REPORT

OF THE

ELEVENTH ANNUAL MEETING

OF THE

ASSOCIATION

OF

EXECUTIVE HEALTH OFFICERS

OF ONTARIO

HELD AT

NIAGARA-ON-THE-LAKE,

14TH SEPTEMBER, 1896.

TORONTO:
WARWICK BRO'S & RUTTER, PRINTERS, BOOKBINDERS, &C., FRONT ST. W.
1896.

TA

FIRST SESS

TABLE OF CONTENTS.

ELEVE

A

EXECUTIV

MI

The Eleventh Annu
ealth Officers of Ont
mber 14th. The con
the Queen's Royal H
At that hour Dr. W.
tion, took the chair,
ssidy, Toronto and
ovincial Board of He
the Provincial Board
ronto; Mr. J. J. Mac
en, Chairman of the
ard, Medical Health
pector of the Provinci
nston, Analyst for th
jor Patterson, Chairm
; Dr. C. N. Hewitt,

ELEVENTH ANNUAL MEETING

OF THE

ASSOCIATION OF

EXECUTIVE HEALTH OFFICERS

OF ONTARIO.

MINUTES OF MEETING.

The Eleventh Annual Meeting of the Association of Executive ealth Officers of Ontario was held at Niagara-on-the-Lake on Sep- mber 14th. The convention opened at 10.30 a.m. in the pavilion the Queen's Royal Hotel.

At that hour Dr. W. R. Hall, of Chatham, President of the Asso- tion, took the chair, there being then present also: Dr. J. J. ssidy, Toronto and Dr. Kitchen, St. George, members of the ovincial Board of Health of Ontario; Dr. P. H. Bryce, Secretary the Provincial Board of Health of Ontario; Prof. Shuttleworth, ronto; Mr. J. J. Mackenzie, Analyst of Provincial Board; Ald. en, Chairman of the Toronto Board of Health; Dr. Charles ard, Medical Health Officer for Toronto; Dr. Beaudry, Chief pector of the Provincial Board of Health for Quebec; Dr. Wyatt nston, Analyst for the Provincial Board of Health for Quebec; jor Patterson, Chairman of the Local Board of Health of Chat- ; Dr. C. N. Hewitt, secretary of the Minnesota State Board of

Health; Dr. Benjamin Lee, Secretary State Board of Health of Pennsylvania; Mayor Paffard, Ald. Evans, Rev. J. C. Garrett, Rev. Nathaniel Smith and Dr. Avery, of Niagara.

When the meeting had been called to order, Rev. J. C. Garrett, at the request of the President, opened the convention with prayer.

Dr. P. H. Bryce, the Secretary, presented the minutes of the last meeting and read extracts therefrom, stating that he did so to save time and asking that any one who might discover any error therein should call attention to it.

On Dr. Bryce's motion, seconded by Dr. Cassidy, the minutes were adopted.

The Chairman called upon Mayor Paffard of Niagara, who was down in the programme for an address of welcome.

The Mayor in the course of a brief but very happy effort said that it afforded him much pleasure to welcome the members of the convention. The visit of the Association he took to be a great compliment to Niagara. He recognized the gathering as one of weight and importance, and he trusted that the day's deliberations would prove of even more profit than usual.

The Chairman in reply remarked that the members of the Association appreciated his worship's kind words. They all recognized that they were in the oldest town of Ontario. He assured the Mayor that they were pleased to visit this beautiful spot and enjoy the fresh lake breezes. He did not doubt that the members would benefit physically as well as otherwise from this visit to Niagara.

Dr. Bryce, the Secretary, stated that Dr. Anderson, the Provincial Medical Health Officer, was to have been present to address the Association, but he would likely be heard from at the afternoon session.

The President then called upon Dr. J. J. Cassidy to read his paper entitled "Notes on Ten Years of the Work of the Executive Health Officers' Association in Ontario."

Dr. Cassidy read his paper, which was concluded amidst applause.

Dr. Bryce: Before the discussion of this paper I beg to state that we have with us Dr. C. N. Hewitt, secretary of the Minnesota State Board of Health, and Dr. Benjamin Lee of Pennsylvania, and

Drs. Beaudry and Johnston, representing the Provincial Health Board of the Province of Quebec. I move therefore that these gentlemen be made corresponding members of the Association and be asked to take part in the discussions."

The motion was concurred in.

Mayor Paffard begged to be allowed to correct Dr. Cassidy in one point. The doctor had classed Niagara-on-the-Lake among those towns which had waterworks but no sewerage system. Niagara had a sewerage system, and though it was only a partial one at present, it was capable of adaptation to suit the needs of the town as it developed. Niagara was scattered over a large area of ground, and the introduction by the corporation recently of electric lighting and waterworks systems had been so expensive as so far to prevent the extension of the sewers. The town enjoyed great natural drainage facilities, and he looked forward to the time when the sewer system would be completed.

Dr. Bryce said Dr. Cassidy might have added that as another result of the Association's labors, many towns with hospitals had isolated departments or separate wards for contagious diseases. In many towns modern isolation methods were now being followed. Dr. Bryce before he sat down pointed out that the public did not sufficiently appreciate the efforts of the medical health officers on their behalf, otherwise these officers would be paid better salaries than they now received.

The Secretary read a telegram from Dr. Probst, Secretary of the Ohio State Board of Health, saying that he was delayed at Buffalo, but would be present in the afternoon.

The President took occasion here to pay a compliment to Mayor Paffard. His worship, he understood, had been mayor of Niagara for twenty-five years, and he hoped he would be chief magistrate twenty-five years more. After being stirred up to-day he would no doubt do even more for the town than in the past.

The Chairman asked Dr. C. N. Hewitt, secretary of the Minnesota State Board of Health, to read his paper on "Domestic Health Officers."

Dr. Hewitt proceeded to read his paper.

The Chairman thereafter invited discussion on the paper.

Dr. Cassidy observed that Dr. Hewitt had given the members of the Association much food for thought, and the meeting was much beholden to him. Having known the doctor for some time, however, he was not surprised at the excellence of that gentleman's effort. Dr. Hewitt, he thought, though, had been a little hard on *la belle France*. Statistics, it was true, showed the birth rate in France to be lower than the death rate, but many parts of America would not make a better showing. Dr. Conn acknowledged a similar state of affairs to exist in New Hampshire, and it was not at all singular. Dr. Cassidy considered, though, that Canada afforded sufficient facilities for the building up of families.

Dr. Bryce stated that all local visitors were to consider themselves corresponding members of the Association. He invited Rev. Messrs. Garrett and Smith to join in the discussion.

After a brief interval of silence, Dr. Bryce said that in the absence of other discussion, he wished to say a few words. The attention of the people, he thought, should be directed to the important matters pointed out in Dr. Hewitt's paper. The sociological question, as Dr. Hewitt had noted, was the one to be considered by medical health officers and the profession generally. He was sorry to say that it was not necessary to look to Europe for consequences of the increase of urban and the decrease of rural populations, for these were experienced here in this country. The normal birth and death rates were 30 per 1,000 and 19 per 1,000, respectively, but these figures did not now anything like represent the situation in Ontario, where there was a great decrease in the normal rate of increase in the population.

Continuing, Dr. Bryce said the problems were, "Where are these things touching the people as to their sanitary condition?" and "Are they affecting the capacity of the race to reproduce offspring and healthy offspring?"

Dr. Bryce went on to say that surely these were questions for the consideration of the Association. They could not do better than

consider if it were not the duty of the medical health officer to go into the homes of the people and draw attention to those important matters in which the profession did not seem to take a vital interest.

Dr. Johnston asked Dr. Hewitt if he had noticed any difference in the death rate among people who lived in their own houses and the mortality of the dwellers in rented premises?

Dr. Hewitt referred Dr. Johnston to Dr. Lee.

Dr. Lee regretted to say that in Pennsylvania they had not arrived at a satisfactory system of regulating vital statistics, and he could not therefore speak upon such a basis as he would like to do in such a case. Philadelphia, it was true, was a city of homes. Acre after acre of land was occupied by small houses, and every laboring man had his own parlor, bedrooms, washrooms, etc. This was a very different state of affairs from that in New York. In conclusion, he observed that the mortality rate among the laboring classes was much higher in New York than in Philadelphia, if that proved anything.

Dr. Sheard observed that selfishness would have to be eradicated from human nature before Dr. Hewitt's desired conditions could be brought about. The tendency was to move towards the attractions, social, educational and otherwise of the city. Then women liked to adorn themselves and look attractive, and preferred so doing to rearing large families. The very inclinations of mankind and the fundamental ideas of life would have to be altered before one could hope for the accomplishment of the ends suggested by Dr. Hewitt.

Dr. Hewitt, being called upon to close the discussion, observed by way of response to Dr. Cassidy, that he had not intended to attack France. He had feared at first to read his paper because its contents appeared to be so self-evident, but he was glad now that he had submitted it, for it seemed to be attracting the attention and arousing the interest of the members. He went on to tell how in Dublin he had seen buildings that had been known for generations as typhus pest-holes, being torn down and replaced by sanitary cottages. It was strange that Ireland was ahead of England in this particular. Over in London Mr. Peabody's tenement house idea

was being followed because it meant three per cent. on the landlord's investment. Incidentally the doctor told of a poor cockney "growler" driver, who had referred to a "Peabody" as a "perfeck heaving sir," and discoursed upon its facilities for the rearing of children.

In conclusion Dr. Hewitt remarked that no nation need hope to win the race without paying attention to the fundamental problems of its physical well-being.

The Chairman stated that a paper by Dr. Griffin, of Brantford, came next on the order paper, but as that gentleman had not arrived he would ask Prof. Shuttleworth to give his "Laboratory Notes on the Bacteriology of Diphtheria."

After Prof. Shuttleworth had concluded, Mr. J. J. McKenzie said he would like to add his testimony to the professor's on a certain point. His experience was that the safer results were to be obtained from the use of the swab, which were better than the culture-tubes. One difficulty with the culture-tubes was that, espocially if they came from a distance, foreign bacilli had grown so rapidly as to obscure the diphtheria germ.

Dr. Wyatt Johnston was glad to find that the swab was holding its own with the culture-tube. He had adhered to the swab in Montreal and found it quite sufficient. No time was gained by the use of the tube, while it often obscured possible results.

Dr. Sheard thought that as a rule the better results were obtained from the use of the swab. Then, proceeding, he told of a peculiar case that had come under his notice. Diphtheria broke out in a house on Augusta Ave., Toronto, and one of the inmates, a lad, was removed to another part of the city for safety from infection. Some time afterwards, when the disease had been eradicated from his home, he was allowed to go back. A little later an examination showed the presence of bacilli in his throat, though he had not been subjected to contagion. For four months, from early in November till the end of February, repeated examinations evidenced the continued presence of bacilli and during that period he was kept out of school. The inoculation of guinea pigs with the bacilli from this lad's throat

proved the bacilli to be of a virulent type. The germs simply lodged in the boy's throat. He himself was invulnerable, but was capable of communicating the disease to others. The doctor thought defective tonsils sometimes formed the lodging place of these bacilli.

Dr. Sheard next noted that diphtheria germs may linger in a house for several years and infect different families moving in. In one instance a family entered a dwelling in which a case of diphtheria had occurred years before. In fixing up the place they tore off the old paper from the walls and the disease at once broke out. The organisms had lodged for years in the paste beneath the paper.

Dr. Lee, of Philadelphia, recited a case where a baby died from scarlet fever, and months afterwards its cradle was auctioned off with a lot of other household goods. The cradle was subjected to six hot-water baths, but these scaldings proved worthless. Ten days after the new baby occupied the little bed a rash broke out upon its body, and straightway scarlet fever went through the family from baby to grandmother.

Just before the noon recess Dr. Johnston exhibited a few samples of bacteria found in non-sterilized milk.

At 12.45 the Association adjourned for lunch.

Afternoon Session.

