

Vol 1 1/12

11

# MEDICAL SCIENCE

ISSUED MONTHLY

VIDEO MELIORA PROBOQUE

TORONTO, OCTOBER, 1888

## CONTENTS

### ORIGINAL ARTICLES

Nature and Treatment of Diphtheria—A Paper read before the Toronto Medical Society by Peter H. Bryce, M.A., M.D., Toronto.....	353
Social Problems—A Paper read before the Lindsay Convention, by Daniel Clark, M.D.....	360

### EDITORIAL

Zymotic Diseases.....	361
An Ontario Sewage Farm.....	365
Infantile Convulsions.....	366
Opening of the Medical Schools.....	367

### INDEX OF PROGRESS

MEDICINE.—The Comparative Pathology of Eczema.—Eclampsia and Albuminuria in Pregnancy.....	368-372
SURGERY.—Treatment of Aneurism.—Treatment of Ununited Fractures.—Surgery of the Brain and Spinal Cord.....	372-375

OBSTETRICS.—Opening Address of Section on Obstetric Medicine at British Medical Association Meeting.....	375-376
THERAPEUTICS.—New Vesicant.—Codeine and Morphine in Diabetes.—Antipyretics.—Cresylic Acid.....	376-377
BACTERIOLOGY.—Preventive Vaccination of Asiatic Cholera.....	377-378
CLIMATOLOGY.—The Climate and Environment Best Suited to Old Age in Health and Disease, by Prof. A. L. Loomis, M.D.....	378
STATE MEDICINE.—Grosso Isle Quarantine System, by C. W. Coverton, M.D.—Anthrax in the Guelph District.....	381-383

### REPORTS OF SOCIETIES

Congress of American Physicians and Surgeons, and the Ottawa Meeting of the Canadian Medical Association.....	383
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### GENERAL NOTES

384

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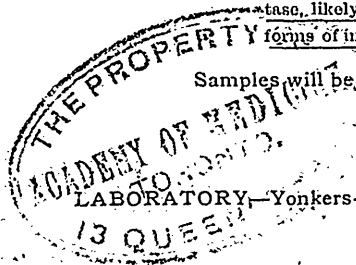
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# MEDICAL SCIENCE

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EDITORS

P. H. BRYCE, M.A., M.B., L.R.C.P. & S., EDIN.  
WILLIAM NATTRESS, M.D., M.R.C.S., ENG.

P. J. SYRATHY, M.D., M.R.C.S., ENG.  
W. B. NESBITT, B.A., M.D., C.M.

ADDRESS ALL COMMUNICATIONS, EXCHANGES, ETC., TO DR. W. B. NESBITT, COR. COLLEGE & McCAUL STS., TORONTO

ISSUED MONTHLY  
VOL. 1: No. *102*

TORONTO, OCTOBER, 1888

SUBSCRIPTION, IN ADVANCE  
\$2.00 PER ANNUM

## ORIGINAL ARTICLES.

### NATURE AND TREATMENT OF DIPHTHERIA.

A PAPER READ BEFORE THE TORONTO MEDICAL SOCIETY  
BY PETER H. BRYCE, M.A., M.D., TORONTO.

*Gentlemen*,—The subject of my paper is one so important in its nature and so extended in the many points necessary to its proper consideration, that it would be quite impossible in a single paper to deal with it in anything like a comprehensive manner. I shall, therefore, endeavor to do little more than point out some of the principal phases of the disease as regards its nature and treatment.

*1st. The nature of the disease.*—In the work on *Pathologie Interne* of Prof. Jaccoud, of Paris, the most illustrious of Trousseau's successors, a number of maladies are placed under the generic term *Angine*. To these he applies the specific terms,

Angine Catarrhale—muqueuse,  
" Parenchymateuse,  
" Fibrinense Diphtheritique;

And defines "Angine" in its most restricted sense to be "Inflammation of the back of the mouth and larynx." Besides having these as distinct maladies he remarks that we have them often forming a part of more general maladies, as scarlatina, etc., and then goes on, taking as the basis of this classification, the "*processus anatomiques*," dividing them as we have already seen.

In the first, we have *catarrh* where there is an undue development of epithelial cells and a copious discharge of serum containing *albumenoid* matter.

In the second, we have a much deeper seated inflammation, either acute, subacute, or chronic, with its exudation of serum, containing fibrin and leucocytes, into the submucous and follicular tissues as well as on the mucous surfaces, resulting, it

may be, in abscesses, or, in chronic cases, in permanent increase of the connective tissue, an hypertrophy, seen especially in enlarged tonsils, uvula, epiglottis, etc.

In the third, angine pseudo-membraneuse, there is a condition in which the characteristics of membranous laryngitis (croup), are applicable to the malady, except that in angine pseudo-membraneuse the mucous membrane is usually more altered than it is in croup.

By following out such distinctions it would seem that we are most likely to get a broad and practical knowledge of the various forms of *sore throat* which are met with in every-day practice, and which, before pathological conditions were made the basis of classification, gave rise to long years of bitter discussion concerning the identity of the French "*Diphtherite*," English "croup," acute laryngitis, spurious croup, etc.

*2nd. Definition.*—Dr. J. Rose Cormack's definition, in Quain's Dictionary, is comprehensive, and, though short is definite, especially as regards the local characteristics of the disease:

"A specific, contagious, asthenic, general disease, which sometimes prevails as an epidemic and is endemic in certain places. It is characterized by the exudation in various situations—particularly on mucous surfaces of the soft palate, uvula, tonsils, pharynx, larynx, trachea—of a peculiar cacoplastic lymph, which, together with the epithelial cells, generally forms a thick, tough, and stratified pellicle or false membrane—a stroma made up of mucous and epithelial cells, arranged in layers of cacoplastic exudation."

Referring briefly to some of the characteristics, as given in the above definition, we have:

*The specific character of the disease.*—Undoubt-

edly the disease is a zymotic, and probably due in most instances to microbes of a particular species. In regard to diphtheria, I believe, however, it to be, of all human diseases, the one to which a remark of Dr. Klein applies in a very special sense. He says: "Amongst the region of different species of micrococci and bacilli occurring in putrid substances, the great majority are quite harmless; when introduced into the body of an animal they are unable to grow and multiply, and therefore are unable to produce any disturbance. But some few species there are, which although ordinarily growing and thriving in putrid substances, possess the power, that when introduced into the body of an animal they set up a specified disease."

Regarding the culture and inoculation experiments which have been carried on up to date, with the bacteria found in diphtheritic membranes, Sternberg has summed them up by saying, after discussing the experiments of Oertel, Eberth, Waldeyer, Klebs, Formad, and Woods, and giving those of his own:—

"It is apparent from what has been said that the micrococci, bacilli (Ewart), and fungi (Leitzerich), which have been supposed to be the cause of diphtheria, present no morphological characters by which they can be distinguished from similar organisms which are found in the mouth and fauces of patients suffering from another disease in which the throat is involved, *e.g.*, scarlet fever, and of healthy individuals—at least so far as the micrococci are concerned."

He adds, "Morphological identity cannot, however, be taken as proof of physiological identity, and indeed we have ample evidence that certain organisms demonstrated to have pathogenic properties do not differ in form from others known to be harmless."

The experiments of Loeffler, carried out under the supervision and after the methods of Koch (1884), are the most recent of any I am aware of, and are definite in their statement of results. He discovered the presence of two distinct organisms, a micrococcus inoculation with which produced lesions like erysipelas, and a bacillus situated in the deeper tissues.

His conclusions are summed up as follows:—

1. The organisms were not discovered in every case; but this may be explained by supposing their

elimination during the course of the disease, as occurs in the case of other pathogenic bacteria.

2. The arrangement in the pseudo-membranes of rabbits and chickens (produced by inoculation) was not as typical as in cases of human diphtheria.

3. The application of the organism to the healthy mucous membrane gave no result; but it is not known whether a minute lesion is not necessary for the production of the disease in the human subject, and besides there is no tonsil with crypts and recesses favoring vegetation in these animals.

4. None of the surviving animals ever had post-diphtheritic paralysis.

5. The mucous membrane of twenty healthy children was examined with the result of finding bacteria once.

Thus from every source of information it would seem that we are daily obtaining evidence that the disease is an exhausting blood-disease in which the constituents of the blood and tissues are fed upon and altered, and the system poisoned by the products of sepsis.

From statistics and personal experience we know that the disease prevails more largely amongst young children, may remark *en passant*, that the dangers attendant upon a case of diphtheria vary much with the age of the patient. Ordinarily speaking, we expect diphtheria amongst children between the ages of 3 and 12 years.

Let us then take a typical case during this period of life. In most cases when called upon to visit professionally a child with diphtheria, we find our patient restless with hot skin, furred tongue, tonsils, uvula, and velum palati more or less swollen, hyperæmic, and in healthy children, usually of an arterial character. Should there be further an inflammatory exudation of a white, rather than creamy color, filmy and membranous, we are in a position to say with much certainty, especially when the disease in addition is endemic in the neighborhood, that it is a case of diphtheria we have to deal with. Especially is this true when the membrane is closely adherent and not removable without hæmorrhage.

We are made still more certain when there is a history of dullness, lassitude, and loss of appetite for two or three days previous.

In a special sense, therefore, we have to devote ourselves to the ends of preventing as far as possible the development of septic organisms in our

patient, to the destruction of those thrown off from his body, and to the removal of the external conditions favorable for the development of these organisms, whether in the sanitary conditions of the house and premises, or of the room where the sick is present.

These preliminary observations regarding the disease we have to deal with having been made, we may now devote ourselves to the clinical aspect of the malady proper. For the purposes of discussion and the elucidation of points in practice, I conceive that the better plan will be to further develop our subject by following the course of a typical case of diphtheria from its incubation until final recovery or death. Of 31 cases of diphtheria seen by me during the past year, I find 9 between 1 and 5 years, 11 between 5 and 10 years, 11 between 10 and 35 years.

Should the invasion be sudden and acute, it is not uncommon to find gastric disturbance, vomiting, and even convulsions in children of neurotic tendency. Sometimes, however, the symptoms are not as well marked, and as yet no membrane has made its appearance. Such cases present real difficulties to the practitioner. He asks, is it anything more than simple tonsillitis? There are, then, several factors aiding him to arrive at a diagnosis. For instance, there may be the history of exposure. A case seen in November, 1885, illustrates this. Two children had died in a house on Woolsley St., within a month before the time when I was called to see a sick boy. Most of the symptoms mentioned above were present, but membrane had not appeared. I said, "At present I cannot say that the boy has more than tonsillitis, but to be safe, he must be isolated." The membrane appeared within thirty-six hours.

Again in the case of the mother of a child on Denison Avenue, which had been well some six weeks. There was on the evening I saw her every evidence of an ordinary tonsillitis. As she was rather delicate, had been rather worn with nursing, and as, moreover, the exposure to the child could not very readily have been the cause, I said it was probably not diphtheria; but to provide against contingencies, put her at once to bed. Membrane appeared within twenty-four hours, and she was confined to bed for three weeks, and made a very tedious recovery. But at times we are not helped toward a diagnosis in this way. In the be-

ginning of June last, I was sent for at night to see a child on Robert Street. There was but little fever, the tonsils were not greatly enlarged, and showed evidences of chronic hypertrophy. There was a small amount of cheesy exudation, apparently follicular. There was no history of exposure, and I had not seen a case of diphtheria since March. I was suspicious, but considered it probably tonsillitis. I, however, isolated the child and did not use the continuous steam apparatus. Great irritability of the stomach remained present, general depression was apparent, glandular enlargement became very great on the third day, and one of the most serious cases of diphtheria I have seen during the past year developed.

Notwithstanding these difficulties of diagnosis mentioned, to which others might be added, I would say that there are several points which seem to have been of use to me in aiding to decide a case as being diphtheria. One of these is the character of the pulse. It may be a fancy of mine, but I have detected so peculiar a pulse in a number of children, about whose throat nothing had been mentioned, that I have been led to suspect diphtheria, and on examination of the pharynx, have found membrane present. I may fail exactly to describe it, but I can only use the word *oppressed* in regard to it. Usually it is rapid, indeed always when the other symptoms of fever are acute; but it is not always, especially in what may be termed sub-acute cases. Jaccoud speaks of a hard pulse, as in the case of inflammation of serous membranes, but what I speak of seems to me a something hardly expressed by this term.

Another point is the frequent absence of a *cold*, of but slight or no sore throat, and often but little swelling internally, and then only on one side, and none externally.

From all I have said, it seems quite evident that we have very many divergences from the normal type of the disease, especially in its early stages.

Returning, however, to our typical case, where there is no doubt as to the nature of the disease, what course are we to pursue?

First, we are to isolate our cases. Now I do not imagine that anyone present fears I am going to give a sanitary lecture when I place this first amongst the measures for the treatment of diphtheria. Besides the safety of the other inmates of a house, the procedure has a most important bear-

ing on treatment. Its advantages are several. It means to the parents that you have a true appreciation of the disease and that you wish them also to have the same. It further means that it will be necessary that one member of the household is to devote himself or herself entirely to the patient. It makes it quite possible to have every article of furnishing, except a cot, stand, and chair removed from the sick room, and it further enables you to ventilate the room to a degree that would be uncomfortable to other children not in bed. In every case the patient ought to be put in bed and kept there, both for safety and convenience of treatment. And finally, while it makes it practicable to use constantly disinfectants in the sick-room which might be unnecessarily disagreeable to the rest of the household, it will be convenient for the nurse, if forced to leave the room for rest, or other absolutely necessary duties, to disinfect hands and face, and leave her cap and overall cotton garments, emerging comparatively harmless to the other members of the household. Incidentally here it ought to be mentioned, that the moment the patient's needs are attended to, a thorough sanitary inspection of the whole premises ought to be instituted, not more for protection of the healthy than for a favorable progress of the patient. This being done, my usual practice is as follows:—

Prescribe,

℞ Fl Ext. Jaborandi ʒss.  
Tinct. Aconiti ʒss.

Fiat mist.

Sig., 12 drops in twelve teaspoonfuls of water, one teaspoonful every half hour, for two hours, and according to age every hour or half hour for two hours more. Then stop for four hours, and repeat if necessary.

Et. ℞ Tinct. Ferri per chlor. ʒiv.  
Potassæ Chloratis ʒi.  
Lig. Arsenicalis m. xx.  
Glycerinæ ʒss.  
Aquam add ʒiv.

Fiat mist.

Sig., ʒi. in water every three hours, after the stomach has become settled.

Et. ℞ Acidi. Carbolic (fort.) ʒviii.

Et. ℞ Spts. Terebinthinæ ʒviii.

Sig., To be used as directed, *i.e.*, by adding to a pint of water in a shallow pan ʒi. of carbolic acid and ʒii. of turpentine as often as required.

