Vol I. 4

MEDICAL SCIENCE

ISSUED MONTHLY VIDEO MELIORA PROBOQUE TORONTO, FEB. 1, 1888

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MEDICAL SCIENCE

VIDEO MELIORA PROBOQUE

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ISSUED MONTHLY
VOL. 1: NO. 4

TORONTO, FEBRUARY 1, 1888

SUBSCRIPTION, IN ADVANCE
$2.00 PER ANNUM

ORIGINAL ARTICLES.

TYPHOID FEVER IN OTTAWA.

BY WILLIAM C. COUSENS, M.D., OTTAWA.

THE outbreak of fever which occurred in Ottawa during the months of September, October, November and December, has presented many notable characteristics, some of which I propose to mention.

It has been remarkable for its suddenness of onset, the intensity of its prevalence becoming apparent about the end of the first week in November; for its appearance simultaneously in all parts of the city; and for its diverse and varied symptomatology, remittent, intermittent and asthenic forms of continued fever abounding. The temperature in very many cases was irregular, not following the typical rise for four or five days with persistence for a week, and then having a gradual fall; but a morning remission was present, while constipation was present and marked in 95 % of cases. Diarrhœa occurred very seldom. In 40 % of cases tenderness in the right side, and spots were not present, and a large number of cases were ushered in by tonsillitis; this, in some cases, masking the real disease. The range of temperature and course of the disease has been markedly mild, the mortality not exceeding 3 per cent. The typhoid of the text books was rare. The incubation period was not marked in the majority of cases. Abortive cases of typhoid were somewhat common, being over 10 per cent. of cases. During the four months of the epidemic I attended 112 cases of fever; 6 cases occurred in September, 5 in October, 68 in November, and 33 in December. Of this number 53 were males and 59 females; 6 were under five years of age, 34 under fifteen years, 89 under twenty-five years, and 98 cases under thirty years of age. In every case but one the patients have been water drinkers. I attended 20 cases in houses not connected with any drainage system whatever, and many others in the suburbs, wherever the water supply of Ottawa reached. As to complications, tympanites occurred in 50 per cent. of cases, peritonitis in 20 cases, diarrhœa in 5 cases, pneumonia in 3 cases, occurring at the end of the third week; thrombosis in 1 case, bronchitis in 4 cases, tonsillitis in from 10 to 20, hæmorrhage from the bowels in 2 cases, and epistaxis in 6 cases.

As much has been stated and written on the question of the immediate cause of the outbreak, I propose to discuss some of the points which, in this connection, have come under my observation.

The causation may be divided into four possible causes. 1st. Atmospheric (local and general). 2nd. Condition of the city drains. 3rd. Contamination of milk. 4th. Pollution of the water supply.

With regard to the atmospheric conditions, it may be said as to sanitary conditions, that Ottawa occupies a commanding position; situated on a a series of lofty bluffs; on the banks of a large and rapidly flowing river; having the Chaudière Falls, one of the largest torrents on the continent directly opposite the city, these together causing a current of air; being situated but seven miles from the Laurentides which lie directly west; considering that the winds which prevail during the summer and fall are westerly, the ozone from the Chelsea mountains is carried throughout our streets; also knowing that millions of feet of freshly sawn pine lumber are piled in a zone around the outskirts of the city, giving off the fresh aroma of pine gum; and also that the Ottawa district contains immense forests of pine situated not many miles from the city; also being aware of the fact that no large factories exist here, which by their smoke might

pollute the air. We would say that all these go to show that Ottawa, so far as local atmospheric conditions are concerned, is singularly fortunate, also as to general atmospheric conditions, such as occur during epidemics of cholera and famine fever, etc. I find on turning up the mortuary statistics for the month of November that the death rate of Ottawa from typhoid fever was 15; that of Toronto 2; Montreal 9; Quebec 3; Halifax 1; Winnipeg 1; London 1. That is, that the number of deaths in a combined urban population of 555,000 souls, was equal to Ottawa with 35,000 souls, many of these cities being situated less favourably as to local conditions than Ottawa. These facts seem to me to exclude atmospheric causes, local or general. Next taking contamination of milk as a cause, we find the disease in houses in every ward in the city, I might say on every street. It is not to be supposed that one milkman could supply the town with milk, nor is it to be thought that the milk coming from farms situated north, south, east and west is all infected or that any considerable number of cows on these farms are drinking sewage water. The exclusion of these two causes leaves but two factors for our consideration. I propose taking up next the conditions of the drains as a possible cause. The main sewer of Ottawa has been constructed of brick lined with Portland cement. It has an excellent fall throughout and discharges into the Ottawa in the vicinity of New Edinburgh. It has been pronounced by eminent engineers to be well built. The subsidiary drains are constructed of tile pipe with a fall of one foot in every 200 feet, that is they are self-cleansing. Had they a fall of 6 or 8 feet the water would run off and leave the accumulations behind, but with barely sufficient fall, all accumulations must come away wherever water flows through the pipes, or damming back of the sewage and flooding of the cellars must occur. Under these conditions, granted a sufficient supply of water, accumulations could not remain in the drains. In every textbook on the subject, it is stated that in large cities with a scanty water supply, after a long dry season, accumulations may occur; when to the decomposing matter is added the typhoid germ which is never wanting in cities, either imported or present from the excreta of an infected person, then we have conditions present which may spread the disease. But where would these germs manifest themselves? Would it not be in those houses where there are no proper traps, or where these are defective, and not elsewhere? Has this been the experience of any medical man in Ottawa? No, I am afraid not. There have been cases in the houses of the rich; in those of the poor; where the drainage is perfect and the plumber has exhausted his art in providing perfect sanitation; where the drainage is bad and scandalous—where there are no drains whatever and in some cases none within some hundreds of yards. Many instances might be cited. I know of twenty cases in houses not connected with the city drains. The fact is that our present system has been here for years, and has been steadily improving; that we have had dry seasons many times, but never anything like the present epidemic of typhoid. I believe that in a few streets in this city the drains would have better served their future use had they been sunk lower at their starting point, but they serve their purpose well; they drain the houses they were built to drain. The trouble will be when approaching Stewarton they will fail to drain houses on a lower level. This will necessitate a new main sewer down Frank or Ann street. Having by exclusion dismissed the drains as a possible cause of the present sickness, we have only the water left.

Liebermeister, a leading German sanitary authority, states "that over 80 per cent. of all cases of typhoid fever are caused by impure drinking water." The persons infected during the outbreak were, in nine out of ten cases, water drinkers, and were generally under 30 years of age. Is the water supply of Ottawa above suspicion? Let us see. The aqueduct runs from the bay above the Chaudière 440 yards to the pump-house. It is open, and serves as a surface drain for a large portion of the Flats and one-half of the Richmond Road as far as the station. Granted a few cases of typhoid along the course of this stream on either side, and a copious rainfall, would it not be probable that the drainage of the back yards, etc., would filter in and pollute the water main, constructed over 12 years ago of wood bound with iron hoops. Considering the alternate contraction of heat and cold; the action of rust on the iron hoops; the pressure on the wooden main in times of emergency at fires, etc., would it not be reasonable to suppose that the hoops have loosened and caused leakages in the

pipe, and the polluted water of the aqueduct to be drawn into the city water supply? In addition to this I have had occasion before this to draw the attention of the public to the famous brewery creek, accumulating, in its course from the St. Louis dam to the Ottawa, in addition to the refuse from a slaughter house, a glue factory, a tannery, and the drainage of many large institutions in the neighborhood, and the surface drainage of some 1,500 people—the majority not noted for paying much attention to sanitary laws. In addition to these facts it is known that three cases of typhoid fever were treated by a city physician of repute in houses situated on the banks of this creek, in the month of August, or early in September, just before the outbreak in Ottawa, and that this creek discharges into the Ottawa by two outlets, one-half of a mile above, the other about 200 or 250 yards above the mouth of our water-supply pipe. In other years, during high water, and when the current flowed from the shore, and towards the Chaudière Falls, little of the Brewery Creek water reached the water main. This season not only has the volume of the Ottawa been diminished, but the direction of the current has been changed towards the shore by the dam which has lately been constructed at the head of the Chaudière, and which causes the creek water to skirt the Ontario shore, and flow directly past the mouth of our water-supply pipe. Therefore I consider it probable that the city water has been polluted by one or both of these causes. There have been three analyses, one stating that the water is pure, the others that it is impure. So far as I have heard, the typhoid germ has not been isolated, but I believe a system of filtration should be at once insisted on temporarily till the spring, when the pipe could be raised from the aqueduct, laid separately from it, and extended to Thompson's Bay beyond Mechanicsville. While it is not certain that filtration will remove germs of disease, it will in all likelihood render them less harmful by removing conditions in the water which render their propagation easy.

THE FEVER.

BY GEO. BAPTIE, M.A., M.B.

A Paper read before the Ottawa Medico-Chirurgical Society.

Mr. President and Gentlemen.—Any one who has paid the slightest attention to what he hears, and what he sees in the press, must be struck with the diversity of views entertained respecting the cause of the fever prevalent in Ottawa, as well as to what the fever is. At different times the popular opinion was that it is malarial, followed by change to bad drains, and then to water as the probable cause of the sickness.

The term malaria is used in two different significations. More generally it is employed to denote the cause of intermittent and remittent fevers. There is now a tendency to make it cover more than this, to make it cover the fevers more or less intimately connected with decomposing organic matter in cities. Paludal malaria and civic malaria are convenient but imperfect designations respectively for these. What is the disease that has come upon us? Is it malarial? It is not malarial, it is argued, because,

1st. The conditions for production of malarial fever are wanting: there are not swamps, the high temperature etc. necessary. Even if the suitable conditions of organic matter, heat and moisture are to be found, do we not require something more? *Bacillus malariæ*; like produces like; no seed no crop. Who ever knew the decomposed potatoes, cabbages, apples, etc., in a farmer's cellar to produce malarial fever?

2nd. The history of the place is against the view that it is malarial. Malarial fevers have been practically unknown as a local disease.

3rd. Were the disease malarial, we would naturally expect a good deal of intermittent, but there has been none of this.

4th. It is not malarial because the fever was not checked by frost.

To these arguments those who hold the fever is malarial may reply that the conditions are possibly existent, for malarial fevers do occur under conditions widely different from those alleged as the conditions, e. g., malarial fevers often occur on the clearing of forests; on the breaking up of the surface, as did occur in the case of the dry plains of Kansas; even granitic and limestone rocks have been known to be malaria localities. It is then, as a matter of fact, difficult to say positively that the conditions are not existent here. It should not be forgotten that the beds of our streams have been greatly exposed. Enormous banks of sawdust lie not so very far from the city. While it is true the conditions here are not those which obtain in notoriously malarial localities, such as above the mouth and lower part of the Grand River, they are

not such as to exclude, under the exceptional weather conditions of the past summer, the possibility of malaria being produced.

In the historical argument the reply may be made of the same character. It is a matter of historical knowledge that malaria may practically disappear from localities, and entrench itself in new centres.

It may also be urged that, granting there is and has been nothing in the locality and in the season to favor the production of malaria locally, it may be malaria, because malaria can be carried from distant localities; such, at least, is the opinion of many physicians of eminence. I know that the late Dr. Frazer, of Welland, who had an extensive experience, often attributed the presence of malarial fever in the high-lying township of Pelham to the carrying of the malaria from a lower locality by easterly winds. Major Smart, U. S. A., attributes the origin of "mountain fever" to malaria thus carried from a distant source. This view has been pushed very far, e.g., M. Guerard, a French authority of repute, supposes that the unusual appearance of fevers in Europe at certain periods, with epidemic prevalence, is due to the transportation of germs by atmospheric currents from the continent of America. I may refer to a curious fact which might be seized upon to lend probability to this view.

Co-incident with the marked outbreak of the fever there appeared in Ottawa a southern moth. This moth arrived in such a condition of freshness that the local entomologists could hardly persuade themselves that it was not of local origin. Mr. W. H. Harrington found the moth (the cotton moth) here in abundance on the 9th of October. The appearance of this cotton moth was discussed at the meeting of the Entomological Society of Ontario, and I am informed that the decision was that the moth was carried by air currents from the cotton-producing States. Now, if wind carried these, might it not also convey the *bacillus malariæ*? I am also informed that the storms originating about the Gulf of Mexico, and travelling northward, "tail off," or come to an end not beyond the valley of the Ottawa.

The third and fourth considerations, viz., the alleged or supposed absence of malarial intermittent, and the occurrence of a decided frost before the disease reached its maximum, are noteworthy. The following might be adduced in support of this. "Sternberg Malaria," page 2, "Where ordinary intermittent fever, *which is the most common manifestation of malarial toxæmia*, does not occur as an endemic disease, then we believe that malaria, properly so called, is not evolved from the soil."

While admitting the force of these contentions, it may be, on the other hand, urged that this normal absence of malaria would, to some extent, render us liable to be attacked with *continued* fever when malaria did get in amongst us. Thus Colin observed "that those who had recently arrived in Rome were attacked with *continued*, remittent or quotidian fever, while the old soldiers were attacked with tertian or quartan fevers."

Our alleged freedom from malaria heretofore, our lack of seasoning would, when the malaria came to us, if it has come, tend towards a continued type, a production of which our fever is, just as it appears from Colin going to the malaria, did in Rome. Who can explain the absence of the intermittent type, which weakens the parallelism? Nor is it to be forgotten that malarial poisoning, accompanied by atmospheric heat, is usually conceded to manifest itself in continuous fever, with cold intermittent. But cold with us has produced continued fever. There remains yet a rejoinder, that it may be malarial in its origin. It is well known that it is possible to "load up," as it were, with malaria, and to remain in this "loaded up" condition for months even. The presence of frost under these circumstances does not prevent the appearance of fever when an exciting cause presents itself. Da Costa, Sternberg, and other authorities, recognize this possibility of malaria remaining latent for a considerable time.

More than this, it may be asked, but how is epidemic influenza spread? Is it not admitted that it can go even against the wind? At the present stage of our ignorance of its mode of movement from place to place, we can find a parallel between our own fever and it The latter is just as inexplicable as the former.

Having thus brought before you some of the arguments for and against the malaria theory (including the atmospheric) what conclusion can we come to regarding it at one period of the epidemic very generally entertained as *the* factor in the disease; for it does not seem that the evidence in its favor is convincing, malaria properly so called having been up to this point under consideration! What about the malaria generated in cities, and which is an

element in bringing about much of the low fever in cities? This malaria is essentially the product of decomposing organic matter, but differs from the ordinary paludal malaria in being more fatal; death from the latter is rare. Sternberg, from the known cases of malarial fever and the number of deaths occurring in the American army division of the Atlantic, and the number of deaths reported as occurring from this cause in New York, shows that the extraordinary number of 189,000 cases should represent the sickness from this cause in that city in one year. It is then more fatal, or more probable it is another fever. What is the bearing of this on the prevalent fever? If this is the principal cause of it, where is the filth and decomposing organic matter? In our privy pits and drains, chiefly. The pits are bad enough. No worse than they have been in the past, and it may be contended that the dry season has been favourable to their disease inciting qualities. I have not devoted much thought to this but it is just as likely the dryness was a benefit. In the drains we must look for the principal source of this substance.

