

SECOND
ANNUAL REPORT
OF THE
PROVINCIAL BOARD OF HEALTH,
FOR THE YEAR 1894.



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HALIFAX, N. S. :
COMMISSIONER OF PUBLIC WORKS AND MINES, QUEEN'S PRINTER,
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PROVINCIAL BOARD OF HEALTH OF NOVA SCOTIA.

HON. W. S. FIELDING, *Premier and Provincial Secretary.*

HON. J. W. LONGLEY, *Attorney-General.*

HON. C. E. CHURCH, *Commissioner of Public Works & Mines.*

WM. H. MACDONALD, ESQ., M. D., *Antigonish.*

EDWARD FARRELL, ESQ., M. D., *Halifax.*

F. W. BORDEN, ESQ., M. D., *Canning.*

A. S. KENDALL, ESQ., M. D., *Sydney.*

A. P. REID, ESQ., M. D., *Medical Superintendent Victoria General
Hospital, Halifax.*

GEO. L. SINCLAIR, ESQ., M. D., *Superintendent Nova Scotia Hospital
for Insane, Halifax.*

Chairman of Board—HON. W. S. FIELDING.

Secretary—DR. A. P. REID.

PROVINCIAL BOARD OF HEALTH,
HALIFAX, NOVA SCOTIA, 1894.

SECOND ANNUAL REPORT.

TO THE HON. W. S. FIELDING,
Provincial Secretary,
Chairman of Board of Health:

SIR :

I have the honor to submit the second annual report of the Provincial Board of Health.

A special meeting of the Provincial Board of Health was held in the Executive Council Chamber on the 6th Dec., 1893, at 11 A. M. All the members were present except Dr. Borden, absent owing to the weather, but would come if the session were extended over the day.

Communications were read from :

The Quebec Board of Health.

The Ontario Board of Health.

The New Brunswick Board of Health.

From the State Board of Health of Illinois.

From the State Board of Health of Maine.

From the State Board of Health of Massachusetts.

From the Department of Secretary of State, Ottawa.

A communication was received from the N. S. Medical Society as follows :

BRIDGEWATER, July 5, 1893.

A. P. REID, *Sec'y. Provincial Board of Health.*

DEAR SIR :

At the annual meeting of the society to-day the following resolution was introduced and passed :

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“RESOLVED, That a memorial be presented to the Provincial Board of Health, calling their attention to the fact that tuberculosis is fully recognized as an infectious disease, and asking them to take the matter into their serious consideration, with a view to the protection of the community from the infection.”

I am, &c., &c.,

Yours truly,

W. S. MUIR,

Sec'y. N. S. Medical Society.

In answer to this communication, its importance was recognised, and it was resolved that a circular be issued and widely distributed, having for its object the education of the people as to the necessity of more than ordinary care in the treatment of the sputa and dejecta of tuberculous patients, and thus preventing modes of disseminating the contagion.

This is circular No. 8 of this Board, and the above instructions have been complied with.

A communication was received from the Halifax branch of the British Medical Association *in re* Bacteriological research and examination of excreta and dejecta of patients laboring under infectious disease.

In answer thereto, the secretary was directed to transmit the following resolution :

“That this Board recognizes the desirability of Bacteriological examination, but does not deem it expedient at the present time to initiate and carry out such a systematic method of Bacteriological examination. However, if circumstances should arise to render it necessary, this board would be desirous of giving it further consideration.”

It was resolved that a circular be printed and distributed in reference to pollution of water supplies, suggesting that in case of doubt the family physician be consulted as to the purity of the supply, and in any case a sample can be sent to the secretary, V. G. Hospital, to be tested as to its contamination.

This circular has not appeared, awaiting specific instructions as to details, but a paper was distributed by the Secretary on “town water supply,” which fulfils a part of the resolution.

Also a sample of water from environs of city was presented for examination, which showed more organic contamination than is present in the water supply of the city, with the very great probability that it came from sewage or animal sources rather than of vegetable origin.

It was also resolved that a circular be distributed on “Prevention and Restriction of Scarlet Fever.”

This appeared as Circular 7, and was widely distributed.

The attention of the Board was called to the number of crimes committed and accidents occurring through the use of revolvers and pistols. While the matter was not deemed to be directly connected

with the work of the Board, it was considered to be so closely allied to it as to warrant them in bringing the subject to the notice of the Minister of Justice. The secretary was therefore directed to address a letter to the Minister, suggesting for his consideration whether the law might not be so amended as to place additional restrictions on the sale of revolvers, pistols, gunpowder, dynamite and other explosives.

It is suggested that persons purchasing such articles should be required to give bonds, or the certificates of well-known and responsible persons, as some guarantee that the articles are required for lawful purposes, and that the names and addresses of the purchasers be registered; also that the sale of such articles to persons under 18 years of age be prohibited.