It was 2.45 before the members again assembled. Besides those present in the morning the following were also in attendance: Dr. Probst, Secretary of the Ohio State Board of Health; Dr. Anderson, M. H. O. of Niagara; Dr. Chrysler, Niagara; Dr. Wardlaw, Galt; Dr. McCrimmon, Palermo; Dr. Griffin, Brantford; Dr. Robillard, Ottawa; Dr. Vaux, Brockville.

Dr. Bryce: Since Dr. Hall is too modest to announce it himself, I shall call upon him to deliver the president's annual address.

The President thereupon delivered his address.

The Chairman then called upon Dr. C. O. Probst, secretary of the Ohio State Board of Health, to read a paper on "Impediments to Sanitary Progress."

Dr. Probst read his paper, prefacing it with a remark indicating its tenor. A young friend of his after finishing a college medical

course had actually through ignorance contracted tuberculosis. Had the institution in question had a proper hygienic course the life of this young man would have doubtless been saved.

Dr. Hewitt enquired if no instruction in "Public Health" was given at Toronto University or other Ontario schools.

Mr. J. J. Mackenzie replied that no university in Canada gave any hygienic instruction in connection with its Arts course. In the public schools hygiene was not taught although the children had to peruse a temperance work labelled "Hygiene." The only university men who obtained any instruction in the subject were those who followed teaching as a profession. Those studied hygiene under Dr. Oldright of Toronto University.

Dr. Cassidy spoke of the text book in use at the School of Pedagogy and described its limited scope. A knowledge of hygiene, he thought, should reach children by a process of intermittent, downward filtration—it should be impressed upon their plastic young minds by capable men and women, rather than directly through text books.

Dr. Probst briefly spoke again to his paper.

Mr. J. J. Mackenzie then read his paper on "The Practical Place of the Laboratory in Municipal Public Health Work."

Dr. Bryce said that it had become a definite object of the Provincial Board of Health of Ontario to propagate the ideas suggested by Mr. Mackenzie in his paper. There was a positive feeling growing that efforts in this direction were necessary to the state's welfare. The trouble was that municipal sanitation was very imperfect. He had a suggestion to make. In each county the county council should appoint a district medical health officer (there might be two in large counties) to relieve the Provincial Health Officer and facilitate prompt action in cases of emergency. Public opinion had altered the composition of county councils, and the question now was whether the Medical Health Officers were really determined upon what was necessary for the public health.

Dr. Bryce went on to draw attention to the work done by the Provincial Board of Health with regard to the inspection of milk

and food-supplying animals, and urged that a systematic inspection by local authorities should be arranged for. He emphasized the importance of tuberculosis tests in dairy herds, and thought that the Association should endeavor to have the tests applied over a larger area.

Prof. Shuttleworth observed that in the Toronto laboratory great advantage was derived from the inspection of the milk and water supply. He doubted, though, the practicability of having local medical officers make bacteriological inspections. The local man had not the proper facilities for the work, and besides the busy practitioner had not time to devote to the experiments.

Dr. Sheard noted that the Provincial Health Act allowed the ordinary medical practitioner the same authority as the medical health officers to grant certificates for the return to school of children from infected houses. This provision was a mistake and often interfered with the usefulness of the local Medical Health Officer. Some modification of the Act should be secured, otherwise scientific knowledge would fall short of its proper effect.

Dr. Griffin, of Brantford, observed that it was partly at his instigation that the Act was in its present shape. He had urged Mr. Hardy to change the clause preventing ordinary physicians from issuing certificates. His reason was that until Brantford and places like it should pay their Medical Health Officers a salary to devote all their time to public duties, the other doctors should be allowed to relieve them of a lot of extra work by signing such certificates.

Dr. Cassidy suggested that croup should be made a notifiable disease, unless the attending physician undertook that it was not diphtheritic. Referring to the question of a healthful milk supply, the doctor said that wholesale dealers should be compelled to keep their stables and cattle in a cleanly condition. The local Medical Health Officers might be instructed to make inspections and give to the deserving dealers certificates of cleanliness to show to their customers.

Dr. Sheard stated that he was now making arrangements with veterinary officers for tuberculosis tests and regular veterinary in-

spection to cover all the area within forty miles of Toronto from which the city drew its milk supply.

Dr. Bryce asked Dr. Hewitt to contribute something to the discussion.

Dr. Hewitt said that Minnesota had 1,700 local boards of health, and went on to speak of some of their methods of work. In case of the outbreak of scarlet fever or other contagious disease, the attending physician notified the chairman of the local board of health and steps were at once taken. There was also a provision that where the epidemic affected several adjacent townships or municipalities, the several local boards of health might amalgamate and work in unison. As regards the dairy, the local Medical Health Officer and a veterinary officer gave dealers in milk certificates as to the condition of their cattle and stables. This arrangement the public appreciated greatly, and where a dealer might lose cattle in the operation of getting his dairy into good order, the loss was soon made up by the extra business he got on the strength of his certificate.

Next in order on the programme was a paper on "How the new Registration Act does public health work," by Dr. P. H. Bryce, secretary of the Provincial Board of Health. Dr. Bryce observed, however, that as the hour was late he would not read his paper but simply make a few remarks regarding the efforts of the Provincial Board of Health of Ontario to increasingly keep itself informed with regard to the state of contagious diseases in the various municipalities of the Province. He explained the working of the new Provincial Act relating to Births, Marriages and Deaths, illustrating it with the cards sent out by the Registrar General to be filled in by the division registrars. He showed how the plan enabled the Provincial Board of Health to discover local outbreaks of contagious diseases, and from month to month to obtain a sort of disease census for the Province. He asked the Medical Health Officers present to speak concerning the working of the new Act.

Dr. Sheard stated that he had found the new system of great

benefit and assistance in Toronto. He made it a point to sign death certificates personally, except in exceptional cases. He always insisted in the law being carried out to the letter, and the city clerk passed no certificates that did not bear both the health office stamp and his own personal signature.

The Act, he went on, enabled him to keep an excellent record of deaths and their causes, to disinfect infected houses, to patrol funerals, and take other effective measures to control epidemics. As to the transportation of bodies, he always refused permits in cases of scarlet fever and diphtheria. Bodies of typhoid patients might be carried by the railways without danger to the public health, but so far he had stuck to the letter of the law and refused permits even for these.

Dr. Bryce explained for the benefit of American delegates that the original burial permit had been amended by the insertion of the words "transit permit" for convenience sake. The railways had been supplied with copies of the Act and the permit form, and warned that they would be held liable in case of a violation of the Act.

Dr. Probst inquired if in the case of the importation of a body from the States, the corpse was met by a Medical Health Officer and if a burial certificate signed by a state officer was required.

Dr. Bryce replied that a local Medical Health Officer could refuse to admit the body of a person who had died from a contagious or infectious disease into his municipality, and to prevent this the railways have been advised to obtain his consent before undertaking the transfer.

The Chairman asked Dr. Griffin to present his paper on "Enteric Diseases and Polluted Ground Waters" which he should have read at the morning session.

Dr. Griffin stated that as his paper was only partially completed he would like to lay it over for another year.

Dr. Bryce then presented the annual report of the executive council, which read as follows:

To the President and Members of the Executive Health Officers' Association:

GENTLEMEN,—Your Executive Council begs to present its brief annual report. During the year it has not been found necessary to call the council together, although the recommendations contained in motions made at the last meeting have, so far as possible, been acted upon. Especially is this true of the endeavors made to get legislation passed for improving the work of meat and milk inspection. The members are aware of the Provincial Act which has been passed with this end in view.

Circumstances not having made it opportune to hold the annual meeting of the association in Windsor during the June meeting of the Ontario Medical Association, it was after full consideration, deemed desirable to hold a short session at Niagara-on-the-Lake at a date convenient for your members to attend the international meeting of the American Public Health Association at Buffalo. The expenses of the year have as usual been met by the Provincial Board of Health in the printing of the annual proceedings of the association. The payment of the stenographer for reporting the Belleville meeting only has been charged to the funds of the Association.

The funds in the hands of the Secretary-Treasurer amount to $152.

All of which is respectfully submitted.

(Sgd.) W. R. HALL,
Chairman.

P. H. BRYCE,
Secretary.

On motion of Dr. Bryce, seconded by Dr. Griffin, the report was adopted.

Dr. Bryce remarked that as many members of the Association had already left the convention, perhaps it would be well not to call

the annual fee. The Association had money on hand and the Provincial Board would doubtless again print the report of the convention.

The election of officers was proceeded with and resulted as follows:

President—Dr. Charles Sheard, Toronto.

First Vice-President—Dr. McCrimmon, Palermo,

Second Vice-President—Dr. J. J. Cassidy, Toronto.

Secretary-Treasurer—Mr. J. J. Mackenzie, B.A., Toronto.

Council—Dr. J. S. Wardlaw, Galt; Dr. J. Coventry, Windsor; Dr. E. Griffin, Brantford; Dr. T. Hutchinson, London; Mr. H. E. Bowman, C.E, Berlin.

Dr. Bryce asked to be retired from the secretary-treasurership after a term of ten years in office.

On motion of Dr. Bryce, seconded by Dr. Cassidy, a resolution was passed tendering the thanks of the Association to the mayor, council and citizens of Niagara for their hospitality.

At Dr. Bryce's suggestion, and on motion of Dr. Cassidy, seconded by Dr. Griffin, the question of a place of meeting for next year was left in the hands of the executive council.

Dr. Bryce formally thanked the Association for the courtesy extended to him during his decade of service.

The meeting adjourned at 5.30 p.m.

A banquet, attended by the members of the Association present, was held at Long's hotel in the evening.

THE PRESIDENT'S ANNUAL ADDRESS.

By W. R. Hall, M.D, Chatham, Medical Health Officer.

Gentlemen,—With a view to the accomodation of those members who desired to attend this session of our Association, and at its close to visit the American Public Health Association which assembles to-morrow at Buffalo, your Executive Committee selected this lovely and convenient town for the place of our gathering this year.

The programme of our meeting has been restricted to cover only one day, but we feel confident that this diminution of time will be fully compensated by the profit and pleasure which we shall derive from fraternal participation in the gathering of these kindred workers in the neighboring Republic.

However, owing to this necessary curtailment of the time usually allotted to our work, we do not enjoy as heretofore, the privilege of a representation of the general public and others more particularly interested in sanitary work and reform, for whose instruction and to awaken whose interest it would be necessary to give popular and non-technical explanations of the functions and aims of our Association.

In the absence of such a mixed audience, it would be trite and commonplace in me to dwell on general sanitary aphorisms however fundamental, or on those elementary facts and deductions, which, however important, are now well understood by those whom I have the pleasure of addressing.

My address to-day will be very brief, but before hurrying on to some rapidly-expressed thoughts on public health matters, and recent legislation affecting medical health officers and local boards and some issues that may arise in the near future, allow me, Gentlemen of the Association, first to thank you for electing me to the very honorable office of President. I would be violating the trust which you have reposed in me, and abusing the privilege of my position, were I to take up your valuable time with commonplace remarks on subjects with

which you are already familiar. One who has been engaged upon the routine work of a medical health officer about twelve years should be familiar with many of the vexatious things which a medical officer of health has to contend with in trying to get local boards of health, municipal councils and the general public to take steps toward needed sanitary reforms. We recommend and reiterate our recommendations, and then often wait years before we have the satisfaction of at last seeing them carried out. "It is the constant drop that wears the stone." It might be said to medical health officers, "do not get offended or discouraged when your recommendations are not favorably received, but put them down in a book kept for that purpose, and recommend them again and again until they are acted upon, or you have reconsidered your recommendation in the light of subsequent experience. A medical health officer should be persistent where he knows he is right and constantly hopeful of accomplishing reforms because they are right.

"The web in the leaves which the spider weaves,
Is like the charm hope hangs o'er men,
Though she often sees them broke by the breeze
She weaves the bright tissues again."