There has been and is a good deal of bad work done in connection with house drains and possibly occasional blunder and practice in connection with public drains until fuller enquiry has been made into the character of the drains to settle their merits, or demerits. It may be affirmed that our drains are probably no worse than they have been for years past. Yet one cannot help thinking that the great volume of water poured into these drains daily must flush some of the larger drains very well. The total daily amount pumped borders upon 4,000,000 of gallons most of which goes through the drains.

This may be the source of the disease but more evidence ought to be forthcoming to bring conviction that it is due to this, call it by whatever name you choose, civic malaria or anything else, sewer air laden with typhoid germs. What is it if not malaria? Typhoid? Well, what is typhoid fever? The bottom facts respecting this disease have not been got at yet. Dr. Cayley, in his account of the Chatham and Redhill outbreak shows that a man without being ill enough to quit his work gave the fever to 305 persons through the splashing from a few stools.

Dr. Woodward (Med. Hist. War of Reb.) cites the case of No. 567, entered in two hospitals as a case of "chronic diarrhœa," dying of pneumonia one month from date of first entering after convalescence. Autopsy showed the typhoid lesion. He says: "It was common enough for fever cases to be registered as chronic diarrhœa." A certain group of characters mark a case as one of typhoid fever, but it is just now perfectly clear to me that many cases of fever exhibit comparatively few members of the group of characters. Where is the line to be drawn? Somewhere, no doubt, until this disease is shown to be a non-specific fever. Two things ought not to be lost sight of: the man and the disease, the one reacting on the other.

In view of the fact of great variability in this disease, and that it is one thing to say what a fever is during the first few days of attack and at the end of three weeks what it was. No wonder that some difference of opinion would obtain at the beginning of an outbreak such as we are passing through.

The eminent American authority, Dr. Wood, says, speaking of mild cases of enteric fever, such cases "are often mistaken for miasmatic remittent." Have we, or have we not reason to suppose that scores of our fever cases if considered singly and early would present a large percentage of cases not likely to be called typhoid

It is for you, gentlemen, who have daily been in contact with the disease, to say whether in the main it is typhoid fever or not. Looking at the matter from my point of view, and until it is more definitely decided what typhoid fever is, the weight of evidence points it out as in main an outbreak of typhoid fever.

To return from this necessary digression, where must we further look for the source of this disease?

It would be worth while to examine our *milk supply*. I have the very best evidence that during the latter part of the summer two cases of typhoid occurred in the family of a milk vendor. Then there is our water supply. My views are well known to you all but I may recapitulate. I have spent some time with Dr. Cousens and again with Dr. Robillard examining what is known as the "brewery creek," which enters the Ottawa 200 or 300 yards above our waterworks in-take pipe. The amount of organic matter coming into the river from this source at present cannot do any harm to our water supply, but on sentimental grounds alone this nuisance

should be suppressed ; besides, there is to my mind great danger from typhoid and cholera, provided cases occur in the district for which this creek is the surface drain. The extent to which dilution of the water of this small creek takes place is probably very great. But if I understand the matter, the probability of and the possibility of the germs of typhoid entering our water supply is very great. The latest deliverance of sanitary authorities tend in this direction. If the Lausen case in Switzerland, the Solothurn cases, the Plymouth case, are properly reported, (and I have never heard the question raised) then this Brewery creek is a standing menace to Ottawa. In itself it is a very small thing, as I think that for eleven months in the year it would pass through a 6-inch pipe. Besides the privy pits directly connected with it, there is the soakage from the outbuildings for a computed population of 2,000 people. To my mind it is practically harmless so long as no disease such as typhoid fever or cholera occurs along this stream. It may be the cause of our fever, for fever cases are now known to have existed in that locality during the end of summer and the autumn.

Here I am confronted with the paragraph in one of our dailies, to the effect that Drs. Cousens and Baptie were in Hull to-day, enquiring about the fever there, and found there was none. Now Hull is supplied with the same water as Ottawa, therefore it cannot be the water that is at fault. To this I reply that the water is not the same. Hull has nothing equivalent to our brewery creek. Then I have asked M. Sylvae, the Mayor of Gatineau Point Village, "Have you any fever at the Point?" No. Where do the people get their water? Out of the river, in front of their houses. (Gatineau Point is a village on the Quebec side, about a mile below Ottawa). Would it not be reasonable to think that the sewers of the city would contaminate the water so that fever would affect the inhabitants of the city? Yes, but it is yet to be proved that these people drink Ottawa River water at all. True they live on the shore of the Ottawa, etc., but is it not likely that the Gatineau River keeps along the Quebec shore, and it is Gatineau water these people use, not Ottawa River water?

Where are we to look for the source of disease to malaria far or near, milk, drains, or water? On the whole the latter is the more probable source.

TREATMENT OF TYPHOID FEVER.

BY W. NATTRESS, M.D., M.R.C.S., ENG.: TORONTO.

IT is very doubtful whether there is at present any drug that will abort this disease, or any known specific for this fever. As the characteristic anatomical lesions are in the solitary and agminated glands of the bowels, and the mesenteric glands in direct relation with them, the keeping up of a condition in the intestinal canal, which favors the continual development of the *materies morbi*, tends to perpetuate the disease. On the other hand if, in the initial management of typhoid, we endeavor to free the intestinal canal from such contents as afford a suitable culture medium, we may arrest the self-perpetuating tendency of this disease. It seems rational then to commence our treatment with the administration of a cathartic. If the case is seen early in the first week, five to seven grains of calomel, with ten grains of sodium bicarbonate may be given at night, and repeated once or even twice, at intervals of forty-eight hours ; but if not seen until the second week, a single dose only. Diarrhœa must not be regarded as a contra-indication, as it usually becomes less troublesome after this treatment.

To still further accomplish our object two other important features require our earliest attention. These are absolute rest and proper diet. In referring to the morbid contents of the bowels in typhoid, Dr. Pepper says, "This condition is much affected by diet, and by agents which influence the lesions of the intestinal glands. It is well to repeat that, from the earliest moment we must insist on absolute rest. Much harm is done by *postponing for* two or three days the necessary confinement to bed; so should an absolute restriction of diet be imposed at once. It seems that the intestinal canal is kept in the best condition when from the earliest hour the diet has consisted exclusively of milk, light gruels or broths, and pure water. Milk may seem to disagree, but it will then usually be found that it has been given in too large amounts, or at too short intervals, or that to enable it to be digested it must be diluted or peptonized. For patients with typhoid fever must be fed, not on theory, but according to the observed effects of the food given. Tympany and diarrhœa are often the result of excessive or improper feeding, although more commonly they may be caused by the enfeebled state

of the muscles of the intestinal and abdominal walls, and by the lesions of the mucous membrane. Under the influence of the unqualified dictum that fevers should be fed, a dictum much more universally applicable to typhus than to typhoid fever, many cases of the latter are injured by injudicious feeding. Not only may tympany and diarrhœa be promoted thereby, but the accumulation of imperfectly digested organic matter in the bowels may favor the multiplication of the specific materies morbi, and also the development of ptomaines. This question of feeding is, therefore, the fundamental one in typhoid fever, and should be treated with caution and minute attention in each case."

A well regulated and properly restricted diet, under the watchful care of an intelligent nurse, is therefore the first, the last, and the chief requirement.

The characteristic lesions of the intestinal glands already referred to are always present, though the number of glands involved may vary. The agminated are those chiefly affected. They appear swollen, prominent and injected. The mucous membrane covering them soon gives way, and an ulcer is formed, having for its base the sub-mucous or muscular coat, or if the ulceration continue deeper the peritoneal coat. What can be done in a remedial way for this condition of the bowels? The drugs which appear to be indicated are those that have either an antiseptic, a sedative, or an astringent effect, e. g., creasote, carbolic acid, iodoform, bismuth, fel bovis, hydrochloric and sulphurous acids, nitrate of silver, etc. Bismuth, in ten to fifteen grain doses every three hours, has proved very satisfactory to the writer in several cases. A combination of naphthaline and bismuth has been found efficient in controlling the catarrhal inflammation, and in correcting fetor. The good results obtained from the use of nitrate of silver by Dr. Pepper and his strong advocacy of it have led to its being employed very extensively. It is given from the outset to adults in doses of gr. ⅙ to gr. ⅓ three times a day, combined with small amounts of opium, or belladonna, or nux vomica, according to special indications; and to children it is given in the form of solution, in a thin syrup of acacia, in doses of gr. 1-24 to gr. 1-16 three or four times a day, to which may be added from one-half to two drops of deodorized laudanum.

Our next object in the treatment of this disease is to prevent, as far as possible, the accumulation in the system of the products of retrogressive tissues changes, which is probably in great part the cause of the so-called typhoid symptoms. Efforts should be directed towards keeping the skin and kidneys active; sponge-bathing should be resorted to early, and kept up regularly at least twice in the twenty-four hours. The kidneys will usually be kept sufficiently active by adhering strictly to a liquid diet, and allowing the patient an abundance of fresh cool water. Some authors report favorably upon the early exhibition of digitalis, even before or without any subsequent indication of heart failure. This may be partly owing to its mild diuretic action assisting in the elimination of these morbid products.

The further treatment of this disease comprises the combating of the various symptoms that may arise.

The development of pronounced typhoid symptoms, especially a dry, brown, tremulous tongue, a rapid, weak pulse, paretic tympany, etc., calls for turpentine, or alcohol, or both; if there is obstinate constipation, a mild enema every other day; if excessive diarrhœa, the mineral acids, bismuth or naphthaline; to relieve insomnia, morphia hypodermically, or bromide and chloral in combination, given well diluted, or urethan, in thirty to forty grain doses, which is considered by some to be the safest and most efficient hypnotic.

The introduction of a new group of antipyretics is gradually withdrawing the use of quinine, in the treatment of typhoid fever, excepting in tonic doses, or where there is a marked malarial tendancy. The regular cold sponge-bathing already referred to, careful dieting, and the selection of those drugs whose remedial effects upon the intestinal lesion are well established, will usually prevent the temperature reaching a very high elevation. Should it however rise to 103° or over, a ten to fifteen grain dose of antipyrin repeated when the temperature again rises, or a two grain dose of antifebrin every two hours will be found to act satisfactorily, and usually without any ill effects.

In the management of the convalescent stage little need be said further than that a return to ordinary diet may be allowed in from ten to fifteen days from the establishment of this stage. Usually the desire for food is very strong, but occasionally, though there is little or no return of the fever, the patient is quite listless and indifferent, the pulse quick and feeble, and there is marked muscular

prostration; stimulating tonics are here indicated quinine, ammonia and iron, alcohol and digitalis. Then again we find some develop a condition of nervous irritability with marked vigilance. In hese cases improvemen will follow the administration of musk, bromide of ammonium, or bromide of potassium, with sal volatile and hydrocyanic acid.

OPHTHALMOLOGY.

SOME POINTS IN DIFFERENTIAL DIAGNOSIS, BY R. A. REEVE, B.A., M.D., PROF. OF OPHTHALMOLOGY AND OTOLOGY, UNIVERSITY OF TORONTO.

Iritis.—As iritis is one of the most important diseases and conjunctivitis is one of the most common, it is of moment that they be not confounded. The frequency with which synechiæ are noted may be partly due to tardiness on the patient's part or defective treatment of recognized iritis, but there seems little doubt that the diagnosis is sometimes at fault. The facility with which the iris becomes glued to the lens capsule by lymph and the area of the pupil invaded, crippling the eye, impairing the sight and favoring further mischief, teaches that we should ever be on the alert for iritis, because early recognition is necessary to securing full mydriasis, the end always to be had in view. In syphilitic subjects who furnish 60 to 70 per cent. of iritis, any complaint regarding the eye should be promptly heeded; so also in the rheumatic, as well as where there is any danger of sympathetic ophthalmia. Though there are some cases free from pain, one fact often gives the clue to iritis without requiring a careful scrutiny of the eye, namely that pain is generally present only *at night*, and that even with intense nocturnal pain it is unusual to find more than discomfort in the day-time. Constant pain is more apt to occur when the ciliary body is implicated with the iris (cyclitis), and then the photophobia and lachrymation are excessive and the eye-ball is tender. In corneal ulcer, in which we should always expect and anticipate iritis, there is often intense pain both day and night. In cases of presumed simple conjunctivitis where nocturnal pain occurs, some mydriatic as ¼ per cent. solution atropia sulphate should be instilled; a resisting or irregular pupil would help if not settle the diagnosis. Sometimes the greatest pain is not in the eye but on the vertex along the pericranial and cutaneous twigs of the supraorbital nerve, and the trouble is mistakenly dubbed "neuralgia," and possibly treated as the cause rather than the effect of the ocular condition. Again, the congestion in iritis is sufficiently characteristic, for while externally it is circum-corneal or at least ocular, it also renders the iris dull or discolored and the pupil contracted, sluggish, or fixed. In conjunctivitis the hyperæmia is mainly palpebral and at the *cul de sac*, the pupil being active and the iris bright. Moreover, the primary watery secretion soon gives place to mucous or muco-purulent discharge, while in iritis proper there is no blennorrhœa, only lachrymation. Yet cases are not infrequent in which despite the absence of blennorrhœa the treatment of conjunctivitis is applied to iritis and permanent damage entailed.

In iritis, as a rule, the tension of the eye is not increased, but in cases of apparent iritis in subjects of fifty years and upwards gentle palpation should not be neglected, for at this time of life glaucoma occurs, which would be aggravated by atropine. Such symptoms as intense pain, hard globe, steamy cornea, dilated fixed pupil, blindness, and rapid onset point clearly enough to acute glaucoma, but the subacute and chronic inflammatory cases are not so evident. They are, however, preceded by the premonitory rainbow hues seen about artificial lights, with transient fogginess, which serve to distinguish them from the rare serous iritis in which with plus tension and enlarged pupil there are punctate lymph deposits against the lower half of cornea.

