

The Canada Lancer

VOL. XLIX.

TORONTO, AUGUST, 1916

No. 12

ORIGINAL CONTRIBUTIONS

THE TREATMENT OF DIABETES MELLITUS.*

BY ELLIOTT P. JOSLIN, M.D.

Boston.

RATHER more success is achieved by surgeons in the treatment of general peritonitis than is attained by physicians in the treatment of diabetic coma. In neither condition are the statistics flattering to the profession; but the successes obtained by our surgical colleagues in the prevention of general peritonitis make the failure to prevent coma as a cause of two out of every three diabetic deaths mortifying to say the least. We physicians should begin to regard diabetic coma in the same light as your British brother, Mr. Moynihan, has taught the medical fraternity to look upon the late stages of a neglected gastric ulcer, namely, as an emergency which should not have been allowed to arise.

With this issue of the prevention of diabetic coma plainly to the fore as the cardinal point in the treatment of diabetes, it is pertinent to inquire what diabetic patients are most susceptible to coma? And your own experience will enable you to anticipate that the answer, which an analysis of my own fatal cases shows, will be children. Of the 62 diabetic children under the age of 15 who have died under my care, coma was the cause of death in all, and the significance of this melancholy fact is this: that where diabetes appears in its most severe type, as in children, coma is its expression. The propositions are simpler to state than to execute—first, that the best way to avoid coma is to prevent the progress of a case of diabetes from the mild into the severe type, and second, to protect the patient from all those agencies such as infections, anaesthetics like chloroform and ether, undue exertion (mental or physical) which tend toward intensifying the severity of the disease. For if the diabetes is kept mild or moderate the coma need not be feared.

* Address in Medicine, Ontario Medical Association.

Next to the children in the frequency of death from coma, strange as it may appear, were those of my cases who succumbed during the first year of the disease. The cause of death in 87 per cent. of these was coma. But diabetes is a chronic disease and the first year of its course should be mild rather than severe, and in mild diabetes coma should find no place.

Just as the health officials of a city, zealous to lower its death rate, concentrate their efforts on those sections of the city with the highest mortality, so should we, in the treatment of diabetes, concentrate our efforts where mortality is also greatest—on the children and on those patients who have recently developed the disease. To-night attention will be directed upon the treatment following immediately upon the detection of the disease, for this is where the highest mortality in diabetes now exists.

Reference has just been made to a mortality of 87 per cent. from coma among diabetics who die during the first year of the disease. Is the term "first year of the disease" quite accurate? It is meant to be accurate. I have most conscientiously tried to fix a definite date for the onset of diabetes in all of my cases. But honestly would it not be more truthful to say the first year of the recognition of the disease? And herein lies a vast difference which gives rise to serious reflection, for it is in the first year of the *recognition* of the disease that treatment is begun, and the highest mortality occurs. Disagreeable as such an implication is to hear, some support of it is afforded by the fact that with the increase in the knowledge of the treatment of diabetes, the mortality for the first year of the disease has decreased. It is significant that whereas between the years 1824—1898, of those cases of diabetes dying at the Massachusetts General Hospital, the duration of the disease was under one year in 68 per cent., for the subsequent 15 years ending November, 1913, Dr. Brigham and I are able to say, thanks to the courtesy of the hospital authorities, that the mortality during the first year of the disease had fallen to 41 per cent. My friend Professor Naunyn, whom all of you will recognize as a master of diabetes, though his cases must have been treated during the generation previous to 10 years ago, showed a mortality of only 28.2 per cent., which was the same, as far as I can determine, for the City of Boston for 1915. The period of my own activity has been later, and so more favorable; perhaps my cases have been less severe, and this may explain first why but 17 per cent. of my own cases have died during the first year of the disease, and second, the more encouraging feature that 95 per cent. of those living have already gone beyond this period. In fact, my own experience is against the idea that properly treated diabetes runs an

acute course. Such figures, while they afford reason for gratification at the improvement in treatment, also furnish proof that the high mortality in the first year is unnecessary, and in what follows will be indicated how the development of acid poisoning during this period may be avoided and how to conquer it before coma results.

The prophylactic and etiological treatment of diabetes will surely play an important rôle in the future, and it is already plain that progress will be along two lines: first, towards the early detection of the disease in those susceptible to it. The whole trend of Naunyn's teaching favors the energetic treatment of the slightest evidence of diabetes. The importance of the early treatment of pulmonary tuberculosis is not greater than that of the early treatment of diabetes.

The only way in which an early diagnosis of diabetes will ever be made is to search for it. The favorable results in 57 of my cases of diabetes revealed by life insurance examinations cannot be explained by the mildness of the diabetes discovered. It is a hopeful sign that the insurance companies are offering to examine the urines of their policy holders gratis at frequent intervals. Everyone should have the urine examined upon his birthday.

Diabetes should be sought in the families of diabetic patients, and in order to allay anxiety of urinary examinations, it is a good plan to have these made with such frequency that they will become simply a matter of routine. Such individuals should be taught to regulate the quantity of food eaten by the body weight, and never to indulge in unusual quantities of carbohydrate.

No pre-existent abnormal condition has occurred more frequently among my diabetic patients than has obesity, and it affords a splendid opportunity for the physician in which to practice preventive medicine. Patients should be cautioned against suddenly gaining weight at any period, but particularly after infectious diseases. The development of diabetes following infectious diseases and in the course of pregnancy always should be borne in mind. Finally, anything which tends to promote the mental and physical welfare of the patients will tend to prevent the onset of diabetes.

Surgery may find a field for treatment in the future more than it has in the past. I recall eight cases of diabetes associated with gall stones which have run an unusually favorable course so soon as the symptoms of the gall stones have subsided, either as a result of medical or of surgical treatment.

That temporary periods of under-nutrition are helpful in the treatment of diabetes will probably be acknowledged by all after these two years of experience with fasting. In no other way can one so readily

keep the urine free from sugar and this is the foundation of all diabetic treatment. With a sugar-free urine there is seldom any opportunity for coma. The inauguration of the treatment and the prolonged continuance of the same are problems which present the most difficulty. Practically the only danger associated with the former is the possibility of acid poisoning at the beginning of the fast, though it can be emphatically stated that it is the rule for acid poisoning to decrease rather than to increase as the fast continues. But on account of the few cases where it does increase it is safer to prevent acidosis than to allow it to develop. This is the reason for what might be called a preparatory treatment for fasting, for it can be assumed that a method of treatment which approaches or embraces fasting is the best method we possess. It is a sound rule of all treatment that patients coming to the physician in an endurable state must not be made worse or have their lives jeopardized by the therapeutic procedures adopted.

Treatment is simplified if acidosis is prevented because no urinary tests will, as a rule, be required save a qualitative test for sugar and the simple ferric chloride reaction for di-acetic acid, and such simplification of methods is necessary when we realize that most physicians do not have more than 5 or 10 cases of diabetes a year and therefore cannot devote to these a proportionately large share of their time.

Individuals predisposed to acidosis are those in whom the disease is of long duration. These are the patients who, after having lived in a fairly comfortable condition for years, finally succumb to active treatment within a few days of its commencement. All complicated cases, especially those in which the complication involves the kidneys, heart or thyroid, demand preparatory treatment, for they are especially susceptible to acidosis. In this group are also included elderly patients, because of their vulnerable kidneys. Very fat diabetics could appropriately be included, and so too, patients about to undergo surgical operations. Finally, all patients showing signs of acid poisoning demand this preparatory treatment before the fast, unless the physician is in a position to watch quantitative changes in the acidosis from day to day.