He should not be quarrelsome or arbitrary, but wait for time and education to vindicate and prove his position.

Medical officers of health are very inadequately paid for the work they perform, but the pecuniary recompense is greatly supplemented by the knowledge that they are making others healthier and happier.

A little incident occurs to me in this connection. Several years ago I was fortunate enough to save a child from drowning; he has since grown to manhood; he had fallen into a well in an adjoining yard, I pulled him out and undoubtedly saved his life. The pleasure of self-commendation after this act enables me to realize the satisfaction which should be experienced by a faithful medical health officer who can realize that by his efforts in sanitary work he has removed or averted fatal dangers to the lives of the citizens he serves.

Many who are here to-day and who were present at the meeting of our Association in the city of Chatham in 1894 may remember the extensive and exhaustive discussion which then arose as to the future source of a supply of water for that city, and my advocacy of the river Thames, how very unpopular it was, and how adversely it was criticised. My views expressed then are to-day those of a vast majority of the citizens of Chatham. The supply is abundant and of excellent quality, in striking proof of which I am able to state that in the year 1895 and the portion elapsed of 1896, there were reported at the health office in Chatham, 124 cases of typhoid fever; careful investigation established the fact that in no one of these cases had the patient used the city water exclusively, but in every case well water. Our experience in Chatham with mechanical sand filtration, with a coagulant, has so far been very favorable to that method of treating water. The Thames water of low grade purity is by it converted into an exceptionally good potable water.

As a further aid to the purification of the Thames river water we are now engaged in the construction of a large sedimentation basin, which when completed will enable us to deal better with the semi-annual rise in the river, due to flood water.

In respect to recent additions and amendments to the Public Health Acts I feel that it would be ungrateful and unfair to withhold from the Provincial Board of Health and its energetic Secretary that praise which is due to them in procuring the passage of several valuable and important Acts by the Legislature of Ontario. I refer especially to the Public Health Act of 1895, the amended Registration Act of 1896, and the Act to provide for the Inspection of Meat and Milk Supplies of Cities and Towns.

The amendments introduced by the Public Health Act of 1895 are most salutary, enabling the Provincial Board of Health to exercise a control over the establishing of waterworks, sewers and systems of sewerage, and to regulate such matters generally to the benefit of the public; a short interpretation clause should be added to the Act defining the meaning of the word "sewer," as some municipalities evade the operation of this portion of the Act by calling a "sewer" a "drain."

The formation and election of members of local boards of health, as provided for in this amending Act, are admirably arranged without too drastic changes, provision being made for a majority of the board to hold over from year to year, thus enabling them to guide the new members as to local conditions, former work, etc., continuity being thus partially retained, while at the same time new blood is infused annually into the board.

The amendment to section 99 forbidding the feeding of uncooked offal and dead carcasses to hogs, enables medical officers of health better to combat these sanitary evils and centres of disease with their loathsome and putrid surroundings

The regulation introduced this year providing that all deaths shall be reported directly to the medical health officer by the attending physician, together with the cause of death, is a very great help to medical health officers in carrying out their many duties.

An Act to provide for the inspection of Meat and Milk Supplies in cities and towns, was passed in the Ontario Legislature, which though not going as far as we would wish, is good so far as it goes, but it leaves the matter in the hands of local authorities, who I fear will be very slow to take advantage of the Act. As originally drafted the Act became mandatory by the use of the word "shall, but this was changed to read "may," and thus became voluntary or permissive. A very short amending Act in the near future, should be introduced making the legislation operative in all municipalities.

Before concluding, I wish to advance an original thought, and let me here predict for it the fruitful progeny of actual results in the future, through legislation; my suggestion has a direct bearing on the status of medical health officers, physicians and surgeons. It is this—only medical health officers specially educated for the work and regularly appointed, and paid by the municipality, village, town or city, should practice medicine and surgery, and they should be prohibited from taking any fee or compensation of any kind from a patient; their service should be free as of right to all.

They should form *ex officio*, the board of health of the municipality and should make the prevention of disease their constant study and work.

Let us briefly consider some of the many advantages of such a scheme.

1st. At the least calculation, half the number would be able to perform the work done by all the medical men in any municipality in Canada, do it better, more systematically and more easily; provision could be made for night work, and none of them need be over-worked. As constituted now, a few of the profession do most of the work, and the others are unemployed. It would therefore be a large financial gain to a municipality.

2nd. The commercial element would be wholly eliminated from the profession; the doctor's income would be fixed and certain, his mind would be immediately and permanently relieved from all worry of collecting, of book-keeping and of bad debts. What this would mean to an overworked physician, only he can tell; the amount of nervous energy thus wasted at present would be saved for the benefit of the doctor and his patient.

3rd. Temptations to unprofessional conduct would be vastly lessened if not wholly eradicated; the temptation under the present system (nobly resisted I grant you), is ever present, when a doctor's income is wholly based on fees, either to make those fees extortionate or else more frequent by the needless multiplication of visits.

One of the greatest physicians of fifty years ago said he "bled the rich financially to assist the poor," and even this romantic action savors of Dick Turpin's charitable bestowal of a portion of his ill-gotten gains. While I am proud to say the vast majority of our noble profession rise superior to such temptations, still they exist, and over the weakness of humanity they sometimes prevail, just as some lawyers violate their code of professional ethics by secretly promoting litigation.

4th. Unprofessional advertising would cease, quack nostrums would no longer be vended to the detriment of the sick, and the vexation of the physician.

5th. A single collection of expensive medical works and costly instruments need only be purchased by the municipality and would be for the use of all.

6th. The doctor would cease to be a private prescription seller, and become purely a medical health officer, and a public benefactor in the highest sense of the term. Professional jealousies and rivalry would be removed.

7th. The establishment of unfeed practitioners would arrest the present lamentable over crowding of the medical profession.

Many other advantages might be mentioned but I am sure they will suggest themselves to you. So too will many objections to the scheme, but perhaps the first to be urged is that the idea smacks of socialism.

Let us briefly examine into the validity of this one objection.

Socialism once but the dream of the doctrinaire has become an actively felt factor in the practical politics of the most conservative countries in Europe, and although its followers have been sometimes brought into disrepute by the advocacy of visionary projects, such projects have been but illegitimate excrescences from a healthy stem, and their existence proves nothing against the principles of socialism —principles which even in England are making themselves felt, as evidenced by mooted legislation in the Imperial Parliament, to provide old age pensions for those over sixty years, legislation based on the calls of economy and justice.

Three hundred years ago in England the passage of a poor-law made desirable by the events of a previous reign, smacked of entering the thin edge of a socialistic wedge.

When then aristocratic England, and bureaucratic Germany have admitted socialism as an acknowledged factor in the economy of governments, shall we in democratic Canada, refuse to consider any scheme such as I have outlined, merely because it may savor of the principles of socialism? I leave the thought with you.

TEN YEARS WORK OF THE EXECUTIVE HEALTH OFFICERS' ASSOCIATION IN ONTARIO.

By J. J. Cassidy, M.D., Toronto, Member of the Provincial Board of Health of Ontario.

Mr. President and Gentlemen of the Association,—When our estimable Secretary requested me to write a paper on the subject upon which I am now about to address you, it seemed to me that he must have formed a too flattering opinion of my capacity for literary work, or, and this is the more probable reason he must have forseen, that in the records of the ten years of the work of the Executive Health Officers' Association, so many interesting subjects would necessarily present themselves, even to the least observant, the materials available for a paper would be so varied and so rich, that one would feel like a welcome guest wandering through an orchard in September, when the richest and ripest fruit hangs temptingly within reach, and all that remains to be done is to stretch forth the hand and pluck it. But again, this very excess of richness, makes the selection difficult, and so I shall crave your pardon, if when there is so much to say, I must necessarily be brief, passing over much that is important, and giving but scant and passing notice even to the best.

When thinking over the history and work of the Association, the idea which rises most rapidly in my mind, is that during the decade of its existence, it has done the people of Ontario a great deal of good, and cannot possibly have done them any harm.

Called into life at an organization meeting, Toronto, October 5th and 6th, 1886, its first annual meeting was held at Woodstock, May 17th and 18th, 1887; the second at Toronto, Feb. 14th and 15th, 1888; the third at Lindsay, Aug. 14th and 15th, 1888; the fourth at Brockville, Aug. 20th and 21st, 1889; the fifth at Owen Sound, Aug. 19th and 21st, 1890; the sixth at Trenton, Aug. 18th to 20th, 1891; the seventh at Niagara Falls, Aug. 16th to 18th, 1892; the eighth at Guelph, June 27th and 28th, 1893; the ninth

at Chatham, Aug. 14th and 15th, 1894 ; and the tenth at Belleville, Aug. 14th and 15th, 1895. At these ten meetings, one hundred and forty papers have been read, followed by discussions elucidating the subject matter of each paper or group of allied papers. It will thus be apparent, that apart from the reports of Committees, or addresses delivered by the hosts of the Association and others, the purely scientific work of the Association would now fill a respectable volume. The good done by this Association in these different centres of population may be measured by the standard of material results such as, an improved water supply, a totally new system of drainage, modern conveniences in dwellings, instead of the ruder devices used in the past, an increased cubic air space in public and private buildings, ventilation in school buildings where none had existed or a better system of heating buildings.

As an evidence of the growth of public opinion in some of these directions now indicated, I may point to the efforts which have been put forth to improve the water supply of Toronto, and the probability that in the near future it will be made quite satisfactory, to its extensive sewer system and the development of modern conveniences in the houses ; the excellent system of scavenging, which has simply transformed the lanes and streets of the city ; the well constructed isolation hospital, with the very thorough system of disinfection applied to the limitation and prevention of infectious disease ; and of equal note, though not so well conned by the public eye, the regular work of the local board of health, the hourly, daily and weekly results, which flow from the regular scrutiny of the sanitary inspector, from the labors of the scientific department and the comprehensive efforts of their untiring chief.

But though Toronto is well able to carry into effect the great sanitary improvements which have been recommended in valuable papers, read before you, and approved of by yourselves in subsequent discussions, the progress of hygiene is also very satisfactory in the smaller cities and towns of Ontario. Brockville, which for many years was fortunate in possessing the services as an engineer, of an ex-President of this Association, and which for many years, until

lately, had as medical health officer a member of this Association, has an excellent system of separate sewers, and waterworks. Lindsay, the home of an ex-President has also introduced a system of sewers and waterworks. Brantford, the home of an ex-President, has an excellent system of sewers and waterworks. Owen Sound, the home of an ex-President, has introduced a system of sewers and waterworks. Windsor, the home of an ex-President, has introduced a system of sewers and waterworks. Chatham, the home of our President, has succeeded in overcoming what promised to be a formidable obstacle in obtaining good drinking water by filtering the water from the river Thames. In fact so many cities, towns and villages have put into operation systems of sewerage and water works, that I cannot do better than read the list. In addition to those already mentioned, systems of sewers and waterworks have been introduced into Ottawa, Kingston, (an extension of the waterworks) Berlin, London, Peterborough, Belleville, St. Catharines, Barrie, Orillia, Toronto Junction, Galt, Goderich, Sarnia, St. Thomas, Niagara Falls, Welland, Walkerton, Woodstock, Waterloo, Cobourg and Pembroke. Waterworks without sewers have been introduced into the following towns and villages: Paris, Collingwood, Orangeville, Thunder Bay, Sudbury, North Bay, Parry Sound, Huntsville, Mattawa, Chesley, Kincardine, Petrolea, Wiarton, Aurora, Aylmer, Amherstburgh, Sandwich, Walkerville, Napanee, Trenton, Deseronto, Meaford, Dunnville, Milton, Georgetown, Wingham, Kincardine, Wallaceburg, Tilbury, Alvinston, Beaton, Cardinal, Prescott, Tilsonburg, Campbellford, Port Hope, Ingersoll, Brampton, St. Mary, Penetang, Alliston, Tottenham, Cornwall, Niagara Falls South, Niagara-on-the-Lake, Dundas, East Toronto, North Toronto and Newmarket. In addition to providing sewers, systems of sewage purification have also been introduced at Berlin, Waterloo, at the London Asylum, the Mimico Asylum, the Brockville Asylum, the Guelph Agricultural College, the city of Hamilton, and a sewage farm will be introduced at London.