Phlyctenular Ophthalmia.—Phlyctenular and catarrhal conjunctivitis often co-exist but the distinctive vesicles or pustules of the former on the ocular conjunctiva can always be found. They serve as useful guides for though, as a rule, pain, photophobia and iritic congestion are absent, pure astringents have here to be used with caution. Phlyctenular keratitis, a sort of corneal herpes with resulting punctate excoriations or tiny ulcers, often occurs also with catarrhal conjunctivitis, and the latter is apt to be regarded and treated as the main affection, or the corneal disease may be overlooked, the phlyctenules being few and minute. As even mild cases are made worse by caustic or astringent collyria, and one phlyctenule may disable an eye and prevent the use of its fellow, the photophobia and lachrymation always present should lead one to look well at the cornea. (Small ulcers or facets are brought out by getting the window reflex upon them). The severe cases in young

subjects tell their own tale and present the characteristic picture of intense photophobia, profuse lachrymation and marked spasm of the orbicularis; and a careful examination should always be made even if an anæsthetic be required. The point is to make out the corneal disease and regard it as the more important and to be first subdued, as by 1 to 2 per cent. solution cocaine with ½ per cent. atropia sulphate and 2 to 3 per cent. acid boracic; any conjunctivitis persisting to be treated later.

Akin to phlyctenular disease and of several weeks' duration is the so-called fascicular keratitis, a linear ulcer which creeps slowly from the edge of the cornea and if not arrested by destroying its infected apex by means of the glowing wire, pure carbolic, ect., may leave a cicatrix across the pupil.

In another form of keratitis, the vascular, the diagnosis is often astray and treatment defective because the lids are not everted and the efficient cause, chronic conjunctivitis, detected. In nearly all cases of corneal inflammation it is a good rule to find out the state of the palpebral conjunctiva.

THE JOHNS HOPKINS HOSPITAL.

BY DAVID B. DICK, ESQ., UNIVERSITY ARCHITECT, TORONTO.

PROBABLY the strongest impression which the average visitor to the Johns Hopkins Hospital at Baltimore will carry away with him will be that produced by the large-hearted scale on which it has been designed and carried out. Especially is this idea suggested by the magnitude of the basement and working portion in proportion to the space to be actually occupied by patients. There are evidences on every hand of an intention that the structure should be as complete and perfect as the present state of knowledge on the subject of hospital construction could make it. It is also obvious that means have been provided to carry out that intention with a liberal, or even a lavish hand. At the same time a wise discretion has been exercised in leaving unbuilt for the present a portion of the whole plan or scheme. The pavilion system, which has been adopted, affords opportunity for doing this without, in any way, impairing the efficiency of the completed portions. When these portions have been subjected to the test of practical use for some time, it may be found from the experience thus acquired that modifications or changes in many points of detail would be necessary or desirable, and these may be made in the portions yet to be erected.

The general plan, however complicated it may appear to the uninitiated visitor, is really very simple, and very well adapted to the site. This is a block of land nearly square in shape, surrounded on all sides by streets and occupying an elevated position in the suburbs of the city. It has thus ready facilities for drainage and a good exposure to the sun and winds. The main lines of the plan form a double L, running round three sides of the square. Some few buildings, such as the mortuary and chapel (the latter not yet built) occupy detached positions, but most of the blocks occupy positions on this line. The administrative and entrance building, with its high tower, occupies the centre of the cross arm, and forms the central and most prominent feature in the group of buildings. From it a wide corridor runs each way across the front of the lot, then turns at right angles along the north and south sides to the rear. This corridor is continuous on the basement floor, and runs through all the buildings, with branches running out here and there to the nurses' home, kitchen, operating theatre, out-door dispensary, and other outlying blocks, and extending forward at each end of front to the two pay-ward wings. On the ground floor level the roof of this corridor forms an open, uncovered gallery, providing communication between the different blocks, while it leaves them separated so far as the conveyance of infection from one to another is concerned. Most of the ordinary wards are but one story in height, in addition to the basement, although the blocks containing the pay-wards, and one with wards on the much discussed octagonal plan, are three stories in height. The construction is fire proof.

The heating and ventilating arrangements are particularly interesting to those who are conversant with such matters. There is probably no other building on the continent in which the systems adopted here have been carried out on so extensive a scale. The heating is effected by indirect radiation from coils of hot water pipes, and the ventilating by exhaust flues, in which a current is induced by coils of steam pipes placed in them. Fans are not to be ordinarily used either to force warm air in or to draw the vitiated air out. Brick flues or shafts are carried up from the basement at the sides of the wards. Those for heating terminate a little above

the ward floor, while those for ventilation extend up above the roof. Those for heating are chambers into which fresh air is introduced through gratings placed in the face of the outside walls, a few feet above the surface of the ground. This is a smoothly sodded lawn, and the air will therefore be free from dust. Inside each of these chambers is a large coil of hot water pipes, by passing over which the air is warmed to the desired temperature. Valves are so arranged that the incoming air may, if desired, be sent up directly into the ward without passing over the coil, or its temperature may be nicely regulated to the desired degree by allowing only a portion of it to pass over the coil. These inlet flues are placed so as to distribute the fresh warmed air as equally as possible through the ward. The system of outlet, or exhaust flues is the necessary complement of the other, and their area is such that all the air which enters the room in a given time can be passed out again through them in the same time. It is expected that the whole body of air in the wards will be changed from three to four times an hour, and perfect ventilation ought to be ensured, because it will be impossible to warm the room without ventilating it in the process. A vessel of any kind, which is full, can contain no more, except under pressure, and with this complete system of outlets there can be no pressure here; therefore no warm air can be introduced unless a corresponding quantity of the air already in the room be removed to make space for it. The outlet registers are placed at the floor, and so located that currents will not be established directly between the inlets and them, but the warm air will pass to the ceiling and be drawn downwards by the passage of vitiated air through the outlets. Everything that might interfere with the free movement of the air, or that might catch dust has been avoided. Thus there are no sharp angles at floor, ceiling or corners, but all are rounded.

Although not intended for use in the continuous ventilation of the building, a small fan, worked by a little steam engine, has been provided under each of the large wards. This is intended to be used, when the ward is empty, for "flushing" it, and will draw in large quantities of cold air, which it will force up through tubes and special gratings into the ward. In connection with this flushing system several large apertures have been provided in the ceiling of the ward. These are connected with ducts in the roof, leading to a large brick shaft provided with a steam coil, in the same manner as the smaller ventilating flues. A complete change of air can thus be surely effected in a few minutes, and the temperature lowered to that of the outside air. When the ward is thoroughly flushed the fan will be stopped, the ceiling apertures closed, and the ordinary system once more brought into play.

It will be obvious that, in order to give off a sufficient amount of heat to warm so large a series of buildings, a very large quantity of water must be passed through the heating coils. It is not, however, under any higher pressure than the head from the supply tank, being open to the atmosphere there. The completeness of the circulation through all the multitude of coils has been attained by providing boilers of ample size and very large mains. Jutting out from the two angles of the Ls at the north and south ends respectively are the kitchen wing and nurses' home. Under each of these is a boiler-room containing a battery of large tubular boilers. The main flow and return pipes are connected with both sets of boilers, extending along the corridor from one to the other, and are 26 inches in diameter. An idea of the magnitude of the system will be best grasped by comparison. A main of this size would be sufficient for the water supply of a town of 30,000 inhabitants. A steam apparatus capable of supplying the same amount of heat would have been much less costly. But it would probably have been a higher pressure apparatus. By the open hot water system adopted, the temperature of the pipes can never exceed 212°, while with a steam system it would frequently have been very much higher according to the pressure. Where the object to be attained, as in this case, is to warm a large volume of air to a moderate temperature rather than a small volume to a high temperature the advantages of the more costly system are apparent. On the other hand it has this disadvantage that it calls for the exercise of a greater degree of care and watchfulness on the part of those having charge of it, if the risk of frozen coils on cold nights is to be avoided. This risk is not so great in the latitude of Baltimore as in more northern localities.

Some of the boilers already mentioned are used for the supply of steam for the ventilating apparatus as well as for cooking and washing. The system of steam pipes for warming the aspirating

flues is as complete at that of hot water for supplying the warm air, although, on account of their smaller size, they do not strike the eye or the imagination so forcibly. The steam being under high pressure, as high a temperature can readily be maintained in the outlet flues as may be found necessary to produce in them the current required to remove the desired quantity of air in a given time. The necessity for this complete duplicate system will necessarily operate against the adoption of hot water for heating in buildings requiring perfect ventilation in all cases where, as is too frequently the case, the question of cost is a vital one and economy in the cost of construction and running has to be practised. The ends which have been proposed—apparently with success—to be attained here will in most cases have to be sought, and if possible achieved, by a single steam system —low pressure in small buildings and high pressure in large ones—or possibly by steam generated at high pressure and so used for exhausting but reduced to low pressure for warming.

EDITORIALS.

COMPENSATION OF MEDICAL HEALTH OFFICERS.

THE more that we examine into the constitution of that complex organization commonly called society, and view it in the multiform phases which, analyzed, now pass for the science of Sociology, the more do we become aware of the intimate relations which any particular class of the community have to the perfection of the social machinery, and the general promotion of its well-being. No phase of society presents a greater interest than the study of the varying relations in which, from the earliest times, the healer (real or pretended) of the ills which flesh is heir to, has stood to the body politic; and at no period of the world's history have his claims to the respect and consideration of that society, whose well-being it becomes his profession to promote, been better understood or deserved than at the present time. It is somewhat remarkable, however, that to whatever cause due, his status as recognized by law, has been but slowly conceded, and exhibits in different communities, even of Anglo Saxon peoples, all the varying stages from that where the skilled physician is, in the eyes of the law, on a *par* with the Indian herb-doctor or some garrulous midwife, to that where sovereigns recognise scientific merit by knightly honors. It is true that in this regard the physician is, to no great extent, different from the students and teachers of the other sciences; and perhaps, owing to the practice of Medicine having become more systematized as a business, than either biology or chemistry for example, he has obtained more recognition than workers in any other science; but it is a curious fact that our communities have become so accustomed to consider the labors of the physician in many respects as peculiarly eleemosynary that they have become habituated to expecting of him charitable work for the general community or municipality in the same manner that he lends his services to visiting the deserving poor, or those whom sudden calamity may have deprived of the necessaries of life. But, while none to whom the nobility or dignity of his profession is dear will turn a deaf ear to the claims either of charity or mercy when occasion demands, still there is a point where clearly the claims upon the physician cease to be of this character, and beyond which any community is manifestly wrong in calling upon a physician either to spend that time in the service of the public, which otherwise he could be devoting to his private interests, or to perform work which the law requires of regularly constituted municipal authorities, without adequate compensation for services rendered. Hitherto the history of the development of Canadian settlements, and the evolution of municipal government has shown that the physician has ever been ready, with somewhat of technical knowledge, to aid in the defence of the public health, when outbreaks of smallpox have occurred; but now, when everywhere municipal wealth has increased, and local government has been established, it is clearly time that the regular work of Local Boards of Health (which are a part of municipal government) defined by statutory enactment as being such as to require attention from day to day, and development from year to year, should be carried on by those officers, to whom by law the task is designated, with the same regularity as is the construction of highways, or the collection of general taxes. It is as reasonable to expect the solicitor to devote his legal attainments to preventing unnecessary expenditure and

financial loss to the community without payment therefor, as to look for the physician to prevent financial loss to the community by lending his time and energies without compensation to investigating the causes of disease, and suggesting means for their removal. The solicitor so found would at once be seized and placed in a glass case, or an asylum; whereas the physician refusing to do the latter is stigmatized as an enemy of his kind, and a conspirator against the public weal.

There may have been good reasons up to the present, such as the short period which has elapsed since municipal health work has, in Canada, been defined, and its performance required by statutory law, why physicians in the great majority of the 650 municipalities of Ontario have been asked to accept the position of Medical Health Officers, to which are attached extended duties and powers, without remuneration being offered for time and services rendered. In very many instances good work has been performed, and physicians have given their time willingly, without the public doing more than questioning the honesty of purpose actuating such, or the value of the labors performed. We have seen a circular recently issued by the Provincial Board of Health, enquiring of Medical Health Officers regarding the duties they perform, the term of their office, and the salary attached thereto. From two municipalities (one a suburb of Toronto, the other of London), each with several thousand inhabitants, we are informed that answers returned state, in answer to the question *re* salary, that for 1887 the amount received in one was $1.50 (which amount was disputed in the Council), while the other pays no salary, and has no Medical Health Officer, two having been appointed during the year, but failed to act. The Chairman of the Local Board in the latter instance remarked that he will never expect anything better so long as the position yields to the Medical Health Officer no ducats, but plenty of abuse. In both it may be mentioned that zymotic disease prevailed notably during the year; in the one typhoid, and the other diphtheria.

When these returns to the Provincial Board from the 300 Medical Health Officers are complete and published we may expect some interesting information. Not only will they indicate the general scope of municipal health work at present being carried out, and the nature of the position which physicians have allowed themselves to be placed in regarding independence of action and tenure of office; but we shall find out how much our municipalities are paying for sanitary work, and what the views of these executive officers are regarding the benefits likely to accrue to municipalities and the Province at large from some reasonable remuneration being paid for their services.

With regard to the status of the Medical Health Officer as fixed by statute, and the duties laid upon him, it may be interesting to indicate what, in our opinion, their importance is, and the position which such officers, in our opinion, are entitled to maintain.

1st. It may be stated that where the length of tenure of office was not fixed in the appointment to office, the office is permanent, unless the Council dismisses by a two-thirds vote, and then only after neglect of duty has been established. This, we take it, gives to the office fixity of tenure, in a manner not now well understood (48 V., c. 45, s. 4).

2nd. That should the physician accept the office, the position demands of him the performance of important duties, defined everywhere in the Health Acts, neglect of which puts him in the position of being legally dismissed as above (48 V., c. 45., s. 4).

3rd. By the same section the Medical Health Officer is entitled to compensation for services actually rendered; and similarly when appointed by the Provincial Board (*vide* 48 V., c. 45, s. 7).

4th. Medical Health Officers possess all the powers and authority belonging to their office, as specially defined by statute, as also all the duties belonging to the Sanitary Inspector, or the members of the Local Board; and further, non-performance of such duties as a Local Board is called upon to perform, shall constitute a neglect of his duties (48 V., c. 45, s. 8).

5th. Further, as by R. S. O., 1877, c. 190, s. 28, Local Boards may require the payment of such expenses as are incurred by them in carrying out the provisions of the Act, so, should the Medical Health Officer acting in their stead order the performance of such work, it must be considered work, done by the Board, for the payment of which the municipality is legally responsible.

If this line of argument be correct, then the Medical Health Officer is empowered to institute such work, as in his judgment is demanded in the interests of the public health, and is entitled to compensation for services rendered, which can be

collected by law. We are inclined to go further in our contention, and would say that with such powers placed upon Local Boards as are defined by statute, and which (48 V., c. 45, s. 8) are in the following words, "and the fact that similar duties are by statute imposed upon the Local Board of Health, shall not relieve the Medical Health Officer from the performance of such duties," equally required of Medical Health Officers, persons deeming themselves injured through the neglect of the Local Board, or its Medical Health Officer, are entitled to recover damages from the municipality therefor.