The principle upon which preparatory treatment is based is simplicity itself—the exclusion of the source of the acid poisoning. Since the chief source of acid poisoning is fat, this constituent of the diet is prohibited before any further change is made. If this rule is adopted, the opportunity for the patient to develop acid poisoning is greatly reduced, and for two reasons: first, the chief source of acid bodies is removed, and no fat is then available for the formation of acid bodies except the fat of the body; second, in consequence of the partial fast,

which is thereby initiated, the possibility of oxidation of some of the carbohydrate which the patient is eating is afforded, and if this should fortunately take place, acidosis is sure to decrease. So strongly have I been impressed by the stormy career of the diabetic patients in whose diet carbohydrates have been suddenly restricted and fat increased, in contrast to the placid course which those pursue from whose diet fat has been excluded and the carbohydrates left unchanged, that whenever I am asked to see a new case of diabetes I beg the physician either not to change the diet at all, or to simply omit the fat until the consultation takes place, and when the patient actually comes for treatment I first omit all the fat in the diet, after two days the protein as well, and then have the carbohydrate on successive days until 10 grams are reached unless the patient is already sugar-free, and thereafter fast.

The days of preparation for the fasting are also advantageous in that they allow opportunity to examine into the general condition of the patient. It would be absurd to feed a patient without teeth with coarse vegetables, or to give these to another patient who has diarrhoea. The bowels must be thoroughly opened, but I do not believe in free catharsis. Gain enough is obtained if a movement is produced once in twenty-four hours when it has only been taking place once in 3 days. In other words, do not upset any patient who is in a tolerable state. Furthermore, allow the patient to continue his regular routine, avoiding excess in my direction. Remember what happens to an old man who is suddenly confined to bed, and the discomfort which follows confinement following a fracture. Do not force a temperate man to drink against his will.

An advantage which the omission of fat from the diet affords is the rest which is given to the digestive tract. Former treatment, which increased the fat in the diet, was the converse of this, and frequently led to vomiting, with the result that patients on the verge of coma fell into it. In every way seek to prevent worry on the patient's part, and from the start give them to understand that they are at school rather than at a hospital.

After the preliminary measures have been taken to prevent the appearance of acidosis one may proceed with fasting. Fasting is never so rigorous as doctors or patients expect. Patients are more ready to undergo it than physicians to prescribe it. Quite as often it is as much a relief to the patient as it is a discomfort. This is in part due to the gradual decrease in polydipsia and polyuria. Headache occurs less frequently than I expected, and is usually dispelled by a cup of coffee. Nausea almost never occurs unless a patient is given alkali or alcohol. Children bear it more easily than adults. Case No. 899 with onset at 83 shunned it and rightly, but she became sugar-free and her family, at

first reluctantly, but now emphatically, agree, with distinct benefit. In fact, it is always desirable to avoid fasting in the old, and this can ordinarily be accomplished by the help of preparatory treatment because the simple omission of fat and reduction of protein and carbohydrate will usually suffice to make the urine sugar-free.

Fasting does not seem like fasting to the patients when they receive coffee, tea, cracked cocoa and broths, and are given an unlimited supply of water. If the quantity of urine, as it often does, falls to less than normal, the patients are urged to drink water freely. Clear meat broths are a great satisfaction. Contrary to my experience with digestive cases, broths do not stimulate the appetite in fasting diabetics; they relieve it. The advantage of broths is probably due in part of this, but to a considerable extent that the patient receiving salt by which he may maintain the equilibrium of the body fluid. It is possible that the salt is a more important factor in the treatment than has been supposed.

Patients should not be kept abed during fasting, neither should they be forced to be up all day. They should be afforded diversion by visits from friends, walking short distances, easy handiwork, playing games, letter writing and reading. In general they are glad to rest for the greater part of the first day of the fast, but upon each succeeding day I have noticed that they are desirous to increase the amount of exercise, and the exercise appears to lessen the necessity for a prolonged fast. Case No. 765, a trained diabetic, who returned to the hospital in order to become sugar and acid-free, at the end of three and one-half days of fasting, enjoyed, without fatigue, going to the theatre. I confess this was not with my advice, for I have endeavored to prevent exposure to any infectious disease of all diabetic patients during fasting. However, Case No. 938, a child of 2½ years, underwent fasting treatment successfully in the presence of a mild infection of the upper air passages.

It is surprising how variable is the period required to render the urine sugar-free. Frequently a urine which contains 7 per cent. of sugar becomes sugar-free after four meals of fasting, and conversely a urine with any three per cent. of sugar may still retain traces after the patient has been deprived of food for three or four days. In general cases seen soon after onset become sugar-free promptly, whereas the reverse is generally true for those of long duration. Children showing large quantities of sugar have also become sugar-free very promptly when the duration has been only a few weeks. I have a suspicion that cases of long standing will actually become sugar-free more quickly if they undergo preparatory treatment than as if they are fasted immediately. This may be due to the avoidance of even a slight acidosis. Even a slight acidosis must be conquered.

The observation of Folin and Denis that an obese individual, though otherwise normal, developed marked acidosis upon fasting but went through a second period of fasting with less acidosis than the first, and the practice, observed by many clinicians of the old school, who advantageously fasted their diabetics one day a week, have given the cue to intermittent fasting.

For a good many months none of my patients have been subjected to a fast of more than four days. A prolonged fast is unnecessary, and even if the fast is carried out, it is doubtful if the patient would always become sugar-free. The apparent reason for the persistence of sugar in Case No. 610, who fasted for nine days, was the presence of a vulval abscess, and inquiry among my friends shows that an infection of some kind is usually present when glycosuria persists after a fast of a few days' duration. This is not always the case, for the difficulty in rendering the urine sugar-free may be simply due to the extreme severity of the disease.

Alternate feeding and fasting are adopted when it is found that the glycosuria persists after a preliminary four days' fast. The method which I have found most successful has been to allow, following the first fasting period, 20 to 40 grams carbohydrate—not far from half a gram per kilogram body weight—and about one gram of protein per kilogram for two days. The sugar promptly increases in the urine, but if one averages the excretion of sugar in the urine of these two days with the two days at the beginning of the fast, the result is encouraging. Then fast again; but the second fast is a day shorter than the first, and the second period of feeding a day longer, until by the fourth period of fasting the patient goes without food only one day and then is given food for four days. This schedule need not be followed exactly, but the general plan has proved most efficacious.

When the 24-hour quantity of urine is sugar-free one can usually give a few grams of carbohydrate to the patient without the appearance of glycosuria. The carbohydrate is generally given in the form of five per cent. vegetables, choosing those which are especially bulky. A plateful of lettuce appeals much more to the patient than a small saucer of string beans. When a mixture of 5 per cent. vegetables is given one can be quite sure that the average content of carbohydrate is not more than 3 per cent., or approximately $4\frac{1}{2}$ grams for the 150 grams prescribed, and for convenience sake this is reckoned as one gram of carbohydrate for each 30 grams (one ounce). This small amount of food, of course, has little nutritive value, but is enough to break the fast. Upon succeeding days 5 or 10 grams of carbohydrate are added daily. A patient fasting or on a very low diet often shows an apparent tolerance for

carbohydrate far in excess of that which he would have shown if the necessary protein and fat in his diet were simultaneously administered.

Following the trial with 5 per cent. vegetables the addition of carbohydrate can be made according to the desire of the patient until the tolerance is determined.

With children one often makes the mistake of increasing the carbohydrate five grams daily, forgetting the fact that 5 grams of carbohydrate to a child weighing 20 kilograms is in the same proportion as 15 grams of carbohydrate to an individual of 60 kilograms.