The ventilation and heating of school buildings has been frequently discussed at our meetings. At our first Annual Meeting which we

held at Woodstock, May, 1887, the writer of this paper had the honor of drawing the attention of the Association to the Smead Dowd system of heating and ventilation, introduced in the Brock Avenue public school, Toronto, during the previous winter. This system of combined heating and ventilation, the only one I know of which has given good results in schools, has during the past ten years been introduced into over 400 schools throughout the Dominion, a convincing proof that the approval given it by this Association in 1887, was well merited.

Real progress in the ventilation of school buildings will not take place unless :

(1) A Provincial Sanitary Inspector is appointed, who shall have power to see that all plans for new schools shall have sufficient flue space to furnish at least 1,500 cubic feet of air per hour, per pupil. This should be the minimum amount.

(2) After new school buildings are erected, there should be a practical inspection by scientific tests to see whether the ventilating apparatus fills the requirements, and in default of its doing so, the contractor should be obliged to make the necessary changes.

(3) The same authority should have power to order changes in the worst of the old schools now in use, so that a larger amount of air, and better air may be supplied.

The sanitary arrangements of the school should also be under the control of the same power.

I mention these points, because I know that in the ventilation of schools, much is left to the imagination. In too many cases, if the building is warmed, and the consumption of fuel is moderate, all the requirements seem to be met. In the ventilation of court houses, churches, public halls, etc., the services of the members of this Association, have not been called into requisition by the municipalities. If ventilation is mentioned, the dictum of the architect of the building is accepted, and a scientific test is not applied. This is quite wrong. Defective ventilation may not cause as potent evils as bad sewerage, but it is a most powerful means of propagating infectious disease. A liberal amount of fresh air, is one of the prime

necessities, when assemblies of people are brought together for purposes of worship, business or pleasure.

I do not however think, that the evil to which I now allude, or any other defects in our sanitary arrangements, will be lasting; They will soon disappear. In fact I feel that owing to the great natural intelligence of our people, and the improved mental status brought about by a careful education, the people of Ontario are only on the threshold of an era of sanitary improvement.

The children educated in our schools have learned to lisp hygiene, since this Association was formed, the masters trained in the Normal Schools of Ontario are obliged to study the principles of hygiene, in a work prepared and edited by members of this Association, so that the rising generation will be with us in heartily carrying to a complete fruition, the recommendations and suggestions laid down, and discussed at our annual meetings.

But some *soi-disant* philosopher, will perhaps exclaim, "why all this effort of the medical profession to enlighten the public as to the evils arising from insanitary conditions?" Why should medical health officers devote themselves to the services of municipalities expending their bodily energies, and the knowledge acquired by many years, of special study in the prevention of disease, and diseased conditions? Why should they interfere to frustrate the growth and development of that crop of infectious diseases incident to humanity, since the dawn of history, when the treatment and cure of these diseases would seem to be the natural object and purpose of the existence of medicine? Why should highly educated and trained physicians devote themselves to the service of the body politic when their financial interests would be better served by attending to the interests of the individual sufferer? Why should they assume the rôle of a special Providence and stay the growth and development of a plague, when they could reap a golden harvest, in simply administering to the wants and sufferings of the victims from a developed plague? Why should the members of this, and kindred associations meet once a year, not merely to enjoy the contemplation of fine scenery, or the interchange of the small courtesies of society

but rather to listen to the expression of matured thought from the leaders of the medical profession, on the best and safest means of obviating the loss and expense, incident to the individual, the family, the municipality and the province, from the onset of preventable disease, the best methods of averting its ravages, and the most enlightened plans for securing to the young, as well as to the middle-aged and the old, the greatest amount of good health and bodily vigor, the lowest modicum of pain and suffering.

Questions easy to ask from the standpoint of pure selfishness, questions quite to the purpose if medical science were a mediæval "mystery," intent on filling the pockets of a learned few, at the expense of the suffering many.

No! The aims of preventive medicine, as developed in associations like this, are far nobler and higher. Without assuming the office of the Christian religion in creating the kingdom of God upon this earth, preventive medicine in its daily routine of work, is constantly at war with selfishness of this world, because, while it works in the world and for the benefit of the world, its own motives are not worldly. With the light of science in its right hand, and impelled by motives as pure as those which actuate good men not enlightened by that light, it strives, and not for self-interest, often not for glory, to make that light so shine among men, as to lead them from the by-paths of an ignorant past, to the heights of a questioning and comprehending future.

Our brethren of the legal profession merit a high mead of praise, when they leave the office and the Court of Justice, to labor for the public good in conventions and parliaments. The artisan and the farmer are not undeserving, when they leave their homes to inform each other in convention, of new plans for improving the output of the factory, the workshop and the farm. The advocates of temperance and a Christian life earn merited renown for their strenuous efforts in convention, and in the domestic circle to spread the light, and lead their fellowmen to a better and a higher plane of life.

But the legislator must wait for a developed public opinion to ripen, before he crystallizes the output of human thought into a statute.

He phrases, he expresses with clearness, processes of thought already worked into concrete fact by observation, and experiment. He fashions, as in the case of public health law, the outcome of medical thought and experimental research. He is a modist, not a creator. He allows the lantern of the statute to convey to the public eye, just as many rays as, in his opinion, the unaccustomed human retina is capable of absorbing, and perceiving. His services to humanity in this respect are valuable indeed. He acts as a fender between inexorable science, which would have right, and right only, and poor human nature which is bewildered by the light and fears that it may only prove to be an *ignis-fatuus*.

The best claim that can be put forward on behalf of the promoters of the industrial arts, that they are the truest friends of humanity, is because among other things they help along the work of this and kindred associations, by their useful inventions. They are our coadjutors; we feel grateful for their services, and we freely concede their claims. But while their inventions are valuable to all, the profits accrues to themselves alone.

The advocates of temperance, and the ministers of religion, meet us on even ground. As the very object of hygiene is prevention, so in temperance organizations the removal of alcohol from the field of human endeavor, or at least its very considerable restriction, is the likeliest means of destroying the evils of intemperance. So also in fostering the Christian virtues, theologians will confess that the prevention of evil, as far as such an effort is compatible with human frailty, is the surest means of cultivating virtue.

The work of this Association will go on and prosper, for the love of perfection will not die in the breasts of its members, and even though with advancing years, the grosser forms of insanitation may become rare, still the old motto "excelsior," will be our inspiring cry; and we shall endeavor to still further advance the interests of hygiene, and still confer fresh blessings on the communities in which we live, and on the good name and fame of our beloved Canada.

While a perusal of the names of our members shows that many of those who were present at our first meeting ten years ago, are still

with us, yet the sad conviction is forced upon us that several of the men most active at former meetings, have gone over to the silent majority. Their memories will, I am sure, live long in our hearts, and their fame will, in a coming and a more appreciative time, be exalted as that of men who deserved well of their country, who feared not to spend their lives, that others might live, who placed duty before self, and the love of science before the allurements of mammon.

While we mourn the dead, we can feel a thrill of pleasure at the presence and co-operation of the living, and to none in this assembly is a warmer feeling due than to our Secretary, the man who more than any other, has planned the building up of this Association, and watched assiduously over its fortunes to the present day. Though younger than many of us, he yields to none in clearness of perception, and in strength of purpose. This Association is fortunate in the possession of his valuable services, and it is earnestly to be hoped that he will long be spared to guide our fortunes, to inspire us with his energy, and to help us to plant still higher on the walls of indifference and old-time prejudice, the triumphant banner of a scientific and ever advancing hygiene.

HEALTH IN THE HOME AN IMPORTANT ELEMENT IN PUBLIC HEALTH SERVICE.

By C. N. Hewitt, M.D., Secretary of State Board of Health, Minnesota.

Gentlemen,—There is some foundation for the charge that in our devotion to the development of the facts and methods of public health by way of experiment, legislation, official routine and laboratory, we have omitted to give due weight to the personal and family side of the obligation and service for health.

I know the inclination and have frequently yielded to it, but have often been brought up against the facts of personal and family influence, and have been compelled to know that they are important

and powerful, not so much because they enlist the sympathy and co-operatio . of this or that influential man or woman, this or that family, but because they are based on the truth of the matter, are naturally necessa y to any permanent success and so cannot be ignored.

It has been my good fortune to serve a people who are mostly believers in the marriage of one man and one woman, the ownership of their own home, and the begetting and the bringing up of the children which that healthy and normal condition and conduct involved. We have a homestead law and the natural increase of our population is still near what it ought to be in such a people and under such conditions. With such a people health officers must have other qualifications than police ability, or any other official capacity, they must see the personal and family side of their duty, beyond the definition and requirements of the letter of the law. I have had a long service and been brought into personal relations with a great number of people and families of every nationality in our rather polyglot population, and I have learned that the influence which grows out of the family relation in a healthy population may be made the most desirable and constantly active of those which ought to contribute to the preservation of the public health. Many times has this knowledge enabled me to control or suppress epidemic or sporadic outbreaks of infectious disease by an appeal to these home sentiments of duty and interest, where the threat of penalty and the power of the police would have provoked an opposition as undesirable as unnecessary.

I am sure that this has been the experience of many medical health officers who are doing me the honor of hearing this little paper, and so I am encouraged to select as its subject, "Health in the Home an Important Factor in Public Health Service."

It is really no reason for the neglect referred to that we who know better should plead the importance and absorbing character of our study and official duty, nor that the most brilliant and, apparently, more efficient work is on the official and public side. That is only apparently so, though the rewards in public recognition and pecuniary pay are almost all there. I hope to show that even from this

lower and narrow standpoint the facts might be the other way, if those who can, will unite to make them so by the more natural and efficient service which I have to propose. I want to remind you, too, that what we have been accustomed to consider as the peculiar field of public health is now being cultivated by a variety of workers not of our own fold. They cannot intrude into the official territory, but they are at work in the personal and domestic field referred to, and they have many enthusiastic followers. The class to which I particularly refer are among students called sociologists, cultivating an undefined science, sociology. They do not lack enterprise or language. Their literature is very abundant, as are their professors and teachers. It is difficult to discover whether they have a common creed or profession of faith. They seem rather, the best of them, to be seeking for a foundation to put under the superstructure which they are rapidly building without one. (Their voluminous contributions to that end remind one of "Bull Run Russell's" description of Washington at the beginning of the rebellion, "the ruins of a city that would be.") In considering the claims of such collections and estimates of facts to be a useful science, it is not unfair to ask for works—results, that is what is demanded of public health every day and it is a fair question. But this is by the way. I turn to the subject in hand.

In free countries there is a strong opinion that practical duties ought, so far as possible, to find expression in the law or ordinance, and they have never hesitated to restrict the liberty of the individual when there seemed just occasion therefor. So one of the first laws enacted by our New England colonies after they had arranged religious matters was to give to boards of health more autocratic power to act than they ever gave any other public servants. That was because of the terror of smallpox chiefly, but the same habit continues, and in no country of the world is the disposition to give to boards of health necessary power and funds more marked than in America. In evidence see legislation as to other infectious diseases, water supply, offensive trades, food adulteration and the like. One of the most striking examples in Minnesota has been in the help

afforded in the fight with diphtheria, begun in 1882 with a success which the statistics alone tell, but which the fact of the limiting the disease to almost a "family prevalence," the voluntary removal of apparently well children from many infected families, and the increasing thoroughness of disinfection after new cases cease, prove to be due to a personal and family co-operation which law and police are helpless to secure. Another evidence of the differenee between obligatory and voluntary sanitary help is found in the experience we in Minnesota have had with smallpox and vaccination. We had scarce a single local board of health in 1872 when the State board, the third in the United States, was organized, and I had the then dubious honor of the election to the office of Secretary. Then, and for a few years after, we had smallpox in epidemic form. Since 1885 we have had only sporadic outbreaks, usually confined to the first attacked. Repeatedly has our legislature under zealous professional prompting been ready to adopt a compulsory vaccination law, but have not done so because the experience of the State board through my office was opposed to any other compulsion in the matter than to require that the children should submit to vaccination before entering the public school, at the order of the school boards, and that the superintendent of schools should encourage the practice My experience has now included more than 100 outbreaks of variola, in which my main reliance has been vaccination, and I have never failed to secure prompt acceptance of the practice, rather through example and tact than by argument or force.