EXECUTIVE COUNCIL CHAMBER,
Halifax, May 30, 1894.

A meeting of the Provincial Board of Health was held, present all the members except Superintendent of the N. S. Hospital for Insane, who was away attending a meeting of the Association of Superintendents of Hospitals for Insane.

The following communication was received from the Deputy Minister of Justice:

OTTAWA, 20th March, 1894.

SIR:

Referring to your letter of the 7th December last, setting forth a copy of a resolution of the Provincial Board of Health regarding the sale of revolvers to minors, I am directed to call your attention to section 106 of the Criminal Code, which provides restrictions in line with those proposed, and I am to inform you that the Minister does not see any reason for any amendment to this provision at present.

I am, Sir,

Your ob't servt,

E. L. NEWCOMBE.

A. P. REID, M. D.,

Secretary Board of Health,

Halifax, N. S.

Communications were read from Boards of Health of New Brunswick, Quebec, Ontario and Massachusetts, reporting cases of small pox.

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A general discussion ensued, when it was resolved that a circular be distributed to the public, calling their attention to the presence of small pox in neighboring states and provinces, and recommending a general vaccination.

This was complied with in the distribution of circular No. 9.

Also, that a circular was to be sent to Boards of Health of towns in addition to circular No. 9, asking them to take action, and the following letter was sent :

PROVINCIAL BOARD OF HEALTH.

To City and Town Councils, and Local Boards of Health:

The attention of City and Town Councils, and Local Boards of Health, is respectfully invited to the necessity of precautionary measures to guard against the introduction or spread of Small Pox.

The year 1885 was marked by the appearance of the disease in this Province, as well as in other parts of the Dominion. A general vaccination took place in Halifax and some adjoining counties, but since that time, owing to absence of danger from Small Pox, no systematic vaccination has taken place, with a result, *an unprotected* state of a considerable portion of the population. In the neighboring States and Provinces of the Dominion Small Pox has prevailed during the past year, and tends to increase. Hence it is very desirable that such precaution be taken as to insure the proper protection of the people by VACCINATION, and also RE-VACCINATION.

Re-vaccination is very much needed, owing to the fact that the protective influence of vaccination is gradually lessened with the lapse of time.

The Provincial Board of Health suggests that immediate action be taken by the City and Town Councils, and Local Boards of Health. If a public notice be given that vaccination is necessary, no doubt the great majority of the people will attend to it. In the case of the poor the local authorities should make arrangements for the attendance at certain times and places of physicians who will vaccinate without charge.

The attention of Boards of Health is called to Sections 16 and 17 of Chap. 9 of Acts of 1888.

In order that Local Boards of Health may obtain satisfactory results from vaccination it is desirable that one or more public vaccinators be appointed to vaccinate on certain days, thereby enabling vaccine to be purchased in quantity, and used when fresh. It is desirable to be careful to select public vaccinators who realize that vaccine inoculation ought to be made with the SAME ANTISEPTIC PRECAUTIONS AS ANY OTHER SURGICAL OPERATION, and that those vaccinated be warned not to unduly expose themselves to cold during the time the virus is active in the system.

It is therefore hoped that your Local Board of Health will take prompt action in the matter, and report without delay to the

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Provincial Board of Health the extent to which it has taken advantage of the powers given it for the protection of the Municipality and of the Province.

By order of the Provincial Board of Health.

A. P. REID, M. D., Secretary.

It was ordered that a circular be issued to medical men, informing them of the prevalence of typhus fever in Newfoundland, and asking them to specially examine any case of sickness occurring in persons coming from Newfoundland.

Dr. Kendall was appointed a committee to draft the circular letter.

The attention of the Board was called to the fact that the Dominion Coal Co. of Cape Breton were about erecting miners' dwellings, and it was resolved that Dr. Kendall be a committee of this Board to confer with the managers of the Dominion Coal Co. and local Boards of Health to the end that such care be used in the erection of such dwellings as to secure a proper sanitary condition in their construction and arrangement.

I would report that the sanitary condition of the Province has been on the whole very satisfactory.

No small pox case has been reported, though it has prevailed rather extensively in the adjoining provinces and states.

Sporadic cases of diphtheria and typhoid fever and scarlet fever have, as usual, been prevalent. But this Board is not in a position to give authoritative information on these subjects, because there are no systematic reports from the local Boards of Health.

This, though contemplated by Clause 9 of Act of 1893, is not specifically ordered, and there are no regular reports.

Respectfully submitted.

A. P. REID, M. D., &c.,

Secretary.

Victoria General Hospital (office of Provincial Board of Health),
29th September, 1894.

APPENDIX.

WATER SUPPLY FOR TOWNS.