Patients who have lived for a considerable length of time on a comparatively low tolerance for carbohydrate may upon trial show that the real carbohydrate tolerance is much greater than supposed. The most striking example in my series has been the patient already referred to—No. 610, who fasted for nine days without becoming sugar-free. During the last 12 months she has lived comfortably, but the quantity of carbohydrate in the diet has been represented by 60 c.c. of cream (two grams) for all her vegetables have been thrice washed. Despite this rigid diet sugar kept recurring every few days, but she persisted to drive it out by fasting. Recently upon re-entrance to the hospital she became sugar-free overnight, and thereafter the steady addition of 10 grams of carbohydrate a day in the form of vegetables up to 55 grams, failed to cause glycosuria, to the surprise of us all. At length, as a test, she drank 55 grams of laevulose and even then the urine remained sugar-free. At this time the protein in the diet was represented only by that contained in the vegetables. Thereafter it was gradually increased, and along with it a little fat, so that finally, at the end of ten days following her re-admission to the hospital, she was taking 55 grams of carbohydrate, a gram of protein per kilo, and at this writing sufficient fat to be equivalent to about 25 calories per kilogram body weight. Contrast this picture with that of a year ago, when it was necessary for her to fast nine days to make the urine sugar-free and when a diet of 2 grams of carbohydrate led to the appearance of sugar in the urine. This very recent experience has given renewed hope to my patients who have been watching its development, and to me. It is a fresh demonstration of the efficacy of energetic treatment.

As a rule when the urine has been sugar-free for 2 days, 20 grams of protein are added to the diet, and thereafter 15 grams of protein daily until the patient is receiving 1 gram per kilogram body weight. The protein may be given either in the form of eggs, lean meat or fish; an egg of average size contains approximately 6 grams of protein and 30 grams (1 ounce) of lean meat contain approximately 8 grams. By this arrangement a patient weighing 60 kilograms would be taking,

within six days from the time he became sugar-free, 1 gram of protein per kilogram body weight. This quantity is quite satisfying to all except children—in fact, it astonishes me to find how few patients care to take as much as a gram and a half of protein per kilo body weight. Children, however, crave and need considerably more, and indeed take with avidity as much as 2 grams protein per kilogram body weight.

Fish is especially desirable in the early days of protein feeding because it contains so little fat. Cod and haddock, for example, contain less than one per cent.

The advantage of giving and increasing protein simultaneously with the determination of the carbohydrate tolerance is that one approaches more nearly normal conditions. What the physician is after is to determine the carbohydrate tolerance while the patient is on a full diet, and not the tolerance for carbohydrate alone, but it is possible that one should defer the addition of protein a few days longer if the carbohydrate can be steadily increased without the appearance of sugar.

There are very few patients who will not bear at the outset as much as one gram of protein per kilogram body weight, and I am very loath to allow the protein to remain permanently below this figure. This can be avoided by still further restricting the carbohydrate, either temporarily or permanently. It is always necessary to bear in mind that one food which the diabetic patient cannot do without is protein, and to it everything else must be subservient.

While testing the protein tolerance, a small quantity of fat is included in the eggs and meat given. It is not at all disadvantageous—in fact, the same rule holds for the testing of the carbohydrate and protein tolerance in the presence of fat as has been said for protein alone. There are two important reasons why fat is not given to the diabetic patient immediately upon his becoming sugar-free: First, by the omission of fat partial fasting is continued and thereby the patient is gaining a tolerance for carbohydrate, and second, the continued omission of fat is beneficial in counteracting the last vestige of acid poisoning, or preventing the appearance of acid poisoning, which easily might occur in a diabetic patient whose metabolism has not become accustomed to so low a quantity of carbohydrate. But so soon as the patient has received the essential gram protein per kilogram body weight, the fat in the diet should be increased above the 15 to 20 grams which undoubtedly are introduced with the protein ration. If the patient is one in whom acidosis has been an essential factor, or if the patient is obese, the fat should be increased slowly, and for such a patient an increase of 5 to 10 grams a day may be all that he can take without the recurrence of a positive ferric chloride reaction in the urine. On the other hand, atten-

tion is called to Case No. 765, who, after persistent periods of intermittent fasting, became sugar and acid-free, and yet the immediate addition of 30 grams fat per day failed to cause the reappearance of acidosis. Cases which have shown little acidosis may easily be allowed an increase of 25 grams fat daily, and for such cases this is desirable, because it rapidly brings the total caloric value of the diet up to a normal figure. Naturally, patients in whose treatment a loss of weight is desired would be given smaller quantities of fat.

The total number of calories which a diabetic requires varies not only with each case, but varies with each case each day. Schematic rules do not hold. One must remember that an individual trained to be quiet and lying down can get along with only 20 calories per kilogram body weight reckoned per 24 hours, whereas the average of a large group of normal men and women, not especially trained for the test at the Carnegie Laboratory, consumed 25 calories per kilogram body weight reckoned also per 24 hours. Habits of individuals vary widely. Some are quiet and some are active. All these considerations should be clearly borne in mind by doctors and patients in order not to allow themselves to be held too rigidly by any calorie fetish. Patients coming for treatment with severe acidosis consume from 10 to 20 per cent. more calories per kilogram body weight than patients after they have become sugar-free and free from acid.

After the diabetic has become sugar and acid-free, he apparently gets along, as Naunyn long ago pointed out, with a smaller amount of food than an ordinary individual. This may be so. From a study of dietary charts in diabetes it appears probable, but I do not believe the question yet settled. Before this can be done, studies should be made upon cases of diabetes of the severest type who have become sugar and acid-free, and remained so for a period of weeks. The caloric values of their diets should then be quantitatively determined. Ordinary calculations, based on dietary tables, will not suffice. Actual analyses of the diets of a group of such patients for a period of several weeks should be made. This is by no means an impracticable matter, and I think the accomplishment of it would be of the greatest help to diabetic patients and would settle any mooted points.

Should the calories be raised above a minimum portion in severe cases of diabetes, glycosuria will return. Therefore great care must be taken to prevent over-eating and undue gain of weight.

The return of sugar demands fasting for 24 hours, or until sugar-free. This rule should be inflexibly followed, especially with children. In hospitals it simplifies the treatment enormously. So soon as it is understood that the reappearance of sugar means a fast, for 24 hours

thereafter, there is little tendency to break over the diet. Furthermore, most patients are thrifty enough to see the disadvantage of paying their board with no return. The rule must be rigidly enforced with children, because with them disobedience means death. When a patient has been made sugar-free by a preliminary fast, starvation for 24 hours will almost invariably be sufficient to free the urine at once if the sugar returns. This will not be the case unless the presence of glucose is promptly detected, and hence the necessity for the patient's examining his 24-hour urine daily. Following this accessory fasting day, the previous diet of the patient may at once be resumed, except for the elimination of half of the carbohydrate, or the original course of treatment may be followed, passing through the different stages at a more rapid rate.

The advantage which the older clinician derived from the use of one day's fast in seven in the treatment of his diabetic patients should ever be borne in mind. One striking characteristic of Dr. Allen's helpful suggestions in the treatment of diabetes (and I cannot say more than I already have said elsewhere of my high appreciation of his work) has been that he has apparently sought out every method which anyone has found useful in the treatment of diabetes, tested its worth, and endeavored to adopt it to modern conditions.

The mild case of diabetes is the case which demands the most energetic treatment, but hitherto has received the least. These cases are analagous to the cases of incipient tuberculosis. As in tuberculosis, a cure may not be effected, but the disease is held in check. Emphasis should be placed on freedom from glycosuria. Naunyn's dictum that many a severe case was originally mild, but neglected, should not be forgotten. It may not be necessary for such patients to practice fasting.