I have for some time been in the habit of placing such pan on the top of a small coal-oil stove, placed close to the bedside on the window side of the room if possible, while a triangular-shaped tent is arranged, with a sheet and a few tacks, over the stove and child. By such an arrangement, the temperature of the air about the child can be readily kept at about 75° F., while the window may be drawn down a number of inches for the entrance of an abundance of fresh air, which not only is prevented from blowing upon the patient, but with the warm air under the tent also creates a current, the moist medicated vapor always moving over the patient.

Finally to this list I add:

℞ Acidi Lactici ʒiv.  
Glycerinæ ʒiv.  
Aquam ad. ʒii.

Fiat mist.

Sig., To be applied with large cotton swab to the membrane every three hours.

Such, then, are the medicaments with which I have been in the habit of beginning the treatment of diphtheria, and which, with a wholly milk diet from the outset supplemented by the use early in the sickness, according to the strength of the pulse, of the best seven-year-old whiskey, have been almost invariably continued throughout the disease without any great or necessary change. It is quite apparent that, to get these various pieces of artillery brought to bear with effect upon the enemy, it requires some little time and trouble; but there is not one of them which I think it advisable to dispense with, or which, in any case omitted or neglected, has not made the neglect or omission sensibly felt in later trouble and anxiety.

Should anyone deem these details unnecessary, my own defence must be results, and the words of Dr. J. Rose Cormack, which exactly state the case. Referring to the treatment of diphtheria, his first words are, "Few diseases more severely tax the ingenuity and therapeutic resources of the physician than diphtheria. He has to devise and carry out innumerable little details—hygienic, dietetic, and medicinal—which do not admit of minute description, and yet upon the minutiae of which success or failure frequently depends."

It will now be proper for us to retrace our steps and briefly examine the reasons for a line of treatment similar to the one just outlined.

As we know, the effects of the disease on the system are various; but the more important are those summed up by Jaccoud, viz., changes in, (1), calorification; (2), nutrition; (3), circulation; (4), innervation.

*Changes of Calorification.*—It is at the onset and during the first few days of the disease that changes in calorification or temperature are usually most marked. As it is during this acute inflammatory stage that the formation of membrane is greatest, I consider it most important that we should reduce temperature as early and to an extent as great as possible compatible with safety. The drugs jaborandi and aconite in this sthenic stage may be used as indicated for twenty-four hours with perfect safety. Their combined action effects several useful purposes. They lower temperature, promote free secretion from the inflamed mucous glands, reducing thereby the mucous congestion, cause the dry, hot skin to become moist and healthy, and lastly, in a marked degree, allay, especially the aconite, the congestion and irritability of the stomach, and so enable us, at an early date, to utilize our remedies directed towards the second all-important point of supplying nutrition. It is, indeed, most gratifying to watch the effects in a few hours of the exhibition of these medicaments. The restless, fevered child, unable to take even milk without vomiting, often becomes soothed, cool, and comfortable, drops off into a restful sleep, and wakes more or less refreshed with a system prepared for heavy doses of iron and the frequent administration of milk. At times an early dose of castor-oil or camell may with advantage be given as soon as the stomach is settled. Should the pulse remain good and fever continue high, I have frequently continued the antipyretic in lessened doses during the first forty-eight hours.

Whatever may be the advantages of quinine or soda salicylate during hyperpyrexia at a later stage, the irritability of the stomach, as well as their disagreeable taste, make both objectionable in the case of children at this stage of the disease.

*Changes of Nutrition.*—As already stated, it is of prime importance for the successful treatment of diphtheria, that sufficient nourishment, to in some degree counteract the rapidly-wasting character of the disease, be administered almost from the beginning. In several cases which I have seen during the past year, which have terminated fatally,

anorexia, extreme irritability of the stomach, harsh skin, and failing circulation with cold extremities, have been characteristic, and I cannot remember a single case in my experience, in which this stage has been reached, that has rallied. They have not died from local trouble, but simply from the destructive effects of the intense toxæmia.

I have already said that the whole treatment is of a most exacting and troublesome character, but if we desire success, we must labor for it. In the matter of nourishment, I lay down the strictest rules from the beginning, stating that from one to two quarts of milk must be given every twenty-four hours. Should I find that the child dislikes the milk and that the nurse gives way to its fancy, I make it an invariable rule during my two, usually, daily visits, to see that the child gets at least two good drinks; and when the nurse finds that the child can take it without vomiting, and when the child learns that it must take it, success in this direction will usually quickly follow. Should the pulse reach 120° I make a practice of administering whiskey, almost from the first, increasing it gradually, giving at times ʒss. every three hours. My usual directions are ʒii. every two hours, in a little water, alternated with milk or milk and limewater in sufficient amounts. After having been once regulated, I have found the bowels to give but little trouble.

Regarding the iron tonic, it is begun as soon as the stomach will retain it, and is pushed with unremitting care. It is almost invariably well borne.

*Changes of Circulation.*—Little more than has been said under the two preceding heads need be added on this point. In respect to one point, however, in relation to the circulation, I must wholly differ, as already indicated, from the directions given by two eminent authorities, Dr. J. R. Cormack and Dr. Morell McKenzie. By both it is directed that the temperature about the patient be kept at 60°–65°. Now, in my opinion, it is of the greatest importance that the temperature be kept nearer 80° F. than 60° F., since free peripheral circulation is a *sine quâ non* to the lessening of internal congestions. This is done by the coal-oil stove and the tent in the manner which I have already indicated. The reasons why such peripheral circulation should be kept free, are several. Of these, we may state:—

1st. That to keep the head and throat at 60° F., while the rest of the body covered with bed-

clothes, is kept at a normal body temperature, must have a tendency to produce those bad results which we all know result from unequal exposure of different portions of the body, in a delicate state of health, to different temperatures.

2nd. That at this temperature the skin does not act feely, and as a consequence the glandular swellings of the throat appear earlier and more pronounced than if the peripheral circulation were free.

3rd. That in proportion as the peripheral circulation is impeded or is not kept active, the excretion of the poison of the disease by the skin is imperfect, and as a consequence, not only are the vital powers depressed but the irritability of the stomach is increased and its desire for food proportionately lessened. The only argument which, I imagine, can be used in favor of a temperature of 60° F. is that it is less exhausting than the higher one of 75° F.; but when we notice, as I again and again have, the comfort which the warmth and steam gives, the freedom in very large measure from glandular swellings, when this treatment is continued from the onset of the disease, and the great capacity even desire which the stomach shows for food, I can only say that not only have I found these benefits more than counterbalance any *à priori* bad results, but have also found that injurious results have frequently followed the neglect of the precaution of keeping up a high temperature.

It may be as well to complete at this point my remarks regarding the medicated vapors. Most of the authorities writing about medicated vapors, indicate the necessity for their use, or at least for the use of steam alone; but none that I remember, insist on the continuous use of vapor, and especially of medicated vapor. Stated briefly, the advantages of it seem to me to be:

1st. Its readiness of arrangement and inexpensiveness, even to a poor family.

2nd. Its continuous supply of an even temperature regulated by the nurse, who keeps a thermometer hung up under the tent.

3rd. Its constant evolution of volatile vapors, which inhaled, produce a healthy stimulating effect on the mucous membrane, and to some extent an antiseptic action.

4th. Its constant supply of carbolic acid vapor, antiseptic as an inhalation and to the air of the

room. We are aware how much is being said on the one hand at present, of the uselessness of carbolic acid as a germicide, except in strong solutions continued for a time, and on the other, of how its antiseptic properties are vulgarly supposed to aim fatal darts from the shallow sides of saucers, sitting about the room, at any micro-organisms within the four walls of the room.

I think we have a right, however, to judge by results of the antiseptic properties of carbolic acid, when properly and continuously used in a room. At all temperatures from 60° F. to 212° F. it becomes increasingly volatile, but at 60° F. Hassall has shown that not more than one-half per cent. is volatile or given off by evaporation. Now I have only to say in a word, that whether this is the sole or partial reason, I have not during the past year that I am aware of, had second cases of diphtheria occurring in houses where these vapors were continuously given off in the sick-room, except in the instance of a mother who remained in the sick-room, and who in swabbing the throat was necessarily much exposed to the child's breath.

I have never been able to detect any marked injuries following the use of these vapors.

Referring to the question of swabbing or sponging the throat with solvents, there is, I confess, room for discussion. Personally, I may say that with children I at once set aside the question of a spray, as not one child in a dozen will, or can, summon up enough of courage to allow of its use for a length of time sufficient to produce any good effects. As regards the use of a large, soft swab of absorbent cotton, I think the practical results to be obtained during the first five or six days of the exudation of membrane are such as to make the use of the swab in most cases justifiable and desirable. My experience, I may say with solvents, has been almost wholly with lactic acid. Every writer agrees that it is a solvent of membrane. If a child has been well-trained there is usually not much difficulty in getting the throat swabbed, except with children under four years of age. If the pulse is good and the formation of the membrane is free and rapid on the tonsils and soft palate, I have the solution applied by such to the part every three or four hours. If the child is nervous with a rapid pulse and is very much excited and struggles when the throat is swabbed, I am inclined to the opinion that the effects of the struggling may be

such as to more than counterbalance the good effects of the removal of membrane. From analogy, I hold the belief that apart from the greater infectiousness to the air of the room of large masses of gangrenous membrane in the fauces, nose, etc., the absorption of the gases and microbes from it are almost certain to intensify the septicæmia whether it be *post hoc* or *propter hoc*. I have never yet seen the thorough use of the measures herein indicated followed by those toxic symptoms of sepsis in the blood, the almost invariable forerunner of a speedily fatal termination of the case.

I have thus in as brief a manner as possible pointed out the chief practical points in the treatment of the disease, and which, in my experience, have, if thoroughly carried out from the early stages of the disease, proved sufficient to prevent the necessity in most instances for the adoption of other measures.

There are, however, some remarks which I deem it of the greatest importance to make, regarding the duty of the physician after the first nine or ten days of acute disease have been successfully passed. The membrane has very largely ceased forming, the prominence of the local symptoms is passing away, and the physician who has had a comparatively mild case to deal with, or one who has not seen the disease frequently in its varied forms, is inclined to consider the case well advanced toward recovery. He perchance says so; relaxes his vigilance, and the friends following his example do the same in an increased measure, and thus an opportunity for the slumbering, though by no means exhausted disease, to re-assert itself is given. The delay frequently in the appearance of membrane after the invasion of the disease, the often prolonged incubation of the disease subsequent to exposure, and the chronic exudative tendency of the disease in other instances, all point, even if unfortunate experience has not, to the fact that a favorable progress with complete disappearance of the membrane in the pharynx at the tenth day, by no means indicates that danger from this cause has passed away. The only instances of tracheotomy amongst my own cases have been in consequence of secondary appearance of exudation, not in the pharynx but in the larynx, while in other instances I have known the system now debilitated, when exposed to cold, sink very rapidly from the septicæmia and inability to take nourishment.

Another reason of even greater importance for continuing at this stage the early-adopted and successful measures, is that the danger of the contagion extending to other members of the family has by no means passed. Not till well toward the end of the third week in almost every case have I allowed the disinfectant and isolation precautions to be relaxed, and this point I signalize by delaying to give in an exact and minute manner the directions for carrying out a final disinfection of patient, clothing, and room. If I have any doubts about the ability of the heads of the house to do this thoroughly, I see that it is done or do it myself. The results have been satisfactory to the patient, and pleasing to the family, and myself.

These remarks made, there is something more to be said regarding the continued treatment of cases after the disappearance of the membrane. Often the iron tonic and whiskey with milk, continued for three or four weeks, answer every purpose; indeed they usually will; but I have thought from observing these cases that it is preferable to continue tonics by the administration of iodide of iron and minute amounts of arsenic and strychnine with cod-liver oil when the stomach can stand it. These aid in the prevention of post-diphtheritic paralysis, counteract the extreme anæmia often present, and when with these can be associated a change of air, a few months will afford a complete recovery, except that the respiratory tract remains for a long time more than usually subject to cold. Such treatment carried out from the beginning removes the dangers in a very large measure of nephritis, and favors its removal if developed in any great degree.

Regarding laryngeal diphtheria, or croup, my experience during the past year has been limited to two cases, within the first four days of the onset of the disease, and I have seen no secondary developments, owing, I believe, to keeping my patients almost invariably in bed for three weeks. When croupous symptoms developed at an early stage of the disease,  $\frac{1}{4}$  of a grain of mercuric chloride, given every one-half hour to an hour for 24 hours with subsequent less frequent doses, has been successful in removing the trouble.

Whether or not it becomes our duty to not only treat cases which occur, but by every means try to prevent them, must be judged from the fact that at the rate of mortality amounts to nearly 20 per



1000 of our population, or  $\frac{1}{10}$  of deaths from all causes in a mortality of 20 per 1000.

To show the relative prevalence of the disease in Ontario cities, the following table may be found of interest:—

DIPHTHERIA IN 1896.

CITIES.	Height above sea level in ft.	Population.	Deaths.	Rate per 1,000 of population
Ottawa . . . . .	240	32,857	42	1.25
Kingston . . . . .	307	15,109	7	.46
Belleville . . . . .	270	10,171	2	.19
Toronto . . . . .	300	111,800	181	1.61
Hamilton . . . . .	740	39,985	71	1.80
St. Catharins . . . . .	583	9,882	1	.10
Brantford . . . . .	512	12,167	4	.33
London . . . . .	816	26,254	26	.98
St. Thomas . . . . .	592	11,157	3	.26
Stratford . . . . .	1,185	9,000	No returns	
Guelph . . . . .	1,100	10,134	5	.49

## SOCIAL PROBLEMS.

BY DANIEL CLARK, M.D., MEDICAL SUPERINTENDENT ASYLUM FOR THE INSANE, TORONTO; READ AT LINDSAY, ONT., BEFORE THE ASSOCIATION OF EXECUTIVE HEALTH OFFICERS OF ONTARIO, ON AUGUST 16TH, 1888.

THE several subjects touched upon in this brief paper do not properly come under the heading of physical health; yet they are very intimately connected with it, and may be looked upon as corollaries to the problems which engage the attention of this Association. Any subject which takes cognizance of the mental and moral well being of the masses in relation to law and order, is worthy of your consideration. Health is a generic term and includes the whole man in all his relations, personal, social, and municipal.