We trust that at the coming Annual Meeting of the Association of Executive Health Officers such discussion will take place as will tend to give Medical Health Officers a true idea of the duties devolving upon them by law, and a proper appreciation of the dignity and importance of the office, as defined and sanctioned by statute.

HOSPITALS FOR INFECTIOUS DISEASES.

WITH the present unusual activity in Toronto with regard to the necessity which exists for more hospital accommodation, and with the assertion reported to be made by the Vice-Chancellor, and others interested in the new University Hospital, who recently visited a number of hospitals in cities in the United States, to the effect that no city of the size of Toronto appears to be so inadequately supplied with hospitals, it will not be improper for us to refer briefly to one phase of the question of hospital accommodation, which is of the greatest and most permanent interest to the public. Much more time and energy are apparently being devoted to the question of how to take care of the semi-pauper and infirm class, who are the most common *habitues* of our hospitals, than to the care of the young, who may be infected with or exposed to contagious diseases. Hospitals for infectious diseases have existed in England for a century or more, and smallpox hospitals have, on occasion, been erected in a number of Canadian cities and towns. The original idea of such hospitals was to promote the recovery of the individual poor patient, for whom other accommodation was wanting; but the advantages in this connection were so apparent, that from an early period of their history infectious disease hospitals have been advocated on the ground of their protecting the household against the spread of infection. The first disadvantage that presented itself in connection with them was the fact that in fever hospitals infection seemed to remain permanent, and patients sent for one ailment took another; and with the exception of smallpox, where vaccination protected, nurses and doctors caught these diseases. Forty years ago these became serious evils, but with the clinical knowledge which distinguished the various fevers, it soon became apparent that while outbreaks of typhoid might be limited by pure water, etc., typhus must be isolated in hospitals, and patients removed at once from houses; with this came house to house inspection in outbreaks of fever. Soon, as was natural, the same fact became apparent regarding scarlet fever, and with the experience of recent years we may say that it is equally true of diphtheria in most classes of houses, but especially in the small houses of the poorer classes. The first dangers apparent to such were pointed out by the late Dr. Parkes, who said if the crowding of healthy men has its dangers, that of many sick persons would be much more perilous. The establishment of the fever hospitals in London and Glasgow about 1862 during an epidemic of typhus, through Murchison and Gairdner, did much to remove the prejudices against such hospitals, and to-day in England and in Ontario the Public Health Acts contain special regulations providing for the establishment of special hospital accommodation for persons suffering from contagious diseases, who in the opinion of the Medical Health Officer, or the Local Board of Health are liable to suffer from lack of proper treatment, or who may in their homes become dangerous to the public health. The next difficulty in England, as it has proved in Ontario, arose from the objections raised by property owners to their location; but the Ontario Health Act of 1886 has settled this question satisfactorily in the public interest. In 1880 there were in England 300 sanitary districts which had availed themselves of the power to have special places for persons who could not be treated at their own homes with safety to other people.

In 1881 Dr. Thorne Thorne inspected some 70 hospitals in England, and reported at length on the whole subject of infectious disease hospitals. His conclusions on the whole matter are of the utmost value to not only Toronto, but also every large city, and even township in Ontario. Where best managed there has grown up everywhere a disposition, even amongst the better classes, to make use of them.

In some instances this is shown by the fact that as much as 81 per cent. of the inmates have been children under ten years of age.

The whole tenor of the report goes to show that in a pavilion hospital, properly constructed for isolation, it becomes possible to have the various contagious diseases received and treated without their spreading from one ward to another. Most of these hospitals have been for the treatment of typhus and scarlet fever. Dr. Thorne is of the opinion that the smallpox pavilion may be, with propriety, somewhat further separated from the hospital than simply by a pavilion. Regarding the site of such a hospital, the successful accomplishment of the desired end demands that it be conveniently situated. That dangers to the public from proximity are, under good discipline, wholly imaginary, is shown by the fact that at Warrington, where a population of 1,082 persons live within 550 feet of the hospital buildings, and one end of the street occupied by working classes abuts against the hospital premises, there were only three attacks of scarlet fever reported from amongst this 1,082, while 424 were reported from the borough generally, and two of these three cases occurred when the hospital was practically empty. As regards smallpox, however, Dr. Power's reports of the Fulham Hospital district, in London, would indicate a certain danger to the immediate neighborhood; most probably from communication between friends and attendants.

From the facts which have been stated it is perfectly plain that a conveniently situated hospital in our large cities would be of the greatest benefit to the patients from small houses, where the attendance is necessarily imperfect, and a great boon to the other members of the working-man's home, the children of which, in many cases, being saved from almost certain infection, and the working members of the household, as in cases of diphtheria, scarlatina, and measles, would be free to go abroad to their employment without, with ordinary precautions, endangering the public health. The remark quoted at the beginning of our article regarding the too limited hospital accommodation in Toronto may be taken as indicating the necessity for the class of hospital accommodation which we have indicated; but it may be asserted by some that separate pavilions attached to existing general hospitals, or to such as the proposed new University hospital, or Sick Children's hospital would fulfil every requisite. Should it be found possible to have such distinct pavilions built of sufficient extent as to prove adequate to the sudden demands which, from time to time, during epidemics, may be made upon hospital space, we think from what has been quoted, there is good reason to assume that with proper caution it ought not be difficult to have hospital discipline so thorough as to prevent dissemination of a contagious disease from one pavilion to another. The great and, what seems to us, the permanent difficulty of having such an infectious disease department attached to any general hospital is that such hospitals are essentially emergency hospitals, and must be, to be thoroughly efficient for their special purpose, governed by rules in some ways different from general hospitals. They must be, for instance, as in Glasgow, London, New York, directly in relation with the Health Department of the civic government, and maintained by a special city rate. At present in Toronto the same rule is necessary to secure the admission of a case of diphtheria to the General Hospital as of a person suffering from chronic disease; and it is needless to say that with such a regulation as requiring a clergyman's, or well-known citizen's certificate to be approved by the Medical Health Officer, in a part of the city distant from the hospital or as on Sunday, the delay of twenty-four hours before such a patient can be admitted, practically nullifies the primary object for which isolation hospitals are established. Another important reason for their being maintained by a special rate is that the rules regarding the dismissal of patients who have recovered from the acute stage of the disease, or who are convalescing, which are now applicable, are wholly inapplicable and positively wrong when applied to contagious diseases. Our best authorities give as the period during which diphtheria requires to be isolated, twenty-eight days, and scarlatina from forty days to six weeks; but it is manifest that the basis of *per diem* allowance from provincial funds whish exists with regard to hospital patients, places the superintendent of a general hospital, which receives even into a separate ward infectious diseases, in a false position, should he carry out what he knows to be in the best interests both of the patient and of the outside public. It must further be noted as has also been referred to by Dr. Thorne Thorne, that an important requisite

of an infectious disease hospital is that it be free to any one within the municipality. Should private wards and extra attendance be demanded, of course they might be paid for; but it ought to be understood that the hospital exists for all who are sick of infectious diseases, and that the public safety is best consulted by having its doors so widely opened that any physician diagnosing infectious disease might, if he thought it necessary in order to prevent the spread of infection, at once telephone the Health Department, as is done in London in the case of the smallpox brigade, for the ambulance to have the patient at once removed, and the Department to take the necessary measures for disinfecting the house.

CACOETHES SCRIBENDI: THE WRITING MANIA.

WHEN one considers for a moment the unlimited number of journals which daily come under his notice, whether voluntarily on his part or perforce, he might, with very good reason, be excused for exhibiting symptoms of syncope at the thought of the hopelessness of the task before him, should he honestly endeavor to search, even by any *cradling* process, for grains of gold in the unlimited amount of *débris*. We are told (and the calculation was made years ago) that more than thirty thousand volumes of history may be found, and one might naturally wonder how any student could ever dream of attempting to climb Parnassus; or how any honest worker dares, in the face of such a fact, to publish his ideas and opinions before consulting these so numerous oracles. Du Fresnoy, one of the greatest of readers, cheers the historiographer by showing "that a public library is only necessary to be consulted; it is our private closet where should be found those few writers who direct us to their rivals, without jealousy, and mark in the vast career of time those who are worthy to instruct posterity." What is here said might, with greatly added emphasis, be repeated regarding the hardihood displayed at the present day by anyone who attempts to write on scientific subjects; for regarding so-called scientific *literati* the lines, of the old Scotch song in which the canny old hills-man characterizes the women, who have grown enthusiastic over Prince Charlie, might often appropriately be quoted, (reversing the gender,) "Thae wumen hae a' gane wud;" but knowing that ourselves may perhaps be classed amongst the *loonies* we hasten to our own defence, and would silence all uncharitable remarks by Daniel O'Connell's method of quoting Latin—"*Tantus amor florum, et generandi gloria mellis.*" There are, however, various reasons why literary composition continues, even at the risk of being designated by the equivocal title *cacoethes scribendi*. The first, and best, reason is that writers believe they have a *mission*. It is true that it may be, as it often is, that of Mrs. Jellaby sending boots and blankets to the Hottentots; but nevertheless to-day, as in the past, there are Mahomets, and this and the other earnest man has not been wanting who could whisper audibly, "Go to, I will make a religion." Carlyle in "Characteristics" would describe the condition as due to disease since he says, "The beginning of Inquiry is Disease;" all science, if we consider it well, must have originated in the feeling of something being wrong; and those who have developed the faculty of thought, and have Force enough to break the Lilliputian strands of fashion, necessity constrains, even though a voice crying in the wilderness, to adopt the now easily accessible method of preaching their new crusade.

By others, and perhaps a considerable number, literary composition is cultivated as a pleasurable employment. Said Buffon, speaking of the hours of composition, "These are the most luxurious and delightful moments of life; moments which have often enticed me to pass fourteen hours at my desk in a state of transport: this *gratification* more than *glory* is my reward:" and Addison neatly points out how those parts of life which are exercised in study, reading and library occupations become a method of "filling up those empty spaces of life which are so tedious and burdensome to idle people."

Viewed from a somewhat different standpoint literary composition is cultivated by some as is music, simply the development of a *faculty*, or in some instances a hereditary gift. For instance Francis Galton points out in "English Men of Science" that through several generations the *Roscoe* family "was characterized by much cultivation, refinement and poetic taste," in the same way in which that of the *Hills* (e. g. Sir Rowland) was active in "social improvements, power of organization, mechanical aptitude," etc.; or the *Darwins* remarkable for a love of "natural history and theory."

Were it in keeping with our space it would be interesting, and perhaps instructive, to follow further the development of this faculty of composition in its biological aspects: but it is sufficient that we understand, in this age of universal activity with every avenue open to those wishing to enter it, either as an amusement or an occupation, why literary composition is so common. We are convinced that to some at least, the pleasure of composition may become as intense as when to the highly gifted musician—

"The touch of his loved instrument
Gives hope and fervour, nearer draws his theme,
First guessed by faint auroral flushes sent
Along the wavering vista of his dream."

It would be idle for us to pretend that literary composition is not affected by some, simply because it is in a sort of way *fashionable*, as in the olden troubadour times it was the *mode* to compose sonnets for their lady-loves; or as in the case of Will Carlton's eastern farmer who, regarding his boy, "guessed he'd make en editur o' him." Such may be dismissed good-naturedly as belonging to the *ovine* class, who follow their leader, and change as he changes, as seen in the curious imitations of the courtly Chesterfield of a previous century.

Regarding that other class afflicted with *cacoethes scribendi*, speaking from the alienist standpoint, they must be placed on the list of *incurables*, and charitably dismissed with the hope that their sojourn here be not long. There is, however, with some of them a remarkable vitality; and it may be, perhaps, that they are designed as a chastisement to those who are heirs of all the literary past, and who amidst sweet harmonies must suffer the impingement upon sensitive organs of *base* notes. There is truth as well as wit in what some writer tacked on to the word *finis* at the end of a silly book,

"Finis! an error or a lie, my friend!
In writing foolish books— there is *no end!*"

TREATMENT OF VARICOCELE BY MEANS OF A YARN TRUSS.

A FEW months ago a man came to consult the writer with reference to a large varicocele of the left spermatic cord. He said he had noticed the much larger size of the left half of the scrotum for some considerable time—seven or eight years—but had never given it much thought. It had caused him little trouble further than a heavy, dragging feeling when long on his feet, or a little aching after a long day's work involving much standing or slow walking. His reason for consulting a surgeon now was that he had visited a phrenologist, so called, on the previous evening to have his "bumps" read, and during the *seance* this exponent-of-the-faculties-by-manipulation asked him if he had a varicocele, and upon further explanation found he had. Whether it was a mere "guess," knowing how frequently this condition is found, or whether he fancied there was a tendency to varix, the veins being a little prominent over the temporal and mastoid regions, or, as he stated to the patient, that he knew from the bumps such a thing existed, we cannot say; but he succeeded in alarming the man so much that he immediately sought medical advice.

The patient is twenty-five years of age and unmarried. He had noticed its gradual development during the last eight years. It was now quite large, extending from the abdominal ring above to a lower level than the testicle below and felt like a "bag of worms." On lying down and elevating the scrotum the tumor lessened very considerably but the spermatic cord on that side was still much larger than its fellow, owing to hypertrophy of the walls of the spermatic veins. There was also a small encysted hydrocele projecting from the surface of the epididymis.

The left testicle was smaller than the right one and a little softer but of the normal shape. The patient said the desire for sexual intercourse had weakened considerably during the last three or four years. It is probable the varicose condition of the spermatic veins commenced about the time of puberty and caused an arrest of development in the organ. Some writers on the subject state that the dilated veins cause atrophy of the testicle; but if this were always the case we would meet with diminished testicles in varicocele much more frequently than we do. The following explanation by A. Pearce Gould is a more rational one: —"If the disease be limited to the cord, as is usually the case, and come on after the testicle has reached its full development, it exerts no injurious influence upon the structure of that organ. But when the vessels within the testicle are varicose, it may lead to a slight shrinking of the tubular structure. If, however, the varices develop before or at puberty, the usual enlargement of the testicle may not take place, and it may continue in its puerile state. The important fact is, that where the testicle is

found much smaller than its fellow, it is an undeveloped organ, and not atrophied. There is no evidence that simple varicocele can produce marked wasting of a healthy testicle."