In our enthusiasm for new methods it should not be forgotten that even in the vast good results were obtained with many diabetics, and that gradual restriction of carbohydrates and the total diet was the means employed. Incidentally, this is good proof that most diabetics are not severe.

It would be wrong to give the impression that the treatment of severe diabetes is simple and free from anxiety. It is true that it is much easier and causes infinitely less worry to the physician than heretofore, but these patients are in most unstable equilibrium and a little upset of trivial character may lead to much danger. The physician who treats severe diabetes successfully must constantly be in close touch with his patient. Forewarned, forearmed! I like to have at least a glance at a severe case of diabetes two, three or four times a day, and the amount of information furnished by the laboratory is never too great.

DRUGS AND MEDICINAL AGENTS CONSIDERED FROM THE PROFESSIONAL ECONOMIC AND NATIONAL STANDPOINTS.*

BY A. D. BLACKADER, B.A., M.D.

Professor of Pharmacology and Therapeutics, McGill University, Montreal.

TO talk on drugs and remedial agents is an old theme carrying us back in the vistas of our imagination to the days of Dioscorides and Galen, and very justly awakening the query, what are the special conditions in the practice of our profession to-day which have induced your esteemed President to consider a paper with the title which has just been announced as opportune, and perhaps interesting, at the present moment?

After some consideration I have deemed that the first and perhaps most outstanding fact in regard to drugs as a whole is the position which they at present hold in modern therapeutics. Years ago they were deemed to be of the first importance; without them there was no therapy. To-day, with the exception of the few which have a definite specific action on some of the discovered causes of disease, drugs in general have been relegated to a distinctly secondary place. For the cure of disease the physician to-day places more confidence in fresh air; on rest, either systemic or local; on a carefully arranged dietary which will afford a sufficient number of calories with the proper proportion of proteids, carbohydrates and fats to supply most perfectly the wants of the organism without unduly taxing any weakened or suffering organ; and on a rational application of the principles of hydrotherapy.

Certainly with the exception of the few diseases for which we have specific treatment, I know of none in which, if I had to make a choice between the use of these remedial measures and the use of drugs, I would not invariably choose the use of the former.

This preëminence of these remedial agents in our modern ideas of therapy, the profession owes in great measure to the almost world-wide study of the conditions, which influence the course of an infection by the tubercle bacilli in man and animals. No one advance in modern therapy has conferred so much benefit upon the sick and ailing as the recognition by the profession of the health-restoring properties of free, fresh, flowing air. I was much interested the other day when listening to an address by Dr. Frank Billings, of Chicago, on vaccine therapy, to hear him state that comparing the records of many hundreds of patients treated by the most carefully prepared autogenous vaccines, with the records of patients who received no vaccines but were placed under the most favourable hygienic conditions, with rest, abundance

* Address delivered before the Ontario Medical Association.

of fresh air and a carefully regulated dietary; he found that these latter with no specific vaccines had their defences aroused quite as quickly and as fully as those who received vaccines. On the other hand, in a few who received the vaccine treatment, but in whom no attention was paid to conditions of general hygiene and careful upbuilding of the strength, it was noted that the vaccines of themselves did not bring forth much of a response.

The importance of a dietary arranged to suit the digestive capabilities of the sick was recognized by Hippocrates, but it is only in recent years that physicians have appreciated the value of an estimation of the actual number of calories daily consumed by the patient in his food as compared with his actual requirements, and have recognized the benefits to be derived from such a modification of the amount of proteid, carbohydrate and fat as to supply efficiently these requirements without overtaxing any damaged organ. Still more recently they have been shown, how much can be effected by a high caloric feeding on the one hand and by a brief starvation period on the other. Unquestionably this triad of fresh air, rest, and careful dietary should occupy the first place in our system of therapeutics at the present.

In the limited time at my disposal it is impossible to make more than a brief reference to vaccine and serum therapy, which now threatens to lessen yet further the need for drugs and thus to relegate them to a position of still minor importance in therapeutics. Two decades ago the profession hailed the introduction of this new method of treatment with the greatest optimism. It was hoped that by its means we should be able so to strengthen and hasten the development of the body's natural defences, that we could promptly antagonize the causes of disease and combat infection with its own weapons. These natural defences, however, have proved much more complex and multiple than at first even the scientists reckoned upon, and progress has been difficult and slow. Unfortunately, while scientific medicine has been earnestly and perseveringly working at these most intricate problems, many commercial houses by the introduction of practices not in harmony either with the conditions demanded by the primary hypothesis or with the teachings of bacteriology, and also by the publication of extravagant statements founded on no scientific evidence, have misled many in the profession into the use of mixed vaccines and semi-secret unstandardizable mixtures of bacterial products.

While it may perhaps be said that clinical investigation indicates that some temporary benefit may follow the injection of many protein substances in chronic infections, the general results obtained under observation have been most unsatisfactory. "Fundamental principles demand

that therapeutic vaccines be composed of bacteria as little different and as little removed as possible from the special strains of bacteria causing the infection against which the vaccine is to be used." (Hektoen.) Therefore autogenous vaccines alone are to be relied upon, and it would appear a simple matter in almost every case for such to be prepared at the same time that the bacteriological diagnosis is made. We may add that the physician who accepts the mixed vaccines of commerce without knowing the exact etiological factor of the infection treated, certainly abandons rational medicine and gropes in the dark.

Concerning the use of drugs in our therapy a second statement that can be made and which appears to me of great importance, is that the profession as a whole, while using drugs freely, often too freely, gives too little study to our gradually increasing knowledge of the exact physiological action of drugs and too little study to the dosage in which they should be employed. Drugs are to-day often prescribed with an erroneous idea of their power to influence special conditions or symptoms, and are often used in unsuitable doses. As simple illustrations the following may be cited: It is now generally agreed that a digitalis action when demanded by the heart's condition is best obtained by the use of the drug in full doses till its effects become manifest. In many prescriptions that I have seen the amount given is too small to secure the greatest benefit. To obtain results from the use of strychnine as a respiratory stimulant larger doses than the 1/5th or 1/60th grain in which it is often prescribed, are necessary. The strength of tincture of nux vomica in the last edition of the *Pharmacopoeia* was reduced 50 per cent. to make it correspond with the strength of this tincture in other countries. I have asked several druggists whether physicians had made any difference in the amount of this tincture ordered in their prescriptions before and after the change went into effect and have been told that very few had done so. Physicians cannot expect that ten minims of the new tincture will have the same result as ten minims of the old. On the other hand the preparations of iron are generally prescribed in unnecessarily large doses and purgatives are ordered with a too lavish hand. As a consequence of this indifference, or ignorance, the physician fails to get results, and his confidence in the official drugs, and perhaps his confidence in himself as a prescriber, is impaired.

Associated with this imperfect knowledge of the exact action of drugs, and the indifference to the proper or necessary dosage in which they should be prescribed, an increasing tendency has been evinced by teachers in hospitals, by writers in many text-books, and often by consultants, to undervalue the use of our official drugs in the treatment and relief of symptoms. Very properly etiology, diagnosis and prog-

nosis in disease are all important, but ailing patients demand some mitigation of their troubles and by means of our official drugs, properly employed in proper doses, we are able to give all possible relief. Psychotherapy, the influence of one mind on another, however, is a welcome addition, and may undoubtedly be of much service; perhaps be all that is required, but its demands tact and judgment.

Another fact which for many years has appeared to me as unfortunate is that the list of drugs in our *Pharmacopoeia* is such a long one. Even the last edition contains for each of us a large number which long ago we consigned to the dust-heap; such as most of our antispasmodics and of our astringents, many of our drastic purgatives, many of the so-called bitter tonics and stomachics; also the phosphates and hypophosphites so often vaunted to the general public as nerve food, and many other drugs of a problematical value which have been allowed to slide through our brain cells into the region of forgetfulness; and very properly so.

