a Population of approximately 135,000 people.

Name	Date	Premises	Privies	Wells	C.P. and S.T.	Town Water	Private Sewers	Town Sewer Connections	Carry Town Water	Buy Water	No. of Wells Showing Fewer Than 10 B.C. Per 100 C.C.	
Woodbridge...	3/5 /22	188	170	91	8	0	1				17	
Georgetown...	8/5 /22	569	286	23	288	500	0				3	
Milton.....	16/5 /22	533	353	115	119	375	0				5	
Weston.....	12/6 /22	800	220	117	21	698	0	551			27	
Caledonia.....	17/7 /22	368	275	110	81	52	3	1			34	
Simcoe.....	18/7 /22	1280	475	221	86	980	3	675			144	
Cayuaga.....	21/7 /22	205	148	115	25	5	8	6			7	
Fort William..	26/5 /22	4768	1075	4	1	4613	62	3483			3	
Port Arthur...	17/5 /22	3738	1104	250	...	2739	17	2446	430	30	176	
Schreiber.....	8/6 /22	280	245	59	17	42	0	20	100		47	
Dryden.....	9/6 /22	282	269	75	13	0	3	0	0		21	
Kenora.....	12/6 /22	1314	676	50	26	1067	42	488	44	50	10	
						100S.S.						
Keewatin.....	17/6 /22	363	362	14	5	0	4	0		214	4	
Sioux Lookout.	20/6 /22	316	303	73	5	15	..	14		40	42	
Rainy River...	23/6 /22	356	208	78	0	166	0	131			25	
Emo.....	26/6 /22	167	154	36	1	0	2	0			27	
Fort Frances...	27/6 /22	779	327	12	2	653	2	411				
						36S.S.					4	
Bracebridge...	15/8 /22	707	523	85	134	542	13	7			21	
Huntsville.....	17/8 /22	556	300	36	86	502	28	91			2	22 Premises have W.C. doubtful
Burk's Falls...	18/8 /22	244	208	28	42	184	2	0			0	
North Bay....	21/8 /22	2465	973	28	99	2341	11	1347			1	
Sturgeon Falls	25/8 /22	788	470	12	15	749	3	270			0	
Sudbury.....	28/8 /22	1770	518	4	19	1509	32	1030			0	
Capreol.....	30/8 /22	297	270	170	21	0	0	0			68	
Massey.....	1/9 /22	178	148	16	26	157	0	0			11	
Thessalon.....	2/9 /22	409	279	2	0	373	37	67			0	
Blind-River...	5/9 /22	341	295	116	10	0	27	0			3	
Cutler.....	7/9 /22	138	106	0	0	111	2	0			0	
Webbwood....	7/9 /22	133	123	91	1	0	0	0			56	
Espanola.....	8/9 /22	302C.	55C.	25	0	265	3	242			13	C.—Company Town
		202F.	185F.	167	0	0	0	0			124	F.—Unorganized Suburb
Little Current.	8/9 /22	291	271	78	14	0	0	0			10	7 Connections to Mill Supply
Chapleau.....	11/9 /22	395	229	5	148	374	0	32			0	C.P.R. Sewer
Parry Sound..	13/9 /22	1008	445	29	75	913	42	375			11	
MacTier.....	16/9 /22	119	115	34	6	0	0	0			7	11 Connections to C.P.R. Water
Grimsby Beach	30/8 /22	166	0	4	30	166	1	0			0	2 Kaustine
Grimsby.....	19/9 /22	575	317	64	282	49						1 Kaustine
Acton.....	22/9 /22	492	430	107	57	234					9	
Collingwood...	25/9 /22	1816	1077	48	122	1686	7	622			3	
Orillia.....	28/9 /22	2159	1123	267	149	1613	1	960			27	2 Kaustine
Campbellford..	20/11/22	849	522	263	64	331	6	187				

Note.—C.P.—Cess Pools S.T.—Septic Tanks S.S.—Summer Services

The surveys conducted expeditiously and at a minimum of expense, continue to return to the local Health authorities and municipal officials data necessary for arousing local initiative, without which sanitation and public health generally make but slow progress. An interesting feature revealed by the surveys in smaller urban centres is the absence of comfort stations for the travelling public and what is more surprising the frequent absence of any provision whatsoever for the employees of the smaller shops and industries, even in the older centres.

Investigations.

Numerous investigations were made at the request of local authorities into the operation of chlorination equipment and an effort was made to establish a daily check on the operation of a series of plants by means of bacterial analysis of specimens transmitted through the mails, and despite the fact that the results, owing to contamination and heating in transit, showed wide variations, there appears ample evidence of the need of periodic supervision from the Engineering Staff of the Board, and it is intended during 1923 to experiment with supervision of the various purification plants, by an assistant Engineer, specially delegated to this work. Fortunately, for the success of this work, which was more or less explored during the latter part of the season, the use of ortho-tolidin solution as an indicator of excess chlorine greatly simplifies this work and it is now possible for an inspecting Engineer to adjust dosage without waiting upon bacterial reports and to instruct the more progressive operators in the use of the ortho-tolidin solution. It is urged that the supervision proposed will become more nominal as the campaign of education progresses. The excellent distribution of the Branch Laboratories of the Board, may in the near future, have an important bearing upon the maintenance of efficiency in the numerous treatment works, protecting the public from contaminated sources of water supply.

In addition to the further protection of water supplies for urban municipalities, the attention of the Government has been directed to the advantages that may accrue from regulating the pollution of the streams, serving as sources of supply for the rural community, and for watering stock. The existing legislation limits the control of the Provincial Board to such water courses as are used as *sources of public water supply*.

The studies carried on during the past two years in the control of domestic flies in urban communities was brought to completion and a summary of the costs of such control appears elsewhere in this report. It is proposed to compile our information in this matter and issue a pamphlet, bringing all our information on this interesting subject together, including costs, etc.

Research.

In the field of research the Experimental Station continues to *perform a most useful function*.

(*a*) The question of the effect of residual Free Chlorine and chemicals used in Municipal waterworks upon Fish Hatcheries and on fish culture, has been engaging the Board's attention for a number of years. By an arrangement with the Department of Game and Fisheries, a supply of eggs and hatching jars was secured and a most interesting research was undertaken in the latter part of the year. The results of this research will be offered in a subsequent report, and it has been shown that limited amounts of Free Chlorine are beneficial rather than harmful during the hatching period, and that the jars using

water containing excess Free Chlorine, show a marked freedom from slimes and fungus growths, so commonly experienced in our hatcheries. The research suggests some modifications in the present hatchery practice.

(*b*) The difficulties, which many of our municipalities are labouring under in the preparation of water for treatment by rapid mechanical filters, were the subject of special investigation during the current year. The problem of coagulation, disposed of in text books by simple formulae, is an extremely complex one, especially for the clear, coloured, soft water forming the major sources of supply in Northern Ontario. Text book formulae, when used, were found to be far from satisfying the requirements of the existing plants, and a detailed study was authorized, using the recently developed technique for colourmetrically determining the Hydrogen Ion concentration. The various phenomena met with, when dealing with these waters according to standard methods, were analyzed and the results of the study are detailed elsewhere in this Report, and it is of interest to note that as the outcome of this work, the Engineering Division can with accuracy predict the critical quantity of alum required for such purification plants, and in addition, may advise the proper correctives for overcoming red water, and other difficulties hitherto experienced at certain of these Northern Ontario plants. In this connection it may be borne in mind that the difficulties to be overcome by the technical assistants were not only those associated with defective theory, but those originating in defective plant design as well.

(*c*) Experimental studies of the theory of the activated sludge sewage disposal system have been advanced during the year. A definite contribution has been made to the subject by the Experimental Station in that we have been able to show that the process proceeds in a sterile sewage and that the purification is not wholly dependent upon the activities of living organisms in the sewage as the writer and others were led to believe from the earlier experiments. *Slightly alkaline media seems to be the sole essential to proper purification by this process.* It will be interesting to note what effect this fact will have upon the patent, which rests almost solely upon methods of applying air to serve the needs of the living organisms.

Bulletin No. 9.

"*Rural and Semi-Urban Sanitation.*"

During the year the Department completed the preparation of the above Bulletin, which was available in the Department's shelves in time for the National Exhibition at Toronto. This Bulletin contains a great deal of useful information in the following subjects:—Wells and Domestic Water Supplies; Fly Control; Dairy Farm Sanitation; Plumbing Instructions; Methods of Sewage Disposal and Rural School Sanitation. (The sanitary surveys referred to elsewhere afford ample evidence of conditions in and about cities, towns and villages, adverse to the public health and the Bulletin has been prepared to supply to local authorities and householders the technical guidance, necessary for corrective measures.) The general disposition on the part of the public to take advantage of such information is extremely encouraging and should materially affect semi-urban sanitation during the present decade.

Regulations.

Regulations, governing the improvement of the quality of the supply of drinking water on passenger trains and vessels, are under preparation, and work to this end will include an improved supervision of sources of supply.

Regulations, governing the design and operation of swimming pools, authorized by the Board, are now in the course of preparation.

The compilation of a standard By-law for waterworks administration, suggested by the Board, has been undertaken and it is hoped will be completed early in 1923.

Respectfully submitted,

F. A. Dallyn.

CERTIFICATES ISSUED RE SEWER EXTENSIONS FOR THE YEAR 1922.

Municipality	No. of Certificates	Extensions	Disposal	New	Industrial and Institutional Systems
Amherstburg	1	$9,129.19			
Barrie	6	8,260.00			
Belleville	7	46,310.60			
Bertie Township	1	10,000.00			
Brampton	1	4,095.00			
Brantford	3	225,979.00			
Burlington	1	1,141.68			
Campbellford	2	10,040.00			
Casselman	1	10,608.00			
Collingwood	1	3,045.30			
Crystal Beach	2			$67,000.00	
Crowland Township	1			520.00	
Dundas	2			258,000.00	
Dunnville	2	3,077.24			
Eastview	3			101,112.39	
Elmira	5	16,400.76			
Emo	1			2,700.00	
Ford (Ford Motor Co.)	1				Outlet
Fort Frances	1	1,180.00			
Fort William	4	9,386.24			
Fort William (C.N.R.)	1				Outlet
Galt	15	53,517.99			
Goderich	4	6,435.50			
Guelph	1	43,195.00			
Hamilton	12	1,024,626.58			
Hawkesbury	1	4,465.60			
Kingston	4	34,406.63			
Kingsville	6			13,797.10	
Kitchener	7	48,639.18			
Lindsay	3	13,474.00			
London	22	98,423.08			
Lorneville	1	1,900.00			
Midland	3	80,040.50			
Mimico	2	14,537.15			
Muskoka (Hospital)	1				Outlet
Newmarket	1	7,200.00			
New Toronto	1	5,711.50			
Niagara Falls	6	38,980.27			
Orillia	1	1,860.00			
Oshawa	1	70,000.00			
Ottawa	26	108,450.13			
Owen Sound	1	275.00			
Pembroke	1	3,849.60			
Perth	1	759.50			
Peterboro	4	56,105.25			
Port Dalhousie	1			19,018.32	
Port Dover	1			23,000.00	
Port Hope	2	13,081.86			

Municipality	No. of Certificates	Extensions	Disposal	New	Individual and Institutional Systems
Preston	3	$11,330.52			
Renfrew	2	1,707.68			
Riverside	2	5,419.34			
Sandwich	8	333,926.64			
Sarnia	4	25,071.52			
St. Catharines	8	84,084.93			
St. Thomas	1	4,004.99			
Stratford	2	34,146.91			
Sault Ste. Marie	3	34,582.10			
Smith's Falls	2	9,261.25			
Trenton	1	7,236.00			
Toronto	19	1,864,297.07			
Timmins	1	10,222.00			
Thornbury	1	9,000.00			
Thorold	4	23,140.00			
Woodstock	4	1,089.00		$48,500.00	
Wingham	1	3,900.00			
Windsor	5	49,935.72			
Wiarton	1	2,040.86			
Whitby	4	14,695.71			
Welland	2	4,428.80			
Walkerville	1	2,449.70			
York Township	1	5,750.00			
	256	$4,647,697.26		$533,647.81	

SUMMARY

Extensions	$4,647,697.26
New	533,647.81
	$5,181,345.07

CERTIFICATES ISSUED RE WATERMAIN EXTENSIONS, PURIFICATION, ETC., FOR THE YEAR 1922.

Municipality	No. of Certificates	Extensions	Purification	New	Individual and Institutional Systems
Alexandria	1	$4,832.72			
Alliston	1				
Brockville	1	5,807.64			
Burlington	2	14,900.00			
Burlington Beach	1			$30,000.00	
Carleton Place	1	32,100.00			
Chesley	1	1,500.00			
Dunnville	1		$65,000.00		
Eastview	1			51,775.00	
Essex	1	36,000.00			
Etobicoke	8			219,594.00	
Ford City	1	51,548.57			
Forest	1			102,038.00	
Fort Frances	1	3,500.00			
Galt	5	38,966.56			
Grantham Township	2			11,745.00	
Grimsby	4	48,292.35			
Haileybury	1	1,000.00			
Hamilton	5	74,647.65			
Hanover	2			131,500.00	
Hawkesbury	1	5,310.10			
Hespeler	2	6,468.14			
Ingersoll	1	22,122.07			
Kincardine	1		22,000.00		
Kingston	3	8,732.53			
Kingsville	3	17,502.42			

Municipality	No. of Certificates	Extensions	Purification	New	Industrial and Institutional Systems
London	1	$125,000.00			
Markdale	1	5,000.00			
Napanee	1	8,000.00			
Newmarket	2	16,000.00			
New Toronto	3	10,919.02			
Niagara Falls	2	26,989.12			
Niagara-on-the-Lake	1	3,216.00			
North Grimsby Township	1	42,297.15			
North York Township	1			$125,000.00	
Oakville	2	39,016.08			
Orillia	1	30,000.00			
Ottawa	1	154,000.00			
Pembroke	1	4,614.00			
Penetanguishene	1	24,000.00			
Peterboro	1	17,421.01			
Plantagenet	1			10,000.00	
Port Credit	2			133,900.00	
Port Dover	2			92,000.00	
Port Stanley	1	1,575.00			
Rainy River	1	4,500.00			
Renfrew	1	5,500.00			
Richmond Hill	1	4,000.00			
Riverside	8			30,922.14	
Sandwich	7	12,520.88			
St. Catharines	1	9,261.37			
Scarboro Township	3	85,781.92		591,030.62	
Smith's Falls			Acrg.of land		
Stamford Township	11	38,105.00			
Stratford	2	27,291.19			
Thornbury	1			18,000.00	
Tecumseh	4			77,596.05	
Thorold	2	19,785.00			
Timmins	3	25,980.60			
Tisdale	1			16,278.84	
Toronto	11	1,234,294.70			
Tottenham	1	10,000.00			
Trenton	2			277,000.00	
Welland	1	680.25			
Whitby	4	56,388.92			
Wiarton	1	10,000.00			
Windsor	1	142,193.25			
Wingham	2	25,000.00			
Woodbridge	1			15,000.00	
York Township	15	474,183.90			
Total	163	$3,066,745.11	$87,000.00	$1,933,379.65	

SUMMARY

Extensions	$3,066,745.11
Purification	87,000.00
New	1,933,379.65
	$5,087,124.76

Division of Sanitary Engineering

BULLETIN No. 10

Preparation of Water for Filtration

By F. A. DALLYN, C.E. (Tor.) and A. V. DeLAPORTE, B.A.Sc.

Report on the Fertilizing Value of Activated Sludge

By H. D. BROWN, B.A., M.S. (in Ag.)

Studies Relating to the Biology of Activated Sludge

By H. D. BROWN, B.A., M.S. (in Ag.)

Chlorination Apparatus and Its Control

By G. A. H. BURN, B.A.Sc., and A. E. BERRY, M.A.Sc.

Statement of Costs of Municipal Control Measures for the Eradication of Domestic Flies

By A. E. BERRY, M.A.Sc., C. H. McLEOD, B.A., and D. G. CAMPBELL.

PREPARATION OF WATER FOR FILTRATION.

By F. A. Dallyn, C.E. (Tor.), and A. V. DeLaporte, B.A.Sc.

It is the purpose of the authors of this paper to confine their remarks to a consideration of the existing water supplies for the municipalities of Ontario.

The sources of supply for municipal waterworks in Ontario are rather unique in that with very few exceptions they are known as "clear" waters. The Great Lakes and the connecting rivers, which form the major sources of supply, are extremely clear, and such turbidity as occurs is of local origin, and as a rule is confined to a small percentage of the three hundred and sixty-five days of the year. The Lower Detroit is an exception to this and carries more or less turbidity during the greater part of the year. The Upper Detroit has some unusual conditions during the spring run-off, brought about by the enormous quantities of salmon-fly larvae, which are introduced from the creeks and shore waters of Lake St. Clair. Lake Erie, which is comparatively shallow, is more or less rile after every storm, and would have considerably more turbidity than is encountered in any of the other Great Lakes.

In addition to the Great Lakes and connecting rivers there are a considerable number of comparatively clear streams and springs, the sources of which have considerable iron in solution. In Northern Ontario, and associated with the waters of the Rideau and Trent Valleys, there is quite an amount of organic matter and definite colour. These waters again are comparatively clear, except as influenced by the spring run-off, and the effect of the organic matter thrown into suspension by convection currents, or due to stream velocity affecting the deposit of suspended matter.

Besides these, there are a few sources of supply, such as the Thames and the Grand Rivers, which carry considerable amounts of turbidity and which rank as hard waters.

The problems of filtration dealing with such waters confine themselves in the main to three problems;

(1) The removal of bacteria, introduced from sewage contamination.

(2) The removal of occasional turbidity.

(3) The removal of colour and organic matter and, for a few of the supplies, the removal of considerable quantities of turbidity.

Economically the problem in the main is a problem of the removal of colour in the northern parts of the Province, and for the Trent and Rideau Valleys: the removal of iron and the removal of occasional turbidity.

The operation of filtration plants for the removal of over 95% of the bacteria, introduced by sewage pollution, from the clear waters of the Great Lakes, has lately been a controversial subject. There appear to be two schools of thought; one represented by the Works Managers and Economists, who insist that, without impairing the appearance of the water, great economy can be effected by reducing the bacterial efficiency of the filtration process and supplementing the treatment by sterilization through the use of chlorine, ozone, or ultra-violet ray. The other school is represented by certain Public Health officials, who take the position that, in connection with our water supplies we cannot have too great a factor of safety, and that filtration should be performed in as efficient manner as is possible, with the highest bacterial removal, consistent with the capacity of the plant; and that this should be further supplemented by chlorination.

In the larger plants, which can afford laboratory control, the former school undoubtedly have the advantage of the argument, since with our knowledge of the behaviour of chlorine as a sterilizing agent, we can ascertain with great accuracy the efficacy of sterilization agencies by the colorimetric determination of excess chlorine in the water. The plant operator knows if a certain excess chlorine exists in the water that the water is sterile and there is no occasion to wait upon the laboratory twenty-four to forty-eight hours to obtain the bacterial counts and results of the fermentation tests.

The argument of economy is rather a difficult one to combat in these days of high taxes, caused by our war indebtedness, when it is realized that the quantities of alum required to give high bacterial efficiencies represent an annual expenditure, considerably in excess of the annual amount of principal and interest charges on the capital cost of the plant itself.

One grain, per gallon, per plant capacity, applied daily, equals approximately the annual amount of the principal and interest of the plant, at 4½%, 30-year debentures.

Where the water is to be treated with approximately two and half grains of alum, the cost of alum alone is from two to three times the actual costs of the interest and principal in connection with the plant itself. The trend of practice, therefore, is toward decreasing the bacterial efficiencies of filtration plants of the rapid mechanical type and supplementing filtration by chlorination. This trend, whether in the right direction or not, fortunately, at this time is not accompanied with very serious health hazards, owing to the fact that the last ten years have witnessed immense declines in incidences of typhoid fever, so that water supplies do not to-day represent the potential danger that they did in the last decade.

In the Province of Ontario a great deal of emphasis has been placed and is still placed upon the location of points of intake for sources of supply. There was a tradition some years ago that American engineers were prepared to purify any source of supply and make it fit for domestic use. And while the writers do not wish to reflect at all upon the ability of the American engineers, to design such plants, and have in fact witnessed such achievements, they do take issue with the practice of utilizing sources of supply (with a view to economy), which are far from satisfactory.

In Ontario, the selection of the point of intake as a rule is determined upon only after a very considerable survey of the sources of sewage pollution likely to affect the intake. In consequence, there are very few plants in the Province, furnishing domestic water supplies, which have intakes, subject to the gross pollution that is experienced in a great many of the American cities.

As a result of this, lapses in the purification processes do not tend to contribute the complement of typhoid fever, which one would anticipate from the American situations, and it is also possible to operate these plants with considerably less supervision than is required of those dealing with highly polluted waters. The density of population in the United States calls for a size of plant, which is rather larger than the general run of plants in Ontario. This, also, is a factor in the extent to which supervision and laboratory services can be absorbed in water rates.

In order that the trend of design might follow more closely the present practices in operation of filtration plants, dealing with the clear, uncoloured waters, such as is furnished by the Great Lakes basin, the writers believe that the discussion of the precipitation reaction of aluminum sulphate is a pertinent matter.

Heretofore, in standard plant design, it has been customary to provide sedimentation and coagulation basins, of from two to eight hours sedimentation. These basins represent from 10 to 30% of the total cost of the filter works. They were introduced originally to assist filtration by settling out a portion of the suspended matter, or turbidity. In many of the older works where treatment by chemicals and precipitation proceeded treatment by filtration, the precipitation tanks were existent prior to the installation of the sand filtration works, and were merely made an adjunct to the new works.

The filter units themselves were of both the open gravity and the enclosed pressure type. It was also believed by many of the workers that economy could be effected in the quantities of alum used, if advantage were taken of a reacting interval of several hours, which fact, I believe, has been amply borne out in practice.

In Ontario, in dealing with the coloured waters in the North, and in dealing with the iron-bearing waters, coagulation and retention tanks prior to filtration appear to offer distinct advantages; not only through economy in the use of alum, but also in providing a certain flexibility in plant management, permitting aeration and other adjuncts such as CO_2 removal, sometimes found necessary in the treatment of these types of waters.

There are numerous instances in Ontario where pressure filters can be operated so as to yield a satisfactory water but the difficulty of controlling the requisite alum dosage, required for rapid precipitation, is so great that this type of plant is not advocated for waters which may be classed as resistant to treatment.

On the other hand, there may be a field for this type of filter when dealing with the comparatively clear water of the Great Lakes Basin, since they are capable of preparing it for effective chlorination, and are also available for the removal of occasional turbidity, provided a suitable laboratory force is available to regulate the administration of chlorine and the requisite dosage of alum and chemicals necessary when dealing with periodic turbidities.

The question naturally arises as to whether the saving of 15 to 20% of the capital cost of the plant is warranted when it throws the burden back upon the laboratory, is a debatable one. Fifteen per cent. of the capital cost represents in annual operation approximately one-tenth of the total cost of the water as delivered from the pumping station to the distribution system, so that the item is not possibly as large as one might anticipate.

During the past year the Board has been carrying on special investigations in different parts of the Province with a view of determining, if possible, the optimum condition of the raw waters associated with coagulation, using aluminum sulphate. The experimental evidence in our possession would indicate that for the soft, coloured waters the optimum is when the natural water has a hydrogen ion concentration, capable of adjustment through the use of alum to a pH value 5.5, and that for the harder waters and the Great Lakes Basin the optimum condition is when the pH value is adjusted to the neighbourhood of 6.5.

The recent report of Theriault & Clarke appearing in Public Health Reports for February 2, 1923, under the caption, "The Experimental Study of Hydrogen Ion Concentrations to the Formation of Flock in Alum Solutions," is a notable contribution to the subject. They were able to show that the time of the first appearance of the flock in mixtures of alum and water containing definite salt concentrations behaves according to an equation, which is graphically represented by a parabolic curve; the axis of the parabola is oriented at right angles

Name	Source	Total Alkalinity (in P.P.M.)		Free CO_2 (in P.P.M.)		PH.		Amount of Alum (in grains per gallon)	Remarks
		In Raw	In Coagulated	In Raw	In Coagulated	In Raw	In Treated		
I. Highly coloured waters—Low turbidity									
Haileybury	Lake Temiskaming	14		5	18	6.6	5.8	2	
Smooth Rock Falls	Mattagami River	29		5	4	7.2	—	0	Dosage required—4 G.P.G.
							6.2	4	
Iroquois Falls	Abitibi River	30		7.1	31.9	7.2	5.7	5	Variable
Dundas	Creek on Mountain	200		2.5		8.4	6.9	6	6 G.P.G. for complete colour removal.
II. Well Supplies containing Iron									
Richmond Hill	Water from artesian sources	160		9		7.7	7.5	1	
St. Thomas	Combination of deep wells & Kettle Creek	203		6		8.2	7.0	2	
							6.7	4	Suggest—4 G.P.G.
							6.6	6	
							6.4	8	
							6.2	10	
							6.0	12	
	Deep wells	218		15		7.9			
	Kettle Creek	189		2		8.0			

III. *River Waters—High Turbidity—Low*		*Colour*							
Weston	Humber River	138		0	0	8.4	8.1		Suggest 3 G.P.G. for flood conditions.
Chatham	Thames River	212		0		8.1	7.2	4	Figures shown relate to
			166		22		7.1	6	dry weather flow and
			152		24		7.1	8	total alkalinity having
			134		36		7.0	10	a high normal carbo-
			112		40		6.6	12	nate. Turbidity in this water is fortunately associated with flood conditions and high free CO_2, and a total absence of normal carbonate.
IV. Great Lakes.									
Kingsville	Lake Erie	76		4	5	8.4	7.6	1	
Toronto tap	Lake Ontario	80		0		7.9	7.0	2	Minimum of 2 G.P.G.
							6.7	4	with filtration required
							6.6	6	for removal of colloid
							6.4	8	turbidity.
							6.2	10	
							6.0	12	
Cutler	Georgian Bay	26		6	7	6.9	6.9	1	

The significance of the PH value is apparently affected by the relation between the free CO2 and total alkalinity.
Allowance must be made for the free CO_2 when estimating the required amount of Alum to remove colour.
A direct relation exists between the volume of alum flock (or grains of alum) and the amount and character of turbidity to be removed, irrespective of the PH values.

to the abscissa at the optimum pH value. In solutions having a high alum concentration, the parabola appears to have a wider curve than where the dilute solutions are used: the practical application of this phenomena being that the hydrogen ion concentration range in which precipitation occurs is very much more limited for dilute solutions than for solutions of a higher concentration, and it is, also, apparent from reference to the curve that as one progresses from the optimum pH the time for the first appearance of the flock increases up to a point where the curve becomes practically perpendicular to the abscissa, so that beyond the confined range in which precipitation is observed to occur there appears to be no hope of precipitation, even if the time interval be prolonged indefinitely.

The use of salts other than alum for the adjustment of the hydrogen ion concentration has not as yet met with a great deal of success. The two salts most commonly used for this purpose, sodium carbonate and lime, both have an unfortunate effect on the formation of flock. Under certain conditions the aluminum hydrate apparently acts as an acid, reacting with calcium hydrate to form a calcium aluminate and it would also appear to react with sodium carbonate and bi-carbonate to form a sodium aluminate or some other compound and these reactions, which are reversible and have not yet been carefully worked out, but it is safe to assume that there will be a loss of alum flock in the presence of free hydroxide and generally in the presence of sodium salts of the rather weak carbonic acid.

Mechanical agitation of sand such as in the Vermehr filter, does not, in the writers' opinion, accelerate precipitation appreciably. Theoretically it may, but the probability is that the presence of a large volume of sand in the filter has considerably more to do with precipitation than the movement of the sand, so that in actual practice there is very little to choose between the precipitation efficiency of the Vermehr plant and the ordinary mechanical filter unit, and from the point of view, solely of chemical application, the theoretical advantage of the Vermehr filter more or less disappears.

In summarizing the conclusions of the writers, it would appear that the present trend of practice to operate filters, more or less as a screen for the protection of chlorination processes on our clear lake waters, is a sound one, in respect to larger installations, provided the laboratory facilities are adequate to keep a very definite check on the residual chlorine, and provided the situation is such that the secondary application of chlorine is possible, in order to correct any mischance in the dosage.

The use of sedimentation, or coagulation units having a minimum of two hours' storage is extremely advantageous for all coloured waters, and iron-bearing waters, and that for iron-bearing waters provision should be made for the addition of supplementary chemicals other than alum.

In this connection the experiments of Alfred Bechtel at Allentown indicate that it takes thirty minutes after the addition of calcium hydroxide, either as the powder or as milk of lime before the calcium hydroxide is in true solution, so that where lime is used to remove CO_2 the treatment must take place at least thirty minutes before the use of alum.

The pressure type of filter without coagulation basins is adequate, provided theoretical quantities of alum are applied to take care of occasional turbidity. If this turbidity is of frequent appearance, or persists for any considerable interval of the year, such as a month or several months, it is our opinion that the addition of coagulation tanks and sedimentation is economically sound, and lends itself to plant management.

For the removal of excess CO_2 following the use of alum, it is recommended that the water be treated after filtration with the requisite quantities of sodium carbonate or lime.

REPORT ON THE FERTILIZING VALUE OF ACTIVATED SLUDGE.

H. D. Brown, B.A., M.S. (in Ag.)

One phase of the experimental work on "Activated Sludge," undertaken at the Provincial Board of Health Experimental Station, Toronto, has been in regard to its possible use and value as a commercial fertilizer. As has been previously pointed out* (1) sewage disposal is a costly and difficult operation and must be considered by every urban and rural municipality. The "activated sludge process" offers large possibilities in the economical disposal of raw sewage and has at least a threefold value. Firstly, it avoids the pollution of waterways; secondly, it returns to the municipality some of the cost of sewage disposal; thirdly, it returns to the soil as fertilizer substances essential to plant life, and which are being taken from the soil more and more as our country becomes more densely populated.

The purpose of the present paper is not to emphasize the need of the readily available nitrogen supply for crop growth, nor to discuss the technique of activated sludge production, but to give the results and conclusions which seem logical, based upon the plot tests carried out during the past three years.

It is well to recall at the outset that the "activated sludge process" is still in the experimental stage, and that we have not even approximated the possibilities in the production of a high nitrogen content and a suitable marketable product.

The sludge used in the experimental test was a dry powdery material, quite inoffensive in odour and was the precipitated solid matter taken from the concrete tanks of the experiment station after about four hours aeration. The solid material was air dried and ground to pass through a forty mesh screen and on analysis contained from three to five and a half per cent. nitrogen and a moisture content below ten per cent. The nitrogen per cent. varied with the season and rate of drying and was analysed each time before using.

It seems advisable to present the data collected thus far, and to indicate wherein the experimental results have corroborated the work of other investigators. The conditions under which the experiments have been conducted have not been entirely satisfactory from the economic point of view and it is not the author's wish to claim for activated sludge any merits as a fertilizer, which are not substantiated by experimental results.

The area being used for plot tests is adjacent to the experiment station and about one-third acre in size. The individual plots are approximately .01 acres and are separated by two foot paths. The plots have good drainage and a light loamy soil. The subsoil is a fairly heavy clay and received a six inch top dressing of loam prior to the commencement of the experiments in 1920. Subsequent results have shown a variability in both the subsoil and surface-soil. This variability is known to have modified the results to some extent and no attempt is made to minimize the serious effects of this variation. In the initial report of this work (1), it was pointed out how important it is to recognize the heterogeneity of the soil in experimental plots, and how erroneous the conclusions reached may be when the irregularities of soil textures and structure are added to those of plant variability, bacterial content, drainage and aeration.

*Note.—H. D. Brown, "Fertilizer Value of Activated Sludge," Annual Report Provincial Board of Health, Ontario, 1921.

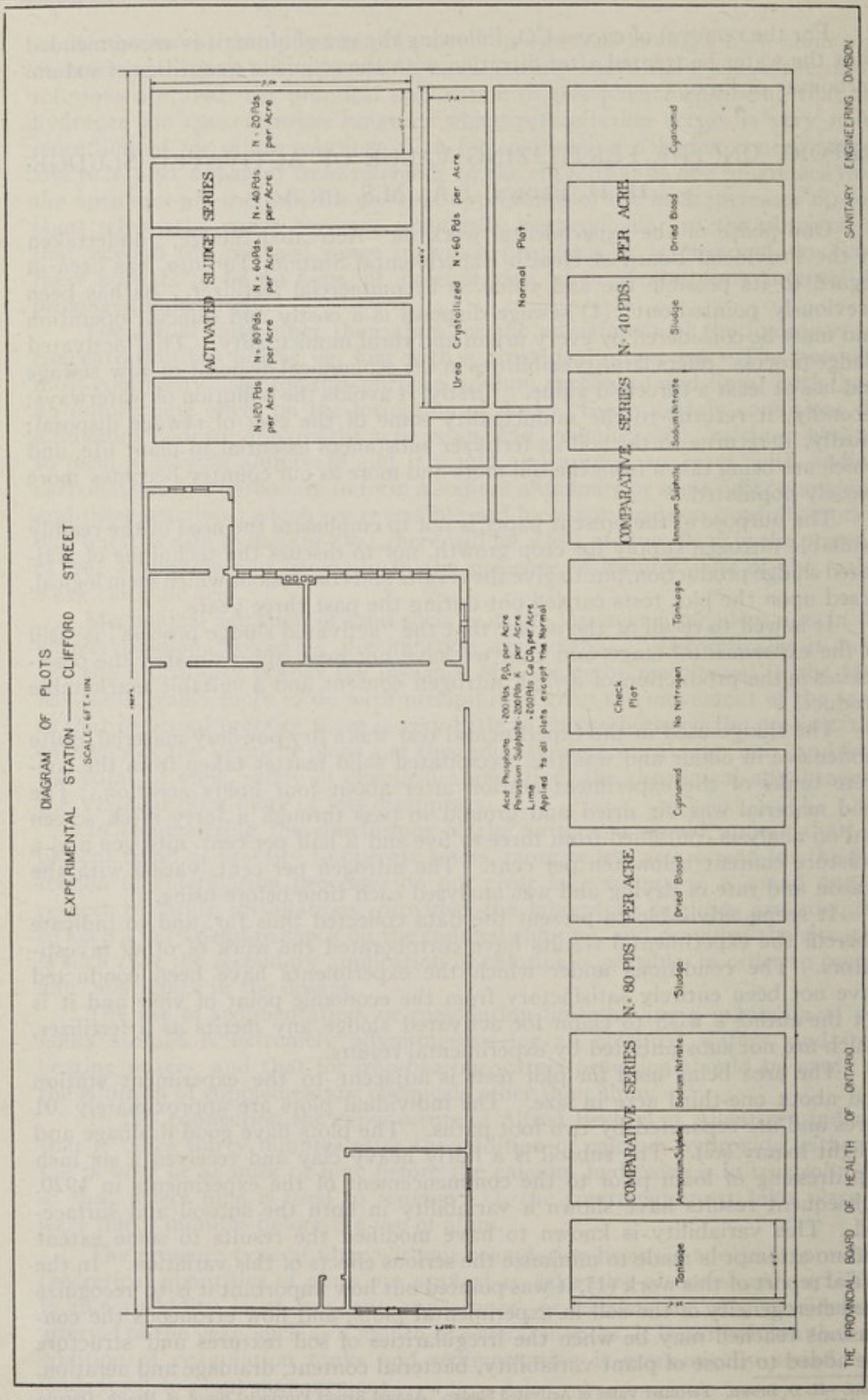
DIAGRAM OF PLOTS
EXPERIMENTAL STATION —— CLIFFORD STREET
SCALE - 64 FT = 1IN
ACTIVATED SLUDGE SERIES
N = 120 Pds per Acre
N = 80 Pds per Acre
N = 60 Pds per Acre
N = 40 Pds per Acre
N = 20 Pds per Acre
Urea Crystallized N = 60 Pds per Acre
Normal Plot
Acid Phosphate - 200 Pds P2O5 per Acre
Potassium Sulphate - 200 Pds K per Acre
Lime - 2000 Pds CaCO3 per Acre
Applied to all plots except the Normal
COMPARATIVE SERIES
Ammonium Sulphate
Sodium Nitrate
N - 80 PDS PER ACRE
Sludge
Dried Blood
Cyanamid
Tankage
Check Plot
No Nitrogen
N - 40 PDS. PER ACRE
Sludge
Dried Blood
Cyanamid
Tankage
COMPARATIVE SERIES
Ammonium Sulphate
Sodium Nitrate
N - 80 PDS PER ACRE
Sludge
Dried Blood
Cyanamid
Check Plot
No Nitrogen
Tankage
N - 40 PDS. PER ACRE
Sludge
Dried Blood
Cyanamid
THE PROVINCIAL BOARD OF HEALTH OF ONTARIO
SANITARY ENGINEERING DIVISION

Diagram No. 1

It is proposed in this report to outline in detail the experimental results obtained in 1922 and to correlate these with those obtained in 1920 and 1921 and to indicate what these tests have emphasized in regard to such experimental work.

From the information as to soil conditions, obtained in 1920 and 1921, it was decided to modify the procedure in 1922 and to give "activated sludge" a more rigorous test. Owing to the small area available for experimental plots and the variability of the soil, the number of plant types was reduced to one, so that instead of eight to ten kinds of plants, only one was used and each plot contained fifty plants of the same type. Tobacco was used on all plots because of its rapid growth and large nutritive demands. "White Burley" had shown good growing qualities and extensive root system and need of available nitrogen, and so was chosen as a suitable variety.

Instead of three series of six plots each, where nitrogen was applied in a low, moderate and high amount for each fertilizer, the number of series was reduced to two comparatives series and one series of sludge application alone. Thus instead of three sludge plots of different sludge applications, there were seven plots to which activated sludge was applied. The scheme of plot arrangement was a modification of that suggested by Gile and Carrero (2), and as shown in diagram one, combines the following principles which are recommended for any such fertilizer test.

(1) A regulated series of plots of the fertilizer to be tested, from which may be obtained the effect of increased application of that fertilizer.

(2) A series of plots to which the other fertilizers are applied in amounts to give an average nitrogen application.

(3) The series mentioned in number two includes plots of the fertilizer to be tested and these act as checks on the regulated series of that fertilizer.

(4) A uniform application of the other essential plant nutrients such as potassium and phosphorus.

(5) A uniform application of the amendment lime, to avoid excessive acidity developing and to put the soil in good physical condition.

(6) A comparison of the various fertilizers with the standard based on equal yield rather than on relative yield. It is important to compare fertilizers which have given equal yields rather than to rate the fertilizers in terms of their relative yields.

"Activated sludge" was used as the fertilizer to be tested and was applied to the *five* plot series at the rate of 20, 40, 60, 80, 120 pounds of nitrogen per acre. The other nitrogenous fertilizers used were Cyanamid, Dried Blood, Nitrate of Soda, Ammonium Sulphate, High Grade Tankage and Urea, crystallized. Two series of six plots each were used with these fertilizers, the first series was an application of forty pounds of nitrogen per acre, and the second series was eighty pounds of nitrogen per acre. The urea plot received nitrogen at the rate of sixty pounds per acre. Calcium carbonate was applied to all plots except the normal, on April 8th, at the rate of a thousand pounds per acre. Acid Phosphate and Sulphate of Potash were applied to all plots except the normal, at the rate of 200 lbs. P_2O_5, and 200 lbs. K per acre. The composition and applications of fertilizers are given in Table No. 1.

Resistant White Burley Tobacco seed was obtained from Kent County and sown broadcast on the greenhouse bench, April 10th. Seedlings were transplanted to flats, June 8th, and uniform plants put out on the experimental plots June 21st, during a period of cool, cloudy weather. The plants were put in three foot squares, so that each plot contained fifty plants. The area under investigation thus contained a thousand uniform plants.

TABLE No. 1

FERTILIZER APPLICATIONS

Fertilizer	Rate of Application	% Nitrogen Content	Pds. Fertilizer Applied	Date of Application
Activated Sludge	20 pds. N.	3	6.75	June 15
" "	40 "	3	13.5	"
" "	60 "	3	19.75	"
" "	80 "	3	27.0	"
" "	120 "	3	41.0	"
Cyanamid	40 "	20	2.0	June 11
"	80 "	20	4.0	"
Dried Blood	40 "	10	4.0	June 15
" "	80 "	10	8.0	"
Nitrate of Soda	40 "	15	3.0	"
" "	80 "	15	6.0	"
Sulphate of Ammonia	40 "	20	2.0	"
" "	80 "	20	4.0	"
High Grade Tankage	40 "	5.5	7.5	"
" "	80 "	5.5	15.0	"
Urea-crystallized	60 "	49	1.2	June 16
Acid Phosphate	200 pds. P_2O_5	160	12.0	June 15
Potassium Sulphate	200 " K	46	4.5	"
Lime	1000 " Ca CO_3	100	10.0	April 8

TABLE No. 2

No. of plants per plot ready for topping 55 days after setting out.

Sludge Plot Series		Comparative Series		
N. Application	Plants	Fertilizer	N40	N80
20	6	Ca CN_2	16	17
40	7	Blood	21	18
60	10	Sludge	20	20
80	10	Na NO_3	18	23
120	6	$(NH_4)_2$ SO_4	12	15
Urea (N 60)	8	Tankage	10	5
Check	8			
Normal	5			

TABLE No. 4

N. 40 Comparative Series Yields obtained and reduced to 87% in comparison with Sludge Series

Fertilizer	Actual Yield in Pds.	Corrected Yield in Pds.
Sludge	23.3	20.3
Cyanamid	21.1	18.4
Dried Blood	22.7	19.7
Sod. Nitrate	19.7	17.1
Amm. Sulphate	18.3	16.0
Tankage	19.0	16.5
Check	17.4	15.1

Plants which were destroyed by cut-worms were replaced from surplus stock and the cut-worm destroyed with a paris-green bran molasses mash applied in the vicinity of each plant during the evening.

The plots were watered as uniformly as possible during their establishment in the soil and were thereafter cultivated, suckered and topped to give them every advantage.

Earliness of maturity is an important factor, particularly in crops such as tobacco when grown in a locality with a short growing season and early frosts. Tobacco growing in Ontario is at present restricted to the Niagara and Erie Peninsula and has not been attempted hitherto in the neighbourhood of Toronto. In the experiments the tobacco matured satisfactorily before the autumn frost and seem to indicate the possibility of growing certain varieties of tobacco with profit in this locality.

A slight indication of the earliness of maturity of tobacco grown on these various nitrogenous fertilizers may be obtained from Table No. 2 which shows the number of plants per plot, which had headed out and were ready for topping by the middle of August. The sludge plots in the comparative fertilizer series compared favourably with the other fertilizer plots, but the sludge series of plots was noticeably backward. This data brings out the fact which was evident throughout the growing season and which is substantiated by the rest of the data, namely, that the area used for the sludge series was poorer in soil texture and structure than the areas of the other series. These plots yielded consistently lower than the comparative fertilizer series, though the relation within the series may indicate fertilizer application. One explanation of the lower fertility of these plots may be in their low residual content of plant nutrients due to the lower applications received in 1920 and 1921.

The tobacco crop was harvested on September 13th, eighty-four days after setting out the plants. The split stock method was used in harvesting. The plants were saddled on five foot laths and weighed. The plants were allowed to wilt on the ground and then transferred to the building and supported on rafters until thoroughly dry. On December 26th the plants were taken down and the dry weights obtained at a humidity of sixty per cent. and a dew point of thirty-six degrees. Table No. 3 gives the summarized data on green weights, air dry weights and comparative dry weights to normal and check plot yields.

It will be seen that the dry weights paralleled the green weights, but that the sludge plot yields are relatively greater in the dry weight series probably indicating a more compact plant structure. The weights from the sludge series plots are low and the heavier applications did not yield as high as the moderate applications. There is a wide variation between the number forty and number eighty sludge plot yields on the sludge series and the comparative fertilizer series which shows that other factors than fertilizer application have been involved. The value of including such data in the report is to give as complete a record as possible, and to indicate the need of carefully selected and tested sorts for this type of experiment. Results with this variability, must be interpreted with caution and should be repeated at the earliest opportunity. The weights obtained from adjoining plots are likely to be of more significance for soil variations apparently tend in definite directions. The soil in the sludge plot series is undoubtedly poorer than that in the comparative fertilizer series and there is a decrease in productiveness in the direction of the heavier applications. The yield on the sludge plots in the comparative series does parallel the yield on the corresponding plots of the sludge series and again the optimum application appears to be around forty pounds of nitrogen per acre.

TABLE No. 3—Green and Dry Weights of White Burley

—	Activated Sludge Series.					Comparative Series N. 40			
—	20	40	60	80	120	$Ca\ CN_2$	Blood	Sludge	$Na\ NO_3$
Green Weights.....	154.3	157.7	145.9	138.9	117.7	175.8	183.5	183.5	166.5
Air Dry Weights.....	17.4	20.3	18.3	17.4	16.0	21.1	22.7	23.3	19.7
Comparison to Normal as 100.	107.1	124.9	113.1	107.2	98.4	130.1	140.0	143.4	121.3
Variation from Normal.....	+7.1	+24.9	+13.1	+7.2	—1.6	+30.1	+40.0	+43.4	+21.3
Variation from Check Plot...	0	+15.7	+4.3	0	—8.8	+20.3	+29.4	+32.8	+12.3

A consideration of Table No. 3 shows that the plot to which nitrogen was applied at the rate of forty pounds per acre gave an increase of 43.4% above the normal unfertilized plot and 32.8% above the check plot. The yield from the sludge plot was the heaviest of the series and the order in which the fertilizer yielded was (1) Activated Sludge; (2) Dried Blood; (3) Cyanamid; (4) Sodium Nitrate; (5) Tankage; (6) Ammonium Sulphate. The number eighty series to which nitrogen had been applied at the rate of eighty pounds per acre, showed sludge producing 26.1 per cent. above the normal and 16.9% above the check plots and the fertilizer plots yielded in the same order, except that the Tankage plot yield was very low and obviously due to causes other than nitrogenous fertilizer application.

The check plot in the fertilizer series had received lime, potash, and phosphoric acid but no nitrogen, while the normal plot was unfertilized. The check plot was between the N40 Tankage and N80 Cyanamid plots which yielded 17.2% and 11.3% respectively above the normal, while the check plot would indicate a response to lime, phosphorous and potash, while the yields of the Tankage and Cyanamid plots adjacent would indicate a further response due to nitrogen added.

The plot called "Urea, Crystallized" was included, owing to the publicity which has recently been given to this product and its claims to a very high nitrogen content. This material was obtained through Lyman Bros., Toronto, and on analysis showed 49% nitrogen. The plot treated at the rate of sixty pounds per acre yielded 11.5% above the adjacent normal unfertilized plot. The cost of this material, despite its high nitrogen content, is at present prohibitive to its use as a fertilizer on an economic basis.

Since the experiment was planned for a comparison of "equal" rather than "relative" yields, the data on dry weights had been plotted on a graph constituting Diagram No. 2. The yields in pounds of dry matter per plot of fifty plants are plotted along the ordinates and the fertilizer application in pounds on nitrogen per acre, along the abscissae.

Regarding the sludge series graph, it is seen that the crop yields increased with increased applications up to forty pounds N per acre and then gradually decreased with the heavier applications. The sludge plot yields on the comparative series were greater than from the corresponding application on the sludge series, but the relation between the forty and the eighty pound applications were the same. The yields of the other fertilizers in the N40

Tobacco in Pounds per Plot of 50 Plants.

Pds. per Acre.		Comparative Series N. 80 Pds. per Acre.						Urea Crystals	Check	Normal
$(NH_4)_2$ SO_4	Tankage	Ca CN_2	Blood	Sludge	Na NO_3	$(NH_4)_2$ SO_4	Tankage	—	—	—
151.0	146.0	158.0	165.0	155.5	159.3	141.8	121.3	138.0	131.0	137.5
18.3	19.0	18.1	19.2	20.5	17.8	17.0	15.2	18.1	17.4	16.2
112.6	117.2	111.3	118.1	126.1	110.9	104.9	93.6	111.5	107.2	100.0
+12.6	+17.2	+11.3	+18.1	+26.1	+10.9	+4.9	—6.4	+11.5	+7.2	0.0
+4.3	+8.3	+3.2	+9.4	+16.9	+1.6	—3.1	—13.4	+3.2	0.0	—7.7

comparative series are indicated on the line joining the check plot yield and the sludge plot yield for this series. As Zile (3) points out, the Mitscherlick curve is a better criterion of the effect of increased fertilizer application on yield than the Liebig curve. The Mitscherlick curve draws attention to the fact that there is an optimum application of fertilizer and that above this amount the effect is deleterious. The Liebig curve indicates increased yield with increased application and has been shown incorrect for heavy fertilizer applications. It is seen that the data obtained for tobacco yields shows an optimum application for sludge at about forty pounds of nitrogen per acre, equivalent to about 1,000 pounds of sludge with a 4% nitrogen content. Applications above or below this amount gave lower yields and the graph somewhat resembles the Mitscherlick curve.

Decreased yields with heavier applications of fertilizer might be explained on the basis of toxicity or other detrimental effects from heavy commercial fertilizer applications. It is well known the ammonium sulphate may induce acid conditions which are harmful to the crop, and sulphur when applied above 200 pounds per acre causes a considerable reduction in crop yield. Experiments conducted at Rothampstead (4) on Activated Sludge indicate a high protozoan content which may affect the bacterial content of the soil. Work at the Toronto station has confirmed the protozoan content of wet sludge and showed an increase from 500 per c.c. in raw sewage to 50,000 per c.c. in a 20% sludge flocculate solution after a short period of aeration. The number of protozoa seem to parallel the organic matter of the sludge and their presence may be injurious to nitrifying bacteria as is shown in the work of Russell and Hutchinson (5).

Activated Sludge when applied in amounts above 1,000 pounds of dried sludge per acre may introduce into the soil organic or chemical toxins which are injurious to normal plant growth. Another explanation for the lower yields on heavily fertilized plots than on plots receiving only forty pounds of N. per acre, may be that the soil conditions were poorer in the areas which were more heavily fertilized. The crop weights from the other fertilized plots and the results obtained in previous years seem to indicate that this explanation is correct. It is interesting to note, however, that the same relation holds true for each of the comparative series as well as for the sludge series. Considering the two sludge plots fertilized alike with forty pounds of nitrogen per acre, the sludge plot in the sludge series yielded 87% of the yield of the sludge plot in the comparative fertilizer series. Similarly the two sludge plots fertilized at the rate

of eighty pounds nitrogen per acre, gave a yield of 85% for the sludge series in relation to the comparative series. Since sludge plots of the comparative fertilizer series both show the same comparative relation of the fertilizers in regard to yield and are in both cases about the same amount better than the sludge series, then the same relative values hold when the comparative series yields are reduced to 87% to compare with the sludge series. Table No. 4 indicates the actual and corrected yields, which are shown on the graph in Diagram No. 2 and includes the corrected value for the check yield which was situated between the two comparative series and subject to the same soil conditions. The theoretical yields due to sludge treatment would be indicated along the line A B C, so that the nitrogen value in pounds per acre equivalent to the yields of Ca CN_2, Blood, etc., would be the equivalent value of sludge in pounds of nitrogen per acre to give yields "equal" to those obtained by forty pounds nitrogen per acre in the form of the various other nitrogenous fertilizers. Were the above assumptions correct in regard to soil conditions, then Table No. 5 would be the equivalent

TABLE No. 5

N 40 Comparative Series in terms of corrected values of Table No. 4. based on graphs of Diagram 2.

Sludge in pds. per acre equivalent to 40 pds. N. of the following to give equal yields.	
Activated Sludge	40
Cyanamid	26
Dried Blood	35
Sodium Nitrate	17
Ammonium Sulphate	9
Tankage	13

value of activated sludge and the other nitrogenous fertilizers used. It is not assumed that Table No. 5 is a true interpretation of the data obtained, because the soil of the sludge plot series was not uniform within this series nor was it repeated often enough to warrant numerical comparisons of this degree of accuracy. The above does, however, illustrate the method of comparison on an equal yield basis and does indicate the relative effects of nitrogenous fertilizer application to a tobacco crop grown on this soil type.

The results obtained in 1920, 1921 and 1922 show the same general results. The number of plant types used in 1920 and 1921 involved so many factors that the results can only be taken as indicative.

Legumes, such as peas and beans, are to some extent independent of soil nitrogen, and the value of a fertilizer such as activated sludge seems to lie in the early acceleration of growth and early maturity of the crops. This early maturity brings the produce on the market slightly before the rest of the crop and its market value is greatly increased thereby. The data obtained during 1920 and 1921 showed an earlier maturity on the sludge plots which was most accentuated when the application was of forty pounds nitrogen per acre. Heavier applications than this prolonged the growing period and cut down the gain in earliness of maturity which the fertilizers in general induced.

Flax responded well to nitrogenous fertilizers during both seasons tested, though there was a marked reduction in yield during the second season that flax was grown on the same ground. The optimum yield occurred on the N80 series and plants on the sludge plots showed a longer stem growth and earlier flowering than on the other plots. The shortness of fibre in the second season was accentuated on the check and normal plots to which no nitrogen had been applied and showed the need of nitrogenous fertilizer, as well as a rotation of crops. For total yield, the dried blood and sulphate of ammonia gave the best results and sludge plots yielded well above the average for each series.

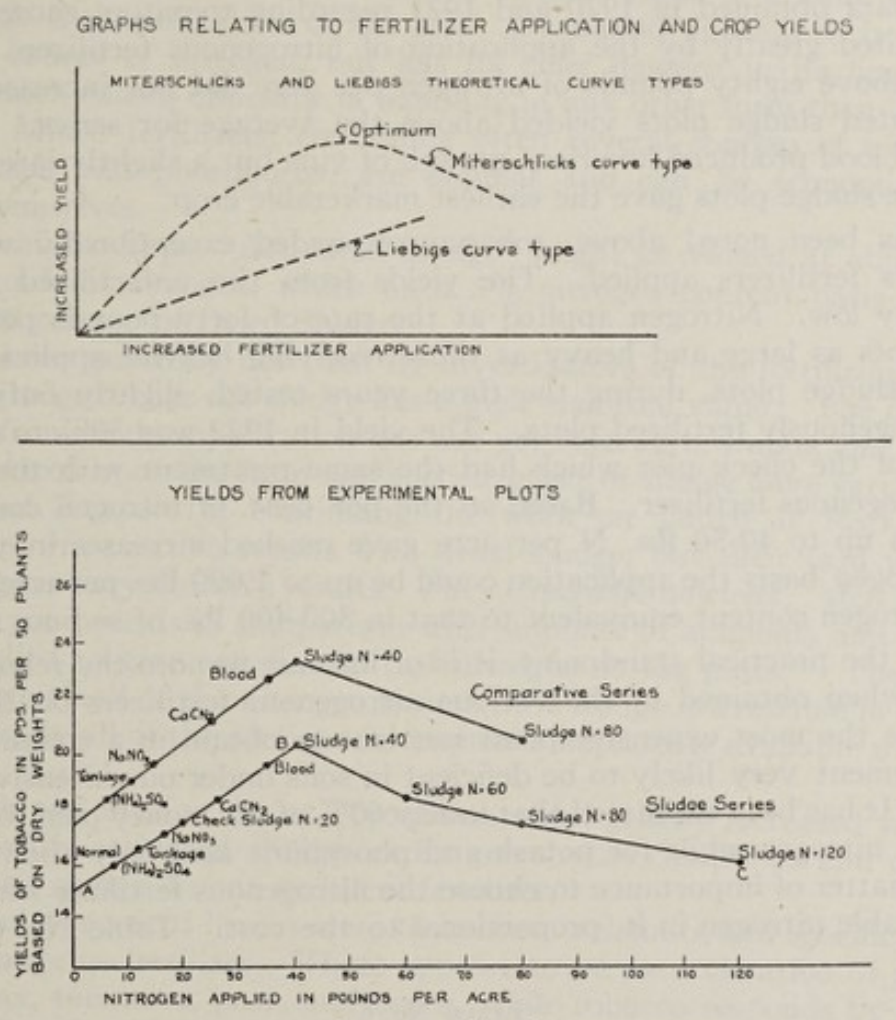

DIAGRAM NO. 2.

The potato crop was light in both seasons and did not respond noticeably to nitrogenous fertilizer treatment. In 1919 the sludge plot crop outweighed the other plot tubers and in 1920 was still markedly above the average. The heavier applications of fertilizer gave slightly heavier yields and tankage in particular caused good response.

Cabbage and cauliflower plants responded well during both seasons and benefited by heavy applications of nitrogenous fertilizer. The response on the activated sludge plots was definite and in all fertilizer treatments the 120 pounds of nitrogen per acre gave the best results. Plants such as cabbage and cauliflower show marked variability in the percentage maturing and in the growth of individual plants. In order to justify conclusions in regard to such crops, large numbers must be used and the variability measured, which arises from such factors as seed constitution, soil condition near the plant, soil moisture in local areas and proximity to other crops.

The data on carrots and onions is of questionable value, owing chiefly to the proximity of the rapidly growing tobacco plants. There is every reason to believe, however, that these crops respond to applications of activated sludge in a degree at least equal to their response to other nitrogenous fertilizers. Corn responded well to activated sludge particularly to the heavier applications. Only one season's data was obtained, but this indicated that all the forms of nitrogen applied were available to the plants. The unfertilized plot yields were considerably lower and the rapidly growing plants seemed able to utilize the nitrogen of the heavier applications.

The data obtained in 1920 and 1921 regarding tomatoes shows that this crop benefited greatly by the application of nitrogenous fertilizers. An application above eighty pounds of nitrogen per acre did not increase the yield and activated sludge plots yielded above the average for series. Cyanamid and dried blood produced luxuriant growth of vine but a slightly later maturing fruit. The sludge plots gave the earliest marketable crop.

As has been noted above, tobacco responded exceptionally well to the nitrogenous fertilizers applied. The yields from the unfertilized plots were consistently low. Nitrogen applied at the rate of forty pounds per acre produced plants as large and heavy as those receiving heavier application. The activated sludge plots, during the three years tested, slightly outyielded the other nitrogenously fertilized plots. The yield in 1922 was 30% to 40% above the yield of the check plot which had the same treatment with the exception of the nitrogenous fertilizer. Based on the per cent. of nitrogen contained, an application up to 40-50 lbs. N per acre gave marked increases in yield. On a 4% nitrogen basis the application could be up to 1,000 lbs. per acre and would have a nitrogen content equivalent to that in 300-400 lbs. of sodium nitrate.

From the practical standpoint, it is of interest to note the relative cost of nitrogen, when obtained in the various nitrogenous fertilizers on the market. Nitrogen is the most expensive plant nutrient to obtain in a commercial form and an element very likely to be deficient in soils under our intensive cropping systems. It has been estimated that nearly 60% of the money paid for fertilizers is paid for nitrogen while for potash and phosphoric acid only about 25%. It is thus a matter of importance to choose the nitrogenous fertilizer which has the most available nitrogen in it, proportional to the cost. Table No. 6 has been

TABLE No. 6

Cost of Nitrogen in Various Forms of Commercial Fertilizers.

Material	Formula	%N H_3	Amt. to contain 100 Pds. N	Cost per 100 Pds.	Cost per 100 Pds. of Nitrogen
Cyanamid	Ca CN_2	24	420 Pds.	$2.50	$15.00
Dried Blood		15	650 "	4.50	36.50
Sodium Nitrate	Na NO_3	18.5	540 "	3.50	23.00
Ammonium Sulphate	$(NH_4)_2$ SO_4	25	400 "	3.50	17.00
Tankage*		10	1000 "	3.75	45.50
Urea. Crystallized		60	170 "	50.00	102.00
Potassium Chloride	K Cl	50%K	200 "	3.25	6.50
Potassium Sulphate	K_2 SO_4	48%K.	210 "	3.50	7.30
Acid Phosphate	Ca H_4 $(PO_4)_2$ + Ca_2 H_2 $(PO_4)_2$	16% P_2 O_5	625 "	1.50	9.40

*Tankage contains 5-10% P_2O_5 which would reduce its nitrogen cost below $40.00.

made up from the quotations of the Ontario Fertilizer Co., Ltd., on December 28th, 1922. This table gives the amounts of the various fertilizers which contain 100 pounds of the fertilizer element in question and the present market price in terms of nitrogen, potassium or phosphoric acid. The table brings out the fact that urea, crystallized, at the price paid for it could not be used economically as a fertilizer. Tankage costing $45.50 per 100 pounds of nitrogen, contains from 5-10% phosphoric acid, which would reduce its cost to about that of Dried Blood at $36.50 per 100 pounds of nitrogen. These are expensive forms of nitrogen to apply as fertilizers and the fact that they are being widely used for stock food mixtures is indicative of their value in a more direct way than through the fertilization of the soil. Cyanamid appears to be the most economical source of nitrogen, but has its chief demerit in its fine powdery condition which causes difficulty in handling in any other form than in a mixed fertilizer. Mixed fertilizers, containing often several sources of nitrogen, as well as potash and phosphorus, are popular and can be economically prepared by themselves.

On the above basis, "Activated Sludge" might be valued at about $30.00 per 100 pounds of nitrogen, which on a 5% nitrogen content basis would be worth $30.00 per ton of Dried Sludge.

It has been generally accepted by investigators of the fertilizing value of "activated sludge," that the sludge has a high manurial value. The magnitude of the gain from sludge application has not yet been agreed upon and the interpretations placed upon the form and specific effect of sludge have varied widely. Richards and Sawyer (4) continuing the work on sludge at Rothampstead obtained uniform positive results with dried sludge, but their field work with wet sludge gave very variable results. They conclude, however, "that activated sludge gave good yields in comparison with sulphate of ammonia and farmyard manure applied to give equal weight of nitrogen to the plots." They believe that only about half of the nitrogen in activated sludge is available in 100 days, while practically all of the nitrogen in ammonia sulphate is available within that time.

Nasmith and McKay (6) at Toronto obtained greatly increased yields over check plots with activated sludge under greenhouse conditions and concluded that activated sludge was an excellent fertilizer.

The results reported herein seem to indicate a definite and specific value for activated sludge as fertilizer. There appears to be an accleration of growth in crops like flax, tomatoes, peas, and beans, while tobacco responds by increased plant growth. Compared to other nitrogenous fertilizers on an equal nitrogen basis activated sludge give good yields and the nitrogen appeared to be available for the plants. Though the nitrogen content of sludge is much lower than in high grade fertilizers like sodium nitrate and cyanamid, it appears to have added value in the way of growth acceleration and the large amount of organic matter contained should be valuable to the soil.

In regard to further experimental work on "activated sludge as a fertilizer," it seems well to point out what these experiments have shown in regard to field technique. Too much attention cannot be given to the unformity of the soil and the need of preliminary cropping as a measure of variability in the plot areas. For field work, plots should be from .1 to .01 acres in size, and each treatment should be reduplicated at least three to four times. Check plots should be placed at least every third plot in the series and used as a criterion of soil heterogeneity. The number of crops studied should be a minimum and chosen with great care as to their response to the nature of the treatment to be used.

The comparison of fertilizers should be made on the basis of equal yield, rather than on relative yield since each additional increase in crop means more in soil productiveness than the previous increase. As has been truly said, "If you ask nature a simple question she may answer it, but if you ask her several questions at once, she usually replies by asking you many more."

Many difficulties yet remain in regard to activated sludge production, but the fact remains that even in its present stage a clarified effluent is obtained which will not pollute the waterways and the sewage which after septic tank treatment has less than 1% nitrogen on a dry basis builds up a sludge in a few hours containing 4% to 6% nitrogen and teems with micro-organisms many of which are valuable additions to the soil. With the introduction of an electrolytic process and the use of lime during aeration, many difficulties may be overcome and the lime content of the sludge be a factor in drying, as well as in its value as a soil amendment.

It is safe to recommend to any municipality a scheme of sewage activation and the utilization of this product "activated sludge" as a fertilizer. The town of Brampton which was the first town in Ontario to adopt this system of sewage treatment, finds the method of sewage disposal entirely satisfactory and the Dale Estate florists are anxious to have the sludge even in a wet condition for their greenhouse work.

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STUDIES RELATING TO THE BIOLOGY OF ACTIVATED SLUDGE.