*Imprudence.* Chronic pauperism is almost incurable. The great tramp and vagabond army are irreclaimable by moral suasion. They live on the rural population in summer, and seek our gaols and poor-houses to obtain food and shelter without work during the cold winter months. They raid farm-houses and small villages singly, and intimidate females, who are usually alone in the daytime. They know quite well that food, and even clothing, can be extorted almost at will under these circumstances. Although two are seldom seen to-

gether, this army has a common band of union and is not only a menace but a drain upon the resources of industry. Such social banditti think that because they exist they have a claim for sustenance on a community without contributing one iota to its comfort, skill, and wealth. They seem to forget the economic law, that every particle of food we eat and every thread of clothing we wear, must be earned by somebody for their benefit. These unproductive classes are dangerous and are becoming chronic. The habit becomes so fixed of roaming about and leading a life of incident and adventure, that honest toil has no charms to the itinerant idler. This class is largely on the increase, and some measure must be taken by society to protect itself against these drones in the hive. The recruiting into this army must be stopped. The remedy may be, 1st, by anticipation in educating the rising generation, not only in morals, but in habits of industry, until work becomes not only a duty, but a pleasure, as it is to the most of us; 2nd, by compulsory imposition of labor upon the chronic and healthy vagabond. It would be a righteous and practicable check to laziness and imprudence.

He who is able to work and will not should starve. This is Scripture, and, as might be expected, it is common sense. An arrest of all vagrants who beg, to be followed by deprivation of food and clothing, would appeal even to the lowest and grossest natures. The "sponging" upon the industrious portions of humanity would virtually cease and *per force* habits of industry might be acquired. The English work-house is needed with plenty of land for summer work and easily-learned industries for winter employment. Such should have "no discharge in this way" against voluntary idleness, vice, poverty, and ignorance. This reformatory should not be for criminals, indigent invalids, or mental incompetents, but solely for the tramp who claims to beg only because he cannot find work. The law should say, "The country will find you work and will pay you for it in food and clothing, but your earning of them must be compulsory."

Some scheme of this kind must be adopted to protect society against the shiftless pauper or "neer-do-weell." These are eventually the petty thieves, and incendiaries as juveniles, and afterwards they graduate into the dangerous and criminal

classes, whom, finally, we are compelled to support in prisons and penitentiaries or have the expense of hanging them after serious crimes have been committed.

Labor is part of our religion, and is a moral work. Every healthy member of community should be compelled to be ethical in this respect. The working habit is the principal standard of a nation's capacity to produce comfort and wealth. Industry means a sense of right and wrong as well as a means of prosperity. The three most important laws which should be operative in every enlightened nation are, 1st, right principles; 2nd, industry; 3rd, useful skill as opposed to ignorance. Without these foundations we may pass laws without number, but we will fail to eradicate thriftlessness or reclaim the ignorant and vicious classes. Secular or sacred socialism, co-operative societies, and all the wisdom of commissions and reports, advocating the means to improve the condition of the so-called lower classes by the means of improved dwellings, higher wages, and less competition will be in vain (good as those agencies are in themselves), without good morals, honest industry, and more or less competitive skill in some forms of labor however lowly. We naturally fear to have in the ascendancy the dangerous elements which tend to disintegrate society, which means defiance of law and order, and destruction of those social and moral forces which are founded on natural affection or on the humanizing influence of domestic life. We see its demoralizing effects also when—for example—divorce has become a normal condition of society, and the integrity of the family is fast becoming a fiction. As a result there is no fixity of purpose or principle in a family thus temporarily united. Morals (including parental control over children) are reduced to matters of expediency. Divorce, in a majority of cases, scatters the offspring, hence vagabondage, vice, and crime, among those who have no family ties or virtuous associations.

In law marriage is held to be only a civil contract, hence the most grievous wrongs of the one contracting party against the other is not held to be a crime as it should be. Petty larceny, assault, or any crimes against property or person, are summarily and severely dealt with; but the violation of the most sacred ties and the wickedly trampling on the rights involved in a solemn contract have no redress but in a dissolution of the bond.

It should be a law of our land that the party whose acts have wantonly destroyed the marriage relation, should be treated as a criminal. Morals must sit loose on any people who allow on the statute book such causes as "incompatibility of temper" as a ground of divorce. The evil results will be seen in the condition of the rising generation.

Another important lever to raise the masses from vice and crime, is by imprinting on the minds of parents the necessity of looking after suitable mates for their children. "Thoroughbred" should not simply apply to stock-raising. A noble race must have a noble ancestry. Courage, mettle, constancy, truthfulness, and wearing power can be bequeathed to our children just as surely as we give them a heritage of a sound or an unsound constitution. Exceptions there are, but this is the law of nature. We ally strength to weakness and the result is weakness. We marry disease to robustness and the coming race has a tendency to disease. We link physical beauty to ugliness and we may expect few lines of loveliness in the offspring. We see parents with low intellects and we are not surprised if a Bacon or a Solon is not found among their descendants. We see a progeny springing from a low parentage of beastiality, of base passions; no morals, with surroundings more filthy and vile than those of the brute creation, and we do not wonder at such beings turning into vicious citizens or dangerous criminals. Their very organization is saturated with animalism. Like brutes they live and like brutes they die. We see this natural tendency to vice in that gigantic ulcer of society, called "the social evil." It is the curse of all our cities and towns. It is an acknowledged fact, that when you eliminate all the cases of such as have taken this mode of life because of seduction, desertion, and vile family example, there still remains a majority who have succumbed to passion and lust because of vicious instincts, intensified by an undue love of dress, and desire to lead an idle life. Such are naturally bad, and for such there is little or no hope under the best training and example. Their immorality is ingrained in their very natures. It is a rotten thread running through the very warp and woof of their being. This is a terrible vice which cannot be shaken off, and clings to society with death-like tenacity. It is a whited sepulchre full of rotten-

ness. It not only affects our morals, but in its foul practice it has infectious, constitutional and transmissible diseases peculiar to itself, which inflict untold injuries on the guileless and innocent. It is calculated that not more than twenty per cent. of the young men of cities escape its foul contamination. Through this source it is a self-perpetuating and disorganizing vice infecting innocent mothers and cursing children in their beginnings; dooming them to endure infirmities for which they were not responsible, even to the third and fourth generations.

The natural history of this insidious and monstrous evil shows that it cannot be destroyed. No power of law or grace has so far accomplished anything towards its extirpation, and these have been in force since the days of the libidinous daughters of Noah up to the present hour. If it be true that we cannot root it out, it is a matter of primary importance to consider if the poisoned fangs of the monster cannot be extracted by a legalized supervision of a necessary evil. It is evident that the less disastrous such an evil and vice can be made, the better for society and the race, now and forever. We need not legalize but we could insist on methods being adopted that would minimise the evil, not because of the transgressor for whom we may have little sympathy, but because of the innocent for whom at present there is no redress. We talk about being in this way "partners with sin," and "making compromises with iniquity," or "stamping with approbation an ostracised social vice." If we cannot get rid of small-pox, although it is a contamination, we do the next best thing, we vaccinate. We modify the evil if it cannot be prevented. This social vice is a taint in a beastly humanity, and we ought not to allow it to do its worst if we can check its consequences, seeing it cannot be got rid of. Many of us put on airs of self-righteousness and say to these frail waifs of society, "We will not attempt to modify the evil. Go and do all the harm you can to yourselves and mankind and then be damned eternally for all we care." We may not pity the courtesan plying her calling, we may not extend our sympathy to the dissolute frequenter of the ways of hell; but we owe it to our virgin daughters, pure mothers, and to generations yet unborn, that an evil for which so far no remedy has been found shall be brought within the controlling influence of law, sanitation

and thorough circumspection. When a social reformer can be found who can propound an efficient system to annihilate this vice, these safeguards will not be needed. There is a noble class of women I have always felt sympathy for in their daily struggles. They are among the heroines of to-day. These are among those classes of women—many of them beautiful and accomplished—who daily feel the pangs of poverty and cold neglect, yet rather than become lost to shame and virtue for gain, work early and late in our shops and busy centres of industry for a mere pittance, badly fed, poorly clothed, and often miserably sheltered. They could, like their fallen sisters who parade our streets in silks, shun for a time all these discomforts by leading a life of infamy, but they spurn the offers of lust and often die prematurely in penury and want, martyrs to virtue and duty. This continuous struggle has more true bravery in it, than is seen in the excitement and frenzy of the battle field.

Without taking a pessimist's views of the situation, it is evident that any steps taken to root the evil out will fail. The next best course is to make it odious. It should be driven to the outskirts of the abodes of men, so that it would need to be sought after by the vicious. It should be isolated like leprosy, and not allowed to flaunt itself in the face of youth and respectability in our city streets, and by appeals to passion leading our young people to degradation and ruin. Fines and imprisonments of the inmates of brothels have done little to check the spread of this plague. Numbers have been reclaimed, but the majority leave their cells more hardened than ever in their evil ways. I would propose as a check, that the property owners of houses of ill-fame be held responsible for their tenants, and that such fines should be imposed on them as would soon amount to confiscation, and that judgment given against them should be a first lien on the property. Then funds thus secured to be applied to building and maintaining a haven for such as wished to make efforts to reform. Destroy the nests and the birds must fly.

*Intemperance.*—It is a cause of crime in the lower classes of offences. It is a vice in itself; whether it has arisen from a habit or has been bequeathed. There is a great deal of silly sentimentality spent on the unfortunate drunkard. The

fact is, that a majority of this class are a poor "feckless," "fusionless" lot, and are drunkards instead of being vicious in some other direction. They have unstable minds naturally, and have little or no power to resist any habit which may contribute to their personal pleasure or comfort. From first to last, selfishness and gratification are at the bottom of their conduct. They like to be jolly and feel good, let whatever will suffer. Their desires override every other consideration. It is this element in their nature which makes so many of the so-called reformed drunkards profligates in their lives. If you take the highest intellectual type of such as seen in the peripatetic temperance lecturer, we find in a large number of such, habits of gross immorality of life, after their reform from drinking. It usually takes the lascivious form, but if not, their unstable minds show their warp in some other direction. Our ears are filled with the wail that, "The demon, alcohol, is continually dragging down to perdition the *best* of our country." This is supreme nonsense. With very few exceptions, as has often been said, every one who goes by the alcohol line would reach their destination by some other highway were this closed to passenger traffic. In the large number of cases, vice of all kinds is an effect, not a cause, a symptom or sign, not the disease. A nature by heritage or habit is weak and defective, hence vicious. Bad example, corrupt precepts, and contaminating surroundings are to many depraved natures only the match to ignite the powder, whose explosive power needed only the fire to manifest what was lying latent. The lighted match was only the *occasion*, not the *cause* of the liberated force. So whiskey *per se* makes no man inherently shiftless, improvident, lazy, roguish, a poltroon or brute, unless these are in his nature. These bad qualities must have been original factors in his being. Drunkenness only puts the man off his guard; when drunk he acts naturally. *In vino veritas* is an old Latin adage which contains philosophic truth.

Earnest temperance reformers of a genuine stamp are often disappointed at seeing their reclaimed friends so deficient in original qualities of goodness. When the drunken element is subtracted from the equation, it is found that little manhood is left. This applies to even those who have acquired this propensity of drinking by habit. After many repetitions of evil or good the bias in

that direction is formed and it is said to have become a second nature. This is strictly true, and any course of conduct continually pursued assumes a normal habit and virtually becomes a part of our nature. In this law of being lies the great resources of evil. "The devil," we are told, "delights to fish in muddy water," and here he indulges in his piscatorial pursuits to his heart's content. Physical disability, disease and moral obliquity are largely preventible. This is apparent everywhere in nature and in the region of law, without any resort to Utopian speculations. For intemperance the only effectual remedy is prohibition; but this must include all intoxicating drugs, or our last end will be worse than the first. Nature's cure for crime and vice is extermination. It is an economic function of nature everywhere operating and is "a survival of the fittest." As a rule, the debased classes are short-lived. "The bloody and deceitful man shall not live out half his days," is not the average of to-day. Such live, as a rule, less than half the average of life. Take a thousand of social pariahs, such as thieves, prostitutes, cheats, chronic drunkards, and rascals of all kinds, and watch their careers and it will be found that they are short-lived because of their profligate habits. Their weak natures become witnesses, judge, and executioner, and perform the office of extermination with commendable despatch. It is true the burglar, the forger, or the head of a band of outlaws, may be a sober and steady man with all his wits about him, but such are few in comparison to the rank and file. It is well for the community that so few leaders in evil follow a correct life, and that the masses of corruption are weeded out by nature's inexorable law.

History shows that in the profligate age, when the aristocracy revelled in all kinds of debauchery their direct descendants were soon destroyed because of immorality. Very few of the nobility of to-day can trace their immediate line of ancestry back two centuries. Tennyson's "daughter of a hundred earls," is a poetic fiction. Society has been said to be like a vat of good wine, scum and froth at the top, dregs and sediment at the bottom, and good, pure, clean liquor in the middle. Vice is a clarifier of a thorough kind, and its morbid work skims off the skum and draws off the dregs. This deadly agent improves our people, and were it not for its purifying

work it would fare badly for our race. This eliminating process is humane in one respect: such die as the fool dieth, but they think they are enjoying life and are drinking deeply of the cup of pleasure. To some extent this is true. Many forms of sin are doubtless, for large numbers, pleasant. Their moral natures are low, and conscience does not trouble them; so there is no cruelty in their cutting off. An early death of the vicious is always an advantage to relatives and to a community. Few such parasites and dangerous citizens live past thirty-five years of age; but the large majority fill dishonored graves much earlier in life. At this age well-behaved citizens are only entering upon their active duties. Society is better to-day than it ever has been in the history of the world. The bad are diminishing. They die sooner than formerly in our fast age. They propagate fewer of their kind, and a purer and physically healthier, although a more nervous race, is taking their place. This is nature's method, but human laws should assist this, beneficence of our being, not only by education, example, and precept among the young, during the plastic period of life, but also by methods of a radical kind which will prevent the increase of crime in all classes, especially in the army of defectives. It is to be remembered that crime usually springs from, 1st, vindictive impul-

ses; 2nd, selfish passions; 3rd, want of moral sense, *i.e.*, no conscience.

If these are the sources of law-breaking, it becomes our clear duty to the community, as well as an act of justice and mercy to the offender himself, to take him in hand as soon as a second conviction has shown that he belongs to the criminal classes, and in this way protect society against him in the only way in which all experience has proved it can be protected—by reforming him and incapacitating him until he is reformed. He has forfeited his citizenship by abusing it; he has made war against society, and it is for society thenceforward to decide his fate; he has given society a right to protect itself against him in the manner it deems most effectual. The history of ruffianism shows that short sentences are mistakes. The object of law should be to keep such from doing further harm. The hardened brute is let loose upon society after a short imprisonment and when he makes many as bad as himself, as the loosened devils are said to take to themselves seven others. First offences should have the punishment probational, but subsequent infractions of law should mean work and imprisonment until indubitable evidence is given of genuine reformation. Sentences should not be determined by time, but by conduct.

## EDITORIAL

### ZYMOTIC DISEASES.

"What's a' the steer kimmer?"