Shortly after I received the appointment of professor of therapeutics in McGill University, Sir William Osler—then to us simply “Osler”—on a visit to Montreal, came and congratulated me on my appointment. “Don’t teach the students many drugs, eight or ten are all that is necessary, but teach them these thoroughly,” he said. I did not agree with his limited number then, but year by year I am becoming more and more of his opinion. My list of valuable drugs lessens, and although I am not yet limited to ten, I yearly decrease the number of those taught to my students and emphasize to them the greater importance of knowing a few drugs thoroughly, rather than of knowing many drugs imperfectly.

Partly as a result of this relegation of drugs to a secondary place in the treatment of disease; partly as the result of a lessened confidence in the beneficial action to be obtained from the employment of our old official drugs; and partly also from a desire to exploit new drugs and new preparations, the physician to-day, I fear, is gradually using the drugs and preparations of the *Pharmacopoeia* less and less, and in their place is prescribing the ready-to-hand formulæ of the manufacturing chemists, and not infrequently their proprietary preparations under patented names.

Large manufacturing houses of limited liability and immense capital, employing a skilled and highly educated staff, have been certainly in many ways of much service to our profession. Their triturate tablets, hypodermic tablets, and compressed tablets; their sugar-coated and chocolate-coated pills; their delicately-flavoured and brightly-coloured elixirs, and their sterile ampoules, have been of great assistance in

our prescribing, and will be so long as the manufacturers are obliged to maintain a high standard of strength and purity. This, however, will require government supervision. Undoubtedly such preparations as I have mentioned tend to favour economy for the patient, and add greatly to the convenience of such physicians as are obliged to dispense their own prescriptions. Much caution, however, must be exercised, and an absolute veto must be placed on the use of proprietary combinations with patented names, or on any preparations of which the formula is hidden or obscure.

The profession should speak on this matter in no uncertain tone, for to-day many of these manufacturing houses and many brazen-faced pharmacists have gone much further than to offer us our official drugs put up in form convenient for administration, or blended in special formulæ of their own devising, stated to be suitable for all constitutions and conditions. Many of them now attempt to give advice to physicians as to the latest treatment of disease and foist prescriptions upon us containing some so-called new chemical agent—otherwise a well-known drug under a new proprietary name. Still worse, in our own medical journals, which we are supposed to control, proprietary nostrums are ethically (!) so they offered, only to the profession with highly exaggerated and totally unproven statements, claiming for their special combination all kinds of miraculous powers. Their agents, fresh from schools of plausible advertising, flood our shelves with their free samples and our desks with their blotters emblazoned with the suggestive names of their special nostrums. Their literature arrives with every mail and is full of unwarranted statements loudly vaunting the virtues of their specifics; on every page flaunting ready-made prescriptions for the physician to copy, in which a valuable official drug is shown in combination with their wonderful elixir vitæ, thus salving the conscience of the physician, while the nostrum manufacturer exacts his heavy toll in the price paid.

May I ask this gathering whether they think a physician treats honestly a patient who consults him, when he prescribes a bottle of So-and-So's Compound Terpin Cough Mixture, or another So-and-So's Digestive Elixir, or a third quack's Wonderful Life Restoring Iron Tonic, when he knows little of what drugs are contained in them and nothing of the amount of the often powerful drugs he is actually giving when he prescribes such nostrums, and trusts implicitly in the statements of "Truthful James" the nostrum dealer. Can you afford me a better illustration of the blind physician leading the blind patient? You know the result.

All this nostrum and proprietary business depends upon secrecy,

upon the zeal and assurance of the advertising proprietors, and upon the gullibility of the purchaser. Patent medicines, unless they contain some dope, are short-lived.

A very instructive story is that of Dr. Warburg, of Vienna. About the middle of last century Warburg's solution of quinine was very highly esteemed in many countries. The Austrian Imperial Health Board ordered it to be kept in all the pharmacies of the empire; English physicians in India averred that by it they effected cures they were unable to effect by the simple drug. But unfortunately for him sufficient pressure was brought to bear to induce him to divulge his recipe, and at once its sale fell off and shortly almost altogether ceased. Everybody said: Oh, is that all—quinine with a little aloes and aromatics. He died a comparatively poor man, and yet his combination had perhaps a certain amount of value. Compare him with Mr. Eno, of Eno's Fruit Salts, who died worth six million of dollars, or the self-dubbed Professor Holloway, vaunting the efficacy of his pills, and his ointment of turpentine and beeswax. He left money sufficient to found colleges for women and asylums for lunatics. Remember also Dr. Morrison and his pills of gamboge, colocynth, squills, cream of tartar and ginger—a pill such as my conscience and my knowledge of the action of drugs never would allow me to prescribe—and yet physicians, we are told, ordered them surreptitiously, and the English public swallowed them freely believing his wild statement, "that all diseases arise from one cause and therefore require but one medicine; it follows that if Morrison's pills do not cure no other medicine on earth will, and infallibility belongs to God." In his days pills and statements were not sugar-coated but were made strong. Our modern proprietary humbugs cover their chaff with a little wheat and take care that their nostrums please the eye, tickle the palate, and gently stimulate the imagination by some suggestive name or statement.

It is also in my opinion reprehensible, and I do not think this is too strong a word to use, for the physician to countenance proprietary preparations of even official drugs. For the pharmacist the fact that he is obliged to keep such an innumerable array of proprietary preparations on his shelves, together with the special tablets and pills of not one but many large manufacturing houses, must demand a large cash outlay; an outlay for which the pharmacist must recoup himself out of the pockets of our patients, and such recouping eventually reacts against the profession.

Personally I do not think it makes any difference to my patients whether the tablets I order be made by Messrs. Brown or Messrs. Smith, provided that both manufacturers are careful and honourable and sup-

ply pure drugs. The pharmacist should be held responsible for the large houses whose goods he dispenses. Very seldom indeed should the physician append the name of any manufacturing house to his prescriptions.

Another important fact which has to be recognized to-day is the number of new synthetic drugs which have been introduced to the profession by German manufacturing houses. A few of these have proved of very definite value, replacing many of our older drugs; the great majority of them, however, have proved failures. For the most part they are the by-products in the manufacture of other chemicals, especially of the aniline dye industry, and their introduction to the profession has been due to the very energetic business methods of our German *friends*! A few, especially the earlier ones, have come to us with their value attested by really careful research work in the experimental laboratory and by the observations of careful clinicians in the large German hospitals. Of late years, however, much of this work has evidently been of the most superficial character and the numerous large chemical industries of Germany have competed with one another for priority rights in flooding the markets of the world with new drugs of almost no value. All of these have had some sounding proprietary name indicative of their supposed action, to which was attached a scientific name to indicate profound chemical research.

A few of these new drugs were definitely appropriated from the laboratories of both French and English chemists, the name given by the discoverer was changed and newly coined one was patented and the medical profession paid the piper. You will remember that in 1894 hexamethylene-tetramine was synthetically made and its therapeutic value as an antiseptic announced by M. Albert Robin at the Academy of Medicine in Paris, under the name of formine. About ten years later under the German name of urotropine, with German patents, the same drug was introduced to the profession and was received without questioning by English, French, and American physicians, and the price demanded was paid; five times the price for which it could be made in an ordinary chemical laboratory.