Treatment.—The patient was advised to abstain from sexual excitement as far as possible, and given half-drachm doses of bromide at bed-time twice a week. He was ordered to bathe the parts in cold water every night and morning; and to prevent an overloaded rectum pressing upon the spermatic veins, a teaspoonful of magnesium sulphate ordered to be taken in cold water every morning. In addition to these palliative measures, a truss made of ordinary gray *yarn* was adjusted as follows:—Two skeins of yarn were re-wound so as to form twice the ordinary length of a skein. This passed double around the body was looped through, drawn down and knotted directly over the left external abdominal ring, the loose end carried on over the perineum and left thigh was caught up under the part encircling the body at the left ilium. The truss was applied quite loosely for a few days to accustom the patient to its use and gradually tightened until it pressed firmly but comfortably on the ring. The patient removes it at bed-time and re-adjusts it in the morning before getting up so as to prevent the dilated veins from becoming fully distended. He has worn this truss for two months with very great satisfaction. The tumor is now barely one-half its former size. The patient never experiences any dragging or tired feeling when long on his feet; the spermatic veins not having so large and long a column of blood to support are gradually diminishing in size. The result is much better than simply wearing a suspender as the latter only weakens the muscular fibres of the dartos without causing any break in the column of blood to be supported.

We have at the present time two or three other milder cases on whom this treatment is being tried with like favourable results.

The advantages claimed for this "home-made" truss over all manufactured ones are: Its cheapness and cleanliness—for half a dozen may be kept on hand if need be, and regularly washed as is other underclothing—its suitability for a light pressure such as is needed for varicocele; its elasticity giving good adaptability and support under all positions of the body, and what is also important when properly applied, it cannot readily shift.

INDEX OF PROGRESS.

SURGERY.

Antiseptics in Surgery.

(New York Correspondence.)

To the Editor:

DEAR SIR,—Laparotomy is a frequent operation here and usually results in quick recoveries. The peritoneal incision is carefully and accurately brought together by a continuous cat-gut suture. Then the external abdominal wound is sponged until all bleeding ceases. After irrigation with a bichloride solution, the integument and deeper structures are sutured with cat-gut. The wound is then covered with successive layers of sublimate gauze and the whole enveloped in cotton well secured with several layers of bandage. The success attending these operations is undoubtedly attributable to the careful use of antiseptics. The greatest care is exercised by the operator and all assistants in personal cleanliness, and in the antiseptic preparation of sponges, instruments and all appliances necessary for the operation.

For disinfection the bichloride solution is chiefly relied upon. The sponges are cleansed and washed in warm water, placed in a solution of sulphate of sodium and oxalic acid for a short time, carefully washed, and placed in a bichloride solution to remain until required. The hands of the operator and assistants are washed and disinfected in bichloride solution. Before commencing the integument in the vicinity of the proposed operation is carefully cleansed with a brush and soft soap, after which it is washed with a bichloride solution 1–1000. A weaker solution 1–5000 is used for purposes of irrigation. Ligatures and sutures are prepared by immersion in a solution of the strength of 1–1000. The sublimate gauze is prepared from ordinary cheese cloth by first boiling in water to which a small quantity of soda has been added, after which it is kept in air-tight vessels. For ordinary operations, iodoform is used sometimes in dry powder, applied by being dusted on a pad of folded gauze and applied directly to the wound.

Dr. Piletier uses saw-dust made into pads with purified and sublimated gauze as absorbent dressings for ordinary surgical wounds. He recommends the dust obtained from soft and absorbent woods as white pine, poplar or basswood. It is purified by immersion in a bichloride solution, and then dried in the open air, made into pads and kept in air-tight vessels until required for use. It absorbs more readily and easily if moistened with a bichloride solution immediately before using. Dry iodoform powder is also sprinkled on the surface of the pad and applied to the wound. By stitching through and through the pads at several points, their proper shape is preserved and uniform pressure or support maintained over the wounded parts.

Yours, etc., A. B.

THERAPEUTICS.

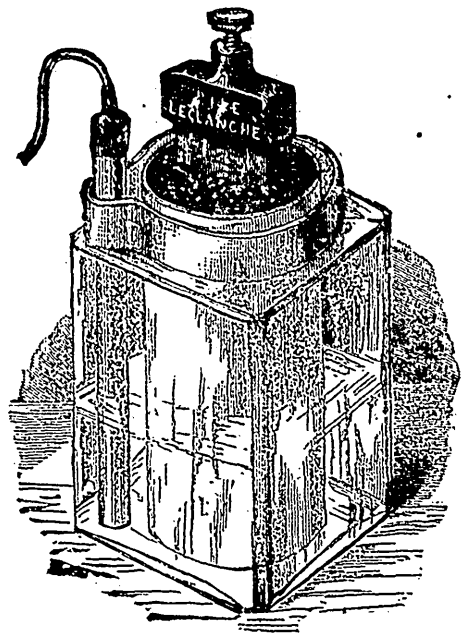
Electro-Therapeutics.

In setting up this gravity cell the copper plate is placed in the bottom with a layer of crystals of copper sulphate on top of it, the zinc plate is now suspended in the cell as per cut, and sufficient water poured in to cover it. When the cells have been arranged in order in some situation where they will not be disturbed, the terminal zinc and copper are connected by a short wire for two or three days until the solutions have separated and the battery is in working order.

To keep it going it is only necessary to supply water for what is lost by evaporation and to occasionally drop some crystals of copper sulphate through the opening in the zinc plate. The zincs require to be cleaned about once in six months.

The Leclanché cell is another form of cell much in vogue for constant batteries, and is the form used by Apostoli. The principal objection to it is that when it becomes exhausted the porous cup and carbon have to be replaced by the makers, as the battery is patented. The porous cup contains a carbon plate, surrounded by a packing of a mixture of gas coke and manganese dioxide. The exciting fluid is a nearly saturated solution of ammonium chloride.

This cell has an electromotor force of 1½ volts, which is a considerable advance over the gravity cell; it also has the disadvantage of running down in strength in a very short time, an hour or two, whereas the gravity element may be short circuited for three or four days without affecting it.



The arrangement of the different parts of the cell is shown in the cut.

Experimental Dietetics in Lunacy Practice.

BY J. LEONARD CORNING, M. D.

In the *New York Medical Journal* we notice that Clark ("Edinburgh Med. Jour.") observes that the result on gastric secretion of using the oral or nasal tubes for forced alimentation is to evade the operation of a physiological process which is aptly described by Lauder Brunton as follows:—"The effects of mastication are not limited to the changes produced by it in the food within the buccal cavity; the taste of savory meat, the rolling of a sweet morsel under the tongue, and the movements of mastication exert an influence upon the stomach and upon the brain. In a case of gastric fistula, where œsophagus was occluded, Richet noticed that the mastication of food induced secretion of gastric juice, although nothing could pass from the mouth into the stomach on account of the obstruction of the gullet." The same phenomenon is known to occur when food enters the stomach, for the bile and pancreatic secretions are called forth in anticipation of the exercises of their respective functions. There can be no question, therefore, that the loss of natural stimuli constitutes a serious objection to

artificial feeding, and the depressed condition of the reflex functions may operate in the same way. Clark adduces three cases in illustration of this which came under his observation two years since. These patients had their food injected four times each day for seven weeks, and yet they steadily lost weight, although they offered little or no resistance to the artificial mode of alimentation. Various dietetics, therapeutic, stimulant, and digestive combinations were tried, the cases being of the most asthenic, unpromising kind. The secretions were altered or arrested, the mucous lining of the throat relaxed and irresponsive, or red, irritable, glutinous. Trial was made of egg custard with milk, brandy or whiskey, beef-tea thickened with potato, Benger's liquor pepticus and liquor pancreaticus, Carnrick's cod-liver-oil emulsion, calomel, acid, and nux vomica, bismuth, and washing out the stomach with Condy or carbolic acid. Finally the pump and tube were discarded, and attendants were instructed to use their utmost endeavors to encourage self-feeding with appetizing and dainty morsels frequently repeated. The total amount of food consumed became thus a mere fraction of that daily injected for seven weeks; but, on the other hand, the improvement in nutrition was gratifying in the extreme after the lapse of a few weeks. Clark explains this by the aid of the statement of Lauder Brunton and the observations of Richet above cited.

[We imagine that still greater benefit would have been derived from combining the gavage with the self-feeding, and that the full benefit of the masticatory act might have been obtained by the use of flavored chewing gems.—Ed.]

Manganese and Menstruation.

The sum of results of a great number of observers amongst whom may be mentioned Fordyce Barker, Martin, (Chicago) and Bartholow, is that in the various compounds of manganese, we have at present the most valuable remedies for menstrual disorders of the most opposite kinds, since they appear to be almost equally efficient both in amenorrhœa and menorrhagia. Fordyce Barker says he has achieved the best results in certain selected classes of cases as below:

1. In young ladies who come to New York to finish their education, leaving a comfortable home for a boarding school with more or less uncongenial surroundings, and consequent homesickness, with various neurotic ailments, one of which is apt to be suppression of menses.

2. In women, whether young or old, who have just returned from Europe, in whom the sea sickness and other discomforts of the ocean voyage have produced suppression. These he cures invariably.

3. In those women who develop a decided tendency towards obesity when they became thirty, or thereabouts, and who suffer from various disorders, both physical and psychical, as a consequence, in whom catamenia usually disappear, or become very scanty, causing thereby aggravation of their other troubles. To these, and to his other patients requiring the remedy, permanganate of potash is administered in doses of two grains three times a day, followed immediately by half a tumbler of water.

One of the most objectionable features in its use appears to be distressing gastric symptoms, irritability of stomach and substernal pain. These, however, are stated by some to be purely due to the method of simply administrating the drug being given in pilular form.

The best method of administering it is to give a two-grain pill of the binoxide three times a day with a glass of water or milk. It is very necessary that at least a tumbler of liquid be taken with each pill. The treatment may be continued for weeks. Dr. Martin overcame the gastric symptoms in a number of his patients by rubbing in ʒss of an ointment made by dissolving manganese oxide in oleic acid in the proportion of 1 to 5. He considers the beneficial effects of the drug to be due to action on the nerve supply of the genital system.

Selection of an Anæsthetic.

Dr. A. G. Gerster (*Medical Record*, April 25, 1887) in reviewing the subject of the proper selection of chloroform or ether as an anæsthetic, sums up as follows:

(1) Ether should not be used as an anæsthetic in cases of present or suspected acute or chronic nephritis, nor on patients suffering from chronic pulmonary affections, especially if elderly persons.

The change from ether to chloroform is justifiable and proper when complete relaxation and insensibility cannot be induced by the former agent, and where local anæsthesia by cocaine is impracticable.

A weak heart, from whatever cause, organic or functional, is the only valid objection to the use of chloroform.

Both chloroform and ether, properly administered, are invaluable and useful anæsthetics; each of them has its proper and legitimate sphere and limitations; the modern surgeon is in need of both of them; the unqualified condemnation of chloroform in surgical practice is unjustified by the facts.

The intelligent selection and use of either anæsthetic is the right and duty of every conscientious physician and fatal accidents occurring, in spite of proper safeguards, are not incriminating to the medical attendant.

BACTERIOLOGY.

Ptomaines.

A great amount of interest is at present being manifested among scientific observers in regard to these most interesting bodies, ptomaines, leucomaines, etc.; and perhaps a greater stimulation has been given to it from its important bearings on the testimony of forensic experts in medico-legal matters.

These bodies are organic compounds obtained from putrefying matter of different kinds, and as previously prepared they resembled so closely a great number of our well known alkaloids that in three poison cases particularly Selmi proved that the reactions, which the experts in the first case took to be indicative of delphinine, in the second of morphine, and in the third of strychnine, were really due to the presence of certain cadaveric bases. The prolificacy of these discoveries has been such that we have ptomaines resembling morphine, strychnine, conrine, curarine, collidine, etc., and they have in the majority of instances been named from sources in which they occur as neurine, neuridine, etc., from putrefying nervous matter.

These bases as obtained by the earlier investigators were generally impure and it has more recently been found that the pure bases do not give reactions similar to the alkaloids above mentioned, this having been due to the presence of peptones and other bodies in the syrupy extract which was supposed to represent the pure ptomaine.

The first to obtain a chemically pure double salt was Nencki of Berne. He obtained it from putrid gelatine and on analysis it proved to be collidine $C_8H_{11}N$ a member of the pyridine series.

Next comes Gautier and Etard with parvoline $C_9H_{13}N$ from putrefying mackerel.

Since 1883, however, the most prominent investigator in this field has been Prof. Brieger of Berlin, who has elaborated methods for the isolation of the greater number of ptomaines in a state of absolute purity by obtaining the gold and platinum double salts and also the picrates of the ptomaines. An accurate knowledge of their chemical constitution having been made possible, it is found that they do not come under the classification of true alkaloids in the present sense which restricts the term derivatives of the pyridine series, but prove to be amines, ammonio-bases and amido compounds of various composition. A number were closely related to *glycine* or, properly speaking, *amido acetic acid*; among these are *betaine* from beet, *choline* of bile non-poisonous, the poisonous *neurine* and non-poisonous *neuridine*, also di-amines as *cadaverine* identical with pentamethylenediamine and *putrescine* a di-methyl-ethylene-diamine. In Brieger's second report published in 1885, he enumerates the following ptomaines discovered by him in human cadavers most of them being di-amines of the fatty series:—

Choline, $C_5H_{15}NO_2$, a non-poisonous ethylene base; neuridine, $C_5H_{14}N_2$, non-poisonous; cadaverine, $C_5H_{16}N_2$, a strong reducent; putrecine, $C_7H_{12}N_2$; saprine, $C_6H_{16}N_2$, strong reducent; trimethylamine, $(CH_3)_3N$; mydaleine,———, a strong reducent.

Besides these there were bodies belonging to the aromatic series. It would appear from the results of investigation that the *ptomaines* formed during the first few days of putrefaction are non-poisonous, and after the disappearance of these the poisonous ones are formed; thus choline disappears and strongly toxic bodies formed especially neurine. On injection of small quantities into cats there is copious salivation, lachrymation, accelerated respiration, dyspnœa and death. The pulse is at first more frequent, then sinks, and death occurs in diastole. There is also increased peristaltic action during the symptoms and contraction of the pupils. Atropine appears to be an effective antidote.

There is every probability that these bodies are produced by the action of putrefaction bacteria on various protein bodies as we find micro-

coccus aceticus oxidizing alcohol into acetic acid, etc. This was abundantly proven by examining the products of the action of bacteria on thoroughly sterilized media. In addition to the substances already mentioned there were found in putrefying fish and horse flesh: gadinine, ethylene-diamine, tri-ethyl amine and other bases, and more recently Vaughan prepared from milk and cheese *tyrotoxine*. This explains much of what has been obscure of the action of pathogenic bacteria, as we readily see how organisms producing such substances would, when introduced into the body, give rise to the most untoward effects by the absorption of their *effete* material into the system. In discussing the effects of the different bacteria in producing poisonous substances we must also take cognizance of the different food materials supplied them; for we see produced, muscarine, putrescine and cadaverine according to the tissues invaded.