FOR two weeks the glory of an Italian sky made our metropolitan city of Toronto, by day and by night, a "palace of delights," lighted up during the two weeks of her world's Fair, with a brilliancy before unheard of, from transparencies breathing loyalty in every "welcome" and "royal crown," to Sebastopol conflagrations, and every-day and periodic electric lights. Two hundred thousand visitors said, "How beautiful!" and all visitors to the city and their many friends went home convinced the city was healthy, as well as beautiful, for not even the shadow of *pallida mors* was to be seen.

But the ubiquitous newspaper man, like a certain historic personage, is never at rest, and items had vanished with the fading show. Between the

hours of midnight, Saturday and Sunday, a Guy Fawke's plot had been hatched. It was certain that none would read anything not highly spiced after the hundred sensations of a previous fortnight. The cockatrice had lurked for a fortnight and had suddenly come out into broad daylight. Small-pox had seized—had been seizing—victims, and eternal smash was imminent. Another twenty-four hours produced in a single paper four solid pages of *potpourri*, with the heading, "An Inquiry into the Present Outbreak of Typhoid, Diphtheria, Small-pox, and Scarlet Fever—Latest Details." The effort was striking and effective. A morning paper was sold: gossip was supplied for the day. In a few days it was discovered that diphtheria was much less prevalent than for several years, typhoid not at all excessive in its prevalence, and that the small-pox was confined to two families. We do

not care to quarrel with the business enterprise of the "dailies," but we must protest against their methods of endeavoring to extend sanitary knowledge and to improve the public health. Sensational preaching is touching, but not effective in long-enduring results. Appeals to all the gods make these exalted divinities tired; and they are apt, if they deign to listen at all, to indicate to unfortunate suppliants, that attention to the details of physical law, day by day, and not spasmodically, and honest enquiry into their nature is the *iter ad astra* along which said divinities are willing to aid their *devotées*.

These health enthusiasts, however, do nothing by halves. We have examined with some degree of interest, the last report of the Provincial Board of Health, in which these questions have been dealt with at some length and important facts set forth. We have not, however, observed that this report has been even reviewed in a city newspaper; much less have its facts been set forth in systematic fashion. Further, we have published in the pages of this journal, reports of two successive meetings of the Association of Executive Health Officers of Ontario, during the past year, dealing with many and important questions affecting the public health, by medical gentlemen officially engaged in the work of municipal hygiene; and yet it was not convenient, or worth the while of these important educators of public opinion, to do more than refer by a badly-prepared Associated Press despatch, to the fact that such an association in August last, held a three-days' session in Lindsay. To say the least, such treatment is not encouraging to an association of gentlemen whose work, as the "dailies" have just been endeavoring to point out, is of paramount importance, viewed either from the vital, social, or commercial standpoint. Similarly we find some papers gravely advising all and sundry Boards and officials that something ought to be done, perhaps something terrible, *e.g.*, retaliate, shut out Buffalo importations, spoil the Canada Southern and Grand Trunk Railway trade: do anything, in fact, like the Mayor of Hamelin, to "rid the town of rats." We would be the last to deprecate every honest endeavor to enlighten the public in matters pertaining to the public health, and give all, who deserve it, credit for aiding through the public press in pointing out real dangers, when menacing society; but it would be more seemly and be-

coming, if, instead of preparing sensational articles, even though founded on fact, and of some utility, our public press would systematically and earnestly endeavor to enlighten both itself and the public, as regularly—and at least as honestly—as on matters of politics and religion.

#### AN ONTARIO SEWAGE FARM.

IT is with much pleasure that we have learnt that, after serious consideration of the many difficulties incident to the disposal of the sewage of public and other large institutions, which for various reasons are usually situated without the towns and cities, the Ontario Government has undertaken the establishment of a sewage farm at the London Asylum, for the purpose of conforming, on the one hand, with the law against the pollution of streams, and on the other of endeavoring to develop in the Province this scientific and economical method of dealing with the sewage of towns and cities, while removing a long-standing complaint which has been made against the institution by citizens of London East against the pollution of Carling's Creek, which passes through it and London city.

We understand that the system, while essentially that of Paris, Berlin and other Old Country places, has been adapted to the requirements of this climate, by the prominent American engineer, Col. Waring, of Newport. It is proposed that after the sewage from this building of one thousand or more inhabitants has been carried by house pipes and drains to one common tank, it be then sent by means of a Weber centrifugal engine and pump through an eight or ten inch pipe to a receiving tank at the field prepared for irrigation.

The method thereafter to be adopted is a combination of the broad and flat-bed system, the first being that in which advantage is taken of the undulation of the surface of the field—a sandy loam—to distribute sewage by several distributing ditches, some eighteen inches deep by four or five feet broad, and the second, or flat-bed system, is where a piece of ground is graded to an almost perfect level, after which it is divided into beds some eighteen feet broad, while between these ridges or beds are made ditches or furrows some eighteen inches deep and four or five feet wide, for receiving periodically streams of sewage like the

other distributing drains. Beneath the ridges parallel drains of field tile are laid some six feet deep. Soakage takes place from the ditches towards the tile drains by downward filtration. The flat-bed which lies all on the one plane is so made with a dip of about one foot in 200 that from the main distributing drain running across the end of the bed sewage can be intermittently supplied to each of the beds in succession, or according to the needs of the growing crop. The effluent from these tile drains is clear and runs off to the neighboring water course.

Such in brief is the system to be adopted, and with careful attention to details of management we anticipate from the farm the most striking, satisfactory and beneficial results, if we are to judge by the experience in other instances, which may be referred to.

In the Section on Public Medicine of the Glasgow meeting of the British Medical Association, a number of most interesting papers on the subject of sewage disposal were read. In the paper by Dr. Drysdale are some most interesting and remarkable statements regarding sewage farms. On the 1,500 acres of land irrigated at Gennevilliers, below Paris, twenty millions of cubic metres of the sewage were used in 1886. During the six years preceding, the population of the commune had increased 34 per cent., while the annual rental of land had increased from 90 to 450 francs per hectare (2½ acres). The experiment has proved so successful that the remainder of the sewage is to be utilized on 3000 acres at Achères. There have been raised at Gennevilliers 16,000 cabbages per acre, also 40 tons of beet-root per acre. The effluent was a palatable water, while irrigation and purification go on winter as well as summer. Each acre of suitable land could utilize 5,000 tons annually, producing 40 tons of mangolds, and five or six crops of rye grass each season, eight tons to each cutting. At Berlin 2,056 persons are employed on the sewage farms, which are a great success. There are 16,657 acres under irrigation, and these farms, it is stated, are so healthy that convalescent homes have been erected thereon. It is further stated that they pay an interest of 2½ per cent. on the capital required to construct and manage the works.

In a recent editorial in MEDICAL SCIENCE we referred to the work which has been carried on in

England and the United States in this connection, and pointed out what is possible for cities, where the sewage question presses most seriously for solution. We shall expect that the example set by the Government will be rapidly followed by many towns and cities in the Province; for with the now well-known system of separate sewers there is no town of any importance that would find such works a serious burden upon their finances (these being built for \$5,000 to \$7,000 per mile), while the immediate and indirect benefits, both to health in the employment of the town poor, and in supplying abundant and cheap vegetables would far more than recoup them for any apparently large temporary outlay.

#### INFANTILE CONVULSIONS.

THIS term for the popular so-called "fits" of children, has been still more exactly defined by Gowers, as infantile eclampsia, eclampsia having come "to be used as a name for the condition in which convulsions occur from other causes than primary states of the brain." We could not have better expressed, perhaps, an important fact in connection with this too common and serious disease, viz., that we are to look to causes other than cerebral in very many of the instances where we are called upon to treat the disease. We must, apart from exciting causes, place in a primary position of importance, heredity. What this means cannot be expressed in exact terms, but we will not be far astray if we state this condition as the result of the various inherited defects of constitution, dependent upon mal-nutrition *in utero*, affecting development of organs, both of digestion, assimilation, and elimination. Says Gowers, "The special liability of infants is probably due to the condition of development of the nervous system. At the time of birth only parts of it are structurally complete. Extensive tracts of fibres have not yet acquired their white medullary substance, and until the axis cylinders are thus clothed, the fibres have but little conducting power, although it is probable that such power is not altogether absent. But the lower centres are further advanced than the higher ones, and are, in consequence, imperfectly controlled." This statement comports most admirably with Jaccoud's statement regarding the phenomena of hysteria and hysterio-epilepsy,

that their exhibition depends upon the inability of cerebral functions to maintain their balance and control over spasmodic spinal action, either by their defective development or their being in temporary abeyance.

The immediate cause of the convulsion in both instances is *reflex*, and in children we have specially to investigate the various special exciting causes, or sources of nerve irritation. Says Gowers, "By far the most potent cause of convulsions in children is the constitutional conditions termed 'rickets'" With the defects of development, notably in bony tissue, belonging to this condition, we have an excessive activity of the centres of the brain, on which reflex spasm and convulsion depend. It is impossible for one whose observation is mostly of persons of mature years to fully realize the extreme liability of many infants to show symptoms indicative of nerve irritation. What peripheral irritation of nerve filaments in the intestinal mucous membranes means, can be in some degree appreciated by a foreign particle on the conjunctiva, or a thistle hair beneath the cuticle. Teething is frequently stated to be the commonest cause, but with intestinal irritation, due to indigestible food, worms, etc., it is not to be wondered at that most writers nowadays are agreed as to this latter being by far the commonest source of convulsions. Apart from these direct causes we have the induced exciting causes, due to general exhaustion, as of mal-nutrition and diarrhoea, producing hydrocephaloid conditions, *i.e.*, imperfect nutrition of nerve elements and mechanical congestion, due to deficient blood pressure, *i.e.*, defect of arterial blood.

As regards treatment, minute search by careful enquiry as to provoking causes, as bad feeding, etc., and hereditary tendency, must be made. If due to intestinal irritation, the exhibition of castor-oil in sufficient dose to produce thorough purgation is advisable, while the injection of a large, warm dose of the same at once has frequently proved good treatment in our hands. Gowers lays naturally great stress on the bromides, giving five grains at a dose to a child of six months. We confess to the opinion that apart from the likelihood of this being vomited, such a heroic dose will in most cases be found unnecessary to prevent the repetition. Similarly we doubt the propriety of his remarks on the uselessness on most occasions

of the hot bath, since it certainly has a physiological reason in the diversion of venous blood from the brain (given by him as exciting cause) to the skin. Similarly he states that lancing of the gums "as the sole, or even the chief element in the treatment, is a mistake, since it deals with the least important, and often quite unimportant, elements in the causation of the convulsions." We quite agree with the absolute necessity for improving by every means possible, as prophylactic measures, the digestive and assimilative functions; and must primarily insist upon food being used, whether milk, gluten flour, barley water, etc., of the most perfect character. Frequently minute, but regular doses, of alcohol, greatly aid to supply a stimulus to weak digestive powers. Apart from scrupulous attention to hygienic measures of the person and of the atmosphere wherein the child lives, we recommend, as in the highest degree beneficial, the daily and repeated frictioning of the body in a warm room with, in the same process, the inunction of cod-liver oil. The results will, we believe, be found in every case, when carefully carried out, to be better than in any other single method of supplying nutrition.

#### OPENING OF THE MEDICAL SCHOOLS.

A YEAR ago, with a degree of pleasure which only those who realize the full meaning of the science of Medicine, Professor Ramsay Wright delivered the opening lecture of the re-suscitated Medical Faculty of Toronto University. A year has gone, and we again realize in the characteristic address of Dr. Thomas Richardson, that the University Medical School has become an accomplished fact. The address was historical in character and decidedly vigorous, as might be expected, when we remember who delivered it. He referred to the beginning of Toronto University, to its Medical Faculty, and to the political circumstances which occasioned the abolition both of the Medical Faculty and the Faculty of Law. "For thirty-four years," said the speaker, "the University of Toronto was deprived of the rights and powers conferred upon it by its original charter and rights which it should never have been deprived of. . . . A very specious argument was used for the abolition of the Medical Faculty. It was that no State aid should be furnished for the study of professional education. He thought the present generation had got a little be-



yond that. . . In its other sections the University had to fight for itself and its own existence. It was only through the exertions of such men as Sir Daniel Wilson that this University was not broken up into fragments. . . The way the restoration of the Faculty had taken place challenged criticism. When it was determined to restore the Medical Faculty the two medical schools were consulted. One refused to have anything to do with the matter and the other was willing to assist in the restoration. . . The students availed themselves of the School of Science which was open to all without distinction throughout the Province. . . . We must go into scientific principles to advance

the practice and study of Medicine. It is a scientific subject and must be developed in a scientific way. . . He believed that the Medical Faculty of the University would reflect honor upon Canada."

The address was received with general applause. We regret at being unable to refer at length to the intended opening address of the Trinity School, which was to have been given by a returned medical missionary, the Rev. Dr. Johnston, The hilarious boys captured the meeting and preferred reading the address in their more sober moments. Our other schools in Kingston and London were opened in due course and the subjects dealt with will be referred to in our next issue.

## INDEX OF PROGRESS

### MEDICINE.

#### The Comparative Pathology of Eczema.

Prof. W. Alston Edgar, F.R.C.V.S., of the Downton College of Agriculture, has recently contributed a most valuable piece of work on this subject. He says:

"The veterinary profession must gladly welcome the ennobling of its work by association of its studies with those on the human animal, as hitherto disease in the domesticated animals has been chiefly studied in relation to its effects upon themselves, and not its probable influence indirectly upon the health of mankind. . . . Mr. J. Bland Sutton's work on comparative hypertrophies, malformations, etc., almost suggests common causes for pathogenic changes in all species. That such common causes exist in some panzootic maladies, is clearly demonstrated. It is almost equally clear that in the group of diseases communicable to man and to the lower animals a similar micro-organism may operate as a common cause, e.g., tuberculosis and actinomycosis, although the organism may possess various points of difference and the pathological changes induced may become modified in different species. Again a zymotic disease, such as variola, may be represented in several species, having many symptoms in common, and yet not be intercommunicable, e.g., small-pox, cow-pox, sheep-pox, although it would appear there are some few persons who still believe that vaccination is small-pox modified by its transit through bovines. . . .

Further, there are some diseases, such as diphtheritis and scarlet fever, possessing in man well marked and easily recognized symptoms, with a definite etiology, which diseases are supposed to have their counterpart in the lower animals. The former probably affects the gallinaceous family, but it requires far more demonstration before it can be accepted as affecting calves and pigs. I am strongly of the opinion that the so-called diphtheritis in the pig have been due to the ingestion of anthrax blood or flesh, which under certain circumstances, in the pig, produces malignant sore throat, tonsillitis and ulceration of pharynx and larynx, frequently causing death, although I am informed by an eminent bacteriologist that pigs possess complete immunity from anthrax, and this, he concludes, because the bacillus anthracis is not found in the blood and tissues after death. All are probably familiar with the recent attempt to establish in the case of scarlet fever its identity in man and bovines, but with what success the issue best determines.