H. D. Brown, B.A., M.S. (in Ag.)

Introduction:

Those interested in the disposal of sewage by the "Activated Sludge Process," note with interest the accumulating data on the biological and chemical aspects of this process. Dealing with a complex substance which undergoes many chemical and biological changes during activation, there is a demand for investigation of all phases of the subject. The biologist and the chemist are, in particular, needed to explain the processes by which the sludge is built up and the effluent clarified. Resulting from investigations from the biological and the chemical points of view, there has arisen one group of investigators who explain all the phenomena of activation on a chemical basis, while the other group considers that the biological phases are most important and will be shown to be the determining factors in the process.

The chemical explanations for the coagulation of the solids and the clarification of the sewage effluent are usually related to the catalytic effect of certain salts. Cambier (1) concluded that nitrification in activated sludge is not biological, but is favoured by ferrous sulphide acting as a catalyst. Lucas (2) found that the presence of iron in the activating sludge chambers caused rapid flocculation and gave a deep brown colour to the sludge which settled rapidly, leaving a clarified effluent. He found no evidence of iron bacteria present, which Fowler and Mumford (3) credit as being present in sewage and responsible for the reduction of iron to the ferrous condition, in which form it is active in precipitating the solids. The modern studies of colloidal solutions show that iron in solution affects the colloidal condition and in certain cases breaks the colloidal state, thereby causing precipitation of solids and loss of turbidity.

The biological point of view has been championed particularly from the Rothampstead station, and protozoa are regarded as the important factor in the nitrogen accumulation in sludge, and their numbers probably are very closely related to the bacterial content of the activating sludge. Richards and Sawyer (4) estimate the protozoan content of well activated sludge at 1,000,000 per gram of wet sludge. They found a complete correlation between the numbers of active protozoa and bacteria under varied conditions, but the suppression of protozoa produced no improvement in the purification of the sewage. These authors also suggest that the high nitrogen content of sludge is due to the accumulation of nitrogen within the protozoa which feed upon the bacteria of the sewage. Many investigators have credited the high nitrogen content of sludge to the free fixation of atmospheric nitrogen and attempts have been made to further increase this content by artificial inoculation. The results have been inconclusive and at present there is considerable doubt whether the nitrogen fixed is great enough to counterbalance the loss of elementary nitrogen occurring through denitrification processes. The process of activation has for its object the breaking down of the complex nitrogenous and carbohydrate compounds and the rendering of the sludge effluent free from disease producing organisms. A clarified effluent is thus of primary importance and its production in a rapid and economical way a matter of great significance. The factors which are likely to be involved in this process of clarification are numerous and undoubtedly are effected both by the chemical and biological constitution of the sewage and sludge. Turbidity is closely connected with the colloidal condition and is

readily modified by flocculating salts, such as ferrous sulphide. The hydrogen ion concentration is a measure of true acidity and is known to have a close relationship to the colloidal state, as well as to the microbiological flora of the sludge. The protozoan content of sludge is very high and its relation to the bacteria in sewage has been little studied as yet. Under normal conditions the putrefactive processes connected with purification of sewage are largely controlled by the ammonifying and nitrifying bacteria, and the part of the latter in the activated sludge process has not yet been determined definitely.

Along with the clarification of the sludge effluent, the composition of the sludge is important and its possible use as a fertilizer intensifies the need of studying the nitrogen content and the factors which control its accumulation in the sludge. Raw sewage contains nitrogen chiefly in the complex amino compounds which are being converted to the ammoniacal form and under aerobic conditions will pass on to the nitrite and nitrate form, by the action of nitrifying bacteria. The chemical conditions may control the bacterial and protozoan content of sludge and it is important to work out this relationship, as well as the inter-relationship of the various bacterial forms and protozoa.

It is with these questions in mind that some studies have been undertaken at the Provincial Board of Health Experiment Station, Toronto, in an attempt to find out the relation of protozoa to the bacteria in sewage during activation and the effect of altered protozoa and bacterial contents.

Samples were taken from various places in the concrete activation tanks at the Experiment Station as is shown in Diagram No. 1. The protozoan content was determined daily during a period of about two weeks and bacterial counts were made at the same time. The relation to the circulation within the aeration and settling chambers of the points 1 to 5 are as follows:

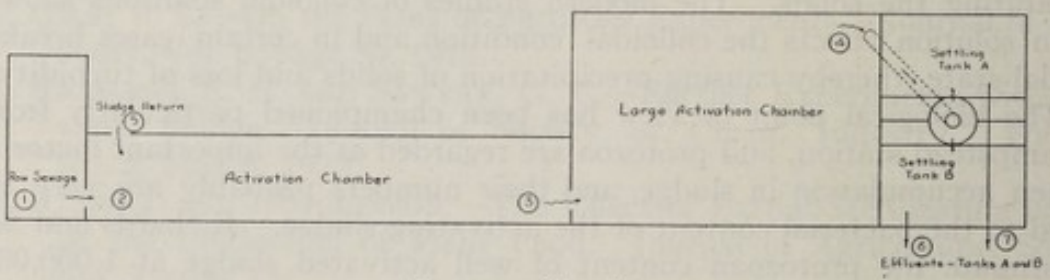

DIAGRAM NO. 1.

1—Incoming raw sewage from the city main.

2—Point at which the activation commences and the sewage mixes with previously activated sludge.

3—The farther end of the activation chamber, from which the activated sludge passes to the large activation chamber and then to the settling chamber.

4—Large activation chamber.

5—Returning sludge used for reinoculation of the incoming sewage.

6 and 7—Effluent from the two settling chambers.

The protozoan counts were made on duplicate samples with ten to twenty counts on each sample and are given in approximate numbers which include the three protozoan types,—flagellates, ciliates and amoeba. The bacterial counts varied so widely that no true index of the bacterial content could be obtained for this run of samples.

TABLE No. 1.

PROTOZOA PER C.C. FROM POINTS IN ACTIVATION TANKS.

Location	1	2	3	4	5	6 & 7
August 21	400	17,000	19,000	20,000	45,000	few
" 22	900	12,000	20,000	14,000	28,000	"
" 23	200	16,000	21,000	19,000	38,000	"
" 24	600	16,000	14,000	14,000	29,000	"
" 25	300	10,000	9,000	11,000	20,000	"
" 29	100	4,000	4,000	9,000	18,000	"
" 31	600	15,000	14,000	13,000	35,000	"
Average	440	12,800	14,400	14,100	30,600	

From the protozoan counts given in Table No. 1, it is evident that the protozoan content of sludge is very high. Even the return sludge which settles to about 20% sludge, has not more than 5% wet sludge, so that the protozoan content would approximate 1,000,000 per gram of wet sludge. This figure is the one given by Richards and Sawyer (4) and apparently holds for Toronto sludge. The protozoan content of raw sewage is from 200-600 per c.c. and varies somewhat from day to day, depending upon the dilution of the sewage and the trade wastes contained. The bacterial count on raw sewage was about 1,300,000 and the counts varied so widely that no significant differences can be given for other places in the tank. As the raw sewage is mixed with activated sludge the protozoan content rises to about 12,000 per c.c. and increases slightly inare as 3 and 4 where the activation has been carried on for a longer time. The return sludge pumped back into the aeration chamber is very high in protozoa and apparently a little higher in bacterial numbers, the counts of the latter averaging about 1,500,000. In the above samples the protozoan count paralleled the amount of solid matter and seemed to be directly related to the organic content of the sludge. The effluent contained very few protozoa and it seems probable that they settled with the solid sludge material, from which they derive their energy. It is thus noted that the protozoan content in the activation tanks rises and falls in proportion to the amount of suspended matter in the tanks and is highest where the sludge-water ratio is greatest.

Protozoa counts were next made during prolonged periods of sewage aeration. Hard glass cylinders five feet long and three inches in diameter were used in series and aerated through porous "Filtros" discs, which finely divided the air entering the cylinders. Five liters of raw sewage was placed in each cylinder and aerated in periods up to one week. Table No. 2 shows the results of this aeration and gives the bacterial counts on triplicate agar plates with dilutions of 1/10,000.

TABLE No. 2.

PROTOZOA AND BACTERIAL COUNTS ON RAW SEWAGE.

Date	Length of Aeration	H. ion conc.	Protozoa per c.c.	Bacteria per c.c.
September 1	0 hours	6.6	400	1,400,000
" 5	4 days	7.4	1100	330,000
" 6	5 "	7.4	1500	340,000
" 7	6 "	7.6	2250	50,000
" 8	7 "	7.6	1400	200,000
" 11	10 "	7.7	1200	.....

The number of protozoa in raw sewage was about 400 per c.c. and this number had increased to 1,100 during the first four days. The number increased up to the seventh day and then returned to about 1,000 at which number it remained up to fourteen days. The bacterial numbers decreased as the protozoan count went up and seemed to vary inversely with it. During this period the sewage became more alkaline, and showed but slight decrease in turbidity. The solid matter after two weeks had not flocculated in any noticeable extent or given evidence of building up a sludge. There seemed to be a relation between the number of protozoa and bacteria, other than that induced by the alkalinity of the sewage.

The acidity or alkalinity of activating sludge has been found to have a definite effect on the clarity of the supernatant liquid, but more work along this line must be done. An acid sludge remains very turbid, while an alkaline sludge settles quite rapidly. The effect of hydrogen ion concentration on protozoa is shown in Table No. 3 from counts on cylinders containing five litres of activated sludge from the return sludge pipe. The hydrogen ion concentration of the acid cylinder ranged around 4.3 and the alkaline cylinder about 8.2. The neutral cylinder remained around 7.0.

TABLE No. 3.

PROTOZOA PER C.C. OF SLUDGE DURING AERATION UNDER ACID AND ALKALINE CONDITIONS.

Date	Time of Aeration	Acid PH.4.3	Neutral PH.7.0	Alkaline PH.8.2
August 16	4 hours	....	30,000	.....
" 17	24 "	200	20,000	30,000
" 18	48 "	few	18,000	10,000
" 19	60 "	non-active	9,000	5,000
" 3	4 "	few	9,000	6,000
" 24	24 "	100	15,000	9,000
ONE LITRE OF SLUDGE RETURN AND FOUR LITRES OF SEWAGE.				
September 1	0	....	6,000	.....
" 2	24 hours	....	8,000	.....
August 30	unaerated 7 days	none	few	few

It is evident that acidity is very injurious to protozoa and that the number of protozoa can be easily regulated by controlling the acidity of the sludge or of the sewage at some time during the activation. Whether the low protozoan content under acid conditions is the cause of the turbidity or whether it is a purely chemical effect has not been definitely agreed upon, but the evidence rather supports the chemical explanation. The protozoan numbers decreased in the cylinders during the first periods of aeration, a condition which occurred in the aeration experiments of Richards and Sawyer (4). These authors found that the protozoa number increased again so that at seventy hours the number was about the same as at the commencement. This condition was true in the aeration of raw sewage reported above, but was not determined in the case of the sludge, owing to breakages in the cylinders used for aeration. Anaerobic conditions were detrimental to the protozoa so that after seven days, the unaerated cylinders contained few living forms. An alkaline sludge clarifies more rapidly than a neutral or acid sludge, but has a protozoan content intermediate between an acid and a neutral sludge.

To study the decreased protozoan effect, apart from acidity or alkalinity, raw sewage was partially sterilized by blowing toluened air through the cylinders for thirty to forty minutes. Aeration was then continued in the normal manner and counts made of the protozoan and bacterial contents.

TABLE No. 4.

PROTOZOA AND BACTERIA PER C.C. IN PARTIALLY STERILIZED SLUDGE.

Date	Aeration Time	Non-Toluened	40 mins. Toluened	Bacteria in Toluened
Raw Sewage:				
September 9	0	500	10	1,400,000
" 11	36	900	100	1,800,000
1 litre Sludge				
4 litres Raw Sewage				
September 12	0	6000	none	1,400,000
" 13	24	8000	"	1,200,000
" 14	48	....	few	no counts
" 15	62	....	200	" "

Thirty minutes toluened air reduces the protozoa number very greatly, but does not affect the bacterial count to nearly so marked a degree. After toluening, the protozoa again increase as normal air is blown through the chamber.

A complete sterilization of sludge, both from the protozoan and bacterial point of view, was obtained by adding mercuric chloride in small amounts to cylinders of sewage during aeration.

Much more work on these phases should be done before definite conclusions can be reached as to the biological and chemical importance of sludge activation. Several points are, however, brought out, namely:

(1) The protozoan content of sludge is very great and though varying with local conditions will range up to 50,000 per c.c. of activating sludge or upwards of 1,000,000 in wet sludge as it would come from a centrifuge.

(2) The protozoan numbers are definitely correlated with the amount of solid matter in the sludge tanks and the protozoa remain with the sludge when it settles out after activation.

(3) There is a correlation between protozoan and bacterial numbers in sludge, and as the protozoa content increased the bacterial content decreased under prolonged periods of aeration.

(4) A neutral sludge is most favourable for protozoa, and an acid sludge is very injurious to them. Acidity is more detrimental than alkalinity and also gives a more turbid solution.

(5) Toluene is effective in reducing the number of protozoa without greatly affecting the bacterial number.

(6) Mercuric chloride sterilizes sludge, both in respect to protozoa and bacteria.

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CHLORINATION APPARATUS AND ITS CONTROL.

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The use of chlorine as an agent in the purification of public water supplies is a development of the past two decades. Following its introduction to this continent in 1908 as a sterilizing agent in the treatment of municipal water supplies, its efficiency was quickly realized by waterworks authorities. The first installations were designed to use calcium hypochlorite only. As the necessity for more adequate protection of municipal supplies became evident, and the field of usefulness for chlorine in water purification widened, the process gradually developed from one using chloride of lime to present day liquid chlorinators. The extensive use of this process is well indicated by the fact that to-day in the Province of Ontario the municipal water supplies, which are protected either wholly or in part by chlorination equipment, represent over 80% of all water supplied to municipalities for domestic consumption. At the present time there are over 2,000 liquid chlorine machines in operation in the United States.

Methods of Manufacture:

Calcium Hypochlorite—commonly known as bleaching powder, or chloride of lime—is produced by the action of chlorine gas on slaked lime in lead lined chambers. The gas itself was originally manufactured by chemical means, but the present day method consists in the electrolytic decomposition of salt brine. Coincident with the development of the electrolytic method came the development of machinery for liquifying the gas so that it could be readily transported, as it is to-day, in steel cylinders.

Bleaching Powder Apparatus:

The original bleaching powder equipment, and that normally used to-day, consists essentially of a primary mixing tank, in which the powder is mixed with water, either by hand or by mechanical means, and a secondary solution tank from which the clear liquid containing the available chlorine is fed through a small orifice at a definite rate. This solution may be introduced directly to the supply, or may first be diluted with more water to facilitate thorough mixing with the water under treatment.

One of the chief disadvantages in the use of this bleaching powder method is due to the variation in the strength of the powder. Chloride of lime, as prepared by the manufacturer, contains as an average 35% by weight of available free chlorine, but this figure is far from standard, and is often considerably lower. When large containers or drums are allowed to stand exposed to the atmosphere, or only partially covered the chlorine content rapidly diminishes. These figures do not hold at all for bleach supplied in paper cartons where the available free chlorine is often as low as 10%. The waterworks plant where the daily requirement of bleach is small must either run the risk of loss in strength through the lengthy exposure of a large container, or use small cartons of low chlorine content. Where the operator has no practical means at his disposal for estimating the chlorine content of the bleach, he must rely upon the flexibility of the orifice discharge to obtain the correct dosage. The use of bleach of a low chlorine content mixed in water in the same proportion by weight as the stronger powder will necessitate a more rapid discharge through the orifice,

which in turn will require chlorine solution tanks with greater storage capacity to last the desired period.

A further decided disadvantage in the use of chloride of lime is due to the difficulties encountered in the preparation and handling of the solution. The chlorine fumes from full strength powder are most disagreeable to the operator, and will also rapidly corrode and deteriorate nearby machinery unless it be well protected. The corrosive action on the orifices, which are of necessity small, renders uniform operation extremely difficult where metal parts are used. Constant supervision is required to prevent continual clogging due to small particles of lime in the solution. In those municipalities where the pumps are left to operate in the absence of an attendant, this method will not ensure safe treatment of the supply. It should be regarded more as a temporary device to be used only until a liquid chlorine machine can be put in operation.

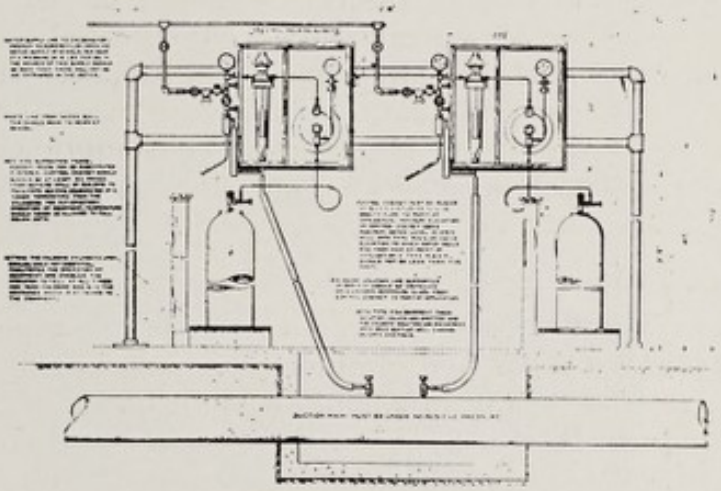

DIAGRAM NO. 1.
Arrangement of Chlorination Equipment.

Liquid Chlorine Machines:

The difficulties met with in the use of chloride of lime are for the most part overcome by liquid chlorination equipment. The development of these machines has now reached a point where the apparatus has become so perfected as to make possible the application of an exceedingly uniform dosage, and one which can be conveniently adjusted to fulfil the requirements of the particular water.

The great majority of the muncipalities of this Province who are using liquid chlorine in the treatment of their water supplies are provided with machines of a similar make, namely, the "Wallace & Tiernan." In view of this a description of the main parts, with their functions of this make only, will be considered. Other machines now on the market include the Patterson Chloronome—Canadian Agents, Laurie & Lamb, Montreal, and the Candy Machine, with the Francis Hankin Company as Canadian representatives. While these machines vary considerably in detail from the "Wallace & Tiernan," they are designed under the same general principles with main parts intended for similar functions.

Component Parts:

The chief parts of a liquid chlorine machine are as follows:

1.—The Cylinder of Chlorine
2.—The Compensator
3.—Gas Measuring Devices
4.—The Mixing and Feeding Equipment

The Cylinder of Chlorine:

The chlorine supplied to the waterworks station is in a liquid condition due to the high pressure in the container. The steel cylinders are of two sizes, containing 100 and 150 pounds of chlorine respectively. Although the liquid chlorine in these is practically pure some foreign substances are very often present and unless this is first blown off by slightly opening the tank valve in the top of the cylinder clogging of the small orifices may occur. The auxiliary tank valves are made in two different styles—the "yoke" and the "union." In view of this it would be advisable for plant operators to procure both styles, so that regardless of from what company the chlorine was purchased no difficulty would be experienced in making the connection to the tank. The chlorine from the cylinder passes through an auxiliary tank valve, and a flexible metal connection to the pressure compensator.

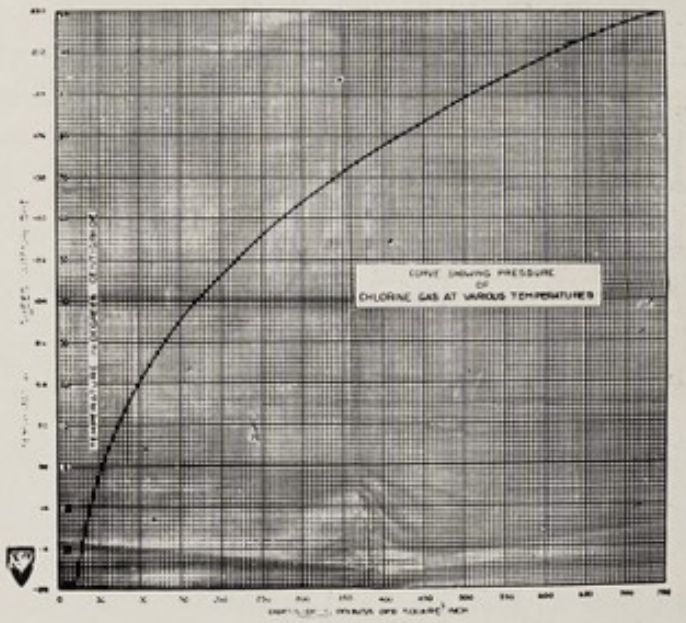

DIAGRAM NO. 2.
Effect of Temperature upon the Pressure in the Chlorine Cylinder.

Liquid chlorine, in addition to being now manufactured in Canada, is sold by the following companies:

1.—The Canadian Salt Company, Windsor, Ont. (Agents—The Nichols Chemical Co., Toronto, Ont.)

2.—The Grasselli Chemical Company, Toronto, Ont.

3.—The General Supply Company, Toronto, Ont.

The Pressure Compensator:

The purpose of the pressure compensator is twofold; first, to reduce the pressure of the chlorine supply leaving the cylinder, and second to maintain a constant delivery of chlorine under varying tank pressures resulting from two factors:

1.—Reduction in the amount of chlorine in the cylinder.

2.—Variations in temperature.

As the amount of chlorine in the cylinder decreases the pressure falls off considerably, especially is this the case when the cylinder is nearly empty. The pressure in the cylinder is very materially affected by the temperature of the room. Pressure variations range from about seventy-five pounds at 50°F. to 150 pounds at 95°F. The common practice is to adjust the pressure from the compensator to twenty-five pounds.

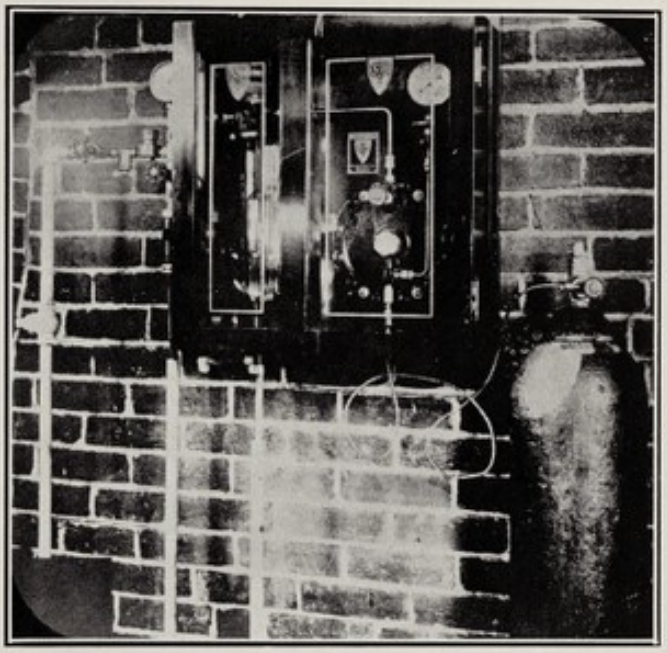

Diagram No. 3.
Wallace & Tiernan M.S.A. Chlorination Equipment.

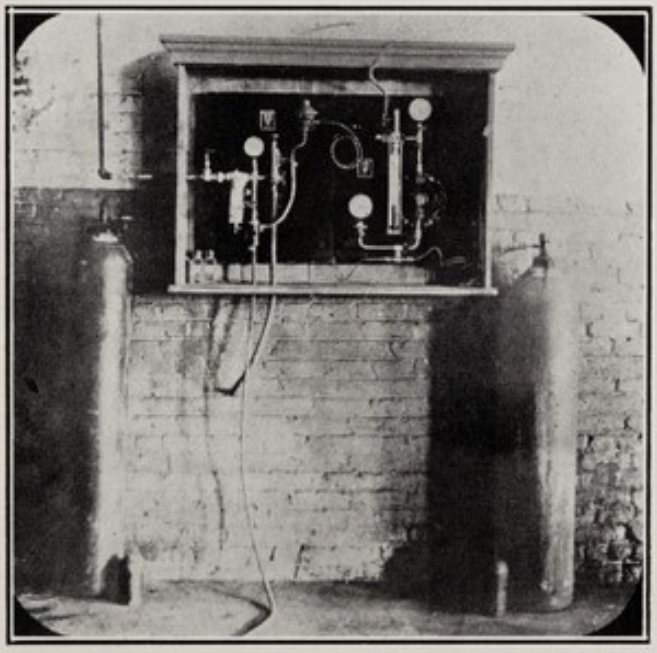

Diagram No. 4.
Wallace & Tiernan M.D.A. Chlorinator.

The compensator is a somewhat complex piece of mechanism, and so constructed as to be very sensitive to slight changes in pressure. The gas entering the compensator is throttled by a tungsten needle point valve actuated by a silver diaphragm, which is held in position by adjusted springs, and operated by the pressure variation on the diaphragm. The release of the pressure on one side following the opening of the chlorine control valve causes the spring and chlorine pressure on the opposite side of the diaphragm to move the latter, which in turn raises the needle off its seat, allowing the chlorine gas to flow through the opening.

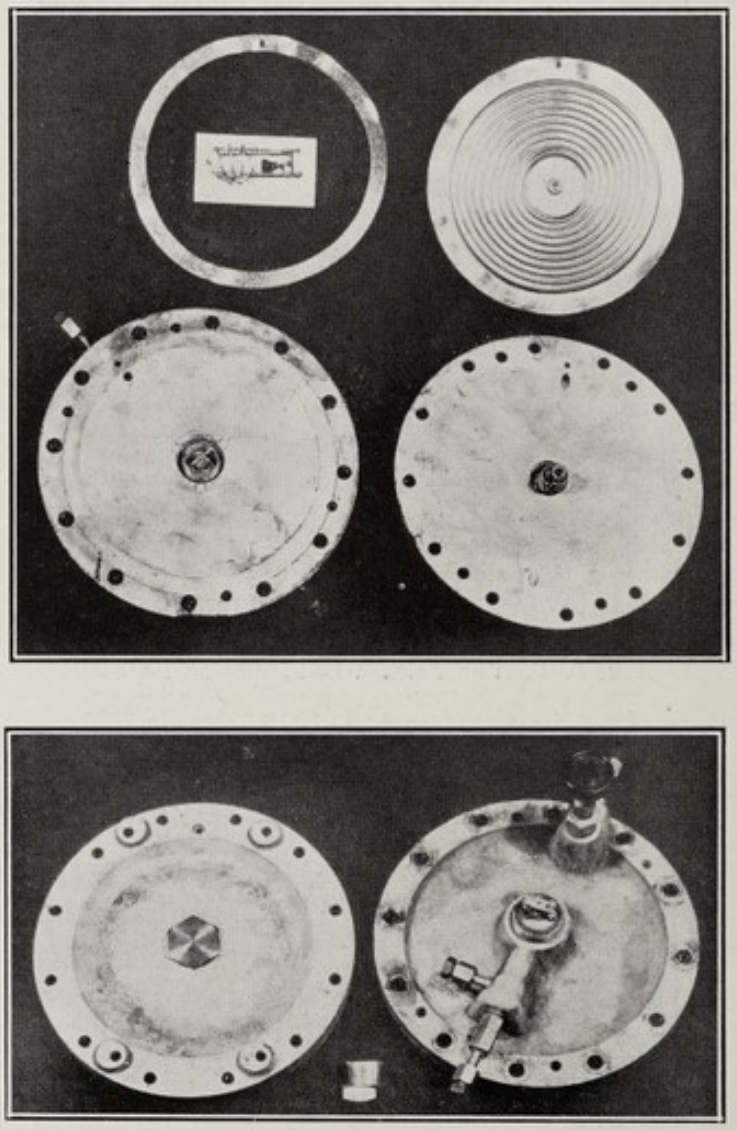

DIAGRAM NO. 5.
The Pressure Compensator Dissembled.

Variation in the capacity of machine is met by varying the size of the compensator seat and container. These are made in four sizes. The first size has a capacity that will pass twenty pounds of chlorine per twenty-four hours, and is used only on the Solution "A" type machines.

The second size will pass up to seventy-five pounds.

The third size up to 200 pounds, while the fourth has a capacity of 300 pounds per twenty-four hours.

The sensitiveness of the various machines is not from O to their capacity, but only over a stated range, which bears a definite relation to the final orifice.

In case of emergency due to failure of the compensator to function properly it may be removed, and chlorine fed directly to the orifice, or gas measuring device, and the rate adjusted by the auxiliary tank valve on the small Solution "A" type. On all other types of machines a jumper valve can be inserted in place of the compensator, and the flow of gas adjusted by a control valve. This does not give nearly as uniform a feed, and will require constant supervision and adjustment of the valve opening to meet the changes of pressure in the chlorine cylinder. Some of these fluctuations can be overcome by enclosing the cylinder of chlorine so as to maintain a somewhat constant temperature.

Gas Measuring Devices:

For measuring the amount of gas passing through the apparatus different methods can be used, depending on the type of machine. On the smaller equipment a volumetric method is adopted. This consists of either of two types, namely, a bubbler for a capacity of from 1/100 to three quarters of a pound of chlorine per day, and the syphon or pulsating meter for a capacity of from one half to ten pounds per twenty-four hours. Both these are used only on the small machines—(Solution "A" type). The amount of chlorine passing the machine is estimated either by the number of bubbles in the former or the number of pulsations in the latter in comparison with a table supplied with the equipment.

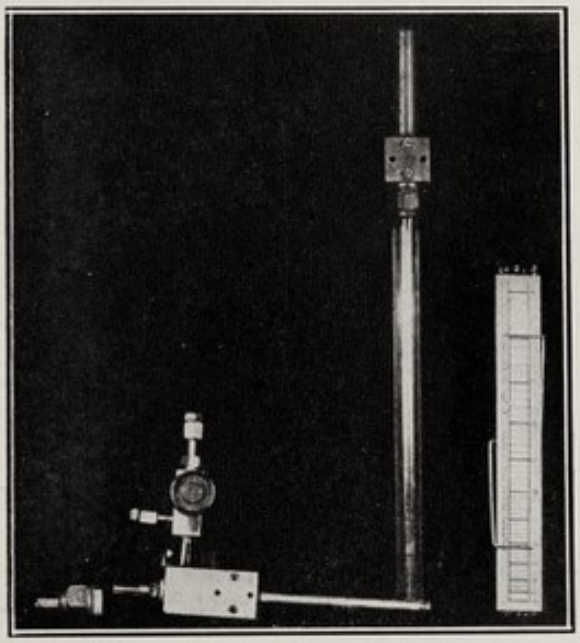

Diagram No. 6.
Orifice and Scale of the M.D.A. Type Chlorinators.

On the larger machines the gas is measured by a glass orifice used in conjunction with a manometer. These orifices are made of a size suitable for the particular dosage capacity of the machine, and should bear a particular relation to the needle point valve of the compensator. The glass orifices are calibrated empirically, and a calibration scale should accompany each orifice. These scales are numbered the same as that etched on the glass orifice. The orifice and scale are interchangeable with any machine where the compensator needle valve and seating have been made for a capacity similar to that of the orifice.

The rate of flow of gas is indicated by the manometer, whose principle of operation being one indicating the drop in pressure of the gas passing through the orifice. This device is made up of a small tube with bottom end open in a larger one. A liquid, carbon tetrachloride, is placed in the manometer, and when the chlorine begins to flow this liquid rises in the inner tube, and the rate of flow is indicated on the scale. The pressure in the larger tube is that of the gas before passing the orifice while that in the inner tube is the pressure of the gas after passing the orifice. This difference in pressure, which registers the actual working pressure of the orifice, causes the manometer liquid to rise in the inner tube, and the corresponding flow is indicated on the scale.

Mixing and Feeding Equipment:

In some of the older and direct feed type installations the chlorine gas was fed through a diffuser directly to the suction main or pump well, but the present practice is to dissolve the gas in water before feeding it to the supply. Where the bubbler or pulsating meter is used the gas is dissolved in the mixing jar surrounding the meter. Where a manometer is used the gas may be dissolved either in a separate solution jar, or in an injector.

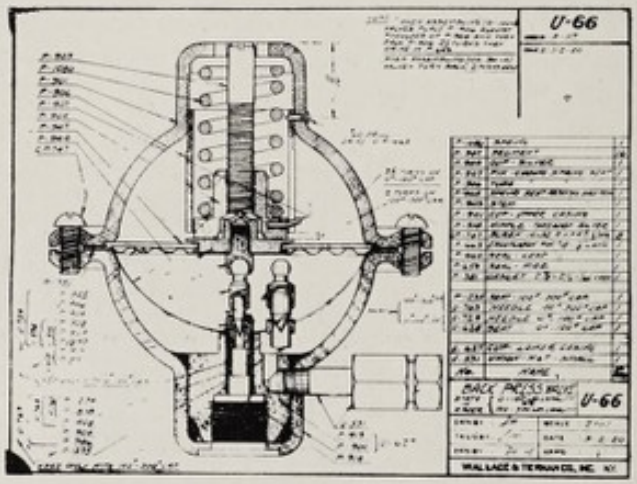

DIAGRAM No. 7.
Section through the Back Pressure Valve.

Injectors:

Injectors are now used very largely on chlorinators. The principle made use of is that a supply of water is passed at a high velocity through a narrow throat and in doing so sucks in chlorine gas through a small opening. The injector is very advantageous in that it is of substantial construction, and not easily broken, and can be used where small pressures occur on the suction side of the pumps. They work successfully where the water pressure available is three times as great as that against which the chlorine solution is to be introduced. The throat of injectors are universally made of vulcanized rubber. A screen placed in front of the injector prevents clogging.

Water Pressure Reducing Valve:

A water pressure reducing valve is usually placed on the water line leading to the injector. It reduces the pressure to a convenient figure for operation of the injector, and keeps it uniform regardless of varying pressures in the main.

Chlorine Check Valve:

The chlorine check valve is an essential part of every chlorinator. Its function is twofold. First, it prevents the possibility of water backing up into

the chlorinator, and thus eliminates subsequent corrosion. It also acts as a check against the escape of chlorine until a definite pressure, usually about twenty-five pounds, has been built up in the machine. This serves to maintain uniformity of discharge through the orifice or pulsating meter.

The essential parts of the check valve are a reinforced silver corrugated disc, to which is attached a tungsten needle, and the back pressure valve seat and container. As the pressure of the chlorine gas builds up against this disc it pushes it upwards and raises the needle from its seat, which in turn allows the escape of gas through the orifice.

The back pressure valve seat and container is made in two sizes, the smaller has a capacity up to 100 pounds per twenty-four hours, and the larger up to 300 pounds.

Feed Devices:

Conditions about the waterworks plant will influence largely the point at which the application of the chlorine to the supply is to be made. It can either be delivered to the pump suction well, or directly to the suction main. The advantages of the fomer lie in the possibility of a more uniform mixing. The most suitable point in the well for delivery of the chlorine solution appears to be directly in front of the pipe carrying water to the well. This will ensure a thorough mixing of chlorine with all parts of the raw water. When the chlorine can be fed only to the suction main difficulty may be experienced where there are many separate suction lines. Alteration in the dosage, however, can be more quickly noted when this method is used. To feed the solution to the suction pipe a special corporation cock and silver solution tube is used. This permits of the closing of the corporation cock before the solution tube is entirely withdrawn.

Water Seal:

The majority of chlorinators are provided with water seals through which a small amount of water is allowed to flow continually. This device is intended to serve two purposes:

1. To prevent air getting into the pumps, when the suction is temporarily greater than is supplied by the chlorine solution.

2. To carry off the chlorine in case of loss of pressure of water, or an insufficient supply of water in the mixing chamber to properly dissolve the gas.

While a water seal is undoubtedly of particular advantage it might well be so designed as to provide a supply of water, which will always be adequate and yet prevent any overflowing.

Automatic Control of Chlorinators:

While the manufacturers have provided equipment for the automatic control of chlorination the use of this in smaller installations is of doubtful advantage because of the delicacy of the mechanism and the difficulty of having operators sufficiently trained to make minor repairs. It is most desirable, however, that every waterworks system be provided with a venturi meter to enable the operator to know at all times the rate of pumpage.

The Pedestal or Vacuum Type.

Recently a new vacuum type of chlorinator has been put on the market, which is entirely different in principle of operation and design than any previous equipment. This type gives much promise of overcoming the difficulties experienced in the operation of the old style units. The machine is extremely rugged in construction and the several delicate and often troublesome features of former types have been entirely eliminated, such as the pressure compensator, control and blow-off valves, manometers, check valves, etc.

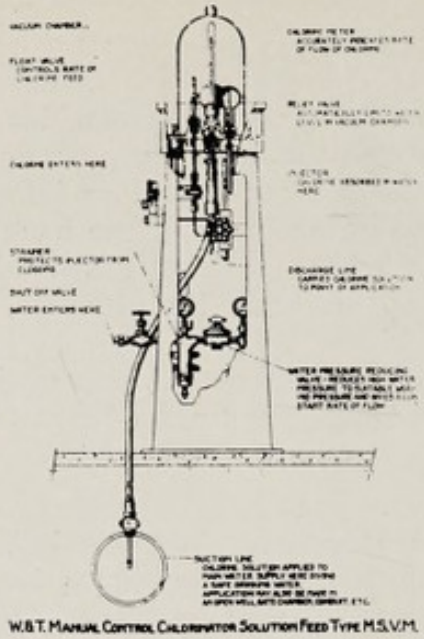

Diagram No. 8.
The New Pedestal Type Machine.

Instead of being designed to work under a pressure of chlorine as is the case with former types this unit functions under a vacuum, a feature which immediately minimizes the nuisance of chlorine leaks.

The vacuum is maintained within a transparent and water-sealed glass dome by the flow of water through a hydraulic injector attached to the base of a vulcanite tray on which the inverted glass dome rests.

Under the glass dome, but connected directly to the chlorine supply is a chlorine pressure reducing valve consisting only of a needle valve and hard rubber float. The chlorine supply is reduced in passing this needle valve from full tank pressure to a slight vacuum and the action of this part in conjunction with other units serves as a compensator in maintaining a constant delivery of chlorine, regardless of fluctuating temperature and pressure of the chlorine supply.

Diagram No. 9.
A Pedestal Type Chlorinator Installation.

The flow of chlorine is varied by increasing and decreasing the vacuum within the glass dome, this latter operation being accomplished by an adjustable silver meter tube which is in turn directly connected to a large rack and hand-wheel, all of which is enclosed within the cast-iron base of the pedestal.

Factors Affecting the Control of Chlorination:

The conditions affecting the control of water chlorination vary considerably in the different waterworks plants. Under those conditions where the pumpage is continuous over twenty-four hours of the day and the supply is fed directly to the mains rather than to a reservoir or elevated tank, difficulty is encountered in providing uniformity of treatment owing to the variations in the consumption throughout the twenty-four hour period. If the supply is unmetered the plant operator can only make a rough estimate of the hourly consumption. Very large municipalities are able to take care of this fluctuation by the setting of the machine. Smaller ones should be provided with an elevated tank or reservoir as a means of economy. The difficulties in the variation of pumpage in small installations may be overcome by placing a pressure relief valve on the discharge side of the pump and providing a by-pass to waste or to some part using water at a lower pressure.

In some of the smaller municipalities where a reservoir or elevated tank is included in the system the service pumps frequently have a large capacity and are operated for only a short period each day. The rate of pumpage here is normally quite uniform, but the operator and those officials purchasing new machines, should bear in mind the fact that the daily consumption is pumped in at a high rate and that sufficient chlorine must be applied to sterilize the water at this hourly rate. The size of orifices in the chlorinator should correspond to the capacity of the pumps rather than to the daily consumption. As a result of these conditions and the previous lack of knowledge of the chlorine requirements of the water, instances have occurred at Haileybury and Timmins in the north where machines of too small a capacity to effectively chlorinate the supply have been installed, and were afterwards removed.

Fire Supply and Dual Supplies:

Practically all waterworks are provided with service and fire pumps, the latter of which are used in case of fires only. Normally the chlorine dosage is set for the service rate. In case the fire pumps are put into operation the dosage should be immediately increased to meet this rate. The operator should know through consultation with the Provincial Board of Health, as a reasonable protection against his liability in a court action, the rate at which chlorine should be applied to fire supplies. Where the fire supply is unfortunately obtained from a separate source, regulations now require the provision of dual check valves, or adequate storage tanks to provide for fire conditions.

Meters:

All public water supply systems should have a venturi meter for recording the consumption. The plant operator can then check up variations in the rate of consumption and adjust his chlorine dosage when necessary. Knowing definitely this increase or decrease, he can at once regulate the dosage and will not be required to make such frequent tests upon the treated supply to determine whether or not he is adding the correct amount of chlorine.

Chlorine Dosage:

Changes in the physical and chemical characteristics of the water supply itself have to be considered in controlling the chlorine dosage. Chlorine is a

very active substance chemically and in addition to its germicidal action in destroying bacteria, it is absorbed by certain substances, which may be present in the raw water, either in suspension or solution. Municipalities which have supplies derived from springs, wells or lakes where there is very little change in the dissolved and suspended solids of the supply will not find any great variation in the organic demand of the raw water. Other supplies, which are subjected to wide ranges in turbidity, colour, amount of dissolved organic matter or amount of industrial waste pollution will be found to require varying amounts of chlorine to maintain sterility in the tap water. Increases in turbidity inhibit the sterilizing action of chlorine and, in addition, the suspended matter, causing the turbidity, usually contains a percentage of organic matter, which reacts with chlorine. Hence increases in turbidity require increases in the amount of chlorine applied. The highly coloured waters, which are characteristic of many of the northern municipal supplies, require large amounts of chlorine (often between two and three parts per million) to meet this demand of the organic content. Plant operators, who are called upon to treat supplies, whose physical and chemical characteristics vary considerably should request the co-operation of the Provincial Board of Health in making a study of the chlorine dosage.

The many factors which either directly or indirectly affect the amount of chlorine which must be applied to ensure a safe water, make it impractical to arbitrarily adopt an exact dosage to be applied at all times. During the earlier period of chlorination the dosage was frequently set upon the advice of the manufacturers of chlorine equipment. This tended to an under dosage, 1/10 p.p.m. being a common figure.

Fortunately the correct dosage of chlorine, which will produce a water of recognized quality, is always associated with a residual chlorine and the dosage may be regulated by this residual rather than the bacteriological test.

With this end in view the Provincial Board of Health of Ontario has made available the ortho-tolidin method for the detection of free chlorine. This method has been chosen on account of its simplicity, delicacy (as small an amount of chlorine as one part in one hundred million can be detected) and definite ranges of colour, which are produced, thus enabling the adoption of permanent standards.

The ortho-tolidin solution for the test is prepared as follows:

One gram of ortho-tolidin purified by being re-crystallized from alcohol, is dissolved in one litre of ten per cent. hydrochloric acid.

The colorimetric standards are prepared as follows:

(*a*) Copper sulphate solution—Dissolve 1.5 grams of copper sulphate and 1 c.c. of concentrated sulphuric acid in distilled water and dilute the solution to 100 c.c.

(*b*) Potassium bichromate solution—Dissolve 0.025 grams of potassium bichromate and 0.1 c.c. of concentrated sulphuric acid in distilled water and dilute the solution to 100 c.c.

The ortho-tolidin solution reacts with any free chlorine in the water tested producing a characteristic yellow colour, which is compared with standards prepared with the potassium bichromate and copper sulphate solutions.

Numerous research experiments have established the fact that the sterilizing action of chlorine is practically complete after fifteen minutes contact. Acting upon this basis the Provincial Board of Health has adopted the standard that for all doubtful water supplies where chlorine alone is used, there shall be maintained a residual chlorine content of not more than .3 p.p.m. and not less than .2 p.p.m. after fifteen minutes contact.

The minimum colour standard is prepared by using 20 c.c. of standard potassium bichromate solution and 1.9 c.c. of standard copper sulphate solution, which is made up to 100 c.c. with the water, which is being treated. The maximum colour standard is made in the same manner except that 30 c.c. of the potassium bichromate solution is used.

To perform the test, a Nessler tube is filled to the 100 c.c. mark with tap water procured as close to the point of application of the chlorine solution as possible. This is allowed to stand for fifteen minutes, when 1 c.c. of the ortho-tolidin solution is added to it. It is now allowed to stand for a further five minutes to give the ortho-tolidin a chance to react with all the available chlorine present. In the meantime the two standards are poured into two other Nessler tubes. After the five minutes period has elapsed, the depth of colour produced in the tap sample treated with ortho-tolidin is compared with the standard by looking down through them over a sheet of white paper. The resulting colour in the treated tap sample should have a depth not less than that of the minimum standard and not greater than that of the maximum. If this is not the case, adjustment of the chlorine dosage is necessary. If the colour is deeper than the maximum, then the dosage must be reduced and vice versa. After the tests are completed the standards should be poured back into bottles provided for the purpose, care being taken that they are not mixed and the Nessler tubes should be rinsed out.

A close check upon the amount of chlorine added to the water is necessary not only to ensure a sterile supply, but also to eliminate the complaints, which sometimes arise as a result of overdosage.

The greatest objection that has been raised against the chlorination of water, has been the production of tastes and odours in certain supplies. These tastes and odours may be roughly attributed to two causes—

(1) An excess of free chlorine.

(2) Combinations of free chlorine with complex organic compounds or certain industrial waste compounds, forming highly complicated substances, the exact nature of which is not definitely known, but which impart a very disagreeable taste to the water.

Tastes and odours due to excess chlorine with the present day knowledge and equipment should rarely occur. Undoubtedly many of the troubles of the early bleaching powder installations were due to lack of adequate means for feeding the solution at a uniform rate or in proportion to the water treated; to the failure to determine the actual strength of the chemical, or to the failure to make tests for residual chlorine on the treated water. The supplanting of the older method by liquid chlorine has done away with many of these difficulties, but even yet tastes and odours sometimes arise, where proper attention is not given to making the doses follow closely the variations in the quality of the water treated or in the rate of pumpage.

There are many instances on record of tastes and odours arising from the second cause, the majority of which arise out of contamination of a supply with trade wastes, containing a certain phenolic content, *e.g.*, wastes arising from the destructive distillation of coal and wood. The solution of this problem at present appears to lie in the retention of all such offensive material on the premises of the offending parties. It is a difficult matter to remove such taste once it occurs and it is, therefore, best to prohibit the pollution of water supplies by such wastes.

Several obscure tastes mentioned in the literature have not been referred to here as these occur only under conditions peculiar to certain supplies.

STATEMENT OF COSTS OF MUNICIPAL CONTROL MEASURES FOR THE ERADICATION OF DOMESTIC FLIES.

By A. E. Berry, M.A.,Sc., C. H. McLeod, B.A., and D. G. Campbell.

The feasibility of fly-control on a municipal basis is very largely dependent upon the cost of such work. Those methods which involve a heavy expenditure, even though efficient, can hardly be expected to gain an extensive application. Any method, in order to be successful, must be practical, cheap and efficient. Various procedures have, from time to time, been advocated for use about private dwellings, but these, for the most part, either failed to strike at the foci of distribution or were impractical for use in extensive municipal control. Cleanliness, screening and careful attention to the removal of wastes can be made by some people an efficient barrier against flies, but it is almost impossible to have every householder pay strict attention to these details, and flies continue to develop and render of little avail the individual efforts of a few. Fly-control by the municipality itself has been curtailed by the lack of efficient methods which can be applied at a reasonable cost.

In the summer of 1921 experimental work on municipal fly-control was carried on at Iroquois Falls. This work was continued in 1922, and extended to other municipalities with a view to procuring further information and a statement of costs for the different methods. The weather conditions for the two summers were far from similar. The former was exceedingly warm, resulting in optimum conditions for fly development, while the latter was cool and wet. This prevented an early development, and produced less uniform results from control measures.

The main objective in the treatment adopted both years was to destroy the fly before it escaped from the breeding grounds, rather than to attempt palliative measures at the homes, and other centres. The points at which development took place included privies, horse stables, pig stables, cow stables, garbage and other refuse.

The methods found to give most suitable results varied with the nature of the breeding ground and the types of flies. These were as follows:

Blow Flies.

Blow flies were found to be breeding chiefly in privies, refuse, and pig manure. Where the garbage was collected regularly, and destroyed by incineration the immature flies failed to reach maturity.

The privies were treated by adding a light layer, about ¼ inch thick, of chloride of lime every 4 or 5 days to the fresh and exposed contents.

The infested parts of garbage and pig manure were treated with a 6% solution of creosote disinfectant (Lyman's).

House and Stable Flies.

The house and stable flies were breeding in the manure from the various stables. This was treated with a 3 to 4% solution of a creosote disinfectant (Lyman's. A 3% solution was satisfactory where the stronger disinfectant

was used. The method of application was somewhat modified so as to treat only those parts of the manure in which larvae were found. The best method appeared to be to store separately each day or two days supply, and treat this after the larvae had developed from the eggs. This procedure not only greatly reduces the amount of disinfectant required, but also decreases the amount of work necessary for each manure pile. In addition to treatment of the manure with disinfectants, storage was adopted where convenient.

Storage of Manure.

The storage of manure in fly-tight boxes is recommended where the quantities are not excessive. The common practice of storage in boxes with no attempt to destroy the adult fly, which develops in these bins from eggs laid previously cannot be considered as an efficient method. Wherever storage is adopted fly-tight bins should be provided in duplicate, each having a capacity sufficient to hold 10 days supply of manure. A fly trap should be fixed to the top of each to catch the adult flies as they attempt to escape to the open. One bin is standing full—ten days—while the other is being filled. During this period the eggs, which were laid in the manure before it was placed in the box will develop into adults, and will be caught in the trap as they fly towards the light. After storage the manure may either be removed for final disposal, or placed in piles without fear of it being further used as a breeding ground.

As in the previous year the effect of treatment was determined by setting fly traps at definite points, and counting the numbers caught over fixed periods. Under similar conditions the counts should decrease when the control methods are working satisfactorily.

Costs.

The cost of fly control is dependent upon a number of factors, namely:

(*a*) The weather.

(*b*) The method of treatment.

(*c*) The amount of bedding used in the stables.

(*d*) The size and type of privy.

In cold and wet weather there is less activity among the flies, and consequently less treatment is required than during the hot, dry periods. A considerable saving may be effected by treating only the infested parts of the manure pile rather than the entire amount. A large amount of straw or bedding requires a correspondingly large amount of the solution to reach all the parts in which larvae are found. In the treatment of privies with chloride of lime where the initial dose requires a covering for the entire exposed contents, the size and type of the privy largely determines the quantity of this material required. The conditions under which the following cost data was collected tended, somewhat, to lower the cost figure rather than increase it. The weather was damp and cold at certain periods, and only small quantities of bedding were used in the stables. The horses were in during the night and at feeding time, while the cows were in the stable only at milking time.

Chloride of lime was purchased in barrel lots at three cents per pound.

Lyman's disinfectant, consisting of a crude coal tar distillate soluble in water, was purchased in barrel lots of 40 gallons each at 75 cents per gallon F.O.B. Toronto.

The cost of treating the manure from the horse stables with a 3 to 4% solution of this disinfectant was as follows:

Number of Horses	Number of Gals. of Disinfectant Used	Length of Treatment	Total Cost of Disinfectant Used	Average Cost of Treatment per Horse	Estimated Quantity of Manure in Bus.	Bushels of Manure Treated with 1 Gal. of Solution.
45	37.5	2 Mos.	$28.10	62.5c.	3360	3.82

Costs for the Dairy at Iroquois Falls from June 27 to August 24 were as follows:

38 to 42 Cows and 8 Horses.

No. of Gallons of Disinfectant Used	Total Cost of Disinfectant	Cost per Animal
21	$15.75	33c.

Treatment of Privies by Chloride of Lime.

The initial application required on an average 2 pds. of chloride of lime per privy.

No. of Privies	Length of Treatment	Amount of Chloride of Lime Used	No. of Pds. per Privy	Cost per Privy at 3c. per Pd.
150	2½ Mos.	1000 Pds.	$6.66	20c.

A solution of the disinfectant may be sprinkled over the contents of the privy instead of the chloride of lime, and will destroy all larvae, but it is not as satisfactory as the latter in that the contents are left exposed to the flies, and in a moist condition. The strength of the solution for this purpose should not be less than 6% and 1 gallon of this will treat about five privies.

STATEMENT OF BIOLOGICAL PRODUCTS

November 1st, 1921, to October 31st, 1922.

Month.	Smallpox.	Cost.	Diphtheria. Units.	Cost.	Diphtheria Syringes.	Cost.	Schick Outfits.	Cost.	Toxin		Antitoxin.		Anti-meningitis Vials.	Cost.	Outfits.	Cost.
									Boxes.	Cost.	25cc.	Cost.				
		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.
November	8,000	320 00	52,277	7,841 55	2,087	417 40	77	11 55	134	18 76	14	14 00	112	112 00	29	13 05
December	6,965	278 60	40,140	6,021 00	1,961	392 20	52	7 80	104	14 56	3	3 00	130	130 00	14	6 30
January	14,525	581 00	35,316	5,297 40	2,097	419 40	67	10 05	440	61 60	8	8 00	99	99 00	4	1 80
February	5,275	211 00	23,931	3,589 65	1,442	288 40	34	5 10	115	16 10	59	59 00	77	77 00	38	17 10
March	5,555	222 20	14,673	2,200 95	413	82 60	32	4 80	20	2 80	8	8 00	73	73 00	3	1 35
April	3,720	148 80	15,414	2,312 10	1,248	249 60	31	4 65	2	28	..	..	103	103 00	5	2 25
May	3,755	150 20	3,327	499 05	117	23 40	61	9 15	36	5 04	10	10 00	35	35 00	..	...
June	11,910	476 40	19,543	2,931 45	479	95 80	6	90	30	4 20	3	3 00	52	52 00	..	...
July	4,370	174 80	16,383	2,457 45	1,317	263 40	50	7 50	21	2 94	8	8 00	45	45 00	1	45
August	6,270	250 80	10,150	1,522 50	329	65 80	80	12 00	44	6 16	34	34 00	83	83 00	18	8 10
September	7,545	301 80	19,100	2,865 00	916	183 20	11	1 65	32	4 48	..	..	81	81 00	7	3 15
October	3,470	138 80	25,107	3,766 05	1,114	222 80	47	7 05	35	4 90	14	14 00	44	44 00	3	1 35
	81,360	3,254 40	275,361	41,304 15	13,520	2,704 00	548	82 20	993	143 82	161	161 00	934	934 00	122	54 90

SUPPLY STATEMENT.

Month.	Tetanus Antitoxin.	Cost.	Syringes.	Cost.	Tetanus Outfits.	Cost.	Pasteur.	Cost.	Pertussis.		Typhoid cc.	Silver-Nitrate boxes.	Total Cost.
									10cc.	25cc.			
		$ c.		$ c.		$ c.		$ c.					$ c.
November	987,000	296 10	138	27 60	5	2 25	..	..	123	46	2,205	366	9,074 26
December	351,500	105 45	91	18 20	1	45	..	..	749	..	335	374	6,977 56
January	844,000	253 20	4	80	3	1 35	..	..	174	5	725	234	6,733 60
February	246,000	73 80	28	5 60	..	..	..	..	182	19	895	344	4,342 75
March	492,500	147 75	10	2 00	2	90	..	..	190	16	851	492	2,746 35
April	613,000	183 90	68	13 60	1	45	..	..	180	20	297	870	3,018 63
May	519,500	155 85	27	5 40	2	90	..	..	132	20	560	281	893 99
June	1,038,000	311 40	80	16 00	18	8 10	1	15 00	225	30	1,810	662	3,914 25
July	1,125,500	337 65	38	7 60	6	2 70	..	..	187	9	2,120	411	3,307 49
August	883,500	265 05	157	31 40	1	45	1	15 00	312	24	1,180	336	2,294 26
September	1,040,000	312 00	86	17 20	2	90	3	45 00	167	18	2,240	356	3,815 38
October	1,413,500	424 05	328	65 60	17	7 65	..	..	195	7	1,260	131	4,696 25
	9,554,000	2,866 20	1,055	211 00	58	26 10	5	75 00	2,816	214	14,480	4,857	51,814 77

Supplied Peterboro Lab. Strept..... 3 00

$51,817 77

CASES AND DEATHS FROM COMMUNICABLE DISEASES

Reported Weekly by Local Boards of Health for Year 1922

Date	Smallpox		Scarlet Fever		Diphtheria		Measles		Whooping Cough		Typhoid		Tuberculosis		Infantile Paralysis		Cerebro-spinal Meningitis		Syphilis	Gonorrhœa	Chancroid	Influenzal Pneumonia	Primary Pneumonia
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Cases	Cases	Deaths	Deaths
January	170	....	518	14	486	54	205	3	89	5	28	5	160	151	2	....	7	6	183	195	1	31	288
February	185	....	610	17	403	38	554	1	158	5	31	5	171	117	....	....	6	6	181	138	3	41	289
March	113	....	446	18	320	32	695	4	61	13	21	11	172	136	....	....	8	7	218	252	4	84	409
April	79	....	249	11	308	27	1266	8	69	8	13	7	207	135	1	1	9	8	194	165	6	30	372
May	88	....	219	5	190	16	2165	10	119	11	23	6	200	122	....	....	4	4	104	143	3	118	245
June	104	....	151	5	191	19	2103	4	65	6	24	2	204	142	....	....	3	3	219	210	....	18	140
July	40	....	157	5	159	17	890	7	79	3	92	7	144	101	3	....	6	5	143	121	3	....	85
August	31	....	141	4	197	10	250	2	163	4	63	17	113	109	92	11	7	6	247	270	7	7	72
September	19	1	180	4	180	19	62	....	196	8	79	7	180	111	55	9	8	6	138	210	3	4	76
October	21	1	369	5	395	40	166	....	149	11	111	32	175	112	38	2	4	4	229	170	2	14	129
November	76	....	461	9	385	29	235	....	309	8	37	11	156	84	10	1	3	3	147	217	4	10	172
December	51	1	449	14	315	40	359	1	234	8	54	17	196	122	4	1	6	6	133	179	3	18	282
	977	3	3950	111	3529	341	8950	40	1691	90	576	127	2078	*1442	205	25	71	64	2136	2270	39	375	2559

*Only 75% of deaths reported.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 1.

To the Provincial Board of Health:

I have the honour to submit the following Annual Report for the above mentioned District, comprising 117 organized municipalities, consisting of sixty-eight townships, four cities, seventeen towns and twenty-eight villages, each of which has a regular organized local Board of Health.

Public Health Nursing.

This work has been very faithfully and intensively demonstrated by your Public Health Nurse, Miss Riddle, in the town of Blenheim and Harwich Township to the apparent satisfaction of the citizens, but the Councils, while appreciative of the work done, did not feel that at present they would be able to finance the expenses connected with making a permanent appointment of a local nurse and as there was not any other local organization willing to become responsible for the expense no appointment has been made, so that from this aspect the demonstration has been unsuccessful, though from an educational point of view and in the work done, it was most successful.

The next demonstration on intensive Public Health work by Miss Riddle was taken up at Leamington where she is at present working very effectively.

In addition to the above Public Health work, Home Nursing Classes have been conducted very acceptably in Blenheim and Tilbury, and assistance given the local authorities in Sarnia and Ingersoll with their Child Welfare and Public Health Nursing work.

Canning Factories.

Sanitary conditions about these factories are decidedly improved, and in those not already made satisfactory promise has been made of improvement next year with one or two exceptions.

Nuisances:

During the year I have been called upon to make special visits to twenty-seven municipalities to assist the local Board in abating nuisances arising from various causes, e.g., Canning Factory Effluents, Slaughter Houses, School Toilets, Cheese Factories, Milk Products Factories, Laundries and Summer Resorts.

Milk Supplies:

Supervision of the production and distribution of milk is now fairly well carried on by the local Boards of Health in all cities, towns and the larger villages in this District, resulting in a marked improvement in the quality and purity of this food. It is satisfactory to note the absence of any milk borne disease during the year.

Meat Supply:

Practically all the locally prepared meat is now slaughtered in fairly sanitary slaughter houses complying with the regulations though constant vigilance is required to maintain a reasonably satisfactory standard in those already established and at the same time control new men entering the business.

Rural Schools:

The local Medical Officers of Health are now generally making an annual inspection of the sanitary condition of these schools, their environment, the

water supply and conveniences and checking up to see that their recommendations are carried out by the trustees of the schools.

Since the inauguration of these inspections there has been a decided improvement, yet much remains to be done before conditions are satisfactory in many of these rural schools; our hope lies largely in the training of the rising generation.

Educational:

The local Medical Officer of Health is commencing to realize that the development of a correct public opinion is an important part of his duty, and so is endeavouring to stimulate and develop a proper interest in scientific knowledge of how to preserve health and the causes and methods of transference of communicable diseases.

I have endeavoured to foster and encourage this work on the part of the local officers, and at the same time, stimulate a demand on the part of the public for more information on these subjects.

In furtherance of this educational campaign I have on many occasions during the year given public Health Talks to Women's Institute Meetings, Trustee Boards, Local Boards of Health and whenever opportunity permitted to other public gatherings in the District.

Communicable Diseases: SMALLPOX.

The incidence of this disease has been less than last year, though it has made its appearance in several municipalities; the most serious being in the Woodstock Hospital.

The local authorities promptly and satisfactorily cared for all, except two outbreaks which required my personal supervision.

Diphtheria:

This disease has not been so prevalent in the District as it was last year, though it is continuing to account for too many deaths most frequently I am convinced, because the public does not appreciate the importance of consulting the family physician at once in all cases of "sore throat."

Venereal Diseases:

I hear there are some of the family physicians who are not reporting these diseases, but just how to bring about better reporting in the part of these is rather difficult to suggest.

Scarlet Fever:

In four municipalities I have been called upon to settle differences in diagnosis or the length of quarantine required in the disease; these differences arising in very mild cases.

Measles:

All the municipalities are now endeavouring to control this disease by quarantining for two weeks all known cases.

Tuberculosis:

In three instances I have been able to have open cases placed in the sanitarium for isolation and treatment. It is encouraging to observe a growing public appreciation of the benefit of thus dealing with these cases.

Typhoid Fever:

This disease has been evident mostly in isolated cases during the year, except at Parkhill where eleven cases developed in one family. The first about five months ago; another about two months ago; and the remainder as contact cases.

The first was judged by the attending physician to have been imported and every precaution was taken to prevent any communication of the disease.

The second case developed three months later with marked meningeal symptoms and was diagnosed meningitis, hence precautions to prevent spread of the disease were not taken with the result that the other members of the family were stricken down.

We suspect that the first case may be a carrier and are at present endeavouring to clear up this point; results so far have been good.

Water Supply; Municipal:

There are about thirty public systems in this District which I am endeavouring to have examined regularly, but find myself hampered in checking this up, as I am not supplied with copies of examinations made unless when I ask for a particular examination. I am of the opinion that your Board should instruct the Laboratories to furnish a copy of all water examinations to the District Officer in charge of the municipality from which the water is sent for examination; in cases where the local Board has the examinations made by their own Laboratory, they should be required to furnish a copy to the District Officer.

I am quite satisfied that in this way the public health may be better guarded than under the present system of chance inspection.

Summer Resorts:

There is need for some special Legislation or Regulations dealing with these communities as well as with semi-urban localities in reference to registration and sanitary conveniences as well as water supply before satisfactory conditions can be maintained from public health point of view.

All of which is respectfully submitted.

T. J. McNally,
District Officer of Health, District No. 1.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 2.

To the Provincial Board of Health:

The year just past has been one of considerable advance in Public Health, more than what shows in a tangible way. Municipalities that have been indifferent or even antagonistic to any public health activities are now asking for assistance. This is true of both rural and urban districts. Instead of a district trying to conceal an outbreak of contagious disease, it now asks for help as to the best means of stamping out the epidemic. Some municipalities have taken a step in advance by increasing the salary of the M.O.H. They believe it is money well spent.

Water and Sewage.

Most places are supplied with good water. Many have their waterworks debentures maturing in the course of the next two or three years, and are turning their attention to sewerage systems. Towns like Orangeville, Shelburne, Mount Forest, Gravenhurst and others are in this position.

Of the three places mentioned in last year's Report as having poor water supply—Hanover, Goderich and Kincardine—Hanover has passed the necessary by-law to install a system at a cost of $135,000. They will get their supply from Ruhl Lake, about three miles from town. This should lower or entirely eliminate the high typhoid incidence of Hanover.

Kincardine has installed a slow sand filtration plant at a cost of $25,000, which appears to be giving good satisfaction.