A paper read by Dr. A. P. Reid, M. D., &c., Superintendent of the Victoria General Hospital and Secretary of Provincial Board of Health, at the annual meeting of the Nova Scotia Medical Society, held at Yarmouth, N. S., 4th July, 1894.

This subject presents itself under different heads :

1. For domestic and culinary purposes.
2. For supply of factories and steam boilers.
3. Removal of sewage, etc.

SOURCES OF SUPPLY.

Wells, lakes, rivers, springs and stored rain water. Any of these, if abundant, will serve all purposes, except the domestic and culinary, and these require most careful consideration from a sanitary point of view.

WELLS.

The most common source of supply will be satisfactory if they be at a distance from human habitations with their ordinary surroundings or receive their water from a large underground water supply, but these conditions rarely obtain in towns, and hence wells are justly regarded with suspicion.

The artesian and "drive" well in some countries prove very satisfactory, but the geological formation excludes their use in the greater part of this province.

The older the ordinary or "surface" well is the more suspicious it is for being the lowest point, the water gravitates to it, and in its course to this point picks up soluble matter and decaying material always present near the domicile, and there are not sufficient facilities for its purification by filtration through the soil, and this the more as the soil is charged with the accumulations of years from the houses and barns in its vicinity. Were the well supplied by an underground stream this objection would not obtain to the same extent, but this is not the rule, and hence sanitarians look on all wells with suspicion.

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Some towns are supplied by wells which are constructed at such a distance as to be free from probable contamination, and the water pumped into a reservoir from which the town is supplied.

This system is likely to be more common in the future than it has been, owing to the inability to get surface water which is not exposed to dangerous contaminations.

LAKES.

A lake is a depression of the surface; a basin in which accumulates the rainfall of its drainage area. If this be kept free from contamination then have we an unexceptional supply as to quality, and the quantity is an engineering problem we need not at present discuss.

Any community looking towards a lake supply should not only consider the quantity and convenience for distribution, but as well the ownership of the entourage of the lake. They should own the drainage area to the end that no houses or cultivated fields should be permitted to drain into the water supply. This is a precaution that has been very generally omitted hitherto, and every succeeding year will render it more troublesome and expensive to control that which could have been readily obtained if daily considered at the time of the purchase.

It has been assumed to be sufficient to own a few feet around the edge of the lake, with the expectation that the shores and vicinity would so continue without change, but time negatives these hopes, and settlements gradually spring up and the lake becomes the recipient of the drainage of the houses, and as well the cultivated and manured fields, a pollution which increases from year to year, with a probable increase in the future.

Hence, when obtaining a lake for water supply its shores, and the shores of its principal tributaries should be so controlled that polluted drainage can be avoided.

RIVERS.

Hitherto the volume of water in rivers has been so great, and at their sources the districts so unfitted for settlement that the small amount of pollution from drainage of fields through which they passed has not been considered a matter of great moment, but this fancied security is yearly becoming less, and in the older settled countries this most difficult problem has been presented, "How can the rivers be kept free from pollution?" and the solution has not yet been forthcoming. Most countries have laws on their statute books having this object in view, but they are practically inoperative, because fields will be cultivated, and the better the cultivation the more fertilizer is used; also the rain will dissolve and remove soluble material and convey it to the river, which drains the locality. Where towns and villages spring up along the borders of a stream the trouble is intensified, and this the more when through manufacturing processes deleterious wastes are thrown into the stream.

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These questions do not trouble us very much in this province as there are no large rivers with their riparian towns, and any community requiring service from any of our rivers can depend on a future probable purity if precautions are taken at the commencement, such as a good sanitary officer or engineer could point out in any given case.

Supply from springs requires the same consideration as that from lakes and rivers.

RAINWATER SUPPLY.

It is not likely in this province that any large community will be supplied in this way in so far as culinary requirements are concerned, so that the consideration of this method would belong to individual rather than town water supply.

DEPURATING PROCESSES.

The impurities in water are classed under the heads of inorganic and organic substances. The former are not specially prejudicial to health, and potable waters are generally sufficiently purified by sedimentation which permits the fine clay and grosser impurities to subside.

ORGANIC IMPURITIES.

These contaminations can be disposed of in nature's laboratories, and we may consider the methods.

FIRST—VEGETATION.

It has long been known that fish will not thrive in water unless it be continually changed, but it is also common knowledge that if water plants are kept in the aquarium with the fish the changing of the water is not of so much moment. Hence by parity of reasoning the vegetation in the lakes is beneficial, for the plants take their nourishment from the water and the mud on the bottom, and what they remove we do not want in our drinking water.

SECOND—FISH.

Fish flourish in our lakes, and it can be readily perceived that they act as scavengers for us by removing the organic material on which they live, and which we do not want in our drinking water. Every little while we hear of colonies of eels being removed from the Halifax water pipes. They entered when so small as to pass through the gratings, and what they lived and throve on we do not want in our drinking water.