The splendid strides made during the last decade in medicine and surgery are capable in many directions of application in our profession. We can profit largely by applying general principles in dealing with disease, and by a study of current medical literature the veterinary may trace analogy in etiology, semiology and treatment in a large proportion of diseases affecting the lower animals.

We have many advantages denied to practitioners of human medicine in following up our diag-

nosis and treatment by post-mortem examination, owing to the comparatively short lives of many of our patients, and thus by careful observation and a record of our work we may return to the sister profession at least a remunerative interest. For instance, in the subject of this paper—Eczema—the surgeon has few, if any, opportunities of demonstrating post-mortem observations in this disease, but to the veterinarian they present themselves frequently.

In the present state of our knowledge, however, one thing is especially clear, that any inquiry concerning diseases of the lower animals in their relation to public health, should be conducted jointly by representatives of the medical and veterinary professions, as laboratory and clinical observations would then probably be more in harmony and calculated to secure the advancement of truth.

Although eczema is usually regarded and classified as a skin disease, I have some doubt if it is but exceptionally, *per se*, a cutaneous malady, but rather to be regarded as a subjective disease, an index whereby the pathologist may read the hidden pages of visceral derangement and structural change. I am confirmed in this opinion by a large number of post-mortem examinations in the dog and pig, and in two in the horse, some of which I will subsequently quote.

Eczema may be defined as acute or chronic hyperæmia and inflammation of the derma, accompanied by, as its name implies, an exudation of serum from the cutaneous capillaries.

All the varieties of the disease described simply represent a series of pathological changes, and the terms usefully express the various objective signs of the malady, viz., redness, cedema, papulation, exudation, producing vesication, with rupture of vesicles and incrustation, subsequently followed by—in the more chronic forms of disease—desquamation of epidermis, thickening and induration (local or general), generally the former, frequently accompanied by fission or cracking of the skin. The subject of eczema is conscious of certain subjective sensations, such as intense burning, itching and pain; the two latter only can be demonstrated in the lower animals, although it may be reasonably concluded from manipulation of the diseased parts that the burning sensation is actually experienced; intense itching is patent in all animals; pain is frequently evidenced upon palpation and by constitutional disturbance.

Acute eczema occurs in horses, cattle, sheep, pigs, and dogs; and the chronic form in horses, pigs (rare) and dogs only.

Again, correspondence in localization of the disease in the several species is remarkable. Local forms occur in man, horses, cattle, sheep, and occasionally in dogs, *e.g.*, nasal and orbital eczema; but in the pig and dog the disease in either variety is most commonly diffused; labial and facial eczema in man, horse, and sheep, the so-called *crusta labialis et facialis*, which represent *E. crustaceum*; mammary eczema in cow, described by some writers as "blister-pox" and "black-pox," which, however, frequently also exist on the soft skin from the umbilicus to the mammae, but is commonly unnoticed, owing to its position. Orbital eczema is also seen in the cow.

Local eczema in its chronic form is well represented in the extremities of man and horse in *E. fissum* and *hypertrophicum*, known to veterinary writers as *psoriasis carpi et tarsi*, or "mallenders" and "sallenders," and the chronic transverse fissures from knee to fetlock, described under psoriasis, and the indurations of "grease," sequelæ of eczema.

In the etiology of eczema, however, is found the most interesting and useful comparisons, as it appears fairly demonstrable that conditions which operate in its production in man are also conducive to similar results in the lower animals, modified in different species.

If this be true of eczema it may be equally so in many other pathological conditions, and it may be possible by such comparison to explain many obscure causes of disease in certain species, which, being occult in one, may be capable of demonstration in another, if, as appears more than probable, common causes have common results modified only by species and circumstances. Causes may be divided in all animals into extrinsic and intrinsic. In the human subject causes operating from without are referred to as irritants acting locally, *e.g.*, heat, moisture, friction, chemical agents, exposure to sun's rays, etc.

Similar causes are doubtless in operation in the lower animals with parallel results, but I think almost invariably associated with some constitutional disturbances acting as a predisposing cause. For instance, it frequently happens that a flock of lambs are pastured upon vetches in the summer,

and when a large quantity of thistles are present in the tares, a severe labial and facial eczema may occur. This, however, happens more frequently when the lambs are receiving an additional diet of albumenoid food, as cake or peas. These outbreaks occur on other green feeding stuffs than vetches, but rarely when sheep are upon green-food diet only, although the pastures may be charged, as it were, with thistles.

Again, in the horse, flannel-lined collars and pads are a frequent source of scapular and dorsal eczema to sensitive skinned animals, but the predisposing cause of the disease is invariably an important change of diet, or constitutional condition, affecting the excretory and digestive apparatus, the local manifestation being due to congestion and friction. I think exposure to continuous moisture operates as an entire cause in the production of eczema of the heels and pasterns in horses, which, in its latter stages, may become transformed into the chronic condition described as grease. Also vesicular eczema of extremities due to irritation produced by *symbiotes spathesferens*, is, of course, due to external conditions only. I have seen several cases of eczema produced in cattle and sheep by chemical irritants—arsenic and paraffin oil—but must regard such cases as purely artificial conditions. I have never, to my knowledge, seen it produced by the action of the sun's rays, in any of the lower animals, their hair or wool covering probably preventing this.

Local mammary eczema in the cow, the blister-pox and black-pox (which is *E. crustaceum*, by flies, dirt, etc.), of milkers, is possibly caused by irritation from the hands in milking or lying in constant moisture, especially decomposing urine. I think the latter is the true exciting cause, as the eruption frequently exists on the soft skin from the udder to the sternum, although, as previously stated, it is frequently unnoticed in this position. I say possibly caused by irritation, etc., because I think this disease, manifested locally in the cow, is always primarily caused by constitutional conditions. A few weeks ago a severe case of orbital eczema occurred in a cow under my notice, the eruption being confined to the eyelids and sides of face; this was suppressed by systemic and local treatment; there was no explanation for its localization.

In the human subject causes constitutional are

referred to under nervous shock, disturbed nervous functions affecting nutrition and circulation, in many cases caused by disordered digestion, painful dentition, menstruation, uterogestation, and parturition, eczema being not infrequently an indication of broken health. Many of the foregoing causes are in operation in the production of eczema in our patients, especially those referable to disturbed circulation and digestion.

It is difficult to define how far disturbed nervous function is a primary cause in any of the domesticated animals. Eczema is common in children during dentition. I have observed several outbreaks of the vesicular form in pigs during the eruption of the temporary teeth, but am not aware that this is a cause in any other species.

I have seen no cases in any animals which may be traced to œstrum, utero-gestation or parturition.

Two things have struck me as remarkable in the study of this subject, viz., the almost constant hepatic and occasional splenic changes in the lower animals, and in medical literature an almost total absence of any reference to either hepatic or splenic derangement as a complication of eczema, excepting so far as it may be inferred under dyspeptic conditions associated with hæmorrhoids or varicose veins.

I am of opinion, from post-mortem examinations made in the horse, pig and dog, and from the line of treatment most successful in those animals, that the liver is the viscus, which is, in a large proportion of cases, the primary cause of cutaneous disturbance. This, of course, will not apply to those cases of chronic eczema in the dog, which are coincident with cardiac disturbance or valvular disease with secondary hepatic changes.

Personally, I have been a subject of local eczema for many years, and it frequently occurs either in conjunction with or immediately after functional disturbance of liver.

Acute eczema is frequently fatal in very young pigs, *i.e.*, from three to six weeks old, and under the circumstances it is not infrequently reported for swine fever. A whole litter will sometimes die off and the only post-mortem changes remarkable are the intense congestion of the liver and the marked cutaneous eruption which is equally distributed over the whole skin surface down to the knees and hocks.

It has struck me that heredity must play some

part under such circumstances, as I have noted such cases where several dozens of animals have been exposed to the same dietetic conditions and sanitary surroundings.

In many post-mortem examinations of the dog I have noted the same marked congestion of liver as present in young pigs, but generally accompanied by considerable softening of structure. I may, however, explain that all, or nearly all, such observations have been made in dogs probably over three years of age, and subjects of recurrent eczema of many months or years' standing.

While I refer to functional derangement and structural change of the liver as a very frequent cause of eczema in the lower animals, I am free to admit that many cases may be due to disturbance, from dietetic causes, of the digestive organs generally, and also renal changes, which, by constantly disturbing the vicarious cutaneous circulation, tend to establish the localized or general congestion which, with a naturally weakened skin tissue, is quickly followed by irritation and exudation.

Prognosis is identical in man, horse, and dog; in each the disease is often tedious and difficult to cure, recurring at irregular intervals of seasons, patients being sometimes under treatment for many months, the ultimate issue largely depending upon the primary cause.

Treatment by comparison is of special interest, and it may, I think, be fairly concluded that success lies in the direction of adoption of general principles, which may be generally followed in dealing with all species. Where causes are identical and the variety of diseases similar, treatment at the outset will be much the same in any animal.

Eczema, in one or more of its many varieties, is probably the most common skin disease by which the horse and dog is attacked; dogs being, in my experience, affected with special frequency and in large numbers during the spring and summer. Chronic recurrent eczema is more common in this species than in any other. Under almost all circumstances local and systematic treatment is necessary, the former, except in one or two chronic phases of local eczema in the horse, being rarely successful alone.

It is not always possible to define the exact cause or causes of each special attack in any given animal, but where a number are affected simultaneously the cause may be generally referred to die-

tic arrangements, and under any circumstances change of diet is beneficial if not essential. It is necessary to correct any dyspeptic conditions, if existing, and to promote by regular exercise hepatic and cutaneous circulation in order that the normal functions of the skin may be stimulated, and the tendency to localized congestion overcome. I think this 'essential exercise in the treatment of dogs and horses is a point often overlooked and omitted.

A mild saline purgative in the cow and an aloetic in the horse, where the animals are in good general condition, is the best preparatory treatment, followed for a few days by magnesia sulphate and potassium nitras in small doses. If the skin does not resume its healthy condition after the first treatment, a course of iron carbonate or liquor arsenicalis generally effects this result, although in some cases in the horse arsenic appears to be of questionable use. Locally, no drug seems to act so well in arresting the catarrh and irritation as a solution of plumbi subacetate or hydrarg per-chloridum, one part to one thousand in water.

This treatment, as indicated for vesicular eczema in the horse, is equally successfully in the cow. The local mammary form is usually overcome by an unguent of diacetate of lead. In several large dairies in my practice, clients having a supply of this ointment, treat their cases of blister-pox without any constitutional agents except, possibly, a mild saline draught.

At the outset, mild aperients, followed by hepatic stimulants and nerve tonics. I may here draw attention to the action of euonymin. Having found from personal experiments that the drug was capable of producing an enormously increased excretion of bile, I was led to try it upon the dog in eczema, in conjunction with small doses of strychnia, and it acts, in very many cases, with remarkable success. The action of this drug has led me to conclude, in conjunction with post-mortem evidence, that liver congestion is a very frequent cause of eczema, quite apart from any disturbance of the stomach or intestines. During the course of treatment, an occasional aperient is an advantage, also administration of potassium bicarbonate in food. As tonic agents, quinine and strychnia, I think, act the best, given alternately with iron carbonate and sesqui carbonate of ammonia.

### Eclampsia and Albuminuria in Pregnancy.

Lantos in *Arch. f. Gyn.*, arrives at the following conclusions:—

1. Albuminuria occurs more frequently in parturient than in pregnant women, which may be explained by the fact that during labor the uterus is subject to great contraction and tension, whereby the nerves in the uterine wall are subjected to greater irritation than usual.

2. This occurs more frequently in those who are pregnant and parturient for the first time, for, while the uterine wall itself is able to offer greater opposition to tension, this opposition acts as a nerve impulse.

3. In twin labors and labors at term, therefore, albuminuria is more common, because the increased volume of the contents of the uterus is the cause of greater tension.

4. Protracted labors cause protracted irritation, and favor the existence of albuminuria.

5. The artificial termination of labor can only be regarded as a means of nerve irritation which increases the already heightened reflex of excitability of the vaso-motor nerves of the uterus and kidneys. The percentage of cases of albuminuria among those with whom labor has thus been terminated is much larger than with others.

6. Albuminuria occurs most frequently among primipare between fifteen and twenty years old, apparently as an expression of the heightened susceptibility to irritation of this period of life. Though the largest number of sufferers from albuminuria are found in multipare between the ages of thirty and thirty-five, it is due to the fact that, relatively, the largest number of women bear children between those periods.

7. The quick disappearance of albumin from the urine is explained by the subsidence of nerve irritation.

8. The well-settled fact that in the ordinary albuminuria of pregnancy albumin is not constantly demonstrable can not be explained by the mechanical theory. According to that theory, the constant and increasing pressure of the uterus upon the veins as pregnancy advances, should have the effect not only of causing albumin to disappear at times, but altogether. On the other hand, these cases are easily accounted for if we assume that the nerve irritation disappears either on ac-

count of change in the position of the foetus or on account of habituation to the irritant.

It is therefore possible to believe that in cases in which there are no tissue changes in the kidneys, albuminuria of pregnancy and labor may be regarded as of no pathological significance, being a very common symptom arising from reflex irritation of the vaso-motor nerves of the kidneys, excited by irritation of the nerves in the uterine wall. As a diagnostic sign of pregnancy this condition may be considered as of some importance.

### SURGERY.

#### Treatment of Aneurisms.

M. Germain-Sée highly extols the simultaneous use of iodide of potassium and antipyrine. He finds that the latter drug effectually quiets the tumultuous cardiac action, favors the formation of the clot and dissipates, to a remarkable degree, the dyspnoea and terrible pains.

Dujardin-Beaumetz, while recognizing the high value of antipyrine, finds that its continuous use brings out an eruption, and for that reason he prefers phenacetine, which is never toxic and as efficient as antipyrine.