Goderich has drilled an eight inch well 325 feet in depth. Their water supply is not satisfactory yet. It is recommended that Goderich put in a filtration plant and possibly a chlorination plant as well.

Milk and Dairies.

A municipality would not allow impure water to be served out to its inhabitants, but will allow dirty impure milk to be sold from house to house every day. Although we know that disease may be spread by impure milk, and although we know that milk can be made safe by pasteurization, many towns still refuse to adopt this method. Some day it may be made compulsory. Many of the dairies have improved means for handling milk like getting it chilled earlier, but many of them can still be improved.

Communicable Diseases.

Typhoid Fever:

There were forty-six cases reported in the District with five deaths. Of these, thirty-two were in two counties, Simcoe and Grey, fourteen in the other seven counties. In Simcoe County, Alliston had an explosive outbreak in December of twenty-one cases. The cause was found to be a defective pipe under the river. In Owen Sound, the water became contaminated and it was found the infection came from a farm house near one of the springs. This was cleaned up and the infection in the water cleared up.

Scarlet Fever:

The mild cases are very hard to control and are no doubt responsible for the large number of cases with low mortality.

Measles:

I have tried to impress on local Boards the importance of treating measles seriously. Every compilation of statistics shows more deaths from measles than from scarlet fever. The last published report of the Registrar General for Ontario 1920 shows deaths from measles 303, from scarlet fever, 170.

Tuberculosis:

I visited the sanitariums at Gravenhurst and Freeport. Both are filled to capacity. It is hoped to finish the new buildings at Gravenhurst next summer. This will give more accommodation for incipient cases. District nurses are doing good work among isolated cases in teaching the family how to avoid spreading infection.

Summer Resorts.

In July and August I inspected the summer resorts in the District. Two places on Sparrow Lake were having trouble with their sewage. They were using the septic tank with sub-soil drainage, and the disposal areas were being saturated. It was recommended in both cases to under drain this area. Two of the larger hotels in Muskoka were not taking care of their garbage properly. On a second visit, they were found much improved.

With Mr. Dallyn of the Engineering Department, the water supply of a number of resorts was looked into. In some cases it was recommended to extend the intake, in others to change it altogether, One large hotel was instructed to put in a filtration plant.

On the whole the summer resorts were in very good condition, but need constant supervision to keep them up to standard.

Special Visits

Were made to cheese factories at Linwood and Attwood, sewage disposal at Penetang, septic tanks at Dwight and Freeport; piggery at Owen Sound, milk supply at different places, garbage dumps, etc. Numerous visits were made in connection with communicable diseases, reports of which have been sent to the Provincial Board.

During April, in company with Dr. Cunningham, I made a round of the furniture factories in the district. We found the management at these places eager to co-operate in every way. A great deal of work remains to be done in this branch of the service.

Cemeteries.

There has been a great improvement in the appearance of the cemeteries through the country. The monuments have been straightened, the plots tidied and the fences repaired. Many have been put in charge of a committee, the finances put on a sound basis after in some cases forty years, and provision made for permanent upkeep. But there are still a number of abandoned cemeteries in a sadly neglected state.

Child Welfare.

I have attended several well baby clinics and found them very much appreciated by the public. Where they are held regularly by the health nurse, the interest is kept up and the results shown most encouraging.

The Public Health Nurses have continued their demonstration work with good results. The survey of the Bruce Peninsula shows the urgent need of such work. But in a sparsely settled district, such as it is a certain amount of work will have to be done by the District Nurses every year. It would be time well spent.

The best results in public health are seen where the ground is prepared by the Health Nurse for the Medical Health Officer, and this is followed up by a good competent Sanitary Inspector. Where the Town Constable acts as Inspector, the best results are not obtained.

A good sanitary man can check up on the reporting of communicable diseases, can clean up on food shops which in some places are deplorable. He can help very much in getting a clean milk supply, in the abatement of nuisances, etc. The employment of a capable man for these duties by a municipality is a good investment.

J. J. FRASER,
District Officer of Health, District No. 2.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 3.

To the Provincial Board of Health:

The year 1922 has been one of increasing activity in Preventive Medicine. One of the most important points conducive to good health in a community is a safe water supply. The number of Certificates granted in my district for 1922 for extension of watermains and the cost of the same are here given.

These figures are supplied by the Director of Engineering of the Provincial Board of Health.

Municipality	No. of Certificates	Cost
Etobicoke	8	$320,594.00
Hamilton	5	74,647.65
Niagara Falls	2	26,989.12
Port Dover	1	65,000.00
Scarboro	2	338,030.68
Thorold	3	20,985.00
Welland	1	680.25
York Township	15	474,183.90
		$1,321,110.60

Sewers are likewise important in any well ordered municipality where an attempt is made to protect the lives of the citizens. The following is the number of Certificates granted for establishment or extension of sewers and the cost of same.

Municipality	No. of Certificates	Cost
Brantford	3	$225,979.00
Crystal Beach	2	67,000.00
Dundas	2	258,000.00
Hamilton	8	504,687.00
Niagara Falls	5	35,504.38
Thorold	4	23,140.00
Welland	1	1,677.52
York Township	1	5,750.00
Total cost		$1,121,737.90

This Report shows that nearly two and a half millions have been expended by the above municipalities on extension of watermains and sewers. The village of Crystal Beach is to be commended for its enterprise. It is only a small municipality incorporated by special Act of the Legislature and is expending as shown above the sum of $67,000 on establishment of sewers.

Milk:

It may be a matter of some surprise but it is nevertheless a fact that a number of villages and towns have no properly enforced milk By-laws. Some have no By-law at all. I have been trying to impress on the Councils and Boards of Health of these municipalities that they should see that a proper milk By-law similar to the model milk By-law recommended by the Provincial Board of Health, should be passed and enforced. Milk is the most important article of food that is consumed in a raw state. It is essentially a children's food, and as children, particularly young children are not able to stand impure milk as adults might do, it is therefore, much more necessary that the food should be safeguarded and sold to the consumer in as pure a state as it is possible to have it. Milk producers and milk vendors are only human and cannot all be depended upon to take the necessary precautions to safeguard the milk for

young children. It is the duty and should be the aim of the municipalities to see that clean milk is sold to its citizens. This does not mean any serious additional cost to the production of the milk. To begin with the milk should be sold as it is produced by the cow. Milk vendors should not be dishonest enough to add water to the milk and certainly the consumer has no right to be asked to buy water by the quart. Then the herds and stables of the producers should be inspected regularly. The cows should be properly housed, and kept clean. The udders should be wiped carefully before milking and the milker's hands should be washed before the milking is begun. No wet milking should be allowed. The utensils should be sterilized and kept clean, and the milk should be cooled down to about 50° Fahrenheit as soon as possible after milking. Unhealthy looking animals should not be allowed to remain in the herd. If there are any reactors to tuberculosis they should be eliminated. Then in addition, the milk should be put in sterilized bottles before it is sold to the consumer and no loose milk should be sold. If these points are kept in mind and acted upon, a fairly safe milk can be obtained, but as an additional safeguard I recommend that milk be collected in as cleanly a manner as possible and then pasteurized. One other point that is important is that those who do the milking or handle the milk should be in good health. If there is a history of any of them having had typhoid, then a blood test should be made to make sure that they are not, "carriers." In my Report for 1921, I cited a case at Vineland, where they had an epidemic of some twenty odd cases of typhoid. On investigation, we found that the only thing used in common by all the homes where we had cases of typhoid was the milk. We then found that the man who did the milking and handled the milk had suffered from an attack of typhoid, eighteen years previously. On examination he was found to be a "carrier." As soon as he ceased handling the milk the epidemic subsided. During 1922 there was no cases of typhoid in the Vineland District. This I look upon as a distinct triumph for the scientific side of Preventive Medicine. I am inclined to believe that sporadic cases of typhoid are quite frequently due to carriers.

Laboratories:

A branch Laboratory has been established during the year in Niagara Falls. This is under the control of the Provincial Laboratory at Toronto. No doubt it will serve a section of the Niagara Peninsula. We are hopeful that some day we may be able to have a Public Health Laboratory established in Hamilton to serve the city and the District, the cost to be borne jointly by the city and the Province.

Epidemiology.

There was a considerable diminution in the total number of infectious diseases in my District during 1922. This in itself is gratifying, but it will be interesting to see if the fall in the number of cases can be maintained in 1923. The control of infectious disease is one of great difficulty; mild cases, missed cases, and carriers are instrumental in the spread of infection. In my Report of a year ago, I recommended that the Schick test should be done on children, and those susceptible to diphtheria should be immunized with toxine anti-toxine.

A free clinic for doing this work has been established in Hamilton, under the M.O.H., Dr. Jas. Roberts, and the work is being done by Dr. Deadman of the City Laboratory. In a few years we should have some valuable statistics to give to the public. Dr. Park of New York, who has had a large experience in this work, and is now using a much smaller dose of the toxine anti-toxine,

reports that the immunization with the smaller dose is just as effectual as the larger, and that the reaction following the inoculation is very much lessened in severity. The use of the toxine anti-toxine for adults has not been very popular on account of the severe reaction following the injection. With the smaller dose this objection is very largely removed.

Venereal Diseases:

This work is being done with increasing activity. In addition to the free clinics already in operation at Toronto, Hamilton and Brantford, a new one has been started in St. Catherines. This it is hoped will serve the needs of the Niagara Peninsula.

Smallpox:

We have had a considerable number of cases of smallpox in my District during 1922. Most of the cases are mild, though some have been severe, but fortunately we have had no deaths. I invariably recommend to municipalities that it pays to have free vaccination clinics. There is a small epidemic in the Township of Gainsboro at the present time.

Child Welfare:

Excellent work is still being done by the Public Health Nurses in my District. We now have permanent nurses appointed in Niagara Falls, St. Catharines, Thorold, Welland, Brantford, and York Township following demonstrations at these points. A large number of Public Health nurses are also working in Hamilton and Toronto.

General:

I desire to express appreciations of the support from the Department in Toronto, and also to that from the various Directors of branches under the Provincial Board of Health.

D. A. McCLENAHAN,
District Officer of Health, District No. 3.

No report from District No. 4, owing to the time that elapsed in appointing a successor to Dr. George Clinton, D.O.H., who has been superannuated.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 5.

To the Provincial Board of Health:

I have the honour herewith to submit my Annual Report for the year 1922, District No. 5.

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.

This office continues to be utilized as a source of information and a Public Health Centre, to a much greater extent than in former years, both by letter and telephone. The latter means of communication is particularly noticeable by its increase due, no doubt, largely to the more central location of this office in the city of Ottawa, scarcely a day passing without one or more telephone messages from Health Officers, Boards of Health, Municipal Councils and others connected with Public Health matters. The written communications now exceed 1,800 letter annually.

The District has been thoroughly inspected in a routine manner during the year and the work.

All the public institutions, thirty-four in number, have been inspected regarding their sanitary condition and a report 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 if found justified vigorous action taken. I desire 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' Allowances Board, the Dominion Veterinary General's Department, the Dominion Anti-Tuberculosis Association, and the Departments under the control of the Provincial Board of Health.

Establishment of Branch of Provincial Laboratory at Ottawa:

The establishment of this branch in November in the city of Ottawa was received with the greatest appreciation by the Health Officers and physicians of the Upper and Lower Ottawa Valley. Owing to the excellent railway communications there being ten lines from this District entering the city, the location will admirably serve the needs of this end of the Province.

Public Health Nurses:

Excellent demonstrations of Public Health work was given by the Nurses of the Maternal and Child Welfare Department in the County of Lanark. The demonstrations covered a period of six months. The nurses for certain periods made their headquarters at Perth, Carleton Place, Almonte and Lanark. In connection with this work, very valuable assistance was rendered by Dr. J. W. Bell, Pediatrician of the Department, who gave a series of most instructive Child Welfare clinics at various points, also several able public addresses. The whole county was covered by the nurses, and their work seemed to meet with the hearty approval of the people especially the women's organizations.

At the June session of the County Council a deputation waited on them to argue the appointment of two County Public Health Nurses. The pro-

position was clearly explained by Col. Wodehouse, O.B.E., Secretary of the Dominion Anti-Tuberculosis Association and Dr. J. J. Middleton in charge of Public Health Education for Ontario, in two very able addresses.

The individual members of the County Council expressed themselves as in hearty sympathy with the work and the greater number seemed disposed to make the appointments but in committee it was decided to leave the matter stand over till the January Session as they had made no provisions in the estimates for the expenditure.

Demonstrations were also given by the nurses at Westboro and Hawkesbury where they are now located and are receiving a very warm welcome.

This end of the Province has been very fortunate in securing the services of such able and tactful nurses as Miss Gipson now employed in a more lucrative position. Miss Halley now labouring in the fire swept country of Northern Ontario. Miss Micklejohn in charge of this department in New Brunswick, and Miss Hamilton now Supervisor of Public Health Nurses for the Province. Our two nurses now in charge, Miss Squires and Mrs. Bricker, are continuing the excellent work of their predecessors and have won the sympathy and confidence of all classses in their work and aims.

Communicable Diseases:

During the year this district has been remarkably free from epidemics of communicable diseases, it being the best year since the district was established.

Sporadic cases of the various reportable diseases have occurred in all municipalities but in only a few cases were they so wide-spread as to be regarded as epidemic.

Smallpox.—Owing to the persistence of vaccination and the more alert work of the health officers this disease is now pretty well under control. It appeared in twenty municipalities but in fifteen of these it was confined to the first case. The only outbreak of an epidemic character was in Cumberland township where twenty cases were reported. There are no cases in the district at the close of the year.

Typhoid Fever.—The outbreak of typhoid fever at Carleton Place during the year at one time threatened to be very serious. But on the conclusion being arrived at that the wells in the town were the source the local Health Officer and his board took such thorough steps that it was gradually got under control. The municipal water supply was at first under suspicion but from water analysis and a study of the individual cases little doubt was left but that the different wells in the town were the offenders.

This town is only partly sewered and supplied with municipal water. During the construction of these public utilities a great amount of blasting was done and no doubt many fissures were made connecting with the wells already in use, contamination from local outhouses as well as from possible leaking sewers resulting.

The Hawkesbury outbreak was due to contamination of the town's supply which is taken from the Ottawa River. There was evidently a slip in the operation of the filtration plant.

Tuberculosis.—This is a widespread disease which has not received the attention it deserves in this district.

But this year the Anti-Tubercular Association has been most active in arousing public opinion to the gravity of the situation. They have had the ready co-operation of many public bodies especially the women's organizations. The Public Health Nurses of the department by their education campaign are

getting practical results and the Mothers' Allowances Commission make it a point of notifying this office of cases coming under their immediate notice. Many of these open cases have been removed to Sanitorium and in all cases those in immediate contact have been instructed how best to avoid infection.

It is hoped that the government will ere long see its way clear to take more systematic steps to stamp out this disease. The success of such a campaign is assured as the efforts now being put forth, spasmodic as they are, have borne such striking results.

Clinics:

Besides the occasional clinics given by our pediatrician, Dr. Bell, which have aroused much interest in the connection with the Maternal and Child Welfare work, the clinics under Dr. R. McClenahan are now firmly established in Ottawa and Kingston. Many difficulties were at first encountered, but by the tact and firmness of the Chief Officer they were overcome. These clinics not only reduce the treatment of these cases to a well ordered system but give the privilege of scientific medical care to those not able to otherwise bear the expense.

Many medical men are availing themselves of the right to send their cases in and it is hoped by persistent encouragement that more will do so. If the diseases particularily treated in these institutions are as prevalent as stated by reliable authorities I think that it is a matter for open public discussion as it is recognized that they are the most deadly foes we have to contend with in maintaining the physical well-being of our race.

The Social Service Council of Canada are doing good work in arousing the public conscience. Both the Dominion and Provincial Governments have generously provided funds for adequate treatment but judging by the percentage of population said to be affected only a comparatively few avail themselves of their opportunities.

Other communicable diseases such as measles, scarlet fever, diphtheria, infantile paralysis, mumps, etc., have been comparatively rare during the year.

Summer Resorts:

Our many beautiful summer resorts have been more generally patronized during the summer than past years. The building of the Good Roads System no doubt had much to do with this influx of tourists.

Besides personal inspection the local Health and Sanitary Officers have been encouraged to take a more active interest in these resorts particularly to guard against the contamination of the waters. Summer residents now appreciate and are very thankful for the stringent regulations enforced.

The following are the chief summer resorts in this district all of which have been carefully inspected and supervised: Thousand Islands, Stanley Island, Hajilton's Island, Colquhoun's Island on the St. Lawrence; the Rideau Chain of Lakes including Jones' Falls and Chaffies' Carleton Lake, Christie's Lake and resorts along the Ottawa.

Among the more notable conditions requiring special attention and generally calling for at least one visit but in some cases many were:—Smallpox and unsanitary town dumping ground, Arnprior; Mother's Allowance case and public meetings, Almonte; Typhoid outbreak public meeting, Carleton Place; Scarlet Fever outbreak with neglect of quarantine, Newburg; Unsanitary dwellings, Napanee; Typhoid, sewers, public meeting, Hawkesbury; Typhoid Fever, West Hawkesbury; Provincial Order for construction of sewer; Smallpox, infantile

paralysis, Casselman; Establishment of Cottage Hospital, Clarence; Smallpox, Vars; Waterworks, unsanitary R.E. Station, appeal to judge *re* M.O.H. salary, Plantagenet; Public meeting, Vankleek Hill; Smallpox, establishment of sewer system, Rockland; Milk By-law, Renfrew; Smallpox, milk by-law, Cornwall; Unsanitary dwellings, Finch; Establishment Provincial Laboratory, drainage, school accommodation case, establishment of Public Health Nurse, Westboro; Unsanitary dump maintained by Ottawa City at Eastview; Establishment of Methodist Church, Cemetery, Kinburn; Maintenance of nuisance department of Railways and Canals, Morrisburg; Slaughter houses, Embrun; Quarantine court case, Russell; Contamination of river by milk condensing plant, Chesterville; Smallpox hotel drainage, unsanitary cheese factory, Brinston; Nuisance caused by Tuberculosis Sanitarium, Portsmouth; Nuisance caused by salvaging grain, difficulties in establishing Venereal Disease Clinic, etc., Kingston; Smallpox, Storrington; Unsanitary dwelling, Pittsburg; Contamination of water supply and unsanitary dump, Alexandria; Installing septic tank general drainage, Lancaster; Dispute *re* stable on the highway, Williamstown; Smallpox, Dunvegan; Unsanitary premises, unsanitary storage of junk; water supply, Brockville.

The above special conditions are outside of the routine work of Inspection of Public Institutions, summer resorts, etc., and do not include many more visits made to other localities when en route or returning which owing to the possession of a car I am enabled to make. As a matter of fact I have done as much work in two days with the car as would take a week travelling by rail and local conveyances.

I wish to include in my report a record of the death of one of the best and most beloved Health Officers in the district, Dr. C. L. Easton, Medical Health Officer of Smith's Falls for the past thirty-three years. He graduated from McGill in 1887 and spent his whole professional life in Smith's Falls. As a Health Officer he was most enthusiastic and methodical and the records he kept were models for their exact data and comprehensiveness.

He was a man noted for his kindness and tact and so was able to do his work thoroughly with little friction. His life has left pleasant memories among a large circle of friends.

P. J. MOLONEY, M.D., C.M.

District of Officer of Health, District No. 5.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 6.

I have the honour to submit for your consideration the tenth Annual Report of District No. 6.

During the year I travelled 21,148 miles at a cost to the Department of $965.70, of which $269.98 was car expense. When to this is added the cost of books and supplies, and which did not appear on my expense sheets but were either paid directly or charged to the laboratory account, the expense amounts to approximately $1,000.00. This does not include any part of the purchase price of car or office rent. My expense was further controlled by the use of a Pass on the T. & N. O. Railway. The use of the Pass will be appreciated when I state that my mileage on this road was 9,012 miles.

Early in the year, owing to the appointment of Constable Moore of the Ontario Provincial Police to the position of Inspector for Temiskaming, that section of this Health District obtained an acquisition to its forces which was soon to show itself. Constable Moore was always a warm friend and an active assistant to Health supervision in Unorganized territory. His advancement to Inspector was made the subject of a communication to the Department. Out of this deserving tribute developed a system of co-operation between the Provincial Police and the Health Department touching Unorganized Territory. The Chief Officer of Health and the Commissioners of the Police Department are to be congratulated upon the result of their mutual efforts to make Section 120 of the Public Health Act effectual. This section had never been enforced up to this time. By it every Police Constable is an ex-officio Sanitary Inspector for the locality for which he is appointed. Immediately Inspector Moore's men began to report all cases of Communicable Diseases from Unorganized Territory with which they came in contact. Houses were placarded and quarantined. Where necessary, provision was made for rationing the inmates. An epidemic of smallpox was quickly brought under control at Porquis Junction by Constable Fenwick, while smallpox and diphtheria were reported from west of Cochrane along the Transcontinental, around Porquis Junction and from the Unorganized Township of Mountjoy outside of Timmins. It was unnecessary to make more than one or two trips by your District Officer in any one case, while without this assistance it was the rule to make at least twice this number. Constable Gardiner of Timmins found it necessary to prosecute one householder for breaking quarantine for diphtheria. He took the case before Magistrate Atkinson's Court but as the family was without many necessities he asked for leniency. After the Magistrate had pointed out that in the eyes of the Law this was a very serious offence and that the minimum fine is $25.00, he allowed them to go with a warning for this time.

Communicable Diseases.

Under this heading each year I have made an analysis of the returns of infectious diseases sent into this office by the Secretaries of Local Boards of Health from the larger municipalities and from those places where the incidence of infectious cases has been highest. Let me point out again what has been pointed out in previous Annual Reports that most of the larger centres in the District have in the surrounding area a greater or lesser number of Unorganized Townships and even when surrounded by Organized Rural sections those sick with Communicable Diseases usually go to the towns to consult a physician.

The result has been that the larger municipality has become a centre for infections and correspondingly a menace to the surrounding unaffected territory. It has been urged for this reason that the returns from a municipality should exclude all cases which did not have their origin in the respective centre. It is doubtful how far such exclusion can be carried out as it is a policy which excludes all cases that *come from* elsewhere but assumes no responsibility for cases that *go* elsewhere. The magnitude of the difficulty rests in the fact that there are three officials who have more or less contributed to the incompleteness of returns. These are the physician or superintendent of a Hospital, the Health Officer and the Secretary of the Local Board of Health. The physician neglects to report to the Medical Officer; the Medical Officer neglects to report to the Secretary; and the Secretary of the Board neglects to report to the Department. The key to the situation is the Health Officer. He is the executive Officer of the Local Board of Health. It is his duty to insist that he be apprized of every case of infectious disease that comes into or occurs within the municipality. A greater effort will have to be made to hold the Medical Officer to his legal responsibilities. Any comment on the part of this official as to the origin of cases returned to the Department is always in order. It is unfortunate that those Health Officers who have been loudest in their criticism of the analysis of these returns have been responsible for the greatest neglect in collecting them.

Below is the number of each infectious disease that was reported during the year.

Disease	Cases	Deaths
Smallpox	38	0
Scarlet Fever	85	0
Diphtheria	86	9
Measles	83	1
Whooping Cough	122	4
Typhoid Fever	29	3
Tuberculosis	5	12
Infantile Paralysis	1	0
Cerebro-spinal Meningitis	1	4
Influenza	31	1
Acute Influenzal Pneumonia	0	3
Acute Primary Pneumonia	5	13

Smallpox.

Smallpox continued in the mild form which has characterized it for many years. The outbreaks in this District have in no case reached any considerable proportions. The mildness of the cases has prevented many from being reported and in this manner has added to the difficulty of stamping it out. The Organized Municipalities which have reported small outbreaks that have been rapidly brought under control are: North Bay, Parry Sound, Haileybury, New Liskeard, Township of Bucke and the Township of Nipissing. In Parry Sound and North Bay single cases kept appearing over a space of considerable time which indicated that some cases were so mild that no doctor was called. It was only by the appearance of secondary cases that were ill enough to have a physician that the outbreak was ultimately brought to an end. The extension of the outbreak in Haileybury, New Liskeard and the Township of Bucke threatened to reach the proportions of an epidemic after the fire in Northern Ontario, where certain cases which were under quarantine in Haileybury were found in the other municipalities after the conflagration. The Nipissing outbreak partook more of the nature of an epidemic than any of the others. The original case apparently came from North Bay. The disease extended rapidly and many were infected before the first case was brought to the attention

of the Medical Officer. The disease extended over into the neighbouring Unorganized Township and into a number of hunters' camps. One of these camps broke up before the secondary cases had occurred, with the result that a number of the members of this club came down with the disease after returning home.

In the Unorganized Territory small outbreaks occurred at Frederick House on the Transcontinental Railway and at Porquis Junction and Timagami on the T. & N. O. Railway. At Frederick House and Porquis Junction much valuable assistance was rendered this office by Ontario Provincial Police Officers Gardiner at Cochrane and Fenwick at Porquis Junction. These men maintained supervision of the quarantined and attended to the securing of supplies. Where new families were attacked I was promptly notified with the result that unaffected members were vaccinated sufficiently early to prevent secondary cases. At Timagami three or four cases occurred in the Government camps, but the camp physician, Dr. Archibald McMurchy, was promptly on the job. All exposed were vaccinated and the outbreak terminated.

I have the history of but one death from smallpox in this District since 1914. This death was in the year 1918. The prevalence of the disease as reported from year to year from the organized municipalities, without including the greater prevalence in the unorganized territory where there is no system of making returns, when coupled with the low mortality, forces me to doubt the necessity for our Regulations being so severe. I would strongly recommend to the Department that when members of a household in which a case has occurred have submitted to vaccination, some liberty should be extended to them.

Scarlet Fever.

During the year scarlet fever occurred in small outbreaks in the following municipalities: Parry Sound, North Bay, Sudbury, Sundridge, Burk's Falls, Township of Machar and the Unorganized Township of Lount, New Liskeard, and the Township of Hudson. This disease has continued in the mild form that has characterized it during the past few years. There were no deaths. In most of these places fresh cases occurred each week for several weeks. As many cases had no rash, control was difficult and slow. The epidemic that occurred in Burk's Falls in 1921 apparently continued over into the present year and slowly spread to Sundridge and the Townships of Machar and Lount. In the latter Townships there was apparently some misunderstanding as to the length of the quarantine period. The placard was being lifted in some cases as early as three weeks after occurrence. By writing a number of personal letters to infected households this practice was discontinued. In the fire area and subsequent to the conflagration, scarlet fever broke out in New Liskeard and in the Township of Hudson. In the town the disease was kept under control although it took several weeks before the last case was liberated. In the Township when the first case was reported a systematic search was made from house to house under the direction of the M.O.H., Dr. McCullough, by Miss Hally, one of our nursing staff, who has been stationed at New Liskeard in order to deal with Public Health problems contingent to the fire. The result was that all the rest of the cases were discovered (ten).

Diphtheria.

Diphtheria has continued to be a potent destroyer of life in this District. From the standpoint of an epidemic there has been splendid control as the disease never reached these proportions in any place. The disease has been

endemic in Sudbury, Sturgeon Falls and North Bay. The cases are usually very mild and have been known to pass through several families without a physician being called. Neglect on the part of parents or guardians is without doubt the chief factor in maintaining the mortality rate. Of four cases reported from Charlton, two died. When the physician was called the patients were past help, although large doses of anti-toxin were used. The four cases occurred in two families. I have been informed by the Health Officer that a contagious sore throat was prevalent in the neighbourhood, but no physician was called. He is of the opinion that this was also diphtheria. In the Township of North Himsworth five cases were reported, but the Medical Officer followed all the contacts personally and the disease was limited to two families. In Bonfield there were four cases and two deaths in one family. The Medical Officer, Dr. DaFoe, is of the opinion that the disease has been endemic in the village and surrounding townships throughout the year.

Measles.

The chief outbreaks which assumed the importance of epidemics were in Sturgeon Falls, and the Township of Neelon. Of eight cases reported from Sudbury, there was one death. The number of deaths from this disease and its complications make it one to be feared in the 2nd, 1st and 3rd years: the severity in the order given.

Whooping Cough.

There were two epidemics of this disease, one in Copper Cliff and the other in the Township of MacMurrich. Of the four deaths reported only one was reported from Copper Cliff. There were none from MacMurrich. Sudbury reported two deaths in the month of December. I have pointed out to the Health Officer that a disease that takes two lives within a month is deserving of some watching. As this disease is required to be reported, I have asked that an effort be made to have the disease reported. The first year of life is the age when whooping cough takes its highest toll.

Typhoid.

Parry Sound, Sudbury, Haileybury, Sundridge and Burk's Falls are among the old offenders that have contributed to the aggregate of our typhoid cases each year. The cases in Parry Sound were quite mild and there were no deaths; although they had fourteen cases reported. It is impossible to reach any far-reaching conclusions regarding Sudbury's typhoid as they have not been reporting their cases. Suffice it to say that there were four deaths from this disease in that town during the year. Undoubtedly there were many cases that did not die. Whether these deaths were due to typhoid that was contracted within the town or not, I am not prepared to say, but it is well known that the water supply contained bacteria of intestinal origin and that the chlorine that was being added was insufficient. The hospital informs me that three of the four deaths reported took place in that Institution, while out of nine cases three were town's people. In regard to Sundridge and Burk's Falls, it is my opinion that the cause of their typhoid will be found to be carriers. One carrier has been definitely found in Sundridge and the Health Officer is proceeding to verify by laboratory tests his observations and suspicions regarding certain others. The cases in Sundridge seem to be general through-

out the town and are not limited to any section, as is the case in Burk's Falls. My conclusions have been that this is due rather to the presence of several carriers, while in Burk's Falls it will be probably traced to one individual. Typhoid was reported from two lumber camps during the year, the Hawkesbury Company's Camp No. 3 and the Sorting Camp of J. B. Smith & Sons at the mouth of the Sturgeon River. As to the outbreak in the Hawkesbury Camp, it was impossible to get any report from the camp physician on this matter. From J. B. Smith's Camp we have definite histories of eight cases, but the information never came to hand until after the camp had finished sorting. This camp was in the Organized Township of Springer and therefore not subject to Camp Regulations. There seems to be no doubt where the disease came from as the river carries Sturgeon Falls sewerage. Although a safe drinking water has been provided, the men will not take the trouble to leave the booms and go ashore to get it. There were a number of cases of typhoid along the Metagami River, below the town of Timmins. At first I suspected the river as the cause, but the cases seemed to be limited to a small area on one bank only. I believe there was a carrier at this point also. There were about eight cases in six houses. The fact that there have been cases in one house year after year would seem to indicate that this dwelling probably harbours a carrier. It was necessary for the Department to pay the hospital expenses and medical care of a man by the name of Tuka and his wife, who contracted their attacks at this point.

Early in the year work was begun on the T. & N. O. extension and this office became anxious to prevent, if possible, a repetition of the history that typhoid has given to the construction of every railway in this Province. Meeting were arranged with the contracting physician and the management of the Construction Company with the result that a definite policy was laid down. This policy was drafted into regulations and became an order of the management to which all employees were required to comply. The regulations were as follows:

(1) The subcontractor, stationman, or foreman in charge of a camp shall be responsible for the carrying out of these regulations.

(2) The refuse and slops from the kitchen shall be gathered in buckets and dumped in a cesspool at least fifty feet from the camp.

(3) The latrines at the camps shall be made fly-proof, or where this is impossible every morning the night soil shall be completely covered with a layer of ashes.

(4) During the day when men are working some distance from the camp and find it necessary to defaecate, they will take their shovels and remove a shovelful of earth and with it completely cover the excreta. This is important.

(5) All men working on the construction of the T. & N. O. extension will be inoculated with anti-typhoid vaccine.

(6) The water from the Abitibi River must not be used for drinking purposes without first being boiled, as this river receives all the sewage from Iroquois Falls and is consequently always contaminated with typhoid germs. This applies particularly after mid-summer.

(7) Every employee or statioman on this work must be able to show a mark of recent successful vaccination, or the evidence of having had smallpox, or submit to revaccination.

It was urged by the Department officials that the men receive their typhoid inoculations before being taken onto the work. This latter suggestion proved a serious stumbling block as the Company found it impossible to comply with

the recommendation as the men were not employed at any one place, nor did they pass through one clearing house. The Department came back again and again with the recommendation but without success. The experience of the army was quoted without avail, so that the Department looked forward with grave anticipations as to the outcome, for it was thought that it was contrary to experience that any other method should be successful. The officials of the Department were warned to be on the lookout for typhoid, but there was none occurred. Month after month went by without anything untoward happening, so that we began to make efforts to ascertain what was the explanation for the miscalculation. It was found that at least 90% of the men were vaccinated, the army and other experience notwithstanding. The contracting physician and the management of the construction company are deserving of the highest praise because this achievement is the blazing of a new trail in methods of obtaining successful vaccination of a large number of employees. That the success of this undertaking could have been obtained without painstaking, systematic and methodical review of lists of employees by the physician and by the sympathetic interest of the management is not to be thought of. This office extends congratulations to the company and to its able physician.

Tuberculosis.

During the year there were five cases and twelve deaths reported. A mother with tuberculosis in an advanced stage was living in a house with five children in the Township of Robillard, near Charlton; as the family was indigent the Department arranged to pay for her hospital care at Weston. It was unfortunate that we did not hear of the case earlier as the patient did not long survive her entrance to the institution. We have the satisfaction that a serious menace was removed from the children for a short time at least. Late in the summer I visited Chartrand Corners, where there was a returned soldier who was an open case of tuberculosis living with his brother and ten children. The youngest child was six months old. I found in this case that the patient was taking considerable care to prevent others being infected, but the opportunities for transmitting the disease were so numerous that I felt that he should leave the household where he has been making his home. He promised to return to Toronto to report to the Military authorities. I was informed that it was their intention to hold him in order to prevent the family being infected. Toward the end of the year, when we sent five nurses into the fire area to supervise Public Health problems such as overcrowding and the prevention of epidemics, Miss Corbman, who was stationed at Cobalt, found a case of open tuberculosis in a large family. While she was trying to make arrangements for the care of the affected, the people left town and moved north into the unorganized territory. Miss Corbman followed these people and after having made arrangements for care in a Sanatorium she brought the patient to the institution. This is the highest form of Public Health effort and indicates to the public the efficiency of the measures which the Department has provided for their protection.

Of the other reportable diseases, there is little to be said beyond the fact that they are not being reported.

In concluding my remarks under this heading, allow me to point out one or two observations where I think the efficiency of the present methods may be improved. Regarding the weekly reports of infectious diseases which are required to be sent into the Department by the secretaries of the Local Boards of Health, he is supposed to get his information from the Medical Officer of

Health. We have absolute proof that we are not getting the reports. The Secretary sometimes claims that he was unable to get information, while at other times the Medical Officer claims information was given that was not forwarded. The only provision under the Act as at present constituted which makes it an obligation on the Medical Officer for the giving of information to the Secretary is under Section 53, which has to do with those reports of in-infectious cases reported by the householder. As this forms a very small part of the reported cases, and since the Act does not require the Medical Officer to give information of those cases reported by physicians and hospital superintendents, legislation should be introduced to make this imperative. I believe a form should be provided the Medical Officer upon which these returns should be made. It would possibly be necessary to have carbon copies in order that he might keep verification of his records.

In the matter of terminal fumigation, this subject was investigated by the Municipal Health Department, Practice Committee of the American Public Health Association. The Committee in its report expresses surprise that almost two-thirds of the cities of over one hundred thousand population still continue the practice. As scientific opinion is practically unanimous as to the uselessness of the procedure, I have consistently recommended to Medical Officers that they discontinue the practice.

In concluding this heading of Communicable Diseases, let me express the hope that a means of prevention will soon be found for those infections which enter by the respiratory tract, such as pneumonia, influenza, measles and whooping cough.

Venereal Diseases.

The problem of the care of indigent cases of venereal disease became more and more pressing throughout the year as requests for free treatment were showered upon this office from all points of the District. Requests for free treatment came from Timmins, Capreol, Kapuskasing, Timagami and Porquis Junction. At one small place I found a man who was a positive case of syphilis. He has discontinued treatment, but after an explanation of its importance he agreed to take further treatment if this could be provided. As there was no free clinic, I went to the Health Officer of the town of North Bay, Dr. Brandon, who agreed to administer the treatment without charge because of the urgency of the case. At another place, where there is no physician, a teacher reported venereal disease among her pupils.

In September, the Director of the Division of Venereal Diseases came to North Bay and laid the bases for the establishment of a free clinic. Although it was to take several months before these plans could be put into operation, yet month after month saw developments which gradually brought the commencement of the work into focus. It is to be hoped another month will see it in operation.

Public Health Nursing.

Early in the year the demonstrations in North Bay of Public Health Nursing, which were begun toward the end of 1921 by Miss Hally, resulted in the Council providing an appropriation for a municipal Nurse. The Division of Child Welfare was appealed to for assistance in the attempt to obtain the services of a nurse with proper qualifications. By the time a competent official could be secured and brought to the town, the year was half gone. The efficiency of Miss Hally's demonstration is deserving of passing notice as there were certain influential citizens who strongly opposed her efforts. One of these, who was somewhat more aggressive than the others, succeeded in obtaining for himself

the expert attention of our Chief Officer. Although this treatment appeared not to have effected a cure in his case, yet there was a decided amelioration of the symptoms of many of his friends. Afterwards, however, as the result of the efforts of our nurse began to accumulate, he was overwhelmed by the evidence. He is now an active supporter of Public Health Nursing, and gives Miss Hally a large share of the credit for his change of heart.

While Miss Hally was carrying on in North Bay, Miss Linton was busy with survey work in the western section of the District, especially in the part about Sudbury. One of the nurses from District No. 8 was carrying on a demonstration in the town of Chapleau. Before this was finished she resigned and Miss Linton went to Chapleau until a substitute could be provided. Shortly after this, Miss Linton resigned and this District lost a most able and efficient official.

During the late summer it was decided that it was in the interests of the work to put on a demonstration in New Liskeard. But before the nurse had reached there the conflagration of October 4th occurred. Forty-five lives were lost and five thousand were left homeless, without food and clothing. The danger from communicable diseases and overcrowding forced this office to ask assistance from the Nursing Branch of the Child Welfare Division. The assistance was promptly supplied.

Under an arrangement with Dr. Routley, who was a member of the Fire Relief Commission representing the Ontario Red Cross, we stationed five nurses at five strategic points. These were to be duplicated by five from the Red Cross. The points selected were: Englehart, Earlton, New Liskeard, Haileybury, and Cobalt. Further, this arrangement provided that the Red Cross Nurses would give attention to those emergency conditions directly attributable to the fire, while the Public Health Nurses would give attention to the permanent work of Public Health Nursing. Dr. Routley's clear-cut view as to the limitations of his staff was a large factor in the solution of the difficulties which the pressing circumstances presented. The division of the work was eminently fair and his adherence to the arrangements under stressing conditions is deserving of the commendation of all those who had a part in the exigency.

The work of the nurses has been the means of obtaining early control of several outbreaks of communicable diseases. It obtained information as to the distribution of the overcrowding and to other menacing conditions. Minute information was kept of the number of shack dwellings that were built and the social problems which each case presented. It became necessary to know whether the buildings were sufficiently inhabitable for winter months and food and fuel were not wanting.

So efficiently has the work been carried on, that although it was established to meet abnormal conditions, municipal officials and citizens have become so seized of its importance that efforts are being made to formulate plans for the continuance of the service.

Water Supplies.

Cochrane.—Cochrane's water supply has been found polluted in samples sent in to the laboratory by private parties. Although it was realized that it was quite possible for the pollution to have been introduced at the time of taking the sample, still the party in one instance at least was a very careful man.

On a previous occasion polluted water has been obtained from one of the shallow wells. Usually, however, the water from the wells which form the bulk of the town's supply is free from contamination. Unfortunately the supply of water from the springs is not sufficient to supply the needs of the town at all times.

As the water in the lake usually shows the presence of bacteria of intestinal origin, and as this supply must be depended upon in case of fire, the danger to the town is not inconsiderable. The presence of this menace was pointed out to the Council at one of their regular meetings. The Council is desirous of providing sufficient tankage to hold ample supply for fire emergencies, this supply to be provided entirely from the springs. This, in my opinion, if found feasible from an engineering point of view, would solve their difficulties and remove the alternative of having to chlorinate all water that comes from the lake, to which they are very averse. Although the necessity for chlorination was strongly advocated, the year ended without tank or chlorination plant being installed.

Later in the summer the town water was suddenly cut off because of the failure of the electric supply to the pumps. It was necessary until repairs could be completed to provide water from Commando Lake. In order to guard against water borne diseases during the time (5 or 6 days) this water was being used, notices were distributed to every house, warning the householder to boil all water used for drinking purposes. It is the opinion of this office that force should be used if necessary to compel the town to provide for chlorination of their water.

Iroquois Falls.—Early in the year Mr. DeLaporte of the Engineering Division upon my invitation accompanied me to Iroquois Falls to investigate the efficiency of their filter plant and the chlorination of the waters. The filters were known to be working inefficiently. I regret that the result of our efforts has not provided a solution to the difficulty, but it appears that sedimentation will be required before the fine silt which is characteristic of Abitibi River water can be eliminated and the water be given a clear appearance. Air washing has been introduced to one of the filters and this one is working so much more efficiently than the others that an effort is being made to secure an explanation by experimental means. Should the results of the experiments give results in keeping with the Iroquois Falls tests, recommendations may be made to add this equipment to the other filters.

The efficient chlorination of the town's water supply is one of the most difficult within this District. The amount of organic matter contained in it varies greatly from hour to hour so that it is impossible to set the machine to do the work efficiently. Sometimes the quantity requires to be augmented and at other times diminished. An effort was made to establish a workable basis by a study of the hydrogen-ion content, but with what results I have not been informed by the experimental station.

Burk's Falls.—During the summer the taste and odour of Reazin Lake water, from which the town gets its supply, became unbearable, with the result that many old wells were put into commission. Samples from the wells indicated that nearly all were contaminated. The main from the lake to the town passed down a boggy ravine. It was thought that possibly the pipes had pulled apart and that bog water may have been getting into the pipes. This was not considered by our Engineering staff as sufficient explanation for the taste and odour. They are of the opinion that the taste and odour may be found to be due to a certain specific algae. If this hypothesis can be proven by experimentation, active measures against the organism might result in a greatly improved water.

Sudbury.—In the early part of the summer bacteria of intestinal origin was found in the water after chlorination. In order to destroy all organisms of this type, it was advised that the chlorine be increased from five to eight pounds per million gallons. This gave considerable improvement, but the

dosage was not finally corrected until it was checked up later by Mr. DeLaporte of the Engineering Division. It has been difficult to apply information as to the origin of typhoid cases within the town since reports of these cases have not been obtained. A few cases of typhoid were known to exist but no reports were made. It is to be hoped that the recent methods introduced by the Medical Officer of Health will bring in satisfactory returns.

North Bay.—The laboratory samples of North Bay's water supply have consistently indicated that the water is exposed in some way to pollution of large numbers of intestinal bacteria. Whether these bacteria are of human origin has not been ascertained. It seems a very difficult proposition to eliminate the possibility of the human source.

At the suggestion of this office samples were taken through the ice opposite the intake. These were free from pollution and did not correspond to the tap samples. As the intake is about seven hundred feet from the shore it was thought improbable that the pollution should be so concentrated as the tap samples indicated. It was thought that an injury to the pipe near shore might explain the contamination. The matter was placed before the Council by the Medical Officer, Dr. Brandon, with the request that the services of a diver be secured in order to explore the condition of the intake. This was done late in the Fall with the result that a break in the pipe was discovered. The break was temporarily fixed with the result that the laboratory samples indicate a greatly reduced bacterial count. I am of the opinion that the location of the intake will have to be changed or the pipe extended if much further benefit is to be obtained.

Haileybury.—The new chlorine plant that was installed in the spring was found to be of insufficient capacity for the effectual treatment of the water of Lake Temiskaming in the quantities that are delivered by the Haileybury pumps. Negotiations between the Council and the Company supplying the plant were under way when the fire swept the town and the pump house. After the fire the menace to the citizens from drinking raw lake water was of the most serious kind, but it is to the credit of the energetic Council and our Engineering Division that a new pump was put into operation within five days and a new chlorine plant was installed within ten days of the conflagration. I believe prompt action effectually prevented an epidemic at a time when everything else seemed most favourable for its occurrence. Thousands had lost their homes. No conveniences were available. Control of the dangerous discharges from the human bowel and bladder was temporarily lost, and the promiscuous habits of the population threatened the people's health. This is a striking example of the protection afforded the public through the Department. Public Conveniences were built in accessible places and every effort made to get sanitary control as early as possible. The results speak for themselves. In the meantime the town has the use of the chlorine plant which was rushed to its assistance from the laboratories of the Provincial Board of Health.

Sewers and Sewerage.

North Bay.—Undoubtedly the most important matter dealt with under this heading was the action taken against the town of North Bay for putting sludge from their septic tanks on the ice of Lake Nipissing. The sludge had collected in the tanks for a year and has completely filled them, so that the sewerage was running through the tanks without septic action. The result was that the sewers were discharging raw sewerage into the Lake. The sludge in the tanks was largely free from dangerous organisms since the time the sludge

had lain there was much beyond the usual lifetime of these organisms. For the reasons enumerated, the sewerage going into the lake was the only serious menace (if it could be termed such) to a body of water which is not being used as a public water supply by any municipality. In spite of this, however, because so many complaints were received, due to the fact that the sludge was before the eyes of the public and also because the placing of sludge on the ice of the lake, even though not dangerous, is contrary to the provisions of Section 91 of the Public Health Act, legal proceedings were instituted against the town. The municipality was found guilty, but because of its assurance that it would not occur again the sentence was suspended. It is quite probable also that the fact that the disposal of sewerage by the great majority of municipalities within the Province is contrary to the provisions of Section 91 of the Public Health Act, influenced the Magistrate.

From my observations in this case, I would strongly recommend either that Section 91 be enforced or be amended so as to permit the Board to exercise its judgment.

Matheson.—In April I went to Matheson to report on the Rosedale War Memorial Hospital for the Department of Prisons and Charities. This introduced the subject of the street sewers which empty into the Black River without treatment. The Black River empties in the Abitibi above the intake pipe for Iroquois Falls water supply. The matter was brought to the attention of the Provincial Board as it was in contravention of Section 91 of the Public Health Act, but no objection was taken to it.

Sturgeon Falls.—It is well known to this office that Sturgeon Falls has greatly extended and improved their sewer system in the past three of four years. It is also known that there are a great many unsanitary privies belonging to premises that now have the privilege of sewer connection. In July the matter was brought to the attention of the municipal council with a recommendation that every effort be made to force householders to connect up. A by-law was mentioned as a means to an end. The Council expressed sympathy with the suggestion but felt that such action would be too precipitate for many of their citizens with small incomes.

Public Health Education.

Every effort is made to make this office a centre for reliable Public Health information, and to make it attractive and accessible to the Public. The Government give certain financial assistance to the Normal Students attending the North Bay School who agree to teach three years in Northern Ontario. The result is that nearly all the teachers in this section of the Province are graduates of the North Bay Normal. This explanation is given as a reason why this office has accepted the invitation of the Principal to give a lecture on Public Health to the Students during the school term. We have already received some evidence of the benefit of these lectures. Unsanitary conditions, communicable diseases and even venereal diseases has been brought to the attention of this office by teachers from about the schools or among the pupils of their classes.

Municipal Health expenditure is very frequently below the average for the Province and frequent reminders are necessary in order to get adequate remuneration for the Health Officer without which we cannot expect efficiency on his part.

Respectfully submitted,

W. Egerton George,

District Officer of Health, District No. 6.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 7.

To the Provincial Board of Health, Ontario:

I have the honour to submit herewith my report of work done, during the year 1922, in District No. 7, comprising the Districts of Thunder Bay, Rainy River, Kenora and Patricia.

Conferences.—On May 29th and 30th I attended the Annual Meeting of the Ontario Health Officers' Association. This meeting was held in Toronto. Eight local Medical Officers of Health from District No. 7 attended and registered at the Annual Meeting. An attendance of nearly fifty per cent. of the Medical Officers of Health from District No. 7 is most encouraging when we bear in mind the fact that most of the municipalities are from eight hundred to a thousand miles from Toronto.

Cemetery Inspections.—Cemeteries were inspected in the municipality of Chapple, District of Rainy River; in the municipality of Ignace, District of Kenora; and in the municipalities of Schreiber, Nipigon, Neebing and Paipoonge, District of Thunder Bay. Reports of inspections were sent to the Provincial Board of Health, and four registered notices were sent to the owners requiring improvements in connection with cemeteries. The inspection of cemeteries has very little public health value—at least in the rural municipalities.

Routine Sanitary Inspections.—Routine sanitary inspections were carried on in fifteen municipalities; and reports were sent to the Provincial Board of Health as follows:

Municipality	Dates of Inspections	Dates of Reports
(1) Port Arthur	March 17th to 25th	March 28th.
(2) Fort William	April 5th to 21st	April 22nd & 24th
(3) Nipigon	July 6th	July 10th.
(4) Paipoonge	Attended Meeting, Local Board of Health, July 14th	July 21st.
(5) Shuniah	Loon Lake Summer Resort, July 26th. Summer Resorts, July 27th. Attended Meeting, Local Board of Health, July 29th	August 31st.
(6) Ignace	July 24th	August 29th.
(7) Dryden	September 20th	September 29th.
(8) Kenora	September 21st	September 30th.
(9) Keewatin	September 22nd	October 12th.
(10) Fort Frances	October 2nd and 3rd	October 13th.
(11) Emo	October 4th	October 14th.
(12) Chapple	October 5th	October 18th.
(13) Morley	October 5th	October 26th.
(14) Rainy River Town	October 5th and 6th	October 24th.
(15) Schreiber	October 16th	October 26th.
(16) Sioux Lookout	October 20th	October 31st.
(17) Port Arthur	Attended Meeting, Local Board of Health, December 6th	December 15th " 16th.

Special Visits and Inspections.—Special visits and inspections were made and reports submitted to the Provincial Board of Health as follows:

Community	Dates of Visits or Inspections	Dates of Reports
(1) Grain Elevators in Port Arthur and Fort William	January 3rd, 5th, and 9th	January 14th.
(2) Rainy River Town	April 30th to May 1st	May 5th.
(3) Fort Frances	May 1st and 2nd	May 6th.
(4) Ignace, Dryden, Kenora and Keewatin	May 15th to 17th	May 19th.
(5) Kenora	June 16th and 17th	June 19th.

Community	Dates of Visits or Inspections	Dates of Reports
(6) S. S. No. 2, Ware (unorganized)	June 6th.	Reports attached
S.S. No. 1, Raith (unorganized)	" 21st.	to letter dated
S.S. No. 1, Savanne(unorganized)	" 21st.	June 28th.
(7) Everard (unorganized)	June 20th	June 23rd.
(8) Fort Frances	July 17th	July 19th.
(9) Silver Islet (unorganized)	July 11th	July 12th.
(10) C.N.R. "Mount Yard" Terminals Construction Camp, Municipality of Neebing	July 28th	July 29th.
(11) "Chippewa Park" (unorganized)	July 9th. August 28th. September 2nd	No Report. (Reports from Provincial Sanitary Inspector).
(12) C.N.R. "Mount Yard" Terminals Construction Camp, Municipality of Neebing	August 28th. September 12th. September 29th.	No Report. (Reports from Provincial Sanitary Inspector).
(13) Nipigon, Schreiber and Cameron Falls (unorganized)	September 7th to 9th	September 16th.
(14) Nipigon	Attended regular meeting, Municipal Council, September 7th	January 11th.
(15) Shabaqua (unorganized)	September 14th	September 19th.
(16) Thunder Bay District Gaol, city of Port Arthur	September 15th	September 19th.
(17) "Dutton & Tomlinson" Construction Camp, near "Rowan,". C.N.R., municipality of Conmee.	September 26th	No Report. (Reports from Provincial Sanitary Inspector).
(18) Rainy River Valley (Fort Frances to Rainy River Town) *re* "Drinking-Water Notices."	October 4th to 6th	October 26th.
(19) S. S. No. 1, Wabigoon (unorganized)	October 19th	November 7th.

Dairies.—Forty-two dairies—including four pasteurizing plants—were inspected as follows:

(1) Port Arthur	5	(including one pasteurizing plant). See report dated March 28th, *re* Sanitary Inspections, Port Arthur; also report dated December 15th, *re* Meeting, Local Board of Health, Port Arthur.
(2) Fort William	12	(including two pasteurizing plants). See reports dated April 22nd and 24th, *re* Sanitary Inspections, Fort William.
(3) Fort Frances	11	See report, dated October 13th, *re* visit Fort Frances; also dated December 19th, *re* Supervision Milk Supply, Town of Fort Frances.
(4) Kenora	11	(including one pasteurizing plant). See report dated September 30th, *re* visit Kenora.
(5) Keewatin	1	See report, dated October 12th, *re* visit Keewatin.
(6) Sioux Lookout	2	See report, dated October 31st, *re* visit Sioux Lookout.
Total	42	(including four pasteurizing plants).

Sanitary conditions, and equipment in each dairy inspected, were described in the above-mentioned detailed reports. Speaking generally, I would call attention to the apparent lack of municipal control over the efficiency of milk-pasteurization plants. In the four pasteurizing plants inspected I could find nothing to prove by mechanical means that any particular batch of milk was effectively pasteurized and subsequently cooled to the proper temperature at which it should be maintained until delivered to the consumer. I would repeat the recommendations made in my Annual Report for 1921:—"that it be made illegal for any person or company operating a dairy to advertise pasteurized milk unless the particular apparatus and process has been officially endorsed by the local Board of Health of the municipality after inspection of same; and unless the officials of the local Board of Health shall have sole access to the recording apparatus and time-clocks in connecting with the pasteurizing plant. I would further recommend that it be made illegal to offer for sale pasteurized milk unless every bottle of this milk be labelled as such, stating the degree of heat and the length of time; and the date on which the process was done."

Water Supplies and Water Chlorination.—During 1922 a total of 992 water-samples were examined bacteriologically in the Provincial Board of Health Branch Laboratory at Fort William. After deducting the 402 analyses of samples sent in by the Field Party from the Sanitary Engineering Division, the remaining total of 590 bacteriological analyses indicates the increased attention being given to the supervision over the purity of water supplies in the District when compared with 390 analyses in 1921 and fifty-three analyses during 1920. Liquid chlorine control machines were installed during the year at the municipal waterworks pumping-stations in the towns of Rainy River and Kenora. The installation at Rainy River town was completed after the receipt by the municipal authorities of a mandatory order from the Provincial Board of Health. I have been notified by the clerk of the town of Fort Frances that everything was in readiness for the installation—about December 6th, 1922—of a liquid chlorine control machine in the Fort Frances municipal waterworks pumping-station.

With reference to the effective supervision over the efficiency of water-purification plants in District No. 7, I would recommend that it be made compulsory for all municipalities—where water-purification plants are in operation—to send tap-samples of the "purified" water to the Provincial Board's Branch Laboratory in Fort William at least three times weekly throughout the entire year. It is essential that water-purification plants be operated in such a manner that the "purified" water is at all times free from colon bacilli.

Sewage Disposal.—Conditions throughout the District are practically the same as mentioned in my Annual Report for 1921.

Night-Soil; Manure and Garbage.—In many municipalities the maintenance of sanitary privies and the collection and disposal of night-soil must be dealth with more effectively. Local conditions determine the choice of methods of ultimate disposal; but no community can be considered a desirable or safe place of residence so long as that community tolerates within it boundaries the unsanitary privy with its contents a convenient feeding and breeding ground for flies. The same remarks apply with equal force to uncovered heaps of manure left for sufficient time to become breeding grounds for swarms of house flies.

Garbage may under certain conditions become a source of danger to health; and its removal and disposal at frequent intervals should be a routine procedure in every community.

Communicable Diseases.—The following lists were compiled from the returns sent to this office from the Provincial Board of Health as received during the year 1922 from the Secretaries of local Boards of Health in District No. 7:—

Disease.	Municipality.	Cases.	Deaths.
(1) Smallpox	Schreiber	16	0
	Port Arthur	1	0
	Fort William	5	0
	Sioux Lookout	1	0
	Chapple	4	0
	Total	27	0
(2) Scarlet Fever	Port Arthur	31	0
	Fort William	84	0
	Oliver	1	0
	Kenora	4	0
	Keewatin	2	0
	Fort Frances	23	0
	Emo	9	0
	Chapple	13	0
	Rainy River	3	0
	Total	170	0
(3) Diphtheria	Schreiber	2	0
	Shuniah	1	0
	Port Arthur	11	1
	Fort William	24	1
	Kenora	2	0
	Keewatin	10	2
	Fort Frances	5	1
	Emo	2	0
	Chapple	1	0
	Rainy River	2	1
	Total	60	6
(4) Measles	Shuniah	1	0
	Port Arthur	2	0
	Fort William	2	0
	Total	5	0
(5) Whooping Cough	Port Arthur	11	0
	Fort William	14	0
	Machin	0	1
	Emo	2	0
	Dilke	0	2
	Totals	27	3
(6) Typhoid Fever	Schreiber	4	0
	Port Arthur	1	0
	Fort William	21	0
	Keewatin	1	0
	Fort Frances (one suspect)	2	0
	Emo	4	0
	Chapple	5	0
	Morley	1	0
	Dilke	0	1
	Rainy River Town	19	0
	Total (one suspect)	58	1

Disease.	Municipality.	Cases.	Deaths.
(7) Tuberculosis	Nipigon	0	3
	Port Arthur	1	4
	Fort William	14	11
	Paipoonge	1	0
	Keewatin	2	1
	Total	18	19
(8) Infantile Paralysis	Fort William	1	1
	Total	1	1
(9) Cerebro-Spinal Meningitis	Fort William	1	0
	Total	1	0
(10) Influenza	Port Arthur	0	2
	Fort William	5	7
	Total	5	9
(11) Acute Influenzal Pneumonia	Fort William	0	1
	Total	0	1
(12) Acute Primary Pneumonia	Nipigon	0	1
	Port Arthur	0	3
	Fort William	75	10
	Total	75	14
(13) Mumps	Port Arthur	1	0
	Total	1	0
(14) Chicken-pox	Port Arthur	6	0
	Fort Frances	7	0
	Total	12	0

The above lists are not to be taken as representing the exact number of cases and deaths owing to communicable diseases; but they are the totals given in the returns received during the year at this office. It is noted that in certain tables the number of deaths exceeds the number of cases; and it is apparent that the returns may be incomplete in connection with diseases like Acute Primary Pneumonia.

Smallpox.—An outbreak of smallpox at Schreiber during the months of February and March was effectively controlled by prompt action on the part of the local authorities of that municipality. Section 12 (twelve) of the Vaccination Act was brought into force; and practically the entire population of Schreiber (numbering approximately fourteen hundred) were vaccinated under authority of this section of the Act. The number of actual cases of the disease was limited to sixteen (16). The Medical Officer of Health—Dr. H. S. Crowe

—assisted by Miss E. B. Corbman, Provincial Public Health Nurse, carried on the entire work of vaccination; and Dr. Crowe and the local authorities of Schreiber are to be congratulated upon having dealt so effectively with a rather difficult situation. The prompt suppression of the outbreak at Schreiber is an object lesson on the value of vaccination against smallpox.

Scarlet Fever.—From Fort William and Port Arthur reports were received of eighty-four and thirty-one cases respectively of scarlet fever. These figures indicate that the disease has been kept under control in both cities. Outbreaks were reported from various municipalities in the Rainy River District; but the disease did not assume dangerous proportions. The stamping out of scarlet fever will remain a matter of difficulty until we possess exact knowledge as to its cause and the length of time during which the patient remains infective after the attack; also until we can detect "carriers" by laboratory means.

Diphtheria.—During the early part of the year an outbreak of diphtheria occurred in the town of Keewatin. Reports were received relative to ten cases with two deaths. Dr. D. M. Baker, Medical Officer of Health, dealt with the situation; and the disease was effectively brought under control. The following quotation from Dr. Baker's Annual Report for 1922 may be of interest: "A number of Schick tests were done on school children; and ninety odd school children were inoculated with toxin-antitoxin mixture." So far as I am aware, Dr. Baker is the first Medical Officer of Health in District No. 7 to have made use of the Schich test and the toxin-antitoxin mixture.

I may say that, during the year, I forwarded to each Medical Officer of Health in District No. 7, a sample package of toxin-antitoxin mixture and a sample package of diphtheria toxin for Schick test. Both these biological products are available free of charge to medical officers of health. The record of cases and deaths owing to diphtheria must stimulate us to use every available weapon in an endeavour to eradicate this dangerous disease.

Measles.—Reports indicate that the District has been practically free from measles during the year.

Whooping Cough.—According to the returns received, the cases of whooping cough numbered twenty-seven with three deaths. The public must realize that whooping cough is an extremely dangerous disease.

Typhoid Fever.—During the early part of the year an outbreak of typhoid fever occurred in the town of Rainy River; and a number of cases were reported from other municipalities in the Rainy River Valley. The town of Rainy River has since installed a liquid chlorine control machine at the municipal waterworks pumping-station, as the town water supply is taken directly from the Rainy River.

During the year notices were posted in the schools and post-offices along the Canadian shore of the Rainy River between S. S. No. 1, Roddick (near Fort Frances) and S. S. No. 2, Atwood (between Rainy River town and the Lake-of-the-Woods) warning the public that the raw Rainy River water is unsafe for domestic use unless previously boiled. Mr. W. C. Millar, Provincial Sanitary Inspector, assisted me in this work. It is hoped that in future no typhoid fever will be attributable to insufficiently purified water taken from the Rainy River for domestic use.

During the summer an outbreak of typhoid fever occurred at the Provincial Industrial Farm near the City of Fort William in the municipality of Neebing. Nine cases occurred with one death. Sanitary conditions at the Farm were found at fault in certain essentials. These were rectified so far as possible; and the disease was eventually brought under control. It is hoped that

permanent improvements in the way of new buildings and equipment—together with routine anti-typhoid inoculation of all employees and inmates—will eliminate any further danger of typhoid fever at the Industrial Farm. I was accompanied on my visits to the Farm by Mr. W. C. Millar, and on one occasion by Mr. Alex. White, Provincial Sanitary Inspector, whose suggestions were much appreciated.

It is only fair to say that the majority of the cases of typhoid fever, reported from the city of Fort William, came from outside sources. All the cases from the Industrial Farm, and three cases from Schreiber (a total of twelve) were brought to the McKellar General Hospital in Fort William and were included in the twenty-one cases reported from that city. Bacteriological analyses of the Fort William water supply, whenever made during the year, have shown the samples to be free from colon bacilli.

At the beginning of December a small outbreak of typhoid fever occurred in the Municipality of Schreiber. The municipal water supply was found to be polluted—presumably from a C.P.R. construction-camp in connection with a new dam being built at Cook's Lake. However, a survey of the local situation led to the conclusion that the disease was apparently due to "contact" infection.

Tuberculosis.—It is to be hoped that at some future date a sanatorium for cases of tuberculosis will be established at some central point in District No. 7.

The following visits were made in connection with communicable diseases:

Community	Date of Visits	Disease	Dates of Reports
(1) Schreiber	February 4th	Smallpox	February 7th.
(2) Schreiber	February 25th	Smallpox	February 27th.
(3) Beardmore (unorganized)	March 31st	Epidemic Cerebro-Spinal Meningitis	April 3rd.
(4) Rainy River Town, Dilke, Morley, Chapple, Emo and Fort Frances	April 30th to May 2nd.	Typhoid Fever, Rainy River Valley	Letter dated, May 3rd, to Director, Sanitary Engineering Division.
(5) Dorion (unorganized)	June 22nd June 24th. July 13th. July 25th.	Diphtheria	June 26th. September 1st.
(6) Rocky Inlet (unorganized)	July 17th	Scarlet Fever	July 19th.
(7) Provincial Industrial Farm, Municipality of Neebing	August 17th. August 19th, two visits.	Typhoid Fever	August 21st.
(8) Provincial Industrial Farm, Municipality of Neebing	August 19th, to August 28th three visits.	Typhoid Fever	September 2nd.
(9) Provincial Industrial Farm, Municipality of Neebing	September 11th.	Typhoid Fever	September 19th.
(10) Schreiber	December 1st	Typhoid Fever	December 7th.