The same is true of the establishment of public water supplies and the control of offensive trades and other sanitary measures of a public character. I do not quote them to prove that sanitary legislation is unnecessary, but to show that it alone is often not only useless but may be a bar to success, of which a striking example is the compulsory vaccination legislation in England and in some of our own States. See what it has done for the registration of children, premature, still-born or of full term, or of mothers in child-bed, or the discovery and knowledge of the other causes of death in infants and children under five years. What has been done to enable us to deal more

effectually with sexual crime? What can it do for the selection and proper use of food and drink more than to deal with its more apparent sophistication, by such legislation as relates to the composition of baking powder and the impurities and dangers of oleo-margarin, with sophistications of such secondary foods, drinks and condiments as coffee, spice and vinegar. In the matter of pure air what can be done for domestic purity and the cleanliness which underlies healthfulness in every direction there, by legislation. These are but a sample or two of the inability of legislation or official supervision to deal with the fundamental facts of health for a people. They might be largely increased, and are quoted here to show the need for a review of the essential of health as they are related to my special subject Health in the Home.

By essentials of health I mean the conditions necessary for health for all sorts and conditions of men. They are of the nature of rights, the common endowment of the race, the common duty of civilization. They belong to the individual as the unit of which all human associations are made, and are secured to them chiefly by the family association if he get them at all.

In the view of public health the individual begins through marriage, in a family which is the first normal and most important association of individuals, the unit of society, the nursery and best school for man. This statement, a truism for us, is disputed by the fashionable sociology of the day, which affects to assume that society is a more perfect and higher organization than the family, to which the last is a subordinate, and possibly a non-essential sub-division. I know no more positive contradiction to such belief, drawn from history, the favorite storehouse of this new departure in the science of man, than the social condition of France to-day. A birth rate less than the death rate, due by the testimony of facts and the confession of their wisest men, to three principal causes: 1. The popular regulation of births at full time by financial considerations. 2. The increasing surrender of marriage for concubinage and other forms of prostitution. 3. The tacit recognition of the fact, as no bar to the marriage of a good woman with a roué. It is hard for us to

think or imagine a society in which impending extinction from these causes is attempted to be delayed by prizes for children born in wedlock, and where some patriots are sacrificing themselves for the people by the martyrdom of wedlock. A few even go so far as to become the parents, not of one child, but of several, as an example of what might be if others would have the courage to follow the example which they set. But what a confession for a great people to make, deliberate suicide. We cannot afford to jest on so serious a matter with the record we make of gross carelessness and indifference to the sacrifice of infant and child-life demonstrated in the statistics of the mortality among them, the medical experience in infant asylums, schools for abandoned children, etc., and the proceedings of the divorce courts. It will be a fatal mistake, if in the future, such bodies as this and the American Public Health Association do not recognize the relation of these matters to public health, and to proceed to investigate their cause, and fearlessly propose means for their removal.

It is important to ask you to recall another fact, which there is a strong disposition to ignore, that the chief end of public health is to preserve health not to restore it. It aims to discover and study healthy men and women and children and to cultivate them, to increase their numbers, longevity and efficiency, and remove, or rather to help them to avoid, the causes of ill-health and premature death which threatens them. They are the hope of the race, both now and as progenitors of still higher examples of men than themselves; they are a true aristocracy, to which even a republican can doff his hat in pride, because they are the foundation upon, which healthy society must rest and of which it must be made. They are the models, living examples of the beauty, power and happiness of health. They are the end of sanitary science and its highest *raison d'etre* is, that it helps them to increase and maintain their high estate, and helps others to join them. A secondary duty of sanitary science is to stimulate and help those who lack something of the essential of health and are able and willing to secure them, and so increase the number of those who attain a near and hopeful

approach to the standard of the healthy ones. Our science is more and more called upon to contribute to the effort, now so vigorous and varied, which has for its object the prolonging of life of the disabled in mind, body or morals, and to help them to an easier if not a better life.

Philanthropy, as defined by many of the organizations devised for its practice, does not accord with the fundamental principles of sanitary science. Its subject is disease. Its object, palliation and possible remedy. It has nothing to offer to healthy folk, except to ask of their earnings for its purposes. In its view they need no help but should be helpful. Contrast this view with that which public health sets up, and they are as opposite apparently as the poles. I shall venture to show that sanitary science proposes to deal with sickness, vice, crime and associated evils, by the way of prevention, avoiding the labor of Sisyphus, by removing the occasion for it.

But we are met more and more by the charge that our official duty as proposed and defined by law limits the field of our study and activities to that which concerns the body, and that it therefore does not include mind or morals. We could afford to laugh at so absurd a proposition if it was not made in apparently good faith by influential people who thereby would exclude us from association in many of the "reform movements" for the "elevation of the masses" so common in our day. The loss of association we could afford to suffer, but we cannot afford for our own or our work's sake, to be excluded from studies and projects which we must attempt because of the facts and opportunities which we are compelled to know by daily experience.

We know that man is a unity, a microcosm literally of matter under the guidance of all the forces of organic and inorganic nature, to which has been added a mind and conscience to make that animal a man. These elements are as much a part of himself as his animal nature, and both are essential to his manhood and his ability to do a man's part in the work of the race. Health is as much a condition of normal mind and morals as of body. The causes of ill-health affecting mind and morals are more subtle and dangerous than those

of physical origin, for they affect health and body directly, and come more directly under the observation of the physician and the health officer than any one else.

How then can they refuse to take them into account and study how to prevent them? We deal with these causes that as many as possible may be and keep healthy as a condition of life and work; they, the philanthropists, that conduct may take certain directions. We are now ready, if you please, to go directly to our study of "Family Health as an Element in Public Health Service." I assume we are agreed that the family is healthfully begun with the marriage of one healthy man and woman, a healthy child has come and that the family so constituted is living in its own home, in its own house on its own land, together the "homestead" of the leading races of the world. The duties of such a family as respects health conveniently arrange themselves into two classes:

1. Those of begetting, upraising and instructing children to an independent and self-supporting age, in health of body, mind and morals.

2. Those of helping the adults of the family to keep healthy, happy and efficient, and of caring for those disabled by the infirmities of age or accident. All are included in the duties of kinship, the strongest motive known to man.

It is evident that most of the causes of disease which are associated with defilement or insufficient supply of air, water or soil, find opportunities for the greatest development in the average home of our population, in country and city. In the country there is no excuse but ignorance or indifference, while in the city these essentials to health are often beyond individual or family control.

It is evident therefore, that if we could secure to the Homestead clean soil, water and air, the principal health essentia, which are its natural rights, we shall remove at once the leading causes of ill-health and the carriers and culture media of specific disease, from the Homestead, and a large share of our official duty will be surely and wisely done. It ought to be the glory of modern public health to have reduced the physical essentia of health to so simple an

practical terms. If you think of it, this is exactly what has been done, and the result has been to remove most of the every-day problems of the health of a community or state to the home of the families which compose it. The homes of the people once what they ought to be in these respects, or the majority of them, the secondary habitations, associations and occupations of that people will by inevitable popular conviction and authority, be compelled to secure and provide the same. These three essentia in daily use in school houses, churches, places of amusement, stores, factories, work-shops, in offensive trades, etc., imagine the result! Then see what would be the intellectual, æsthetic and moral effect upon the individual, the family and the community, of the general use of these three physical elements of health, and tell me what you can do better than to inaugurate a vigorous and persistent campaign to secure them through the family.

But how? There is no need to get off the common ground, nor to use a familiar and well-understood phrase, "to go up in a balloon," nor to theorize or philosophize, in the sense of a profound study of the problems and abstract difficulties involved, nor to study the history of past effort, nor to accumulate facts, nor to organize more associations and pass more resolutions: all that is needed is to *begin to do* in the most evidently natural direction. Remember that the essentia which we have noted are physical facts, recognized and demanded as such by domestic animals, and as necessary to man as to animal, but that for him, as man, they are, beside, the physical basis of his higher life.

The civilized man and woman know these facts. The knowledge is first instinctive, then civilization reaches its reasonableness. There is no more need to demonstrate them to such people than to prove that they must breathe air and drink water to live. They know too that health is largely dependant on them. They know in the same way that marriage satisfies natural, intellectual and moral wants as much as physical: that children follow as naturally to satisfy the parental instinct made strong and overwhelming for the perpetuation and up-bringing of the race: they know that the house and the land

are the physical essentia of family and home, and that the homestead represents to them all free and healthy people. They know that the community is the creature of the families that compose it, who devised to pool their common interests in common essentials, of which these are among the most important. That community and society do not in many respects fulfill this intention is common knowledge. The plain duty of those who know what public health is and its place in this matter, is to avoid even the appearance of over-laying, perverting or concealing the truth. It must have no complicity with the attempts to do that in the supposed interests of commerce, trade, business or any other excuse, by which the energy of individuals and other associations than the family, have diverted the attention and service of communities and states, to secondary ends often destructive and injurious to the families by whom, and for whose purpose, they were originally devised and established. The simplest explanation of the restlessness and discontent among the people from which the next generation is to come, the laboring class as the wrong-doers call them, is to be found in the violation done to their natural instincts and desires, and to their natural rights by any act which makes natural life and association more difficult, or which perverts or destroys it. That this is being done healthy men and women know instinctively, though they may not be able to say so in the language of the sociologist, of political economy, or of the schools or society. It is well too that all healthy and helpful men and women belong to this class, the laboring class, and that healthy labor, *i.e.*, that which has as its reward the possibility of the essentia of health in family and home, is the natural means to that end.

I venture to think that what has gone before is nearly the belief of every medical officer of health who hears me. What can we do beyond our official duty to make this belief a popular one and a working force in the effort to secure for the family its simplest natural right the opportunity to *earn, own* and *retain a homestead*. I will not discuss additional legislation nor imagine what might be in other ways, in Utopia.

Taking the common law of the English-speaking races, and the

existing statute law of Canada and the United States it is very evident that they are efficient for much more than has been demanded of them in this direction.

The popular unrest already referred to; the general foreboding of evil because of the weakening of the ties of family and home; the volume of thought and discussion in pulpit, lecture-room and in current literature; the voluntary associations for philanthropic and reformatory work, show that the tide is setting right. Experience tells us that great movements, like this, waste much power in wrong directions. Is it not time then that such associations as this help to direct and keep these common efforts within healthful bounds?

Our efforts should be to strengthen the defences of marriage and home by helping—

1st. To make the owning of homesteads as easy and permanent as possible

2nd. In centres of population water supply, sewer provision, garbage disposal, fire and police protection for the homesteads, to be the first public duty.

3rd. Public enforcement of parental and family responsibility for care of children and dependent kindred.

These involve pure air, water, soil and all possible opportunity for a living wage and for the natural operation of instinctive and rational motives to healthy thinking and doing. Though not all that is needed these things are the foundation upon which the rest must be built.

IMPEDIMENTS TO SANITARY PROGRESS.

By C. O. Probst. M.D., Secretary Ohio State Board of Health.

Mr. President and Gentlemen,—I must first express my great pleasure and gratification in being permitted to attend this meeting of Ontario Health Officers. I have been reading the reports of your proceedings since your organization, and with much profit to myself.