This is but one example out of many. How was it accomplished? The German houses bought up, or ruined by underselling, all the chemical industries in France and Great Britain that either opposed them or stood in the way of their schemes. For the few years immediately preceding the war this synthetic drug business represented in Germany a modern trust in its most vicious manifestations. There were large chemical factories thriving on the past bounties given by a fostering government large hospitals in which clinical experiments could be made,

high professors with sounding titles who did not hesitate to stoop to give certificates, and well paid medical journals which willingly published reports, long and many, calling attention to every new product.

The whole world still honours the perseverance and careful laboratory methods of Ehrlich in his search for a *therapia magna sterilisans* for syphilis. His 606 accomplished almost all but not quite all that he claimed for it. It is far otherwise with many of the recent synthetic products which until the outbreak of the war were so sedulously brought to the notice of our profession in Canada and elsewhere. A short trial has shown that most of them are of little value and their introduction can only be regarded as a prostitution of laboratories, hospitals, and professors to commercial ends. Everywhere when science ceases to pursue truth for its own sake and becomes the poorly paid slave of commerce deterioration is, I fear, inevitable.

As I have mentioned, a number of these new synthetic drugs proved themselves of very definite value and replaced almost entirely many of our older drugs and their galenical preparations. Now, when our supply is cut short, we find ourselves in difficulty and appreciate how completely Germany in the chemical trade had made herself master of the situation. At present it is against the law to order or make use of any German wares, and under this law falls the use of German made drugs and German patent names. On the other hand it has been questioned whether a pharmacist is at liberty to replace a substance ordered under its fancy German name by the same substance sold under its true scientific name. It is perhaps debatable, but the remedy is in our own hands. To-day quite a number of these really useful synthetic drugs are manufactured in England, France and Switzerland, and a few in Canada and the States, and have been placed on the market under their chemical names. It behoves us in writing our prescriptions to avoid the use of all patented names and to use only the name given in the *British Pharmacopoeia*, or the chemical name. For this reason in prescribing we should write,

- Acetanilid, not antifebrin;
- Phenazone, not antipyrin;
- Acetyl-salicylic acid, not aspirin;
- Theobromine sodio-salicylate, not diuretin;
- Methyl-sulphonal, not trional;
- Diacetyl-morphine, not heroin;
- Barbitonum, not veronal; and so forth.

The list is a long one.

Much more objectionable even than the patented names of new synthetic drugs are the proprietary names representing the semi-secret

and patented preparations of many large manufacturing drug houses, American, Canadian, and English. To these I have already referred, but desire to make one more protest against the prescribing of such nostrums by any well educated and right thinking physician. All use of such in prescriptions I regard as unethical, tending not to the honour but to the dishonour of our profession, and not to the advancement of true knowledge, but to the benumbing of research and as a retrogression towards the therapeutics of the dark ages.

When the war is over there is little doubt but that Germany will again make the attempt to dump large quantities of these drugs and chemicals in every civilized country with the hope of again ruining the chemical laboratories which to-day are trying to supply us with the synthetic drugs of which we stand in need. I must appeal to the patriotism of every physician to favour either the home made or the British made product. And to our government we would say that no industry is more important for our country than the development in all directions of its great resources by chemical research and no manufacturing houses are in greater need at the present of governmental protection than those which attempt to do for the development of Canada what large chemical laboratories and factories have done for the advancement and development of Germany.

THE AETIOLOGY AND TREATMENT OF EXOPHTHALMIC
GOITRE WITH SPECIAL REFERENCE TO THE USE
USE OF RADIUM.*

BY DR. W. H. B. AIKINS, TORONTO.

EXOPHTHALMIC goitre is referred to in literature under several different names, including Graves' disease, Basedow's disease and Parry's disease, and the designation of hyperthyroidism has recently been applied to it by some observers. This latter term, however, can scarcely be regarded as an appropriate one, as it is now generally assumed that hyperthyroidism, although it probably plays a certain role in the causation of the disease, is not by any means the only aetiological factor. The designation of exophthalmic goitre also has the disadvantage that the assumption on which it is based, namely, that exophthalmos and enlargement of the thyroid, are invariably present, has now been shown to be without foundation, as one or both of these symptoms may be

* Read at a meeting of the Ontario Medical Association June 2nd, 1916.

absent in an otherwise typical case, but it has been so generally adopted that I propose to use it.

In spite of the fact that there is probably no condition in regard to which such extensive investigations, both clinical and experimental, have been made during the last few years, and the enormous amount of literature which has accumulated upon the subject, the ætiology of exophthalmic goitre still remains obscure, although considerable light has been thrown upon it. The two chief theories which have been advanced may be considered under the following headings: (1) The Glandular Theory; (2) The Neurogenic Theory.

1. *The Glandular Theory.*—The theory of Mobius was for a long time very generally accepted as a sufficient explanation of the symptoms of exophthalmic goitre. It assumes that it is due to a primary functional disturbance of the thyroid, resulting in the production of an excess of secretion, which saturates the organism, and causes the symptom-complex. Many writers now consider it probable that abnormalities of the other endocrinous glands, such as the thymus, suprarenals, hypophysis and ovary, also play a more or less important part in the ætiology of the condition.

2. *The Neurogenic Theory* does not negative the glandular theory, but is complementary to it, there still being difference of opinion as to whether the glandular or the neurogenous disturbance is to be regarded as the primary one. Feeding with thyroid substance, both experimentally and by the administration of thyroid tablets in man, sometimes produces the typical symptoms, whilst in other cases it fails to do so, even if continued for a prolonged period. This indicates that the disease cannot be regarded as a pure hyperthyroidism, but that, in addition to an abnormal secretory function of the thyroid a predisposing factor of some kind is essential, and the facts which are now at our disposal lead to the assumption that this predisposing factor is to be sought for in a primary defect or injury to the central nervous system. This hypothesis is confirmed by the comparative frequency of the disease in neurotic individuals and those with a neuropathic heredity, as manifested by the occurrence of diseases such as insanity, hysteria or epilepsy in other members of the patient's family. The predominance of symptoms referable to the nervous system in the clinical picture is also confirmatory of it. In this connection Bumsted¹ emphasizes the fact that direct inheritance of the disease itself is not so uncommon as is generally supposed. He quotes Rosenberg's case, in which the patient's grandmother, father, two aunts and two sisters had suffered from exophthalmic goitre, and Oesterreicher's statement that in a family of ten children eight suffered from it. Bumsted himself has had four sisters under his observa-

tion during the last five years. Two of them have severe exophthalmic goitre and a third early symptoms of it, whilst the fourth developed symptoms when she had been for some time at home with her sisters after leaving school.

Although it has not yet been definitely proved, it appears probable that abnormalities of the other endocrinous glands play a part in the production of the symptoms. This applies more especially to persistence and hyperplasia of the thymus, which has been observed in a large proportion of the cases which have been examined *post-mortem*, and is described by the French writers as rejuvenescence of the thymus. Capelle and Bayer² found enlargement of the gland in 43 of 60 autopsies (70 per cent.), Matti³ in 75 per cent. of 133 autopsies, Berry⁴ in 100 per cent. of every autopsy that he has made, and Klosé⁵ goes so far as to say that exophthalmic goitre never occurs without enlargement of the thymus. Capelle and Bayer believe that in most cases the symptoms result from abnormal function of the thyroid, which is supplied by the sympathetic nervous system, and the thymus which is supplied by the vagus. Some writers explain the symptoms, not by disease of the thyroid, but of the thymus, and Garre⁶, who now operates on the thymus in every case, states that its removal causes the disappearance of Garre's characteristic blood picture. Hart⁷ is inclined to agree with this opinion, and believes that the thymus of itself is capable of causing the symptoms usually ascribed to the thyroid. He therefore assumes secondary disease of the thyroid, partially due to persistence of the thymus and partially to constitutional anomalies, above all lesions of the nervous system. On the other hand, Kocher⁸ says there is no proof that typical exophthalmic goitre can be induced by the thymus alone without hypersecretion of the thyroid, but that it is possible that hyperplasia and persistence of the thymus predisposed to it. He finds that an enlarged and persistent thymus is particularly common in certain districts and certain families, in which it is seen both with and without symptoms of exophthalmic goitre. He accordingly regards it as merely a regional familial late involution, dependent upon congenital or possibly constitutional peculiarities, and not as a direct cause of the disease.