Venereal Diseases.—As no weekly returns of venereal diseases come into the office of the District Officer, I have no exact knowledge as to the incidence of these diseases in the municipalities throughout the District. During the year my work in connection with venereal diseases has consisted in an effort to compel certain Indians to continue treatment at the Venereal Diseases Clinic in Fort William.

Territory Without Municipal Organization.—The control of communicable diseases has been the work to which I have given my attention during the year in the territory without municipal organization; and the direct sanitary supervision of this territory has been left largely to Mr. W. C. Millar, Provincial Sanitary Inspector. I accompanied Mr. Millar on certain visits of inspection where we thought it advisable; and we have endeavoured to make sanitary inspections of a few of the public schools situated in this territory.

Fort William is the logical headquarters for two Provincial Sanitary Inspectors:—one to have jurisdiction over the territory without municipal organization in the Districts of Rainy River and Kenora, and the other to work in similar territory in the District of Thunder Bay or as far east as practicable.

Regarding the agricultural townships (without municipal organization) which have been thrown open for settlement, I would repeat the observation made in my Annual Report for 1921:—"As settlement can only proceed in townships appropriated for agricultural purposes and open for settlement; and as these partly settled unorganized townships are in fairly compact groups within reach of existing municipalities, some means can surely be found whereby certain local medical officers of health may be appointed over groups of unorganized townships within reach of the municipalities at present under their jurisdiction. It is of the utmost importance that provision be made for local health supervision in partly-settled townships where there is little probability of municipal organization in the immediate future. It is physically impossible for one official to perform effectively the duties of local Medical Officer of Health throughout the entire extent of unorganized territory in the District; and at the same time to carry on efficiently in connection with the municipalities his duties as District Officer of Health."

With reference to the sanitary supervision of lumber and timber camps, I believe that if the law provided for the permit or license (to cut timber) to become automatically voided upon failure by the timber operator to furnish within a specified time the information called for under Section 1 of the Provincial Board of Health, "Regulations for the Sanitary Control of Lumber and Timber Camps situated in the Unorganized Territory," the timber operator would be careful to furnish this information to the Provincial Board of Health more promptly than I am led to believe is his practice at the present time; and the Provincial Sanitary Inspectors' duties in this connection would be simplified to a great degree.

Schools in Territory Without Municipal Organization.—Under present conditions it is practically impossible to make complete sanitary inspections of all public schools in territory without municipal organization throughout the District. I would repeat the recommendation made in my Annual Report for 1921:—"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 a report of each inspection."

Surveys by Field Party from Sanitary Engineering Division.—During the year sanitary surveys were completed in the cities and towns and in two township municipalities (Schreiber and Emo) by a field party from the Sanitary Engineering Division. Detailed sanitary surveys (by trained sanitary engineers) are of the utmost public health value. The environment in which we live must be made conducive to health if our public health work is to remain upon a sound foundation.

Public Health Nursing.—During the summer months, Miss M. Carr Harris, assisted by three Provincial Public Health Nurses on temporary duty, carried on special work in each of the three main agricultural areas in District No. 7. This work was much appreciated in the localities visited by the nurses; and it is hoped that its scope may be extended during the summer of 1923.

Miss E. B. Corbman continued her most efficient public health nursing work at Schreiber, Cameron Falls, Nipigon and Dorion.

Public Health Laboratory.—The work of the Provincial Board of Health

Branch Laboratory at Fort William has increased to such an extent under the able supervision of Dr. N. O. Thomas, that it was found necessary during the year to employ an additional full-time assistant.

Provincial Sanitary Inspector.—Whenever requested, Mr. W. C. Millar has assisted me during the year, in addition to carrying on his arduous duties in connection with the sanitary supervision of lumber camps, etc., Mr. Millar is a most efficient and conscientious inspector.

Annual Reports from Local Boards of Health.—I have continued the practice of reminding the Secretaries of local Boards of Health (and the medical officers of health) as to their duties in connection with the sending of Annual Reports to the Secretary of the Provincial Board of Health.

I have the honour to be, Sir, your obedient servant,

G. L. Sparks,
District Officer of Health, District No. 7.

ANNUAL REPORT FOR 1922 OF DISTRICT No. 8.

To the Provincial Board of Health, Ontario:

I beg to submit the following report on Public Health Activities in this District during 1922.

During the year I have been able to make at least one visit to all sections in the District, except a small section near Hearst, being part of the territory farthest north in Algoma District.

The following places were visited during the year, investigating complaints or on requests for assistance in dealing with sanitary conditions: Hornepayne, Foleyet, Gogama, Searchmount, Richard's Landing, Gore Bay, Desbarats, Bruce Mines, Nestorville, Thessalon, Spanish Station, Espanola, Little Current, Manitowaning, Massey and Lee Valley.

In the town of Thessalon a difficult situation arose in connection with logs being stored in the river within the town limits, which so retarded the current that much of the drainage and sewerage from the town was prevented from clearing to the open water below, thus becoming stagnant and offensive during the hot weather. An order was secured by the municipality from the Federal Department of Waterways, forbidding the lumber company concerned to store logs within several miles from the town limits.

During the summer the Sanitary Engineering Department of the Provincial Board made a survey of sanitary conditions in the town of Little Current. It was found that the water from the majority of wells in the town was dangerous for household use, as was also the water from the channel which was used in a number of business places, homes and hotels along the water front. Beyond advising individual owners and householders regarding the necessary precautions to be taken, a satisfactory solution of the problem has not yet been secured, as the municipality is not yet prepared to assume the financial responsibilities that would be incurred by the installation of a municipal water and sewerage system. Owing to the large area with the comparatively small population and to the fact of the rock formations, a municipal system would be very expensive to undertake.

In isolated communities along the lines of railway in northern sections of the District, it is often difficult to get satisfactory results when endeavouring to secure reasonably clean and sanitary conditions. In many places which are not organized as municipalities, there is no local authority to be responsible for local conditions and though the population may number 400 or 500 people, the Board of Health regulations do not cover the situation either as a camp or as a municipality, and owing to the large territory to be covered, it frequently takes some considerable time to get the desired improvements, particularly when visits have to be repeated in connection with follow-up work.

Communicable Diseases:

Communicable diseases have been officially reported for 1922 as follows:

	1922	1921
Smallpox	1	37
Scarlet Fever	91	78
Diphtheria	116	121
Measles	7	4
Typhoid Fever	20	16
Cerebral-Spinal Meningitis	1	0
Total	236	256

These figures as given do not indicate any decided reduction in 1922 over 1921, but actually there has been a much larger decrease than is shown, the reason being that cases have been much more regularly and accurately reported, both from municipalities and from unorganized districts. Appreciation is hereby expressed for the assistance and co-operation of physicians throughout the District in reporting and making provision for adequate supervision over those cases requiring quarantine or isolation.

The result of this assistance and co-operation has been that the District has been free from anything approaching an epidemic, even though cases of scarlet fever, diphtheria and typhoid have been constantly present as a focus for infection which might have become epidemic had not these precautions been taken.

I regret that we have not yet arrived at the place where we are getting reports that would furnish us with anything like reliable statistics regarding the number of cases of tuberculosis. In connection with the work of 1923 it is intended to devote more attention to this important branch of the work, endeavouring to impress the public with the necessity for precautions to prevent the spread and enlisting the co-operation of the medical profession in securing early diagnosis and reporting of cases. One physician in the District who has an almost entirely rural practice, has demonstrated the value of early and persistent open air treatment with absolute rest and climatic conditions in this District are apparently well suited to the treatment of these cases.

Special work has been done in connection with the control of communicable diseases in the following places: Searchmount, Desbarats, Massey, Little Current, Manitowaning, Gore Bay, Silver Water, Thessalon.

Maternal and Child Welfare:

Extent of the Maternal and Child Welfare service as planned by the Public Health Nursing Department has been considerably curtailed owing to the resignation of Miss Bagshaw in April, the vacancy not having been filled in this District. Miss Grenville was also absent for some time doing relief work after the Haileybury fire.

An extensive demonstration on Manitoulin Island was completed by Miss Grenville in August. The demonstration was brought to a close by a most successful series of Child Welfare Clinics under the direction of Dr. W. J. Bell. The clinics were held at central points over an area of about 100 miles and included Silver Water, Gore Bay, Mindemoya, Manitowaning and Little Current and also the town of Blind River on the north shore.

During the winter of 1922, Miss Bagshaw made a most thorough demonstration at Chapleau, at which Dr. Bell also conducted welfare clinics.

The municipal council of Little Current being favourable to the appointment of a Public Health Nurse, the question was submitted to the ratepayers for their approval at the time of the municipal election, but a small majority opposed the proposition on the grounds of their inability to meet the increased taxation of an already high tax rate.

A Public Health Nursing service has been temporarily discontinued in the town of Blind River. The 1922 report of the Medical Officer of Health for that town shows that the infant mortality rate between 1920 and 1922 was reduced from 161 to 110 and with the exception of one suspected case of diphtheria the town was free from ordinary communicable disease throughout the year of 1922, with no loss of time from schools due to quarantine. A considerable amount of the credit of this excellent report being possible is given to the Nursing service.

In all Maternal and Child Welfare work it has been the intention to interest all municipalities in making the work permanent. In District No. 8, with the exception of Sault Ste Marie, there is only one municipality with a population of over 1,500 and it has been shown that these smaller places are not yet able to undertake the responsibilities of a full-time nurse. During the year 1923 it is intended to try to have two or more smaller places united for combine service where geographical locations are suitable.

Summer Resorts:

Information was secured and reports made of sanitary conditions of summer resorts and tourist hotels for use by the Tourist Hotel Investigation Committee. These reports were of special interest in this District in view of the efforts being made to open up and advertise Algoma and Manitoulin for tourist traffic.

Milk Supplies:

A better milk supply for the city of Sault Ste Marie has been one of the local problems requiring attention. It has not yet been possible to secure the support of the city council in providing for compulsory pasteurization of the whole of the milk supply, though the local Board of Health has strongly recommended that a milk by-law be passed with those provisions. It is hoped during 1923 the municipality will take advantage of the assistance offered by the Dominion Department of Agriculture for tuberculin testing of all dairy cattle and the standardization of herds. This provides also for pasteurization of all uncertified milk within two years.

Industrial Hygiene:

Excellent results have been obtained by an Accident Prevention Campaign in two large industries. It was possible to show a decrease of approximately 75% in loss of time from accident. It is being pointed out to industries with these accident figures as an example, that an organization for sickness prevention among employees would be an equally if not more profitable measure to take in addition. A visit by Dr. Cunningham in connection with this work was much appreciated and has large fields for further effort.

The recent work of the Board in connection with sanitation in lumber camps has been a most successful branch of Industrial Hygiene throughout this District. The death of Mr. James Taylor was very deeply regretted by his associates of the staff of the Board and by the lumber operators with whom his work was concerned. His duties had become more those of co-operation and assistance than of compulsory regulation of camps.

Venereal Disease Clinics:

A clinic for treatment of Veneral Disease has been proposed for location in Sault Ste. Marie in order to provide for the surrounding territory. This service will be started as soon as suitable quarters can be secured.

Public Health Education:

During the year opportunities have been afforded for carrying on of Public Health Education work throughout the District by conferences with and talks to various organizations representing almost every phase of community interest and including Farmers' Clubs, District and Local Meetings of the Women's Institute, School Boards and Teachers' Conventions, Municipal Councils, Local Boards of Health, Rotary Club, Young Men's Civic Club, Industrial Welfare Boards, Children's Aid Society, Maternal and Child Welfare Committees and various school and church organizations of boys and girls.

It has not been possible to bring to a successful conclusion all the various projects opened up to promote Health and Welfare, but there is every evidence of increased interest on the part of the public. All propositions requiring financial backing have been delayed owing to the uncertainty of industrial conditions throughout the whole of District No. 8, but as conditions resume more normal proportions it will be possible to show more concrete evidence of the successful outcome of the efforts beings made.

Which report I have the honour to submit.

H. W. JOHNSTON,
District Officer of Health, District No. 8.

CHIEF SANITARY INSPECTOR'S REPORT.

February 16th, 1923.

The Provincial Board of Health of Ontario.

Gentlemen:

I have the honour to submit for your consideration my sixth Annual Report, covering the year which has just closed.

As forecasted in my report of last year, our success as a Division, from the standpoint of accomplishment, far surpasses during 1922 any of our previous efforts. Indeed, we seem to have made more headway during the last year than we did in the previous five. This success I attribute to four reasons: first, a loyal and efficient staff of Inspectors; second, the working standards which the Board have set up; third, the splendid co-operative spirit shown by employees of labour towards common-sense Health Reform; and in the fourth place, the Board's policy of supporting physicians who specialize in Health in Industry, and who show evidence of an earnest desire to promote the welfare of the men who labour in lumber camps, our gold and silver mines and in the temporary camps of our large construction companies. These, I contend, are sound and substantial reasons for the measure of success shown in our statistics and cited elsewhere under the heading of "New Standard Camps Constructed" and "Communicable Diseases." Without a doubt, submerging our ancient policy of law enforcement for one in which the educational factor predominated, has been a wise step and is specially mentioned by each of the Divisional Inspectors as having been a large factor in each of their successes. And why not? There is a marked difference between the doing of something involving a considerable expenditure of money as a legal requirement only, apparently, and in citing a condition which, if not remedied, may result in typhoid fever and death.

It is with considerable regret that I mention the death of our Inspector James Taylor, who was stationed at Sault Ste. Marie. Mr. Taylor was reported in poor health most of last summer, and on being operated on in September a diagnosis of cancer of the stomach was made, his death taking place in October, one month later. The loss of a valued official will be keenly felt by the Board, for without doubt the late Inspector discharged his duties in an able, conscientious manner and gave of his very best in the public interest.

As stated in my report of last year, while I am credited with supervising a district comprising the timber agencies of Peterborough, Renfrew, Parry Sound, North Bay and part of New Liskeard, my executive duties as your Chief Inspector seriously prevent the carrying on of routine work among the camps of this District. The work of supervising and in assisting the Divisional Inspectors and in helping to keep our system working as smoothly as possible, together with discharging my office responsibilities dealing with divisional correspondence, criticizing reports, etc., is of much more vital moment than carrying on routine inspections. Any special credit due in connection with the splendid sanitary condition existing at the camps in my district I attribute to the painstaking efforts of our Contract Physicians and to the goodwill of the district lumbermen. I find most of the physicians in this District now discharging their obligations in a manner which is creditable to our Board, acceptable to employees and to the satisfaction of labour.

Information from Crown Timber Agents, from employers of labour and from contracting physicians show that we have a total of 145 camps in this District, these operations giving employment to roughly 6,248 men.

New Camps in North Bay District.

During the year there have been constructed 36 new Standard camps. This number, together with the 16 built last season, make a total of new camps constructed since the advent of our new standards of 52 camps, leaving a balance of 93 old camps to be discarded at the close of the current season, viz.: April 1st, 1923. This also includes the 40 shacker camp buildings thrown up by the Hawkesbury Lumber Company of Ottawa, who of necessity must cut our burnt area near Lake Temiskaming caused by the Haileybury fire. However, as these were for three months' operation only, much leeway had to be given. The time factor precluded any attempt at a permanent operation. These shacker camps, therefore, need not enter into consideration as they are now closed

As stated in the introductory paragraph of this report, it is quite impossible for me to carry on routine inspections at all of these camps. If I did, the divisional office work would suffer, which must not happen. I have therefore only visited 57 camps during the season and half of these were in the territory of our District Inspectors with whom I visit at intervals to overlook the work and advise on new business. The camps in this district are much better off in a sanitary sense than any of the other divisions. However, the contracting physicians are of longer standing and many make a specialty of camp work, visiting the office at once if anything untoward springs up.

Consolidation of Main Features, Showing Progress Made and Work Performed by the Division of Sanitary Inspectors.

Lumbering statistics covering the season 1922-23 for Ontario, and gathered from the reports of Crown Timber Agents, the Employers of Labour, and the contract physicians, show that we have 154 companies operating and these control 596 camps and give employment to approximately 23,834 men. In addition we have 100 sawmill camps of summer operation and some 15 mining companies situated in the unorganized territory.

It is my opinion that between lumber camps, mines, construction companies, summer resorts and many unorganized small towns and villages, we have to care for roughly 100,000 people.

Of the companies mentioned above, 158 have contracted with a qualified physician in the manner set forth by our laws.

These physicians, I find, have made 502 monthly camp inspections and have forwarded 286 sketches of camp buildings to date. In addition 72 of these companies have sent in a general statement of the season's operation.

Your group of Inspectors, I find, made during the year, 436 camp inspection visits, and added to this have paid 65 visits of inspection to small towns, villages and headquarters of our many industrial concerns. Several of our Inspectors have also accompanied the District Officer and given assistance when required. A grand total of contract physician visits, together with those of your Inspectorate is for the year, 904.

In the total number of visits made, our Inspectors are considerably over their last year's record, which was 422 camps examined, even being mindful of the fact that we have had no representation in Sault territory since Mr. Taylor's death, save the casual visits I have made over matters of policy.

The total of physicians' visits made, however, is almost double that of last year. Without doubt, the efficiency of the contract physician in the making of monthly reports has been increased. We have also evidence which shows this official to be practising preventive medicine to a much greater extent than hitherto.

Communicable Diseases.

While the total case record of communicable diseases in camps is considerably higher than last year, our mortality rate remains the same; each year we have one death from typhoid fever. The total case record for 1922 is:—

Typhoid Fever	29 cases,	1 death,
Smallpox	2 "	0 "
Scarlet Fever	5 "	0 "
Mumps	7 "	0 "
Chicken-pox	16 "	0 "
Total	59 cases,	1 death.

Eighteen of these typhoid cases occurred at a Hawkesbury camp near McLaren's Bay early in October, and from the evidence I imagine the infection was due to a carrier working in camp, I am also reasonably sure the method of infection was that of fly transmission. There is no excuse for this number of cases occurring at any one camp. The liberal use of typhoid vaccine should be applied at once rather than after the 18th case. Aside from the fact that there may be no mortality, the loss of time is a great economical factor, both to the individual and the employer.

The balance of our cases occurred at Smooth Rock Falls and were importations from the Province of Quebec without doubt, and at the camps of the Abitibi Power & Paper Company, together with one case at A. B. Gordon & Sons in the township of Blythe.

The two cases of smallpox mentioned occurred at Iroquois Falls and at Temagami.

The sixteen cases of chicken-pox developed at Smooth Rock Falls, mostly among children.

Dysentery is still a large factor in many lumber, construction and other camps during our fall months. This is nearly always due to fly infection. Contract physicians, together with your officials, must give more attention to the removal of manure and to the building of more sanitary, better constructed closets. The control of typhoid or dysentery in a camp is seldom of a complex nature.

Our Engineering Division should be complimented in introducing the new water test. The use of orthotolidene and liquid chlorine prepared by this Division is and will be of great value to small mines and lumber companies who of necessity must use as a domestic supply a polluted body of water.

Few of our large rivers may now be used by men employed along these streams without some treatment. This serious condition is created by towns discharging sewage without sufficient treatment into these waters and situated on the upper reaches of these streams. If history repeats itself and no further protection is forthcoming, large numbers of lives will be lost. Municipalities who have inefficient, doubtful disposal systems in use, should as a protection to the pioneering institutions along these rivers chlorinate the affluent from these disposal plants. This situation demands action and attention in many parts of Ontario. The protection of lumbermen, settlers and rivermen, who labour nine months of each year along these waterways, is our chief mission.

There are no special matters presented in the Annual Reports of our Divisional Inspectors. Each mentions his viewpoint concerning our development. It would seem, however, each is unanimous that the small towns near the railhead require assistance. These are usually in a most unsanitary condition; no attention is given to outside privies and no scavenger system is in

use. These are fertile fields for typhoid outbreaks and are not even to be compared as safe habitations with your woods camps fifty miles from a railway.

Last year we attempted no new work, but rather consolidated and developed our gains of the year previous.

In the construction of the T. & N. O. Railway Extension north of Cochrane, we have perhaps created a record. In so far as I am aware the building of new railways in Ontario, and indeed anywhere, is usually attended with much sickness, particularly typhoid and dysentery, and at times much smallpox; yet we have constructed forty miles north towards Hudson's Bay, along a polluted waterway, with no cases of these diseases. Vaccination and inoculation against typhoid is one of the main reasons for this success. A most enterprising and painstaking Company Medical Officer as the supervisor is the other reason. Whether our good fortune will continue as we proceed north, one cannot say.

Starting out less than two years ago with roughly 15,000 double width wooden sleeping bunks, to have these replaced with single bunks, 25% being of iron construction equipped with mattresses, is what has been accomplished. I find a great desire on the part of employers to-day to purchase steel bed equipment as being economic, and who now claim the construction of wooden bunks used in the past and renewed each season was poor financing.

I also have heard the statement often mentioned that in our new camps men seem more contented, therefore remain longer, and as this reduces the labour turnover, thereby effecting a financial saving to the employer. It is a distinct advantage.

In conclusion, I believe the year just closed has been productive of much progress to the Board. Industrial concerns have profited by the increased comfort supplied to the employees, and labour seems satisfied at the interest shown by the Government and by the employer. Let us hope these good relations shall continue.

Respectfully submitted,

ALEX. R. WHITE,
Chief Sanitary Inspector.

SANITARY INSPECTOR'S REPORT.

SUDBURY, ONT., February 7th, 1923.

To the Provincial Board of Health, Ontario.

I have the honour to submit my second annual report covering my work in this District for the year 1922.

During the past year most of my time and work was devoted to the sanitary supervision of Lumber, Mining and Mill camps, combined with the small towns and villages chiefly in the unorganized territory. I have endeavoured to enforce the Public Health Act and Camp Regulations to the best of my ability without embroiling the general public to any great extent. I am convinced from continual personal interviews and visits to these different towns and camps in the unorganized territory the co-operation of the general public will be gained and thus furthering all efforts put forward in this work in the future.

Mileage travelled.—Since the establishment of your five (5) separate District Inspectors, each having a specified territory under his jurisdiction, the actual distance to travel to work is considerably reduced, with a great advantage of allowing each Inspector more close supervision over his own territory which will tend to more efficiency and minimize the time lost travelling to different points. During the year I travelled 11,064 miles almost entirely in the Sudbury District in the fulfilment of my duty.

Number of camps and other inspections made.—I have visited and inspected 127 camps, which includes Lumber, Mining and Construction camps, I have also made several inspections of railway extra gang temporary camps in the unorganized territory at different points during the summer months. Combined with Bush and Mill camp work I have visited 17 small towns and communities in connection with sanitary conditions and water supply, etc. In most of these small communities and towns which spring up from time to time the Public Health Act is only of secondary importance with most of the settlers. The result is very serious from a health point of view, and while it is not always good policy to take the offenders to court on my first visit, sometimes I am compelled to make two or three trips to one point before the desired results are achieved.

Camp statistics.—During the year in the Sudbury District we had 38 different companies operating, a total of 132 bush camps, employing approximately 7,000 men, this does not include 14 mill camps and 7 mining camps which are more or less of a permanent nature from year to year in the unorganized territory here. Out of the 132 camps operating during the lumbering season 51 new camps were constructed according to your standard plans, that is, 24 Class "B" and 27 Class "C" camps were constructed, while some of the companies omitted putting in fresh air inlets under the floor and in other instances dormer windows were substituted with roof lights. In each case I have taken steps to have these conditions rectified to conform to the present standard plans as shown in your Regulations. All the old camps I have inspected this season either before or directly after my visit have been overhauled and equipped with single beds, etc., to tide them over this the last season's operations satisfactorily, without imposing any unnecessary expense or hardship on the operator by having to construct a new camp for one season's operations. While these camps are in reasonably good condition I am convinced that further co-operation of all lumbermen will be gained in this way. During the year I was compelled to close down 12 camps in all as a menace to health and not conforming to your Regulations in any respect. In each case the camps were closed down completely within 14 days after my instructions to the operators. I might say

here there is a vast improvement this year in living conditions especially in bush camps which is highly appraised by employees coupled with being a protection to the health of the individual employed. It also provides further protection for the general public from communicable diseases, etc.

Re *Contracting Physicians.*—A remarkable improvement has taken place during the past year in the services rendered by the Physicians under contract, more frequent visits to the camps have been made and much better medical and sanitary supervision rendered. The monthly reports come forward more regularly through the season though I hope next season you will see a further improvement in this respect.

During the year a total of 51 medical contracts passed through this office to the Board, these being mostly between the local Physicians here in Sudbury and the different Companies operating, their contractors, and subcontractors in my District.

Inspection of small towns and communities.—From what little time I had during the summer months I inspected 17 small towns and communities in the unorganized territory, and most of these settlements having no local Board of Health, the healthfulness of the community and the sanitary condition surrounding each home is entirely left to the occupants, which I find often leads to very unsatisfactory results from a health point of view. While considerable progress had been made during last summer to improve sanitary conditions by my personal visits from time to time, a considerable amount of missionary work will have to be carried out before some of these communities come up to the present sanitary standard in the bush camps.

Communicable Diseases.—During the year in the unorganized territory very little communicable diseases were brought to my notice. One outbreak of typhoid fever developed at the McNaught Lumber Company's bush camps at Devon during the fall of last year, which had my attention. The contracting physician, Dr. S. A. Wilkinson of Chapleau, dealt with this very successfully, checking the disease before a serious epidemic might have developed. Two cases of scarlet fever developed at Nicholson Siding mill camps, and were also taken on hand in time by the same physician and all contact patients quarantined; no further development of this disease was reported.

While I was compelled to report 8 cases and two deaths from typhoid fever at Gogama in my annual report last year, it is satisfactory to note not one case was reported from that community during the past year and that a marked improvement in sanitary conditions has taken place there.

Re *Railway repair temporary camps.*—In concluding I would earnestly request that close sanitary supervision be rendered to all railway extra gang camps during the spring and summer months. I have visited several of these temporary camping grounds, sometimes up to 100 men employed at the same point very often sleeping in overcrowded box cars, which are usually in a filthy condition, all refuse and filth strewn around the cars, no provision of any kind made for closets, not even to afford privacy to employees. These railway camps are moved from one point to another along the track during the summer, usually located on the suburbs of a small town or community, anywhere from 2 to 8 weeks at a time without any provisions made for closets of any kind.

A temporary collapsible closet which could be dismantled and taken away on abandoning a camping ground would be very beneficial, coupled with rendering protection from bowel and bladder discharges, comfort and privacy to employees. It would be a further protection for the general public who are compelled to live with their families at these points all the year.

All of which is respectfully submitted.

DAVID MCKEE,
Provincial Sanitary Inspector.

NORTH BAY.

North Bay, February 6th, 1923.

To the Provincial Board of Health of Ontario.

Gentlemen:—

I beg to submit herewith for your consideration my second Annual Report, for the year ending December 31st, 1922.

The year just closed in so far as the territory over which my jurisdiction extends, viz., the districts of South Porcupine and Cochrane, shows a considerable decrease in the number of companies operating over that of other years.

Lumbering Statistics:

From the reports of the Crown Timber agents of South Porcupine and Cochrane, the number of companies operating in these sections gave a return of ten companies with one hundred and seven camps, giving employment to over three thousand men. During the year's work I have made one hundred and twenty-five camp inspections. Throughout this season the number of camps built according to either one or the other of the plans covered by the Regulations is as follows:—Plan B, 20; Plan C, 30; Combination Plan, 35; Total, 85.

Abitibi Power & Paper Co.'s Woods Operations:

I find in general that the camps of this company show a marked improvement over that of other years, especially that of jobber camps which have always been a source of trouble to us. The reason for this improvement is in my opinion largely due to the painstaking efforts and energy of the contracting physician for the company, Dr. R. D. Menzies. Credit must be given to this official for the interest he has shown and for having brought the camps up to their present standard.

Mattagami Pulp & Paper Co.'s Woods Operations:

While some improvement has been made in the construction of camps by this concern over other years, they are by no means up to the standard as required by the Board's regulations. The jobber is the greatest sinner and it seems almost impossible to educate these people in matters pertaining to sanitation.

Spruce Falls Pulp & Paper Co.'s Woods Operations:

I find that on the whole the camps of the above company can only be classed as "fair" and I am much disappointed at the result of my inspection, more especially after the time spent both by Mr. White and myself in placing before the company the views of the Board as to what was expected of them in their bush operations.

As the district under my supervision is largely a pulp wood operation, the following information and figures will be of interest. For the year 1921 the total number of mills in the Dominion was one hundred, comprising forty-four pulp mills, twenty-seven pulp and paper mills, thirty-three paper mills, distributed among the various Provinces as follows:—

Ontario—pulp mills, 8; pulp and paper mills, 13; paper mills, 18; total, 39. Quebec—pulp mills, 17; pulp and paper mills, 12; paper mills, 15; total, 44. British Columbia—pulp mills, 4; pulp and paper mills, 2; total, 6. New Brunswick—pulp mills, 5; Nova Scotia—pulp mills, 6. The total number of employees in connection with the industry was 24,611, of whom, 21,480 were employed in the Provinces of Ontario and Quebec. The total salaries and wages paid was $34,199,090, distributed among the various Provinces as follows: Ontario, $19,952,899; Quebec, $16,726,716; British Columbia, $3,205,429; New Brunswick, $1,151,229; Nova Scotia, $162,827. The total consumption of wood was 2,180,578 cords, valued at $38,283,262, giving an average cost of $17.55 per cord. Distribution as follows:—

Province	Cords	Average
Ontario	700,589	$19.09
Quebec	1,111,277	17.68
British Columbia	225,240	15.45
New Brunswick	121,110	12.54
Nova Scotia	22,362	11.05
Total	2,180,578	$17.55

In addition to the above, 1,092,553 cords valued at $14,617,610 were exported. Total capital invested, $378,812,751 distributed as follows:—Ontario, $139,666,276; Quebec, $171,477,753; British Columbia, $39,152,823; New Brunswick, $23,394,271; and Nova Scotia, $6,121,630. In quoting the above information and figures it is my desire to point out the huge amount of money expended in this particular industry and that it is by no means the "small potato" as viewed by others who carry on bush operations.

Summer Camps and Construction:

During the year I have made a number of inspections of saw mills and rossing plants; with a few exceptions, I find that sanitary conditions show a decided improvement. More attention is being paid to the removal and disposal of garbage, also in the building of latrines. These are now being constructed in most instances of lumber, a decided improvement on the old open structure of logs. In regard to construction, I have made various visits to the camps along the T. & N. O. Railway extension. The work was mostly done by station men who lived in tents, moving from place to place as the work progressed. The camps, constructed by the contractors, Messrs. Grant, Smith and McDonell, used as permanent buildings are of lumber with sufficient air space and other necessary details for the number of men housed therein. Strict attention was also paid to sanitary conditions. During the year and up to the time of writing, there has not developed one case of communicable disease on these operations. The measures adopted have been so effective that a new page of supervision of railroad construction has been turned in this Province. I feel that I might well recommend to those industrial institutions in this and neighbouring provinces, whose Public Health Services have been casting about for measures of prevention, that they investigate carefully the methods put into operation by the medical supervisor and management of this Company. The average number of men employed on this work is 600.

I have also made inspections of the camps of the Northern Canada Power Company's operations at Indian Chutes on the Montreal River, fourteen miles from Elk Lake, where an average of one hundred men were employed, and at

Sturgeon Falls on the Mattagami River, thirty-five miles from the town of Timmins. This operation also employed one hundred men.

I also inspected the camps of the Grenville Crushed Rock Company, who are the contractors for the logging road from Iroquois Falls to Hughes on the Grand Trunk Pacific Railway, a distance of eighteen miles. This railroad is under construction by the Abitibi Power & Paper Company of Iroquois Falls for the hauling of logs to their mill and is known as the Abitibi Transportation and Navigation Company. Sanitary measures were reasonably carried out by the respective companies.

MINING COMPANIES:

Throughout the year I have made a number of inspections of mining camps located in the Kirkland Lake, Larder Lake and the Porcupine Mining Divisions. I find that on the whole the camps are well constructed, that sanitary measures are reasonably well maintained.

I have also visited the following places:

Timmins	2 visits,
Iroquois Falls	3 "
Smooth Rock Falls	4 "
Kapuskasing	3 "
Matheson	1 "
Elk Lake	2 "
	15 visits.

In conclusion, I wish to express my sincere thanks to the other members of the staff for their support and co-operation; further let me say for the smooth working of a Health Department, loyalty of the staff to one another and of the staff to the chief is essential, and the chief should not only show consideration to his staff, but should give them every opportunity of gaining experience, and a sense of responsibility so that when the occasion arises they may have confidence in their own ability to meet any emergency.

Respectfully submitted,

JOHN RICHARDSON,
Provincial Sanitary Inspector.

FORT WILLIAM.

Fort William, Ontario,
January 26th, 1923.

Dr. J. W. S. McCULLOUGH,
Chief Officer of Health for Ontario, Toronto.

Dear Sir,—I have the honour to submit, for your consideration, my annual report for the year ending January 31st, 1923, as Sanitary Inspector, of the unorganized territory in District No. 7.

As the various industrial operations and summer resorts over which I have jurisdiction are scattered over 27,000 square miles of territory, it has taken me two years to get a proper sanitary survey of the conditions existing there, and the past year has been spent in concentrating my whole attention on those places, which the survey showed required immediate attention, to protect the health of—in summer resorts, the visitors, and in concerns employing labour, the workmen.

I have endeavoured to have the regulations in this district complied with by those responsible for same, by a liberal measure of advice and education to them, showing the link between certain unsanitary conditions and certain diseases so often found where a body of people are congregated. In this I feel that I have had a certain amount of success, having, in only one case, to call in the assistance of the law—this I did when all other means of protecting the health of the inmates of a certain lumber camp had failed.

Following is a list of Summer Resorts and of Operators in District No. 7, where labour is engaged:

12	Summer Resorts, with a 4 month population of	3,000
11	Provincial Government Road Camps, employing for 5 months	300
3	Railroad Construction Camps, employing for 12 months	1,850
15	Right-of-way Gangs on the G.T.R., C.N.R., C.P.R. and the T.C.R., employing for 5 months	750
5	Towns in Unorganized Territory, with a population of	1,000
6	Gold and Silver Mines, employing for 9 months	500
2	Fishing Stations, " " 6 "	150
5	Saw Mills, " " 5 "	350
156	Lumber Camps, " " 5 "	6,000
15	River Drivers' Camps, " " 5 "	200

SUMMER RESORTS.

Following is a summary of my activities and the success achieved in supervision of summer resorts in this district.

I was able to visit all the summer resorts in the Thunder Bay District last year, the resorts at Silver Islet and Chippewa Park receiving my special attention.

Silver Islet.

At Silver Islet, the resort patronized by the majority of people of Port Arthur and Fort William, during the summer months, I found conditions very unsanitary, but have succeeded in prevailing upon the Camper's Association of that resort to engage a man as Sanitary Policeman, his duties being to report

to the association any person whose premises are unsanitary, or who is known to be infringing the Public Health Act in any way. Upon the failure of any person to abide by the Act, after having been warned, they shall be reported to me.

I have also succeeded in having this association agree to install standard sized water-tight receptacles in all latrines at this resort and expect to see the system there during the coming year. In this way, I hope to protect the water of the Bay from being polluted in the gross way which the bacteriologist's report have shown it to have been last season.

Chippewa Park.

Chippewa Park, a new summer resort in the vicinity of the Twin Cities, was opened last year.

This park lies six miles southwest of Fort William. Twenty-four water samples, taken at this resort last season, showed, in every case, gross pollution, presumably from the sewerage of Fort William and Port Arthur.

The Parks Board of Fort William was written to in regard to this and the danger pointed out to them. Notices were immediately posted up in this park, warning the public against drinking the shore water, without first boiling same.

Wells have now been bored and a pure supply will be available the coming season.

I hope to spend considerable time this coming summer in the Lake of the Woods District, which is yearly becoming more popular among the Manitoba people, who have, I understand, a great many summer camps there.

As these camps are all above the intake pipe, which supplies the City of Kenora with its drinking water, the importance of strict supervision in this district will readily be understood.

Provincial Government Road Camps.

The road camps, which were built here last year by the Department of Lands and Forests, showed a gratifying improvement over those of the preceding year, when they were spoken of as being the worst class of camp to be found in this district.

This year, I have received the greatest co-operation possible from Mr. Meader, District Engineer, working under the Department of Lands and Forests, and have been able, with this co-operation, to have erected camps built after the knock-down pattern, as shown in the new book of regulations governing camps of this class.

These camps are now a credit to the Department, and have been the means of making the enforcement of the regulations easier, in so far as the good example shown by the Ontario Government has gone in this District.

The above applies only to camps in the Thunder Bay District—those at Dryden, Kenora and Rainy River being still in poor condition. Promises to bring these up to the Thunder Bay standard have been given and I hope to be able, in my next annual report, to show that those promises of the Lands and Forests Department have been kept.

Railroad Construction Camps.

There have been three railroad construction camps operating in District No. 7 during the past year.

One of these was operated by a Manitoba firm, and, as is usually found where there is no sanitary supervision of camps, conditions were bad and very dangerous to the health of the camp inmates.

By constant supervision and instructions, conditions were changed and the camps made sanitary.

There are, at present, thirty miles of new railroad going in at Long Lac, and I have arranged with the contractors to have all camps and their environs made to comply with the regulations.

R.R. Right-of-way Extra Gangs.

I inspected a few of the extra gang boarding cars camp in the past year, inspecting and making certain changes at one, where typhoid fever had broken out in 1921, presumabiy from unsanitary conditions.

This year's operations at this particular camp finished without an outbreak of any disease. The boarding cars used by the extra gangs in this district have much room for improvement, most of them being overrun with vermin, poorly lighted and ventilated and overcrowded.

Latrines are seldom installed where the railway company has its extra gangs working—this sometimes happens to be just at the outskirts of some town, and the danger to the health of the general public, from the unsanitary conditions left at the camp-site, where no provision has been made for the dispose of its inmates' excreta, can be readily understood.

Owing to the temporary nature of the work engaged in by the Railway Companies right-of-way extra gangs, the necessary supervision is very hard to maintain.

I hope to give more of my time to this class of work in the year ahead of me, and will write the three railway companies in the district, giving them suggestions for the improvement of their boarding cars.

Towns in Unorganized Territory.

During the past year, I inspected the towns of Armstrong, Grant and Redditt, on the Transcontinental Railway; Jellicoe on the C.N. Railway. The water supply of the town of Redditt had become polluted and I made a sanitary survey of the lake from which their source of water supply was obtained. I have forwarded a copy of this to the superintendent of the National Railways, with sketches and suggestions which, if carried out, will insure a pure water supply to the town of Redditt.

Mining Camps.

The mining industry has not been carried on to any great extent in this district for many years, but has reopened in the past year on a small scale.

I have inspected the camps in the vicinity of Schreiber and also those near Dryden and have shown the operators what will be required in the way of camp buildings, as soon as their operations are large enough to warrant employing a big body of men.

Fishing Stations.

There are only two fishing stations of any importance in this district, viz.: those of Rossmere and McDermid.

I spent considerable time last year at the McDermid fishing station, situated on Lake Nipigon.

I was able to persuade the Department of Game and Fisheries, under which the station is run, to install a new water system for domestic purposes for the cook camp and the private dwellings at McDermid.

Other improvements were promised, which I intend to see carried out before the camp begins operating this year.

Summer Saw Mills.

The saw mills of District No. 7, are, on the whole, in very good shape, with the exception of the Twin Falls Lumber Company's mill at McDougall's Mills.

During the past year I have spent some time at this mill and have been able to get considerable improvement in the living conditions around the mill. There is still, however, room for improvement, which I hope and intend to see made this coming summer.

River-Drivers' Camps.

Owing to the temporary nature of the camps used while driving the logs and pulpwood down the lakes and rivers, I have been able to make a survey of only one or two. In the past two seasons, typhoid fever has broken out in the camps of the Keewatin Lumber Company.

From the M.H.O.'s records of Kenora, I find that typhoid has been prevalent in this company's camps for the past ten years, with a heavy death rate.

The number of men engaged on those log-drives are small and I would strongly recommend that a history be taken of each person responsible for handling the food in the company's camps, and a system of inoculation against typhoid used on each man, before he leaves town for the drives.

Lumber Camps.

The lumber camps in this district have shown a decided improvement in the past year, fourteen companies having built thirty-two camps, conforming with the new regulations.

These regulations have been very favourably commented upon by most of the operators, their foremen and the lumber workers. Built, as they now are, to a standard plan, operators, when tendering on limits, can now figure exactly what their overhead expense is to be for camp buildings, etc., feeling assured that their competitors will be figuring the same. This gives the company, who has in the past built good camps, an even chance with the unscrupulous competitor who could have underbid them on the cost of their camp buildings.

The foremen who build the camps have now a plan to work to—this does away with interference from some office expert.

To the men who spend one-third of their lives in camp, the new class of camp provides a comfortable, healthy home, in contrast with the hovels which, in the past, a great many camps provided. Where the new class of a camp has been built, the men are sticking closer to their jobs—this will in time do away with a big part of the twenty-five per cent. of floaters who go and come from the camps.

Less sickness has been noticeable, as with the ventilation, air-space and sunlight called for in the new regulations, much of the sore throat, headache and colds attributable to a scarcity of fresh air and sunlight has been prevented.

As the camps are the first point to which our Central European emigrant drifts, another benefit is derived from the building of sanitary camps, in the fact that he gets his first lesson in sanitation here. In the past those foreigners saw how the big companies crowded their workmen into filthy box-cars and dirty, poorly ventilated camps. Naturally, when they brought their families out here and started housekeeping, in segregated foreign districts, usually found in every Canadian town, they built their home accordingly and, where they kept boarders, they followed the example of the Canadian companies, in whose camps they had worked, and used every inch of space on which they could place a bed.

The new type of camp will therefore, in my opinion, over and above protecting the health of its inmates, increase productiveness and educate a great number of our foreign people in the fundamental principles underlying the building and maintaining of a healthy Canadian home.

Communicable Diseases

In District No. 7 there was one case of communicable disease in all its camps during the past year.

This was a case of typhoid fever, which broke out in the drive camp of the Keewatin Lumber Company. The camp was broken up before we had an opportunity to look into the matter, but it is my opinion that the typhoid fever, which breaks out every season in this company's camp, is caused by carriers, who have the handling of the food and water for the camps.

This company has operated in the Kenora District for the past fifteen years. Typhoid has been present at one or more of their camps, in almost every one of these fifteen years. Some of the company's men, particularly the cooks, have been working for this company, off and on, during most of this time.

I am taking up the matter of getting a history of all cooks and cookees who will be working for the Keewatin Lumber Company in future, and will recommend that, in the log-drive camps, all the men be inoculated with typhoid vaccine.

Ontario Government Industrial Farm.

An epidemic of typhoid fever broke out at the above noted institution in the past year, nine of the inmates developing the disease, with, in one case, fatal results.

I accompanied Dr. Sparks, D.H.O., several times on inspections of this institution, while this epidemic was on. The source of the disease was undoubtedly from a carrier-inmate, who used a latrine which was improperly built, thus allowing the entry of house-flies to its contents, from there into the kitchen and dining-room, where the inmates' food was cooked and served.

This case furnished a good example of the importance of following sanitary rules. A heap of manure had been left at the cow-barn for months—millions of flies bred in this unsanitary mess. The flies from this incubation gained entry into an unsanitary latrine, from there into the kitchen-dining-rooms, which were not provided with proper screens, again showing unsanitary conditions.

The root of the entire trouble was the failure of the Institution's water supply, thereby putting the water-closets out of business, and making the building of outside privies imperative.

Conditions in the institution were, on the whole, bad, and will remain so until a big change has been made in the buildings, ventilation, water supply and disposal of sewage.

Assistance given Dr. Sparks, D.H.O.

I accompanied Dr. Sparks, D.H.O., on three occasions in the past year, on his inspections of the towns of Fort Frances, Emo, Stratton, Rainy River and several other small towns in the Rainy River District. I also assisted Dr. Sparks to placard all post-offices in the vicinity of the Rainy River, warning the people residing there of the danger of drinking the water, without its having first been boiled for twenty minutes. I also accompanied Dr. Sparks on an inspection of the town of Sioux Lookout and the schools on the C.P.R. and the G.T.R.

In my prosecution of the lumberman referred to in my report (C. W. Cox), Dr. Sparks assisted me in every way possible. His thorough knowledge of the Public Health Act came in very useful to me while prosecuting this man, who had one of the ablest lawyers in the Twin Cities defending him.

Respectfully submitted,

W. C. Millar (E.M.),
Provincial Sanitary Inspector,
Room No. 4, City Hall, Fort William, Ont.

BRANTFORD.

November 15th, 1922.

To the Chairman and Members of the Brantford Board of Health.

LADY AND GENTLEMEN:

In accordance with the Public Health Act, I beg to submit my Annual Report for the year ending October 31st, 1922, upon the sanitary and health conditions of the City of Brantford.

We have had a birth rate of twenty-six per thousand, which is slightly higher than the rate for the last seven years. Our death rate was twelve per thousand, which is two points higher than the rate for last year, but lower than the rates for the preceeding three years. An analysis of the deaths occurring in our community during the year, discloses the fact that 40 per cent. of all deaths occurred in individuals over sixty-five years of age, and that 63 per cent. of all deaths occurred in individuals over forty-five years of age. Last year 110 deaths occurred in individuals over sixty-five years of age. This year 151 deaths occurred in this group. Obviously there has been an increase in the death rate among the older age groups. The increased deaths listed under the causes "Pneumonia" and "Old Age" (to be found at the end of this report under the Vital Statistics Section) would seem to indicate that the unemployment situation and resulting distress during the year, have reacted unfavourably on the older age groups. The vital statistics also demonstrate that deaths from cancer are on the increase.

INFANT MORTALITY

I am glad to be able to report a new low infant mortality rate for our city —sixty-three deaths per thousand babies born. The saving of child life is probably the most important movement stirring the hearts and energies of man today. That we are succeeding in Brantford is abundantly proven by the steady decline which has occurred during the last five years in our infant mortality rate. In 1918—128 babies died for each thousand born; in 1919—106 died; in 1920—ninety died; in 1921—sixty-four died and in 1922—sixty-three died. We believe this astonishing reduction has resulted from the cleaning up of our milk supplies and the pasteurization of most of the milk sold in Brantford. A survey of the causes of deaths in infants, shows that diarrhoea and intestinal troubles have practically disappeared as a cause, which is the result we hoped and expected to achieve by properly safeguarding our milk supplies.

The extreme distress and unemployment which existed in our city last winter and spring, led us to believe that we might reasonably expect a higher infant mortality rate this year. Fortunately the rate is lower. There can be no reasonable doubt however, that poverty does adversely affect the health of children. Vancouver, B.C., has an infant mortality rate of fifty-five (one of the lowest in the Dominion of Canada) and the average salary of Vancouver parents is more than $1,250.00.

In Montreal where the infant mortality rate is above 155, the average earning capacity of parents is less than $450 a year. It should be the wish of every citizen and the aim of every statesman to maintain and increase the standards of living which exist in our country. The industrial outlook in Brantford leads us to hope that poverty as a cause of infant mortality and morbidity will soon be eliminated.

The valuable work in the realm of child welfare which is being done in our city by the Baby Clinic and nurses of the Social Service League, by the School Medical Service, by the Victorian Order of Nurses and by the practising physicians of our city, has been mentioned at great length in previous reports. It is again gratefully acknowledged in this report.

During the year the board compiled and printed a book entitled the "Care of the Child." Over 600 of these books have been sent to parents and we are sending them out monthly to the mother of every child whose birth has been registered with the city clerk during the month.

Infantile Paralysis.

The outstanding event of the year, from a communicable disease aspect, was the epidemic of Infantile Paralysis, which visited our city. Altogether seventeen cases were reported to the Health Department. Undoubtedly there were a number of mild unreported cases. These missed cases are a public health danger as they allow the disease to spread unchecked. The first case was reported on July 8th, and occurred in a home which was very unclean and where flies were allowed to exist in swarms. The fly has been strongly suspected to be the means of transmitting this disease. For this reason we were very glad the first case appeared so late in the season. The last case was reported on September 26th. Some of the children affected made almost complete recovery. Many of them were more seriously affected and will be maimed for life.

Whether the fly is guilty or not remains an open question, but there can be no doubt that the fly is a public nuisance and should be eliminated as far as possible from our community. The way to eliminate the fly is to destroy his breeding places and for this reason I beg to recommend that the city council require all household refuse to be wrapped in paper before depositing in garbage receptacles. I also beg to recommend to the Council that the garbage dumps in West Brantford and rear of the Colborne Street Station be closed during the summer months and the dump at the rear of Massey-Harris' be used exclusively. The two dumps first mentioned are both situated in thickly populated districts, and are an undoubted nuisance during the summer months. They breed flies in abundance and soon become foul and evil smelling. The dump at the rear of Massey-Harris' is more secluded and better situated for the purpose of receiving garbage.

Scarlet Fever and Diphtheria.

The city has been practically free of Scarlet Fever during the year, only ten cases being recorded. Diphtheria continues to take a heavy toll. Ninety cases were reported and six died. There is no disease in which early medical attention is so important as in Diphtheria. If every case of sore throat were to receive medical attention as soon as detected, our deaths from Diphtheria would disappear.

We have performed the Schick test on many children during the year, and have given toxin-antitoxin to those who were found to be susceptible to the disease. Toxin-antitoxin is a sure preventive for Diphtheria and we shall be glad to administer the remedy free of charge to all who apply. To those who prefer to go to their family doctor, we shall be glad to give the remedy to the family physician.

Other Communicable Diseases.

The city has been practically free from Measles. It has been absolutely free from Smallpox for the first time in six years. We had reported fifty cases of Chicken-pox and eight cases of Whooping Cough.

Tuberculosis.

We have had reported forty-seven cases of Tuberculosis, which is the largest number ever reported. This does not mean that Tuberculosis is becoming more prevalent. It simply means that physicians are reporting their cases better. We believe that the establishment of an educational Tuberculosis Clinic in our city, would discover many cases in their earliest stages when there are greater prospects of restoring them to health and all that health means. I beg to earnestly recommend the establishment of such a clinic in our city.

Typhoid Fever.

Typhoid Fever continues to remain a negligible disease. Only eight cases were reported during the year. Two of these were young boys who had been bathing in the Grand River, south of the city, where it is most polluted. One case was clearly a contact case, contracted while in hospital from an out-of-town patient suffering from the disease. Two cases were infected while away from Brantford. The cause in the other cases was probably infection carried by flies.

In June this year the Provincial Board of Health prohibited bathing at Wilkes' Dam. This was done as a protection to our water supplies and to prevent the possible infection of the water with typhoid.

Nurses' Forum.

An outstanding development during the year was the formation of the Public Health Nurses' Forum. This organization now holds regular monthly meetings and is composed of those nurses doing public health work in our community. These are the Victorian Order of Nurses, the School Nurses, the nurses of the Baby Clinic (Social Service League), the nurses employed by industrial concerns, the Social Service Nurse of the Board of Health and representatives of the Brant Sanatorium, and the Brantford General Hospital.

These groups are all concerned in the work of preventive medicine, and it is very fitting that they should meet and discuss the problems which they are endeavouring to solve.

Recommendations Contained in Previous Reports But Not Acted Upon.

I beg to draw the attention of the board to the following recommendations which have never been acted upon.

1. That public conveniences be provided in such widely separated areas of the city as the North Ward, West Brantford and Bellview.
2. That a motor ambulance be provided the Health Department to transport infectious diseases to the hospital.
3. That the tail race between Erie Avenue and the river be filled in.

Annual Medical Examinations.

In closing this report I desire to direct attention to the benefits to health which would result from periodic health examinations. No sensible automobile owner to-day runs his car continually without overhauling. Where this principle is not applied, breakdowns and accidents occur. If periodic health examinations by the family physician were to become a general practice, I am sure there would be a great decline in the sickness and deaths in our community.

The Framingham demonstration has shown what can be done to safeguard the health of a community. Nearly two-thirds of the population of this city were physically examined. Many cases of disease were found which had not previously been known and treatment was instituted. This was particularly true of tuberculosis. In the decade prior to 1917. The tuberculosis mortality in Framingham averaged 120 per hundred thousand. In the year 1921, the mortality from this disease was forty per hundred thousand. A reduction of 66.7 per cent. The benefits of periodic health examinations are obvious. Efficiency and good health go hand in hand. The wise man has his dentist look over his teeth every six months and in the same manner an annual inventory of one's physical assets and liabilities by a qualified medical practitioner is a sound investment.

Cancer kills at least 7,000 Canadian citizens every year. At ages over forty years, it kills one in eight among women and one in fourteen among men. In its early stages cancer causes no pain or signs of ill-health, and can only be discovered by a complete and thorough physical examination. This is an added reason for yearly health examinations as the only hope of curing a case of cancer exists in its early recognition and treatment.

In concluding this report I wish to thank the members of the Department, the staff of the School Medical Department, the Social Service Nurses, Mr. Thompson and the doctors of the city for their unfailing help and co-operation.

Ald. A. A. Lister, as chairman of this board, has given freely of his time and advice, and I wish to thank him along with the members of the board for their support and valuable assistance.

I remain,

Your obedient servant,

W. L. HUTTON,
Medical Officer of Health.

REPORT OF FOOD INSPECTOR.

October 31st, 1922.

To the Chairman and Members of the Brantford Board of Health.

LADY AND GENTLEMEN:

I herewith submit for your consideration my report on my work during the past year.

The milk supply naturally takes up the greatest part of my time. During the year inspectors of the Dominion Department of Agriculture have applied the tuberculin test to fifteen herds of cattle that are producing milk for sale in Brantford. Three hundred and eighteen animals have been tested and fifty-three of them reacted.

The reactors were killed under the supervision of the Dominion Inspector, and the carcasses disposed of under his instructions.

Seven retail vendors are licensed for the sale of milk in the city, one of these selling cream only. One hundred and fourteen producers are licensed, an increase of seven over last year. One thousand three hundred and seventy-two cows supply a total of approximately 10,428 quarts of milk daily, for the supply of the city. In addition 249 quarts of cream are delivered daily to the consumer. The percentage of milk pasteurized is approximately eighty-six and one-half per cent.

The premises and equipment of the vendors in the city are in good condition, and are kept clean and sanitary. One new dairy has been erected in the city during the year, replacing one that was too small for the requirements of the company.

The premises of the producers have been kept in better condition than formerly. The license of one producer has been suspended owing to failure to comply with the regulations of the Milk By-law.

Although there is a great improvement in the cleanliness and temperature of the milk arriving at the dairy during the past year, these conditions can still be improved. There are times when the producer is hard put for time on the farm, generally in the spring, when seeding is being done and again during harvest and threshing. At these times operations have to be more or less neglected on the farm, and I find the milk is generally the part to suffer most. Until the producer is educated to the fact, that as the milk is refused at the dairy unless clean and properly cooled, he is suffering a great financial loss by neglecting one of the most important and valuable food products of his farm, we shall have this trouble to contend with.

I have had to refuse admittance to the city of milk from one farm temporarily on account of sickness among the cows, 1,192 gallons of dirty milk, and 1,056 gallons not properly cooled, have been refused at the dairies. Sediment tests have been made frequently and are exceedingly valuable in showing the producer the amount of dirt in his milk and inducing him to take more care in producing clean milk. The use of the small topped or sanitary milk pail is increasing slowly.

Four hundred and eighteen for butter fat have been made. The average result being 3.46 per cent., an increase over last year in butter fat of .061 per cent.

The following table compiled from records in this office show the gradual decrease in the quality of the milk supplied to the city from the year 1897 to 1920, and the increase during the last two years.

Year	Average % butter-fat for year per cent.	Percentage of tests below 3% butter fat per cent.
1897	3.96	?.1
1904	3.91	4.
1912	3.65	4.8
1914	3.40	9.7
191	3.37	9.7
1920	3.17	14.4
1921	3.40	8.54
1922	3.461	.74

I again offer the following suggestions to consumers whereby they may assist in having a good milk supply.

1. Place milk in a clean, cool place as soon as delivered by vendor.
2. Keeping it away from other food or articles that may impart an odour or cause it to sour.
3. Keeping the bottle or container tightly covered.
4. Returning bottles clean, and not using them for any purpose than to contain milk.

Restaurants and Butcher Shops.

The restaurants, total number of which is thirteen, are well kept and sanitary. A small percentage have lavatories provided for patrons, and as in my report of last year, I advise these should be installed in all restaurants. Butcher shops,

with one or two exceptions, are clean and sanitary. The exceptions referred to are small places where meat is kept as a side line, and constant inspection is required to keep them clean and tidy. Inspection of restaurants and butcher shops are made at irregular intervals.

The new building on the market for the sale of meat is a decided advantage, enabling meat to be cut and displayed for sale free from dust and dirt as it was when cut on the open market.

Six hundred and forty-four pounds of pork, 286 pounds of beef, seventy-five pounds of veal, sixty-eight pounds of mutton, and 125 pounds of fish unfit for food have been condemned and destroyed.

Fourteen dogs that have bitten persons have been inspected, and quarantined when necessary. The head of one dog was sent to the Biological Laboratory, Ottawa, for examination. Result of examination was negative.

I remain,

Your obedient servant,

A. B. CUTCLIFFE,
Inspector.

REPORT OF SOCIAL SERVICE NURSE.

To the Medical Officer of Health of the City of Brantford.

SIR:—I beg to report the facts of work carried on in the campaign against venereal diseases in Brantford during the past year.

Treatments at the Out-door Clinic Brantford General Hospital—	
Male syphilis	464
Male syphilis, children	63
Female syphilis	287
Female syphilis, children	178
Male gonorrhoea	455
Female gonorrhoea	487
Female gonorrhoea, children	65
Total	1,999

Day patients in General Hospital for treatment who are unable to be out of bed:

Male syphilis	39
Male syphilis, children	65
Female syphilis	171
Male gonorrhoea	133
Female gonorrhoea	109
Female gonorrhoea, children	75
Ophthalmia neonatorum	13
days	605
Patients referred to clinic for treatment by doctors	17
Patients referred to clinic for treatment from hospital wards	7
Patients referred to clinic for treatment from Police Department	8
Patients referred to clinic for treatment from Department Board of Health	71
Patients who came to clinic for treatment their own accord	13
Patients continuing treatments from last year	50
	166
Patients dismissed as cured	42
Patients dismissed for treatment elsewhere	42
Patients who left town and cannot be located	28
	112

Total number of patients coming for treatments, November 1st, 1922..	54
Number non-venereal diseases patients examined	16
Number patients arrested for not reporting for treatment	3
Number patients who left clinic at various times during the year, and persuaded by the Social Worker to return	107
Source of infection who have been known to infect others	27
Source of infection placed under treatment	35
Number of patients referred to private doctors	30
Hours clinic open during the year	406
Average number of patients at each clinic	13
Calls made by Social Service Nurse	557

Doctors who attend clinic regularly:—E. R. Secord, M.D.; L. Coates, M.D.; R. W. Digby, M.D.; D. A. Morrison, M.D.

These doctors have given of their time and skill two evenings and one afternoon a week, it is to them we owe the successful work the clinic has accomplished.

An example of the social and community value of the work of the venereal disease clinic may be given in the following case. A man suffering from rheumatic pains had a blood test taken, and was found to have syphilis. An investigation of the family history was made. This man was thirty-one years of age, and his father had syphilis thirty-two years ago. Now we find a family of seven living children all who are infected. The eldest girl of eight years is deaf and blind in one eye. She was admitted to the Institute for the Deaf and Dumb in Belleville. The boy has been examined by Dr. Clarke, of Toronto, and he advises this boy to be sent to the Government School at Orillia, also one other child. Another child of seven years cannot talk All seven are under treatment and this family have been kept by the city most of the time. If an examination before marriage of this man had taken place, how much unhappiness and misery could have been averted.

It is just a question of time until the real seriousness of the venereal disease problem impresses itself upon the public conscience, and medical examination before marriage becomes an accomplished fact.

Faithfully yours,

FERN KEEFER,

Social Service Nurse.

VITAL STATISTICS YEAR ENDING OCTOBER 31ST.

POPULATION (ASSESSORS' FIGURES) 30,109.

	1921	1922
Births	804	783
Birth rate	25.63	26
Deaths	327	370
Death rate	10.42	12.28
Marriages	313	252
Infant mortality rate	64.67	63.85

COMPARATIVE RATES.

	1918	1919	1920	1921	1922
Births	24	20.36	25.31	25.63	26
Deaths	27.7	14.5	12.78	10.42	12.28
Infant mortality	128.6	106.1	90.4	64.67	63.85

NOTES.

1. Still births were excluded in compiling the above figures.

2. One death that took place outside of the municipality of Brantford was excluded.

3. No reductions were made of deaths that took place in the Brantford General Hospital where homes were outside the City of Brantford.

DEATHS AT VARIOUS AGE PERIODS.

	1921	1922
Still born	36	37
Under 1 year	52	50
1 year and over and under 5 years	13	13
5 years and over and under 15 years	15	14
15 years and over and under 25 years	19	14
25 years and over and under 45 years	35	43
45 years and over and under 65 years	81	85
65 and over	110	151
Age not reported	2	0
Totals	327	370

DEATHS GROUPED ACCORDING TO INTERNATIONAL LIST OF CAUSES.

		1921	1922
Group	1—General Diseases	74	79
	2—Nervous System, etc	24	16
	3—Circulatory System	54	71
	4—Respiratory System	43	51
	5—Digestive System	11	31
	6—Genito-urinary System	23	18
	7—Puerperal State	3	5
	8—Skin and Cellular	1	3
	9—Bones, etc	0	1
	10—Malformation	5	1
	11—Early Infancy	41	31
	12—Old Age	19	34
	13—External Causes	20	26
	14—Ill Defined	9	3
	Totals	327	370

Our vital statistics have improved considerably during the year. The causes of death are being more accurately described.

AMONG THE SPECIFIC CAUSES OF DEATH NOT REPORTABLE ARE THE FOLLOWING.

	1921	1922		1921	1922
Cancer	24	29	Old age	19	34
Apoplexy	13	7	Pneumonia	31	39
Heart affections	12	30	Bronchitis	7	3
Nephritis	9	9	Premature births	15	5
			External causes	20	26

STATISTICS OF CONTAGIOUS DISEASES—CASES REPORTED YEAR ENDING OCTOBER 31ST, 1922.

	1918	1919	1920	1921	1922
Scarlet fever	38	20	52	114	10
Diphtheria	44	77	103	65	90
Typhoid	19	21	19	5	8
Measles	182	3	249	12	3
Chicken-pox	0	0	29	134	50
Smallpox	1	14	73	214	0
Tuberculosis	0	0	12	32	47
Whooping cough	2	9	51	28	8
Mumps	0	0	3	189	3
Cerebro-spinal meningitis	0	0	1	1	1
Influenza	0	0	366	0	0
Venereal diseases	0	0	48	100	167
Infantile paralysis	0	0	0	0	17
	286	144	1,006	894	404

NOTE.

We ceased to placard chicken-pox June 1st, 1921. It is not proposed to resume placarding unless smallpox breaks out.

DEATHS FROM REPORTABLE DISEASES.

	1919	1920	1921	1922
Diphtheria	8	10	5	6
Typhoid fever	1	1	1	0
Measles	0	3	1	0
Whooping cough	2	3	4	0
Meningitis	4	4	5	2
Tuberculosis	26	18	19	6
Infantile paralysis	0	0	0	1
Influenza	89	34	0	8
	130	73	35	23

NOTE.

Three cases of typhoid fever died in the Brantford General Hospital in the year 1922, but the homes were outside of this municipality.

RECORD OF WORK ACCOMPLISHED.

Water samples examined—71 as follows:—

City water O. K.—47.
Private wells O. K.—9.
Private wells polluted—15.

NOTES.

1. It is significant to note that of twenty-four wells examined, fifteen were polluted. The city water is the only safe water in Brantford.

2. Where a polluted well was used for human consumption it was closed and city water installed.

Milk samples examined		418
Cream samples examined		11
(For results see Dr. Cutcliffe's report.)		
Diphtheria swab examined		338
Results positive	65	
Negative	273	
T. B. slides examined		10
Results—Positive	2	
Negative	8	
V. D. G. slides examined		98
Results—Positive	52	
Negative	46	
Urine slides examined		20
Urine for albumen		12
Vaccinations office		300
Schick test performed		40
Positive for diphtheria	28	
Negative for diphtheria	12	
Toxin-antitoxin administered		10

HOUSES PLACARDED, FUMIGATED AND RELEASED.