Ontario, I believe was among the first, if not the first, to call health officials together for conference. Ohio, my own state, followed soon after, and our next meeting, in January, will be our eighth.

In meeting here for counsel as to the best means for hastening sanitary progress, I have hoped it might not be unprofitable to review some of the impediments that stand in our way, and to consider how these may be removed or overcome.

This will lead us into well trodden paths, through fields which have already been broken; but the soil—ignorance and indifference—is poor and acquires constant cultivation, while the harvest we hope for—the highest earthly development of the human race—is still far in the future.

I assume, that as regards sanitary matters, conditions in Canada are, in the main, similar to those in my own country, and that the impediments we are constantly knocking against, or fortunately stumbling over, are practically of the same character as those you have to contend with.

In some respects I am inclined to think you have the advantage. You are much more closely connected to, and associated with, our common mother, Old England, the leader, and in most respects the superior of all countries in sanitation, and your people, I imagine, are more easily led into and kept in the right ways of living than are ours, made up as they are from all nations, and who come to us because of the belief that ours is a free country where everyone is at liberty to do as he pleases. But after all human nature is much the same and our differences in this respect cannot be great.

Sanitary progress is retarded, not so much because we do not push hard enough as on account of the impediments to be removed or passed over; and I would ask, Have we as sanitarians paid sufficient attention to smoothing the ways?

In the last twenty-five years a great mass of information has been acquired which some believe would reduce the general death rate by 50 per cent. if universally applied. The famed "City of Hygeia" is not an impossible creation, and one would suppose that all who know of it would seek citizenship therein. But our villages and

cities are the result of commercial advantages, and are often most unfavorably situated as regards the health of their inhabitants. Those who are called upon to guard the sanitary interests of these people may find, then, immovable impediments to the highest possible development. While we may hardly hope to control the location of our future cities, we should be able to greatly improve unfavorable conditions. An architect, having the health of the people in mind, recently seriously proposed demolishing all the structures on Manhattan Island and reconstructing the streets and buildings in accordance with modern sanitary knowledge.

We know that the direction and width of streets, which must practically be established in the laying off of villages, will have a noticeable effect upon the health of their inhabitants, and especially so when the small houses and large lots of the village give place to the large houses and small lots of the city.

It has been remarked that certain of the contagious diseases, also rheumatism, consumption—now placed among the contagious—and catarrhal conditions, prevail most in houses so placed as to receive little sunlight in living and sleeping rooms. Since recent investigations have shown us the wonderful bactericidal properties of direct sunlight—destroying the bacillus tuberculosis in a few moments exposure, we can readily understand that this may be so; and human experience, as is so often the case, discovered the fact long before science explained it.

In many of our cities the streets run north and south; It is so in our city, Columbus. During practically all of the day houses on the north side of streets running east and west have their front rooms in the shade, while the backs of houses on the opposite sides of the street are also shaded. By turning our streets so as to have them run equally distant from the cardinal points of the compass both the fronts and backs of all our houses would receive direct sunshine a considerable part of each day.

The evils of narrow streets are also well known, and act in the same way by cutting off the sunshine and interfering with the free circulation of air. The "sky scrapers" of Chicago, New York, and

other large cities, have justly caused much unfavorable comment on the municipal governments permitting such monstrosities.

Another evil of a somewhat similar character comes from the small building lots for dwellings found in many of our cities. In opening up new additions to growing cities the real estate speculator usually endeavors to get as many lots out of his land as possible. And this small lot evil is made worse by the professional or contract house builder, and in two ways. First, by covering a large space with one building in the form of "flats," and often, if allowed to do so, by having little or no space between the backs of his flats, and secondly, by putting up four houses on three building lots, or in about that proportion. Great good has been done in some of the larger cities of Europe by sweeping away the buidings from these badly over-crowded spaces and substituting houses of dimensions suitable to the available area, or leaving them as open spaces for air circulation. But how much needless suffering and death goes on before municipal authorities can be induced to take such radical steps as regards existing conditions, and how greatly better it would be if a far-seeing policy would prevent such conditions arising!

Public parks should be in the foundation walls of a city. Too often they enter only into its decoration, and come late in its life history. I was pleased to note while in Mexico that scarcely a village was found too small to have its plaza or public place, or square around which the village was built. When parks are not provided until a city has grown to considerable size, we usually find one, or possibly two or three large and handsome parks in the suburbs. They are accessible to but comparatively few of the working people, who most need them, except possibly on Sundays or holidays, and they scarcely at all answer the main purposes of such places—the ventilation of the city itself—which is almost as essential as ventilation of its houses. It would be much better, in my judgment, to provide a large number of smaller parks, dotted throughout the city, where they could be resorted to daily by large numbers of people, and where they would act as ventilators, purifying the air of the streets.

These are among some of the more important of the fixed con-

ditions which confront health officers in their attempt to better the health of their people. They are, unfortunately, matters over which the health officers can have little or no control, but each of us, perhaps, can exert some influence in preventing these and other similar evils entering into the structure of cities yet to be.

There are other matters of a sanitary character in the nature of public works with which health authorities are much more closely connected, and which are almost equally beyond their control. You will agree, perhaps, that a pure water supply, and the proper and speedy removal of excrementitious and other filthy matters, have as much to do with the health of a community as anything that can be mentioned. We find towns where, owing to unfavorable geological formations, the common method of obtaining water from one hole in the ground and pouring foul wastes into another is fraught with the greatest danger.

But, however clearly the board of health may be able to demonstrate that a continued high death rate in the community is due to such conditions, it cannot compel the municipal officers to provide waterworks and sewerage, which are often the only remedy for the trouble. Often, owing to ignorance, or indifference, which is really worse, the board cannot secure even such protection as water-tight vaults or dry boxes above ground would give.

Recently, in my own State, some eighty cases and eight deaths occurred from typhoid fever in a small village of 600 people. The trouble was very clearly traced to the pollution of one well, which was the favorite water supply of a large part of the inhabitants. In spite of the fact that the local physician had condemned the well, having himself contracted the fever from drinking its waters, the people were so wedded to its use that the village board of health required an order from the state board before they were willing to go counter to popular opinion and close the well.

Where waterworks are provided, it has been the case, until quite recently, and is still so in all but four or five of our States, that the health authorities have little or no control of the source of the supply. From the lack of such control a great many of our cities are supplied

with water dangerously polluted, and defeating the health officer each year in his attempt to bring down his annual death rate to a proper figure.

It is so also in regard to sewers, at least in my country. It is the council and not the board of health which decides when sewerage is necessary, and how it shall be constructed. Your Provincial Board of Health, I believe, and it is true of the Ohio Board, now controls, to a great extent, the discharge of sewerage systems, as well as the source of public water supplies in new works, but may not order such improvements to be made, no matter how much they are needed.

The improper construction, heating, lighting and ventilation of dwellings, schools and workshops; the use of adulterated and unwholesome food, and especially tuberculous meat and milk; public indifference to the management of the minor contagious diseases—whooping cough and measles—as well as the major contagion—tuberculosis—in addition to the bad construction or use of public works of a sanitary character already alluded to, are among the impediments which retard progress towards a higher standard of public health.

To remove these conditions boards of health must be given vastly greater powers, or the whole people must be raised to a plane of sanitary knowledge that will lead them, of their own accord, to bring about necessary sanitary reforms. These remedies are, in fact, closely inter-dependent. As the people become better informed boards of health are given larger and greater powers; while on the other hand wise sanitary laws, wisely administered, are one of the best means of public instruction.

For public instruction we naturally look to our public schools, and in most of the United States, and I believe it is true of Canada, instruction in hygiene in the common schools is compulsory. Most unfortunately boards of health, as a rule, have interested themselves very little in this movement, and in the States the necessary legislation was secured by the temperance people, or rather the prohibitionists, so that for the most part the instruction in hygiene consists of the giving of a good deal of mis-information in regard to the use of alcoholics and narcotics. My own lad of twelve has displayed for

my benefit considerable knowledge of a very queer sort regarding the grave pathological changes following the use of wine and the weed.

In our high schools and universities, as a general thing, the study of hygiene is dropped. Here it seems to me, is an important work for boards of health and real sanitarians. Our future, national, state and municipal law-givers, those who, to a large extent, will control sanitary progress, may be reached in our schools and colleges and made lasting friends of all public health movements. And, besides, what subject of education is of greater real benefit to our young men and women than personal and public hygiene? Is it not a great mistake for a Government to spend large sums for educating its citizens and neglect to instruct them in the matter of maintaining a healthy body, without which education is of but little use either to the individual or the State. It is not enough that our colleges should establish gymnasia and encourage athletics. This gives no protection against typhoid fever, small-pox and many other diseases. Our boys and girls, during the closing years of their school life, when the truths of sanitary science can be understood and appreciated, should be thoroughly instructed in public as well as personal hygiene. Can it be supposed that a community having a majority of its active men and women as well informed in sanitary matters as the members of this Association, would permit the use of a public water supply which was dealing out typhoid fever each year? Would they permit milk from tuberculous cows to be sold to their children, or suffer them to pass the greater part of their youth in badly ventilated school rooms? It is evident that the majority of even the educated classes do not really believe all that we tell them about such matters. They must be made to study the subject themselves; and it should be our constant effort to give them the opportunity before they leave college and engage in business, which may leave them neither the time nor inclination.

Our best allies should be the physicians, and they usually are; but I find, among us at least, that their knowledge of hygiene is not up to what it should be. Few of our medical colleges are giving any thing like a satisfactory course in hygiene. In quite a large number

the students are not even examined in this subject. None of the colleges in Canada or the United States, so far as I am aware, is giving the degree of Doctor of Hygiene, or Doctor of Public Health. It is a degree which every health officer should covet; and I hope to see the time when none but the holders of such a degree will be eligible to this office. Let us all unite in advancing the study of hygiene in our medical colleges and universities.

There is another class, not large but most influential, who by every right should be deeply interested in sanitation, and who could be of the greatest assistance in advancing our cause. I refer to the clergymen. There is, I believe, a sanitary Association of English Clergymen that is doing excellent work. It would be worth our while to endeavor to introduce the study of hygiene in our theological colleges, and to inspire these men with a greater interest in the bodies of poor sinners.

So too, I would urge that more attention be given to the organization of Women's Sanitary Associations. Women are essentially cleaner than men, and as cleanliness rightly understood is the basis for most sanitary reforms, women should make excellent sanitarians. There are several such associations known to me that have accomplished and are still doing much good.

In comparing the improved sanitary conditions of civilized countries at the present time with those existing thirty or forty years ago, and their effect upon the public health, as shown by the lowered death rate, we congratulate ourselves upon the progress being made in such matters; but when we contemplate the still awful sacrifice of life from causes which we know to be controllable, we cannot but be discouraged that greater results are not accomplished.

All hail to the achievements of modern sanitary science; but while we push onward for greater and still greater knowledge of the laws upon which health and disease depend, we must not, if we would accomplish our purpose as health officers, get beyond the sight of the masses to whom ignorance of the way is death. Let us by every possible means provide for hygienic instruction for all the people,

but let us also grasp all needful coercive powers in order that the unwilling may be kept under proper control. It is not enough that His commands should be known to the people; they must also do them.

LABORATORY NOTES ON THE BACTERIOLOGY OF DIPHTHERIA.

By E. B. Shuttleworth, Phar. D., F.C.S., Bacteriologist to the Board of Health, Toronto, Professor of Bacteriology, Trinity Medical College, Toronto.

(Continuation of work published in Report for 1895.)

Gentlemen,—A year ago I had the pleasure of presenting to the Association the result of six months' bacteriological work in connection with diphtheria, as carried on in the laboratory of the Toronto Board of Health. I now desire to briefly continue the record, so as to cover the intervening period from July 1st, 1895, to June 30th, 1896, and also to offer such deductions as seem justified by prolonged experience.