#### Treatment of Ununited Fractures.

In the *Reforma Medica* of August 14th, a case is related, in which Professor Loreta successfully treated an ununited intracapsular fracture of the neck of the femur, by scraping the fractured surfaces and inserting a bundle of metallic sutures between them. On January 23rd, a robust man, aged thirty-six, was admitted into the Bologna clinic with the history of a fall on the left hip nineteen months previously, since which he had been quite unable to stand, and had suffered from constant severe pain, shooting from the left hip-joint into the gluteal region, the point of greatest intensity being over the course of the sciatic nerve. The limb was much wasted, but it was normal in position, and scarcely at all shortened. Flexion and extension of the thigh on the pelvis were almost impossible, but the patient could occasionally execute very slight movements of rotation and abduction. In rotation, he was sometimes conscious of faint crepitus in the trochanteric region. On February 15th, Professor Loreta operated with full antiseptic precautions. He made a long incision behind the great trochanter, so as to expose the

capsule of the joint, when he noticed a depression between the intracapsular and extracapsular portions of the neck of the femur. On moving the limb, it was found that there was a fracture without displacement in that situation. The capsule was then opened, the fibrous tissue between the fragments divided, and the fractured ends carefully freshened by scraping with a raspator. As it would have been very difficult to wire the fragments, a bundle of from eight to twelve metallic sutures was introduced between them, and brought out at the lower angle of the external wound. The wound was carefully cleansed, a drainage tube inserted, the edges brought together with deep superficial interrupted sutures and the whole covered with a sublimate dressing. A long outside splint was then applied. Five days after the operation, the bundle of metallic sutures was removed, and the wound healed by first intention. In less than a month the pain had permanently ceased, and fifty-five days after the operation the patient left the hospital, being able, not only to stand, but to walk with no further support than an attendant's hand.

#### Surgery of the Brain and Spinal Cord.

This subject was treated of by W. MacEwen, M.D., of Glasgow Royal Infirmary, at the late meeting of the British Medical Association.

After thanking the Association for the honor conferred upon him, he introduced his subject and referred to the past of the Surgery of the Head. He stated how simple any attempt at brain surgery had been, and that two factors were necessary for the introduction of cerebral surgery. The first was what Lister taught and worked out in the wards of the Glasgow Royal Infirmary, viz., the theory of asepticism: and the second, that taught by Broca, Dr. Alexander Robertson of Glasgow, by Huguings Jackson, by Fritsch and Hitzig and elaborated by Charcot, Pitres and Ferrier, viz., the localization of cerebral function.

These experiments enabled MacEwen to venture in 1876 an operation for cerebral abscess, and thus began his important work in this great field. We give in MacEwen's own words his experience in this case.

*Case in which the Symptoms of Focal Cerebral Disease led to Diagnosis of Lesion in Broca's Lobe:*  
—While in possession of this knowledge a case of

cerebral abscess presented itself to me in July, 1876. The general symptoms of this affection were clearly manifest. A cicatrix on the forehead marked the site of an injury under which the skull was bare. Had this cicatrix been taken as a guide to the localisation of the abscess, and an operation performed there, no abscess would have been found. But phenomena were exhibited which enabled its seat to be definitely recognised. A convulsion, accompanied by loss of consciousness, commenced on the right side, and gradually involved the whole body. On its cessation absolute hemiplegia of the right side was present, and remained for two hours, during which the patient was aphasic. Both these phenomena became much less marked at the end of this period. From these symptoms the abscess was diagnosed to be situated in the immediate vicinity of Broca's lobe. It was evident that the whole of the base of the left third frontal was not involved in a destructive lesion, otherwise the aphasia would have persisted for a much longer period, and it was probable that Broca's area had become involved in the inflammatory zone surrounding the abscess. Trusting to these localising symptoms, it was proposed to open the abscess aseptically by exposing Broca's lobe. Unfortunately, the result of a consultation was decidedly to negative this proposal. The parents then refused consent, notwithstanding the assumption by myself of the sole responsibility of advising and performing the operation. Thirty-six hours afterwards the convulsions returned and persisted until a fatal issue ensued. After death the friends acquiesced in the proposal to have the operation performed just as it would have been had permission to do so been granted during life. The skull was trephined, the brain exposed, and an instrument was introduced through the third frontal convolution for half an inch, when pus flowed through the incision, proved the accuracy of the diagnosis and giving poignancy to the regret that the operation had not been permitted during life. The abscess, about the size of a pigeon's egg, was situated in the white matter of the basis of the second and third frontal convolutions.

The blade of the bistoury which had been left *in situ* after insertion through the trephine opening, was found to have penetrated its outer wall. The congested zone in the periphery of the abscess extended from the anterior horn of the lateral ventricle to the cortex of the base of the second, but

especially that of the third left frontal convolution. Here the precise spot in the brain which the abscess occupied was accurately determined from the localising phenomena induced by the focal lesion, which were trusted as indicating its position, though pointing to a different part of the brain from that which would have been selected had the seat of injury been accepted as a guide. The operation showed how easily the pus could have been evacuated, though the unfortunate refusal to allow it to take place during life leaves uncertain the ultimate issue, but judging from my subsequent experience, worse cases have recovered after operation.

Reference may now be made to a few points regarding the present aspects of cerebral surgery. First, are the localising phenomena reliable guides to the diagnosis of cerebral lesions situated in the motor cortex? My answer is unhesitatingly affirmative. Each case, however, requires to be studied on its own merits, the whole phenomena presented, the *unobtrusive* as well as the prominent features must be carefully searched for, the degree in which each is present must be accurately measured, and the whole weighed and compared with former experience before drawing a conclusion. The various points upon which reliance is to be placed should be tested wherever possible by instruments of precision, instead of the rough impressions conveyed by the hand being trusted. In testing the power of the muscles in brachial palsy, the dynamometer will impart much more accurate information than that which can be gained through the sense of touch, and occasionally shades of difference may be determined by it, which otherwise would remain undetected. In many cases the evidences of focal lesions are so distinct that a diagnosis is easy: in others they are so intricate that a prolonged and minute investigation is necessary to decipher them; while there are still others in which the signs are so perplexing that at best an approximation only can be arrived at. To lay bare a certain known convolution on a cerebral surface and observe the results of its stimulation, is an easier task than to take what appears to be a tangled skein of nerve phenomena, such as is presented by many lesions of the complex brain of man, and to relegate each to its true source and infer from a study of the whole what particular parts of the brain are affected.

*Epilepsy (Jacksonian) induced by Focal Facio-Lingual Lesion: Removal of Cyst from Brain: Cured.*

—In support of the foregoing the following instances are adduced, and a case is first presented in which the symptoms were so definite and precise that the diagnosis was easy, and permitted me to perform the operation on first seeing the patient. He was 22 years of age, and suffered from epileptiform convulsions, each lasting from two to three minutes, and as these occurred on an average every five minutes, he consequently had over a hundred in twenty-four hours. The convulsions were limited to the tongue, the right facial muscles, and the platysma on the same side. When they subsided the parts remained paralysed. Consciousness was retained throughout. Eight years previously he had received an injury to the head, after which his right arm became weak, the weakness persisting, though he was quite able to work. It was clear that an irritating focal lesion existed, confined to the base of the ascending convolutions, causing a Jacksonian epilepsy. The only question was, whether the base of the ascending parietal was involved as well as that of the ascending frontal. The contraction of the platysma on the opposite side has been asserted to be induced by stimulation of the base of the ascending parietal. Dr. White-locke reminded me, however, that the platysma is often supplied by a branch of the facial, so that a single lesion in the base of the ascending frontal would be sufficient to account for the whole phenomena. The operation was at once undertaken, when in the lower part of the ascending frontal, a cyst about the size of a filbert was found situated partly in the cortical and partly in the white substance of the brain, and was surrounded by a narrow zone of encephalitis. In manipulating the medullary substance, in process of the removal of the cyst, the patient, while under chloroform, had a convulsion confined to the same group of muscles as were affected in his fits prior to the operation. The convulsion ceased with the removal of the cyst, and he has never had another. The wound healed firmly under one dressing, the paralysis of the facial muscle soon disappeared, and he has since been constantly at work. The power of the right arm has also been increased. Possibly the cyst might have caused indirectly slight pressure on, or had set up an inhibitory action of, the middle portion of the ascending frontal. This case affords important evidence of the position occupied by the facio-lingual centre in man, and on the whole cor-

roborates that assigned to it by experiments on the lower animals. It was also interesting to note when this part of the brain was exposed and irritated that it gave rise to the same kind of convulsion.

We give but one more of many instances, in this case an operation on account of paraplegia, caused by pressure on the spinal cord.

*Case of Paraplegia with Incontinence of Urine and Fæces, due to Connective Tissue Tumour at Seat of Angular Curvature of Spine, completely Cured by Removal of Tumour and Laminae of Vertebrae.*—In 1882 a boy, aged 9, came under observation, suffering from complete sensory and motor paraplegia, with incontinence of urine and fæces, which had existed for two years previously, but had been absolute during the last eighteen months. For three years he had had angular curvature of the spine, most marked between the fifth and seventh dorsal vertebrae, for which he had been treated by extension and plaster jackets. When seen by me the curvature had become fixed by ankylosis of the bodies of the vertebrae. Treatment by extension and plaster jackets was, however, tried again, under direct supervision, in the hope of amelioration. It proved futile. The limbs were livid and cold, affected with marked spastic rigidity and with wasting of the muscles. The symptoms exhibited pointed to irritation of and pressure on the spinal cord about the level of the sixth dorsal vertebra. The paralysis having existed slightly for two years and markedly for eight months, and showing no signs of amelioration under ordinary treatment, this operation was deemed expedient. Dr. Alex. Robertson saw this case and agreed in the hopelessness of any other procedure than operation. On May 9th, 1883 the laminae of the fifth, sixth, and seventh dorsal vertebrae were removed. There was no pulsation in the portion of the cord exposed. Between the theca and the bone there was found a fibrous neoplasm of one-eighth of an inch in thickness, which was firmly attached to the theca, and covered about two-thirds of its circumference. This was carefully dissected off. The cord was then able to expand backwards, and its pulsations, which up to this period were absent, began to show themselves, especially about the fifth dorsal. Twenty-four hours after the removal of the pressure the limbs had lost their livid colour, were distinctly warmer, the spastic rigidity had greatly lessened, the sense of tickling the soles had re-

turned, and that of touch had improved. The first return of movement was observed eight days after. Soon he had perfect control over his sphincters. Six months subsequently he was able to go about without support. Five years afterwards he walked three miles to pay me a visit. He attends school regularly, joins in all the games, including football, and he says he feels quite strong.

#### OBSTETRICS.

Opening Address of Section on Obstetric Medicine at British Medical Association Meeting.

If we were to judge from the many complimentary remarks which were made at Glasgow, regarding the position which Scotland holds in the history of the progress of Medicine during the present century, Scotchmen will be still more convinced than ever that they are the original people and that their language was spoken in Paradise "in the days o' auld lang syne." Said Prof. M. Madden, of Dublin, who delivered this opening address, "It is to Scotland and to the genius of her sons that the true success of obstetrics and gynaecology which we are here met to cultivate, owe their earliest development in Great Britain; and to a large extent their progress is traceable to the same source." The lecturer then traced from the works of Houston and Smellie the work done up to the time of Simpson, Keith, Duncan, and to the present standing alongside of the able teachers of the Dublin School. The writer proceeded to indicate some of the progressive improvements of midwifery practice. "The prevalence of puerperal septicæmia by epidemic outbreaks, by which, in my earlier days, I have seen the crowded wards of a maternity hospital contaminated, has been largely diminished by the hygienic and antiseptic measures now adopted for its prevention; whilst, if septicæmia should still occur, we are now armed with more scientific means for the curative treatment of this disease, some years ago classed among the incurable *obprobria* of our art." Similarly it may be said the mortality from *post partum* hæmorrhage has been almost removed, while the throes and pains of labor have been rendered endurable by the employment of comparatively safe anæsthetics. He then referred to the almost universal setting aside of the embryonic instruments, which a few years ago formed so important a portion of the obstetric outfit, in favor of forceps of various kinds.



The development of gynæcology within the last few years has been still more marked. Nowadays every well-educated practitioner may recognize and treat utero-ovarian, tubal and other intra-peritoneal and pelvic complaints, that previously baffled detection or treatment. "Nor in those pre-antiseptic days could have been anticipated the wonderfully successful results since realized from laparotomy operations, and more especially ovariectomy, as well as in some still more recent developments of intra-peritoneal surgery, in tubal and other diseases, including tubercular peritonitis and cancer of the uterus."

The same may be said with regard to the importance of the views long since expressed, regarding the correcting of uterine displacements: as also of the bearing of cervical lacerations in pelvic pathology and of the diagnosis and curability of diseases of the uterine appendages.

Referring to the influence of prejudice and fashion, Dr. Madden remarked that the first stage is usually opposition to all innovations, to be followed by unreasonable running after some *fad*.

"In physic, as in fashion, we find,  
The newest is ever the rage of mankind."

Dr. Madden said, regarding the treatment of Fallopian tube diseases, that while recognizing the necessity in some cases and the successful surgery in such operations, "I have not, in my own experience, found laparotomy operations by any means so generally necessary in such cases as they are apparently deemed by others." The lecturer confirmed from his limited experience the successful treatment of uterine fibromata, etc., by Apostoli's methods of strong electrical currents.

#### THERAPEUTICS.

##### New Vesicant.

Dr. Boni, in *Union Pharmac.*, recommends the following:—

Camphor . . . . .	2 parts.
Chloral . . . . .	30 "
Cantharides . . . . .	10 "

The camphor and chloral are first mixed in a mortar and then warmed. The tincture of cantharides is added last and then thoroughly shaken for fifteen minutes. The preparation is less volatile than the catharidal collodion, and is especially useful in cases of women and children.

##### Codeine and Morphine in Diabetes.

Dr. V. Mitchell Bruce gave the following as some conclusions based upon observations as to the comparative values of the two drugs in this disease. The results on the whole seem to be in favor of morphine. Three tests are applied:

(1) The test of power, (2) that of cost, (3) that of safety. Morphine proved unquestionably the more powerful, it completely removed the sugar from the urine, while the codeine did not—the dose of morphine when it actually disappeared amounting to 5-6 grains daily, while the best results with codeine were attained only when the phosphate was given up to 30 grains (21 grains of codeine were reached per diem). Hence the morphine is to be decidedly preferred along the ground of expense. In considering whether the drawbacks in administering the large doses of morphine are greater than those of codeine, Dr. Pavy seemed to think the narcotic ill effects of the morphine were the greater; but Dr. Bruce stated that narcotic symptoms set down showed as long as the sugar continued to lessen in amount.

##### Antipyretics.

In the Croonian Lectures before the Royal College of Physicians, Dr. MacAlister in discussing "Antipyretics" said:—

"The Harveian Orator, Dr. Stone, had pressed on the College the importance of physical investigations in Medicine, and regretted that they were at present less regarded than researches in histology or bacteriology. A series of valuable experiments, involving high skill in physics and in mathematics, and therefore perhaps overlooked, had been made on the radiating power of the skin, by Dr. Masje, under Professor Eichhorst, of Zürich. Probably, sixty per. cent of the heat leaving the body did so by radiation. But the laws of this loss had not been enquired into, or had been assumed to be governed by physical analogies. At the Zürich Hospital, by the aid of an instrument of great delicacy and precision, on the principle of Langley's holometer, the true laws of skin-radiation had been worked out, and had proved strikingly suggestive.