10 for scarlet fever.
90 for diphtheria.
17 for infantile paralysis.
50 for chicken-pox.
3 for measles.

Exclusion notices and release certifications issued to cover 800 school children.

Notices to abate nuisances (all complied with)	37
Notices to make sewer connection	36
Complied with	22
Number of earth closets inspected	573
Earth closets reduced during year 1922	47

All laundries periodically inspected—conditions normal.

All stables periodically inspected—conditions normal.

All alleyways and lanes frequently inspected—in good condition.

Prosecutions—4. Convictions—3.

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, antitoxins, and the various test outfits have been kept on hand, and given to the medical profession and hospital on request.

Four houses were closed due to being unfit for human habitation and were subsequently repaired.

CHATHAM.

Annual Report for the Year 1922.

To the Chairman and Members of the Board of Health of the City of Chatham.

Gentlemen:—In accordance with the provisions of the Ontario Public Health Act, I hereby submit my annual report for your consideration for the year beginning with the first day of December, 1921, and ending with the 30th day of November, 1922. The population of the city is 15,100. The general health of the city for the year has been exceptionally good, there has been no general epidemic or anything similating such a condition, unless it could be an epidemic of idleness among the physicians of the city for the greater part of the year.

Typhoid Fever.—Eleven cases counting the first case admitted to St. Joseph's Hospital the last day or two of November, 1921; ten of these were of a virulent type, five of them were a family of Belgians sent in from Wallaceburg, who were well advanced in the disease before being admitted to the hospital. Three of the five died, also one of the five nurses in training that had contracted the disease. None of these cases had taken the Typhoid Paratyphoid Vaccine previously and thus be fortified against this infection. When the cases were admitted to the hospital they were a mass of open sores and abscesses making them dangerous cases from the beginning with anything but a promising outlook, none of them could speak English while their senses were already dulled previous to their admission. One case admitted last of November, three in December, three in January and three in February. Outside the five nurses only one other citizen of Chatham had typhoid during the last twelve months and this case was contracted at a summer resort where a number of the water wells or distributing systems had become contaminated with Bac. Coli; this case was very mild and the patient had a previous attack a year or two ago.

Scarlet Fever.—Fifty-three cases all of a mild type, forty-one of this number being in the months of: December, nine, August, six, September, four, October, seven, and November, fifteen, the month of June none; the other twelve are spread over the other six months of the year; no deaths.

Measles.—There have been nine mild cases with no complications and no fatal cases.

Chicken-pox.—Sixty-nine cases during the year as follows:—thirty-one in December, nineteen in January, eleven in February, five in March, four in June and nine in November.

Smallpox.—Two very mild cases, one in June and the other in May, all the other members of the two families were vaccinated with no further developments.

Tuberculosis.—Five cases with four deaths reported. This grim monster is collecting a large toll of valuable lives among our citizens each year and yet this serious condition might be very favourably modified could the County and the City get together and build and maintain along with the Government grant a sanitarium to care for this class of suffering humankind. It would be a good investment from a financial view point if nothing else; each life's cash value is estimated from three to five thousand dollars. While the country is needing more people, why not save those we have as well as inducing strangers to come in? One native born is far more valuable than an outsider, at least for the first few years of the stranger.

Diphtheria has the third largest number of cases in the list of communicable diseases in our city for the year, the number being thirty-six with five deaths,

all of the latter were severe and laryngeal in type and died within a few hours after the doctor had first been called, two of the five were operated upon in trying to save a life but in these cases it was too late. Our physicians use large doses of antitoxin on the patients and immunize all the rest of the family with generally good results. Some forms of septic sore throat respond very readily to a small dose of antitoxin and is practiced to considerable extent. In most instances swabs are taken early and sent to one of the laboratories of the Provincial Board of Health as confirming the clinical diagnosis.

Mumps.—Only five cases reported for the year.

Whooping Cough, three. Pertussis Vaccine is being used pretty generally early in the disease and as an immunizing agent.

Erysipelas one, severe type affecting the head, face and neck, running a high temperature with some delirium, serum seemed very helpful, recovered.

Pellagra, one case, that of a visitor from Edmonton, Sask. This case was of fifteen years standing, the patient seeming well for months, then have acute attacks with rash and much pain. Was in the city for about three months, she then returned home. This is an unusual disease for this climate and the party claims never to have been farther south than Detroit. In fact the greater part of her life has been spent in Canadian Northwest.

Acute Cerebral Meningitis.—Two cases with two deaths both in young children, one developed from an abscess of the middle ear.

Scurvy.—Two cases in one family due to faulty diet which has been corrected and are getting better.

Venereal Diseases.—Seven cases of Lues or Syphilis and nineteen cases of Gonorrhoea only have been reported by eight out of nineteen doctors in the city for the year. This would be a happy condition of affairs for Chatham if it were the true state of the situation, which I am convinced it is not. I am firmly of the opinion that it is not more than one-third of the cases which have been treated and belonging to the self same city. I cannot understand why some of the medical profession hesitate to report these cases in accordance with Venereal Diseases Act else how can the profession hope to cope with its ravages. There is no reason why these diseases should not soon become a thing of past history if the whole medical profession and the general public would only work in unison toward this end.

Vital statistics for the twelve months above are 421 births, including fifteen stillbirths; for the same period there were thirty-seven deaths under thirteen months, and one hundred and seventy-seven deaths of persons older than thirteen months. Not counting the stillbirths as deaths we would get an infant death rate per 1,000 of 91, which is a good showing. The total death rate of all ages per thousand is about 15⅓.

Milk.—Average daily consumption, 2,500 quarts and 50 quarts of cream at a price ranging from 10 cents per quart in summer months to 16 cents in winter and spring. The quality has been improving each year as regards both cleanliness and amount of butterfat; the standard required is 3.5 per cent. butterfat and 12 per cent. solids. It is not difficult to maintain this standard in this locality, though some fall down occasionally.

Water.—Our city water supply for the year has been ample and of good quality with the exception of a day or two after a very temporary breakdown of our chlorine injector force pump, when some raw water that is unchlorinated escaped into the mains; this was the only contamination of our water supply

during the whole year. Our city analyst, Dr. Mustard, keeps a close watch on water supplied every day while the local M.O.H. sends three samples to the laboratories of the Department at London as a check-up as to the accuracy of his work. Besides Dr. Mustard tests many samples of local and surrounding county well water, thus getting a much earlier report than possible from the Department and in every instance his tests agree with those obtained from the Provincial Laboratory.

Incinerator.—The city will in the course of a couple of weeks have one of the most modern and up-to-date type of incinerator on the continent in operation, when we hope that it will make good up to all promises given and then Chatham can honestly say she is leading the Province in the disposal of all garbage without giving offence to any citizen or to any of the surrounding municipalities.

Public Schools.—Annual inspection of all the Public Schools have been made recently and find them in first-class condition and can say that few places of Chatham's size can make a better showing either in its schools, teachers or pupils.

(Signed) T. L. McRitchie,
Medical Officer of Health

Chatham, Ont., December 1st, 1922.

Report of Miss Mary Northwood, School Nurse, for 1922.

The work of supervision and inspection of the pupils, two thousand in number, of the public schools, three in number, is carried on with regularity during the months of the school year. Class room inspection are daily routine. notifications on printed forms being sent home to the parents whenever a defect is found which is felt to be serious enough to demand attention.

Home calls upon parents are found to be very beneficial, in helping to have such defects remedied. During the school year one hundred and ninety-five calls at pupils' homes have been made.

Notifications have been sent concerning thirty-nine defective vision cases, twenty-seven of these having improved by the use of glasses or treatment by an eye specialist. Twelve cases of defective hearing have been notified, ten of these have been treated by a physician and condition improved. Fifty-nine notifications have been sent concerning enlarged or diseased tonsils. Many of the same children were suffering from defective nasal breathing, and of these thirty-two children have had these defects remedied, each child being attended by the family physician.

Twenty-five cases of skin disease have been excluded from the schools until the physician in attendance gave permission to attend.

Classroom talks relating to health subjects are given at regular intervals. The question of the value of open windows in the sleeping room, the benefit obtained by drinking some milk each day and the importance of having a long night's rest; the child getting to bed very early, and the necessity of keeping the skin well cleaned at all times by frequent baths are points we try to keep before the children.

Through the kindness of two of our local dairymen milk was given during three of the spring months to some of the children who were subnormal in weight. A glass given at morning recess was very beneficial and was much enjoyed by the children who received it.

Chatham, Ont., December 1st, 1922.

Sanitary Officer David Holmes' Report for the Year December 1st, 1921, to November 30th, 1922.

To the Chairman and Members of the Board of Health.

Gentlemen:—I wish to report as follows:

During the year I put up one hundred and forty-eight placards for contagious diseases and removed one hundred and twenty-three. Disinfected ninety-one different homes, also the Collegiate Institute and Central School. Inspected all the laundries and cafes, each forty-four times, all the butcher shops each seven times, slaughter houses, five times. Gathered one hundred and twenty-eight samples of milk and assisted the M.O.H. in testing for cleanliness, temperature, butterfat, solids and specific gravity, and inspected the premises and equipment of the vendors for handling the same. I also inspected most of the herds of milch cows of the producers for our city supply.

I gathered 150 samples of city water for the M.O.H. to send to the laboratories of the Provincial Board of Health at London, being three samples per week for the year. Inspected a considerable number of homes, three of which were unfit for living in and had necessary improvements made. Investigated seventy-nine complaints, made forty calls on families under quarantine and saw that needs were supplied. Inspected the city dump thirteen times, had six lame horses laid up for treatment till better; instructed the garbage man to remove thirty-eight dead animals, inspected the different herds of cows and the utensils used in handling their milk. Had a number of offenders of the milk by-law up before the police magistrate and fined. Condemned on the city market two lots of meat, also eggs, butter and poultry; attended the market two days of each week during the whole year. Number of outside closets cleaned during the year was 1,002, many of this number mean repeats.

(Signed) David Holmes,
Sanitary Officer.

FORT WILLIAM.

To the Chairman and Members, Local Board of Health, Fort William, Ont.

Gentlemen:

I beg to submit herewith my report for the year ending October 31st, 1922:

Vital Statistics.

Estimated population	20,436
Death rate per thousand population of all deaths registered	11.79

This rate is 1.05 per cent. lower than last year.

Thirty-five non-residents died in this municipality. Fifteen deaths occurring in other municipalities were registered here. Excluding these the death rate is 9.35 per thousand.

Birth rate per thousand population	33.86
Infant mortality rate per thousand births	89.60

The birth rate for this year is 1.78 per cent. lower than for last. The infant mortality rate is exceedingly good even taking into consideration the smaller number of births. This year the mortality rate among infants is 17.45 less than last year.

Nine persons were summoned to court during the year; the causes for summons will appear in the Sanitary Inspector's report.

Seven of these were convicted and paid fines aggregating $125 and costs.

The following products and supplies from the Provincial Board of Health were distributed:

Diphtheria Antitoxin	1,799,000 units
Tetanus Antitoxin	231,500 units
Pertussis Serum	705 c.c.
Smallpox Serum	41 tubes
Sterile Swabs	261 swabs
Influenza Serum	70 c.c.
Typhoid Serum	30 doses
Silver Nitrate	84 ampules
Phenarsenamine	453 ampules

I took charge of your department on October 15th, fulfilling the position of Medical Officer of Health rendered vacant by the sudden death of Dr. E. B. Oliver, who for years has been your most efficient officer and who during his regime brought your department to the high standard of efficiency as I found it upon assuming charge.

In Dr. Oliver's death the city and the community has lost one of its best citizens. I intend to follow to the best of my ability the precepts laid down by my predecessor, to obey the rules and regulations as laid down by the Provincial Board of Health and to serve the community as it should be served in preventing all forms of communicable diseases from spreading and to promote its general welfare and health.

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 in Toronto, but also from its efficient staff, Dr Thomas and Dr. Sparks, locally. I am glad to say that at present there is absolute co-

ordination in the different branches of the work. Miss Gerry, your public health nurse, has been doing excellent work and the results are self evident inasmuch as it is due to her work and to the improved sanitary conditions in certain districts of the city, which department comes directly under Mr. Bolus, your sanitary inspector, that the infant mortality has been reduced.

Last year there were fourteen deaths from Gastro Enteritis as compared to twelve for the current year, this being the best record of this disease in your city.

Your clerical staff also has proved to be most efficient.

Your board is to be congratulated on the steps lately taken to protect your pure water supply. Inasmuch as the strongest chain is no stronger than its weakest link, we have for years been running a daily risk of having our water supply becoming contaminated by the different emergency connections made for fire protection.

On November 1st instant, information was received by the municipal engineering department that double check valves had been received by the local engineering department of the C.P.R. and that steps are being taken to have these installed. Other plants have had installations made of the double check valves and are, under date of writing, being passed upon for final inspection. I am looking forward to the time when it will be possible to have the water mains now on the bed of the Kam River further protected by means of a tunnel, but in the meantime all due precautions are being taken.

I wish to call your attention to an outbreak of typhoid fever in Chatham, Ontario, in 1918, where it was proven that the epidemic was due to contamination of the water by means of a valve being left partly open in a connection between their pure supply of water and the water supplied to the Lake Erie Railway boilers.

In Rosenau's Preventative Medicine and Hygiene the following statement appears: "The admission of polluted water to a pure city supply at any time is inexcusable," therefore as I have already stated, your board is to be congratulated upon the steps already taken.

Your board is also to be congratulated upon the decreased infant mortality during the current year, the death rate being 17.45 less than last year. This shows decided improvement.

The reports on the abattoir show that a total of three thousand five hundred and fifty-eight animals have been slaughtered during the year and that four thousand six hundred and forty-five pounds of meat have been condemned as unfit for human consumption. This department shows a credit balance of $19.75 for the year as against a debit balance of $21.57 last year. This shows that the department is at least paying expenses and that the public are being fully protected.

I am pleased to report to your board *re* the sanitary connections made and which are being made at present. The number will be greatly increased in the near future.

There has been some improvement in the sanitary conditions in the coal dock section during the current year but there remains much more to be done.

Re communicable diseases admitted to the Isolation Hospital, there were during the year less than half the number as compared to last year which in itself shows the great improvement in the situation *re* the number of cases developing in the city.

In consequence of the fewer number of patients admitted, the net cost of operation is less than that of last year.

The V. D. clinic under the charge of Dr. W. P. Hogarth, has done excellent work during the past year. This is a very important branch of your board's work and you are to be congratulated in having such an efficient officer at its head. There were ninety-five cases of venereal disease reported during the year.

Re the maintenance of the Board of Health in total, I am pleased to call your attention to the fact that the total cost per capita this year is 76.211 cents as compared to 84.245 cents in 1921, being a difference of $1,346.99 in operating expenses.

I made five relief calls since my tenure of office on October 16th, and two consultations.

Since my tenure of office I have had occasion to visit several indigent cases under the care of the Children's Aid Society at the Children's Shelter on Vickers Street. While I found everything satisfactory as far as general cleanliness is concerned, both *re* the children and the building, I found that it was and has been extremely overcrowded. While the activities of this very commendable society must not be restricted, I have called their attention to the rules and regulations of the Provincial Board *re* air space required and have requested them to secure more adequate accommodation in the near future.

In conclusion let me quote the following statement: "No sanitary improvement worth its name will be effective, whatever acts you pass, or whatever powers you confer on public officers, unless you create an intelligent interest in the public mind."

Smallpox.

There were six cases of this disease reported. Three of these were traced to outside sources. There were no deaths. Statistics follow:—

Year	Cases	Deaths
1918	2	0
1919	0	0
1920	24	0
1921	10	0
1922	6	0

Scarlet Fever.

There were 105 cases of scarlet fever reported as compared to 201 cases last year. There were no deaths. Several of the cases were traced to out-of-town infection.

Cases	M.	F.	Under 5 yrs.	5-9 yrs.	10-14 yrs.	15-19 yrs.	Over 19 yrs.	Contracted out of town
105....	38	67	17	47	19	1	21	5

Twenty of these cases were second, third and even fourth cases occurring in houses already infected. This was no doubt due to the fact that the infected person was allowed to associate with the other members of the family before the period of isolation had expired.

Diphtheria.

There were twenty-three cases of this disease reported with one death.

Year	Cases	Deaths
1918	12	2
1919	22	1
1920	22	1
1921	54	2
1922	23	1

Measles.

There were no cases of this disease reported.

Year	Cases	Deaths
1918	12	0
1919	0	0
1920	384	5
1921	662	7
1922	0	0

Whooping Cough.

There were twenty-one cases of whooping cough reported with one death, as compared to 104 cases last year with three deaths.

Year	Cases	Deaths
1918	259	1
1919	2	0
1920	60	3
1921	104	3
1922	21	1

Erysipelas.

There were seven cases of this disease reported.

Year	Cases	Deaths
1918	4	0
1919	1	0
1920	19	1
1921	16	0
1922	7	0

Chicken-pox.

1919	31	0
1920	72	0
1921	193	0
1922	86	0

Mumps.

1919	1	0
1920	0	0
1921	5	0
1922	28	0

Pulmonary Tuberculosis.

There were thirteen cases of tuberculosis reported, of which two cases came from other municipalities. There were thirteen deaths.

There were five cases of influenza reported with seven deaths.

There were no cases of poliomyelitis reported.

Typhoid Fever.

There were seventeen cases of this disease reported with one death. The sources of these cases were:—

S. S. Westmount	1 case
Montreal	1 "
Winnipeg	1 "
Industrial Farm	9 cases
S. S. Assiniboia	1 case
Mission Bay	1 "

The sources of infection of the other three cases were unknown. One of the cases from the Industrial Farm died.

Cerebrospinal Meningitis.

Two cases of this disease were reported, one having been brought into the city from out of town. The other case, a resident, died.

Primary Pneumonia.

There were eighty-three cases reported with thirteen deaths.

A general resume of the cases of communicable diseases reported, follows:—

	Cases	Deaths
Smallpox	6	0
Scarlet fever	105	0
Diphtheria	23	1
Measles	0	0
Whooping cough	21	1
Erysipelas	7	0
Chicken-pox	86	0

	Cases	Deaths
Rubella	0	0
Mumps	28	0
Tuberculosis	13	13
Influenza	5	7
Typhoid fever	17	1
Primary pneumonia	83	13
Poliomyelitis	0	0
Cerebrospinal meningitis	2	1
Syphilis	41	0
Gonorrhoea	53	0
Chancroid	1	0
	491	37

Isolation Hospital Report.

Patients admitted,—	
Scarlet fever	39
Diphtheria	1
Smallpox	1
Total	41
Hospital days	1,577

I am pleased to report that no deaths occurred at the Isolation Hospital during the year. One mastoid operation was performed.

Financial Statement.

Debit:		
Salaries of staff		$3,400 50
Temporary employees		176 00
Maintenance account		2,904 19
Total		$6,780 69
Credit:		
Accounts collected	$2,799 46	
Garden produce	150 00	
		$2,949 46
Net Cost of Operation		$3,831 23

Visiting Health Nurse's Report.

Miss Gerry made two thousand nine hundred and eighty-seven calls and attended clinics on twenty-three occasions during the year. Classification of these calls follow:—

Month	New Born Babies	Breast Fed	Cows' Milk	Miscellaneous	Special Calls	Revisits
1921						
November	54	50	4	0	6	162
December	22	18	1	3	3	178
1922						
January	52	39	10	3	8	146
February	41	35	2	4	11	161
March	46	39	4	3	12	166
April	37	28	3	6	6	153
May	51	36	13	2	5	189
June	31	24	5	2	4	173
July	50	38	8	4	13	197
August	33	29	3	1	15	260
September	34	32	2	0	9	193
October	44	40	2	2	6	198
Totals	495	408	57	30	98	2,176

Other calls not classified above were:

Prenatal calls	167
Tuberculosis cases	11
School absentees	10
Taking swabs	30

Sanitary Inspector's Report.

A. J. Bolus, M.R.S.I.,
Sanitary Inspector.

R. M. Boyd, Esq., M.D.,
Medical Officer of Health,
Fort William, Ont.

Dear Sir:

I beg to submit herewith for your consideration and approval my report of work done in my department for the year ending October 31st, 1922:

Business Premises.

All places wherein food is stored or offered for sale have been checked up during the year, and where necessary repeated visits have been made. I am pleased to be able to say that the majority of the storekeepers do business in a cleanly manner.

Thirty sacks of sugar, damaged by water, presumably unclean, were seized and held, but later allowed to be shipped out of town to a sugar boiler. It is my opinion that sugar like this is unsafe when used in its raw state, and therefore should not be sold by retail.

Twenty pounds of tea and some marmalade were seized and the tradesman prosecuted for offering same for sale.

Number of Visits Made to Stores.

Butcher Stores	703
Bakeries	163
Candy Stores and Cafes	1,196
Cafe and Rooming Houses	528
Grocery Stores	829
Second Hand Stores	133
Total	3,552

One hundred and thirty-four visits were made to apartment blocks which are generally found to be in good order. No complaints have been received as to conditions therein, but some trouble is caused by the improper disposal of garbage by tenants who will not use the receptacles provided by the owners. In this respect, however, I believe things are better than they were.

The new Bakery By-law which was put into force this year has been helpful in obtaining better kept premises.

The Abattoir.

Business at the abattoir continues to increase. This place is without doubt a convenience to local butchers, farmers and dairymen, and ensures a steady supply of fresh-killed meat for the public. All meat killed thereat is inspected and, if approved, stamped, otherwise condemned and destroyed at the incinerator. A receipt is obtained from the City Engineer for all meat destroyed.

During the past year I made 322 visits; the premises are usually to be found as clean as may be expected in a business of this kind.

Statement of animals slaughtered and meat condemned:

	Cattle	Pigs	Calves	Sheep	Total
November, 1921	146	104	165	30	445
December	130	232	112	...	474
January, 1922	73	43	50	...	166
February	54	7	35	...	96
March	60	23	81	1	165
April	72	14	143	...	229
May	111	27	64	...	202
June	70	6	129	7	212
July	88	18	105	47	258
August	160	2	169	48	379
September	136	21	164	154	475
October	192	70	115	80	457
	1,292	567	1,332	367	3,558

MEAT CONDEMNED (IN LBS.)

	Tubercular	Other Causes	Total
November, 1921	350	70	420
December	....	190	190
January, 1922	....	....	....
March	....	450	450
April	....	....	....
May	....	150	150
June	....	495	495
July	....	....	....
August	500	40	540
September	1,200	200	1,400
October	....	1,000	1,000
Totals	2,050	2,595	4,645

COMMUNICABLE DISEASES.

Fifty-seven visits were made in connection with communicable disease, as against 828 in the previous year. The large difference is accounted for by the fact that there was no epidemic of measles this year, whilst last year 784 visits were necessary by reason of measles alone.

In no single instance has terminal fumigation been employed, but care has been taken that all proper cleansing was carried out as instructed.

Publicity in reference to the spread of disease by means of flies, garbage, and manure, also the necessity for fly screens, was obtained by the printing on electric light account forms of short pithy warnings, and many thousands of these were circulated month by month at seasonable times.

Twenty-four framed copies of information *re* V.D. were affixed in suitable locations.

THE MARKET.

The market which opened May 9th and closed November 3rd, operated twice weekly and was well patronized by producers and customers. The food stuffs offered for sale were all of good quality and the place was kept clean. No complaints were received by this department. The report of the market superintendent will show the value of this place of business to the community.

SEWER CONNECTIONS AND INSTALLATION OF PLUMBING.

During the year fifty-six old premises were plumbed and connected to sewer, twenty-eight of which were done at the immediate expense of the owners

and the other twenty-eight were done by the city at the request of the owners and charged on taxes of the owner.

On the instructions of the board I made inspection of seventy-one premises and reported on same, and although most of these places were undoubtedly in a very unsanitary condition, only thirty on the list were marked for action, the owners of these being served with notice to install sanitary plumbing, and the work was done.

I would like to call particular attention to the fact that in the elimination of the filthy and dangerous privy, one of the greatest dangers to public health is being removed, and I would point out that we have some length of sewer, laid ten and twelve years ago at the request of the owners of property abutting on same, which at this late date have never been made use of. These same people have petitioned for a concrete sidewalk which would cost more money and yet they plead they cannot afford to connect to the sewer they asked for years ago.

I would respectfully request that the board take into full consideration the fact that the public in general are entitled to expect that when a sewer is laid it be made use of, and that only in very exceptional cases should these privies be tolerated another year. In this connection, I would point out that the Public Health Act provides that the municipality may provide the required funds, if the owner of the premises is unable to pay the expense of same at once. The determination as to ability to pay, or as to the wisdom of closing the premises, remains with the local authorities.

Nuisances.

All nuisances found by me, or reported as such, during the year were dealt with as found expedient; many verbal orders and requests were made and, where this was insufficient, other steps were taken.

Three hundred and seventy-one written notices were sent out. Most of these have been complied with. In six cases it was necessary to take action in the police court.

The animal nuisance in the coal dock sections of the city does not show sign of improvement, neither will it until such time as action is taken to prevent the erection of sheds and stables. These, often constructed of old boxes, are to be seen in course of construction every day. It would seem that no permit is asked for and they are without exception built contrary to regulations governing stables.

I have previously stated that the people in these quarters of the city take no heed of their own, their neighbor's or the community's welfare. They will not listen to advice, or to instruction, and the only way to deal with the matter is by way of a campaign in which all sheds erected without a permit be ordered torn down, and all persons keeping hogs or cattle on their premises be prosecuted *without notice* after a sufficient warning regarding the law has been published in the press.

I wish to point out that many thousands of tons of cow and pig manure are used each year, not on farm land, but to fill up low lying land, around and beneath the dwellings these people live in.

Considerable attention has been given to the provision and proper use of manure boxes and few complaints have been received in this connection from the more central parts of the city.

To order a man to provide a manure box is equivalent to giving him a

written permit to keep animals, therefore discretion must be used in this direction.

I have considered it my duty to point out these matters, and trust the board will give same some consideration, and formulate a definite policy thereon for the improvement of the city districts.

The C.P.R. boarding houses are again in use, having been reopened since the insanitary boarding cars brought into the city by a Winnipeg firm were condemned and ordered not to be used.

Dairies.

There are now twelve licensed retailers of milk doing business in the city, seven of whom keep their cattle in the city. Two have a farm in the country, two receive and distribute milk from the country supplies, and one buys locally for sale over the counter.

Barrow Webster is not now operating a dairy in the city and F. Scollie has turned over his store, but retains the creamery.

One hundred and forty visits were made during the year to these places and one hundred and thirty-nine samples of milk were collected off rigs in the street for testing purposes.

Some small improvement in the care of cattle and condition of premises is to be noticed, but there is room for improvement yet.

Several of the dairymen have pasteurizers, but without a recording thermometer therefor there can be no check on this operation.

One man whose butterfat content was consistently low, had only Holstein cattle, and on my advice has now one or two of another breed.

Figures showing the quality of the milk are given below:

Name of Vendor—	No. of Tests	Percentage of Butter Fat
Jas. Otway	13	3.48
Kellough Bros	12	3.20
Thunder Bay Dairy	12	3.10
Fred. Widnall	12	3.46
Edw. Otway	12	3.10
F. Scollie	11	3.06
P. Rizzo	12	3.10
L. Morasutti	12	2.94
B. Webster	8	3.50
H. Crabtree	11	3.23
H. Doherty	12	3.32
C. Hanna	8	3.40

Most of the samples were clean.

Sanitary Survey.

A sanitary survey of the city was made during the year by three Provincial men. I gave assistance when asked to do so, but this only consisted in helping them to find different places they desired to see. I understand the board will later receive a report on their survey which included Loch Lomond, from which they took samples of water, and the dairies. Samples of milk were taken from wagons in the street and sent by them for analysis.

Inspection of Schools

Each of the public and separate schools has been inspected and a report of same made in accordance with the requirements of the Provincial Board of Health, copies of same having been sent to the school board concerned.

Insanitary Dwellings.

Seven dwellings were ordered closed as such until made fit for habitation. One place was torn down and the site cleaned up; three were put into sanitary condition and allowed to be used again, three remained closed.

Court Cases.

Nine cases were taken before the Police Magistrate with the following results:

Selling milk without a license	Fined $10 and costs.
Failing to abate nuisance	Time given to comply with notice.
Sale of unfit foodstuffs	Fined $20 without costs.
Sale of unfit foodstuffs	Fined $20 with costs.
Failing to abate nuisance	Fined $25 and costs.
" " "	Fined $25 and costs.
" " "	Time allowed to comply with notice.
" " "	Fined $15 and costs.
" " "	Fined $10 and costs (not yet abated).

Summer Resorts.

In company with Dr. Sparks and Mr. W. C. Millar, Provincial Sanitary Inspector, I visited Chippewa Park on several occasions in reference to sanitary conditions there, including the provision of good drinking water and the necessary toilet accommodation and disposal of wastes.

Pulp and Paper Mill.

With Dr. Oliver and the plumbing inspector, I visited the pulp mill with reference to the installation of proper sanitary conveniences for employees, etc. This matter was put off from last year and nothing has yet been done. I notified the manager by letter that no sewage in its raw state would be allowed to go into the lake.

District Inspection.

I accompanied Dr. Sparks, Provincial Medical Health Officer for this district, at the time of his inspection of the following:

McKellar Hospital
St. Joseph's Orphanage
Children's Shelter
Police Court cells, etc.
All dairies.
Around the coal dock sections of the city.

Convention.

With the sanction of the Board I attended the Annual Convention of the Sanitary Inspectors' Association of Canada, held at Winnipeg on September 6th, 7th, 8th and 9th. Those who addressed us included Dr. R. W. Bell, of Toronto, Mr. E. L. C. Forster, Food Inspector, of the Federal Department of Health, Ottawa; Mr. Alex. White and Mr. J. Richardson, both Provincial Sanitary Inspectors.

Many instructive papers were listened to and discussed, good addresses were heard from experts, and visits to various places with demonstrations on ventilation (at the Parliament Buildings) and Swift Co.'s packing plant.

Two interesting films were shown on "The Rat Menace" and "The Awakening of John Bond", the latter illustrating the insidious ravages of tuberculosis.

All of which is respectfully submitted.

(Signed) ALFRED J. BOLUS, M.R.S.I.,
Sanitary Inspector.

LABORATORY REPORT.

Dear Doctor:

I have the honour to submit herewith report in summarized form of the work done in this laboratory for the Municipality of Fort William for the year ending October 31st, 1922. We have exceeded last year's total by about 400 analyses, which I think will speak for itself in the matter of co-operation of the city health officer and physicians with this laboratory in the interests of the health of this community. Rapid and accurate diagnosis materially lessens mortality and every life saved is an economic asset to the city and the following figures go to show that the laboratory is doing its share:

DIPHTHERIA.

RELEASE SWABS		
Positive	54	
Negative	50	
Total		104
SWABS FOR DIAGNOSIS		
Positive	26	
Negative	201	
Total		227

TUBERCULOSIS.

SPUTUM EXAMINATIONS		
Positive	34	
Negative	171	
Total		205

TYPHOID.

WIDAL AGGLUTINATION TESTS		
Positive	20	
Negative	35	
Total		55

SYPHILIS.

COLLOIDAL GOLD TEST		33
WASSERMANN TEST		
Very strongly positive	172	
Strongly positive	12	
Weakly positive	59	
Negative	601	
Total		844
TREPONEMA PALLIDA		
Positive	12	
Negative	12	
Total		24

GONORRHOEA.

SMEAR EXAMINATIONS		
Positive	93	
Negative	281	
Total		374

WATER ANALYSIS.

Bacteriological	82

MILK ANALYSIS.

Fat content and sediment	213

MISCELLANEOUS.

Miscellaneous specimens	453
Grand Total	2,614

Faithfully yours,
(Signed) N. O. THOMAS,
Director of Laboratory.

Dr. R. M. Boyd,
Medical Officer of Health.
City of Fort William, Ont.

BIRTHS REGISTERED IN THE CITY OF FORT WILLIAM

FOR YEAR ENDING OCTOBER 31ST, 1922.

Month	Total	Males	Females	Twins
1921				
November	41	15	26	..
December	70	40	30	2
1922				
January	68	33	35	..
February	54	30	24	1
March	72	35	37	..
April	61	28	33	..
May	60	36	24	..
June	56	25	31	1
July	68	36	32	1
August	48	22	26	..
September	55	33	22	1
October	39	20	19	1
Totals	692	353	339	7

STILL BIRTHS.

Month	Total	Males	Females
1921			
November	4	4	..
December	2	1	1
1922			
January	2	..	2
February	6	4	2
March	2	1	1
April	1	..	1
May	4	2	2
June	0	..	..
July	1	..	1
August	1	1	..
September	1	..	1
October	3	2	1
Totals	27	15	12

ANALYSIS OF DEATHS UNDER ONE YEAR OF AGE

By Months.

	N.	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.
151 Congenital Debility	1	2	3	2	2	3	2	1	....	....	5	3
104 Diarrhœa and Enteritis	1	....	1	....	1	....	1	....	3	2	3	....
150 Congenital Malformations	1	1	1	....	2	....	....	....	1	1	....	1
152 Other Diseases Peculiar to Early Infancy	....	1	....	....	....	....	1	1	....	....	....	1
91 Broncho pneumonia	....	....	1	1	....	1	....	....	....	....	....	....
10 Influenza	....	....	....	....	....	2	....	....	....	....	....	....
71 Convulsions of Infants	....	....	....	....	1	....	1	....	....	....	....	....
92 Lobar Pneumonia	1	....	....	....	....	1	....	....	....	....	....	....
103 Other Diseases of the Stomach	....	....	....	....	....	1	....	....	....	1	....	....
119 Acute Nephritis	....	....	....	....	....	....	....	....	....	....	1	....
153 Lack of Care	....	....	....	....	....	....	....	....	1	....	....	....
168 Asphyxiation in Bed	....	....	....	....	....	....	....	....	....	....	....	1
Totals	4	4	6	3	6	8	5	2	5	4	9	6

By Wards.

	Wards					
	Total	1	2	3	4	Non-Residents
151 Congenital Debility, etc.	24	11	4	1	8	..
104 Diarrhœa and Enteritis	12	7	2	1	2	..
150 Congenital Malformations	9	1	1	..	3	4
152 Other Diseases of Early Infancy	3	1	..	..	..	2
91 Broncho pneumonia	3	2	1	..	..	..
10 Influenza	2	2	..	..	..	..
71 Convulsions of Infants	2	1	..	..	..	1
92 Lobar Pneumonia	2	..	..	..	2	..
103 Other Diseases of the Stomach	2	..	1	..	..	1
119 Acute Nephritis	1	..	..	1	..	..
153 Lack of Care	1	1	..	..	..	..
168 Asphyxiation in Bed	1	..	..	..	..	1
Totals	62	26	9	3	15	9

DEATHS.

No. on International List.		
151	Congenital Debility, etc.	25
79	Organic Diseases of the Heart	22
28	Tuberculosis of the Lungs	13
92	Lobar Pneumonia	13
104	Diarrhœa and Enteritis (Under 2 years)	12
81	Diseases of the Arteries, etc	10
150	Congenital Malformations	9
175	Traumatism by Other Crushing	9
120	Bright's Disease	8
185	Fractures	8
10	Influenza	7
91	Broncho pneumonia	6
169	Accidental Drowning	6
40	Cancer of the Stomach, Liver	5
45	Cancer of other or Unspecified Organs	5
61	Meningitis	4
109	Hernia, Intestinal Obstruction	4
42	Cancer of the Female Genital Organs	3
50	Diabetes (Diabetes Mellitus)	3
64	Cerebral Hemorrhage	3
71	Convulsions of Infants	3
152	Other Diseases peculiar to Early Infancy	3
154	Senility	3
24	Tetanus	2
34	Tuberculosis of Other Organs	2
43	Cancer of the Breast	2
60	Encephalitis	2
78	Acute Endocarditis, Myocarditis	2
96	Asthma	2
103	Other Diseases of the Stomach	2
105	Diarrhœa and Enteritis (Over 2 years)	2
108	Appendicitis	2
113	Cirrhosis of the Liver	2
114	Biliary Calculi	2
115	Other Diseases of the Liver	2
119	Acute Nephritis	2
167	Burns	2
181	Electricity	2
189	Ill-defined	2
1	Typhoid Fever	1
8	Whooping Cough	1
9	Diphtheria	1
36	Rickets	1
41	Cancer of the Peritoneum, Intestines, Rectum	1
48	Chronic Rheumatism	1
51	Exophthalmic Goitre	1
53	Leukemia	1
54	Anemia, Chlorosis	1
72	Chorea	1
80	Angina Pectoris	1
82	Embolism and Thrombosis	1
89	Acute Bronchitis	1
117	Simple Peritonitis	1
118	Other Diseases of the Digestive System	1
122	Other Diseases of the Kidneys, and Adnexa	1
132	Salpingitis	1
137	Puerperal Septicæmia	1
146	Diseases of the Bones	1
153	Lack of Care	1
168	Asphyxiation in bed	1
170	Traumatism by firearms	1
173	Traumatism in mines and quarries	1
174	Traumatism by machines	1
182	Homicide by firearms	1
	Total	241

There were thirty-five deaths of non-residents in this municipality. The causes of death were as follows:

79	Organic Diseases of the Heart	4
150	Congenital Malformations	4
28	Tuberculosis of the Lungs	3
40	Cancer of the Stomach, Liver	2
45	Cancer of other or Unspecified Organs	2
92	Lobar Pneumonia	2
152	Congenital Debility, etc	2
175	Traumatism by Other Crushing	2
43	Cancer of the Breast	1
53	Leukemia	1
61	Meningitis	1
64	Cerebral Hemorrhage	1
71	Convulsions of Infants	1
31	Diseases of the Arteries, etc	1
91	Broncho pneumonia	1
96	Asthma	1
109	Hernia, Intestinal Obstruction, etc	1
120	Bright's Disease	1
146	Diseases of the Bones	1
151	Congenital Debility	1
167	Burns	1
173	Traumatism in mines and quarries	1
	Total	35

There were fifteen deaths which occurred in other municipalities, but were registered here The causes of death were:

175	Traumatism by Other Crushing	4
185	Fractures	3
167	Burns	1
168	Asphyxiation in bed	1
169	Accidental drowning	1
181	Electricity	1
182	Homicide by firearms	1
120	Bright's Disease	1
96	Asthma	1
34	Tuberculosis of Other Organs	1
	Total	15

Financial Statement for Year Ending October 31st, 1922.

Salaries of City Hall Staff	$7,518.75
Special Clinic Nurse	350.04
Carfare	90.00
Printing and Stationery	34.65
Antitoxin Syringes	42.73
Conventions	175.00
Phone and Ice	98.00
Office Equipment	44.05
Automobile	300.00
Incidentals	140.67
Salaries of Isolation Hospital Staff	3,400.50
Temporary Employees	176.00
Maintenance of Isolation Hospital	3,204.19
	$15,574.58

CREDITS.

Isolation Hospital Accounts	$2,799.46	
Garden Produce	150 00	
Police Court Fines	115.00	
Antitoxin Syringes	14.00	
Utilities (allowed on old car)	100.00	
Abattoir	19.78	
Refund on alcohol	3.67	
		3,201.91
Net Cost of Department		$12,372.67
Per capita cost—Department		43.029 cents.
Per capita cost—Isolation Hospital		33.182 cents.
Total per capita cost operation of board		76.211 cents.

Respectfully submitted,

R. M. BOYD,
Medical Officer of Health.

GALT.

To the Local Board of Health of the City of Galt:

Gentlemen:

As required by the Ontario Public Health Act, I herewith submit my annual report for the year 1922. During the year twelve regular and four special meetings have been held.

At your first regular meeting you honoured me by appointing me as your chairman, for which you have my sincere thanks, and I hope I have fulfilled the duties of the office to the satisfaction of all of the members. I at least have always given to the office my best attention and have at all times tried to impartially, faithfully perform my duties in the best interests of the city as I saw it.

This the first year's experience in the work has convinced me of the very valuable service that is being rendered to the city by this board; also let me state that I am firmly of the opinion that the citizens at large have no adequate conception of the value of that service or a much greater interest would be taken in the affairs of the board and the position as a member of the board would be sought by men of the greatest influence and ability.

"An ounce of prevention is worth a pound of cure," so the work of this board is largely one of prevention, thus it is impossible to adequately calculate what a valuable service it does for the community when this principle is faithfully adhered to, as I believe it has been done in the past year at least, and doubtless has been for a much longer period.

The system of handling contagious diseases is a good illustration. The moment a case is reported it is immediately isolated and the place of residence quarantined and a careful watch kept in the carrying out of instructions to prevent a further spread of the disease.

It ought to be a matter of great satisfaction to every citizen of our city to know that we are now equipped second to none in the province in the matter of facilities for handling cases of contagion.

There is one thing lacking that would be an economical investment and that is a motor ambulance. The old ambulance is done and the cost of hiring teams is far beyond what the cost of a motor ambulance would be. This could be driven by the sanitary inspector whereas a driver and team has not to be used and paid for each trip.

Our other well-known facilities, the General Hospital, Baby, and Chest Clinics and School Inspection are meeting a much felt need and are growing in importance as the service develops.

In such an important centre as Galt is, in these matters can we not in some manner prevail upon the Provincial Government to establish here a clinical laboratory? It would serve a large centre that is now served by the distant centres of London and Toronto.

The garbage system has been handled perhaps as well as could be expected under the present system of dumping. The places available for dumping have, however, come to an end and a new system must be adopted. The modern system of burning in an incinerator seems to be a most satisfactory and sanitary method and is the most modern method.

The visit of this board, along with the chairman of the Finance Committee, to see two different incinerator systems, convinced us of this fact.

The supplies of milk coming into the city is being watched and tests regularly made, and is found to be generally satisfactory.

The city is and has been entirely free from cases of typhoid fever, due doubtless to the splendid supply of water that we are blessed with and to the quality of milk as well as to other minor causes.

The epidemics of scarlet fever and chickenpox have been somewhat severe but it is a source of gratification that we are able to state that no deaths have resulted, due, no doubt, to our excellent facilities for isolating and treating the cases.

During the year 165 properties have been connected up with the general sewerage system, 50 taking advantage of the deferred payment plan of financing the same.

Although time and again the sanitary conveniences of the city hall have been brought to the attention of the councils, nothing yet has been done to correct the abuse, and our own by-laws are not being lived up to.

A very desirable matter for which any council might gain the undying regard of the community would be to establish here and there at suitable points throughout the city public laboratories.

The work being done by Nurse Brighty, under the direction of the board, we are pleased to say is being much appreciated by the medical profession as well as by the citizens who have taken advantage of her experience in seeking her advice and aid. In the words of one of our medical profession we sum it up: "Miss Brighty, in her own individual effort in the homes of the city and in the clinics over which she presides, is rendering efficient, intelligent and capable service for the welfare of the babies. The value of her work is enhanced by the deep personal interest which she takes in it."

All of which is respectfully submitted.

W. BURNET,
Chairman.

To the Chairman and Members of the Local Board of Health, Galt:

Gentlemen:

As required by the Ontario Public Health Act, I herewith submit my annual report for the year ending October 31st, 1922.

One of the most important problems which this or any board has to deal with is to see that pure milk and plenty of it is supplied to the children of the city, as it is and should be the most common article in the diet list for the child, and as it is now admitted by all authorities to be the best medium for the growth and development of certain germs which produce disease, it is therefore very important that due precautions should be taken to prevent it becoming contaminated through filth, tubercle or any other cause, thereby becoming a great menace to the health of the children within our municipality. On this account it is very important that the premises of the producers as well as the herds should be thoroughly inspected in order to insure that the milk by-law is being complied with, and yet as important as this may seem I consider it is just as necessary to see that the premises, bottles and utensils of the vendors are kept clean and sterile as well as the pasteurization is done properly because if not done properly it is practically useless.

During the year I found on one occasion the water from the south end of the collecting gallery, which runs parallel with Glenmorris street, collecting the water from the springs, contained a slight trace of colon bacilli (the germ which causes typhoid fever). Should this condition increase it would be a very serious matter to our water supply but so far there has not been any trouble arising

from that source so there has not been a single case of typhoid fever develop in the city nor has there been any epidemic of intestinal trouble, yet notwithstanding the slight trace of colon bacilli, I can with confidence assure the public that before the water reaches their houses, it is absolutely safe to drink and fit to use in any way.

The disposal of the garbage has been another source of annoyance during the year and will have to be disposed of next year by the purchase of an incinerator or some other means, as the present dumps will have been closed and no others in sight.

In my judgment the medical men of Galt are not reporting all the cases of venereal diseases which come under their care, judging from the small number of cases reported last year, as required by the Venereal Disease Act of Ontario. This state of affairs should not be allowed to continue without some effort being made to enforce the Act, as it is a very important branch of public health.

In the year 1919, no doubt you remember the Board spent about $18,000 building and equipping the City or Contagious Hospital, and last year over $11,000 was spent moving, repairing and furnishing the Smallpox Hospital, better known as the Swiss Cottage, thus placing the city second to none in the Province of Ontario for taking care of contagious diseases. Now, with our excellent General Hospital facilities, Baby and Chest Clinics and School Inspection, the city would be in a first-rate and up-to-date health centre if the provincial government could see its way clear to establish a clinical laboratory at the hospital or some other central place within the city.

I again desire to draw your attention to the fact that the city is still without any public convenience excepting the one at the market which is a disgrace to any civilized community, causing me more trouble and annoyance than all the outside closets within the city put together.

As will be seen below, we have had quite an epidemic of scarlet fever and chickenpox, but I am thankful to be able to inform you that whilst there has been 154 cases of scarlet fever and 191 of chickenpox there have been no deaths; but, unfortunately, such was not the case with diphtheria, spinal meningitis, and infantile paralysis, there being seven cases reported of diphtheria with one death, one of spinal meningitis, one of infantile paralysis, and one death in each of the latter two diseases.

As shown by the vital statistics report given below, the number of children born within the city was 34 less than last year, the total for this year being 326 as compared with 360 last year.

The number of stillborn children reported this year was twelve, being five less than last year. The total number of children who died under one year was twenty-eight, being seven less than last year. But if you will take into consideration our decrease in population as well as the decrease in the birth rate, you will find a great similarity between the two years with a slight decrease per thousand in favour of this year.

In the general death rate, I find that the total number of deaths registered for this year was 148 as compared with 163 for last year, being a decrease of fifteen; but in order to arrive at the correct number of resident deaths, it will be necessary to deduct the number of non-residents who were brought to our hospital for treatment from other municipalities, and who died at the hospital and are included in our total death rate. On a careful examination of the hospital reports, I find there were nineteen non-resident deaths registered; therefore, after deducting the non-resident deaths of nineteen from the total of 148, it leaves the actual number of deaths for the city at 129.

By a careful examination of the above figures, you will find that our reduced population has been more than compensated by the reduction in the total death rate, which death rate has been reduced from 10.65 to 9.75 per thousand, being a remarkably low rate for a city of our size.

VITAL STATISTICS.

Population	13,222
Births	326
Birth rate per thousand	24.6
Deaths, residents	129
" non-residents	19
" per thousand residents	9.75
" rate per thousand non-residents	1.43
Infant mortality	
Still births, residents	12.
Still births, non-residents	1.
Total deaths under 1 year, residents	28.
Total deaths under 1 year, non-residents	6.
Death rate under 1 year per thousand	2.00

CONTAGIOUS DISEASES.

Reported		Deaths
0	Typhoid fever	0
7	Smallpox	0
191	Chicken-pox	0
154	Scarlet fever	0
2	Measles	0
0	Mumps	0
0	Whooping cough	0
7	Diphtheria	1
1	Spinal meningitis	1
1	Infantile paralysis	1
7	Tuberculosis	2

Respectfully submitted,

J. H. RADFORD,
Medical Officer of Health.

GUELPH.

Chairman and Members of the Board of Health.

Gentlemen:

The most prominent event in health circles in the city during the year 1922 has been the passing by the city council of the pasteurization by-law.

Alderman Grenside largely deserves the credit for engineering this by-law through the council. By this by-law, which comes into force six months after its enactment, makes it compulsory that all milk sold to the city of Guelph must be first pasteurized. His report is a large amount of this report.

A few months ago, Dr. Gwatkin, bacteriologist at the Ontario Veterinary College, kindly consented to make bi-weekly tests of the milk supplied by the local vendors. These tests include bacterial counts, sediment tests, lactometer reading, fat determination, acidity, total solids (milk solids), solids not fat (plasma solids). We are much indebted to Dr. Gwatkin for the splendid report; in fact, I have never been associated with a more thorough examination of a milk supply. The bacterial counts could tend to convince anyone open to argument of the value of pasteurization of milk.

Cancer.

Cancer has taken its usual toll of deaths during the year just closed. The public were slightly aroused to the importance of early recognition of this disease by having their attention drawn to cancer during "cancer week." What cannot be impressed too firmly of the great danger of cancer developing, generally in people over forty years of age, developing slowly and insiduously from a little sore or wart or skin abrasion on the surface of the body, or perhaps in the stomach, after months and months of indigestion. The lesson to be learned is, that people, especially people over forty years of age, more particularly women, should be examined, overhauled as it were, by some competent man at least once a year. By so doing, an early cancer might be recognized in time to save the patient's life, because, in order that the life be saved, the cancer must be totally removed or destroyed. This is only possible with comparatively early cases. Surgery is your only hope for cure. This year we have heard of deep-penetration X-ray machines and their wonderful efficiency. It would seem that for superficial cancer they might be useful, but perhaps more useful when combined with an accessory to surgery.

Report of an Examination of 156 Samples of Milk.

By Ronald Gwatkin, A. L. McNabb and H. M. LeGard,
Ontario Veterinary College.

Between the dates of October 26th and November 30th, 152 samples of raw and four of pasteurized milk were examined for specific gravity, fat, total solids, solids not fat, dirt, bacterial count, and in some cases acidity. The results of the examination are contained in this report.

The samples with the exception of two (Nos. 151 and 153) were brought in by the sanitary inspector. The samples consisted of one pint of milk in regular bottles with pasteboard caps. These were placed in the ice-chest as soon as received at the laboratory and examination commenced within two hours at the latest.

Bacterial Count.—Dilutions of milk were made in sterilized tap water as follows:—1:100, 1:1,000; 1:10,000 and 1:1,000,000. 1.0cc of 1:1,000, 1:10,000 and 1:1,000,000 was plated in 10 cc of 1.5% beef extract agar with a reaction of 1, and incubated at 37°C. for 48 hours, when the colonies were counted. Controls on water and agar were also prepared and incubated.

Sediment Test.—One pint of milk was rapidly filtered by pressure through a pledget of cotton which was then mounted on white paper for comparison with standards when dry. This test approximately indicates the amount of insoluble dirt, which is chiefly cow manure. In this report the samples have been graded as clean, fair, and dirty. If the milk has been previously filtered through cotton, the sample might grade as clean and yet have a higher bacterial count than another grading as dirty. This is readily seen by running a sample of dirty milk through two separate cotton discs.

Lactometer Reading (specific gravity).—This was taken by means of Quevenne's lactometer which indicates the temperature and the 2nd and 3rd decimals of the specific gravity. If the sample was not at 60°C., the reading was corrected to the temperature indicated on the thermometer scale.

Fat Determination.—The Babcock test was used for determination of percentage of fat in samples. Reading was done at a temperature of between 50° and 60°C.

Acidity.—Some of the samples were tested for acidity by Publow's method, but this test would have given more information in warmer weather.

Total Solids (milk solids).—These were calculated from the corrected lactometer reading and percentage of fat according to the table of Shaw and Eckles.

Solids Not Fat (plasma solids).—Were determined by subtracting the percentage of fat from the total solids.

Following are the results of samples tested. The columns from left to right show:—Vendor, producer, date collected, lactometer reading, temperature, corrected lactometer reading, fat, total solids, solids not fat, acidity, dirt, bacterial count. Some plates were overgrown by spore-forming organisms (spreaders) and could not be counted. Under the bacterial count column these are entered as spreaders. It is impossible to judge with such plates whether the sample has a high or a low count. In addition, the medium used with one batch of samples was contaminated and no colony count could be made. These are marked not counted:—

No.	Date	L.R.	Temp.	C.L.R.	Fat.	T.S.	S.N.F.	Acid.	Dirt	Bact. Count
1	31-10-22	33	56	32.5	3.0	11.74	8.74	.25	F	6,000,000
2	21-11-22	34	58	33.7	3.2	12.28	9.08	not done	D	50,000
3	31-10-22	32	56	31.5	3.2	11.73	8.53	.21	D	2,800,000
3a	31-10-22	33	58	32.7	3.2	12.03	8.83	.17	D	200,000
4	21-11-22	35	58	34.7	2.8	12.05	9.25	not done	D	300,000
5	21-11-22	34	57	33.6	3.4	12 49	9.09	"	D	30,000
5a	27-11-22	33	48	31.8	3.8	12.52	8.72	.20	F	40,000
6	31-10-22	32	56	31.5	3.3	11.97	8.57	.21	C	50,000
7	21-11-22	33	58	32.7	3.4	12.27	8.87	not done	F	50,000
8	31-10-22	29	56	28.6	3.4	11.24	7.84	.20	C	50,000
9	2-11-22	30	60	30.0	5.2	13.75	8.55	.20	D	400,000
10	28-11-22	33	54	32.3	3.6	12 38	8.78	not done	D	200,000
11	28-11-22	34	54	33.2	3.2	12.15	8.95	"	F	200,000
12	28-11-22	35	54	34.2	4.2	13.60	9.40	"	F	200,000
13	31-10-22	30	56	29.6	3.3	11 35	8.05	.18	C	spreader
14	21-11-22	33	58	32.7	3.2	12.03	8.83	not done	C	50,000

No.	Date	L.R.	Temp.	C.L.R.	Fat.	T.S.	S.N.F.	Acid.	Dirt	Bact. Count
15	27-11-22	35	48	32.8	4.0	13.26	9.26	.21	D	20,000
16	30-11-22	35	52	33.9	3.8	13.05	9.25	not done	D	40,000
17	31-10-22	35	58	34.7	3.9	13 38	9.48	.21	D	50,000
18	21-11-22	35	58	34.7	4.0	13.42	9.42	not done	F	300,000
19	31-10-22	33	58	32.7	3.6	12.51	8.91	.19	F	40,000
20	21-11-22	32	57	31.6	3.3	11.87	8.57	not done	C	30,000
21	31-10-22	32	58	31.7	4.2	12.98	8.78	.22	D	70,000
22	21-11-22	33	57	32.6	3.2	12.00	8.80	not done	D	250,000
23	2-11-22	31	60	31.0	3.0	11 36	8.36	.20	D	200,000
24	23-11-22	33	50	31.9	3.6	12 31	8.71	.20	D	80,000
25	2-11-22	32	60	32.0	4.4	13.30	8.90	.21	D	100,000
26	23-11-22	34	52	33.0	3.6	12.58	8.98	.20	F	80,000
27	2-11-22	32	60	32.0	3.4	12.09	8.69	.20	D	2,500,000
28	23-11-22	33	52	32.0	3.8	12.57	8.77	.21	F	60,000
29	2-11-22	32	60	32.0	3.4	12.09	8.69	.18	D	spreader
30	23-11-22	33	52	32.0	3.4	12.09	8.69	.18	D	60,000
31	2-11-22	31	60	31.0	4.0	12.56	8.56	.19	D	700,000
32	23-11-22	33	52	32.0	3 4	12.09	8.69	.18	D	150,000
33	2-11-22	33	60	33.0	3.0	11.86	8.86	.18	D	250,000
34	2-11-22	32	60	32.0	3.8	12.57	8.77	.20	F	150,000
35	23-11-22	33	50	31.9	3.8	12.55	8.75	.19	D	100,000
36	2-11-22	34	60	34.0	5.0	14.52	9.52	.20	F	400,000
37	23-11-22	35	52	33.9	5.0	14.50	9.50	.21	D	80,000
38	16-11-22	33	58	32.7	3.4	12.27	8.87	.20	F	50,000
39	16-11-22	34	56	33.5	3.2	12.23	9.03	.20	F	spreader
40	28-11-22	30	52	29.1	4.2	12 31	8.11	.20	C	50,000
41	30-11-22	33	52	32.0	2.2	10.64	8.44	not done	F	50,000
42	28-11-22	34	54	33.2	3.8	12.87	9.07	"	C	200,000
43	30-11-22	35	54	34.2	3.0	12.19	9.19	"	C	20,000
44	28-11-22	35	52	33.9	4.2	13.54	9.34	"	C	400,000
45	30-11-22	35	52	33.9	4.0	13.29	9.29	"	C	50,000
46	16-11-22	32	58	31.7	3.4	12.02	8.62	.21	F	spreader
47	28-11-22	34	52	33.0	4.0	13.06	9.06	not done	D	100,000
48	16-11-22	32	56	31.5	3.2	11.73	8.53	.20	C	250,000
49	28-11-22	33	52	32.0	3.6	12 33	8.73	.22	F	50,000
50	31-10-22	33	58	32.7	3.6	12.51	8.91	.21	D	450,000
51	16-11-22	32	56	31.5	4.0	12.69	8.69	.21	F	spreader
52	31-10-22	33	58	32.7	3.4	12.27	8.87	.21	C	1,800,000
53	16-11-22	34	56	33.5	3.8	12.95	9.15	not done	F	500,000
54	16-11-22	27	56	26.6	3.2	10.49	7.29	.17	F	4,500,000
55	28-11-22	31	52	30.1	3.0	11.11	8.11	.17	D	150,000
56	16-11-22	30	56	29.6	3.0	11.00	8.00	.19	F	spreader
57	28-11-22	32	52	31.1	3.6	12.09	8.49	.19	F	100,000
58	16-11-22	33	56	32.5	3.2	11.98	8.78	not done	C	spreader
59	23-11-22	35	52	33.9	3.6	12.81	9.21	.19	C	60,000
60	16-11-22	34	56	33.5	3.2	12.23	9.03	not done	D	spreader
61	23-11-22	34	54	33.2	3.6	12.63	9.03	.18	D	40,000
62	16-11-22	34	54	33.2	3.4	12.39	8.99	not done	F	spreader
63	23-11-22	33	52	32.0	3.4	12.09	8.69	.18	C	300,000
64	21-11-22	34	58	33.7	3.0	12.04	9.04	not done	C	350,000
65	27-11-22	35	46	33.6	3.6	12.73	9.13	.21	C	30,000
66	21-11-22	34	59	33.9	3.0	12.09	9.09	not done	C	200,000
67	27-11-22	35	46	33.6	3.2	12.25	9.05	.19	C	20,000
68	28-11-22	34	52	33.0	4.8	14.03	9.23	not done	F	100,000
69	30-11-22	34	52	33.0	4.0	13.06	9.06	"	C	100,000
70	28-11-22	32	56	31.5	3.8	12.45	8.65	"	C	80,000
71	30-11-22	35	52	33.9	4.8	14.26	9.46	"	C	20,000
72	28-11-22	35	52	33.9	5.2	14.74	9.54	"	D	50,000
73	30-11-22	35	54	34.2	3.8	13.13	9.33	"	C	100,000
74	28-11-22	35	52	33.9	4.0	13.29	9.29	"	D	200,000
75	29-11-22	30	52	29.1	6.0	14.50	8.50	"	D	3,000,000
75a	30-11-22	36	52	34.9	3.8	13.31	9.51	"	D	70,000
76	28-11-22	32	54	31.3	3.8	12.40	8.60	"	F	50,000
77	30-11-22	32	52	31.1	4.2	12.83	8.63	"	D	200,000
78	28-11-22	35	54	34.2	4.6	14.09	9.49	"	C	20,000
79	29-11-22	32	54	31.3	4.0	12.64	6.64	"	D	400,000
80	30-11-22	35	54	34.2	4.0	13.37	9.37	"	F	20,000
81	28-11-22	34	54	33.2	4.4	13.60	9.20	"	F	70,000
82	29-11-22	33	54	32.3	3.2	11.93	8.73	"	F	5,000,000
83	29-11-22	30	55	29.4	5.0	13.30	8.30	"	D	200,000

No.	Date	L.R.	Temp.	C.L.R.	Fat.	T.S.	S.N.F.	Acid.	Dirt	Bact. Count
84	30-11-22	35	52	33.9	4.0	13.29	9.29	"	C	400,000
85	21-11-22	32	58	31.7	3.0	11.54	8.54	"	C	250,000
86	27-11-22	33	48	31.8	3.4	12.04	8.64	.16	C	10,000
87	28-11-22	33	54	32.3	3.4	12.09	8.69	not done	F	spreader
88	30-11-22	35	52	33.9	3.8	13.05	9.25	"	C	40,000
89	29-11-22	30	54	29.3	5.4	13.82	8.42	"	D	100,000
90	29-11-22	32	52	31.1	2.6	10.90	8.30	"	F	100,000
91	26-10-22	33	50	32.0	4.0	12.81	8.81	.23	C	spreader
92	9-11-22	33	54	32.3	4.0	12.89	8.89	.16	F	not counted
93	26-10-22	33	50	32.0	3.4	12.09	8.69	.18	C	spreader
94	9-11-22	34	54	33.2	3.0	11.91	8.91	.19	F	not counted
95	26-10-22	33	50	32.0	3.2	11.85	8.65	.20	F	100,000
96	9-11-22	30	54	29.3	5.8	14.31	8.51	.16	D	not counted
97	26-10-22	31	52	30.1	3.0	11.13	8.13	.16	D	8,000,000
98	16-11-22	31	54	30.3	2.8	10.94	8.14	not done	D	200,000
99	26-10-22	33	52	32.0	3.2	11.85	8.65	.21	F	4,000,000
100	16-11-22	35	56	34.5	3.0	12.24	9.24	not done	F	100,000
101	26-10-22	33	52	32.0	4.0	12.81	8.81	.18	F	1,000,000
102	9-11-22	33	54	32.3	3.4	12.17	8.77	.18	D	not counted
103	26-10-22	34	52	33.0	2.6	11.38	8.78	.21	F	200,000
104	16-11-22	33	56	32.5	3.6	12.46	8.86	not done	F	spreader
105	26-10-22	32	52	31.1	3.0	11.39	8.39	.19	D	150,000
106	9-11-22	33	56	32.5	3.8	12.70	8.90	.19	D	not counted
107	26-10-22	33	52	32.0	4.2	13.05	8.85	.20	F	spreader
108	16-11-22	35	54	34.2	3.6	12.89	9.29	not done	F	spreader
109	26-10-22	34	52	33.0	3.0	11.86	8.86	.20	F	30,000
110	9-11-22	35	54	34.2	3.4	12.65	9.25	.22	D	not counted
111	16-11-22	35	54	34.2	4.0	13.37	9.37	not done	F	100,000
112	26-10-22	33	52	32.0	3.3	11.97	8.67	.20	F	30,000
113	16-11-22	33	54	32.3	3.2	11.93	8.73	not done	D	spreader
114	26-10-22	34	52	33.0	3.4	12.34	8.94	.19	F	1,000,000
115	9-11-22	34	54	33.2	4.0	13.11	9.11	.18	F	not counted
116	26-10-22	34	52	33.0	3.6	12.58	8.98	.22	C	1,000,000
117	9-11-22	32	56	31.5	4.2	12.93	8.73	.19	F	not counted
118	26-10-22	35	52	33.9	4.0	13.29	9.29	.19	F	spreader
119	9-11-22	34	54	33.2	2.8	11.67	8.87	.16	D	not counted
120	26-10-22	34	52	33.0	3.5	12.46	8.96	.20	F	3,500,000
121	9-11-22	34	54	33.2	3.4	12.39	8.99	.18	D	not counted
122	26-10-22	32	52	31.1	4.0	12.59	8.59	.19	F	5,000,000
123	9-11-22	32	56	31.5	3.0	11.49	8.49	.15	F	not counted
124	26-10-22	33	52	32.0	2.7	11.24	8.54	.20	F	4,500,000
125	9-11-22	33	54	32.3	3.0	11.69	8.69	.18	F	not counted
126	16-11-22	32	56	31.5	2.8	11.24	8.44	not done	C	spreader
127	26-10-22	34	52	33.0	3.4	12.34	8.94	.23	C	7,000,000
128	9-11-22	35	54	34.2	3.6	12.89	9.29	.21	F	not counted
129	26-10-22	32	52	31.1	...	not done	..	.20	F	spreader
130	9-11-22	32	54	31.3	3.2	11.68	8.48	.18	D	not counted
131	26-10-22	33	52	32.0	4.0	12.81	8.81	.19	F	5,000,000
132	9-11-22	33	56	32.5	3.6	12.46	8.86	.18	F	not counted
133	2-11-22	30	60	30.0	2.5	10.50	8.00	.17	F	600,000
134	16-11-22	34	54	33.2	3.0	11.91	8.91	not done	F	200,000
135	27-11-22	30	48	28.8	3.6	11.48	7.68	.17	F	300,000
136	28-11-22	32	56	31.5	3.0	11.49	8.49	not done	F	300,000
137	2-11-22	31	60	31.0	2.6	10.87	8.27	.19	D	spreader
138	16-11-22	31	54	30.3	2.8	10.94	8.14	not done	D	5,000,000
139	27-11-22	35	48	33.8	3.2	12.30	9.10	.20	D	spreader
140	28-11-22	33	52	32.0	3.8	12.57	8.77	.19	D	200,000
141	2-11-22	32	60	32.0	3.2	11.85	8.65	.21	C	spreader
142	16-11-22	32	56	31.5	3.6	12.21	8.61	not done	F	spreader
143	27-11-22	32	46	30.6	3.2	11.50	8.30	.16	C	10,000
144	16-11-22	32	54	31.3	3.8	12.40	8.60	not done	F	3,500,000
145	28-11-22	33	52	32.0	5.0	14.02	9.02	"	D	200,000
146	16-11-22	31	54	30.3	3.6	11.91	8.31	"	F	spreader
147	16-11-22	34	54	33.2	3.4	12.39	8.99	"	D	spreader
148	28-11-22	29	56	28.6	3.2	10.99	7.79	"	D	400,000
149	30-11-22	26	54	25.4	2.6	9.47	6.87	"	D	100,000
150	31-10-22	30	56	29.6	2.8	10.76	7.96	.20	F	250,000
151	2-11-22	30	60	30.0	3.2	11.35	8.15	.20	F	80,000
152	21-11-22	32	60	32.0	3.0	11.61	8.61	not done	F	3,000,000
153	23-11-22	33	52	32.0	3.6	12.33	8.73	.19	F	30,000

Summary.