There were examined during this period the original exudates from 59 patients, of which 37.7 were from the Isolation Hospital and 22 from city physicians. The clinical records of the former cases are complete, but no systematic attempt was made to keep track of the latter, and the details submitted only refer to bacteriological par-

Collection of Exudates. The plan first pursued in this laboratory of supplying swabs in corked tubes and making the cultures in the laboratory has proved, in all respects, entirely satisfactory. Published records of other institutions show that when both swabs and media are supplied, a considerable portion of the cultures are unsatisfactory, and have to be so reported. This arises partly from the fact that the culture medium is dried up, or from the removal of the wool, has become contaminated, and partly, that physicians are not perhaps all as careful or capable as the laboratory worker who is constantly engaged in such manipulations. There is abundant evidence to show that it is best for the bacteriologist to sow the seed as well as to look after the crop. Under such conditions, and with good swabs, there need not be any failures whatever.

Too much emphasis cannot be placed on the latter point. The physicians should endeavour to wipe off a small piece of membrane, or at least to use sufficient force to detach some of the outside layer, which is commonly richest in bacilli. The presence of epithelial cells, as shown by the microscope, is pleasing evidence that some force has probably been used, and that the exudate submitted is not mere superficial mucus.

Diagnosis by the Exudate. I am more than ever convinced of the advisability of examining the exudate before making a culture. Reliable conclusions may often be arrived at in a few minutes. The gain of twenty-four hours in making a sure diagnosis is worth much to the physician, more to the patient, and often still more in the matter of isolation.

It was previously reported that a certain diagnosis had in this way been made in at least one-third of the cases, and a fairly correct idea in about three-quarters of the exudates examined up to July, 1895. Experience has increased the proportion in which the characteristic bacilli have been thus detected, as I find that positive evidence was given in 54 per cent. of the exudates sent in since that time, while 20 per cent. were marked suspicious and 26 per cent. negative. Failure to find the bacilli does not prove their absence, and it is only when they possess definite and well-marked characters

that the indications are of value. To a fairly experienced eye this appears to be the case in about half the exudates submitted.

Staining. I am not aware of any stain, which, for all-round purposes, is better than Loeffler's methylene blue. Having tried many others, including the dahlia and methyl green mixture of Roux, one returns with pleasure and satisfaction to the old and well-tried formula.

Fifty-six experiments were made with most of the eligible anilines, with various additions, but though many combinations answered well, as the bacilli are easily stained, none gave better segmentation and polarity than that of Loeffler, while for ease in working, uniformity of effect and keeping qualities, the latter proved superior.

Relation between the Size of the Bacillus and its Virulence. Observations as to size of bacilli found in cultures have been continued during the year and the result confirms the statement previously made, that this character affords little on which to base a prognosis. The records show that the disease was mild or severe in about an equal proportion of the cases in which the cultures showed large bacilli. Mild cases predominated when the bacilli were of medium size, and this was also the case when the micro-organisms were small. In the instances in which the bacilli were very irregular the severe cases were nearly double those which were classed as mild.

On looking up the details of the last forty-five fatal cases, there were twenty instances in which the bacilli were large, six medium, ten small, and nine very irregular as to size. Large bacilli here apparently indicate the most serious consequences, but I doubt if this and similar data warrant such conclusion, more especially when taken with previous experience, by which an opposite result was reached by Park and Beebe, and also by me. It appears reasonable that long, well-developed bacilli would be likely to grow most vigorously, produce the greatest mechanical obstruction, and the maximum quantity of toxin, but against this, there must be taken into account the influence of culture media, and conditions, on the development of the bacilli. Parallel cultures of the material from the same swab,

if grown under precisely similar conditions, but on serum media of different ages, dryness, or composition, will give organisms which are markedly different in size and type. This has been repeatedly observed, as also the effect of varying incubation temperatures.

The various factors which constitute the resistance of the patient exercise an all-powerful influence on the result of the attack. Taking this, with the circumstances just alluded to, I think it unwise to base a prognosis on such a variable character as size, though, with the same medium and conditions the numerical chance seems to favour the idea that the largest bacilli are the most virulent.

The Pseudo Bacillus. The position of the so-called pseudo bacillus has not been any more clearly defined than it was a year ago. It is still maintained by some that an organism exists, which, in morphological characters and staining peculiarities is indistinguishable from the true bacillus, but that, as tested on guinea pigs or rabbits, it is devoid of virulence. Objection may be taken to this test, as pointed out by Lennox Browne, in his recently published work on diphtheria. It is argued that these animals may, like horses, possess varying resistance to the toxin, and it is probable that such animals are sometimes altogether immune, as some human beings undoubtedly are. The test of virulence must therefore be made subject to this condition.

I do not purpose entering into this argument, nor is it necessary in practical diagnosis to attempt any nice distinctions. Patients sent to a diphtheria hospital manifest symptoms sufficiently marked to justify their temporary admission, and bear evidence of the attack of organisms possessing some degree of virulence. For hospital purposes it is therefore proper to characterize as diphtheria all cases in which a bacillus exhibiting the peculiarities of that of Klebs Loeffler is found in the exudates or revealed by cultures.

Persistence of the bacilli in the throats of patients. Discharge from the hospital has for the past year been entirely governed by the results of bacteriological examinations of cultures from the throats of patients. It was formerly the practice to detain patients for 1

days after the disappearance of the membrane, or, say, 26 days from admission, but it has been proved that this is by no means a safe rule, as many would thus carry infection, while others would be kept in hospital much longer than necessary.

The shortest time for the disappearance of the bacilli was 14 days, but this may be regarded as exceptional, as the average duration of the term was 22.8 days. In 13 9 per cent. the detention was from 28 to 35 days; 5 9 per cent., between 35 and 42 days; 2 1 per cent., between 42 and 49 days, while in one instance the infection was retained until the 65th day, and in another until the 75th day. The case of the second longest term is particularly interesting, from the fact that it was one in which anti-toxin was employed during the early stage of the disease. The case in which the infection was retained for 75 days shows a longer duration than any cited by Park and Beebe in last year's New York statistics. Longer periods have been recorded elsewhere, as that instanced by Lennox Browne, in which 146 days elapsed after the disappearance of the membrane.

The direct economic advantages of bacteriological examination as a guide to hospital discharge will be evident from the statistics given, and it will only be necessary to indicate the still greater gain which follows the isolation of infective patients, who would otherwise go forth and sow broadcast seeds of future disease.

Pathogenic organisms found.—In the following table organisms other than the diphtheria bacillus are widely classed as streptococci and staphylococci, but it must not be inferred that the former always indicates streptococcus pyogenes, or the latter the pus staphylococci. Tetracocci are not included. The classification was made on the microscopical characters of composite serum cultures, after an incubation of 24 hours, except the tubes set on Saturday, which were allowed to remain in the thermostat till Monday. Comparison of the results of cultures of short and long exposure do not lead to the conclusion that 24 hours was not sufficient for the development of the bacteria present.

The table covers both hospital and outside patients, 559 in all. For greater intelligibility the results are given in nearly whole percentages :—

	Hospital cases.	Private cases.
	Per cent.	Per cent.
B. Diphtheria	56	40
" and streptococci	18	12
" and staphylococci	7	2
" with strepto. and staphylo	6	1
Streptococci only	2	26
Staphylococci only	6	2
Strepto. and staphylo	5	11
Other organisms	0	3
Sterile	0	1

Comparison of this table with a similar one submitted last year shows a greater prevalence of cases of pure diphtheria, and less of the complex, or cocco bacillary form, and also a less proportion of coccal, or non-bacillary affections. With regard to the hospital cases this may be, in part, accounted for by the fact that physicians have become more careful in the selection of patients. After the first two months following the institution of bacteriological diagnosis, the proportion of non-diphtheritic patients admitted was 27.9 per cent.; after six months this had dropped to 24.5; in nine months it was 21.6, and the average for last year was only 12.4 per cent.

Of the city cases the proportion is but slightly changed. The specific bacillus was present in 56 per cent. of the cultures, against 61.7 last year, the cases of non-bacillary infection being 43.4 against 38.3 per cent.

The above facts do not wholly account for the comparative absence of coccus forms, as I have noticed with regard to pyogenes aureus

—easily recognized in old cultures—that it is at times relatively prevalent, and then for months it seems to almost disappear. It was observed in 24 out of 377 primary cultures, or in 6.3 per cent. of the cases.

Relation between organisms present and character of the disease.—The classification of cases into mild, severe, very severe and fatal groups, as revealed by clinical records, has been continued, and when taken with the bacteria observed gives a table similar to that before presented :—

TABLE OF ORGANISMS COMPARED WITH CLINICAL RESULTS.
July, 1895, to June, 1896, inclusive.

	Mild.		Severe.		Very severe.		Fatal.		Total.	
	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.
B. diph.	102	47.9	30	14.0	45	21.1	36	16.9	213	56.0
B. D. and strep	35	50.7	9	13.0	13	17.9	12	17.4	69	18.0
B. D. and staph	9	32.1	4	14.3	9	32.1	6	21.4	28	7.0
B. D. st. and sp.	12	60.0	4	20.0	3	15.0	1	5.0	20	6.6
Staph.	6	100.0	....	....	....	....	....	....	6	2.0
Strep.	23	100.0	....	....	....	....	....	....	23	6.0
Staph. and strep.	18	100.0	....	....	....	....	....	....	18	5.0

A comparison of this and the previous table shows them to be fairly accordant, and I am enabled to repeat with greater confidence the statement that when staphylococci or streptococci are associated with the diphtheria bacillus the mortality is higher than when the latter is alone present. This is in accordance with common belief. I have, however, again found that the most serious combination is that of the diphtheria bacillus with staphylococci. The disease is more malignant and the mortality higher than under any other conditions. It will be seen that with the diphtheria bacillus alone the mortality was 16.9 per cent.; the combination with streptococci gave 17.4 per cent, while that with staphylococci showed the deaths to equal 21.4 per cent. The mild cases exhibit a reverse proportion.

Thus, of 213 cases in which the diphtheria bacillus was alone present, 47.9 per cent. were mild; with 69 cases of a mixed infection with streptococci, the percentage was 50.7; and of 28 cases of mixed infection with staphylococci, the proportion fell to 32.1 per cent.

The combination of both staphylococci and streptococci with the specific bacillus is again shown to be of a benign character. Such mixtures resulted in the reduction of the death rate less than one-third that shown by the mixture of the diphtheria bacillus and streptococci, and less than one-quarter of the staphylococcus mixture. When it is considered that the records extend over a year and a half and include 565 cases, it can scarcely be concluded that this is the result of mere chance.

With regard to the effects of streptococci, or staphylococci, respectively, or associated together, the consequences have never been serious, nor has any case proved fatal. Such patients have generally been sent out from hospital within a week, and in no instance has there been any return, or complaint of too hasty discharge.

Susceptibility according to Sex. The female sex continues to show greater susceptibility, or possibly greater exposure to infection, as the female hospital patients bear the relation of 59.2 per cent. to 40.8 per cent. of males. This proportion corresponds fairly with the admission to the Asylum Boards Hospitals of London, from 1888-94 inclusive. Of 11,598 cases, 54.8 per cent. were females and 45.2 males.

Susceptibility and mortality according to age:

—	No. of cases.	Deaths.	Per cent.
7 and under	184	44	23.9
7 to 14	92	7	7.5
14 to 21	46	1	2.2
21 to 32	55	3	5.4
	377	55	14.5

It will be noticed that four of the deaths were those of persons over fourteen years of age. The ages were sixteen, twenty-three, twenty-six and thirty-two years respectively. So far as the statistics here are concerned this is a somewhat abnormal state of things, and may be in part accounted for by the statements that two of these patients were suffering from typhoid fever when attacked by diphtheria, and in the other cases, both females, one was under recovery from a severe uterine operation, and the other was worn out by poverty and disease. These conditions doubtless had an influence on the final result, but, taken as it is, the percentage of deaths, in patients over fifteen, differs only by 0.4 per cent. from that given by the English statistics previously referred to.