A hot body radiates less as its temperature falls. This was the physical law, but not the physiological. A part of the skin partially uncovered naturally became cooler, but its radiation increased

steadily as the temperature fell, until a certain limit was reached. Radiation was more intense in men than in women, in boys than in girls, in young than in old, in the vigorously healthy than in the feeble or convalescent. In other words, radiation was more active as the processes of nutrition and metabolism were more active.

Reasons were given for believing that the radiating power of the skin, which would be shown to depend on its physical and chemical constitution, was subject to physical control; and thus, what was apparently the most physical of all the thermolytic processes was not outside the domain of the thermal nervous system. In discussing the value of an antipyretic method, in explaining its mode of action, we could not in future ignore the questions: What changes does it call forth in the texture of the skin? How does it modify the great thermolytic function of radiation?

Another subject connected with thermolysis deserves some mention, namely the connection of peripheral temperatures with central. The lecturer, in common with many others, had been perplexed and baffled by the apparent lawlessness of surface temperatures as taken by any of the ordinary methods. So doubtful were any results based on them that experts regarded with suspicion all observations but their own. Recent inquiries, also carried out at Zürich under Professor Eichhorst, showed that the difficulty lay chiefly in an erroneous method of procedure. When peripheral temperatures are taken continuously for some hours (eight or ten) instead of some minutes, it appears that in health as well as in disease the curves obtained consist of distinct portions. The first corresponds to a stage of an hour or so, in which the temperature is highly irregular and different from the central temperature. This is the *ambiguous* stage. The second is marked by much greater uniformity and nearness of the central temperature. Like the latter it tends to be constant and stable. This is the *continuous* stage, and it is so regular, so normal, that we are safe in drawing conclusions from its changes. Observers hitherto had seldom got beyond the ambiguous stage, and hence the irregularity and confusion already alluded to. The effects of antipyretic methods on the continuous stage of the peripheral temperature would form an interesting and trustworthy study later on.

Next, the anatomy and physiology of the thermo-

genic system had received valuable contributions. New points in the thermogenic tract had been made out (he would not call them *centres*) by Ott and others in America, using the methods and working under the inspiration of Professor Wood. In the rabbit four points in the cerebral axis were known, the stimulation of which gave rise to increased heat production, not simply rise of temperature. Two were at the anterior and median borders of the corpus striatum, one between that body and the thalamus, and a fourth at the anterior of the end of the thalamus. Dr. Hale White had in part verified the localisation as regards the anterior striate centre and had made out that unilateral irritation gave rise to bilateral pyrexia. It thus appeared that in the rabbit the lateral differentiation of the thermal tracts, like that of the motor, was still incomplete."

#### Cresylic Acid.

In a thesis published by Dr. Delplanque, are various experiments on the antiseptic properties of cresylic acid, at the laboratory of Hospital Cochin, Paris. After the determination of the toxicity of the acid, sometimes called cresylol, milk and urine were successfully experimented on. Cresylic acid (phenol, cresylic, cresol, hydrite, cresyl, etc.), exists in creasote, and is isolated by fractional distillation at between 200° and 210°C. It is a phenol, derived from toluene. It is separated out from the sulfotoluenate by potash, then separated by acid and ether. It is a colorless liquid, with an odor of creasote. It is slightly caustic. It is insoluble in water, quite soluble in alcohol, glycerine and aqueous ammonia, very soluble in ether. Toxic doses cause in rabbits convulsive shocks, followed by salivation, increased respiration, and paralysis of hind legs. The symptoms disappeared in two hours, but the rabbit died next day. The acid notably retards fermentation both in urine and milk.

Experiments on microbes showed that with doses of from 2 tenth-milligrams added to 3 cubic centimeters of culture, inoculated with typhoid bacilli, their development was either wholly prevented or greatly retarded.

#### BACTERIOLOGY.

##### Preventive Vaccination of Asiatic Cholera.

In the *Revue Scientifique* for Sept. 1st, appears a notable communication by M. Gamaleia, *chef* of the laboratory of Odessa, and presented to the Academy of Sciences, Paris, by M. Pasteur.

After a brief introduction referring to the objections raised to Pasteur's method of inoculation by Koch and others, the paper goes on to remark:—"It is known that the cholera vibrio has only a minimum virulence, to the extent that M. Koch, who discovered them, has believed after numerous failures, that Asiatic cholera was not inoculable in animals. On the other hand, Pasteur's assistants only once succeeded in inoculating a fowl. Now it is easy to endow the cholera vibrio with an extreme degree of virulence; it is only necessary to inoculate a pigeon after its passage through a guinea-pig; it then kills pigeons in giving them a dry cholera with exfoliation of intestinal epithelium. What is still more important, the microbe also appears in the blood of pigeons which have died from it. After several inoculations this microbe acquires such a virulence that the blood of carrier pigeons in the dose of one or two drops, kills all fresh pigeons in the space of eight to twelve hours. The virus also kills guinea-pigs with still smaller doses; all animals of those two species similarly succumb to the infection. With this absolutely deadly virus we have been able to prove the existence of choleraic immunity. Thus we have inoculated a pigeon twice with an ordinary cholera culture (non-virulent), the first time in the pectoral muscles, the second in the abdominal cavity. This pigeon has become refractory to repeated infections of the most virulent virus. The fact of immunity is thus acquired.

Now, if one cultivates this virus (*de passage*) in a nutritive bouillon, and if one subsequently heats this culture to 120 C., for twenty minutes, to certainly kill all the microbes it contains, we prove then that heating has allowed to subsist a very active substance in the sterilized culture. This culture, in fact, contains a poisonous substance which causes characteristic phenomena in experiments in animals. Inoculated with the dose of four cubic centimetres to a guinea-pig, the sterilized bouillon produced a progressive lowering of the temperature, and death in twenty or twenty-four hours. At the autopsy we found a pronounced hyperæmia of the stomach and intestines, and, with reason, a complete absence of choleraic microbes. Pigeons succumb with similar morbid phenomena, only they are most decidedly resistant to this poison, and death only succeeds after an injection of 12 cubic centimetres. If on the contrary one intro-

duces this same quantity of 12 cubic centimetres, but in three, four, or five days: in injecting, for example, 8 cubic centimetres the first day and 4 cubic centimetres the day after, one does not kill them.

We have proved besides in these pigeons another phenomenon; they have become refractory to cholera. Inoculation does not kill them. Vaccination of guinea-pigs succeeds more easily; in injecting them with the toxic bouillon by doses of 2 cubic centimetres, they are vaccinated in three *séances* or with 4 or 6 cubic centimetres. We are thus in possession of a method of preventive vaccination against cholera. It is founded upon the principle of employing a sterilized vaccine and has all the advantages of chemical vaccination; certainly and securely, since the chemical vaccine can be measured in a perfectly exact manner and introduced by doses sufficiently small to be entirely inoffensive, while the total of these can give the desired quantity necessary for complete immunity.

Pasteur was authorized to state that Gamaleia was prepared to repeat all the experiments before him in the Paris laboratory.

In remarks made thereafter by M. Pasteur, he states that M. Gamaleia had been sent to his laboratory by the municipality of Odessa, to study under him experiments in inoculation against rabies, and this fruitful result has grown out of Gamaleia's labors.

#### CLIMATOLOGY

##### The Climate and Environment Best Suited to Old Age in Health and Disease.

OPENING ADDRESS BY PROF. A. L. LOOMIS, M.D., PRESIDENT OF SECTION ON CLIMATOLOGY, WASHINGTON MEDICAL CONGRESS.

In studying the therapeutics of climate, and its effects upon diseased processes, one soon realizes that *age* is a factor which enters very largely into the climatic problems which we are endeavoring to solve—much has been written on the climates best suited to the management of different diseases, but the literature of *the climate and environment best suited to old age in health and disease* is meagre and conflicting. I have thought that it might not be without interest, if I should at this time give you some of the results of my experience, and observations on this subject.

The life of man is naturally divided into four periods—infancy, youth, manhood, and old age; each period has its mental and physical character-

istics, each its diseases, and each its therapeutics. There are conditions of environment and climate which not only are especially adapted to the development and vigor of each, but which influence largely the immunity from those diseases liable to occur at these different periods, often arresting or curing them after their development.

Most men begin to show signs of decay between fifty and fifty-five, while the favored few retain the vigor of manhood until seventy. Original conformations, heredity, habits of life, climate, anxieties, and temperament, unquestionably influence very greatly the commencing period of old age. Some men are old at forty, while others are young at seventy.

There are certain physiological and anatomical characteristics of old age, which especially interest us in the study of those conditions which are best suited to the fuller development and prolongation of life. The more prominent of these are: defective secretions and excretions, imperfect metabolism, feeble respiration, which interfere with complete oxidation, the excretory organs being more or less weakened withdraw from the body less perfectly the results of tissue metamorphosed. The nutritive functions, digestion and assimilation, are imperfectly performed. The arterial changes give a feebleness to cell nutrition which shows itself in the visible signs of advancing age. "The bones, the cartilages, the membranes, the flesh, the skin, and every fibre of the body becomes more solid and dry." But long after the decay of corporeal vigor, the understanding and the higher powers of the mind preserve their energy and precision.

It has been said that no sooner does man arrive at his full maturity than he begins to decline. This may be true of his animal life, but not of his intellectual. It does not seem consistent with the design of the Creator that all growth in man should cease with the attainment of his maturity. It is evident that his intellectual powers do not attain their highest development with the completion of his body growth; for we often find that those qualities by which "he rules the world, as reason and judgment," are most active after his body decline has begun. Some of the most brilliant and powerful productions in literature, science, and art have been the work of old age. Disraeli claims that the age of three score and ten is a most powerful one for writing.

To one studying the physiology of old age, it becomes apparent that the gradual and progressive impairment of the functions of organic life and the anatomical changes which precede or accompany their failing activity, can only be retarded by furnishing "to each organ, or each system of organs, their appropriate and natural stimulus without undue excitement or depression." There is unquestionably a hygiene of old age, which, if carefully studied and intelligently observed, would prolong its physical vigor and mental power. I have the opportunity of daily watching and studying one who has reached the ninety-fifth year; all her physical and mental powers retain their activity, her pulse has the characteristics of youth, her skin is as fair and soft as that of a girl of eighteen; in fact, the changes of old age, as usually met with in persons from seventy to eighty, have not taken place in her. This case, as well as others of great age that have come under my observation, have taught me that the absence of senile changes is the chief reason of their age, and have convinced me that if the hygienic laws of age were more carefully studied and observed, not only would greater age be reached but they would be far more vigorous and useful.

I believe that the progressive degenerative changes in structure and failure in functional activities may so adapt themselves to each other as to produce an old age which may be as healthy as mature life. One of the most important of these hygienic laws is that the brain shall be stimulated by a pleasurable enjoyment of its faculties, care being taken that it shall not be enfeebled by prolonged and continuous labor; this, together with healthful exercise, has a salutary influence over the whole system, while idleness and listlessness lead to senile atrophy of both mind and body. It is most essential also that the diet should be simple and nutritious, as moderation in eating and drinking is indicated by the diminished capacity of the stomach, its reduced muscular power, and its declining nervous energy. So long as it can be accomplished without fatigue, exercise in the open air is another condition which promotes longevity, for it is evident that the perfect performance of respiration is stimulated by moderate exercise in a pure atmosphere and insures the highest state of oxidation, which is important to the healthful nutrition of the aged.

There is perhaps nothing that has a more prejudicial effect upon the aged than cold; their greatly diminished power of generating heat and of preserving it, renders it necessary for their greater activity that they should live in a more equable climate, in localities that are sheltered from the north and east winds. Dr. Farr, in the *Third Annual Report of the Registrar-General of England*, states "that the rate of mortality rises in the aged, as the mean temperature falls. When the mean temperature of day and night falls a degree or two below 32° F., the rate of mortality immediately rises, and the effects of the low temperature go on accumulating and continue to be felt for thirty or forty days after the extremes of cold have been passed. I have noticed that the extremes of heat seem to be as hurtful to the aged as extremes of cold, and should be avoided."

Another essential to healthy old age is personal cleanliness. The skin which becomes unfitted for carrying off effete matters from the system, should have its activities stimulated by frequent warm alkaline baths followed by friction to the surface.

With these thoughts before us in seeking climates and environments suited to the development and prolongation of old age, we naturally reach the following conclusions:

*First.* That healthy old age thrives best and is most vigorous when it can be passed in moderately warm climates. To accomplish this a change of residence once or twice a year becomes a necessity. For some reason which I am sure is not based on experience or observation, it has come to be a common belief that old people should spend their last days in one locality, that they are so wedded to their homes and surroundings that any change affects them unfavorably; so prevalent is this opinion, even among medical men, that the usual professional advice is, that it is better that the aged should be made comfortable in their own homes however anti-hygienic they may be, than that they should change their residences as the seasons change. This, I am confident, is a very great mistake. I have found that old people not only bear changes well, but if such changes are judiciously made, they are not only invigorated by them, but that change of air and scene stimulates them to greater mental vigor and physical power. It is an established fact that change gives fresh impulse to mature life, and my experience teaches me that the same holds good with the aged.

*Second.* The localities best suited to the development of healthy old age are those which invite to an out-of-door life with surroundings and associations such as shall stimulate to mental and physical activity free from excitement, for it is to be remembered that the aged live more within themselves and are consequently annoyed and fatigued by excitement.

*Third.* The localities suited to healthful development of age must furnish an abundance and variety of well-cooked food, the comforts and, if possible, the luxuries of life must be within easy reach, for if there is any one period of life more than another in which comforts and luxuries are essential to its healthfulness, it is that of old age. For what ought men in their activities to strive for more than comfortable sunset? As I have already stated, the food of the aged must be simple and nutritious, and, above all, well cooked. If you send a toothless old man to a second-rate hotel, even in the garden of Eden, his muscles will grow more flabby, his step more tottering; his mind will fail to be stimulated by the glories of nature which surround him, and he will languish and die for the good table and comfortable bed which he has left in his own home.

It is never safe for an aged person with chronic bronchial catarrh to pass quickly from a very dry to a very moist atmosphere. My clinical experience has given me many examples of the injurious effects of such changes in this class of cases, as well as the ill effects of high altitudes on the vascular system of the aged. The localities which I have found best suited to old persons suffering with chronic bronchial catarrh and pulmonary emphysema, from December to April, is Nassau, the Bermudas, and Monterey. In July and August they do well at Shelter Island, and at Newport or Cape May; all of this class of cases that I have sent to the mountains have done badly, except a few that were complicated by hereditary asthma of long standing.