Standards.—The standard for butter-fat under the new by-law is 3.25% and total solids 11.75%. The provincial standard for butter-fat is 3.5%. There are no federal or provincial bacterial standards at present for raw or pasteurized milk but only for certified milk, which is not applicable to the present supply. Park and Williams, in discussing raw milk, state as follows:—"With only moderate cleanliness such as can be employed by anyone without adding appreciably to his expense, namely, clean pails, with small openings, straining cloths, cans or bottles, and hands, a clean place for milking, and a decent condition of the cow's udder and belly, milk when first drawn will not average in hot weather over 30,000, and in cold weather not over 25,000 bacteria per cubic centimetre. Such milk, if cooled and kept at 50°F., will not contain at the end of 24 hours over 100,000 bacteria per cubic centimetre. If kept at 40°F., the number of bacteria will not be over 100,000 per cubic centimetre after forty-eight hours."

Following is a summary of samples deficient in fat and total solids. The samples are also summarized with regard to dirt and bacterial count.

Fat.—Taking 3.25% fat as the standard, there were 55 samples under that percentage.

Total Solids.—There were 33 samples below 11.75%.

Dirt.—Out of 156 samples, 35 graded clean, 66 fair, and 55 dirty.

Bacterial Count per Cubic Centimetre of Milk.—Below 100,000, 57 samples; between 100,000 and 1,000,000, 41 samples; over 1,000,000, 18 samples; not counted for various reasons, 40 samples.

The following samples were outstanding in their deficiency:—Nos. 4 and 119 give evidence of skimming. Nos. 54, 56, 90, 98, and 133 give typical results of milk to which water has been added.

The results of this examination would indicate that benefits to the milk consumers could be derived from a regular system of inspection which would also safeguard the vendor who is providing a good, clean, wholesome milk.

H. O. Howitt.

HAMILTON.

To His Worship the Mayor, the Chairman and Members of the Board of Health for the City of Hamilton.

Gentlemen:

I have the honour of submitting my report for the year ending October 31st, 1922.

The report, as in former years, includes vital statistics; details relating to communicable diseases; reports of the various divisions of the health department; particulars relating to the work accomplished in connection with clinics, special reports, and other matters bearing on health conditions in the city.

The housing of the Department in the former public library building, now known as the Public Health Building, which has been suitably and handsomely equipped for our purposes, has marked an epoch in public health work in Hamilton.

The inception and development of features of modern health work, hitherto practically untouched owing to our wholly inadequate quarters in the city hall, and which for years it has been the ambition of your health officer to inaugurate, have, in a large measure, been realized. These features include, among others, a dental service which can now be said to be something more than an excuse for an adequate service; a first class dispensary service for the diagnosis of tuberculosis; a flourishing baby clinic; two clinics weekly for the Schick test and the administration of toxin-antotoxin as a prevention against diphtheria; a thoroughly up-to-date laboratory for the examination (including bacteriological) and testing of milk (our routine laboratory examinations such as diphtheria cultures, Wassermanns, g. c. smears, Widal tests, water examinations, to the number of thousands, being conducted at the excellent laboratory for pathology and public health, one half of the expense of which is defrayed by the Board of Health); and, lastly, a splendid suite of offices for each division of the staff, including necessary and well appointed private offices for the heads of the same, with a large and commodious general office where citizens may have their various needs attended to, with a facility such as would be required by an up-to-date business concern.

Population.—The estimated population of Hamilton for the current year was 120,235, an increase of 2,002 over 1921, when it was estimated at 118,233.

Birth Rate.—The number of living births registered during the year, which means that stillbirths and those occurring prematurely are excluded, totalled 3,099, and are equal to a birth rate of 25.8 per thousand of population. Actually 255 less births occurred than in 1921, in which year the birth rate was 28.2 per thousand. The births registered in each month are recorded in a table at the end of this report.

Deaths.—The total number of deaths from all causes registered in the city was 1,384; premature and stillbirths, however, are deducted from this total in calculating the annual death rate, the number of such registered being 196. This number reduces the total to 1,188, and shows a corrected death rate of 9.8 per thousand of population. I had occasion to congratulate Hamilton last year on its then lowest recorded death rate, which was 10.6. The city is indeed to be congratulated this year, for the low record of 1921 has been reduced by nearly one per thousand.

Vital statistics, to be of any value whatever to the average reader of such figures, must be interpreted with intelligence, and with the authority of study

and acquaintance with their significance; indeed this important branch of public health knowledge requires a fair education in mathematics and some analytical ability in order to be able to properly unravel the meaning of mortality tables; for instance, it would be manifestly unfair to compare the annual death rate of a large industrial city with that of a recognized pleasure or health resort, or even of a country town where the inhabitants may be largely composed of those living on a competence and able to take life leisurely and contentedly. In the latter instance the inhabitants are not exposed to the dangers and privations of dust, fume and hazardous occupations; to accidents and fatality, and other numerous causes of morbidity and mortality to which the former are ever prone. Similarly it is likewise hardly consistent to compare the death rate of a city of a million, where land values are high and living areas congested, with a city of one hundred thousand population, where the objectionable features of modern civilization are usually in their incipiency. Death rates in newly settled sections, such as the cities of the western prairies for example, should be lower than in cities where settlement is a matter of centuries, as the former attract the young and energetic of high grade vigour and vitality, whereas in the latter, the aged and infirm, the delicate in health and physically handicapped linger and are attracted to surroundings with which they are familiar, and which afford the least discomfort to the routine of their existence. Then, again, during war, the young and physically fit, amongst which class the death rate is extremely low under normal conditions, are taken away, leaving the children, the aged and infirm, among whom, particularly the latter, the death rate is naturally much higher. At such times the death rates of cities soar, but during periods of peace, decline.

The above are only a few of the factors to be taken into account in the presentation of vital statistics to the public.

Hamilton is a typically industrial city, largely composed of persons who own their own homes and intend to pass their existence in their native surroundings. The low death rate recorded for the year, and the figures submitted for your consideration, reflect favourably on the public health work accomplished during the past year.

A reduction in the total deaths in the following group diseases, may be noted more particularly as contributing materially to the favourable decrease in our death rate:—

(*a*) The group of general diseases, including among others, infectious diseases; to the infectious diseases are to be ascribed 116 deaths, as compared with 152 for 1921, and 271 for 1920.

(*b*) The group of diseases of the cardio vascular system, in which group there were 143 deaths, as compared with 183 in 1921, and 217 in 1920.

(*c*) The group of respiratory diseases, including the pneumonias, in which group 141 deaths were classified, as compared with 195 in 1921 and 208 in 1920.

(*d*) The group of diseases which are responsible for deaths in babies under one year of age. There were 180 deaths in this group, as compared with 259 in 1921, and 275 in 1920.

Infantile Mortality Rate.—If Hamilton is to be congratulated upon its low general death rate, what may be said of its infant mortality rate?

Excluding premature and stillbirths, 180 deaths occurred amongst infants under one year of age. This number is equivalent to an infantile mortality rate of 58 per thousand of living births.

Last year we pointed with satisfaction to an infant mortality rate of only 77.6 per thousand, which was then the lowest on record; the next lowest being 81.6 in 1919, which could compare favourably with 1905, when the rate was 144.7.

It will be observed that the rate for 1922 is only slightly above one-third of the rate for 1905. These figures, and the percentages here given, literally translated, mean that if the infantile death rate of 1921 had prevailed in 1922, 240 babies under one year of age would have died, rather than 180; or 60 more babies, notwithstanding the suffering, solicitude and care on their behalf by the mothers, would have perished; had the rate of 1904 and 1905, the initial year of my incumbency as M.O.H., been maintained, there would have been a loss to this municipality of 448 infants, or 268 deaths in excess of the actual number occurring.

This low infantile mortality rate is, in my opinion, one of the most gratifying features in the statistics I am able to submit, and is an evidence that the labour and time spent in public health work, particularly as relating to child welfare, is not being spent in vain.

Through the various activities of the department, especially by the agency of our nurses, mothers are being taught to attend to their children along hygenic lines, both in regard to feeding and nursing, as well as in providing the most suitable surroundings in the home.

This is in large measure the work for which the health department exists. If we are able to save and conserve the lives of our children, we have achieved one of our great objectives.

The large number of premature and stillbirths, however, is a feature in this year's statistics demanding more than a passing reference.

The stillbirths totalled 128, and 68 were prematurely born, making a total of 196.

This number is consistent with the records of previous years; last year 44 premature and 168 stillbirths were registered, making a total of 212.

Many of these births are the result of a lack of knowledge on the part of the mother during the child-bearing period, or some other prenatal condition which might have been avoided if proper care and help had been afforded at the opportune time.

The comparative table, recording deaths at all ages, is deserving of close attention.

It will be noted that in 1921, 126 children died between 1 and 10 years of age; this number was reduced in 1922 to 99.

The work of the Health Department is organized in the best interests of the public.

The reports of the various divisions contained in this report, is an evidence in support of this statement.

The health of the community is the first and final consideration of the department; and if the general death rate is showing a downward tendency from year to year, and if the infant mortality rate is lower than ever before, and if the mortality from communicable diseases continues to decrease, it is safe to assert that the improvement in health conditions throughout the city may be traced to the results following improved knowledge in health matters and the correct application of that knowledge.

It is hoped that as the general public become better acquainted with the principles involved in preventing the spread of communicable diseases, they will at all times conscientiously apply those principles, the number of cases will be reduced proportionately.

All divisions of the Health Department have contributed to the improved health conditions in Hamilton. The efforts of the nursing staff in following up communicable diseases, tracing contacts and enforcing quarantine and isolation,

have been unremitting. The inspectors of the quarantine and isolation division are also to be commended on the efficiency of their work along the same lines. The work of the nurses engaged in child and maternal welfare has been productive of good results and must be considered a factor in the improved health of the community. The efforts of the food and dairy division, in watching and guarding our food supplies, to insure the purity and safety of our foods, especially our milk, against contamination and unwholesomeness, have also been successful. The sanitary inspectors have contributed to the general health conditions as obtaining in the city; a study of their report will show that many conditions that would militate against the health of the community have been removed during the year as a result of their efforts. Industrial hygiene has received considerable attention. Factories and workshops have been inspected, and many conditions prejudicial to the health of the workers have been improved.

The record of a special survey of housing conditions in Hamilton is incorporated in this report. The actual survey was commenced early in 1921 and completed in 1922. The report is self evident, and contains accurate and useful information as to the housing conditions which your Health Officer was desirous of having at hand.

Health Centre.

The Health Centre for Hamilton was opened in the building hitherto known as the old library building, Main Street West, in the summer of 1921, when the executive of the Health Department was transferred to these very commodious and well-equipped offices from the limited office space available at the city hall.

It is intended to briefly outline the work accomplished at the clinics, so that the general public may be able to appreciate the service which is being rendered for their benefit.

The Tuberculosis or T.B. Clinic is conducted in the front offices of the basement, under the able administration and direct supervision of Dr. J. H. Holbrook of the Mountain Sanatorium, assisted by Dr. C. R. L. Morgan and other Sanatorium medical practitioners.

Four clinics are held every week, with Miss Mason, a qualified nurse, always in attendance; adult clinics are held on Monday, Wednesday and Friday afternoons; on Saturday mornings a school children's clinic is held, under the special direction of Dr. Morgan. All these clinics are well attended.

Tuberculosis in all its stages, from the incipient to the advanced, is dealt with at the clinics.

It is here the patients receive instructions as to the care to be exercised, so as not to be a source of danger from infection to others.

Sputum bottles and handkerchiefs are disbursed; literature dealing with tuberculosis is given to patients; expectorants and medicine are dispensed to those who may require them.

The advice advanced to patients of all stages is along the lines of securing an abundance of fresh air, good and suitable foods, keeping the home well ventilated, dry and clean.

If the patients follow out to the letter the instructions given at the clinic, every hope for a complete recovery is afforded.

If it is found that any patient is not responding to treatment, such patient is invariably sent to the sanatorium.

Very special care is given to children; these are frequently kept under close observation, where glands and bronchial infections are involved.

The visiting nurse dealing with tuberculosis is ably assisted by other public

health nurses, doctors and other friends in noting any children who are pale, of underweight, emaciated, or who in any way may be suspected of even a remote possibility of being infected with tuberculosis, and advising them to attend the children's clinic.

While some of these children are positive cases, others of course prove to be negative.

All, however, are cared for and frequently benefit in no small degree from their attendance at the clinics.

It is worthy of note that material help is given in many instances for adults, as well as children. Milk tickets are supplied by the Hamilton Junior Health League, thus making it possible for any person, although in indigent circumstances, to obtain this necessary nourishment.

There is also a fund available for poor patients who may be in need of eggs, fruit, and other dainties; this is known as the Miss Doolittle fund. It might be mentioned here that Miss Doolittle was a sufferer from tuberculosis, and in her will she left a sum of money, the interest of which was to be used in the purchase of dainties for poor T.B. patients.

In conclusion it should be stated that some of the patients attending the clinics leave the city and omit to advise the nurse as to their new address. It is possible that such persons go to some other district, neglect proper treatment, and become a source of danger to persons in their new surroundings.

The Dental Clinic.

This clinic is held in addition to the two other dental clinics, which have been established under the Health Department for several years, at the King George and Caroline Street schools.

The Health Centre clinic is under the care of two qualified dentists, Dr. J. L. Stewart and Dr. J. E. Dores, in addition to a trained and qualified nurse, Miss E. M. Breay. Dr. E. B. Blaine has generously given his services gratuitously, once a week, as anaesthetist.

This clinic was opened with the object of relieving the pressure on the two previously established clinics, and to reach such cases as could not be conveniently treated at the schools.

This same clinic, however, has justified its existence a thousandfold, in the immense amount of work which has been accomplished there during the past year.

The clinic is conducted in the front part of the building; is equipped with the most modern and up-to-date appliances available, and is very accessible to patients attending the other clinics, where attention to teeth is frequently advised.

In connection with this clinic is a well-equipped laboratory; but the steady stream of children, the parents of whom are wholly unable to provide for their needed dental attention, has precluded the possibility of undertaking plate work up to the present time. Treatments at this clinic during the first year of its existence totalled 5,675.

Baby Welfare Clinic.

The Baby Welfare clinic conducted at the Health Centre is marked down as a great success; and the primary object of its establishment is the preservation of infant life.

The clinic is under the voluntary direction of Dr. O. A. Cannon and Dr. K. E. Cooke, assisted by Nurse A. Boyd and Nurse C. Harley.

It is only intended to very briefly outline the work accomplished at this clinic.

The clinic is held every Tuesday afternoon, and it is an inspiring sight to note the large numbers of baby carriages lined up inside and outside of the Public Health building, as an evidence of the large number of mothers who are availing themselves of the advice and expert counsel possible, by bringing their tender offspring to be weighed and to obtain evidence of the progress being made by them.

The trend of thought in connection with this clinic is, that not only must every care be exercised to preserve the life of the infant, but it must be given every chance of growing into a healthy and intelligent being. This is the work and reason for existence of baby welfare, and with which must be associated prenatal clinics.

It may be taken for granted that every child brought into the world has a right to be well born.

This clinic has already met with pronounced success, in its being able to be a centre from which such knowledge and information can be imparted to expectant mothers as shall be of service at the important period.

Expectant mothers have also been directed as to the proper care of their future offspring.

There is, however, an urgent need for the extension of this very important branch of public health work.

In addition to the infants brought to the clinic for advice and direction, a large number of mothers bring their babies for the sole purpose of having them weighed; this service is rendered with the greatest of pleasure by the nurses in attendance, who furnish each of the mothers with a card, on which the progress of the baby as to weight is duly recorded.

The problem of infant mortality and its solution has long been recognized as one of the most serious of modern life.

That is why we have our maternal and child welfare clinics, and aim to educate the mother in some of the most simple laws of hygiene, as a guide for her welfare during the child-bearing period.

However, these clinics are not in any way intended to interfere with the duties and responsibilities of the family physician, but rather to co-operate with him in his efforts for the prevention of disease in mother and infant.

Every expectant mother has a right to receive the best care available to make the bearing of children safe; every unborn child has a right to be born with a healthy body and a subsequent normal growth and development.

Therefore, it is the duty of those who know the facts to apply them in every way possible, in an endeavour to solve this great problem, as it is presented to us in this city.

Schick Test and Immunization against Diphtheria.

Diphtheria has, from time immemorial, been regarded as one of the most dreaded diseases that could fall upon our children; not only is it dangerous to life, but its after-effects upon patients who do not succumb to the disease are frequently very serious, causing damage to the body and generally impaired health.

The discovery and application of antitoxin in recent years has, however, materially reduced the mortality rate of this disease.

With the object of further reducing the ravages of diphtheria, a clinic was opened on January 1st, 1922, at the Health Centre, for the application of the Schick test, and the administration of the toxin-antitoxin mixture. The clinics are held on Monday and Thursday afternoons at 4 o'clock, and, considering the

fact that the public has had very little preparatory information on this subject, have been a marked success from an educational viewpoint.

I might mention here that this clinic is under the direction of Dr. W. J. Deadman, city bacteriologist, assisted by Drs. J. C. MacGregor, T. L. Eaton and G. R. D. Farmer, all of whom have given their time and services as a labour of love.

Through the courtesy of the Board of Education and the School Medical Officer, permission has been obtained for the extension of this work among the children in the public schools, and to utilize the schools as a centre for attracting, particularly children of the pre-school age, to receive the benefit of this great discovery.

Thousands of circulars, outlining in simple language the meaning of the process, by which protection against diphtheria is brought about, and the results to be hoped for, have already been distributed.

Communicable Diseases.

Diphtheria.

Diphtheria was prevalent in every month throughout the year, and outnumbered any disease notified.

It will be noted in the table of communicable diseases, that 747 cases were notified, the greatest number in any month being 150 in November, and the least number being 18 in the month of July.

Thirty-two deaths are referred to diphtheria.

The work undertaken to reduce the incidence of this disease is recorded in the report on the clinics, included in this report.

The total number of cases for 1921 was 608, with 41 deaths.

Scarlet Fever.

Two hundred and ten cases of scarlet fever were reported; four deaths resulted from this disease, as against 245 cases with three deaths for 1921.

Typhoid Fever.

A practically negligible number of cases of typhoid fever have been notified during the year, the total number being twenty-one, of which number, according to reliable information obtained by our staff, nine were definitely traced to infection at locations outside of the city; only one death is recorded from this disease.

Typhoid has its origin in water, milk and other foods, or by contact with either an actual case or a carrier. The amount of typhoid in our city would indicate that our water and milk supplies have been satisfactory, and that persons in the community harbouring virulent typhoid baccilli in their body excretions must be rare indeed. I wish just here to emphasize the fact that evidences of pollution of the city water supply, as shown by the presence of gas in McConkey's medium using 10 c.c. and 1 c.c. quantities of water, and by the presence of b. coli, have been more frequent than in former years. Our monthly records show the pollutions referred to as follows:—During November, 1921, once; February, 1922, on three occasions; in March on three occasions; in June on three occasions; July, one; September, five; October on three occasions.

I have, therefore, no hesitation in supporting the recommendation of the City Engineer, when submitting his annual budgets, for the provision of a chlorinating plant, to be used in cases of emergency and when our daily water tests at the laboratory show danger signals.

Influenza.

Six cases of influenza were reported during the year, with one death resulting, as compared with twenty-three cases and seven deaths in 1921.

Chicken-pox.

Chicken-pox was prevalent throughout the year, 530 cases of this disease being notified.

Smallpox.

Only fourteen cases of smallpox were notified during the year; seven of these cases occurred in the month of June.

From the fact that no deaths resulted, it will be understood that the disease was not of a very virulent type.

Every precaution, however, was observed, which would be a factor in confining the disease within the limits as stated.

Measles.

Measles have been fairly insistent throughout the year; 669 cases, with two deaths, have been notified.

The greatest number of cases occurred in the month of June, when 251 cases were reported; in September two cases were notified, three in February, five cases in April, and five in October.

In 1921, 310 cases were notified with one death resulting.

Whooping Cough.

Two hundred and sixty-eight cases of whooping cough were reported, with seven deaths referred to this disease.

In 1921, the number of cases notified was 758, with eighteen deaths.

Anterior Polio-Myelitis.

Epidemic anterior polio-myelitis occasioned anxiety to the department during the summer months.

Cases of this disease were occurring in several other places on the continent, and in the month of June two cases were reported in this city. Early in July other cases followed, and the possibility of the disease becoming epidemic was feared; precautions to avert such a possibility were immediately adopted, and in accordance with printed instructions from the Provincial Board of Health. Medical practitioners were immediately asked to report any suspicious illness which might bear any of the symptoms present in anterior polio-myelitis.

Many of the precautions taken by the department were followed along the lines indicated in the printed instructions of the Provincial Board of Health.

All cases were quarantined; contacts were followed up and kept under observation for two weeks. Gatherings of children at picture shows, picnics, playgrounds and other places were prohibited. The probable origin was carefully inquired into; the inspectors were careful as to the premises and surroundings being kept clean, and the garbage carefully cared for, and other instructions by the Provincial Board of Health carefully observed.

It affords me very great pleasure to report that the Board of Health received the most hearty co-operation of all the public bodies in the city, and all organizations readily complied with the instructions issued by me from time to time, and as conditions required.

The number of cases notified month by month were as follows:—

In June, two cases; July, thirty cases; August, twenty-seven cases; eleven cases in September and four in October, making a total of seventy-four cases, of which seven cases terminated fatally.

Other Diseases.

Further information of an instructive nature will be found in a table at the end of this report, dealing with communicable diseases.

The nurses have been very diligent in attending to impetigo, scabies, pediculosis, and other diseases, and their efforts in eradicating these diseases have been attended with marked success.

Sanitary Inspection of Schools.

A sanitary inspection of all the schools in the city was made during the months of September and October. The schools included twenty-seven public, fifteen separate, and eight private, making a total of fifty schools.

In the course of inspection, information was obtained on the following points:—(1) Grounds, size and suitability. (2) Water supply, as to drinking cups or bubble fountains. (3) Sanitary conveniences, such as closets, sinks, washbasins and urinals; conditions as to cleanliness, suitability and repair. (4) School buildings, as to the number, size and accommodation provided by the class rooms. (5) Interior of the buildings, as to light conditions, situation or position of blackboards, direction of light on the scholars, style of seats, whether fixed or adjustable; condition as to walls and ceilings, cleanliness, and other points concerning health conditions. (6) Heating, lighting and ventilation of the classrooms, and other parts of the premises. (7) Whether the common use of towels would be permitted. (8) If talk on sanitation is given. (9) Number of pupils. (10) Recommendations.

Reports on each of the schools have been prepared, copies of which are being forwarded to the Chief Officer of Health of the Provincial Board of Health; a copy of the reports on public schools is being sent to the Board of Education; a copy of the reports relating to separate schools will be delivered to the Separate School Board, and a copy of the report on each of the private schools will be sent to the principal of such schools.

The inspection of these schools entailed a considerable amount of work, a complete record of which would in itself comprise a voluminous report. Recommendations have been made by me for improvement in several of the schools inspected.

General Remarks.

I would like to emphasize in this report, as I have done on numerous other occasions, the necessity, if a full measure of success in public health work is to be achieved, of a unified service, and the urgent need for centralization, to the utmost extent possible, of all health activities in the official and responsible Health Departments of the Province.

I desire to express, on behalf of the Board of Health and for myself personally, our appreciation of coutresy and consideration manifested at all times by His Worship the Mayor, the Board of Control and the City Council, and for the assistance so generously afforded in the accomplishment of our work.

In concluding this report I wish to personally thank the chairman of the Board of Health, Alderman J. A. McIntosh, Controller Calvin Davis and Alderman R. B. Spera, members of the Board, for the kind and appreciative manner in which they have conducted the business of the Board during the year, and for their many marks of appreciation shown to me, as well as to every member of my staff.

I have no hesitation whatever in stating, that in my many years of experience as the executive officer of the Board, I have never known a Board who have taken

a more sympathetic interest in the work of the Department than the gentlemen whose names I have mentioned, and the gratitude of the public of Hamilton, for the generally satisfactory conditions obtaining in the city from a health point of view, is due to them.

I have the honour to be, gentlemen,

Your obedient servent,

JAMES ROBERTS, M.D.,
Medical Officer of Health.

REPORT ON LABORATORIES.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

In presenting the report of the laboratory, for the year ending October 31st, 1922, I wish again to express my thanks to yourself, and to the chairman and members of the Board of Health, for the support accorded us during the past year. We have tried constantly to increase the efficiency, both as to character and amount of work done, and any degree of success that we may have had, as shown by the attached detailed report, must be credited to the faithful co-operation of the laboratory staff, supported in their efforts by yourself and the Board of Health.

As is shown in the attached statement, this year's work shows an increase of 33 per cent. over last year's work. This is accounted for chiefly by an increased number of Wassermann reactions, diphtheria cultures and milk examinations, all of which are of the utmost importance in public health work. As will be noticed there has been a substantial percentage increase every year for the past five years, and the increase shows every indication of persisting as the profession and the public become more and more familiar with the value of laboratory examinations in infectious diseases. Our hope and aim is to give Hamilton a laboratory service which will be the equal of any on the continent.

All these examinations are highly technical in nature, and require in a technician a great deal of skill, in addition to a great deal of training. We have at present three girl technicians, two of whom have been with us about seventeen months, while the other one has been with us about three months. It takes at least two years to properly train a technician, so that the accomplishment of this large amount of work has borne rather heavily upon the director and the chief technician, who, in addition to getting the work done, have had to devote a great deal of time to the training of these technicians. Our stenographer left us two months ago to take a position in a doctor's office, and it has been necessary to break in a new one, and as the position is also somewhat technical in nature, this has entailed added work. With the constantly increasing demands, it will be necessary to keep the staff of technicians up to requirements, in order to keep up the quality as well as the quantity of the work, and it is also highly desirable that these technicians, once they are trained, be paid fair and adequate salaries, in order that the laboratory and the city may reap some benefit from the time and labour expended in training them. It may also be necessary to ask for another technician in the new year, to cope with the work.

This year saw the installation of the Schick clinic, which up to the present has been fairly successful. We have performed Schick tests on 325 children. Approximately 30 per cent. of these gave positive reactions and were accordingly

immunized with the toxin-antitoxin mixture. So far only one of these immunized cases has developed diphtheria, and that under circumstances which would make it difficult to avoid infection. The director attended the convention of the American Public Association in Cleveland, and heard Dr. Park of New York city discuss the application of this means of preventing diphtheria, and its value would seem to be very well established. It would indeed be worth while to try to extend the scope of this work, as it is very difficult to draw conclusions from such a limited number of cases.

The daily bacteriological examination of the city water shows that occasionally it is found to contain bacillus coli in quantities of 1 c.c. or less. This is an evidence of contamination, which may be accounted for by the weather condition, and also the increasing summer population around the shores of the lake in the vicinity of the intake. It would seem advisable to provide means of chlorination for dealing with the condition when it arises.

In conclusion, I would like to state that the cost to the Board of Health of the laboratory will not exceed $5,500.00, which is an extremely moderate figure, in view of the amount of work accomplished.

Respectfully submitted,

WM. J. DEADMAN, B.A., M.B.,
Director.

CITY LABORATORIES REPORT FOR YEAR ENDING OCTOBER 31ST, 1922.

	Stools for Typhoid			Urine for Typhoid		Sputa for B. Tuberculosis			Diphtheria Cultures				Milk	Water
	X	–	Total	X	Total	X	–	Total	D X	R X	–	Total	Total	Total
November..1921	1	6	7	0	5	8	42	50	177	323	1485	1985	17	19
December..1921	0	3	3	0	4	6	49	55	175	396	1596	2167	4	19
January....1922	0	3	3	0	3	5	60	65	115	230	1263	1608	11	17
February...1922	0	2	2	0	0	1	70	71	84	242	1008	1334	14	18
March.....1922	0	1	1	0	0	9	109	118	79	119	1143	1341	22	35
April.....1922	0	0	0	0	0	6	65	71	50	132	1006	1188	22	18
May.....1922	0	16	16	0	15	8	87	95	54	99	759	912	31	31
June.....1922	0	4	4	0	0	5	107	112	58	80	646	784	22	43
July.....1922	0	1	1	0	0	7	92	99	27	17	410	454	32	29
August.....1922	0	2	2	0	0	13	45	58	28	26	325	379	63	14
September..1922	0	1	1	0	1	8	57	65	30	37	439	506	101	24
October....1922	0	6	6	0	5	17	64	81	117	57	1034	1208	28	20
	1	45		0		93	847		994	1758	11114			
Total.....			46		33			940				13866	367	287

CITY LABORATORIES' REPORT FOR YEAR ENDING OCTOBER 31ST, 1922.

	Wassermann Reaction				Spirochaete Examinations			Gonococcus Films			Widal Reactions		
	St'g. xxx	Weak X	Neg	Total	X	–	Total	X	–	Total	X	–	Total
November...1921	31	15	198	244	0	0	0	20	108	128	4	4	8
December...1921	28	16	199	243	0	1	1	13	92	105	4	4	8
January.....1922	39	10	244	293	2	1	3	13	129	142	0	7	7
February....1922	55	10	219	284	1	0	1	9	88	97	1	5	6
March.....1922	66	20	306	392	0	0	0	11	150	161	3	7	10
April.....1922	47	23	243	313	0	0	0	11	101	112	0	3	3
May.....1922	58	17	231	306	0	0	0	19	135	154	3	7	10
June.....1922	45	33	240	318	0	0	0	24	87	111	2	3	5
July.....1922	52	22	223	297	0	1	1	14	100	114	1	4	5
August.....1922	45	12	229	286	0	0	0	24	116	140	1	12	13
September...1922	58	20	267	345	0	1	1	21	145	166	1	11	12
October.....1922	47	14	280	341	0	2	2	13	113	126	4	17	21
	571	212	2879		3	6		192	1364		24	84	
Total.....				3662			9			1556			108

CITY LABORATORIES' REPORT.

BOARD OF HEALTH WORK FOR THE YEAR ENDING OCTOBER 31ST, 1922.

		Total
1. Wassermann Reactions		3,662
Strongly Positive	571	
Weakly Positive	212	
Negative	2,879	
2. Spirochaete Examinations		9
Positive	3	
Negative	6	
3. Gonococcus Films		1,556
Positive	192	
Negative	1,364	
4. Widal Reactions		108
Positive	24	
Negative	84	
5. Faeces for Typhoid		46
Positive	1	
Negative	45	
6. Urine for Typhoid		33
Negative	33	
7. Sputum for Tuberculosis		940
Positive	93	
Negative	847	
8. Diphtheria Cultures		13,866
Positive (Release)	1,758	
Positive (Diagnosis)	994	
Negative	11,114	
9. Milk Examinations		367
10. Water Examinations		87
Total Examinations		20,874

BOARD OF HEALTH LABORATORY WORK.

COMPARATIVE TABLE FOR SIX YEARS.

	1916–1917	1917–1918	1918–1919	1919–1920	1920–1921	1921–1922
Wassermann Reactions	0	814	1,037	1,599	2,762	3,662
Spirochaete Examinations	0	0	10	15	6	9
Gonococcus Films	0	795	825	1,099	1,677	1,556
Widals	148	148	85	194	204	108
Stools for Typhoid	0	0	0	20	53	46
Urine for Typhoid	0	0	0	21	43	33
Sputums	481	501	723	659	930	940
Diphtheria Cultures	4,476	2,069	4,849	8,261	9,645	13,866
Milks	0	0	12	147	191	367
Waters	300	300	320	320	293	287
Total	5,405	4,627	7,861	12,335	15,804	20,874
% Increase over previous year	...	...	70%	57%	28%	33%
% Decrease	...	14%	...	...	...	...

Increase over 1916-1917 amounts to 286%.

REPORT OF THE DENTAL CLINICS.

(In King George and Caroline Street Schools, for the year ending October 31st, 1922.)

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

During the past year the requests received for dental treatment in the school clinics have increased greatly, which is indeed a favourable indication of the interest which is being taken in the work of the clinics.

In reviewing the past year's work which has just been completed, with a general survey of all the schools, it is very gratifying to those in charge to find but fifty-six per cent. of the pupils requiring dental treatment. While this may seem a large percentage of defectives, when one considers that our survey two years ago showed over eighty per cent. of the children in need of dental treatment, the improvement is great and proves that our work in the schools and dental clinics has been very much worth while.

During the course of the past year the two clinics, on half time, have given treatment to four thousand children.

This means that another four thousand have been treated by their family dentist as advised during our examination.

Admirable as the increase in the school dental service may be, we must strive to popularize preventive dentistry. Our children may leave school with healthier mouths, but unfortunately they are not coming into the schools with fewer cavities to be filled by the school dentists, as our records show. To overcome this, the public must be educated or our dental facilities increased to care for the children of the pre-school age.

The keywork to "prevention" is "education," and the prejudice and ignorance handed down must be counteracted by education. Parents must be aroused to the realization of the importance of the first teeth, of the six year molars and of all the cardinal points of dental health. It may be suggested, in striving for this objective, that more emphasis be laid on this subject in the normal schools and the training schools for public health nurses.

Wisdom teaches to cure evil at its source. Prevention with children is much better than cure with adults.

Below is submitted a detailed report of the year's work:

Total Treatments	6,542
Total Extractions	4,120
Fillings:—	
Amalgam (Silver)	2,807
Petroid Cement	1,198
Copper Cement	1,571
Enamel (Synthetic)	232
Gutta Percha	2,775
Temporary	232
Silver Nitrate	4,481
Miscellaneous Operations	571
New Cases	3,280
Completed Cases	2,464

Dental Inspection of 18,553 pupils.

INDIVIDUAL STATEMENT OF EACH SCHOOL SURVEYED, 1922.

School	No. Inspected	No. requiring Treatment	% requiring Treatment
Central	476	231	48
King Edward	415	295	71
Allenby	410	240	58
Murray	237	165	65
Cannon	312	163	52
Ryerson	582	302	51
Earl Kitchener	788	440	56
Bennetto	1,010	671	66
Hess	722	491	68
Strathcona	820	520	63
Caroline	350	150	42
Prince of Wales	875	499	55
Gibson	960	602	62
Wentworth	720	401	55
Lloyd George	585	301	51
Queen Mary	945	501	53
Fairfield	450	220	48
King George	945	421	44
Memorial	1,400	600	42
Adelaide Hoodless	965	405	41
Robert Land	1,020	721	70
	14,987	8,339	55%

This report shows a vast reduction in the number of children requiring dental treatment, due, not only to the increased number cared for in the clinics, but also the interest stimulated by the annual survey of the children when a report is sent to each and every parent informing them of any dental defects in their children.

That this advice is acted upon is evident from the continually improved condition found annually upon inspection.

Respectfully submitted,

W. G. MANNING, D.D.S.
H. A. THOMPSON, D.D.S.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

In presenting the first annual report of the Health Centre dental clinic, it will no doubt be gratifying to note the great amount of work which has been accomplished here during the first year. In this connection it might be stated that there was no dental survey of the schools, from which children come to this

clinic, made until October, so that the results of this are scarcely noticeable in this report. When this is taken into consideration it shows that we are getting very good co-operation from parents and all those connected with this work, and their assistance is greatly appreciated.

This clinic, which is situated at the Health Centre, is open every school day from 9 to 12 a.m. and from 1.30 to 5 p.m.; also Saturday morning from 9 to 12 a.m. The children who come here for treatment are from the fourteen separate schools situated throughout the city, and four public schools which are in this vicinity. In addition to children of pre-school age, deserving adults are looked after.

The inspection which was recently made of the 5,655 children under our jurisdiction, showed that there were 4,766, or 83 per cent., requiring treatment. Since the parents' notification cards have been sent out, there have been a great number apply for treatment, and the result of this should be very noticeable later on. The parents are taking a greater interest in the children's teeth, and indirectly in the children's health, as there is no doubt that the former has very much to do with the latter, and parents are realizing this more than ever.

Below please find detailed report of the year's work done in this clinic.

Total Treatments	5,675
Total Extractions	2,834
Fillings:—	
Amalgam (Silver)	1,821
Synthetic (Enamel)	325
Copper Cement	2,956
Petroid Cement	90
Gutta Percha	1,322
Root Fillings	240
Silver Nitrate	367
Pulp Removed	79
New Cases	1,889
Completed Cases	1,192
Gas Cases	60

DENTAL SURVEY OF SCHOOLS.

Public Schools	4
Separate Schools	13
Total Number of Children Inspected	5,655
Total Number of Children Requiring Treatment	4,677
Percentage Requiring Treatment	82.706%

Respectfully submitted,

J. E. DORES, D.D.S.
J. L. STEWART, D.D.S.

DIVISION OF FOOD INSPECTION.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

I submit for your consideration the report on food and dairy inspection, for the year ending October 31st, 1922, as follows:

The purpose of milk inspection is to prevent sickness and save human lives; the relation between the milk supply and infant mortality is important; it is claimed that other factors enter into lessening the infant death rate, but the intimate relation between infant diseases such as gastro-intestinal diseases, and the conditions of milk shipped to the city, is universally conceded.

The inspection of milk has been pursued along educational lines; an endeavour to procure a cleaner product, placed in sterile containers and kept at a

temperature of 50 degrees Fahrenheit, has been made. The necessary equipment for heating, washing and sterilizing the utensils, cooling, refrigeration and the handling of milk varies with the amount of milk handled. The failure to frequently use wash water for hands and to supply clean towels while capping bottles has demanded considerable attention.

Instructions to operators of pasteurising plants as to efficient sterilizing of machinery and utensils has helped in reducing the bacterial content of milk.

During 1922, bacteriological examination of milk has shown a marked improvement in bacterial counts. Although a small percentage of samples were at times high, the quality of milk as a whole was far superior to that examined during 1921.

The conditions surrounding the production, care and delivery of milk in Hamilton change from year to year; and its supervision requires continual inspection; much time and patience is required to secure the necessary compliance with the regulations, so as to ensure a milk of the highest standard.

Milk examinations as to butter-fat, amount of sediment, and temperatures of milk during transportation, were an important factor in the year's work, as the summary of inspections will show.

During the year a most vigorous inspection of central market, and meat markets throughout the city, has been carried on, for the purpose of making this class of foodstuff absolutely safe for consumption.

The inspection of restaurants and other public eating places shows a marked improvement in the conduct of these. There is a strong desire on the part of owners to do all that is required of them.

Diligent effort was made to enforce the screening of foodstuffs liable to contamination by flies; notices were served on keepers of restaurants, bakeries, fruit stores and business places where foodstuffs were exposed for sale.

Respecting licensing of places where food is sold or handled, we feel that all applications for licenses should be submitted to the Medical Officer of Health; after approval from this department, they should be referred to the police department or license board. It has frequently occurred that a butcher shop, restaurant or other food establishment is approved by the license committee, and opened for business without the knowledge of the food inspectors of the health department.

Pasteurization of Milk.

The pasteurization of milk was first undertaken in Hamilton about 1910. The process for reducing the bacterial count, and eliminating organisms pathogenic for human beings as first adopted, was what is known as the flash system, and was carried out by holding the milk to a temperature of 170 to 180 degrees F. for thirty or sixty seconds. The flash system of pasteurization has been practically abandoned as a sure method of destroying pathogenic bacteria in milk, and has been replaced almost everywhere by the procedure of holding the raw milk to a temperature of from 142 degrees to 145 degrees F. for thirty minutes, thereby destroying effectually all disease producing germs, including the tubercle bacillus. Of more than 8,000 gallons of milk sold daily in Hamilton, only 70 gallons are now unpasteurized. This happy result has been chiefly brought about by the education of our people to the necessity of a safe milk supply.

Recently an attempt has been made (for reasons which need not here be analyzed or dwelt upon) to get imbedded in the minds of the general public, the idea that pasteurization is used solely for preventing the transmission of bovine tuberculosis to children, and that the production of milk from "accredited

herds" and "pasteurization of all milk" are alternatives. Needless to say such attempts are patent to everyone but the unsophisticated. In the early days of milk pasteurization, the storm centre around which the discussion as to its advisability or non-advisability raged, was the reduction of infant mortality by the lessening of digestive disturbances, during the summer months, due principally to dirty milk.

Time will not permit here even a fragmentary discussion of the numerous epidemics of greater or less severity which have been traced to the distribution of milk bearing pathogenic germs. The literature of sanitary science is rich in outbreaks of scarlet fever, typhoid fever, diphtheria and septic sore throat due to carelessness in the production of milk, and faulty, or negligent supervision of its distribution. In the suppression of such outbreaks the pasteurization of milk has been singularly effective. But great as has been the accomplishment in this direction the decrease in the death rate in children under one year of age, from the diarrhoeal diseases of the summer months has been strikingly more evident.

For the considerations above mentioned we warn the public to beware of the attempt to create the impression that pasteurization is a substitute for "accredited herds." On the other hand the substitution of accredited herds for the regrettable frequency of diseased herds throughout the country while a great and burning question from the standpoint of the agriculturist is from the viewpoint of the public health official only to be thought of as auxiliary to pasteurization in bringing about the desired results.

In the opening pages of this report reference has been made by the M.O.H. to the very low infantile mortality rate as existing in Hamilton at the present time, this rate being 58 per thousand of living births as compared with a rate more than double this fifteen years ago. Bearing in mind the excellent educational work carried on by a voluntary organization in baby welfare and remembering that this organization has been able at best to reach not more than 25 per cent. of mothers, and remembering also that the work of the Health Department in this direction has been spasmodic owing to limitations of staff and other obstacles, we are irresistibly drawn to the conclusion that the proper pasteurization of almost our entire milk supply and the efficiency of its general supervision have been prominent factors in bringing about our present infant mortality rate.

The following is a summary of inspections made and notices served by my department:

Total Number of Inspections	26,799
Inspections of Central Market	192
" " butcher shops	487
" " abattoirs	9
" " fruit and vegetable stores	239
" " butter and egg stores	13
" " grocery stores	553
" " ice cream premises	271
" " candy kitchens	191
" " bottling works	19
" " restaurants and lunch rooms	926
" " fish stores	101
" " bake shops	189
" " poultry stores	9
" " sausage factories	3
" " city dairies	633
" " milk depots	290
" " milk wagons	259
" " dairy farms	908
for licenses, milk, butcher, restaurants, etc	260

Number of	licenses refused (various)	86
" "	milk samples tested (chemical)	2,982
" "	milk samples tested (bacterial)	301
" "	milk temperatures taken	613
" "	cream samples tested	31
" "	sediment tests made of milk	2,007
" "	times weighing market products	5
" "	complaints regarding food investigated	80
" "	attendance at police court	2
" "	miscellaneous inspections	741

NOTICES WERE SERVED AS FOLLOWS:

Notices to clean	premises where food is sold or stored	828
" " "	milk wagons	2
" " "	milk depots	15
" " "	milk dairies	40
" " "	dairy cows	4
" "	limewash cow stables	109
" "	build milk houses	35
" "	take out milk licenses	22
" "	remove animals from stables	9
" "	remove manure from stables	3
" "	screen food premises	17
" "	provide proper ice box for milk	4
" "	provide individual sanitary butter tasters	5
" "	cover and protect foodstuffs	162
"	regarding light weight foods	2
" "	marking fruit baskets	29
" "	high bacterial count of milk	5
" "	high temperature of milk	6
" "	low chemical test of milk	106
" "	sediment in milk	100
"	to cover milk cans in transit	6
"	cancelling milk license	1
"	refusing butcher and restaurant licenses	6

SEIZURES.

Number pounds	beef	1,266
" "	pork	100
" "	veal	10
" "	fowl	10
" baskets	fruit	6

I have the honour to be,
Your obedient servant,

C. SHAIN,
Chief Food 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, 1921 to October 31st, 1922.

During the above mentioned period the number of producers who shipped milk to Hamilton varied from 440 to 460; the milk being shipped mostly from within a radius of twenty-five miles.

The number of visits to dairy farms during the year was 2185; some of the farms being visited more frequently, on account of existing conditions which required improvement.

One producer was 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	60
" "	barns built	3
" "	milk houses under construction	2
" "	milk houses repaired	17
" "	stables repaired	8
" "	stables whitewashed	410
" "	inspections for dairy farm license	55
" "	milk licenses refused	1
" "	milk licenses suspended	3
" "	stable tests taken	19

NOTICES WERE SERVED AS FOLLOWS:

To build milk houses	72
To repair milk houses	26
To repair stables	10
To whitewash stables	227
To remove hogs	17
To remove fowl	2
To remove accumulations of manure	10
To clean cattle	92
To discontinue use of milk on account of disease in herd	1
On account of sediment in milk	297
On account of high temperature of milk	254
On account of low test of milk	21

Respectfully submitted,

J. T. ARRELL,

Dairy Farm Inspector.

REPORT OF THE PUBLIC HEALTH NURSES FOR THE YEAR ENDING OCTOBER 31ST, 1922.

To James Roberts, Esq., M.D., Medical Officer of Health, City of Hamilton.

Sir:

I submit the following report on the work of the nursing staff of the Health Department, for the year ending October 31st, 1922.

The personnel of the staff has undergone certain changes during the year; the efficiency of the work, however, has not been impaired on this account, but on the contrary, has been improved.

In order that the best results from the work of a health department nursing staff might be obtained, the work should be divided into different sections, such as communicable diseases, child welfare, dental hygiene, tuberculosis, venereal diseases and social hygiene, general public health work, mental hygiene. An ideal arrangement would be for a nurse, to be in charge of each of such sections. Owing to a limited nursing staff, however, we are unable to organize the work exactly as we would desire, but the staff has been so arranged, that a nurse is specifically detailed to each of the following activities of the health department—social service which includes the control of venereal diseases, dental hygiene, tuberculosis and child welfare.

In connection with child welfare, each nurse of the department is more than interested, as the principle underlying the very existence of public health nurses, is the care of the child and the conservation of its life through every stage, prenatal, infancy, pre-school age, school age, adolescence and even beyond.

Special reports are being submitted in connection with social service, dental hygiene and tuberculosis; so that the statistics immediately following relate to the nurses who attend the other communicable diseases, and general public health work, including child welfare.

The extent and variety of the work accomplished by these nurses may be recorded in the following table:

Occasion for Visits	Number of Visits
In connection with cases of diphtheria	2,731
" " " scarlet fever	565
" " " poliomyelitis	497
" " " typhoid fever	44
" " " whooping cough	413
" " " measles	836
" " " chicken-pox	537
" " " smallpox	36
Other disease, including impetigo, scabies, erysipelas, ringworm, mumps, suspicious throats, pink eye and others	1,382
Dental investigations and other causes of absence from school	173
Visits to the city laboratory	439
In connection with child welfare, inspections of infant nursing homes and maternity nursing homes	2,104
Total number of visits	9,757

Other matters attended to by the general public health nurses:

Number of throat and nasal cultures taken	4,911
Number of school children examined for various causes	4,346
Number of cases referred to clinics	106

The details above submitted are an evidence of the wide field of activity covered by nurses engaged in public health work; these details, however, do not tell the whole story of a nurse's responsibilities.

She is able by her training and experience to give advice to mothers in practically all conditions of life; she not infrequently meets with a wife or mother who fails to make the home as attractive as even limited circumstances would permit. This is the nurse's opportunity to wisely direct in the betterment of the home, and invariably, the advice and counsel so rendered is favourably received, and beneficial results obtained.

The nurse becomes acquainted with the many health and social problems in her particular district, and to a large extent, with the city conditions in general. By the exercise of care, tact and discretion, she is not only able to investigate many of these, but in some instances, do much to effect a remedy.

I have the honour to be, Sir,

Your obedient servant,

ANNIE BOYD,
Superintending Nurse.

REPORT OF VISITING NURSE DEALING WITH TUBERCULOSIS.

To James Roberts, Esq., M.D., Medical Officer of Health.

Sir:

I wish to submit the following report in connection with the downtown dispensary of the Sanatorium, and the chest clinics for the year ending October 31st, 1922.

The Anti-Tuberculosis campaign has been waged as earnestly during the year under consideration, as it has been in other years past.

The home of the dispensary and clinic was removed from the house on Hess Street, to the more commodious and better equipped quarters in the front part of the health centre basement.

Three clinics have been held in each week throughout the year—on Monday, Wednesday and Friday afternoons, at which any person suffering from chest affections of any form, may attend and be examined; and advice given without any charge being made for such services.

In the month of August a new clinic was established.

This clinic was started through the kindness of Dr. C. R. L. Morgan, at which school children could be examined on Saturday mornings.

During the year 1,370 cases have been examined at the general clinic; of this number 586 were new cases—and 784 were re-examinations.

Three hundred and twelve patients attended for advice and for medicine, while 467 patients were supplied with paper handkerchiefs, sputum cups, and educational pamphlets, who are under treatment in their own homes.

The following particulars are submitted relating to our work throughout the year:

Total number of cases receiving attention		3,029
Patients still under supervision		1,058
New patients registered	586	
Re-examinations	784	
Total examinations		1,370
Cases of active pulmonary tuberculosis found		125

The new active cases are as follows:

	Men	Women	Children	Total
Incipient	8	7	39	54
Moderately advanced	17	28	0	45
Far advanced	13	13	0	26
Totals	38	48	39	125

Recommended for sanatorium treatment	96
Suspected cases under observation	110
Nurses visits to homes of patients	1,475
New homes visited	541
Miscellaneous calls	233
Homes at which medical supplies were delivered	467

References of patients to dispensary and clinics were made by the following:

Physicians	188	
School nurses	46	
Public health nurses	62	
By friends or without reference	284	
Other sources	6	
School children examined, aged 16 or under		223
Positive cases reported from the city laboratory		93

The following particulars relating to the nationality of patients attending during the year may be of interest:

Canadian	327
English	112
Scotch	20
Irish	6
American	17
Others (including Russian, Italian and Chinese)	25

OTHER INFORMATION.

Milk, distributed by the Junior Health League, quarts	6,600
Fruit, eggs and delicacies, distributed through the Miss Doolittle fund and other donations to the value of	$107 69
Disbursements for the dispensary	53 18
Receipts—from the Miss Doolittle fund	90 00
Donations	25 00
Cash from sale of thermometers and supplies	21 75
Cash on hand	1 45

I desire to express my sincere thanks to the Junior Health League, and the trustees of the Miss Doolittle fund for the material help afforded during the year.

I have the honour to be, Sir,

Your obedient servant,

NURSE MASON.

REPORT ON SOCIAL SERVICE AND ATTENDANT RESPONSIBILITIES IN CONNECTION WITH THE CONTROL OF VENEREAL DISEASES.

To James Roberts, Esq., M.D.,
Medical Officer of Health.

Sir:

It is with a sense of duty and obligation that I submit my report on social service, principally in connection with the control of venereal diseases, for the year ending October 31st, 1922.

This work was placed under my charge on the first day of June, but the report is a record of the activities of this special branch of public health for the entire year.

The underlying principles involved in the work of a social service nurse were outlined in the report of my predecessor for 1921. It will therefore be unnecessary for me to dilate upon these features in this year's report.

The following constitutes a summary of the work accomplished in connection with the venereal disease clinic at the general hospital during the year.

399 patients reported for treatment during the year. Of these 65 were non V.D., 168 syphilis and 166 gonorrhoea.

Syphilis patients discharged.			
Apparently cured—			
Male	10		
Female	1		
Children	2	Total	13
Transferred for treatment elsewhere—			
Male	34		
Female	19	Total	53
Discharged without permission—			
Male	30		
Female	20		
Child	1	Total	51
Gonorrhoea patients discharged.			
Apparently cured—			
Male	45		
Female	10		
Child	1	Total	56
For treatment elsewhere—			
Male	24		
Female	5		
Child	1	Total	30
Without permission—			
Male	38		
Female	8	Total	46
Total number of patients under treatment, 313.			
For syphilis, 216.			
For gonorrhoea, 97.			
Number of patients pregnant, 9.			

Five of these have been confined, the babies are doing well and apparently healthy. Two of these were illegitimate children. One case was admitted following confinement. There have been several temporary reactions following phenarsenamine treatment. Five cases of jaundice also resulted.

Twenty patients had negative Wassermann periodically during the year.

The above table includes cases, 165 syphilis and 63 gonorrhoea, which were reported during the previous year, and carried over into 1922 for treatment, or had received treatment in 1921.

It is worthy of note in passing, however, to remark that the details of social service work as they are dealt with by the nurse reveal the necessity for a better understanding of the dangers involved, by disregarding those evils which have called the social service branch of the health department into existence.

The necessity for more specific legislation to deal most effectively with this growing evil is frequently met with and the powers and responsibilities of the medical officer of health should be so enlarged, as to make it possible to cope without delay, with those responsible for the spread of venereal diseases.

The nurse is frequently brought face to face with many modern social problems. Young people are thrown together, who have not received those warnings and counsels from their parents, necessary at the threshold of their adolescent life; consequently they are ignorant in many instances of the dangers resulting in violating nature's laws.

Such responsibilities undoubtedly rest upon parents who should wisely instruct their children when approaching manhood and womanhood, rather than incur the risk of their children receiving this information, in a possibly distorted form, from vicious companions.

My contention is that parents should without any reluctance inform their children that certain acts of indiscretion will lead to disease.

In conclusion I desire to deal with difficulties of a very serious nature confronting us.

The first is the lack of any home or kindly interested organization, where illegitimate babies may be sent and tenderly cared for. It is earnestly hoped that some provision will be made for them in the near future.

The next difficulty is the lack of a home for erring boys and girls, and especially those who are mentally deficient. It is also hoped that a home will be provided for such, where they may be voluntarily admitted and afforded an opportunity for making a fresh start in life.

I have the honour to be, Sir.

Your obedient servant,

C. E. Flock,
Social Service Nurse.

Report of the Sanitary Inspectors for the Year Ending October 31st, 1922.

To James Roberts, Esq., M.D.,
Medical Officer of Health.

Sir:

I have the honour of submitting the following report on the work accomplished by the division of sanitary inspection, for the year ending as above.

The work of the sanitary inspectors is recorded each month on a specially prepared form.

The following constitutes a summary of the work performed by the sanitary inspectors for the year, as shown under respective headings:

COMPLAINTS.

Complaints received and attended to	2,417

NOTICES.

Statutory notices served	2,565	
Informal notices	7,117	
Total of notices		9,682

PREMISES INSPECTED.

The following is a description and number of premises inspected:

Dwelling houses	10,012
Tenements and apartment houses or blocks	850
Hotels, lodging, boarding and rooming houses	696
Workshops, factories and offices	636
Restaurants and stores	949
Stables	922
Laundries	512
Second-hand stores and junk yards	102
Yards, sheds, areas, outbuildings and alleyways	12,313
Vacant lots	380
Schools and public buildings	439
Other premises	3,608
Inspections for communicable diseases	2,708
Number of inspections	34,127
Number of re-inspections	7,699
Total number of inspections and re-inspections	41,826

Particulars relating to nuisances or sanitary defects, discovered and removed or abated.

PLUMBING.

Defective or choked drains and sewers	564
Defective sinks, urinals and washbasins	743
Defective soil pipes, waste pipes and other fittings	659
Defective or insufficient ventilation or plumbing	127
Frozen plumbing or water supplies	51
Defective or insufficient eavetroughs and rain water leaders	1,727
Inadequate plumbing	473
New plumbing installed for existing dwellings	725
Total of plumbing defects discovered and remedied	5,069

PARTICULARS RELATING TO SMOKE NUISANCES.

Number of observations taken of chimneys and smoke stacks	631
Number of inspections of boiler rooms, power houses and other premises in relation to smoke nuisances	593
Total of observations and inspections	1,224
Statutory and informal notices served	349

OTHER NUISANCES OR DEFECTS DISCOVERED AND REMEDIED.

Dirty yards, courts, sheds, areas and alleyways	4,678
Dirty walls, ceilings and floors of dwellings and other premises	4,621
Dark or darkened rooms	196
Insufficient ventilation of premises	271
Keeping animals in or near dwellings	701
Lack of proper receptacles for manure, garbage or other waste	1,528
Offensive accumulation of manure and other refuse	1,749
Defective and insanitary cellars or basements	818

Dilapidated and generally insanitary dwellings, or other premises	120
Insanitary conditions in factories, offices and workshops	67
Insanitary conditions in halls and theatres	34
Insanitary conditions in schools or public buildings	14
Cases of overcrowding dealt with	224
Defective chimneys and smoke stacks	190
Defective roofs and structural defects	1,061
Defective gas stoves and fittings	259
Defective furnaces and stoves	148
Nuisances from earth closets and privies	2,734
Miscellaneous defects	976
Total	20,389
Total of all defects discovered and removed or abated during the year	25,458

Drains Tested.

Twenty-two drains or sewers were tested during the year, of which 13, or 70 per cent., of the tests were positive.

A special report is submitted respecting smoke nuisances in the city during the year.

Other important work accomplished by the sanitary inspectors was the completion of a survey of artizans' dwellings a special report is submitted herein.

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, 1922.

To James Roberts, Esq., M.D.,
Medical Officer of Health.

Sir:

I respectfully submit the following report on smoke nuisances, their abatement and prevention, together with information respecting the control of smoke from chimneys, smoke stacks, locomotives, and other sources, as dealt with by the health department during the year ending as above.

Considerable activity was evident by your officials, as recorded in the following table:

Number of observations taken of chimneys, smoke stacks, locomotive engines, stationary boilers and steamships, totalled 631.

Total number of boiler rooms, power houses, fuel supplies, boiler equipment, and other premises or material inspected, in relating to smoke abatement or prevention, is 593.

The total of observations and inspections in the aggregate amounted to 1,224.

The number of statutory or informal notices served was 349.

Many of the observations and inspections were made by the district inspectors.

During the winter of 1921-22 very gratifying results were obtained in relation to smoke prevention, particularly in connection with low pressure boilers, where it was possible to abate the nuisance found existing by simply changing the fuel.

The fuel responsible for at least 90 per cent. of the smoke which fouls the atmosphere of our city, is the American bituminous coal, generally known as American soft coal.

In the early part of the year, little if any difficulty was experienced by the owners of heating plants, and low pressure boilers in general, from being able to discontinue the use of this smoke-evolving American product, and using in place of the same other kinds of coal, which could be burned without objectionable smoke being evolved.

As the year advanced, however, the supply of these better grades of coal appeared to be diminishing, and owners were apparently advised by coal dealers to secure supplies of the bituminous order for the approaching winter. This advice was evidently accepted, for a large number of the owners stored their coal bins with this offensive smoke-evolving fuel, and negatived a considerable amount of the good work already accomplished in smoke abatement throughout the city.

It is regrettable that such a condition was positively forced upon the residents of Hamilton, and that our residents should feel they were dependent upon their supplies of coal from the United States, and that when coal difficulties make their appearance in the States as they so frequently do, the residents of Hamilton and in fact practically the entire Province of Ontario are compelled to suffer on this account.

During the year I undertook the writing of an article dealing with coal supplies of Canada, and headed my article "Canadian Coal for Canadians."

This article was well received by the Hamilton Chamber of Commerce; but I regret to note that "Canadian Coal for Canadians" is still in the background, and every effort appears to be exercised to prevent Canadian coal being brought into this part of Canada, and Hamilton is expected to suffer from the continued vagaries of the coal situation in the States

Many millions of doilars are sent out of the country every year to bring coal into Ontario, while the most excellent coal the world can produce is going begging in our own fair land, because we appear to be lacking in that enterprise which may ensure for us an unlimited and inexhaustible coal supply, obtainable within our own borders. It has been estimated by the Department of Mines that Canada has a sufficient fuel energy stored up for the next fifty thousand years; it would be just as safe to say for one hundred thousand years, for Canadian fuel supplies are only limited by the means available for their transportation. The difficulty in transportation is more imaginary than real, for American coals are transported over long distances in the States, over the lakes, deposited at the lake ports, and then on to Winnipeg and other cities in western Canada, to be sold in competition with coal produced from the magnificent coal fields of Alberta and Saskatchewan.

These are proven facts; yet we are informed the freight rates for Canadian coal to Ontario are prohibitive; exactly so, but the sooner the rates are so adjusted that Canadian coal can compete with the imported product, to the great advantage from every point of view to the Canadian, the better it will be for our city and our province. The two Government owned railways, could handle the situation if impelled to do so. Vast quantities of bituminous coals are mined in Nova Scotia. If this coal were dealt with by a process of coking either before entering the city, or in a plant devoted to that purpose within our borders, the necessity for anthracite coal would be reduced in proportion to the supply of the Nova Scotia article.

It is with pleasure that I am able to report considerable progress having been made with the provision of mechanical or automatic stokers during the year. A large number of plants have been equipped with these devices; high pressure boilers are provided with this equipment as a general rule, but it is

gratifying to note that at least three forms of equipment now being applied to boilers in the city, may, with certain adjustments, be attached to low pressure boilers, as well as those of high pressure.

Very favourable results have been obtained in practically every instance where this work has been accomplished.

It is possible to use ordinary bituminous coal for boilers equipped with these devices, without any smoke being in evidence, except probably during the cleaning of the grates and the necessary re-starting of the fires.

It is to be hoped that all owners of boilers will, during the ensuing year, make such provision either by suitable boiler equipment, or, by ensuring the supply of non-smoke-evolving fuel, that even greater progress in smoke abatement throughout the city may be evidenced than has hitherto obtained.

In several instances oil has been resorted to for fuel; very good results have been attained where this has been done.

Unfortunately many of the oil burners in use are not of the best type.

There appears to be an opening in the market for a good pattern of oil burner for fuel oil, for very few of these existing can be described as perfect; with a liberal supply of fuel oil at a reasonable rate, and a burner that will prove to be a fuel saver, oil as fuel should in the near future be as popular as coal.

It is also within the realms of possibility that gas may be more widely used for heating and manufacturing purposes than is the custom at present.

Some very efficient burners are being manufactured at the present time, and recent experiments and tests with natural and manufactured gas appeared convincing as to the benefits that could be expected from the more general use of gas for heating and manufacturing purposes.

It is also to be expected that electricity will soon be a competitor with all other products for heating and manufacturing.

In the meantime, however, owners and manufacturers are largely dependent on coal as fuel for boilers.

Many improvements have been made to existing plants during the year, by raising the setting, baffling the boilers, and in other ways increasing the efficiency of the boiler, as well as ensuring improved combustion and incidentally lessening the smoke nuisance in evidence.