Age predisposition and age mortality have been remarked everywhere, and are probably rightly ascribed by Lennox Browne to two causes: Disposition from nasal obstruction and tonsil enlargement; and the tendency in the infant to membranous exudation in all acute inflammatory conditions of the throat as compared with submucous infiltration, with œdema, in the adult.

The statement made last year as to the mild type of disease prevalent in Toronto is confirmed by further experience. The mortality for the period stated was 14.58 per cent., and for the past four years the hospital register, of 1,506 cases to December, 1895, shows 18.52 per cent. The asylums boards' statistics, 188-94, give a death rate of 30.3, and in the hospitals of continental Europe the mortality is much higher. I think these figures warrant the conclusion that either the bacilli are less virulent in Toronto than in European countries or that the resistance of patients is greater.

THE PLACE OF THE LABORATORY IN MUNICIPAL HEALTH WORK.

J. J. MACKENZIE, B.A., BACTERIOLOGIST OF THE PROVINCIAL BOARD OF HEALTH.

GENTLEMEN,—Perhaps one of the most striking characteristics in the history of bacteriology is the rapid manner in which its practical methods have come to the assistance of municipal health authorities and their work. For many years we know that sanitarians have made use of chemical work and chemists to assist them in many of their sanitary problems, but the nature of such assistance, *e.g.*, in the analysis of foods and drugs, of water supplies and in the investigation of problems of ventilation, was such as to only be of occasional necessity, and we consequently find that chemical laboratories as adjuncts to sanitary work were necessary only in the largest cities or in connection with central governments.

With the advance of our knowledge of infectious diseases, however, the necessity of practical laboratory assistance in all municipal health work became pressing, and we find now that everywhere hygienic laboratories are springing up whose only function is to assist in municipal health work and to elucidate problems in municipal sanitation.

This began at first in many of the large cities with laboratories for the observation and control of public water supplies, but it was rapidly extended so as to include various other branches. For instance, with the threatened danger of Asiatic cholera, there were established in many places in Europe small laboratories where an early diagnosis could be made in all suspected cases. With the publication of Roux and Yersin's papers upon diphtheria there grew up in connection with large hospitals bacteriological laboratories for the diagnosis of that disease. These soon spread so as to include an examination of all cases of suspected diphtheria in a municipality, and there resulted a municipal laboratory for the diagnosis of diphtheria. The first large city to undertake this work under the board

of health was New York, and its example was rapidly followed by other cities in the United States and in Europe.

The value of these laboratories as an aid to municipal health work is becoming greater every day, and wherever they have been established they have repaid the cost of their inception and maintenance by the increased efficiency of the boards of health and the resulting lessening of epidemic disease.

The value of laboratories of this character may be manifold and it may be well to note a few of such advantages.

Control of Public Water Supplies. The bacteriological control of public water supplies was first begun in Paris and in Berlin; in the latter city where a filtered supply is used the efficacy of the filters and the purity of the water is entirely controlled by this means.

In the City of Toronto a systematic bacteriological study of the city water from week to week has enabled the Medical Health Officer to follow with absolute certainty the varying character of that water. It is, in fact, just in this continuous comparative study of a single water supply that the great value of a bacteriological examination rests. It reveals variations which would not be appreciable to ordinary chemical tests.

Examination of Suspected Diphtheria.—During an epidemic of diphtheria there always occur a certain number of atypical cases which from the ordinary clinical diagnosis would escape classing as diphtheria, yet which would be none the less dangerous as centres for the propagation of further epidemics. Even healthy individuals exposed to the disease may harbor in their throats the germs of the disease without themselves showing symptoms of illness; these cases without a bacteriological examination would escape detection and in spite of the most strenuous efforts of the health officer new foci would arise.

Similarly the length of time that the bacillus of diphtheria may remain in the throat after convalescence can be discovered only by bacteriological examination, thus preventing the release of a case from quarantine until certainty is reached that all chance of infection has disappeared. Without a bacteriological examination we must depend entirely upon purely empirical data.

Finally the bacteriological examination is of very great value in connection with a municipal or other diphtheria hospital in preventing the entrance of those anginas which are not diphtheritic, but due to streptococci or other organisms and in which, if we should have superadded a diphtheria infection as a result of introduction into a diphtheria ward, we would have just that special form of mixed infection which is of most serious import.

Under the Provincial Board of Health we have for some years been carrying on the examination of suspected diphtheria exudates for municipalities, and it is no uncommon occurrence to have the necessity of this work very forcibly brought to our notice by the facts which we learn.

For instance, within the past few months a medical health officer sent to our laboratory a sample of exudate from a case which he claimed was diphtheria and which resembled many other cases which had occurred in the same municipality, but which the medical men systematically refrained from calling diphtheria. In fact it was claimed that no diphtheria had existed for years in this municipality, although children died from follicular tonsillitis and croup. It was found in this case that it was diphtheria as well as in other cases sent by the same officer. In spite of very vigorous opposition upon the part of older members of the profession this medical health officer is, thanks to the assistance of the bacteriological examination, carrying out the provisions of the Health Act and forcing proper isolation and disinfection.

Similar instances have occurred time and again in Ontario, and they occur wherever bacteriological laboratories have been established.

Tuberculosis. The examination of suspected tuberculous sputum is another branch of bacteriological work which municipal laboratories have taken hold of.

As this does not really require a laboratory, but merely a microscope and the necessary training to use it, it might be argued that it should not come within the functions of the municipal health laboratory. Certainly medical men ought soon to be able to examine sputum with the same care as they examine urine, but for a good

while to come, at any rate, the laboratories will have to do most of the examination of tubercular sputum. And if we are to expect tuberculosis to be placed upon the list of notifiable diseases, we must be prepared to have some official place where the diagnosis may be confirmed, just as in the care of diphtheria.

Another possible function of the municipal health laboratory is the control of milk supplies. In Berlin and in some other cities, bacteriologists are employed in connection with some of the large dairies, part of whose business it is to control the cleanliness of the milk production by bacteriological tests.

Milk is so readily affected by the bacteria which gain entrance that no care is too great which may be taken to prevent infection.

In a dairy in Toronto conducted by the most modern method and with the greatest possible care, I have found a quantitative increase in the number of bacteria from the udder to the bottles, as follows:

I. Direct from cow, 15 bacteria per c.c.

II. Pail in stable, 720 bacteria per c.c.

III. Milk from cooling apparatus, 884 bacteria per c.c.

IV. Milk from bottles immediately after filling, 1,640 bacteria per c.c.

It is evident that we could find in this method of control a very efficient means of checking dairy methods in regard to cleanliness.

The Provincial Board of Health of this Province has been for some years doing for municipalities bacteriological work, which they are in hopes will in time be done by the municipalities themselves.

It is easy to see that no matter how promptly the results of diphtheria examinations are reported from Toronto, too much time must elapse before the results are obtained.

In this, as in other branches of municipal health work, we require laboratories more in touch with the municipalities. In the large cities, it is hoped that the good example of Toronto will be followed, but in the smaller municipalities this is not possible; the only solution of the difficulty for rural districts is the establishment of County Health Officers with county laboratories, a scheme which was ably outlined by Dr. Bryce at the meeting of this Association in Belleville last year.

HOW THE NEW REGISTRATION OF BIRTHS, MARRIAGES AND DEATH'S ACT DOES PUBLIC HEALTH WORK.

By Peter H. Bryce, M.A., M.D., Deputy Registrar-General.

Gentlemen,—I have ventured to make a few remarks on the above subject, with a hope of obtaining at this early stage of the introduction of the New Act, the views of the active members of the Association as to the practical benefits, or otherwise, experienced by them, and with the object of having any suggestions made which will tend to make our statistics more complete. As the members are aware the old Births, Marriages and Deaths Act had been passed in 1869, and while much good doubtless has been accomplished through it, yet it had for years been felt by many, and especially by the writer, that it required revision and serious amendment before all the benefits that might be received from such an Act could be obtained. After much study of the Acts of other countries and neighboring States, the Act, practically as it at present stands, was laid before the Legislature in 1896, and became law. It is not necessary to point out what is made very plain (by its terms) that a determined effort has been made to obtain accurate and complete returns.

In its provisions the first step was to pay more per capita to the Division Registrars for the complete returns made by them; the second desideratum was to obtain free transmission for the returns through the mails; the third end was to have physicians report every birth attended by them; the fourth step was to make it absolutely illegal for any person to engage in the burial of the dead body of any person prior to its registration; the fifth proviso was to have every return of death examined by the Medical Health Officer, in order that the private burial of contagious diseases deaths could be enforced, and the sixth step was to have proper enquiry made as to deaths suspected to be due to violent means.

From the operation of these provisions it was hoped that the efforts to obtain complete returns, the primary condition of all statistics, by the municipal clerks would be encouraged. Remembering

that hitherto ten cents per registration only was allowed them, and that to obtain these they might have to pay for stationery and stamps, it was not fair to expect these busy officials, never well paid, to exert themselves to obtain returns whose benefits to the State are not at first thought very apparent. That the Post Office Department should have assisted in the work was to be expected, where statistics, the primary condition of real progress in any department of State work, were to be obtained. This important saving of expense to the municipal officers and to the Registrar-General's Department has enabled the more extensive use of the various forms so necessary in order to reach the many persons from whom returns are to be obtained.

The new departure in asking physicians to make returns of births, though appearing to add something to the work of many busy practitioners, has been made so simple and easy that this aid to the State by a profession which has ever illustrated the radical meaning of philanthropy, was not too much to ask, when from such statistics they are before all others enabled to study and estimate the advances which the divine art of healing is making for the alleviation of human suffering, and for the lowering of the death rates, and by so much making them public benefactors in saving many lives to the state, and for promoting the prosperity of our common country.

That a careful registration of deaths should be made has for many years been looked upon as a part of public health work in every progressive European country. The establishment of the Department of the Registrar-General in England is almost contemporaneous with the recognition by the State of public medicine, as a department of governmental work. Sir Edwin Chadwick was equally the apostle of statistics and of State medicine. There is, however, another aspect from which the value of health returns may be estimated. While criminal law does not punish, any more than does sanitary law, the good citizens, yet in the welfare of society it exists both for the discovery and punishment of crime. Deaths from violence, either open or secret, and the latter more especially with the evolution of a more complex and more educated society, demand investi-

gation and punishment; and to the end of making the hiding of crime more difficult, the amended Act has provided, as far as practicable. It is hoped that no undue haste in the burial of any dead body will take place, and especially of the bodies of persons found dead, or who have died without having had a physician in attendance. From the public health side the aid to the medical officer of health in obtaining an accurate knowledge of the existence of cases of contagious disease has already been most marked. Without his certificate no body can be legally buried; and should the death be due to contagious disease, he is at once in a position to direct the conduct of a private funeral, and have the infected house cleansed from contagion. Similarly he prevents the transportation of such corpses by rail, and so removes a danger which time and again has been illustrated by the propagation of contagious disease from one district to another.

Such have been the immediate benefits to the municipal officer; but another, if not as direct, at least wider in its scope, has resulted in the ability of the public health department to take advantage of the Act to obtain a monthly report of all the deaths occurring within the Province during any month from contagious diseases. Already the Provincial Board of Health has again and again placed its finger upon local outbreaks of diphtheria and typhoid, not otherwise reported, and has been enabled to direct the attention of local boards of health to their duties under the Public Health Act. Never has there been evinced such an acute appreciation of what infectious disease means to the welfare and good standing of a community, and in nothing else is the commercial rivalry to day in Ontario more manifest than the desire which every town has to prove that it stands first in the land, or in the world, in the matter of public health. There was perhaps a time when it could be said that disease and deaths statistics had no interest for the public. To-day the daily press demands its health news as eagerly as its war news, and from the practical standpoint the former have benefits and an importance with which the latter can only occasionally be compared. It certainly can in this matter be truly said of the last half of the century, with the domination of science in every realm, "The old order changeth, giving place to new."