In connection with the climatic treatment of the pulmonary diseases of the aged, I wish to say a word in regard to change of climate as a prophylaxis against their development. Physicians, as well as patients, are too apt to think only of the diseases that already exist, and lose sight of those which may threaten. While we are usually consulted for the relief of present difficulties, and not as to how

possible ills may be averted, still in our capacity as guardians of health, it seems to me that the time has come when we should impress upon the public mind the importance of prophylaxis, and teach those under our immediate supervision that after sixty a failure to recognize the changed condition of their vital powers, and a continuance in the business habits of earlier life, after this period, are often no better than suicide.

#### STATE MEDICINE.

BY G. W. GOVERSTON, M.D., MEMBER PROVINCIAL BOARD OF HEALTH.

##### Grosse Isle Quarantine System.

To the Editor:

*Sir*,—It has occurred to me that, as the public mind is at present somewhat agitated on the subject of possible extension of yellow fever from Florida to our Maritime ports, a brief description of the night and day surveillance of all ships from British and foreign ports entering at this, the seagate of the Dominion, might prove reassuring. The statement is based on the opportunities for accurate knowledge that a fortnight's residence at this quarantine island has afforded.

There are provided two steamers, the *Challenger* and the *Hygeia*. On board the latter are the various arrangements for a thorough disinfection of the cabins that have been occupied by steerage passengers who, during the voyage, may be found to have been the subjects of infectious diseases. The said steamers are provided with small hospital cabins, in which the sick are placed, and on completion of the work of disinfection of the isolated hospital on board the ship are conveyed to the shore hospital, as also the attendants on them during the voyage, in whom the disease may be presumed to be incubating, the first to be there kept until recovery, the latter until the period of incubation of the particular disease has expired. In cases of emigrants who have not been re-vaccinated within seven years, if the ship surgeon during the voyage has neglected the work, the quarantine officer assumes the duty. Should the emigrants obstinately refuse, they are removed from the ship to the quarantine steamer, conveyed to the shore, there placed in a comfortable house, supplied with necessary rations and detained until fourteen days, counting from the time of embarkation, have elapsed. Passage is then provided for

them to Quebec, the port to which the vessel they had crossed in was bound.

Three instances of determined refusal to re-vaccination occurred on board the *S. S. Sarmatian*. No objection was offered to the alternative and the protestors are now enjoying themselves on this beautiful island until the expiration of the time for incubation of small-pox.

One of the steamers is to be found at the western wharf with banked fires night and day, a lookout man continually on the watch for in-coming ships, and, with the exception of coasters, immediately one is in sight, a signal for the medical officer is given. Quickly Dr. Montizambert or his assistant, Dr. Coote, is on board, and the quarantine steamer proceeds to the deep water channel, between three and four miles from the shore there awaiting the arrival of the ship or going down to meet it. For the night duty one or other of the medical officers sleeps on board the *Challenger*, the largest and best adapted boat for heavy weather.

From the foregoing abridged account of the work at this station it will be obvious to all that the chance of infection entering at this port is reduced to a minimum. Absolute immunity can only be secured by the Government at an early date supplying the long-experienced want of a deep-water wharf, such as other quarantine stations are fitted with; then not only the cabins in which the infected have been placed, but also the whole of an infected ship could be promptly disinfected at very little cost from demurrage to the owners of ships.

Of the great esteem in which our old friend, the quarantine officer, Dr. Montizambert, is held by the employees of the station, the following translation of an address accompanied by a superbly executed life-sized portrait of himself will sufficiently testify.

GROSSE ISLE, September 20th, 1888.

To Dr. F. Montizambert, M.D., Edin., F.R.C.S., Edin., D.C.L.:

DEAR SIR,—"Recognition is the coin of the heart." For a long period we have recognized the truth of this axiom, and to-day more than ever we feel the desire of proving it to you.

In placing you in the important post of superintendent of the quarantine station at Grosse Isle, the Government displayed faith in your great aptitude. In truth, it was with reason. Never since you have taken the post in hand have you betrayed the confidence placed in you.

On the contrary, the important works of which you have assumed the initiative, and which you have always brought to a satisfactory completion, the numerous improvements introduced into the quarantine service, exist here in proof that you are a man of progress. Still more, entirely devoted to your work, you have consecrated all the thought and energy with which Providence has gifted you.

Called to work under your orders we recognize in you a superior man. Commander, you are our pride. We have only to look back and compare the quarantine of twenty years ago with that of to-day, and we are simply astonished at the progress made; and if one asks, who is the one who carried out all this? we reply with pride, "Behold our superintendent." Without doubt in all your labors you had as your beacon light the good of the public. Also under all circumstances you have endeavored to improve the position of all working under your orders. A soldier in war is proud of the general who leads him on to glory; we are proud of our superintendent. We are gathered around you at this moment for the purpose of saying to you, and of repeating also, that you will always find in us devoted hearts.

If in the past we have in any measure failed in duty, believe that the heart was not delinquent.

Thanking you for your goodness and consideration to us, we ask you to accept this portrait of yourself now offered. If we have succeeded in producing on paper your features, believe, superintendent, that the qualities of your heart have for a long time been engraven on our memories. We hope that in the providence of God you may long be spared, as also Madame Montizambert and all your family, to remain in our midst as a good father in the midst of his family.

Members of the Crews of the Steamers Challenger and Hygiea	{	G. LANGLOIS, Capitaine.
		F. X. TURCOTTE, Second.
		J. MADEAU, Ingenieur en Chef
		M. LAPOINTE, Ingenieur.
		G. DANCAUSE, } Marins.
		J. B. TURCOTTE, }
		A. LAPOINTE, Chauffeur.

#### Anthrax in the Guelph District.

This unfortunate outbreak which occurred two years ago for the first time, has been repeated again during the past summer. The peculiar character of the disease and the manner both of the infection of the pasture lands and of the way in which animals become inoculated, make it a disease on the one hand very difficult to deal with if the cattle are allowed to go on the pastures infected, and on the other very easy if the cattle were removed. The dangers to the general public are of no light nature, as the following statement by the Sanitary Inspector will make evident. Clearly the question arises as to whether the disease can be stamped out without the removal of cattle from the pasture-lands along the Speed. It may be possible through protecting the graves where animals have been buried,

by fences, but the experiment is not satisfactory. The shallow character of the soil, subject to the annual washings of the spring overflow, prevents the breaking up of the sod and placing the fields under crop. The local health authorities naturally enquire whether it be not possible to stamp out the disease, but the present inadequate means for attempting this by inoculation with attenuated virus means, we fear, the return of the disease with its serious losses of cattle and possibly more serious effects on human life during another year.

The following is the reply of the Sanitary Inspector, Guelph, to a request of Dr. Bryce to supply the latter with any facts regarding animals that died during the past summer:—

With regard to the information you ask for, I do not know whether the animals died from the disease called anthrax or not, and I am unable to find out from the parties who owned these animals what was the cause of death. The information which I received was as follows:—

*Case I.*—Thomas Simpson, butcher, states that his beast was turned out on the flats in the morning, and at night when it came home he noticed that the animal would neither eat nor drink anything and he put it in the stable for the night, and the next morning it died. He had it skinned and sold the hide to Mr. Stull, a man who follows that business on the Guelph market. The carcass was taken to the nuisance ground and buried by the nuisance contractor.

*Case II.*—Mr. T. Ellis, butcher, states that his beast died on the flats. It was quite well in the morning when he put it there at 8 o'clock, and at 11 o'clock a.m., it died. He skinned it and sold the hide and buried the carcass four feet deep in the ground.

*Case III.*—Mr. Gibson states that his cow was grazing on the same flats as the others and she was brought home in the morning, milked, and fed, and afterwards it was turned into another field close to the house. He did not notice anything the matter with it then, but it broke out of this field and got to the flats again, and he saw it go direct to the river and drink freely, after which it came back amongst the other cattle; this was about 12 noon, and at 2 p.m. it was found dead. It was skinned, hide sold, and carcass buried.

*Case IV.*—Mrs. Olson states that her cow died under similar circumstances as that of Mr. Gibson's,

only that her's was brought home at night ; but she noticed that the cow was sick and would not give any milk. The cow was kept in the stable and was attended by a veterinary surgeon, and was sick three days before she died. She was skinned, hide sold, and carcass buried.

*Case V.*—Mrs. Brisbane states that this year she lost two fat pigs, and last year she lost 12 pigs, 1 cow, and 1 horse, all on the same flats. The two that died this year were noticed to be rooting up the ground on the same spot as Mr. W. F. Stone buried one of his cattle last year which died from the same cause as the others, and these pigs died two days after they had been rooting up this spot. They were buried three feet under ground.

*Case VI.*—Mrs. McShane states that she lost

one cow and that it was grazing on the same ground as the others. The cow was brought home at night and would not give any milk. She put her into the stable and the next morning she was found dead. It was skinned, hide sold, and the carcass buried.

This is the number that have died this year, and this is about all the information that I can give you. There are a great many opinions about this matter ; some are inclined to think that the river has something to do with it, while others hold different opinions, but a good many would like if you could come up and meet all those gentlemen who are interested in this matter, and those who own the ground where this disease is supposed to be, and talk the matter over and find out what is best to be done.

## REPORTS OF SOCIETIES.

Congress of American Physicians and Surgeons, and the Ottawa Meeting of the Canadian Medical Association.

These two national meetings or congresses have held their sessions, and the many medical men who thus took their brief holidays have returned to their arduous labors.

Dr. William Pepper, Chairman of the Executive of the American Congress, said that the actual need was apparent of an organization to secure the re-union at stated intervals of the more active leaders and workers in the leading branches of medical science. Such meetings ought not to be too large, and yet to attain the best results the same members should attend regularly. He then sketched the extent and character of the work which the Executive had laid out for the Association, which really means that the united Societies shall become sections of a single Congress similar to that of the British Medical Association. The programme included papers in so great numbers that one almost becomes bewildered at the idea of how by any possibility he can attain to even a small amount of knowledge of the many observations therein stored up. The paper of the first evening's session was a well chosen one, being by Dr. Fitz, of Boston, on "Intestinal Obstruction in its Medical and Surgical Relationships." He confined himself to the medical diagnosis and treatment. Dr. Senn, of Milwaukee, took up the operative treatment of intestinal obstruction, and said that while the opposition

to it had been, owing to the great mortality, most pronounced, yet the time would come when mortality in operating for intestinal obstruction would be reduced to that of other intra-peritoneal operations. Owing to the shock attendant upon any such operation, it is most necessary to perform it while the nervous system is still in a condition to resist successfully the immediate effects of the operation. Dr. Durham, London, and Prof. Anandale, of Edinburgh, followed, in a large measure supporting Dr. Senn's position. The paper for the second evening was by Dr. Mills, of Philadelphia, on "Cerebral Localization in its Practical Relations." He said, "motor localization had become almost an exact science." Amongst the sources of error in motor localization, the questions of reflex spasm, convulsions due to uræmia, lead, et., were to be considered. He believed that the evidence was daily becoming stronger in favor of a zone for the sensations of touch, pain and temperature, apart from cortical motor areas. He concluded by saying that the discoveries in cerebral localization with the achievements in antiseptic surgery constitute the greatest triumphs which adorn the history of the noble science and art of Medicine. Dr. D. Ferrier, of London, referring to the pleasure it gave him to hear this subject given so important a place, referred to the strictures which were made upon him when he first suggested such operations. After referring to the successful vindication of himself by the history of cerebral surg.



ery during the five past years, he said we had to be careful, and that a good deal of work yet needs to be done in diagnosing accurately cerebral disease. He was followed in his remarks by Mr. Victor Horsley, of London, and Drs. Keen, of Philadelphia, and Stone, of New York. The lecturers had numerous papers of interest, some of which we hope to again refer to at length.

We are placed in a somewhat difficult position when we have to refer to the meeting of the Canada Medical Association in the same article with this great Congress. Judging by the numbers and geographical distribution of those present at the Ottawa meeting, Canadian national sentiment is still in an embryonic state, and, speaking from a teratological standpoint, the development is likely to be of the decidedly monster type. There was scarcely a representative of Ontario physicians west of Toronto present, and very few physicians from outside a short radius of the place of meeting. The programme, good as some papers undoubtedly were, seemed to be a somewhat diminutive descendant of the Smithsonian Institute by true Apostolic suc-

cession. We trust that its next year's meeting at Banff, attended even for a pleasure trip, will partake of a more representative character than the one just over.

Dr. J. E. Graham's paper on irregular and rapid action of the heart, with clinical reports of cases, was of much practical interest and elicited no little discussion. The general address on "Some of the recent advances in Surgery," by Prof. F. J. Shepperd, of Montreal, was of much interest, giving, as it did, special attention to the advances in abdominal surgery, surgery of the gall, bladder, and kidney; advances, too, in the surgery of the bladder were also remarked upon. MacEwen's fame in cerebral surgery (an abstract of his latest work being found in this number), was commented upon in terms of praise. Altogether the papers given by leading members showed regarding the profession in Canada, as remarked by Dr. Ross, "Many evidences of a better condition of things than formerly prevailed, of a greater interest in the scientific side of medicine, and a desire not to practice on, and from a purely perfunctory, a financial point of view."

## GENERAL NOTES

THE Central Sanitary Department of Japan has just published a report on the cholera epidemic of 1886, which was the most violent since 1879. There were in all 155,574 persons attacked, and of these 110,086 died. The gravity of the epidemic is attributed to the impurity of the water.

SLOWLY, but surely, with the great increase of immigration, cases of leprosy are finding an entrance to American soil. The two centres of supply seem to be China on the west, and Norway and Sweden on the east. The State Board of Health of Iowa has notified the American Consul at Christiania of two cases having come to that State from Stavangen, Norway, and further states that any new cases will be returned if found in Iowa.

THE contract for the construction of the new water works at Brantford has been awarded to the Waterous Engine Works Company, Brantford, and a by-law submitted to the people to approve of the proposal and to raise the money for the purchase of the old works and the construction of the new ones has been carried. The intention is that the city shall construct and own the works. The al-

ternate scheme was, that the proposals of the home company to own and maintain the works be accepted. Says the *Expositor*, "As far as the question of cost is concerned, we believe the city is getting an excessively good bargain, and that they will get a first-class system."

ACCORDING to *Progrès Médical* the *corps médical* of Paris, including medical men and pharmacists, has undergone a terrible increase since the year 1866. Then it numbered 6,506 persons, but now contains some 10,360. It does not appear to exceed our own Toronto with its 300 medical men and 200 druggists.

THE question of the contagiousness of leprosy is still controverted, the latest opponent being Dr. Zambaco of Constantinople. Speaking of experiences obtained during a recent visit to Egypt, Syria, and other leprosy countries, he says: "I may say I am acquainted with all the places in the East where this terrible malady exists, and I have never seen a single case of contagion. The malady is certainly hereditary, however." We are afraid he did not stay long enough.