These improvements have been effected without making radical changes to the boilers, and at relatively small cost.

Further improvement, however, is suggested by increasing the draughts for boilers.

In many of the boilers throughout the city it has been noted that the daughts are inadequate; the boilers in some instances have been rebaffled without the draughts being proportionately increased.

The re-baffling will of course be helpful, but increased volumes of air are required through the fuel beds; more steam per pound of coal used will be the positive result of this suggested improvement, and more perfect combustion assured.

Locomotive Steam Engines.

Considerable improvement has been effected in many of the locomotive engines operating in the city, particularly the T.H. & B. and C.P.R. engines; although smoke conditions at and near the T.H. & B. roundhouse are still far from being considered satisfactory.

The G.T.R. engines are still responsible for many objectionable smoke emissions.

The attention of the officials has been directed to these conditions from time to time, and promises of improvement have been received.

It is to be regretted, however, that many of the G.T.R. locomotives continue to foul the atmosphere with smoke; this is particularly in evidence at the G.T.R. depot and on the tracks along the habour shore.

The remedy for this condition is to be found in electrification.

With the amount of power available in this neighbourhood, and the exceptional facilities for electrification afforded, I would recommend that if it is not intended to electrify the entire system of railways in this province, that the necessary proceedings be instituted which will ensure that all locomotive engines operating in or passing through the City of Hamilton should be operated by electricity.

This would entail the laying of a centre or under rail for all tracks; and if electrification be ordered for Hamilton only, the engines could be changed at points outside the city limits, the loss of time on each train need not exceed one and one-half minutes for changing engines.

The City of Hamilton has just occasion for being proud of its healthy condition; this condition would be even improved if the fouling of its atmosphere by emission of smoke and gases from locomotive engines were prevented.

This improvement can be effected by the electrification of railways in the city limits.

I have the honour to be, Sir,

Your obedient servant,

W. F. THORNLEY,

Chief Sanitary Inspector and Smoke Inspector.

REPORT OF THE INSPECTORS DEALING WITH QUARANTINE AND ISOLATION, FOR THE YEAR ENDING OCTOBER 31ST, 1922.

To James Roberts, Esq., M.D.,

Medical Officer of Health.

Sir:

In connection with this important division of health department work, there are two outstanding features which contribute to the attainment of the best results; the co-operation of the medical profession in promptly notifying cases of communicable diseases occurring in their practice, so that your inspectors may visit the premises without any unavoidable delay; and that the parents and attendants of patients suffering from any infectious disease observe quarantine regulations to the letter.

Medical practitioners are requested to phone to the office or to my private address if it is not convenient for them to call at the office, as soon as they know a person is suffering from any communicable disease; the printed official notifications can then be sent through the mail. This prompt action on the part of the attending physician makes it possible for your quarantine officials to visit the premises in which the case or cases may have occurred, with the least possible delay. The information obtained by quarantine officials at all such visits is recorded on specially prepared cards, on the following lines:—

Nature of the disease; name, address, age and occupation of the patient; school, if any, attended; the probable source of infection; (in cases of diphtheria) if antitoxin given; if for removal to hospital or treatment at home; if premises placarded; names of other children attending school; name of such school;

sanitary condition of the premises (where necessary the condition reported to the sanitary division); instruction given by your officials; names of persons allowed to attend business; other information; name of attending physician. These cards are kept on file at the office.

Very little difficulty in enforcing quarantine regulations is experienced amongst the well informed citizens, but among our foreign population we not infrequently meet with difficulties.

In some instances they appear to be unable to understand what is required of them, and in a few instances we have encountered direct opposition, and have been compelled to deal with them as circumstances demanded.

The following is a record of the work accomplished in connection with quarantine and isolation, for the year ending as above.

Houses placarded owing to presence of scarlet fever	110
" " " " diphtheria	389
" " " " measles	441
" " " " poliomyelitis	61
" " " " smallpox	10
Houses renovated after diphtheria; patient sent to City Hospital	293
Houses renovated after scarlet fever; patient sent to City Hospital	84
Houses renovated after smallpox; patient sent to Isolation Hospital	4
Houses renovated after typhoid fever; patient sent to City Hospital	1
Houses renovated after poliomyelitis; patient sent to City Hospital	19
Houses renovated after tuberculosis; patient sent to Sanatorium	68
Miscellaneous renovations	260
Measles cards removed	410
Houses renovated after diphtheria cards removed	362
" " scarlet fever cards removed	108
" " poliomyelitis cards removed	38
" " smallpox cards removed	7
Number of visits in connection with smallpox contacts	112
" " " " quarantine and isolation	1,182
" " " " meningitis	3
" " " " erysipelas	17
Number of investigations of cases where persons were bitten by dogs	19

I have the honour to be, Sir,

Your obedient servant,

C. ROBERTSON,

Inspector in charge of Quarantine and Isolation.

REPORT ON A SURVEY OF ARTISANS' DWELLINGS.

To James Roberts, Esq., M.D.,

Medical Officer of Health, Hamilton.

Sir:

As instructed by you, a survey of artisans' dwellings in Hamilton has been conducted by the staff of the city health department.

The work of inspection, the following up of notices served, the tabulation of reports and all incidental work has been accomplished entirely by the staff of the department; in consequence of which the preparation of the report has been spread over a longer period than would have otherwise occurred; this condition, however, has not in any way affected the beneficial results obtained from the survey, for in every case where insanitary conditions were discovered, any serious overcrowding found to exist, or where it was found that the services of health department nurses could be helpful, immediate attention followed.

Notices were forthwith served to remedy the insanitary conditions or improve the overcrowding; the public health nurses visited the homes where their help was required, without delay.

No additional inspectors were appointed for the actual survey work, neither was any addition made to the office staff for the clerical work involved.

On this account it was not intended to inspect all the homes of the artisan population in the city, but to obtain such information as would be sufficient to reasonably and fairly estimate the conditions under which our artisans live.

The inspectors were duly advised at the outset, as to the objects and method of their inspection; the instructions given were faithfully observed in every detail.

Three classes of homes were inspected—(1) Dwelling houses occupied by one family; (2) Dwelling houses occupied by more than one family; (3) Tenements, apartments and rooms occupied over stores.

Information was sought along the following lines: number and name of street or avenue; name of the head of the family; nationality; occupation; if married; particulars as to health of the family; if any lodgers; if so, the nationality and occupation of same; the total occupants of the premises; monthly rental value of the premises; if occupant owned same; construction and general description of the premises; number of rooms in same, if any of the rooms were dark; description and condition of the sanitary conveniences and fittings; general repair and condition of the premises; description of the cellar if any; other information.

All of the forms totalling 4,666 are filed at the office, and are available for inspection by any person qualified to examine them.

For general information certain particulars have been tabulated for each district and summarized as follows:

"A" DISTRICT.

West of Bay Street.

	Occupied by one family	Occupied by two or more families	Tenements or rooms over stores occupied	Total	
Occupied by owners	564	6	7	577	
					577
Monthly value or rent paid—					
Under $15.00	168	18	2	188	
$15.00 to $25.00	907	22	10	939	
Over $25.00	240	2	5	247	
Information not obtainable	41	2	8	51	
					1,425
Number of junior occupants—					
Under 12 years	1,918	74	16	2,008	
Over 12 years	1,155	17	9	1,181	
					3,189
Boarders	642	8	11	661	
					661
Sanitary condition—					
Good	1,099	18	19	1,136	
Fair	174	19	5	198	
Bad	83	7	1	91	
					1,425

Number of inspections—1,425.

Number of houses occupied by one family	1,356	
Number of houses occupied by two families	44	
Number of dwellings over stores (or tenements)	25	
		1,425

Number of homes with defective sanitary fittings	582
Number of homes with leaking roofs, broken plaster and defective eavetroughs	161
Number of homes needing floor repairing	9
Structural defects or dampness	17
Dirty homes and cellars	136
Dark rooms	21
Earth closets and pits, or privy vaults	14

The following particulars in district "A" are worthy of special attention:

One house rented at $20.00; 4 rooms, 2 children, 2 adults and 2 boarders; another, 7 rooms, 1 dark, 12 occupants, 5 children, 2 adults, and 5 boarders; 1 room used for cooking, eating and sleeping, 1 bedroom used for cooking.

Three rooms, over frame garage, 2 rooms dark. All walls dirty, 1 living room, 1 bedroom for 4 children, 1 for 2 adults and 1 child.

"B" DISTRICT.

Between Bay and Wellington Street.

	Occupied by one family	Occupied by two or more families	Tenements or rooms over stores occupied	Total	
Occupied by owners	263	13	7	283	283
Monthly value or rent paid—					
Under $15.00	312	68	8	388	
$15.00 to $25.00	714	45	21	780	
Over $25.00	138	18	35	191	
Information not obtainable	...	9	14	23	1,382
Number of junior occupants—					
Under 12 years	1,443	174	65	1,682	
Over 12 years	836	48	25	909	2,591
Boarders	612	43	80	735	735
Sanitary condition—					
Good	833	52	28	913	
Fair	245	67	22	334	
Bad	86	21	28	135	1,382

Number of inspections—1,382.		
Number of houses occupied by one family	1,164	
Number of houses occupied by two families	140	
Number of dwellings over stores (or tenements)	78	1,382
Number of homes with defective sanitary fittings	599	
Leaking roofs, broken plaster, eavetroughs defective	522	
Defective flooring	33	
Structural defects or dampness	37	
Dirty walls, ceilings and insanitary cellars	151	
Dark rooms	65	
Earth closets and pits, or privy vaults	19	

Premises Worthy of Special Notice.

Very dirty and careless; no sanitary accommodation.

One W. C. for two houses, premises in very bad state of repair.

One room—rent $16.00 per month for two occupants, no sanitary accommodation.

Three rooms—rent $12.00 per month each, no sanitary accommodation.

Twenty-six persons occupied a house in which the following conditions were noted: One room rented at $18.00 a month; 1 room, 5 persons, 4 adults and 1 child. One room rented at $20.00, 3 adult occupants. One room rented $18.00, 2 adults, 1 child, 4 years, 1 child, 2 years, 1 child, 4 months. Only 1 bathroom for the use of all occupants.

At other premises one W. C. was the only sanitary accommodation for 2 houses.

At a three-room house, 9 occupants; 6 children were sleeping in a room 8 ft. x 8 ft. x 9 ft., 576 cubic feet.

"C" DISTRICT.

BETWEEN WENTWORTH AND WELLINGTON STREETS.

	Occupied by one family	Occupied by two or more families	Tenements or rooms over stores occupied	Total	
Occupied by owners	95	..	..	95	
					95
Monthly value or rent paid—					
Under $15.00	41	10	1	52	
$15.00 to $25.00	238	6	6	250	
Over $25.00	33	1	16	50	
Information not obtainable	28	6	..	34	
					386
Number of junior occupants—					
Under 12 years	248	27	27	302	
Over 12 years	422	6	6	434	
					736
Boarders	35	..	5	40	
					40
Sanitary condition—					
Good	208	11	13	232	
Fair	74	6	5	85	
Bad	58	6	5	69	
					386
Number of inspections—386.					
Number of houses occupied by one family				340	
Number of houses occupied by two families				23	
Number of dwellings over stores (or tenements)				23	
					386
Number of defective sanitary fittings				213	
Number of defective roofs, broken plaster, eavetroughs				212	
Number of defective floors				38	
Structural defects, dampness				46	
Dirty premises and insanitary alleyways				99	
Dark rooms (houses of one family, 6; tenements, 22)				28	
Dry earth closets				10	

"D" DISTRICT.

EAST OF WENTWORTH AND SOUTH OF CANNON STREETS.

	Occupied by one family	Occupied by two or more families	Tenements or rooms over stores occupied	Total	
Occupied by owners	381	..	..	381	
					381
Monthly value or rent paid—					
Under $15.00	95	5	..	100	
$15.00 to $25.00	303	9	1	313	
Over $25.00	84	1	1	86	
Information not obtainable	33	5	..	38	
					537
Number of junior occupants—					
Under 12 years	760	19	2	781	
Over 12 years	313	8	..	321	
					1,102
Boarders	65	1	..	66	
					66
Sanitary condition—					
Good	309	18	2	329	
Fair	174	2	..	176	
Bad	32	..	..	32	
					537
Number of inspections—537.					
Number of houses occupied by one family				515	
Number of houses occupied by two families				20	
Number of dwellings over stores (or tenements)				2	
					537

Number of defective sanitary fittings	65
Defective roof, broken plaster on walls, ceilings and defective eavetroughs	43
Number of defective floors	9
Dirty premises and insanitary cellars	26
Dark rooms	2
Dry earth closets	168

Premises Worthy of Special Notice.

One dwelling house with 3 rooms, 2 adults, 3 children; only 1 bedroom, 8 ft. x 10 ft. x 8 ft., 640 cubic feet. Walls of living room in very bad condition.

Another with 3 rooms; 2 adults, 5 children. No sanitary conveniences, although public sewer is available.

Other dwellings of 1 room, 14 ft. x 14 ft. x 9 ft., 2 adults, rent $10.00. Walls and ceilings unfinished.

Other dwellings of 1 room (one with 5 occupants). Several other 2 and 3 room dwellings. (Several of these are in an unfinished condition.)

Several of these small houses were dependent on private wells for drinking water. All of these wells have since been filled in, and city water supplied.

"E" DISTRICT.

East of Wentworth and North of Cannon Streets.

	Occupied by one family	Occupied by two or more families	Tenements or rooms over stores occupied	Total	
Occupied by owners	493	5	6	504	
					504
Monthly value or rent paid—					
Under $15.00	149	44	4	197	
$15.00 to $25.00	558	22	34	614	
Over $25.00	66	7	16	89	
Information not obtainable	..	26	10	36	
					936
Number of junior occupants—					
Under 12 years	1,329	159	99	1,587	
Over 12 years	564	39	40	643	
					2,230
Boarders	205	11	11	227	
					227
Sanitary condition—					
Good	297	58	40	395	
Fair	391	35	18	444	
Bad	85	6	6	97	
					936

Number of inspections—936.	
Number of houses occupied by one family	773
Number of houses occupied by two families	99
Number of tenements or rooms over stores	64
Number of defective sanitary fittings	45
Broken plaster on walls and ceilings, defective roofs or eavetroughs	122
Structural defects or dampness	8
Dirty homes and insanitary cellars	92
Dark rooms	17
Dry earth closets	632

Premises to Which Special Attention Might be Directed.

A dwelling of 2 rooms, $10.00 per month; 2 adults, 3 children.

Another dwelling of one room, 9 ft. x 20 ft. x 7½ ft., $10.00 per month rent; 2 adults, 4 children; 6 people were found cooking, eating and sleeping in one room. This dwelling has not been properly finished.

At another of these single room dwellings, occupied by a man with his wife and one child, where there was no water supply, the occupants obtaining water from the well of a neighbour; $25.00 per month was being paid for these premises.

A very large number of dwellings consisting of one room, and two rooms, still exist in this district; many of which at the time of inspection were dependent on neighbours for their water supply, or the occupants were required to travel long distances to pumps or city schools for this commodity. All of these premises are now provided with city water, and the wells filled in.

SUMMARY.

Number of homes occupied by one family	4,148	
Number of homes occupied by two families	326	
Number of dwellings over stores (or tenements)	192	
		4,666
Defective sanitary fittings	1,504	
Defective eavetroughs, plaster and roofs	1,060	
Defective flooring	80	
Dampness and structural defects	117	
Dirty homes and cellars	504	
Dark rooms	133	
Dry earth closets or privy vaults	843	

From this summary it will be noted that out of 4,666 premises inspected, 1,840 or 40 per cent. were owned by the occupants of the same.

The 4,666 include tenement houses, and rooms over stores; if these be excluded it will be found that at least 50 per cent. of the artisans in the city are the owners of their own homes.

The amount of rent paid, or the rental value of the premises is significant.

Very few if any of the low rental houses were passed over in the survey, so it will be safe to assume that the number 925 represents the total of houses where the amount paid for rent or the rental value would be less than $15.00 per month; these represent only 20 per cent. of the total inspected.

At 2,896 or 62 per cent. of the homes inspected, the rental value was fifteen to twenty-five dollars, while 663, or 14 per cent., the amount was over 25 dollars per month.

It will be noticed that the sanitary condition of premises has been classified under three headings, good, fair and bad.

Of the 4,666 residences inspected, 3,005 are reported as being in good condition.

This might be qualified by stating that a large number of the dwellings in Homeside, where outside closets still exist, have been included in this total; these insanitary conveniences exist through no fault of the owners, and will be removed as soon as sewers are available for the premises. All other conditions relating to the premises are of such a satisfactory order as to justify their inclusion in the first order of classification.

It will be remembered that 1,840 occupants are also owners of their homes.

It has been almost invariably noted that, where a person owns his home, he takes a greater pride in keeping the premises sanitary and in good repair, than when he is simply a tenant paying rent to some other person, with the possibility of receiving a month's notice to vacate at any time.

These two factors will afford an explanation for such a large percentage of the houses whose condition may be described as good.

Brief reference might be made to the 1,237 characterized as fair, and 424 as bad.

Numerous and various sanitary defects were discovered in all of the latter and several of the former, for which statutory and informal notices would be served to remedy such conditions.

After the completion of the works required under the terms of the notices, all the premises described in the report as being in bad condition would be eligible for promotion into the fair or good classification.

It would be impossible in respect to many of the premises, even when large sums of money had been spent on them in repairs, to classify them as good; for on account of location, original construction, and irremediable structural defects, it would be impossible to regard them as ideal homes.

It will be observed that the report deals with occupied premises only, and has no reference to any vacant property.

It might be noted, however, that, comparatively speaking, the number of vacant houses suitable as artisans' dwellings is remarkably small. In the extreme east end of the city, several homes have been erected consisting of a single room.

The idea of such an arrangement appears to be that a person with strictly limited capital purchases a building lot; he then commences to build his home. He builds one room, and uses the same for a living and sleeping room for his entire family. His original intention was to add to his home, room by room, as circumstances would permit.

In a large number of instances, he is either satisfied with the single room arrangement, or he is not in such a financial position as would warrant him to proceed with the completion of his home.

At the present time about fifteen of these single room tenements are in occupation in the east end, all of which however are now occupied by the owners.

From the fact that the sense of ownership as pointed out in this report has proved to be an incentive for people to maintain hygienic conditions in the home, and from the fact that so few premises are vacant at the present time, which could be regarded as ideal homes for artisans' dwellings, I have no hesitation in stating there is a distinct evidence of the necessity for a large number of small habitations to be erected in the city; these habitations to be of such a price and on such terms as would make it possible for a man with a family and a small salary to become the owner of his home.

The purpose for the survey has, however, been served in ascertaining where conditions prejudicial to health existed, with the prompt removal of such conditions, and to direct the attention of the public health nurses where their ministrations could be best appreciated.

I have the honour to be, Sir,

Your obedient servant,

W. F. THORNLEY,

Chief Sanitary Inspector.

VITAL STATISTICS.

	1921		1922	
	Births	Deaths	Births	Deaths
November	250	111	277	123
December	295	129	305	127
January	335	138	310	140
February	308	125	297	110
March	320	156	292	126
April	288	128	272	128
May	314	99	288	107
June	307	114	249	100
July	275	129	287	99
August	285	119	255	96
September	276	104	233	117
October	297	120	230	111
	3,550	1,472	3,295	1,384

COMPARATIVE TABLE.

SHOWING NUMBER OF DEATHS WITHIN THE FOLLOWING AGE PERIODS.

	1921	1922
Under 1 year	471	376
From 1 to 5 years	84	72
From 5 to 10 years	42	27
From 10 to 20 years	49	34
From 20 to 30 years	74	62
From 30 to 40 years	87	94
From 40 to 50 years	114	99
From 50 to 60 years	121	142
From 60 to 70 years	163	215
From 70 to 80 years	155	179
From 80 to 90 years	96	72
From 90 to 100 years	16	12
	1,472	1,384

DEATHS.

I.—GENERAL DISEASES.

Influenza	1	
Measles	2	
Typhoid Fever	1	
Whooping Cough	7	
Scarlet Fever	4	
Diphtheria	32	
Erysipelas	9	
Tetanus	1	
Epidemic Anterior Polio-myelitis	7	
		64
TUBERCULOSIS—		
Lungs	42	
Meninges	7	
Intestines	2	
Spine	1	
Kidney	1	
		53
CARCINOMA—		
Stomach and Liver	47	
Intestines	9	
Breast	7	
Uterus	10	
Neck	1	
Jaw	3	
Ovary	1	
Rectum	6	
Throat	5	
Bladder	5	
Tongue	1	
Pelvis	2	
Not specified	1	
		98
SARCOMA—		
Abdomen	1	
Brain	7	
Bone	1	
Orbital Fossa	1	
Not specified	3	
		13
Rheumatism	5	
Septicæmia	7	
Exophthalmic Goitre	6	
Anæmia Pernicious	12	
Anæmia	2	
Leukæmia	5	
Diabetes Mellitus	14	
Addison's Disease	2	
Syphilis	6	
Rheumatoid Arthritis	1	
Arthritis Deformans	1	
Hodgkin's Disease	1	
Pyæmia	3	
Glioma	1	
		66

II.—Diseases of the Nervous System.

Meningitis	5
Paraplegia	1
Locomotor Ataxia	3
Cerebral Hæmorrhage	31
Cerebral Embolism	1
Paralysis (General)	1
Paralysis (Agitans)	3
Epilepsy	7
Cerebral Abscess	2
Hemiplegia	13
Cerebral Thrombosis	1
Apoplexy	40
Myelitis	2
	—110

III.—Diseases of the Circulatory System.

Aneurism	4
Endocarditis	16
Chronic Valvular Disease	10
Angina Pectoris	9
Arterio Sclerosis	38
Myocarditis	52
Heart Failure	23
Aortic Regurgitation	1
Mitral Regurgitation	2
Fatty Degeneration	1
Acute Dilatation	22
Mitral Insufficiency	1
Embolism	2
Cardiac Insufficiency	6
Asthenia	5
Thrombosis	2
Heart Disease	1
Phlebitis	1
Hæmorrhage (not specified)	1
	—197

IV.—Diseases of the Respiratory System.

Bronchitis	10
Broncho Pneumonia	33
Lobar Pneumonia	35
Hypostatic Pneumonia	5
Pleuro-Pneumonia	6
Pneumonia	49
Empyema	2
Oedema of Lungs	5
Pulmonary Abscess	1
Asthma	4
Follicular Tonsilitis	5
Pulmonary Thrombosis	1
Pleurisy	3
	—159

V.—Diseases of the Digestive System.

Duodenal Ulcer	1
Diarrhœa	1
Appendicitis	15
Peritonitis	1
Strangulated Hernia	5
Cirrhosis of the Liver	5
Intestinal Obstruction	12
Gastro Enteritis	7
Gastric Ulcer	2
Convulsions (Gastritis)	1
Cholecystitis	9
Gall Stones	1
Enteritis	1
Pancreatitis	2
Volvulus	1
Stricture of Oesophagus	1
Cholecystectomy	2
	— 67

VI.—Diseases of the Genito-Urinary System.

Nephritis	58	
Bright's Disease	8	
Uræmia	2	
Cystitis	2	
Uterine Fibroid	2	
Prostatic Hypertrophy	3	
Dropsy	1	
Ovarian Cyst	1	
Pyonephrosis	1	
Hydronephrosia	2	
		80

VII.—Diseases of the Puerperal State.

Eclampsia	1	
Abortion	5	
Septicæmia (Childbirth)	4	
Ectopic Gestation	2	
Childbirth	3	
Post Partem Hæmorrhage	3	
Cæsarean Section	1	
		19

VIII.—Diseases of the Skin.

Epithelioma	2	
Gangrene (Leg)	2	
Gangrene (Foot)	1	
Gangrene (not specified)	2	
		7

IX.—Diseases of the Bones.

Otitis Media	2	
Rickets	2	
		4

X.—Malformations.

Spina Bifida	9	
Hydrocephalus	1	
Congenital Heart	2	
		12

XI.—Diseases of Early Infancy.

Malnutrition	30	
Gastro Intestinal Diseases	42	
Post Partem Hæmorrhage	1	
Asphyxia Neonatorum	2	
Injury at Birth	3	
Cerebral Hæmorrhage	8	
Icterus Neonatorum	1	
Atelectasis	1	
Pemphigus Neonatorum	3	
Congenital Debility	7	
Imperforate Anus	1	
Hæmorrhage Neonatorum	1	
Congenital Syphilis	3	
Tetany	1	
Stillbirths	128	
Premature	68	
Patent Foramen Ovale	3	
Asthenia	2	
Pulmonary Oedema	1	
Periostitis	1	
Convulsions	9	
Heart Failure	1	
Septicæmia	1	
Hæmorrhage	1	
Volvulus	1	
Suffocation	2	
		322

XII.—Diseases of Old Age.

Old Age	24	
Debility (General)	1	
Senile Decay	23	
		48

XIII.—External Causes.

Accidental Injuries—Falls, Burns, Poisonings	20	
Drowning	4	
Suicide	13	
Fracture Skull	1	
Fracture Femur	2	
Fracture Hip	3	
Killed—Train, auto, street car, etc	17	
Post Operative	2	
		62

XIV.—Ill-Defined Causes.

Found Dead	3	
		3

TABLE

Showing causes of death in children under 1 year, exclusive of premature and stillbirths:

Malnutrition	30
Gastro Intestinal Diseases	42
Post Partem Hæmorrhage	1
Asphyxia Neonatorum	2
Injury at Birth	3
Cerebral Hæmorrhage	8
Icterus Neonatorum	1
Atelectasis	1
Pemphigus Neonatorum	3
Congenital Debility	7
Broncho Pneumonia	16
Pneumonia	8
Bronchitis	3
Diphtheria	2
Erysipelas	1
Whooping Cough	5
Lobar Pneumonia	1
Measles	1
Jaundice	1
Tubercular Meningitis	1
Pulmonary Tuberculosis	1
Spina Bifida	9
Hydrocephalus	1
Congenital Heart	2
Imperforate Anus	1
Hæmorrhage Neonatorum	1
Congenital Syphilis	3
Otitis Media	1
Tetany	1
Patent Foramen Ovale	3
Asthenia	2
Oedema of Lungs	1
Periostitis	1
Convulsions	9
Heart Failure	1
Septicæmia	1
Pyæmia	1
Suffocation	2
Hæmorrhage	1
Volvulus	1
	180

GENERAL DEATH RATE FOR EIGHTEEN 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

INFANTILE DEATH RATE FOR CORRESPONDING PERIOD.

Deaths in children under one year per thousand of living births:

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

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 Poliomyelitis	..	..	..	..	..	..	..	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	x15
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

x 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 Poliomyelitis	..	..	..	..	..	..	..	..	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, 1920, TO OCTOBER 31ST, 1921.

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug	Sep.	Oct.	Total
Diphtheria	66	68	75	44	41	52	34	25	26	26	40	111	608
Scarlet Fever	23	38	27	28	24	20	13	12	3	9	15	33	245
Typhoid Fever	7	1	1	..	2	1	..	..	..	3	5	1	x21
Tuberculosis	8	7	17	17	15	18	9	25	8	20	13	15	172
Chicken-pox	145	114	163	98	68	55	43	74	15	1	11	11	798
Measles	42	27	41	11	10	45	60	43	20	6	..	5	310
Mumps	9	1	10	8	16	25	19	6	2	1	..	..	97
Erysipelas	1	1	2	1	..	3	2	1	1	1	..	..	13
Smallpox	23	18	48	29	39	27	11	5	1	..	..	..	201
Jaundice (Infectious)	..	3	..	..	..	..	..	..	..	..	..	..	3
Whooping Cough	129	152	174	97	55	33	24	25	25	19	22	3	758
Cerebro-Spinal Meningitis	1	..	..	..	..	..	..	..	..	..	1	..	2
Influenza	..	..	..	23	..	..	..	..	..	..	..	..	23
Total	454	430	558	356	270	279	215	216	101	86	107	179	3,251

xIncludes 9 Typhoid Fever cases infected outside city.

POSITIVE KLEBS LOEFFLER.

	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug	Sep.	Oct.	Total
	..	2	8	6	4	..	16	4	2	1	1	34	78

SHOWING DEATHS FROM COMMUNICABLE DISEASES

REPORTED FROM NOVEMBER 1ST, 1920, TO OCTOBER 31ST, 1921

Diseases	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug	Sep.	Oct.	Total
Diphtheria	4	4	4	2	4	3	1	1	1	3	4	10	41
Typhoid Fever	..	..	1	..	..	1	..	..	..	..	1	..	3
Scarlet Fever	..	1	..	..	..	..	1	..	..	..	..	1	3
Whooping Cough	2	3	2	3	4	3	..	..	..	..	1	..	18
Erysipelas	..	1	1	1	..	..	1	..	..	2	..	..	6
Influenza	3	1	..	1	1	1	..	..	..	..	..	..	7
Consumption	4	4	4	7	7	3	6	4	6	3	5	1	54
Tuberculosis (other forms)	1	2	2	4	..	2	1	1	2	..	1	1	17
Measles	..	..	..	..	..	..	..	1	..	..	..	..	1
Sleeping Sickness	..	..	..	..	..	..	1	..	..	..	..	..	1
Cerebro-Spinal Meningitis	1	..	..	..	..	..	..	..	..	..	..	..	1
Total	15	16	14	18	16	13	11	7	9	8	12	13	152

KINGSTON.

To the Chairman and Members, Board of Health, Kingston, Ont.

In submitting my report for the year that has just closed I desire to thank the board for their sympathetic co-operation in meeting the various problems that have arisen requiring decision and action.

During the year weekly reports on infectious diseases have been laid before you. I shall not go into these in detail as their contents are already well known to you, and a brief summary will be sufficient. There have been no cases of typhoid fever due to local causes. We have cared for a few cases of typhoid during the year but these were contracted outside of Kingston. Likewise there have been no cases of smallpox, epidemic meningitis or infantile paralysis and very few cases of chicken-pox, mumps, measles and whooping cough. Of diphtheria we have had our usual average but of scarlet fever our numbers have been far in excess of everything for some years past with the exception of last year when we also had a large number of cases. In looking over the situation I feel safe in saying that the mildness of the type is responsible for the wide spread of the disease. Time after time cases have been reported in families where careful inquiry has shown that previously there have been two or three unrecognized cases. Again cases have been admitted to the isolation hospital with slight symptoms and rash in the afternoon and next morning the rash had disappeared. Others have been diagnosed as presumably scarlet fever through accidental discovery of some complication as adenitis, otitis or nephritis. As long as the epidemic remains mild I do not see any way to combat the condition unless a daily inspection of all school children by competent observers be adopted because some of these mild cases never lose a day from school. This method has been tried in some larger centres with doubtful results. The expense is heavy and the results are of a temporary nature. Reports from these places show that after a few months there is a reappearance of the disease. We cannot hope for better permanent results until we know the cause of scarlet fever and how to combat that cause. With the completion of the new city infectious hospital it will be easier to persuade parents to send their children there for treatment and this will ensure more thorough isolation than can be accomplished in the homes.

The clinic for venereal diseases at the general hospital is now carrying on its work under government approval, supervision and support. The difficulties referred to in my last report have been amicably arranged and many cases are now under treatment, some voluntarily, others as the result of reports and follow-up work on the part of the nurse in charge of this department.

The reports on the milk supply have regularly been brought to your notice by Dr. Bell, the milk inspector, and Prof. Jas. Miller, director of the local branch of the Ontario Government Laboratories. These reports indicate a highly satisfactory state of affairs and have tended to re-establish the confidence of citizens in the quality of the milk supplied here.

Last summer our water supply was the cause of considerable anxiety. Beginning in the month of May, city water which had occasionally shown presence of colon bacilli in 50 c.c. now showed these in 1 c.c. or less. In spite of increased chlorination at the pumping station the water remained contaminated. Boiling notices were inserted in the local newspapers and repeated warnings issued. After consulting with the public utilities commission and the

laboratory staff, various steps were taken to try to overcome the trouble. The chlorination plant was overhauled by an expert and pronounced all right. The suction pipe was tested and found tight. Many schemes for obtaining a pure water supply were discussed such as 1st, lengthening the suction pipe; 2nd, leaving the pumping station and pipe as it is and supplementing it by a mechanical filter; 3rd, moving the pumping station and pipe out to Lake Ontario Park; 4th, collecting and disinfecting Kingston sewage. Before deciding on any scheme, the commission thought it wise to have bacteriological and chemical analyses made of samples of water from various places as far south as Nine Mile Point and as far west as Amherst Island. These tests were made and showed that the water at these points was just as badly contaminated as it was at our own shore, using the colon bacillus as the index of contamination. These findings seemed to indicate the uselessness of extending or changing the location of the water plant and also of attempting to obtain pure water by disinfecting our own sewage as long as the dumping of sewage into the lake was continued at other places, for it is apparent that no trick of wind or current could account for the contamination of water at Nine Mile Point by Kingston sewage when we remember that most of that sewage finds its way directly into the St. Lawrence current moving eastward at the rate of three miles an hour. The opinion of the commission was that a filter plant of a mechanical type combined with light chlorination would be the best method to adopt but that further information should be sought on the subject. Early in October the condition of the water supply began to improve and for the past two months it has been pure in 50 c.c. and chlorination is being reduced.

All of which is respectfully submitted.

A. R. B. Williamson,

Medical Health Officer.

KITCHENER.

The Mayor, Chairman and Members, Board of Health, Kitchener, Ont.

Gentlemen:

I beg to submit the Medical Health Officer's Report for the City of Kitchener, year 1922.

Number of births during the year, 631. Of these, 17 were registered as stillborn. The number of deaths, 300. Premature births, 20. Deaths under one year, including stillborn and premature births, 68. Deaths from one to five years, 10. Twenty-seven cases smallpox during the year with one death. Forty-eight cases of diphtheria with two deaths. Eighty-six cases of scarlet fever with one death. Twenty-one cases of measles and four cases of infantile paralysis.

The water was regularly tested by the Provincial Laboratory during the year and the supply found pure. Milk regularly tested, tests good.

Respectfully submitted.

JNO. MCGILLAWEE,
M.O.H., Kitchener.

LONDON.

London, December 8th, 1922.

Dr. John W. S. McCullough, Chief Officer of Health, Toronto, Ontario.

Dear Doctor:

I beg to submit the following report on communicable diseases and sanitary work for 1922:

Although the population is gradually increasing we had a smaller number of cases of communicable diseases in 1922 than during the several preceding years. This I attribute to the fact that we had no marked epidemic in the city this year. The nearest approach to epidemics is the large number of cases of scarlet fever and whooping cough.

The following cases were reported for the year ending November 30th, 1922:

Diphtheria	126
Scarlet Fever	155
Smallpox	1
Tuberculosis	187
Typhoid Fever	5
Venereal Disease	124
Chicken-pox	202
Measles	17
Whooping Cough	541
Mumps	12
Impetigo	686
Scabies	228
Ringworm	85
Conjunctivitis	76
	2,359

In the more severe diseases such as diphtheria, scarlet fever and smallpox there is a very marked reduction in the number of cases reported in 1921. Diphtheria is less than half and there was one case of smallpox as compared with forty-seven last year.

In tuberculosis there is a gain of nineteen cases. This disease seems to be on the increase. It was found necessary to engage another nurse, Miss Della Foster, to cope with this branch of the work.

We had five cases of typhoid fever as compared with ninety-one last year. The large number last year was due to an outbreak at the Ontario hospital.

There were a few less cases of venereal disease reported in 1922. A number of these patients do not seem to realize the seriousness of their condition and do not take treatment as regularly as they should. It was found necessary to summon a number of these to police court. After a lecture from the police magistrate the treatments were continued more regularly. Some patients realize that they are dangerously ill and take treatment faithfully. We have had great difficulty in following up some because they are constantly moving from place to place in the city and from one city to another.

Whooping cough increased by nearly five hundred cases. There was a mild epidemic of this disease. A great deal more of the Provincial Board of Health pertussis vaccine is being used for this disease now than formerly. In most cases good results are obtained.

There was a large increase in the number of cases reported of the minor diseases such as impetigo, scabies, ringworm and conjunctivitis.

Our nurses Mrs. M. Patterson, Miss Raymond and Miss Foster have worked most faithfully throughout the year as shown by the thousands of calls they have made. Total calls made by all nurses, 5,700.

Sanitary inspections were vigorously carried on by Mr. R. H. Sanders and Mr. H. Boss. The total number of inspections was approximately 7,000 including yards and lanes, cellars, dumps, restaurants, cafes, barber shops, billiard hall accommodations, hotels, bakeshops, dairies and milk wagons, manure piles, butcher shops, laundries, grocery stores, fruit stores, Chinese merchant stores, fish shops, insanitary houses, stables, etc. In this connection four hundred and ninety letters were sent out and police court attended twenty-seven times. Five hundred houses were ordered to be connected with the sewer.

During the year two new by-laws were passed by the London City Council on the recommendation of the Board of Health. These are the meat by-law and the milk by-law.

The meat by-law covers the transportation, storage, offering for sale, covering and handling of meats by owners and customers. Through the year several lots of meat were destroyed by the inspectors. In other instances outstanding cases were prosecuted in the police court. Fines were imposed by the police magistrate varying from $5.00 to $50.00.

The milk by-law was finally passed by the City Council after it had been approved by the Chief Officer of Health, the Provincial Department of Agriculture and the Dominion Department of Agriculture. The by-law provides that all milk must be from cows free from tuberculosis or be pasteurized. Up to the present about ninety herds have been submitted to the tuberculosis test. A number of physicians prefer milk from the tubercular free cows to the pasteurized milk.

The inspection of dairy herds and dairies has been energetically carried out by Dr. C. S. Tamlin. Several hundred inspections of herds were made throughout the surrounding country. Approximately 500 samples of milk were taken from wagons on the street. A few farmers were forbidden to send milk into the city on account of unsanitary methods of milking and handling milk. Diseased cows were isolated from herds. In cases of high bacteria counts the producer was notified at once of the condition of his milk either personally or by letter. In cases where milk was below the standard, adulterated or preservatives added, the cases was decided in the police court and a fine imposed.

During the year a hundred or more samples of water were tested at the Institute of Public Health and in most cases a satisfactory report was given. On the slighest indication that the water was not of the best chlorination was resorted to at once.

Approximately 1,000 tests and inspections were made by the plumbing inspector, Mr. J. C. Young, and slightly over 100 defects were found. The fees collected for inspections and tests pays all expenses of the plumbing department and there are a few hundred dollars to the good.

The relations between the different members of the Board of Health and between the board and the staff have been most harmonious throughout the year. This is a very desirable condition and enables the staff to carry out its work more satisfactorily. Members of the board have given freely of their time, advice and ability towards helping members of the staff.

Your obedient servant,

W. S. Downham,
M. O. H.

London, Ontario, December 6th, 1922.

London, Ontario, December 19th, 1922.

The Mayor and City Council of 1922.

Dear Sirs:

In making the annual report of the activities of the Board or Health, we propose to give a brief summary of the work done as well as a few recommendations for the new Board.

We do not propose to give any actual figures, as the report of the City Clerk and the M.O.H. in this regard are most comprehensive. Every complaint coming to the Board was investigated. Many of these were anonymous. In this connection we wish to point out that an absolute guarantee to secrecy and protection is given to all reports and complaints sent in. We must have the confidence and co-operation of all citizens to arrive at our goal,—the most sanitary and healthy city in America.

With pardonable pride we point to the passing of some important by-laws, the first of which was the meat by-law, the chief provisions being that not only should all meat arrive in good condition but it should remain so until it reached the consumer. Under a severe penalty, no meat offered for sale should be handled by anyone except those duly authorized.

No slink or boneless veal for human food to be delivered to the city trade or the cold storage.

All fruits, fish, etc., exposed for sale on the public street to be covered, and also kept a specified distance from the ground.

The passing of the amended milk by-law requires particular attention, its main features being that all milk delivered to the city should be either from tuberculosis-free cows, or be pasteurized in an approved plant. The benefits from this legislation will be seen in the next generation.

The sale of mattresses on the public market was forbidden. Every place in which the public have access to is regularly inspected and reported to the Board.

We particularly recommend to the incoming Board, that they co-operate with No. 1 Committee of the City Council to have all fruit and vegetables offered for sale in boxes or baskets on the public market be placed on stands at least eighteen inches from the ground.

It is with pleasure that the Board reports most favourably on the zeal and efficiency of every official connected with the department. Special mention is made of the work of our sanitary inspector.

The plumbing by-law passed a year ago is working out to our entire satisfaction, under the able management of James Young, the trade and the public are well satisfied. In addition, the fees collected are sufficient to take care of all expenses and will return a margin of four or five hundred dollars to the city funds.

In conclusion, we wish to state that the members of your Board worked during the year with the most absolute unanimity and harmony. All of which is respectfully submitted.

Yours very truly,

EDWIN R. SEABROOK,
Chairman Board of Health.

London, Ontario, December 1st, 1922.

Chairman and Members of the Board of Health.

Gentlemen:

I beg to submit my annual report, respecting the work of the Board of Health for 1922, pursuant to the provisions of the Public Health Act.

During the year the Board held fifteen meetings, at which Messrs. E. R. Seabrook attended fifteen; Mitchell and Dr. Downham, fourteen meetings each; Alderman O. I. Cunningham, eight; and His Worship Mayor J. Cameron Wilson, two meetings.

During 1922, Messrs. Sanders and Boss, the sanitary inspectors, made and reported to the Board the following inspections, viz.:

Quarantines	302
Water Tests	63
Yards, Lanes and Cellars	1,553
Dumps	49
Restaurants and Cafes	442
Barber Shops	30
Billiards	4
Hotels	135
Bakeshops	144
Dairies and Milk Wagons	92
Attended Police Court	24
Released from Quarantine	352
Toilets	1,528
Manure Piles	4
Butcher Shops	408
Laundries	101
Groceries, Fruit and Candy	194
Chinese Merchant Stores	6
Fish Shops and Wagons	35
Insanitary Houses	107
Miscellaneous	485
Yards, Stables and Cellars	42
Letters and Notices	....
	6,578

The sanitary inspectors reported a marked improvement in the care of restaurants, butcher shops, laundries and bakeshops.

Dr. Tamlin inspected 469 dairies and a large number of butcher shops. He also reported that a great majority of dairymen were endeavouring to satisfy the requirements of the Board with respect to their herds and dairies. Regular tests are made of the milk supply.

Misses Foster and Raymond reported 868 visits to tuberculosis patients. Miss Foster is an additional nurse appointed this year. All tuberculosis patients will be removed from Victoria Hospital to Byron Sanatorium.

Mrs. Patterson, public health nurse, states that she has made the following visits, viz.:—

Ringworm	75
Scabies	209
Mumps	12
Chicken-pox	6
Diphtheria	7
Calls—not home	78
Impetigo	551
Whooping Cough	515
Pink Eye	58
Scarlet Fever	14
Measles	4
Miscellaneous	158
Total Number of Calls	1,706

Miss McVicar submitted the following report respecting venereal diseases, viz.:

Number of patients admitted	118
Number of visits made by Social Service Nurse	553
Number of patients taking treatment	147
	818

Dr. Downham submitted the following report respecting communicable diseases, viz.:

Diphtheria	114
Mumps	6
Whooping Cough	360
German Measles	4
Gonorrhoea	79
Urethritis	4
Paratyphoid	2
Scarlet Fever	133
Chicken-pox	199
Measles	15
Tuberculosis	100
Syphilis	40
Typhoid Fever	3
Smallpox	1
	1,060

Dr. Downham submitted the following report respecting Victoria Hospital, viz.:

Diphtheria Ward—	
Admitted	75
Still in	23
Discharged	78
Died	8
Scarlet Fever Ward—	
Admitted	40
Still in	46
Discharged	52
Died	1
Tuberculosis Ward—	
Admitted	47
Discharged	45
Died	9

Dr. Slack reported on seventy-two tests of water supply. At least one test is made of the water supply each week. The water was in nearly every instance absolutely satisfactory.

J. C. Young, plumbing inspector, submitted the following report respecting plumbing, viz.:—

Permits granted	1,147
Inspections required	1,820
Fees collected for inspections	$2,824 50
Three by-laws sold	4 70
Fess collected for use of smoke machine	98 00
Total fees collected	$2,927 20
Water tests made	920
Smoke test under pressure	3
Smoke tests made	608
Final inspections	131
Total inspections	1,662
Defects discovered	97
Defects made good	97

The Board dealt with several complaints. The fertilizer plant was frequently visited by the sanitary inspector and he reported the conditions as satisfactory as can be arranged. The sanitary conveniences at Springbank Park have been looked after. An effort has been made to keep the lanes, especially in the downtown portion of the city, clear and clean. Conditions at the Horton and Thames Street dump has been improved. The complaints respecting cow-keeping in the city were made satisfactory to the ratepayers. Wherever fruit was exposed to contamination the sanitary inspector demanded proper protection. The Western Fair and market received the usual attention.

The Board initiated and recommended the following sewers, on sanitary grounds, viz.:—

Ashland Avenue, Horton Street, Cromwell Street, Hill Street and Shirley avenue.

Early in the year the Board introduced a new meat by-law, providing for greatly improved sanitary conditions with respect to the sale of meat by butchers and grocery shops. The handling of meat was forbidden, and places offering meat for sale and wholesale butchers delivering meat are made subject to regular inspections.

The milk by-law has been amended and in future all milk sold in the city of London will be either certified free from tubercular or pasteurized. A large percentage of the producers have had their herds tested and condemned cattle have been removed.

Dr. Downham has been given charge of the indigent sick. Wherever, in the opinion of the Medical Officer of Health, attendance may be satisfactorily given at home, the patients are not admitted to the hospitals but cared for in their own homes.

The Board has appointed Dr. Holl, head of the Hygienic Institute and chief of the Medical Health Faculty of the Western University, consultant. The Board is also giving co-operation to the Children's Welfare Society wherever practicable.

All of which is respectfully submitted.

S. BAKER,
Secretary.

TUBERCULOSIS CLINIC YEARLY REPORT.

(December 1, 1921, to November 30, 1922.)

The regular routine work has been carried on during the past year, namely, two clinics weekly, at Victoria Hospital, and follow-up monthly visits to the homes of those patients attending clinics.

The total attendance at clinics for the year is eleven hundred and thirty-four (1,134), an increase of nine over last year, though there is no increase in new cases, the number being the same, one hundred and eighty-seven (187), for this year and last. These new cases are referred to the clinics by physicians for chest examination and diagnosis, by friends attending the clinic, and reported to us by the Board of Health.

Tuberculin tests are taken on all new cases at the clinics and sputum analysis made when indicated. We have posters and literature on the prevention of tuberculosis and instructions to patients; also sputum boxes for patients' use at home—those who can afford it paying a nominal sum for them, others receiving them free of charge.

Patients advised sanatorium treatment and unable to pay are referred to

the Medical Officer of Health, who refers the application to the City Relief Office, where the case is investigated. Last year fifty-six applications were sent in, twenty-two for the sanatorium and thirty-four for the preventorium. Eight of these were rejected as able to pay.

The Ladies' Sanatorium Aid, through funds obtained in the United Welfare Drive, have enabled us to supply several families with the needed groceries and meat. Forty-five families are receiving milk; in other cases bedding and clothing have been supplied, and fruit for those who are ill.

There are four hundred and seventy-three patients on the visiting list, who are visited once a month; those who are ill or taking the cure at home and returned sanatorium patients, once a week. A total number of five thousand one hundred and fifty-two visits have been made. This includes visits made by the Public Health nursing students, who took field work with us.

E. RAYMOND,
T. B. Nurse.

OTTAWA.

Chairman and Members, Board of Health, Ottawa, Ont.

Gentlemen:

I have the honour to present the following report of the work of the Health Department for the year 1922:—

	1922	1921
Population (Assessor's census)	116,205	113,000
Births registered	3,501	3,317
Live births	3,371	3,156
Still births	130	161
Birth rate	30.12	29.35
Live birth rate	29.00	27.93
Deaths registered	1,802	1,775
Deaths excluding still births	1,672	1,614
Gross death rate	15.50	15.70
Death rate excluding still births	14.38	14.28
Corrected death rate (excluding 194 non-city deaths.)	12.718	12.416
Infant deaths, under 1 year	417	439
Infant death rate, per 1,000 live births	123.7	139.10
Corrected infant death rate	109.48	121.0

Communicable Diseases have been less prevalent than during the previous year, a total of 2,768 cases having been reported with 160 deaths, as compared with 3,256 cases with 172 deaths during 1921.

Smallpox, as was to be expected after the extensive epidemic of 1921, did not entirely disappear and has persisted throughout the whole year but never in large numbers. One hundred and fifty-four cases were reported, mostly of a mild or moderate type, and no deaths were caused by this disease. Practically all cases were treated in the Hopewell Hospital on Porter's Island, the hospital having been in use for the entire year with the exception of one week in September. The largest number of cases in hospital at a time was twenty in December, 1921, and again in June, 1922. On account of the fact that it was necessary to keep this hospital in operation for the accommodation of only a very few patients, it was deemed advisable to make certain alterations to the plumbing and heating systems so that the ground floor could be used alone or with the first floor, and the water and heating be cut off from the unused parts of the building. These changes were carried out under the supervision of the plumbing inspector, and resulted in a saving of coal and firemen's wages that much more than paid in one year for the cost of the alterations.

Scarlet Fever was slightly in excess of 1921, both in the number of cases and number of deaths.

Diphtheria showed a slight decrease from the previous year, but, in spite of this, diphtheria was second only to tuberculosis among the contagious diseases as a cause of death and caused as many deaths as all the other communicable diseases combined. It is regrettable that, in spite of free hospital and laboratory service and free antitoxin, this unnecessarily high mortality persists. Undoubtedly, delay on the part of the parents in calling in a physician is very largely responsible. A more general use of the laboratory facilities provided, earlier and more frequent administration of prophylactic doses of antitoxin to suspected cases and to contacts of definite cases, and a wider employment of the Schick test and toxin-antitoxin immunization are needed to cut down the wastage of life due to this disease.

Measles of a mild type occurred chiefly during the spring and early summer months, 935 cases being reported during the year with only three deaths.

Tuberculosis again showed a reduction both in the number of cases and number of deaths. This year marks the lowest mortality from tuberculosis that Ottawa has ever shown, the figure being 8.519 per 10,000 population as compared with 9.64 last year,—the previous low record. Tuberculosis in 1922 caused 5.9 per cent. of the total deaths as compared with 6.75 per cent. in 1921.

TUBERCULOSIS, 1922.

Month	Cases Reported	Deaths from Pulmonary Tuberculosis	Deaths from other forms of Tuberculosis
November	8	11	1
December	8	5	3
January	5	10	1
February	14	3	2
March	8	6	1
April	14	4	1
May	11	7	3
June	10	8	4
July	14	3	4
August	9	6	3
September	5	5	1
October	8	7	..
Totals	114	75	24

Typhoid Fever has not been prevalent. Nine cases originated in the city, three being fatal. A number coming from outside points were treated in the local hospitals.

TYPHOID FEVER, 1922.

Origin	Cases Reported	Deaths
Ottawa	9	3
Other points in Ontario	10	4
Province of Quebec	9	3
Totals	28	10

Venereal Disease shows a slight increase in the number of cases reported, 285 new cases having been registered as compared with 276 last year. These cases are made up as follows:—Gonorrhœa, 152; syphilis, 131; chancroid, 2. The free clinic has been in operation throughout the year at the Water Street Hospital for the treatment of these cases and has proved very satisfactory. The amount of work done at this clinic is shown in the attached table.

VENEREAL DISEASE CLINIC.

Cases admitted to Out-patient Department—Male	143
" " " " Female	95
Total	238
Treatments given to Out-patients	2,856
Cases admitted to Public Ward in Hospital—Male	27
" " " " —Female	47
Total	74
Treatments given to In-patients	2,357

INFANT MORTALITY.

The year has been marked by the lowest infant mortality yet recorded for Ottawa, 417 deaths having been recorded and 3,371 live births, as compared

with 439 infant deaths and 3,156 live births in 1921. The infant mortality rate this year was 123.7 per 1,000 live births, or 109.48 if 48 deaths of non-city cases were excluded. The corresponding figures last year were 139.10 and 121.0.

The chief saving in life has been due to the greatly diminished mortality from diarrhœa and enteritis, these diseases causing only 14 per cent. of the infant deaths as compared with 25 per cent. in 1921.

The proportion of infant deaths to total deaths was 24.9 in 1922 and 27.2 in 1921.

The principal causes of infant mortality are shown in the attached table:

Disease	Under 6 months	6 months to 1 year	Total
Convulsions of Infants	7	2	9
Diarrhoea and Enteritis	35	25	60
Respiratory Diseases	29	26	55
Contagious Diseases	21	9	23
Prematurity	95	4	99
Congenital Malformation	21	3	24
Congenital Debility	32	2	34
Marasmus, etc	29	8	37
Other Diseases	55	14	69
Totals	324	93	417

In conclusion, I wish to endorse the recommendation made by Dr. Shirreff, medical superintendent of the Isolation Hospital, as to the urgent need of increased laundry and boiler accommodation at this institution. The laundry was built when the hospital was only half its present size and requires to be enlarged to cope with the amount of work that it is now required to do. Two of the boilers are very old and in a precarious condition and require to be run always at full capacity to develop the power needed, leaving no reserve boiler available in case of repairs being necessary during cold weather.

I wish to thank the members of the Board of Health and the staff of the Health Department for their co-operation throughout the year.

Tables of vital statistics and the reports of the various subdepartments are appended.

All of which is respectfully submitted,

T. A. Lomer,
Medical Officer of Health.

PETERBOROUGH.

To the Chairman and Members of the Board of Health of the City of Peterborough.

Gentlemen:

I herewith present to you my annual report for the year 1922, ending November 30th, 1922.

I am pleased to inform you that at the present time the health of the city is better than at any other period since I assumed the position of M.O.H., also that the sanitary condition of the city is much improved.

The establishment in this city of a branch of the provincial laboratories is of untold value not only to the medical profession but to the general public also. The number of tests made in this laboratory since its opening has been 4,071.

All city water is now being filtered.

Monthly tests are made of milk and there has been a marked improvement in every way.

The meat shops of the city are well kept and clean.

The hotels and restaurants are a credit to their owners.

There might be some improvement in some laundries.

More houses have been connected with the sewer this year than for many years past, viz., 187; *i.e.*, 125 old houses and fifty-six new and six old ones replaced by the more modern type.

At the annual inspection of the city school buildings I find them very satisfactory with the exception of that on Rubidge Street, South Central, which I have reported to the Provincial Board of Health as unfit.

The number of contagious and communicable cases is as follows (to November 30th, 1922):

Typhoid	1
Diphtheria	71
Measles	5
Chicken-pox	21
Smallpox	0
Scarlet Fever	126

At the present time there is only one case (scarlet fever) in the Queen Mary Hospital, and only one house under quarantine in this city.

It gives me great pleasure to inform you that there has been much done in the way of improvement at the Isolation Hospital. Two fire escapes have been placed, one on the north and one on the south side. The north side has been decorated and painted. The other side will require this next year. The Chief Provincial Health Officer recommended that this hospital should be connected with the city sewer system. The council now has this matter under consideration and in all probability this will be completed next year.

The number of cases admitted to this hospital, 1922, ending November 30th, is as follows:

In hospital, January 1st		18
Scarlet Fever	11	
Diphtheria	6	
Mixed Infection	1	
Admitted to November 30th, 1922		100
Scarlet Fever	59	
Diphtheria	41	
Out of city cases		6
Scarlet Fever	3	
Diphtheria	3	
Cases discharged		112
Deaths		5
Case in hospital now		1

The fees paid to the city treasurer to date amount to $2,310.00.

Since a training school has been established in connection with the hospital, two of the nurses have graduated.

And, gentlemen, I wish to bring to your notice that many of the medical men of this city are giving lectures during the winter months to the nurses, a kindness and consideration which I greatly appreciate.

The sanitary inspector's report is enclosed and will speak for itself.

(Sgd.) T. W. H. YOUNG, M.D.,
Medical Officer of Health.

Dr. T. W. H. Young, Medical Officer of Health, City of Peterborough, Ont.

SANITARY INSPECTOR'S REPORT FOR YEAR 1922.

I am pleased to report sanitary conditions of the city have much improved, especially *re* earth closets which you (as M.O.H.) ordered to be connected with sewers, which has been done in many instances. A great number still remain to be connected as there are many who have not complied with the notices given. I still find that most of the people have not proper receptacles for their garbage and do not drain it, which gives the men at the incinerator much trouble to keep the fires alight.

The following list of some of the complaints will give you some idea of the work being done by the sanitary inspector:

Garbage complaints	260
Scavenger complaints	119
Slaughter house inspection	38
Pig pens	4
Cow buyers' inspection	32
Bathing house inspections	7
Milk tests	289
Butcher shop inspections	12
Dead animals	15
Stable and manure box inspections	47
Hen coops	3
Hotel inspections	10
Boarding and eating houses	42
Bakeries inspections	20
Cesspools	3
Houses and cellars inspections	45
Yards and lanes inspections	110
Laundries inspections	15
Factories inspections	5
Fruit and fish stores inspections	11
Inverlea dressing rooms	4
Diphtheria	71
Scarlet Fever	126
Measles	5
Typhoid	1
Chicken-pox	21
Removed all quarantine cards	
Inspected schools with M.O.H	13
Restaurant Inspections	14
Inspections with Provincial Officer of Health	4
Milk vendors' inspections	17
Store inspections	23
Board of Health notices	42
Removing dead fish out of Little Lake.	
Inspecting market every Saturday.	

Mr. Miller, relief officer, is appreciated for his assistance in the office.

All of which is respectfully submitted.

(Sgd.) C. S. STAPLETON,
Sanitary Inspector, City of Peterborough, Ontario.

PORT ARTHUR.

Mr. S. A. Coulter, Chairman, Board of Health.

Dear Sir:

I beg to submit my annual report for the year ending 31st of October, 1922.

We had a fairly successful year, our Isolation Hospital being without patients several times. We also had fewer houses quarantined than we have had for a number of years.

We have kept a watch on the city water, sending a number of samples to the provincial laboratories for examination. I am pleased to say the reports were all good. With Dr. Spark, the district Officer of Health, I visited the pumping station and inspected the plant with special attention to the machine for chlorination.

Dr. Spark, Mr. Miller, Provincial Inspector of Health, and myself visited all the summer resorts in connection with the city, which include Loon Lake, Amethyst, Birch Beach, Wild Goose, McKenzie, Green Bay, Iskabibble, and Silver Island. With Inspector Peckett I have visited and inspected the camping grounds at Current River, the Lake Shore and the Lyon Boulevard. The toilet accommodation at nearly all of these places are of the most primitive kind and I notified all the campers that they must provide better and more sanitary closets, which must be protected from flies.

As in other years, the milk supply has required the most careful attention. Our inspector gives three days a week to the milk alone. He collects samples from the different dealers to take to the laboratory for examination. I am pleased to say the reports have been generally good. Occasionally a dealer has dirty milk or milk which is low in butter-fat. However, as we publish a weekly report in the paper, which is always watched by the citizens, the dealers find it does not pay to have poor or dirty milk. For years I have advised that the milk be handled under a different system than at present. When we consider that there are one hundred and sixty-four persons selling milk in the city, it will be easy to understand what a work the inspector has. At present there is no city by-law in regard to having cattle tested for tuberculosis. I advise the by-law should be amended by the council, so that every person wanting to sell milk in Port Arthur should have their cattle tested before receiving a license. You will note that there were thirteen deaths from tuberculosis during the year. Of course, this does not mean they were contracted from the milk, but we cannot be too careful. I have written the Department of Agriculture, Ottawa, in regard to this subject and expect some help from them. We visited the dairies and found them generally in very good condition. I believe the large dairies try to keep their stables and cattle clean.

I have assisted the inspector in visiting and inspecting yards, lanes, restaurants, hotels, schools, elevators, gaol, police station, boarding houses and all complaints of unsanitary houses. We have also quarantined and inspected all houses reported for contagious diseases. Mr. Hayes, our inspector, had to apply for leave of absence last April, on account of ill health. Mr. Peckett, the plumbing inspector, took on his work on May 1st, and has given the greatest attention to it. Mr. Hayes has returned from the Military Hospital in Winnipeg, and your Board must settle the question of his again taking up the work.

I attended a number of sick children in the Shelter during the year; also a number of the men in the firehalls and in the police station. I examined thirty-

three insane persons in the gaol, attended seventeen charity patients in the hospitals as well as nineteen in my office or at their homes.

On account of finances, we dispensed with the services of the school nurse on May 1st. Since that time we have had no report on the health of the school children. The teachers have sent a number of pupils to me for examination when they attended school, but the absent children were not followed to their homes as the nurse had done.

We have had about one hundred and twenty patients from Port Arthur treated at the venereal clinic since it was started. What this means in the prevention of the spread of disease it is impossible to say. As these diseases are a cause of death among a large number of infants and the principal cause for idiotic and deformed children, the value of this work cannot be estimated. We now look forward to the day when venereal diseases may be a thing of the past.

We only had one case of typhoid reported. This was a patient who took ill while in Haileybury and returned to hs home here for treatment. Thus we did not have a case from the city which is a great gratification. Dr. Spark paid our Board a couple of visits during the year and gave some remarks on health subjects, which were received with interest by our members, our chairman thanking the doctor.

Vital Statistics.

The estimated population of Port Arthur is	15,629
Births for the year (males, 244; females, 245)	489
Deaths registered	201

Eighteen of these deaths occurred outside of the city, but were registered here.

Causes of Death.

Still born	22
Premature	12

	1 year	1 to 2 years	2 to 3 years	3 to 5 years	5 to 10 years	Over 10
Marasmus	5	1	..	..	..	..
Pneumonia	2	2	3	..	1	3
Enteritis	5	1	..	..	..	..
Pyelitis	1	..	..	..	..	..
Shock from fall	1	..	..	..	..	..
Rickets	1	..	..	..	..	..
Influenza	1	..	..	..	..	3
Purpura Fulman	1	..	..	..	..	..
Hurt by forceps	1	..	..	..	..	..
Dural Hemorrhage	2	..	..	..	..	..
Septicaemia	1	1	..	..	..	4
Indigestion	3	1	..	..	..	1
Encephalitis	1	1	..	..	..	..
Diarrhoea	..	1	..	..	..	..
Scarlet Fever	..	1	..	..	..	..
Meningitis	..	1	..	..	..	2
Cardiac	..	..	1	..	1	19
Tuberculosis	2	..	..	..	..	11
Nephritis	..	..	1	..	1	6
Burned	..	..	1	..	..	..
Diphtheria	..	..	..	1	..	..
Intestinal obstruction	..	..	..	1	..	..
Ruptured liver	..	..	..	..	1	..
Shot—accident	..	..	..	..	1	1
Tetanus	..	..	..	..	1	..
Addison's Disease	..	..	..	..	..	1
Cancer	..	..	..	..	..	8
Shock—explosion	..	..	..	..	..	1
Suicide	..	..	..	..	..	5
Pleurisy	..	..	..	..	..	1
Suffocated—grain	..	..	..	..	..	1

	1 year	1 to 2 years	2 to 3 years	3 to 5 years	5 to 10 years	Over 10
Fracture—skull	..	..	..	..	..	4
Abscess—liver	..	..	..	..	..	1
Peritonitis	..	..	..	..	..	3
Rectal fistula	..	..	..	..	..	2
Urinary abscess	..	..	..	..	..	1
Salpingitis	..	..	..	..	..	1
Shot—murder	..	..	..	..	..	1
Crushed by car	..	..	..	..	..	1
Apoplexy	..	..	..	..	..	3
Anaemia	..	..	..	..	..	4
Drowned	..	..	..	..	..	1
Paralysis	..	..	..	..	..	1
Injury to chest	..	..	..	..	..	1
Appendicitis	..	..	..	..	..	1
Skin Disease	..	..	..	..	..	1
Embolism	..	..	..	..	..	1
Arterio-Sclerosis	..	..	..	..	..	1
Angina Pectoris	..	..	..	..	..	1
Asthenia	..	..	..	..	..	1
Fracture—femur	..	..	..	..	..	1
Senile	..	..	..	..	..	1
Bright's Disease	..	..	..	..	..	1

You will note that thirty-four deaths occurred in children at time of birth. This is the lowest number for some years and shows greater care taken by those in charge of the confinement.