There seems reason to believe that other internal secretion glands have some influence. In exophthalmic goitre Kocher found general hyperplasia of the lymphoid organs and proliferation of ectopic lymphoid tissue, involving the suprarenals, and ovaries, and more rarely the pancreas. The frequency of pigmentation of the skin suggests the possibility of an influence of the suprarenals, whilst the greater frequency of the disease in women points to the influence of ovarian secretion. It is a well-known fact that there is a predisposition to the onset of exoph-

thalmic goitre at puberty and the cessation of menstruation, and to exacerbations of the already existing disease during menstruation and pregnancy.

Whilst there is evidence that an excess of thyroid secretion is of importance in giving rise to the symptoms of exophthalmic goitre, there seems reason to believe that it does so only if some predisposing factor is present, and that this primary predisposing factor consists in an injury of the nervous system. The secretion of the thyroid gland consists of iodine, an albumin body and a group of proteins, and described collectively as idio-thyreo-globulin. This combination appears to possess specific characteristics, which neither of its constituents possess in themselves, either alone or in combination with one of the others. Oswald, who has made extensive investigations in this connection, states that iodo-thyreo-globulin increases nerve tonus and the excitability of the nervous system, and also favors metabolism and the degeneration of the albumin and fat. These properties explain the clinical pictures of myxœdema and hyperthyroidism, thyroid secretion in the former being reduced or abolished, and in the latter increased. Oswald⁹ points out the significance of the fact that symptoms of exophthalmic goitre do not invariably develop in response to saturation of the organism with iodo-thyrea-globulin, and therefore concludes that the extra-thyroid contributory factor must be something more than a mere predisposition. Oswald does not regard the saturation of the organism with iodo-thyreo-globulin as primary, but as a result of increased innervation of the gland and excessive flow of blood through it, in which the nervous system plays the primary role. A so-called vicious circle is thus established, the excessive amount of secretion poured out increasing still further the tonus and excitability of the nervous system, and the latter in its turn reacting on the thyroid, and intensifying its innervation and thereby its secretory activity.

Constitutional disease, such as diabetes, gout and obesity, are not infrequently present in these cases, and careful enquiry will often elicit the information that the patient has for a long time suffered from severe nervous and phychial disorders, sometimes dating back to childhood. We find that long before the appearance of the typical symptoms the patient has been nervous, unduly excitable, irritable and "difficult," and has perhaps suffered from cardiac troubles. A very common statement in the anamnesis is that there is intolerance for cocaine, as manifested on the extraction of a tooth. The general conclusion seems to be that, whatever part of the thyroid and other internal secretion glands vlay in the setting up of the pathological process, injury to the nervous system is by far the most important ætiological factor.

Exophthalmic goitre may follow acute diseases, such as typhoid, rheumatism, diphtheria, and especially influenza. Bialokur reports its occurrence in 27 of 337 cases of pulmonary tuberculosis, and its stimulation in the early stages of the symptoms of the latter disease has sometimes led to an erroneous diagnosis. It is not uncommon in chlorisis. McCarrison's¹⁰ very extensive researches in relation to endemic goitre, in the course of which he obtained good results from vaccines prepared from organisms isolated from goitre, suggest the possibility that the enlargement of the thyroid in exophthalmic goitre may also be due to some non-specific infection.

TREATMENT.—The treatment of cases of exophthalmic goitre is always difficult, and demands a maximum of good judgment on the part of the physician if he wishes to obtain a successful result without referring them to the surgeon for thyroidectomy. It is a mistake to assume that the condition is practically incurable by medical treatment, and after a careful study of its results in the hands of various writers, and including Hale White¹¹, and Mackenzie¹², Solis Cohen¹³, concludes that there is a reasonable prospect of recovery in about 75 per cent. of the cases, which is about the same proportion as that claimed for surgery in the hands of competent surgeons. At the same time there is no doubt that for some cases surgery is imperative, and in this respect each individual case should be judged on its own merits. Whatever the treatment adopted, it is very exceptional for all the symptoms to completely disappear, but most authorities agree that we are justified in speaking of cure if the general condition and strength are maintained, and the symptoms are relieved to such an extent that the patient is able to resume her ordinary occupation.

The brief account which has been given of the various hypotheses in regard to the causation of the disease makes it obvious that in the treatment it is essential to adopt measures tending to reduce excessive vascularity of the gland, thereby diminishing secretion and the tendency to hyperthyroidism. With this object in view it is absolutely necessary to secure for the patient the most complete bodily and mental rest which is obtainable under the circumstances, thus removing the stimulating effect on the thyroid of exercise and excitement. In some of the slighter cases a simple rest and isolation cure alone may relieve the symptoms, and if persevered in for some considerable time result in subsidence of the enlargement of the gland. During the first stage of the treatment rest should be so complete that it should not even be disturbed by the administration of medicaments. The length of time during which it is advisable for the patient to remain in bed varies in accordance with the progress of the case. The best guide in this respect

is the condition of the pulse. When it has remained regular and practically normal for three or four weeks the patient may be allowed to rest on a sofa in the room for an hour or so daily, and subsequently increase the amount of exertion very gradually day by day. The benefit of the rest cure is likely to be greater if it is possible to take it in the country, preferably in a bracing climate, and away from the ordinary surroundings of the patient.

Defective nutrition is commonly associated with this disease, and therefore a liberal and nutritious diet, similar to that often recommended in pulmonary tuberculosis, is frequently indicated. Foods rich in extractives should be avoided, the diet consisting chiefly of milk and cereals, together with fruit and the more easily digested vegetables. It should be borne in mind, however, that gastric hyperacidity is present in not a few of these cases, and that under such circumstances it is advisable to forbid acid fruits.

Medicaments.—As regards the medicaments which have been recommended, their name is legion, and the most contradictory opinions are given by different writers as to the efficacy of most of them. Opinions differ as to the advisability of giving hypnotic drugs, such as veronal, sulphonal and trional. Some writers recommend them for the purpose of procuring sleep and lessening excitability, while others emphasize the fact that in neurotic cases of this description the drug habit is easily formed, and not so easily given up. Williams¹⁵ thinks that the only sedative drug permissible is asperin. The benefit sometimes derived from belladonna is due rather to its property of controlling glandular secretion than to its sedative qualities.

Of the bromides the only preparation which has been found useful is hydrobromate of quinine, which is highly recommended by Miller¹⁶, Forschheimer¹⁷ and others. Bumsted states that with it he has been able to cure several cases which had previously proved refractory to all other forms of treatment, including operation, and that one of its advantages is that it can be taken for months together without bad effects. In my own practice I have found that the most effective drug treatment is the administration of this preparation in the form of capsules or cachets, each containing 5 grains of hydrobromate of quinine and 1 grain of ergotin, the dose being repeated three times daily.

Leigh Watson¹⁸ reports beneficial results from the injection of 1 to 4cc., of a 30 to 40 per cent. solution of quinine and urea in fifty cases of exophthalmic goitre, the dose being repeated every third day. Two severe cases remained free from symptoms eighteen months after the last injection, and sixteen have been free from symptoms for one year.