As regards pathogenic bacteria it may be stated that results in many respects similar to the above have been arrived at. In 1885 Villiers, according to Brieger's method, obtained a liquid ptomaine from bodies dead of cholera which had an odor of hawthorne flowers and produced in the animals experimented upon strong tremors, great disturbances of the heart and increased peristalsis. He also obtained ptomaines from pneumonia victims which bore close resemblance to those of diphtheria, but quantities were insufficient for definite results.

Brieger especially advocates a definite classification of these compounds which is as follows:—

To all basic substances produced by the action of bacteria, he relegates the generic name *ptomaine*, while he gives the name *toxines* to the poisonous ptomaines. The name *leucomaines* is reserved for those bases produced from the albumins during life processes.

Brieger, to avoid confusion, re-examined all the ptomaines formed by putrefactive bateria (B. termo and B. lineola). He found in putrid horse flesh besides the ones already mentioned a very poisonous amido acid $C_7H_{17}NO_{21}$, which produced symptoms resembling curare in the animals experimented on also a more poisonous but slowly acting base, mydatoxine, $C_6H_{12}NO_2$; also the poisonous methyl-guanidine, $C_2H_7N_2$. In putrefying fish the non-poisonous bases, cadaverine and neuridine, and besides these di- and tri-methyl-amine, putrescine, etc.

As regards pathogenic bacteria the results were as follows:—Staphylococcus pyogenes aureus yielded no toxine, but only ammonium salts. Streptococcus produced tri-methyl-amine, which is not entirely free from poisonous properties.

The Koch-Eberth typhus bacillus produced small quantities of *typhotoxine*, $C_7H_{17}NO_2$, (isomeric, but not identical with toxine above mentioned) when introduced into animals it produced a lethargic condition and other symptoms similar to those of typhus in man.

The tetanus virus produced the toxine *tetanine*, $C_{12}H_{30}N_2O_4$, and much ammonia. When this was injected in experimental animals it produced clonic and tonic spasms of great violence, followed by death.

Besides these results Doleris and Butte found a crystalline toxine in the blood of eclamptic patients. Bocklisch confirms the absence of ptomaines in the pure cultures of the vibrio proteus, the Prior-Finkler bacillus of cholera nostras.

The moral of all this is that it is much easier to keep the bacteria out of the body by *preventive* medicine than it is to find antidotes for the poison they produce once they have gained admittance, and further, that the chemists may beat the biologists on their own ground, for is not the *chemist* Pasteur the father of bacteriology?

Diphtheria in Glasgow.

Dr. James H. Russell, Medical Officer of Health, in a letter to the editor says, *re* diphtheria:—"We have very little diphtheria in Glasgow, some 1% of all deaths. It is associated in my experience with sewerage derangements, e.g. perforations in the pan of the prevalent pan closet; choked soil-pipes, cistern overflows into soil-pipes. The first condition is conspicuous, and the feature is that it forms a larger proportion of the total deaths in houses of five apartments and upwards than in houses of one, two or three apartments. Indeed it constitutes the lowest percentage of the total deaths in one-apartment houses and the highest percentage in five apartments and upwards. Being connected with derangements in fittings, etc., it is most fatal where those most abound *inside* the house. A large proportion of one-apartment houses have no inside connections with the sewers as you may suppose. We treat cases of diphtheria in our infectious diseases hospital in a separate ward.

Self-Infection.

The following notes are from the *New York Medical Journal* of Jan. 7th, on Self-infection:— Ahlfeld (*Ctrlbl. f. Gyn.*, Nov. 12, 1887) says that the axiom that there can be no such thing as self-infection after a normal parturition is effectually exploded. Winckel has shown that it has occurred in women who have given birth to their children *in the street*, in which there could be no question of infection from the hands or instruments of physicians or midwives, and Ahlfeld has demonstrated the same by experimental investigations. The author understands by self-infection, with Semmelweiss, a condition in which the poisonous matter exists upon or in the genital organs at the time of parturition, or is developed during parturition or the puerperium. The infection may or may not be communicated to the patient during the manipulations of the physician or midwife. A sharp distinction between infection from without and self-infection does not seem to be possible; it is therefore difficult to say, in most cases, that the physician or the midwife is responsible should puerperal fever make its appearance. It is only recently that stress has been laid upon the influence exercised by micro-organisms upon the vulva and the external genitals, and this has led to undoubted improvement in the condition of puerperal women in general. It is now admitted that if pathogenetic spores are found in the vagina of a woman who is otherwise in good condition, disease may result, though there is still uncertainty as to whether they are developed in the vagina previous to parturition by their entrance into the tissues, or through the process of their proliferation. A fatal result from blood-poisoning or septic peritonitis may occur even though the patient may not have been touched by a physician or other attendant. Cases are narrated in which the evidence of septic infection from retained and putrefying products of conception is clear and convincing, poisoning from the absorption of ptomaines being admitted. The author does not agree with Kaltenbach in his belief that puerperal disease from such a cause is of rare occurrence.

OBSTETRICS.

The General Treatment of Puerperal Sepsis.

Runge *(ibid.)* refers to his paper published in 1886, in which he outlined a suitable method of treatment for septic cases among puerperal women, which should consist in the use of very large doses of alcohol, warm baths, nutritious food, and the avoidance of all antipyretic medicaments. Since that time he has treated nine cases of more or less severe puerperal sepsis by these means, and with only one fatal result. The opinions which were elicited by the paper in question were favorable to the avoidance and disuse of the so-called antipyretic medicaments; they were also favorable to the free use of alcohol, but they regarded the usefulness of the baths as at least questionable; indeed, some expressions were elicited which disapproved of them entirely as objectionable means. It was also doubted whether it would be possible, in the majority of cases, to administer a large quantity of nutrient material. The convictions of the author as to the value of the means which he has recommended have been deepened by additional experience. There are certain limits to the effectiveness of local treatment in puerperal sepsis. To be sure, one can prevent further resorption of poisonous germs by suitable precautions, but these do not defend the organism from the poison which has already been absorbed and is working in the circulation. The object of treatment should therefore be to furnish defence against the enemy which has already made its invasion, and, with this in view, the regulation of all the functions, especially those which pertain to digestion, is of first importance. The use of alcohol and warm baths will accomplish this end; the alcohol will increase the heart action and retard the metamorphosis of albuminoids, while the baths will increase the desire for food, and so prepare the way for the increased ingestion of nutrient material. By the same means the sensorium, circulation, and respiration will be benefitted, and the author's experience enables him to say that these are facts and not theories. The treatment with alcohol should precede the use of the baths, in order to fortify the heart for their influence. The temperature of the baths should be 22° to 24° C., and they should be used from five to ten minutes according to the strength of the patient. If there is a tendency to collapse after their use, a large dose of alcohol should be given, or a subcutaneous injection of ether or of camphor. The greatest care should be exercised in giving the baths so as not to weary the patient. They are not so much indicated on account of elevated temperature as for their influence upon the

general condition—the activity of the heart, the respiration, and the appetite. They are not indicated in cases where there is obstinate vomiting, nor where collapse is imminent, nor where thrombosis is associated with sepsis. The value of this method of treatment can be better appreciated if it is considered that sepsis means a struggle for the mastery between the cells of the tissues of the body and the microbes which have invaded them. The plan of treatment which the author has indicated has for its object the fortifying of the body to enable it to pass through this struggle successfully.

Histology and Pathology of Re-production.

(From the Journal of Comparative Medicine and Surgery.)

The following are notes from a paper on the above subject, by Henry O. Marcy, A.M., M.D., Boston, read at the Washington International Medical Congress. At the outset he eulogized Ercolani of Bologna, for this, his most famous work on the placental development in vertebrates. The study of this subject goes back to the times of Malphegi in the fifteenth century. Ercolani starting with the differentiation of the mucous membrane and its glandular structure, examined the structure in all the species possible to be obtained.

The placenta is ordinarily sub-divided into *diffused*, *multiple* and *single*. The simplest form is found in the mare. Over the whole surface of the uterus in this animal there is developed a series of secreting glands of follicular character, and into these it is easy to trace the villi of the fœtal portion of the placenta. A fœtal villus is little more than a vascular loop covered with epithelium. The glandular follicle is equally simple in anatomical construction, and also lined with epithelium, the one a villus of secretion, the other of absorption.

The multiple placenta of the cow offers the simplest form of this kind, common to ruminants. The glandular maternal organ is modified here, which consists simply in the uterine follicles being placed parallel with the surface and superimposed upon each other instead of being disseminated vertically over the whole internal uterine surface as in the diffused. In the dog and cat the follicles are extraordinarily elongated into tubular glands, as it were, which are closely packed against the fœtal villi.

In the human species all that relates to the form itself of a glandular follicle is completely lost, but the fundamental parts of a secreting organ, that is to say the walls and cells, in a word the gland and its secretions, are persistent. The function of nutrition of the fœtus is in all the morphological variations carried on by the same process.

In woman the mucous membrane is reduced to a simple layer of epithelial cells, and with impregnation there is a proliferation and destruction of these cells over the entire surface of the uterus. This destruction is necessary because this is what facilitates the setting up of the neo-formative changes from which will result the maternal portion of the placenta. Thus the formation of the decidua and the placenta is due neither to a tumefaction nor to a transformation of previously existing anatomical elements.

The neo-formative process of the maternal portion of the placenta, *decidua serotina*, consists in the production of new vessels which are distinguished from the ordinary uterine vessels; first, the arterial as well as the venous vessels have only a simple endothelial wall; second, on the external surface of their walls is elaborated a layer, more or less thick, of special cells not separable from the wall of the vessel. These are the so-called decidual or placental cells.

What the origin is of the cells entering into the formation of the maternal portion of the placenta has long been a matter of doubt; Turner, Owen and Kolliker touch the question, but imperfectly.

The simple elementary form of the maternal portion of the placenta is recognized, and is maintained throughout the whole period of gestation in the uterus of certain viviparous fishes.

The manner in which the relation between the two parts is established may be by simple proximity, contact, or by intimate cohesion. When the relation is that of simple nearness the maternal portion of the placenta manifestly presents the form of a glandular organ and has its limitation by the repetition of secretory villi upon the inner surface of the uterus, which, uniting with each other in various ways give rise to the formation of crypts or glandular follicles, single or compound, into which enter the absorbent villi of the chorion. When the relation is more intimate and an adherence takes place between the two parts before mentioned, as in the single placenta, the glandular character is concealed by the fact of the adhesion, but the fundamental character remains constant.

The contact in this case is direct, between the vessels of the absorbent villus and the epithelium of the secretory villus which is never lost. Only two very simple changes occur in the fundamental parts of the placenta when single, and they are the factors of the manifold differences which are observed; first, the loss of the epithelium of the absorbent villus, and second, the dilatation or ectasia of the vessel in the maternal villus, and this is remarkable only in the placenta of the quadrumana and in women.

The formation of the lacunæ precedes the formation of the tufts of the villi, and further evidence regarding them may be found in the structure of the so-called uterine decidua in cases of extra-uterine pugnancy, where may be seen in the maternal portion of the placenta lacunæ through ectasia of the vessels without any trace of the fœtal villi.

Marcy states that the old views that the lacunæ are large cavities, and that the chorial villi float in the maternal blood are fundamentally wrong, as clearly set forth by Ercolani's teachings.

He thus sums up the chief changes in woman during pregnancy. (1) The mucous membrane of epithelium disappears from the subjacent muscular walls. (2) It is replaced by a layer of decidual cells, proliferated from the vascular network of the uterine wall. (3) The utricular glands are not destroyed but on the contrary increased in size. The constant secretion therefrom forms openings through the decidua vera, which may easily be traced by the unaided vision as a sieve-like perforation through the proliferation of the serotinal cells at the placental site. These glands are by the pressure of their own obstructed secretion dilated and altered. (4) The second period of development begins with the rapid and exuberant proliferation of branches from the trunks of the fœtal villi and the ectasic process in the network of the maternal vessels. Resulting from this the branches of the proliferation villi press against the endothelial walls of the vessels, which are at the same time thinned and dilated, and the ultimate result is that the walls of the villus, at first simply bent in towards the cavity of the dilating vessel, must as the process of aneurism becomes more and more pronounced completely invest the villus, aided also by the tension exercised upon the walls of the vessel. Intimate union with the introflected wall of the maternal vessel lined with its layer of decidual cells ensues and the picture of the villi swimming in the lacunæ is complete.

"Prof. Ercolani sums up," says Marcy, "with the following conclusions":—In all the vertebrates the nutritive material which is to serve for the growth of the fœtus is furnished by the mother. In mammals it is supplied by the maternal portion of the placenta, gradually as the fœtus develops. In the viviparous vertebrates, the material, in the quantity necessary for the development of the fœtus, is emitted in a mass from the mother, in the egg. In the mammiparous, as in the viviparous animals, the absorbent or fœtal part does not change, and it is by means of an absorbent villus more or complicated that the material elaborated by the mother is conveyed to the fœtus. There is therefore but one law, a physiological modality, that governs the nutrition of the fœtus in all the vertebrates.

The Use of Corrosive Sublimate in Obstetric Practice.

Szabo *(ibid)* says that the use of sublimate is approved of at the Buda-Pesth Obstetric Clinic, but the following conditions and restrictions have been found useful: 1. For the disinfection of the hands a solution of sublimate of 1 to 1,000 is recommended. 2. For the disinfection of the external genitals a sublimate solution of 1 to 2,000 should be employed. 3. For the disinfecting irrigation of the uterine cavity or the vagina a sublimate solution of 1 to 4,000 is recommended. 4. Irrigation of the vagina, and still more of the uterine cavity, is permissible only when the indication is very positive, either after parturition or during the puerperium. 5. Not more than two quarts of sublimate solution should be used for irrigation of the vagina or the uterine cavity. 6. In atonic hæmorrhages postpartum a 1-to-8,000 sublimate solution should be used as a hæmostatic. 7. Sublimate should not be used with women who are suffering from anæmia, phthisis, nephritis, or diseases of the digestive organs.

HYGIENE.