Sunlight and aeration are justly considered active factors in purifying waters, but more recent labours of bacteriologists have disclosed a host of agencies that were undreamed of a few years ago. These agents are so numerous and withal so minute and

varied that it has not been possible to name or differentiate them, and they are generally described as so many thousands to the cubic centimetre. It takes $16\frac{1}{2}$ c. c. to make a cubic inch, and we can with difficulty conceive how enormous must be the number of organisms that ply their active life in removing impurities from our water; they could not live and flourish in perfectly pure water, and their numbers are in so far a measure of the organic substances on which they thrive; the more organisms the more impurity, and *vice versa*. We have reason to assume that most of these microbes are friends and act as scavengers. Now and then a foreign renegade gets into their society in the form of a cholera or typhoid fever or other "pathogenic" organism, and the whole moral tone of the society is lowered; the water for a time is a mass of corruption that poisons those who use it (except it be boiled for a half hour, which destroys all living organisms). Yet in time our friends, the other microbes, will get in their work and remove the objectionable ones, for the pathogenics can only thrive at a comparatively high temperature, though their germs are tenacious of life for a length of time at a low temperature.

FILTRATION.

We have been accustomed to talk very glibly about filtration without correctly understanding how it acts in regard to water purification, yet we thought we knew all about it. Take a sample of muddy water and pass it through a filter, and see how clear and sparkling the water becomes. How easy it is to understand how a filter acts! Yet the gross particles removed by the filter from the water are in no way *per se* injurious to health.

Then is filtration of no service? Well, that depends. From time immemorial it has been known that if impure water passes through the soil its hurtful properties are removed, and this is not measured by its limpidity either before or after. The capacity of the soil, as generally used, is limited, but it will handle unlimited quantities if sufficient time be given for the filtration (with a well-devised filter bed, according to Dr. Koch, the rapidity of transmission should be under 100 m. m., or about 4 inches in 24 hours).

AND NOW AS TO THE RATIONALE OF FILTRATION.

It has long been known that a chemical analysis of water gave but little information in a sanitary sense. The inorganic substances generally present are not specially injurious. The organic impurities classed as nitrates, nitrites, free ammonia and albuminoid ammonia were looked on as specially obnoxious, especially the albuminoids, and so they prove to be, as they furnish the pabulum for microbes of different kinds, including the "pathogenics."

Research has shown that the upper layers of the soil, amongst others, contains a series of active and most useful microbes that are named the *nitrifying organisms*, which convert ammoniacal and albuminoid substances into harmless nitrites and nitrates, in which

condition, being very soluble, they can be appropriated by plants. In fact, it is supposed that nitrates are the only form of nitrogen that plants can utilize. Now, it is not difficult to understand in what way filtration may be of service, and why it may fail. If a sewage contaminated water is allowed sufficient time and soil for its percolation its harmful nitrogenized impurities can be converted into nitrates, and an impure be rendered a comparatively passable water, but practically it is very risky to depend on filtration for purification.

1st. Owing to the very extended area needed to permit a sufficiently slow passage of water where large quantities are demanded as in town and city service.

2nd. The expense of renewal of filter bed and removal of gross impurities.

3rd. The efficient action of the whole surface so that the water passes at a slow rate over the whole active surface equably so that at no point the passage be too rapid.

The satisfactory action of a filter bed removes injurious substances by makin them innocuous and unsuitable for the growth of microbic life, as shewn by the greatly reduced number of organisms to the cubic inch, and, though there is reason to assume that it is possible, yet it is improbable that sewage contaminated water can be rendered wholesome. Where there is so much risk to health, and expense as well, entailed, there can be no question of the desirability for the exercise of the greatest care in the selection of a water supply so that the probability of impure water be avoided.

With regard to the examination of water, a chemical analysis is but of comparative value from a sanitary point of view. The bacteriologist alone can give the probable condition by making known the number of organisms that flourish in it, which shews in so far a ready soil for the pathological varieties.

This examination to be of value must have the sample at once analyzed on its collection, for the lapse of a few hours may give results that are quite misleading, owing to the changes resulting from these active forms of microbic life.

A chemical analysis that can specify that a given sample has or has not organic animal impurity is of great practical value, because it advises us that the given sample is or is not in a condition to support a host of microscopic organisms that may be poisonous if these organisms come from a case of contagious disease.

Distribution—We need not occupy much time on this subject, because the pipes are now made of iron chiefly, and but little lead is used except for short lengths in house distribution.

Continuous service and letting the water run a few minutes before using will avoid any probable metallic contamination.

I must apologize for making this paper so short on a subject of great importance, but discussion may elicit more ideas and be of more value than a longer article.