STILLBORN.

1916	39
1917	53
1918	39
1919	47
1920	62
1921	46
1922	34

CONTAGIOUS DISEASES REPORTED.

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Scarlet Fever	7	16	13	6	8	3	1	2	2	2	..	4
Mumps	1	..	..	..	..	..	..	..	1	..	..	..
Typhoid	..	..	..	..	..	..	..	..	1	..	..	..
Whooping Cough	13	7	1	5	3	6	8	..	1	..	..	..
Tuberculosis	..	..	..	..	..	..	..	1	..	..	..	..
Diphtheria	7	..	2	1	2	2	..	1	2	1	..	1
Chicken-pox	2	3	1	..	4	..	..	..	..	..	1	..
Measles	..	..	..	..	1	1	4	1	1	..	..	..
Smallpox	..	..	..	..	..	..	..	..	..	..	1	..

TOTAL NUMBER OF CASES FOR YEAR.

	Cases	Deaths
Scarlet Fever	64	1
Mumps	2	0
Typhoid	1	0
Whooping Cough	44	0
Tuberculosis	1	13
Diphtheria	19	1
Chicken-pox	11	0
Measles	8	0
Smallpox	1	0

SCARLET FEVER.

Years	Cases	Deaths
1918	66	3
1919	115	3
1920	101	7
1921	33	0
1922	64	1

DIPHTHERIA.

1918	16	1
1919	4	1
1920	14	2
1921	30	1
1922	19	1

MEASLES.

1918	6	0
1919	12	0
1920	364	0
1921	17	0
1922	8	0

WHOOPING COUGH.

1918	58	3
1919	1	0
1920	5	0
1921	16	1
1922	44	0

TYPHOID.

1918	5	1
1919	4	0
1920	3	1
1921	1	1
1922	1	0

ISOLATION HOSPITAL.

There were twenty-eight cases of scarlet fever, five of measles, and four of diphtheria treated in the hospital during the year.

1919	123	patients
1920	71	"
1921	33	"
1922	64	"

FINANCIAL STATEMENT.

Pay Roll	$9,850 00
Board General Account	370 44
Relief	74 00
Public Utilities	213 30
Engineer Suspense	89 31
Isolation Hospital	2,166 82
Total	$12,763 87

CREDITS.

From Public School, re Nurse's salary	$350 00	
Separate School, re Nurse's salary	87 50	
Fort William, Clinic Nurse	350 00	
Provincial Board, Clinic Nurse	500 00	
Red Cross, Clinic Nurse	120 00	
Schools, for Nurse to May 1st	233 33	
Collections, Isolation Hospital	349 30	
Total	$1,990 13	
Net total		$10,774 74

Yours respectfully,

C. M. LAURIE,
Medical Officer of Health.

SARNIA.

To the Chairman and Members of the Local Board of Health, Sarnia, Ontario.

Gentlemen:

It is my privilege to present my fifth annual report of the sanitary conditions of the city for the year 1922.

During the year there were 209 deaths, which includes all deaths occurring at the City Hospital, some of whom were from outside points. This gives a death rate of 13 per thousand, which has been reduced eight points as compared with the years 1918 and 1919.

The birth rate during the year has been 420, or about 26 per thousand, which compares with the rate of 1921, and more than 1918, which was 24.33 per 1,000.

The following is the report of contagious and infectious diseases for the year 1922: The sanitary inspector reports that we have had 79 cases of all kinds, viz.:—Diphtheria, 13; scarlet fever, 21; typhoid fever, 5; measles reported, 29; smallpox, 1; tuberculosis, 2; chicken-pox reported, 4; impetigo reported, 4. This report would show that the city has been practically free from any epidemic. Kindly note that with some of the minor diseases, that the reports are not likely accurate, as these cases are not quarantined and many escape as they are not reported. In all cases where fumigation was required, it was done by Mr. A. Crosbie, sanitary inspector, at thirty-four different houses in the city. We had only one case of smallpox, which was contracted in Essex county, and five cases of typhoid fever, most of them brought in from outside points.

It is a matter of regret that our death rate among infants under one year is still too high, but has been considerably lessened by the efforts of the district health nurse and the establishment of a "Well Baby Clinic," and with the appointment of a public health nurse by the Provincial Board of Health for each district, who visits the various centres and with the local nurse instructs the mothers in the proper care and feeding of infants. I trust that the citizens will interest themselves in supporting this splendid work for "baby welfare," and that the city council will in due time provide the funds for carrying on this project and thus relieve the ladies of the Red Cross Society who have up to the present carried out financially this important work. For the present a committee of fifteen citizens have volunteered to raise $600 annually for three years, providing the city council will grant a similar amount in order to assist the funds of the Red Cross Society for carrying on this very important work.

Communicable Diseases.

A fact that is not sufficiently understood is that the common infectious diseases of childhood are much more fatal in babies and children under five years of age than in older children. Parents should protect these younger children above all others from infectious diseases. If one of the older children has suspicious symptoms, keep him away from the baby from the very beginning. If it turns out that the older child has an infectious disease he will probably come through all right, and if the baby gets it there is a great deal more doubt about him.

One of the great difficulties in controlling communicable diseases is to get all children under proper quarantine. There is every reason to believe that either through carelessness, ignorance or intention on the part of the parents,

many cases of infectious diseases are not seen by doctors and not reported to the Board of Health. Such hidden and missed cases are a big factor in the spread of communicable diseases. It should be impressed on the parents that whether a doctor is called or not, the head of the family is required by law to notify the Board of Health is he has any reason to suspect that he has any infectious disease in his household. Finally, the danger of hidden and missed cases may be combatted by education of the public through the school nurse and the press. The final condition that requires mention in connection with infectious diseases is the serious disability we labour under, in having no Isolation Hospital.

Isolation Hospital.

The prevention of the spread of communicable disease is one of the aims of the Board of Health, and whenever a person has so contracted a communicable disease and others have been exposed to the disease, provision should be made at once to isolate the person by placing the patient in the Isolation Hospital and quarantine those exposed for the regulation period. If this were done at the inception the epidemic might be brought under immediate control. In this way the expenses could be reduced all round as the number of people to be provided with necessaries would not by any means be so great.

I would again recommend that the Board of Health request the city council to erect a suitable building on the present hospital grounds for the care of all persons so affected with a communicable disease. It is to be hoped that the city council will be able to borrow the money required for such a building and thus place the city of Sarnia as being a city up to date.

Milk Supply.

Clean milk is necessary for developing a sturdy race, yet milk causes more deaths than all other foods put together; therefore, it is of the greatest importance to see that the milk that is supplied to our citizens should be clean and wholesome. It is necessary, therefore, to see that the source of supply which our dairymen get is obtained from farmers who take the greatest amount of care of their cows, barns, utensils, etc., and also that those helping around the farm and dairymen are in good physical health and free from any contagious and infectious disease. While these requirements are all necessary, the greatest essential is to see that the producers have proper places for cooling their milk and the means to keep it cool at 50 degrees temperature; also to see that all bottles are sterilized, filled and capped before they start on their journey to the city, by the dairymen who distribute the same to their customers.

Last year I made an effort to see that all customers were supplied with bottled milk, and accordingly drafted a modified milk by-law to take the place of the ancient milk by-law that had been passed years ago. I found on investigation that seven-eighths of our entire supply was so distributed as bottled milk and thought that in the by-law we should compel all milk sold to customers to be bottled, with the exception of customers who consume large quantities, who should have the privilege of getting it in bulk. Some objection was taken by some dairymen on account of the expense in purchasing bottles, so that the council has refrained from passing the by-law, consequently this by-law is still standing in abeyance.

Our dairymen are to be congratulated on the class of milk that is sold to our citizens, as the tests, both bacterial and sediment, have shown that it is well

within the class of clean, wholesome milk. Half our milk supplied comes under the standard of pasteurized milk, which in many cities is the only grade of milk that is allowed to be sold to customers.

We hope to have a conference with the dairymen before long and see if we cannot agree on a modified milk by-law, which should be in the interest of dairymen as well as customers.

School Health Supervision.

Health is one of our greatest natural assets and to insure health, supervision should start with prenatal care of the expectant mother and the proper methods of infant feeding. This latter has been carried out by the formation of a "Well Baby Clinic" under the supervision of the Medical Officer of Health, and its public health nurse, Miss G. Menzie, assisted by the city physicians, who have willingly given their services at the weekly baby clinic where mothers are given instruction how to properly feed the baby and get the best results for their baby's welfare.

Following the child into its school days, we have a health nurse in connection with our schools, whose duty is to see that each child is examined physically and mentally, which at the time or in the future if untreated becomes a hindrance to the physical or mental progress of the individual. Many of these children previous to medical inspection had probably been dubbed subnormal and had often received unwarranted criticism and undeserved punishment. Children found affected with physical defects are reported by the school nurse to their parents, who are advised to consult their family physician for proper treatment, and each child so reported is followed up at their homes by the school nurse.

The Provincial Board of Health issues annually a questionnaire for the Medical Officer of Health, instructing him to visit all the schools of the municipality and fill in the blanks after each inspection and make such recommendations to the Board of Education along the line of improvement of the benefit of the health of teacher and children of said schools. This has entailed a great deal of work on the Medical Officer of Health, as three copies are required, one for the Local Board of Health, one for the Board of Education, and one for the Provincial Board of Health.

Water Supply.

Our water supply since the last intake pipe was put into the river bed has proven with the chlorinization, as shown with repeated tests, to be most favourable and free from colon bacilli, and we can congratulate our citizens in having probably the purest water in the Great Lakes. As stated, we have only had five cases of typhoid fever reported during the year, and most of these cases were imported. Your committee has personally inspected the source of our ice supply and find that ice taken from the bay is not free from suspicion. We have issued warnings to the citizens that such ice should not be used in drinking water during the summmer time. The artificial ice which is made from the city waterworks supply, we can recommend for cooling drinks in the summer time.

Sewerage and Garbage.

Our system of sewerage is such that at the present time it empties into the river St. Clair, and whilst we have three main trunk sewers and lateral sewers that connect with all parts of the city, there are still a few outdoor closets with no sewer connection which are cleaned in the spring of the year.

The city streets, especially the paved streets, are kept clean by "white wings" during the summer months and nearly all other streets are given such attention, so that drainage, etc., is kept in perfect condition by the city Board of Works.

The city provides a contractor to take charge of all kinds of garbage from all parts of the city, where it is disposed of at the incinerator or carted to the present dumping ground north of the city, where it is covered up with soil.

Venereal Diseases.

Since the legislation of 1918, when the legislature passed "The Venereal Diseases Prevention Act," we have endeavoured to get the physicians to report all such cases coming under their care. Of all the racial evils of the human race, viz.: (1) Venereal diseases, (2) alcohol, (3) tuberculosis, none causes so much misery, suffering, expense, etc., as those of our people with venereal disease. Our public institutions, viz.: asylums, penitentiaries, homes for cripples, etc., are filled with inmates who, having inherited or contracted this disease, have wrecked these inmates physically and mentally and rendered them unfit to perform the ordinary duties of life. This disease is curable, and the Act so provides free medical treatment to those unfortunate individuals who have contracted this disease and cannot afford to pay their physician for such treatment. The Provincial Board of Health are establishing such venereal clinics in the larger cities on certain conditions and I am of the opinion that we should make application for such a clinic for the city of Sarnia. Such a clinic laboratory could be placed in connection with our new Isolation Hospital which we hope to have before long.

Recommendations.

(1) That a sanitary inspector be employed to visit and inspect all places where milk is produced by farmers in the early spring, and that the questionnaire again be used and permits granted to those who are graded first class.

(2) That the city council be petitioned to erect an Isolation Hospital of small size to accommodate patients affected with communicable disease.

(3) That we petition the council to ask that they request the Provincial Board of Health to establish a "Laboratory Venereal Disease Clinic," as provided by the regulation of the Provincial Board of Health for free treatment of patients affected with venereal disease who are unable to pay for such treatments.

All of which is respectfully submitted.

(Sgd.) Wm. Logie, M.D.,
Medical Officer of Health.

SAULT STE. MARIE.

To the Mayor and Aldermen of the City of Sault Ste. Marie, Ontario.

Gentlemen:

I have the honour to submit my annual report for the year 1922.

Vital Statistics.

Estimated population	22,000
Births to date	629
Deaths to date	205

Infectious Diseases.

Smallpox.—One case, no deaths. Last year, 174 cases.

Scarlet Fever.—Ninety-seven cases, one death. Last year 126 cases and three deaths.

Diphtheria—Fifty-one cases, four deaths. Last year 127 cases and five deaths.

Measles—Four cases, no deaths.

Typhoid Fever—Six cases. Two from Thessalon, three from Blind River, one from a boat, and none from the city.

Tuberculosis—Eleven deaths from all forms of the disease. Still the most fatal of our communicable diseases.

Chicken-pox—Four cases, no deaths.

Infantile Paralysis—One case.

Dairies and Milk Supply.

The dairies supplying milk to the city were inspected by members of the Board of Health and Dr. Johnston, Provincial Medical Officer of Health for this district. Our milk supply is very often subject to grave suspicion as to its safety and cleanliness. Examination of many samples at the laboratory of the Provincial Board of Health has shown gross contamination with dirt. A warning is given the dairyman whose milk is found dirty and if his milk is persistently unclean his license to sell milk in the city is cancelled.

Boarding Houses, Hotels and Restaurants.

These places have been regularly inspected and have been kept in good condition during the year. The sanitary inspector made 119 inspections of these places during the year.

Butcher Shops and Meat Supply.

The butcher shops were inspected regularly by the sanitary inspector. One hundred and seven inspections were made and two police court prosecutions were held against butchers for offering meat for sale that was unfit for food.

Nuisances.

These were immediately investigated and abated. Forty-seven notices to connect to sanitary sewer. Two hundred and seventy-six visits were made by the sanitary inspector to stables and other premises and to investigate complaints. The garbage collection by the City Engineer's Department was done most efficiently.

The Isolation Hospital.

Patients admitted: scarlet fever, seven cases; diphtheria, five cases.

The Public Health Nurse.

Miss Miller continues to do good work and a great deal of it. During the year she has made over 1,900 calls and has attended eighty-five baby clinics. Results are beginning to show in the decreased infant death rate which is gradually falling.

The Sanitary Inspector.

The duties of this officer were faithfully performed. Below is a summary of his work during the year:—

Houses quarantined	149
Visits to same	65
Houses fumigated	140
Butcher shops inspected	107
Restaurants and hotels inspected	119
Grocery stores and bakeries	88
Ice cream parlors	64
Stables and other premises	242
Laundries	22
Investigating complaints	34
Isolation Hospital	25
Attended police court	7
Attended market	47
Collected milk samples once a month	11

Board of Health.

There were twelve meetings of the Board during the year. Mr. G. J Saunders was chairman of the Board, and Miss Way, Mr. O'Connor and His Worship the Mayor were valuable members.

All of which is respectfully submitted.

A. S. McCaig,
Medical Officer of Health.

The Public Health Laboratory.

By courtesy of Dr. N. F. W. Graham, director of the laboratory of the Provincial Board of Health, I attach to my report a summary of the work done at the laboratory during the year.

Diphtheria.

Swabs for diagnosis—	
Positive	123
Negative	706
Swabs for release—	
Positive	73
Negative	334

Tuberculosis.

Sputum for examination—	
Positive	40
Negative	155

Typhoid Fever.

Widal Test—	
Positive	4
Negative	8

Cerebro-Spinal Fluid.

Cerebro-spinal Meningitis	0
Tuberculous Meningitis	0

Syphilis.

Colloidal gold test	2
Wassermann—	
Positive	110
Negative	178

Gonorrhoea.

Smear examinations—	
Positive	32
Negative	64

Milk Examination.

Fat content	159
Bacteriological	625
Tuberculosis	20
Adulterants	20

Water Examination.

Bacteriological plates cultured and counted	8,792
Chemical	346

Miscellaneous Examinations and Analyses.

Blood	12
Urine	195
Ice	50
Oil	4
Beer	12
Moonshine	17
Drugs	3
Mineral	196
Typing for transfusion	2

ST. CATHARINES.

To the Chairman and Members of the Local Board of Health of the City of St. Catharines.

Gentlemen:

I herewith submit my annual report from November 15th, 1921, to November 15th, 1922.

Attached to this report is the number of births, deaths and marriages during the year. Also a list of diseases classed as contagious, as reported by the medical practitioners of the city. Also a list of all deaths and their causes during the year, and a summary of the ages at the time of death.

The population as returned by the assessment commissioner for 1922, is 21,194, an increase of 233. The death rate per 1,000 is 12.22.

Eleven meetings were held during the year. Copies of the above are attached to the Medical Officer of Health's report.

All of which is respectfully submitted.

J. ALBERT PAY,
Secretary, Local Board of Health.

NUMBER OF BIRTHS.

From November 15th, 1921, to November 15th, 1922, inclusive.

Births—Males	319	
Females	349	
Total		668
Marriages		225
Deaths		287

Births a decrease of 46 over 1921.
Marriages a decrease of 35 over 1921.
Deaths a decrease of 30 over 1921.

CONTAGIOUS DISEASES REPORTED.

	Cases	Deaths
Diphtheria	62	3
Scarlet Fever	16	0
Smallpox	17	0
Measles	11	3
Whooping Cough	8	0
Chicken-pox	9	0
Tuberculosis	24	11
Mumps	3	0
Typhoid Fever	2	1
Erysipelas	2	2
Venereal	92	2
Totals	247	22

AGE AT TIME OF DEATH.

Stillborn	27
Premature	17
From birth to 6 months	28
" 6 months to 1 year	11
" 1 year to 2 years	5
" 2 years to 5 years	5
" 5 years to 10 years	4
" 10 years to 15 years	7
" 15 years to 20 years	4
" 20 years to 25 years	9
" 25 years to 30 years	10
" 30 years to 35 years	13
" 35 years to 40 years	16
" 40 years to 45 years	10

From 45 years to 50 years	10
" 50 years to 55 years	12
" 55 years to 60 years	13
" 60 years to 65 years	19
" 65 years to 70 years	18
" 70 years to 75 years	18
" 75 years to 80 years	13
" 80 years to 85 years	9
" 85 years to 90 years	7
" 90 years to 95 years	2
" 95 years to 100 years	0
Total	287

Causes of Deaths.

No.		
1	Typhoid Fever	1
6	Measles	3
9	Diphtheria (Paralysis)	1
9	Diphtheria	3
10	Influenza	2
18	Erysipelas	2
20	Septicaemia	1
28	Pulmonary Tuberculosis	5
28	Tuberculoiss of Lungs	11
29	Acute Miliary Tuberculosis	1
30	Tuberculous Meningitis	1
31	Psoas Abscess	1
37	Syphilis	2
39	Cancer of Jaw	1
	" Pelvic	1
40	" Liver	1
40	" Stomach	5
41	" Intestines	1
41	" Kidney	1
41	" Breast	2
41	" Peritoneum	2
42	" Uterus	6
48	Arthritis Deformans	1
50	Diabetes	2
50	Diabetes Mellitusi	4
61	Meningitis Simple	1
63	Paralysis Agitans	1
64	Cerebral Haemorrhage	4
64	Apoplexy	3
71	Convulsions (Infantile)	5
78	Endocarditis (Acute)	1
79	Endocarditis	6
79	Aortic Insufficiency	1
79	Auricular Infiltration	1
79	Chronic Valvular Disease	7
79	Fatty Degeneration of Heart	1
79	Myocarditis	5
79	Mitral Degeneration	1
79	Valvular Heart Disease	4
80	Angina Pectoris	3
81	Arterio Sclerosis	4
81	Aneurism of Aorta	1
81	Degeneration of Arterial Disease	1
89	Acute Bronchitis	1
90	Bronchitis Chronic	1
91	Broncho Pneumonia	10
92	Lobar Pneumonia	15
96	Asthma	1
102	Ulcer of Stomach	1
103	Gastritis	1
103	Haemorrhage of Stomach	1

No.		
104	Diarrhoea and Enteritis	8
108	Appendicitis	5
109	Strangulated Hernia	1
110	Intestinal Paralysis	1
110	Paralysis of Bowels	1
111	Stillborn	27
115	Cholecystitis	2
117	Peritonitis	1
118	Adenoma of Thyroid	1
120	Bright's Disease	9
120	Chronic Nephritis	6
123	Calculi of Bladder	2
124	Acute Cystitis	2
126	Enlarged Prostate	1
126	Prostatitis	1
137	Puerperal Septicaemia	1
139	Puerperal Phlebitis	1
139	Puerperal Pulmonary Embolism	1
140	Puerperal Shock	1
144	Abscess Pelvic	1
151	Ulcer Umbilicis	1
151	Empelego Contagion	1
151	Inability to take food	1
151	Intestinal Indigestion	1
151	Marasmus	1
151	Malnutrition	2
151	Premature Births	17
151	Pyloric Stenosis	1
152	Umbilical Haemorrhage	1
152	Atelectasis	1
152	Haemorrhage	2
154	Senility	10
156	Haemorrhage of Newborn	1
157	Suicide by Hanging	2
167	Scalding by Hot Water	1
168	Gas Suffocation (Accident)	1
169	Accidental Drowning	2
171	Accident—Fracture of Skull	1
172	Accident—Fracture of Thigh	3
174	Traumatism by Motor	2
174	Accident by Falling	3
175	Traumatism by Railway Accident	4
189	Unknown	6
	Cardiac Decompensation	1
	Cong. Malformation of Heart	3
	Chronic Heart and Kidney Disease	1
	Pyelitis	..
	Pernicious Anaemia	1
	Total number of Deaths	287

To Chairman and Members of the Board of Health of the City of St. Catharines.

Gentlemen:

Following is a report of work done by the sanitary inspector for the year ending November 15th, 1922.

Total number of inspections	1,512
Inspection of outside toilets	266
" inside toilets	23
" unsanitary houses and premises	58
" laundries	32
" restaurants	25
" market	40
" junk shops	14
" nuisances	27
" water in cellars	5
" chickens on premises	7
" hogs on premises	5
" sewers	20
" stables	7
" garbage dumps	6
" garbage complaints	5
" dairies	90
" unfounded complaints	7
" miscellaneous	80
" relief supplied	60
Number of dead animals collected and buried	153
Notices served to dispose of nuisances	10
" " " outside toilets	120
" " provide manure receptacles	46
" " dairies	34
Number venereal disease notices posted up	12

QUARANTINE AND DISINFECTION.

Number of houses placarded	62
" " fumigated	85
" " visited under quarantine	20
Number of milk samples collected and tested for sediment and butter-fat	193
	1,512

All of which is respectfully submitted.

RICHARD BONHAM,
Sanitary Inspector.

REPORT OF THE WELL-BABY CLINIC FOR YEAR ENDING NOVEMBER 15TH, 1922.

Number of infants enrolled November 15th, 1921		182
Enrolled during year		179
Total number of infants registered	361	
Average weekly attendance	25	
	361	361

A. M. READ,
Public Health Nurse.

REPORT OF PUBLIC HEALTH NURSE FOR YEAR ENDING NOVEMBER 15TH, 1922.

Date	Infant Welfare	Child Welfare	Miscellaneous	Relief	Prenatal	Tubercular	Sickness	Well Baby Clinic	Inspection	Mothers' Meetings	Operations	Totals
1921												
November 16th to 30th..	46	2	11	20	1	1	5	2	1	..	...	89
December.....	65	..	27	63	2	9	9	3	..	2	..	180
1922												
January.....	73	12	13	81	3	3	7	5	..	1	..	198
February.....	74	21	19	43	12	..	..	4	5	2	..	180
March.....	101	9	13	44	3	5	14	4	..	1	..	194
April.....	99	16	23	8	6	2	15	4	..	1	..	174
May.....	132	16	22	9	4	..	2	5	..	..	3	193
June.....	120	23	22	6	5	1	2	5	..	..	..	184
July.....	122	15	31	8	5	1	17	4	..	..	..	203
August.....	...	..	..	..	..	..	..	..	..	..	..	...
September.....	96	24	30	..	3	..	24	4	..	1	..	182
October.....	107	20	27	6	..	..	17	4	..	1	1	183
November 1st to 15th...	42	7	12	3	..	..	6	2	..	1	..	73
Totals.....	1,077	165	250	291	44	22	118	46	6	10	4	2,033

The Chairman and Members, Local Board of Health, St. Catharines, Ont.

Gentlemen:

Please find herewith my annual report as Medical Officer of Health for the past year.

Milk—Practically all samples of milk taken from the vendors this year were clean, the butter-fat of the required percentage and the temperature in keeping with the by-law requirements. Much of the milk is still being delivered in bulk, and I consider it would be much better if bottles were used, and all milk come from tuberculin-tested cows or be pasteurized. The discs from the samples tested are now placed on view in the hallway of the city buildings so that citizens may see which dealers supply clean milk.

Child Welfare—Considerable work by different organizations has been done this year along the lines of child welfare and the health nurse has spent considerable time on this very necessary work. The Child Hygienic Centre has proved its usefulness and this Board is indebted to those who have so faithfully carried on the work there, and to Alexandra Hall for the use of their rooms. The Centre, however, has grown to such an extent that the present quarters are hardly large enough. The average weekly attendance at the Centre was twenty-five, and 179 new babies were enrolled during the year.

Water—The city water supply has been very satisfactory and no cases of typhoid were reported, except two which were brought in from outside municipalities and treated at the hospital.

Inspection of Public Institutions—During the past year I have inspected the following institutions: General and Marine Hospital, Isolation Hospital, Tuberculosis Sanatorium, Children's Shelter, and all public schools. A detailed report of the latter inspection was sent to the Board of Education and to the Provincial Board of Health.

Special V.D. Clinic—This clinic was opened in March and has been fairly well attended. Four afternoons each week are given to the free treatment of venereal disease to those who are unable otherwise to pay for treatment. The clinic nurse and physician have been very conscientious in their work.

Outside Toilets—Each year a determined effort is made to do away with outside toilets, but the work would be much easier for health authorities if owners of all new houses were compelled by law to connect with the sewer when building. I would draw your attention to section 25 (2) of the Public Health Act.

Where a local board in any city recommends that sanitary conveniences should be installed in any building, and is of the opinion that the owner of the premises is unable to pay the expense of the same at once, the municipality may install suitable sanitary conveniences at the expense of the owner, and the board may direct that the cost, including interest at five per centum on the deferred payments, be paid by the owner in equal successive annual payments extending over a period not exceeding five years, and that such annual payments be added by the clerk of the municipality to the collector's roll and collected in like manner as municipal taxes.—3-4 Geo. V, c. 55, s. 1.

Sewers—During the year there were 200 houses connected and five miles of sewers laid. Practically all the city with the exception of a part of Westchester avenue has now been sewered.

Isolation Hospital—During the year the following cases have been admitted: Diphtheria, 16; smallpox, 11; scarlet fever, 2; septic sore throat, 2; total, 31. Two of these cases were non-residents and there were no deaths. The hospital is very well kept and the matron has done efficient work. The Isolation ambulance is now kept at the hospital and handles all cases going to that institution.

Tuberculosis Sanatorium—There were twenty-six cases admitted. Thirty were discharged and ten died. This institution is doing a splendid work and is very well looked after. The location is excellent and it is rather surprising that more city cases are not admitted.

Complaints—Many complaints have been received by this department. We have tried to follow these up as far as possible, but this work will never be properly handled until a proper system is put in force and quarters provided for the Board of Health. The citizens should remember that their name and address should be sent in with each complaint so that we may let them know what progress we are making in the matter.

Victorian Order—We have received very hearty co-operation in all public-health work from the Victorian Order, and there is no doubt that they are doing a very great work in home-nursing and prenatal work.

Cancer—During the year there were twenty deaths from cancer in this city and it would appear that many of these cases might have been saved had the disease been discovered early in its course. We should remember that cancer s a curable disease. It is neither contagious nor hereditary and must be treated early to give satisfactory results. Cancer should be suspected if there is any lump, especially in the breast, and any irregular bleeding or discharge, any sore that does not heal, particularly on tongue, mouth or lips, persistent indigestion with loss of weight. A careful examination by the family physician should be made if any of these signs are present.

SUPPLIES FROM PROVINCIAL BOARD OF HEALTH DISTRIBUTED.

Anti-Meningitis	100	c.c.
Diphtheria Antitoxin	3,630,000	units.
Tetanus	57,000	units.
Pertussis Vaccine	270	c.c.
Typhoid Vaccine	6	bottles.
Smallpox Vaccine	210	cap. tubes.
Wassermann Tubes	125	
Diphtheria Swabs	115	
Silver Nitrate	320	ampules.
Sputum Bottles	35	

Tuberculosis—Practically no cases were reported by the physicians and most of our reports came from the tuberculosis sanatorium. Much more intensive work against tuberculosis should be undertaken by this board if we are going to cut down the death rate from this disease. It would appear that more co-operation with the Sanatorium Board is necessary. In order to carry on this work it will be necessary for a certain sum of money to be included in our estimates this year.

Infectious Diseases—It is regretted that many physicians are neglectful in reporting infectious diseases and it is to be hoped that during the present year much more co-operation will be given. Our statistics cannot possibly be correct if all cases are not reported. Citizens are also bound to report cases of infectious diseases, especially where there are children of school age. The following is a report on different infectious diseases for years 1919, 1920, 1921 and 1922.

CHICKEN-POX.

	Cases	Deaths
1919	16	0
1920	16	0
1921	28	0
1922	9	0

Diphtheria.

1919	38	2
1920	141	10
1921	101	6
1922	62	3

Measles.

1919	1	0
1920	150	0
1921	9	0
1922	11	3

Mumps.

1919	0	0
1920	40	0
1921	2	0
1922	3	0

Pulmonary Tuberculosis.

1919	15	18
1920	16	16
1921	35	19
1922	26	11

Scarlet Fever.

1919	9	0
1920	32	0
1921	229	2
1922	16	0

Smallpox.

1919	2	0
1920	65	0
1921	1	0
1922	17	0

Typhoid Fever.

1919	0	0
1920	8	3
1921	13	0
1922	2	1

Whooping Cough.

1919	3	2
1920	4	0
1921	32	3
1922	8	0

Venereal Disease.

1920	19	3
1921	110	0
1922	93	2

Financial Statement, Board of Health.

Salaries	$5,794.00
Supplies	365.91
Repairs	211.27
Ambulance	423.62
Medical Attendance Indigents	158.00
Power, Heat, Light and Coal	195.49
Board of Patients	1,020.06
Insurance on Ambulance	217.90
Ice	65.20
Contingencies	429.60
Clinic	1,774.56
	$10,655.61

D. V. Currey.

STRATFORD.

To the Chairman and Members of the Local Board of Health.

Gentlemen:

It is my duty and pleasure to again report to you upon the sanitary condition of the municipality during the past year. We certainly have reason for congratulations. This has been one of our favoured years. Our death rate, as will be shown, is below the general average.

There were recorded with the city clerk, 401 births and 215 deaths. Deducting from the total number registered, eighteen premature and stillbirths, leaves 197 having died from disease and injury. Taking the population of the city as per assessor's report, the general mortality for the year will show 9.8 per thousand people, a figure which is lower than any municipality yet known reported.

Between the ages of one year and twenty there were only five deaths recorded, a most remarkable showing, the five causes of death being paralysis, strychnine poisoning, scarlet fever, nephritis and tubercular meningitis. It is interesting to note that only one death has been recorded as being due to so-called "infantile diseases." This is remarkable and is probably in a measure due to the enlightenment of the mothers regarding the care they should take of their infants' feeding. The education and instruction given by the various organizations towards "child welfare" has undoubtedly had effect. The "Baby Clinic" also comes in for its share in developing the interest of the mothers in the care of their children. From this report it would seem that babies born to-day have a much better chance of their lives than those who were born when a haphazard life had the supremacy.

Between the ages of twenty and forty there were eighteen deaths, the causes being diabetes, suicide, fractured skull, drowning, pneumonia, myocarditis, cancer of the stomach, heart failure, enlarged spleen, cerebral spinal lues, and six from tuberculosis. This is the tubercular period; therefore, those coming under that time of life should exercise care and avoid unnecessary exposure.

Old age carries off the palm. There were seventy-one out of the 197 who survived over the three score years and ten. That so many of the inhabitants live to be over seventy and eighty years of age proves that Stratford, with its beautiful surroundings, must be a very healthy and desirable place in which to live.

Communicable Diseases.—We find that during the early part of the year we had a number of cases of scarlet fever of a very mild type. Fifty cases were reported during the year with two deaths. Ten cases of diphtheria with no deaths. Six cases of chicken-pox and one case of measles with no deaths. Tuberculosis, nine cases with eight deaths.

The great difficulty in controlling communicable diseases, particularly when of a mild type, is that parents through carelessness or ignorance of the law or a desire to avoid quarantine, use "home treatment." The cases are therefore not reported and the children prematurely allowed to return to school, thereby infecting others. Parents should understand that it is required that whenever any householder knows or has reason to suspect that any member of the household has any communicable disease, he shall within twelve hours notify the Health Department.

Any person, householder or physician, whose responsibility it is, by the statutes of Ontario, to report a case of communicable disease, and who neglects to do so, may incur a penalty not less than $25 nor exceeding $100.

Births.—It is required that every birth, including stillbirths, shall be registered by the parent or guardian, on the prescribed form, within thirty days from the date of birth.

Deaths.—It is required by law that every death, including stillbirths, shall be registered by the physician last in attendance, on the prescribed form, before a burial permit is issued.

Any person required by the statutes of Ontario to register a birth or death, and who neglects to do so, may incur a penalty not exceeding $10. Any person who wilfully makes or causes to be made a false statement touching any of the particulars required in registering a birth or death, may incur a penalty of $50.

Sewage Disposal.—Certain changes are about to be made in our sewage disposal, the plan for the proposed alterations having been approved and submitted to the Provincial Board of Health. These, it is expected, will be satisfactory and beneficial to all concerned.

The Isolation Hospital, which has been under course of construction during the year, fortunately is making progress towards completion. The interest taken by the members of the Board therewith is worthy of note. Twenty-one special meetings have been held during the year by the Board and few absentees, if any, were recorded therefrom. Too much praise cannot be given to the chairman for the interest manifest in health matters, time spent in attempting to solve knotty problems and formulating means for the protection of the citizens in general.

Respectfully submitted.

J. A. ROBERTSON,
Medical Officer of Health.

To the Chairman and Members of The Board of Health.

REPORT OF SANITARY INSPECTOR.

Gentlemen:

I am most happy to say in presenting my annual report, that we are still making progress towards improved sanitation in the city. Better sewer service in the east and south end of the city has contributed much to this end, and there has been a marked falling off in the number of complaints from householders of water flooding over in cellars. The pulling down or remodelling of a number of old houses has also been a contributing factor towards improving the sanitary condition of the city. As a result of this activity some eighty outside privies have been abolished and modern toilets have been installed, in itself a large step forward in the right direction.

Yet there stills remains much that needs attention. There are many old unsightly stables, some of them on the street line of the best residential streets of the city. It would be a much needed reform if some way could be found to have these stables removed as they are most offensive during the hot weather. Most modern stables are well kept and there is little trouble with them but the older ones have not that virtue and are badly in need of reform.

Our streets have been well attended to by the Works Department. They have been kept clean, the filthy deposits cleaned up daily in many cases, and the streets washed with the flusher. Another side of this work is the garbage collection, which is a great boon to the city, in bettering sanitary conditions. It depends, however, much on the individual householder, for without intelligent co-operation the scheme cannot be effective. Proper receptacles must be provided with tight-fitting covers for the garbage and also for ashes. To keep

these cans in a sanitary condition all garbage should be wrapped and kept dry. Our incinerator is giving the best of satisfaction but it is not intended to burn water.

We are at a disadvantage in not having a city dumping ground as there is a considerable accumulation of refuse, which must be carted away from stores and other places at times, which the incinerator will not handle. I would suggest that there be a dumping ground purchased in the near future to provide for this necessary part of our sanitary equipment.

In accordance with my duties I have during the year inspected a number of times all places where human food is handled, such as bake shops, butcher stores, restaurants, fruit stores, etc. In addition all the city laundries have been inspected many times with a view to insure proper handling of clothing while being cleansed. I found that on the whole these places were clean and well kept.

Besides inspecting the above named places I have also made many trips over the city for the purpose of checking up the general conditions in the city. While lanes, backyards, dumping grounds, etc., were in most cases in fair condition, I found a few instances of minor nuisances being created by the practice of throwing out wash and scrub water in the yards. This practice, however, I am glad to say, is being discontinued by most people. A number of cases of cats, which were apparently killed by automobiles on the streets, were reported and the animals removed.

Our city water still retains its purity and in every case where I have sent samples away to be tested has the report been satisfactory in every way. The water is not only safe from a health standpoint but is also good from the personal outlook of taste and appearance.

On my trip of inspection through the dairies, I was accompanied by Dr. J. A. Robertson, M.O.H., Mr. D. M. Scott, the chairman of the Board. We found the dairies to be in good condition and on other visits during the year I found everything in good shape. The tests of the milk showed that it was up to the standard in every way.

Dr. Robertson also accompanied me to several places in the city where contagious disease was believed to exist and there was no doctor in attendance. In each case where disease was found the house was quarantined and the regulations observed fully. As a result of this work I disinfected seventy houses and as most of these places had to be visited a number of times it is safe to say that the number of visits to each place would average four, or a total of 280 visits in this kind of work alone.

The market came under my observation as inspector and I would suggest that change be made there in the regulations governing the sale of meat. Most of the meat sold there is purchased from farmers, whether the farmer himself is selling it or some butcher from the city. It is therefore butchered and sold without inspection in many cases and I should think that provision ought to be made to have these animals slaughtered in a public abattoir under the direction of a qualified inspector. I would also recommend that all bread should be wrapped in paper at the bakeries to keep it clean during the process of delivery.

Respectfully submitted,

THOS. DUNSEITH,
Inspector of Sanitation.

WELLAND.

The Chairman and Members of the Board of Health, Welland.

Gentlemen:

I beg leave to submit my annual report for the year ending November 30th, 1922.

I am pleased to state that the year has been a fairly healthy one, and that we have had no marked epidemic of any kind. There have been very few deaths from any infectious or preventable diseases.

While there were 14 cases of typhoid reported at least 9 of these were from outside the city, and were cases brought to the hospital for treatment. Three of them were men taken off boats passing through the Canal. Of the remaining 5, I do not regard the city water as the probable cause. The cases were scattered throughout the year, some of them had been drinking water from other sources, either from wells or while away on visits.

I wish to point out, that examination of the water from a number of wells in the city shows that in nearly all of them colon bacilli are present, and while these germs may not be of the typhoid type, they are a common cause of intestinal infections. No well is absolutely safe unless it is regularly cleaned out and has a concrete curb extending from above the ground, to at least four or five feet below the surface, in order to prevent pollution from surface drainage. There were two deaths from typhoid, only one of whom was a resident of the city.

Of the contagious diseases, 11 cases of diphtheria were reported with no deaths. Five cases of scarlet fever, no deaths. One case of smallpox, who recovered. Prompt quarantine and vaccination of those exposed, prevented any further spread of the disease. We had one case of infantile paralysis, a young woman who came from Brantford, where the disease was prevalent at the time, on a visit to friends in the city, and became sick shortly after her arrival. The case was a very severe one and death resulted. The Board was greatly handicapped in this case, owing to the fact that we have no place for the isolation of cases of contagious diseases, and were put to much trouble and expense in procuring a vacant house, and fitting it up for the isolation of the patient.

I would strongly urge that in the proposed enlargement of the hospital, a small wing completely shut off from the main building by a wall, and having a separate entrance should be built. Cases of contagious diseases are likely to occur at any time and treating them in the home involves quarantine of other members of the family, and in the case of scarlet fever especially, the keeping of the other children from school for five or six weeks.

There was an epidemic of whooping cough during the summer and one death was reported.

Vital statistics for year December 1st, 1921 to December 1st, 1922: births, 240; stillbirths, 21; deaths, total all ages, not including stillbirths, 110. Of these 30 were non-residents and died at the hospital.

Death rate per 1,000—12.8 as compared with 14.8 for 1920. Excluding the non-residents who died at the hospital, the rate was 9.3.

Under 1 year, 17, of whom 6 died under 1 week of age.	
1 year to 5 years	7
5 years to 10 years	5
10 years to 20 years	8
20 years to 30 years	5
30 years to 40 years	11
40 years to 50 years	10
50 years to 60 years	10
60 years to 70 years	9
70 years to 80 years	19
Over 80 years	9

Birth rate per 1,000 excluding stillbirths, 27.7. The number of stillbirths was much larger than in 1920 when there were 12.

The most striking feature in respect to the deaths, was the great reduction among babies under 1 year only 17 occurring which gives a rate of 70 per 1,000 births. This is a marked reduction from the year 1920, before we instituted Child Welfare work, and the employment of a Public Health Nurse. In that year 42 died under one year of age, giving a rate of 150 per 1,000 births. The child welfare work in charge of Miss Oram, whose report is appended, has proven a wonderful success, not only in the saving of lives, but in making stronger and healthier children. The Baby Clinics held each week have been largely attended and great interest is manifested. These clinics are for well babies, and not those who are sick or diseased. It has to do chiefly with the feeding and the prescribing of the proper kind and quantity of food so that the baby maintains good health and proper growth. While the success of the clinic has been largely due to the splendid work of Miss Oram, she has been ably assisted by Mrs. Hanna, Miss Webb and Miss Jones.

The ladies of the Home and School Associations have contributed to the comfort of the mothers by serving tea and refreshments each clinic day. Drs. Boyd and Reive, who have had charge of the medical side of the work, have been most faithful in their attendance for which they receive no compensation.

Owing to the increased demands for Miss Oram's services, and the extent of territory to be covered, the Board purchased a Ford coupe early in the year for her use, thus enabling her to do more and much better work.

The milk supply of the city comes from two dairies which have modern equipment for pasteurizing, cooling and bottling. In addition a small amount of raw milk is sold. As milk is practically the only animal food taken raw, and is liable to contamination from tubercular, typhoid and other germs, the importance of destroying these germs by means of pasteurization is evident.

The sanitary condition is fairly good and while there is an occasional complaint of a nuisance, the sanitary inspector, Mr. Geo. Lee, is prompt in his endeavour to have it abated. There are still a few outside closets, particularly on some of the outlying streets, but they are gradually being done away with as the circumstances of the owners will permit, and the extent to which they are a nuisance.

The Public Health Act provides that there shall be supervision of all plumbing and in my opinion, the City Council should pass a plumbing by-law and appoint a competent man to enforce it.

In the performance of my duties as Medical Officer of Health, I wish to acknowledge the assistance and hearty co-operation of the Chairman and members of the Board of Health and the Sanitary Inspector.

I have the honour to be, Sir,

Your obedient servant,

J. H. Howell,

M.O.H.

WINDSOR.

To the Chairman and Members of the Local Board of Health for the Essex Border Municipalities.

Gentlemen:

I have the honour to submit herewith for your consideration my annual report for the calendar year of 1922.

The general death rate for 1922 is 10.4 per thousand of population. This is slightly higher than last year when the rate was 10.2, but compares favourably with other cities as follows: Detroit, 11.6; Toronto, 10.5; Hamilton, 10.5; Brantford, 12.0.

The birth rate was 30.7 per 1,000 of population which is entirely satisfactory. By natural increase we are adding approximately 2 per cent. to our population annually.

The infant death rate was 91.2 per 1,000 living births. In 1921 this rate was 89 and in 1920, 111. There is therefore a distinct improvement over 1920 but our rate of 92.1 compares unfavourably with that of other cities as follows: Toronto, 75; Hamilton, 78; Brantford, 65; and London 63, and Detroit, 87.6. This subject is discussed at greater length in section 8 of this report.

On the whole, communicable diseases showed a falling off in 1922. New cases of tuberculosis fell a little, but the most marked reduction was in tuberculosis deaths which receded from 35 in 1920 and 44 in 1921 to 27 in 1922. Of typhoid fever only 15 cases were reported, and 9 of these got their infection outside the border cities. We have so little typhoid that the majority of our doctors have not seen a case for two or three years. The credit for this fine showing belongs to the men who have charge of the chlorination of our water supplies. Of smallpox only 9 cases were reported—the lowest number for several years.

The special treatment clinics provided by the board for the treatment of venereal diseases is now the second largest in the province with a record of 6,600 treatments in 1922.

Section I.

Vital Statistics.

In connection with vital returns, the Border municipalities are in very special position. The only hospitals in Essex County are located in Windsor. As a result many persons are sent in from outside points for serious operations or following accidents and if they die their deaths are registered in Windsor. Many deaths are also registered in Windsor in which the deceased habitually lived in Sandwich, Ford or Walkerville. The same is true as regards births. It is therefore necessary to go over very carefully the births and deaths registered with the various municipal clerks and re-assign such registrations to the proper municipality or to throw them out altogether. Otherwise Windsor would have an exceedingly high death rate and birth rate, both of which would be grossly inaccurate. Vital statistics which follow have been dealt with in this way. These statistics cover only Ford, Walkerville, Windsor and Sandwich where the registration of births and deaths is well done. Since these municipalities represent something over 90 per cent. of the population under the jurisdiction of your board, it is believed that the figures presented will give a fair picture of the whole area.

TABLE I.—DEATHS, 1922.

	Four Municipalities	Ford	Walkerville	Windsor	Sandwich
*Deaths	626	67	69	421	69
Population	60,128	5,527	7,469	42,122	5,010
Death rate per 1,000 population	10.4	12.1	9.2	10.0	13.8

TABLE II.—BIRTHS, 1922.

	Four Municipalities	Ford	Walkerville	Windsor	Sandwich
*Births registered	1,846	229	185	1,241	191
Population	60,128	5,527	7,469	42,122	5,010
Birth rate per 1,000 population	30.7	41.4	24.8	29.5	38.1

TABLE III.—DEATHS UNDER 1 YEAR, 1922.

	Four Municipalities	Ford	Walkerville	Windsor	Sandwich
*Deaths under one year	170	26	18	103	23
*Births	1,846	229	185	1,241	191
Deaths under 1 yr. per 1,000 births	92.1	113.5	97.3	83	125.6

*Exclusive of stillbirths throughout.

TABLE IV.—CAUSES OF DEATH, 1922—(International Classification).

Int'n'l List No.	Disease	Total	Number of Deaths			
			Ford	Walkerville	Windsor	Sandwich
1	Typhoid Fever	3	..	..	3	..
6	Measles	6	2	..	3	1
7	Scarlet Fever	2	..	..	1	1
8	Whooping Cough	5	2	..	3	..
9	Diphtheria	5	3	..	2	..
10	Influenza	24	1	4	18	1
18	Erysipelas	2	..	..	2	..
20	Septicæmia	7	..	..	6	1
28	Tuberculosis—lungs	23	3	3	16	1
29	" —acute miliary	1	..	..	1	..
30	" —meningitis	3	..	1	2	..
36	Rickets	5	..	..	5	..
37	Syphilis	4	1	..	3	..
40	Cancer—stomach	13	..	2	11	..
41	" —intestines	6	..	3	3	..
42	" —uterus	9	..	1	7	1
43	" —breast	2	..	1	1	..
45	" —unspecified organs	14	..	2	11	1
46	Other Tumours	3	..	1	2	..
47	Acute Artic. Rheumatism	2	1	..	1	..
48	Arthritis Deformans	1	..	..	1	..
50	Diabetes	6	1	..	5	..
51	Exoph. Goitre	2	..	..	2	..
53	Leukæmia	1	..	1	..	..
54	Pernicious Anæmia	7	1	..	4	2
60	Encephalitis	3	..	..	3	..
61	Meningitis	5	1	..	4	..
64	Cerebral Hæmorrhage	33	2	5	19	7
67	General Paralysis	3	..	..	3	..
68	Mental Alienation	2	..	..	2	..
69	Epilepsy	1	..	..	1	..
76	Ear Disease	1	..	..	1	..
79	Organic Disease of Heart	61	4	10	41	6
80	Angina Pectoris	7	..	2	5	..
81	Arteriosclerosis	20	..	1	18	1
82	Embolism and Thrombosis	8	2	2	4	..
83	Phlebitis	1	..	..	1	..
85	Hæmorrhage	1	..	..	1	..
87	Disease of the Larynx	2	..	..	1	1
89	Acute Bronchitis	5	2	..	1	2

TABLE IV.—CAUSES OF DEATH, 1922—Continued

Int'n'l List No.	Disease	Total	Number of Deaths			
			Ford	Walkerville	Windsor	Sandwich
91	Broncho-pneumonia	45	12	5	21	7
92	Lobar Pneumonia	32	2	6	19	5
96	Asthma	2	..	..	2	..
102	Ulcer of Stomach	1	..	..	1	..
103	Gastritis	1	..	..	..	1
104	Diarrhœa and Enteritis (under 2 years)	28	6	1	20	1
105	Diarrhœa and Enteritis (over 2 years)	2	..	..	2	..
108	Appendicitis	5	..	..	4	1
109	Intestinal Obstruction	10	1	..	8	1
113	Cirrhosis of the Liver	1	..	..	1	..
114	Gall Stones	1	..	..	1	..
115	Other Diseases of the Liver	1	..	..	1	..
117	Peritonitis	3	..	..	1	2
119	Acute Nephritis	3	..	1	2	..
120	Bright's Disease	22	4	..	13	5
122	Other Diseases of the Kidneys	1	..	..	1	..
126	Prostatic Enlargement	4	..	..	4	..
129	Uterine Tumours	2	..	..	2	..
130	Other Diseases of the Uterus	1	..	..	1	..
132	Salpingitis	2	..	..	2	..
134	Accidents of Pregnancy	1	..	1	..	..
135	Puerperal Hemorrhage	1	..	..	1	..
136	Accidents of Labour	3	1	..	1	1
137	Puerperal Septicæmia	1	..	..	1	..
138	Puerperal Albuminuria	4	..	1	3	..
142	Gangrene	2	..	..	2	..
150	Congenital Malformations	10	1	..	8	1
151	Premature Birth	60	7	9	36	8
152	Other Diseases of Early Infancy	22	1	2	15	4
153	Lack of Care	2	1	..	..	1
154	Senility	13	2	1	9	1
157	Suicide by Hanging	1	..	..	..	1
158	Suicide by Drowning	1	..	..	1	..
159	Suicide by Firearms	2	..	..	2	..
165	Poisoning	5	..	..	4	1
166	Conflagration	1	..	..	1	..
167	Burns	1	..	..	1	..
169	Accidental Drowning	2	..	..	2	..
172	Fall	1	..	..	1	..
175	Auto and Railroad Accidents	11	2	2	7	..
181	Electricity	1	..	..	..	1
182	Homicide by Firearms	1	..	..	1	..
189	Ill-defined Causes	3	1	1	..	1
	Total	626	67	69	421	69

Section II.

Communicable Diseases.

	Cases Reported	Deaths
Typhoid Fever	15	3
Diphtheria	108	5
Scarlet Fever	88	2
Measles	794	6
Whooping Cough	42	5
Smallpox	9	0
Chicken-pox	133	0
Mumps	84	0
Infantile Paralysis	0	0
Cerebral Spinal Meningitis	0	0
Tuberculosis	65	27
Gonorrhœa	154	0
Syphilis	75	4

Typhoid Fever.—Only 15 cases were reported as against 32 last year, but there were 3 deaths in 1922 and only 2 in 1921. Of the 15 cases reported, 9 were traced to outside sources. Two out of the 3 fatal infections were contracted outside of the Border cities.

Diphtheria.—108 cases and 5 deaths was the record for 1922, against 270 cases and 15 deaths the previous year—a very satisfactory reduction.

Scarlet Fever.—Almost duplicated the figures for 1921, with 88 cases and 1 death—a very low mortality.

Measles.—Was epidemic in 1922—794 cases and 6 deaths.

Whooping Cough.—42 cases were reported with 5 deaths. Obviously many cases were not reported.

Smallpox.—Only 9 cases were reported during the year.

Influenza.—Was not present in epidemic form.

Section III.

Tuberculosis.

The new cases reported in 1922 totalled 65 as against 68 in 1921. The number of deaths from all forms of tuberculosis was 27 as against 44 in 1921 and 35 in 1920—a very gratifying reduction. The death rate for 1922 works out at 45 per 100,000 of population, which is extremely good. Twenty-five years ago the rate in Ontario was about 200, that is, four or five times what it is now.

During 1922 twenty cases were sent away to various sanatoria, mainly London and Weston. 105 patients all told were kept under supervision in their homes. This work involved 529 visits.

114 chest examinations were made at the weekly clinics which the Board of Health provides for this purpose. The thanks of the Board are due to Dr. Murray Flock who has not only made the necessary clinic examinations but has also made a number of home visits for us.

The new Sanatorium being built by the Essex Health Association on the Prince Road in Sandwich will open early in 1923 and will be a great help in the local fight against tuberculosis.

Section IV.

Venereal Diseases.

The clinic established by the Board in 1920 for the treatment of these diseases is now the second largest in the province. Five clinics are held each week—two for men, two for women and one for children.

256 persons were treated at these clinics in 1922—77 for syphilis, 151 for gonorrhoea, and 28 for both diseases.

The 256 persons treated were made up of 156 men, 84 women and 16 children.

In all, 6,608 treatments were given in 1922.

Section V.

Sanitation.

The work of the Sanitary Division in 1922 is tabulated below.

Complaints by Citizens	369	
Nuisances discovered without complaints by Citizens	614	
		983
Re-inspections		1,972
Miscellaneous routine inspections (ferry docks, railway stations, hotel lavatories, laundries, etc.)		1,475
Total inspections		4,430
Written notices issued		284
Abatements		616

It will be noted that as in previous years, inspectors of the Board discovered almost twice as many nuisances as were learned of through the complaints of citizens. The number of nuisances dealt with was about 10 per cent. less than in 1921.

Section VI.

Laboratories.

During 1922 the following laboratory examinations were made for physicians and for departmental purposes:

Laboratory examinations for Diphtheria	648
" " " Tuberculosis	202
" " " Gonorrhœa	861
" " " Syphilis	22
" " " Typhoid (Widals)	46
" " of Water	1,183
" " " Milk (Bact.)	277
" " " Milk (Chem.)	306
" " Miscellaneous	325
Total	3,870

Various biological products (mainly diphtheria antitoxin) received by us free from the Provincial Board of Health, have been stored on ice and handed out to physicians as required. The market value of these materials would be somewhere between $5,000 and $10,000.

Section VII.

Food Inspection.

Over five hundred establishments preparing or handling food have been kept under inspection during the year. Dairies and restaurants have been given most attention but inspection has been made also of fruit, grocery, meat and fish shops, slaughter houses, bakeries, etc. The total number of inspections made was almost 4,000.

In regard to milk, 306 samples were examined for butter-fat, total solids, etc., and 277 samples were examined bacteriologically. All samples were found at least up to the legal standard for butter-fat. The legal standard is 3.25%, and the average for the year was 3.74%. The bacterial counts were also on the whole satisfactory.

About 75 per cent. of our milk supply is voluntarily pasteurized. The remaining 25 per cent. carried an element of danger which could be removed by pasteurization and the Board has under consideration a compulsory pasteurization by-law for submission to the various municipal councils with whom the power lies to pass such by-laws.

Section VIII.

Child Welfare.

Throughout the year two child welfare clinics were held each week in Windsor and every second week in Ford City and Sandwich. Approximately 150 clinics were held all told and the attendances totalled 2,548 as against 1,859 in 1921.

These clinics are in charge of Dr. George White and the thanks of the Board are due him for the very satisfactory work that has been done.

The infant death rate in 1922 was 92, that is 92 deaths for every 1,000 living births. In 1921 the rate was 89 and in 1920 one hundred and eleven.

The 1922 rate of 92 compares favourably with the 1920 rate of 111, but compares very unfavourably with the rate in other cities. Against our rate of 92 for 1922, the Toronto rate was 75, Hamilton 78, Brantford 65 and London 63.

Probably a great deal of investigation would be necessary to determine the real reasons for our poor showing compared with other western Ontario cities. The fact that between 20 per cent. and 30 per cent. of our milk supply is sold without being pasteurized is no doubt a factor but prenatal conditions would appear to be more important. In 1922 we had 170 deaths under one year of age, and no less than 92 or well over half were due to prenatal conditions—prematurity, malformations, diseases of early infancy, etc.

Section IX.

Water Supply.

Our local water supplies have been kept safe throughout the year. 15 cases of typhoid were reported with 3 deaths, but nine of the cases (which includes 2 deaths) were clearly traceable to sources outside the Border cities and therefore beyond our control. The gross death rate from typhoid works out at about 5 per 100,000 of population and the net rate at about 2 per 100,000. Anything below 10 is considered normal so that our 1922 record is extremely satisfactory.

Almost 1,200 water samples were examined during the year. This includes both raw and chlorinated samples. Quite a number of the raw samples showed dangerous sewage pollution but the chlorinated samples were invariably safe.

During the summer the water pumping plant in Riverside which supplies Tecumseh and that part of Riverside above the Little River was equipped with a pressure-type rapid sand filter—the first in the Border cities.

At the municipal elections held at the end of 1922 the ratepayers of all the Border municipalities voted in favour of a joint filter plant to supply filtered water for the whole border, so that we may presently expect to have a water supply not only effectively protected against disease but also clear and clean no matter what the state of the raw river water may be. From a public health standpoint this is a big step forward.

In the meantime our water supplies are being kept safe by chlorination and your Medical Officer of Health has pleasure in testifying as to the painstaking and efficient manner in which the chlorinating process is being carried out by the Water Commissioners and others in charge and their employees.

All of which is respectfully submitted.

F. Adams,

Medical Officer of Health.

WOODSTOCK.

To the Chairman and Members of the Board of Health, Woodstock, Ontario.

Gentlemen:

I herewith submit the annual report for the year ending November 30th, 1922.

The population of the city by the last assessment is 10,196.

The births recorded with the Registrar are 205 (exclusive of still births), 103 being males and 102 females.

Deaths recorded 134 (exclusive of still births), which give a mortality of 13.14 per one thousand.

Deaths occurring during the following periods:

Still births	8
Premature	9
Under one year	5
From 1 to 5 years	4
" 5 to 10 "	1
" 10 to 20 "	2
" 20 to 30 "	4
" 30 to 40 "	6
" 40 to 50 "	15
" 50 to 60 "	11
" 60 to 70 "	32
" 70 to 80 "	24
" 80 to 90 "	17
" 90 to 100 "	4
	142

CAUSES OF DEATH.

Stillborn	8
Premature	9
Valvular Disease of Heart	18
Acute Dilatation of Heart	4
Arterio Sclerosis	27
Cerebral Embolism	7
Cerebral Hæmorrhage	3
Cholelithiasis	4
Appendicitis	2
Cancer of Stomach	7
Acute Nephritis	3
Chronic Nephritis	5
Diabetes Mellitus	2
Broncho-Pneumonia	6
Pernicious Anæmia	2
Bright's Disease	3
Simple Meningitis	3
Chronic Cystitis	2
Railway Accidents	2

and one each of the following:—accidental fall with fracture of skull, tuberculosis of lungs, cancer of oesophagus, cancer of mesentery, cancer of liver, sarcoma of liver, tubercular peritonitis, duodenal ulcer, whooping cough, spina bifida, lobar pneumonia, septicaemia from wound, cerebral tumor, exophthalmic goitre, actinomycosis, suicide by poisoning, gastric ulcer, malnutrition, locomotor ataxia, fracture of hip with shock, chronic pleurisy, abscess of kidney, pleuro-pneumonia, typhoid fever, arthritis deformans.

In recording premature births as being a cause of death I have taken the records as supplied the Registrar and find they mean children that have lived only a few minutes or a few hours. This classification is misleading, as such a

condition is more frequently due to prenatal causes and our premature and still-births are an indication that prenatal work should be given consideration. The low death rate of infants under one year is something not to be forgotten, and I believe this is in part due to the work of the Victorian Nurses.

The Baby Clinic, keeping the well baby well, is under the management of the Victorian Nurses and financed by the local Red Cross Society.

During the year 659 have attended the Clinic, with an average weekly attendance of fourteen.

Home visits and follow up work from Clinic, 1,207.

Babies referred to their own physician, 60.

Instructional consultations and talks to mothers are given by members of the medical profession associated with the clinic—clothing, demonstrations are given by nurses in charge. The sole purpose of the clinic is to keep children well and not to treat disease. All cases requiring treatment are referred to the family physician.

COMMUNICABLE DISEASES FOR 1922.

Diseases	Nov 1921	Dec. 1921	Jan.	Feb.	Mar	Apr.	May	June	July	Aug	Sep.	Oct.	Total
Chicken-pox	2	..	..	..	..	..	23	26	8	1	..	4	64
Mumps	4	14	31	9	8	2	2	3	..	..	1	..	74
Tuberculosis Lungs	1	..	..	..	..	..	..	..	..	1	..	..	2
Scarlet Fever	1	2	..	..	..	1	2	4	3	..	6	2	21
Erysipelas	..	1	..	..	..	..	..	..	..	..	..	..	1
Smallpox	..	..	3	..	..	..	..	14	7	..	..	..	24
Whooping Cough	..	..	..	1	..	..	..	..	..	..	..	..	1
Typhoid Fever	..	..	..	..	..	1	..	5	..	1	5	2	14
Totals	8	17	34	10	8	4	27	52	18	3	12	8	201

Communicable diseases have been quite prevalent throughout the year and the reporting of the same has been much improved by the efficiency of the school nurse. Of the fourteen cases of typhoid fever, three cases were contracted from outside points, eight cases were contracted by contact and three cases were of unknown origin. Of the twenty-four cases of smallpox, twenty had never been vaccinated, three were vaccinated during childhood and one case vaccinated two and a half years ago; this latter case was very much modified in type.

Milk Supply.

The various sources of our milk supply were inspected and though many were in good condition there were others where facilities for the care of milk could be much improved.

In safeguarding our milk supply we are protecting the children of to-day.

Statistics show that 25 per cent. of tubercular patients under 16 years of age are suffering from bovine tuberculosis, which comes from milk and I strongly advise the passing of a by-law making pasteurization of milk compulsory. Positive pasteurization will absolutely destroy all germs, whether tubercular, typhoid or of any other contagious disease. When the slight expense of pasteurization is compared with the safety it gives, it seems almost beyond reason that anyone would run the risk of spreading infection, and offer unpasteurized milk for human consumption. The time will come when

milk consumers will insist, that they be assured, that the milk they use daily on their tables shall be free from dangerous germs. The time will come when boards of health of the different localities throughout Canada will follow the example set them by various cities, when they prohibit the sale of milk which is not pasteurized.

Why milk should be pasteurized.

1. Raw milk as a cause of infants' deaths.

Twenty-five per cent. of all deaths are of children under five years of age.

More children die from intestinal disease than from any other cause.

Dirt bacteria, harmless to adults, irritate and inflame the intestines of children.

2. Raw milk as a cause of septic sore throat.

Septic sore throat is a form of tonsillitis.

It is often followed by acute articular rheumatism, erysipelas, endocarditis and other serious inflammations.

Boston, Mass	1,270	cases from one raw milk supply.
Chicago, Ill	10,000	" " " " " "
Baltimore, Ind	602	" " " " " "
Cortland-Homer, N.Y	669	" " " " " "

Trask has collected records of 317 outbreaks of typhoid fever traced to raw milk supply and 123 epidemics of scarlet fever traced to raw milk supply.

Water Supply.

Analysis of the city water supply have been made twice monthly with varying results, but the results, are sufficient to say that there is some animal infection and if this cannot be overcome, then chlorination will have to be considered.

I believe an analysis of our drinking water should be made twice weekly, but this is practically impossible by not having laboratory facilities.

Sanitation.

During the year various districts have been supplied with sewers, and though the outside closet nuisance is becoming less, I would recommend that closets be done away with where sewers are available.

The garbage dumps have been kept in better condition and as the dumping areas are becoming somewhat restricted it will be necessary to consider the building of an incinerator for the destruction of all refuse.

Two houses were closed until needed repairs were made.

A most urgent need is an isolation hospital. The present building is a poor excuse as an isolation building and its proximity to the septic tank is a menace.

Local slaughter houses were inspected and invariably found to be below the standard as required by the Health Act.

In conclusion I wish to thank the Chairman and Members of the Board for their co-operation in carrying on the work of the Board during the year.

F. S. Ruttan,
Medical Officer of Health.

Woodstock, November 15th, 1922.