Lœwenthal on Hygiene.—*(Translated.)*

Lœwenthal, (Professeur agrégé â l'Académie de Lausanne), in his recent memoir on "*L'Enseignement actuel de l' Hygiène,*" says: That we ought to determine what hygiene is and the role which it is called upon to play in science and in

practical life. . . . Proust defines hygiene as the art of preserving health; but adds: What is health? That is to say, that the difficulty of defining it in a satisfactory manner would prevent one from precisely indicating the art of preserving it. Evidently health is not a thing of which we can describe the form and qualities; it does not exist as a reality, we know no organism aptly representing it to us. It is only an abstract notion; but, as such, it is easy to state for ourselves that *la santé est l'expression et le synonyme d'une évolution organique normale* (health is the expression and the synonym of a normal organic evolution). Now, all evolution is a process wholly of movement, a dynamic process *par excellence*, in which disturbances of equilibrium necessarily exist, in order to a return to equilibrium, in such a way that it is absolutely impossible to assign to any one of these continual oscillations the character of *health*. It has, however, formerly been conceived by science, and is still to-day by those who do not discern too closely, as a stable entity, a sort of mysterious individuality of the kind of *force vitale*, while in reality it is only the *syndrome* of the simultaneous presence of all the conditions which assure the normal evolution of an organism equally normal. We think, then, that the apparent difficulty of defining *health* resides wholly in this false conception of the subject; it is almost as if one conceived light as a material object and endeavoured to discover in it the distinctive characters of objects, while it is only the perception of vibrations well-known, and even measured, of something unknown. Thus we understand health as a resultant state of normal evolution; and this state reveals itself to our senses by a sign which ought to be inherent to it: *le sentiment du bien être* (the feeling of well-being). It is erroneous to say that health is characterized by the absence alone of all trouble; it is erroneous, because, on the one hand, this absence accompanies cessation of life as well, and, on the the other, health continues in spite of certain disturbances sometimes well marked, but due to the performance even of natural functions.

The death, for example, of an ovule, fecundated or otherwise, the direct or indirect cause of menstruation in women, is assuredly a disturbance of physiological life; but none would dare to pretend that the menstruating woman has lost the right of believing herself perfectly healthy. On the other hand, a close and perfectly appreciable sensation of satisfaction accompanies the performance of every normal function; and such sensation will be much more accentuated, if it is the result of the *ensemble* of all the functions composing the life of the human organism normally accomplishing themselves; it exists in effect under the form of well-being, the satisfaction of living, which is no more an abstract notion, but a positive sensation of the healthy man in all the force of the term: this internal satisfaction, which is the energetic denial given by physiology to a certain philosophical school having as its tenet the *denial of the pleasure of existence*. The genius of language has very well seized the character and bearing of this positive symptom of health in calling a man healthy *who feels himself well;* and we will have overcome all the difficulties of definition in substituting the matter for the idea, *health*, its distinctive symptom and as designating as the aim of hygiene, *l'art de se bien porter (the art of being well)*.

Examination of Milk.

The universally acknowledged value of pure milk as a food, as well as of the dangers attaching to it as a medium for the transmission of disease, as illustrated by the diphtheria outbreak in York Town and Camberley District, referred to in the last number of MEDICAL SCIENCE, makes it desirable that Medical Health Officers and medical practitioners everywhere be kept in possession of such knowledge regarding its constitution and examination as is of practical value.

Of the constituents usually determined by analysis (1) water, (2) sugar, (3) nitrogenous constituents, (4) ash, and (5) fat, are the principal. The two which are usually taken as indicating the nature of milk are the *solids and fat.*

Martin, who is analyst of the New York State Board of Health, and H. W. Wiley, chemist of the Department of Agriculture, Washington, give the following average constitution of milk:

	PER CENT.
Water	87.5
Fat	3.2
Sugar	4.4
Caseine	4.1
Salts	.7
Total Solids	12.5
Solids not Fat	9.3

The methods adopted for estimating solids are mostly of a delicate chemical character, demanding fine balances and delicate apparatus, there being

but one method of that simple character which is likely to become of value in the hands of an ordinary experimenter. It depends upon drying the milk on strips of asbestos paper over a sand bath at 100° -105° C. It can as yet hardly be said to have come into practical use.

Regarding the estimation of the fat, there are numerous methods, each of which has its special champions. Adams's method depends upon the absorption of the milk by bibulous paper. The details of the method can only be satisfactorily worked out by those who can enter thoroughly into the work of milk testing. Soxhlet's method of estimating fat, now much in vogue, is criticized by various chemists as to the trustworthiness of its results. It requires special apparatus and conveniences for carrying it out. What is of practical value, however, is the estimation by volume of the cream. It gives a rough approximation of the percentage of fat in the milk. The methods in use are based upon the natural separation of the fat globules on standing, and estimating the volume in a graduated cylinder. Chevalier's creamometer, a type of this class of apparatus, is a cylinder 20 cm. high and 40 cm. diameter. It has a scale graduated from 5 cm. at the top downwards. The milk is allowed to stand from 24 to 48 hours. A centrifugal machine is used in many cases, with advantages over the above. The lactocrite is a special apparatus of this class, which has special parts for separating the cream and reading the amount from a register. It is attached to a centrifugal machine which can be made to revolve at the rate of 6000 revolutions per minute. The milk to be tested is specially prepared by putting in an ordinary test-tube equal portions of the milk and of a mixture of 20 parts of concentrated acetic, and one part of sulphuric acid. The test tube is closed with a cork in which is fixed a glass tube, shaken, and heated for ten or fifteen minutes in a water bath with frequent shaking. This is now placed in special cylindrical boxes, arranged on so as to be revolved, and at a temperature of 50 or 60 C., they are revolved for three to five minutes. At the end of this time the fat has completely separated and its volume can be read on the divisions of the glass tube. It is estimated that with the lactocrite 48 determinations of fat can be made in an hour with only a difference of .05 per cent. between its results and those by the Adams's method (Blythe). Says Faber, "These very favorable results are of importance as showing that in the lactocrite is at last found the long-wished for apparatus, possessing the two qualities not hitherto combined simplicity of construction and working, and sufficient correctness for all practical purposes. The lactocrite will, no doubt, be found invaluable for butter dairies or dairy factories buying milk from different farmers, by enabling them to carry out the system of paying for the milk according to the amount of butter fat, which is the only fair system." The estimation of sugar is by evaporation of the water and extracting the sugar by alcohol. It is troublesome and has no practical value for the ordinary worker such as the Medical Health Officer.

The biological examination of milk has not yet been advanced to such a point as to have for the health officer any practical bearing.

CLIMATOLOGY.

Aiken (S.C.) as a Health Station.

Through the kindness of Dr. Malloch, of Hamilton, a member of whose family we are pleased to learn is obtaining much benefit from a residence during the winter at this southern health resort, we are indebted for a copy of Dr. W. H. Geddings' (Aiken) pamphlet on the above subject. The work is based upon observations, taken by Dr. Geddings during a period of five years, on the climate of the place. Discussing first the desirability of a study of climate in its therapeutic relations, and indicating its availability especially in chronic diseases, he refers to the height above the sea level as being a point of importance. Aiken differs from Colorado in its being only 500 feet above the sea level, thus making change from sea-level scarcely noticeable. In this regard it would suit well Ontarians, as here the level varies from 200 to 1500 feet. The soil is sandy and therefore warm and dry, while there are forests of pine extending about the town in many directions, both affording protection against the winds and influencing the rainfall. Regarding the second point of temperature, he points out what is now well known, that warmth is a variable term not depending in its subjective effects upon thermometric degrees alone, and states the important truth that "the figure of temperature representing the annual mean is perhaps the least important in forming an estimate of the comparative merits of different health resorts."

The winter mean (November, December, January,) is at Aiken 48.5° F., or one and a-half degrees lower than Cannes and Mentone, but six and a-half degrees higher than Pau. Boston winter temperature averages 18.11° lower, and Chicago 16.90°, while the Toronto average is in the neighbourhood of 13°. The mean temperature of autumn is a high one, being 71°, almost a summer temperature, since the August average there is 76°.

Again he points out what is of special moment, viz.: "that points of much greater importance than the mean temperature are the annual and daily extremes of heat and cold, and the rapidity with which these changes occur." At Aiken the average daily range from these daily observations throughout the whole year is 12.65°. San Diego, amongst all the American resorts, is the only one for which the Signal Service Reports give a lower annual daily range.

Intimately related with daily range is relative humidity. Aiken in this respect has a record admirably suited to consumptives, as the average relative humidity is only 64.04%, the general average for a normal climate being given generally as about 73%. When it is stated that steel instruments may be exposed for months without rusting, we obtain an idea of the moisture of the climate; as also when we are informed that the gray tree moss (tillandsia), an unfailing sign of moisture in the south, is absent from trees in the neighbourhood, and cannot be cultivated. Hyeres and Cannes alone of the Riviera stations have a lower relative humidity. With rare exceptions dew is not deposited at night at Aiken, and frosts are not very frequent even in mid-winter.

Fogs are, as would be expected, rare, and the amount of cloudiness is comparatively small, while rain is much more frequent in summer than in winter, the winter rains being usually drizzles. The average rainfall given is 46.48 inches (large compared even with Ontario and England); but of this 9.02 inches only fall in winter. This, however, is, as has often been remarked, no criterion of the dryness of a climate, as while some parts of India have a rainfall of 60 inches, England with not more than 30 inches, still has a moist, or island climate. Few American states have a less number of rainy days during the year than Aiken, while the towns of the Riviera have about the same number.

Summing up the general character of the climate Dr. Geddings says: "We find that it is moderately cool, quite dry, slightly variable, and that it has a larger proportion of fair weather than almost any American resort east of the Rocky Mountains. Comparing it with foreign sanatoria, we note that it has the same average winter temperature as Nice, Mentone and Cannes, but with a somewhat greater range; that in point of humidity it is superior to all of them, except Hyeres and Cannes, where the lesser percentage of moisture is in a measure due to the presence of the mistral." Geddings says: "Consumption, in its various stages, except the last, and in all its forms except acute tuberculosis and laryngeal phthisis," is benefited by Aiken, and advises it as a resort for such, and further suggests an early departure for the south, "so as to reach Aiken in time to enjoy the superb weather which usually prevails from the 1st of October to Christmas."

We propose giving in our issue next notes from the diary of a consumptive sent west who has sojourned in Colorado and is at present residing in Southern California.

MEETINGS OF SOCIETIES.

The Provincial Board of Health.

The first Quarterly Meeting of the Provincial Board of Health for 1888 took place on Tuesday, the 26th ult., the following members being present:—Dr. Rae, chairman; Dr. Covernton, Dr. Yeomans, Dr. Cassidy, Dr. Macdonald, Dr. MacKay and Dr. Bryce, secretary.

After the minutes of the last meeting were read and adopted, the secretary presented a large number of communications; one requesting the Board to investigate the typhoid epidemic at Ottawa, others referring to outbreaks of diphtheria in different places, and a number regarding the powers of Local Boards and the methods to be legally adopted for carrying out regular inspection of milk, dairies, etc., in compliance with the regulations sent to Local Boards. The action taken in connection with each was stated. The reports of standing committees being taken up, Dr. Covernton presented a report from the Committee on Epidem-

ics regarding quarantine defences. It was adopted, and the following resolutions were adopted on motion of Dr. Covernton, seconded by Dr. Yeomans:—

Whereas the Provincial Board of Health of Ontario have reason for belief that the quarantine station at Grosse Isle would gain great additional power in the work of protecting the inhabitants of our Dominion from the entrance of infectious diseases, by certain additions to the very admirable provisions already adopted, be it resolved that the following additional improvements be urged upon the Dominion Government: First. A steam launch or boat of sufficient size, strength and horse-power for boarding in all weather, day and night, vessels in the offing waiting for clearance. Second. Repair and extension of the western wharf sufficient for permitting vessels, on board of which, during the voyage, cholera and small-pox had occurred, to ride at anchor at low tide during the process of disinfection of such ships. Third. Requisite buildings at the extreme end of the extended wharf for a fumigating furnace, reservoir and exhaust fan, for all persons, baggage and wearing apparel which shall be removed from the ships to this building for purposes of thorough disinfection. Fourth. That as the present service is a day and night one for eight months in the year, and thus the medical superintendent and his assistant are debarred from practice, the salary of the superintendent should be an adequate one, as also that of his assistant. Fifth. That at the meeting of the Association of Executive Officers of Health of Ontario, convened for the 14th of February next, the members of the Provincial Board, or committee thereof, shall bring this subject before said meeting and suggest the propriety of concerted action on this matter of guarding against epidemic disease. Sixth. That the chairman be authorized to appoint a committee from this Board to interview the Department of Agriculture at Ottawa during the coming session of the House of Commons regarding the questions involved in the above resolutions, and that the Quebec Provincial Board of Health be invited to join with the committee of this Board in the proposed interview.

Dr. Bryce read a report of the Committee on Epidemics *re* an investigation carried out by Dr. C. S. Elliott, M.D., by authority of the Board, into an outbreak of diphtheria in the Nipissing District. The report was adopted and satisfaction expressed at the interesting and thorough character of the report. Dr. Bryce further presented a report *re* the outbreak of typhoid at Ottawa, which was received and discussion thereon was adjourned.

2nd Session.—The Board met at 10.30 a.m., all the members being present. The reports of the previous meeting were read and confirmed, after which the Secretary presented a number of important communications, and introduced the question of enlarging the scope of the Monthly Health Bulletin. The matter was referred to the Committee on Publication. Dr. Cassidy thereafter presented a report from the Committee on ventilation on some experiments by Bouchard before the Academy of Sciences, Paris, "On the purity of expired air." The report, which will appear in MEDICAL SCIENCE, gave rise to an animated discussion, and was adopted on motion of Dr. Cassidy, seconded by Dr. Yeomans. The Board adjourned till 3 p.m.

3rd Session.—The Board resumed its labors, and after the minutes were read and approved, returned to the discussion of the report of the Committee on Sewerage and Water-supply in regard to the epidemic of fever at Ottawa. The report, after referring to the suddenness and widespread character of the outbreak, showed that its incidence was equal in all parts of the city supplied with Ottawa River water. After discussing the system of drainage, the superficial garbage deposits, etc., the report dealt chiefly with analyses of the river water. These, in brief, showed that the water since 1881 has constantly become worse in character, and that according to the analysis made in December last, it contains such an amount of albumenoid matter as to characterize it as being unfit for drinking purposes. The report recommended the boiling of the water in the meantime, the obtaining of the public water supply from a source less liable to contamination and fluctuation than the present supply, to make inspections of sewers, house drains and the notification of infectious diseases were strongly recommended.

The Committee on Epidemics reported further regarding the prosecution of investigations respecting inoculative protection of animals against anthrax, and the carrying on of experimental work in other departments of the work. The Committee stated that at present no facilities existed for doing such work by the Board, and introduced a memorial on

the subject which pointed out the duties which, by the Act, are laid upon the Board to carry out such investigations, and by a series of facts regarding the past imperfect work of the Board in this respect, showed the necessity of the Board being placed in a position as regards laboratory work and a money grant for carrying on such work in the interest of the municipalities of the Province. The report was adopted, and estimates to be submitted, amounting to $3,000 additional to the past year's estimates, were recommended.

Dr. Oldright, the delegate appointed by the Board to attend the Memphis Meeting of the American Public Health Association, presented an extended and interesting report on the important matters discussed there, many of which were referred to at length in his letter to MEDICAL SCIENCE in the January number. The Board then adjourned till 10.30 a.m. on Saturday.

The Board met at 10.30 a.m., Dr. Cassidy, in the absence of Dr. Rae, taking the chair. The minutes as amended were adopted, after which the report of the Committee on Legislation was presented. Dr. Cassidy then presented a report from the Committee on Publication, recommending that the scope of the Monthly Health Bulletin be extended, and that the various materials for publication in the annual report be approved. Dr. Macdonald thereafter presented a report of the Committee on sewerage *re* "Muddy Run" sewage investigation, at Niagara Falls. The report was adopted. Dr. Yeomans then presented a report on his inspection of the Ontario Vaccine Farm, at Palmerston. He briefly described the satisfactory methods which are adopted by Dr. Stewart, the care exercised in taking off the lymph, and the method of drying and preserving the *points* as recommended by Dr. Bryce.

The secretary presented a partial report of returns in answer to a circular issued to Medical Health officers. The report was received.

The estimates for the work of the coming year were, after discussion, approved of and the Board finally adjourned.

Toronto Medical Society.

STATED MEETINGS, *January 5th, 1888.*

The President, Dr. Nevitt, in the chair.

The Secretary, Dr. Wishart, presented a case of alopecia areata in a man about 30 years of age. Dr. McPhedran, whose case it was, had been unable to obtain any history pointing to the cause. The skin was not thinned and sensation was unimpaired. The area affected seemed unlimited. Several members considered it probably parasitic in origin.

January 12th.

Cases in Practice.—Dr. Graham related the following history of a case of obstruction where operation was followed by death in three days from uræmia. This case was received into the hospital on the 21st December, 1887, presenting a collapsed appearance—pulse 96, abdominal pain and tenderness, with stercoraceous vomiting. He was well up to three days previous, when he was seized with vomiting after a heavy breakfast. The abdomen was distended and tympanitic, with a small nodule above the external ring on the left side. No pain or tenderness here. Urine examined carefully—normal, no diabetic symptoms. Heart sounds normal.

Ether was administered very sparingly, and the intestine returned. Little trace of peritonitis was discovered. Bowels moved daily after the operation. As stated, death followed in three days with uræmic symptoms.

Post mortem.—Bowels normal. Intense cirrhosis of the kidneys.

It was suggested by Dr. McPhedran that the deleterious effects of the ether upon the diseased kidneys produced the fatal result.

Dr. Graham also related the following history of a case of Graves' disease: A lawyer, *æt* 56. Disease began twelve years ago and about two after marriage, with marked enlargement of the thyroid gland. Dyspnœic attacks began only about two months ago. Emaciation present with prominence of eyeballs. The gland was irregularly enlarged. Heart's action increased. Systolic bruit heard on line of third costal cartilage and down the sternum but not toward the apex. The patient was seized with retching after a hard day's work, and died in a few days.

January 19th.

Dr. Graham exhibited specimens and gave the following notes of a case of cirrhotic kidney with extensive hypertrophy and dilatation of the heart: J.B., *æt* 39, married; occupation, potter. Entered the hospital December 20th, 1887. Family history good.

Personal history: Had ague ten years ago, from which he had suffered six years. Since that time health had been good until two years ago, when he

caught cold in the harvest field. The cough accompanying it persisted all that fall and through the winter. It re-appeared one year ago, when patient complained of a shortness of breath coming on with the least exertion. During last summer paroxysms of coughing became more severe and frequent. He first noticed swelling of the limbs one year ago, the œdema being intensified after spasms of coughing. This condition disappeared and reappeared several times.

At the time of admission the dyspnoea and cough were very distressing especially when lying down. Face pinched and dusky. Skin presented circumscribed erythematous spots. The patient sits up or lies on his face, the breathing being difficult in any position. Pulse 108, irregular; temperature 95°; respirations 42; persistent sweating; intelligence good with vertigo at times.

No bruit to be heard over cordiac region. Apex beat not observable on inspection, and on palpation found very weak. The cordiac dulness extends from two inches to the left of the left nipple across to the right nipple, and from the third to below the sixth intercostal space.

Respiration is short and laboured. The infra-clavicular region is depressed and respiratory movements more vigorous on the left side.

Behind, the vocal fremitus diminishes as the lower margin of the lungs is approached. Small mucous râles heard over greater portion of the back; (these afterwards almost entirely disappeared), no special dullness in lower portion of the chest on either side.

Urine scanty; sp: gr: 1025 with large amount of albumen.

Patient died Jan. 4th, 1888.

Post Mortem—Left pleural cavity was filled with a serous fluid and left lung slightly adherent posteriorly, compressed and œdematous in part. The right cavity was filled with fluid and lung adherent throughout, the upper and middle lobes congested, the lower one fibrous. The pericardium contained from eight to ten ounces of serous fluid and on the left side the heart was adherent to the sac. The heart itself was dilated and hypertrophied more especially the right ventricle; valves all free.

The upper surface of the liver was adherent to the diaphragm. The kidneys were contracted and contained cysts with cicatricial tissue dipping down into the kidney substance. The capsules were adherent. The kidneys weighed only some five or six ounces each.

Remarks:—The case presented some interesting features both in the diagnosis and pathology. It was difficult to differentiate between a dilated and hypertrophied heart and effusion in the pericardial sac. The cause of the weak apex beat or impulse was probably owing to the fact of so much effusion present. From the time the patient entered the hospital the heart symptoms were and evidently had always been the most prominent. There were no symptoms of uræmic asthma. The changes in the heart and kidneys seemed to be synchronous.

Dr. McPhedran thought that the weakened impulse was due to the fact that the apex in all probability did not strike against the chest wall owing to the right side of the heart being enlarged and impinging against the wall of the chest.

Dr. Spencer asked if strophanthus had been largely used as a heart tonic in similar cases. In a case marked by indistinct heart sounds, pulse 100, dyspnœa, urine scanty (℥viij) and albumenous, freshly infused digitalis had had no effect, when five minim doses of strophanthus three times a day brought down the pulse to 70 and increased the quantity of urine passed to thirty ounces.

Dr. Ferguson had obtained relief from doses of ten minims twice a day in a similar case.

Strophanthus had not been given in the case cited. In answer to a question Dr. Graham said he was not inclined to accept Mahomet's statement that 75% of the cases of granular kidneys died without the lesion being discovered. He believed the defective diagnosis as a rule, due to imperfect examination of the urine.

January 26th.

Pathological Specimens:—Dr. Oldright exhibited a diseased testicle with tissues attached, and gave the following history of the case:—Patient had recently come from the old country. One year ago he noticed a hardness in the scrotum which had become slightly tender and had gradually enlarged.

On examination, a tumor was discovered closely attached to the testicle, also a hardness in the scrotum contiguous to a sinus which had formed from the bursting of a small abscess some time previous. The sinus was discharging a thin serous fluid. The patient had suffered from orchitis several years ago and gave a history of having received several blows

in that region. The glands of the neighborhood were not enlarged.

Judging it safer, Dr. Oldright removed the diseased structures. In operating, he had found it expedient to twist the vessels of the cord to arrest the hæmorrhage and had dressed the wound with subiodide of bismuth.

The patient suffered concurrently from gonorrhœa.

On examining the testicle and tissues a sac filled with pus was discovered. The organ itself was softer than natural, and of a dirty gray hue. It was thought there had been at one time an opening between the tumor and the sinus which had become closed.

Dr. Atherton thought it was well, as a rule, to tie the vessels of the cord in this operation lest they should slip into the pelvis and hæmorrhage occur.

Ottawa Medico-Chirurgical Society.

BY B. SMALL, M.D.

At the regular meeting held December 29th, the discussion on the recent typhoid epidemic was resumed. In addition to the members, there were also present Drs. McDonald and Bryce of the Provincial Board of Health and Dr. Cranston, of Arnprior.

Dr. Rogers was to have read a paper but he was not prepared owing to a misunderstanding as to date of meeting.

Dr. Cousens addressed the meeting. He divided the causes of typhoid into atmospheric, drainage, milk supply, polluted water. After considering each of these divisions, at length the first three were excluded as probable causes, the water supply offered the most likely explanation. The supply pipe was carried through a low and poorly drained district, the inlet was not far distant from the mouth of a creek where waters were contaminated by drainage of houses and near which there had been two or three cases of typhoid fever. Such facts he considered sufficient to warrant him in condemning the water.

Dr. Rogers objected to the argument that the city drains could be excluded and cited instances where they were defective.

Dr. Small thought there was not sufficient evidence to determine upon any one cause. He believed that local unsanitary conditions in connection with the unusual dry and mild season were a more reasonable explanation. The city was unfavourably situated for subsoil drainage, the city drainage was very imperfect, and there was no provision for the disposal of house refuse. The typhoid poison, which was present every season, simply flourished more luxuriantly and the fever became more general. As an objection to the water being a cause he stated that typhoid fever was more prevalent this year than usual in the county north and east of the city, for many miles from the river. Epidemics were also reported from many places in the United States.

Dr. Bryce was called upon and spoke at length on the results of his investigations. He agreed with the view of Dr. Cousens and had arrived at the same conclusions. He critizied Dr. Small's idea of fermentation of filth in the soil as a probable factor.

After some general remarks and vote of thanks to Dr. Bryce, the meeting adjourned.

At the meeting held January 13th, Dr. Rogers read a paper on typhoid fever and its causes. The subject was treated in a very able manner, the author upholding his view that the city drainage was the chief cause of the fever.

The discussion was continued between the adherents of the two opposite views.

Brant County Medical Association.

BY J. G. SUTHERLAND, M.D., SECRETARY.

The last regular meeting was held at Brantford, Dec. 7th, 1887. The President, Dr. Thompson, was in the chair. After the reading and adoption of the minutes, and other business had been attended to, Dr. Burt gave some points in the history of a case of carcinoma of the breast. The patient was of delicate constitution, aged 67 years, giving a cancerous family history, as her mother and sister had suffered from the disease.

He removed the breast, assisted by Drs. Philip and Sutherland. Several axillary glands, some of them very large, were also removed. A few cervical glands were enlarged; the enlargement being probably due to irritation, as they had decreased somewhat in size since the operation. The sponges, etc., used in the operation were soaked in a carbolic acid solution, and the wound had healed by first intention.

Several of the members present discussed the removal of cancers, touching on the means to be

employed; indications for and against removal, repeated removals, and the question of prolongation or shortening of life by such operations. With regard to the latter point, the opinion of the members was that life was made much more pleasant, and was prolonged by operation in most cases.

Dr. Griffin spoke of a case in which repeated operations had been performed, the patient getting a new lease of life with each operation. Dr. Philip assisted at the removal of a breast, which was shown to be cancerous, by the microscope, in which the disease had failed to return after a period of seven years.

Dr. A. J. Henwood and Dr. Secord were appointed to provide notes for the next meeting, which should form a ground work for discussion.

The Association of Executive Health Officers of Ontario.

The second annual meeting of this Association is convened by Dr. J. Coventry, Windsor, Chairman, at Toronto, for 14th and 15th February, in the Normal School building. This association of workers is making rapid progress, and, judging from the work outlined in the subjoined programme, a splendid meeting, pregnant with good results, may be expected. The Association may deem itself most fortunate in being able to obtain several prominent scientists for special papers. Prof. Wright, of the University of Toronto, is known as a biologist to every one, while Prof. Vaughan is the Professor of Hygiene at Ann Arbor, Michigan, and has charge of the Laboratory of Hygiene, now being erected. We commend the meeting to our readers, and especially to the many who are engaged in active public health work.

PROGRAMME.

TUESDAY, FEBRUARY 14TH.

First Session, 2 p.m.

1. Opening Exercises.
2. Minutes of last Meeting; Report of Executive Committee, and Enrolment of new Members.
3. *(a)* Report of Committee on House and Land Drainage, and Disposal of Sewage: presented by C. S. Elliott, M.D., Chairman, and Members of Committee. *(b)* Methods of dealing with City Sewage; by P. Drayton, Esq., Chairman Local Board of Health, Toronto.
4. Report of Committee on Ventilation of Houses, Schools and Public Halls; presented by R. B. Smith, M.D., Chairman, and members of the Committee.
5. Food; its Adulteration and Unwholesame Supply; presented by C. McLellan, M.D., Chairman, and Members of Committee.
6. Milk supply; its Sources and Pollution; by J. B. Lundy, M.D.
7. Late improvements in Milk Analysis; by W B. Nesbitt, B.A., M.D., Toronto.

Second Session, 8p.m.

1. Opening Exercises.
2. Address of Welcome; by P. Drayton, Esq., Chairman Local Board, Toronto.
3. President's Annual Address; by J. Coventry, M.D., Windsor.
4. Address on "The duty of the State in investigating the Causes of Diseases."
5. Paper on Methods of Biological Analysis of Drinking Water; by Prof. R. Ramsay Wright, M.A., University College, Toronto.
6. Compensation of Officers of Health; by Francis Rae, M.D., Chairman Provincial Board of Health.

WEDNESDAY, FEBRUARY 10TH.

Third Session, 10 a.m.

1. Opening Exercises.
2. Election of Officers, and Report of the Secretary-Treasurer.
3. Report of the Committee on Water Supplies and their Pollution; presented by E. Griffin, M.D., Chairman, and Members of the Committee.
4. *(a)* Report of Committee on Removal of Night-soil and Garbage; presented by G. C. Carlisle, Esq., Chairman, and Members of the Committee. *(b)* Cremation of Town Refuse; by Dr. Oldright, M.A., M.D., Medical Faculty University of Toronto.

Fourth Session, 2 p.m.

1. Opening Exercises.
2. Report of Committee on Control and Prevention of Disease; presented by J. Coventry, M.D., Chairman, and Members of Committee. *(a)* Report of Committee on Dangerous and Unhealthy Occupations; presented by S. H. Fee, M.D., Chairman, and Members of Committee. *(b)* Sanitary Condition of Factories in Ontario; by C. Brown, Esq., Provincial Inspector under Factories' Act.
3. Report of Committee on Sanitary Legislation; presented by J. Sweetland, M.D., Chairman, and Members of Committee.
4. Report of Committee on Statistics and Printing, including the Report of the Executive *re* the Incorporation of the Association; presented by the Secretary-Treasurer.

Arrangements have been made with the Grand Trunk and Canadian Pacific Railways by which Delegates presenting certificates at point of departure will be entitled to a one-third return fare. All Delegates desiring certificates will apply to DR. P. H. BRYCE, Secretary-Treasurer, Toronto, at once.