On the assumption that exophthalmic goitre is more common in

districts in which the water is deficient in lime, treatment by the administration of calcium salts has been recommended. Campbell¹⁹ states that during the last eighteen months he has been in the habit of treating his cases in this way, and has had better results than from any other form of medication. He does not suggest that it should be the only treatment, but that it should be combined with any other form of treatment selected. He gives a dose of 10 grains of chloride of calcium daily.

In view of the liability of digitalis toxæmia in toxic conditions of the thyroid, many writers emphasize the desirability of avoiding the use of this and other cardiac drugs, except in cases in which special indications, similar to those in organic disease of the heart, are present. Weiland²⁰ points out that such indications are absent in the cases in which some surgeons recommend a dose of digitalis before operation, and that they should therefore be included in the category in which the drug is contra-indicated.

Organotherapy.—Some writers claim to have obtained satisfactory results from administration of extract of the thymus gland, but the reports as regards treatment by organotherapy, including the administration of the thyroid substance, are on the whole not very favorable, and do not compare with the brilliant results obtained in cretinism and myxœdema from organotherapy. Serum from thyroidectomized sheep and milk from thyroidectomized goats are sometimes used in the forms of preparations known as rodagen, thyroidectin and antithyroidin, and have been found useful in some cases.

Roentgen Rays.—The fact that X-rays are known to have a selective effect upon glandular tissue, justifies the assumption that their use may be beneficial in exophthalmic goitre, and they have accordingly been extensively used, both alone and in combination with surgery. Satisfactory results are reported by several writers, and Kienbock,²¹ Nagelschmidt²² and others go so far as to say that no operation for this condition should be undertaken without preliminary treatment by X-rays, and that if this procedure were universally adopted it would be likely to materially reduce the operative mortality of exophthalmic goitre. Belot²³ is of the opinion that even in the so-called abortive cases in which struma is absent the rays have a favorable influence on excessive and dysfunction (deficient or perverse function) respectively of the glands of internal secretion, even if these abnormalities are not associated with appreciable enlargement. Dr. Dawson Turner²⁴ reports successful cases, in which application of the X-rays was followed by diminution in the size of the thyroid and subsidence of the symptoms. This retrogressive process was associated with atrophy of the secretory epithelium and interstitial and extra-capsular fibrosis.

Radium Treatment.—Clinical experience shows that many cases do not respond satisfactorily to any of these methods, and in these refractory cases I have found the employment of radium to be of decided benefit. Abbé, of New York, first used radium successfully in exophthalmic goitre, and his favorable experience of its results has been repeatedly confirmed by other writers. The experiments of Victor Horsley and Finzi²⁵ show that the most constant changes after the application of radium affect the blood and lymph vessels. My own clinical experience shows that, when applied over the thyroid, the more penetrating radium rays diminish the vascularity and reduce the secretion of the gland.

Dawson Turner, who has had very favorable results, thinks that radium has two definite advantages as compared with the X-rays, *i.e.* (1) The possibility of giving definite doses; (2) The fact that it can be applied without noise or excitement, while the patient remains in bed.

The following cases will serve as examples of the benefit to be derived from the use of radium rays in exophthalmic goitre:

Case 1.—Mrs. M., *et.* 31; married; two children. Five years before coming to me she noticed enlargement of the thyroid and had used local applications, probably iodine, with no effects. A month before she consulted me the growth had increased to such an extent that it was spreading to the lateral lobe. She had suffered from difficulty in breathing, and discomfort on speaking or swallowing. Recently her appetite had been bad, and she had felt tired, nervous, and disinclined for work.

On examination the thyroid was found to be definitely enlarged and pulsating, especially its middle and right lobes, the neck being 15 inches in circumference. The pulse rate was 88, and accelerated on slight exertion. The condition appeared to be an early stage of exophthalmic goitre.

Three thyroidectin tablets, each containing 5 grains, were given daily, and in addition a radiation of 100 m.g. hours was given with a large radium plaque. A week later the circumference of the neck had diminished to 14 inches, the pressure symptoms were better, and the patient felt better. Five weeks after the commencement of the treatment the neck was 13 inches in circumference, the tumor had almost disappeared, the patient no longer complained of nervousness, and she has remained well ever since.

Case 2.—A young unmarried woman of 21 had for a year been so nervous, excitable and changed in disposition that her parents feared for her mental condition. A physician was consulted, but apparently he did not suspect the real nature of the disease. When she first came under observation she was in a highly nervous condition, with marked

tremor, cardiac rapidity and enlargement of the thyroid, the circumference of the neck being 14 inches. The treatment adopted was rest in bed, with an ice-bag applied over the heart, and the administration thrice daily of a quinine hydrobromate capsule (5 gr. hydrobromate, ergotin, 1 gr.). The thyroid gland was subjected to a heavy exposure to radium rays. Three months later the neck was only $12\frac{1}{2}$ inches in circumference, and the tachycardia and nervous symptoms had disappeared. Further radium treatment has since been given from time to time, but she has now continued well for more than two years, and has been able to resume her normal life.

Case 3.—In this case, in a young woman, the circumference of the neck was $16\frac{3}{4}$ inches. When first seen signs of hyperthyroidism were not marked, there being slight tremor, but no tachycardia. She was not treated by absolute rest until severe tachycardia suddenly developed, the pulse rate going up to 160, when she was at once put to bed with an ice-bag over the præcordia. Radium was applied to the thyroid, and in three months the neck measured only $12\frac{1}{2}$ inches, the pulse rate at the same time becoming normal. She has remained well ever since, that is for over three years.

Case 4.—A married woman, æt. 35, was referred to me by Dr. G. W. Smith, of North Bay. She had suffered for the previous months from exophthalmic goitre, which developed six months after the removal of the ovaries. The thyroid gland was only slightly enlarged, but there was well marked tremor, and the pulse rate was 140. She had been treated at home by rest in bed, suitable diet and medication, together with other ordinary recognized measures of treatment, but without result. As a last resort she was sent to me for radium treatment. I prescribed absolute rest in bed with an ice-bag over the præcordia, and the administration thrice daily of hydrobromate of quinine (5 grains, with one grain, with 1 grain ergotin). In addition to heavy radiation was instituted of the thyroid. The improvement was marvellous. Within two weeks the pulse rate had dropped to 75, and nervousness had almost entirely disappeared. The patient was kept under observation for six weeks, when she went home in apparently normal health. When seen again, about six months later, there had been no return of the symptoms of hyperthyroidism, and I am informed that she continues well.

Case 5.—A girl of 19, referred to me by Dr. Clarke, Bowmanville, Ontario, who presented the typical picture of Graves' disease. The thyroid was fairly prominent, the circumference of the neck being $14\frac{1}{2}$ inches. There was well marked exophthalmos, the pulse rate was 120, and the patient was very nervous. No benefit had resulted from all the ordinary measures of medical treatment, which had included the

administration of hydrobromate of quinine and ergotin and of Mobius' serum, together with absolute rest for some months. She was kept in bed with an ice-bag over the præcordia, the quinine and ergotin being continued. In addition an exposure of 70 m.g. hours of radium was given over the thyroid. She went home and was not seen again for five weeks. At the end of this time the pulse rate was still 120, but the circumference of the neck was reduced to 13 inches. She was further radiumized, and when seen again, two months later, the pulse rate had dropped to 76, tremor had disappeared, and the exophthalmos was scarcely noticeable.

This patient was last seen in September, 1915, when she had improved sufficiently to be able to do light housework. The neck measurement remained 13 inches, and the pulse rate was 80. The effect of radium in this case was most marked, as before its employment no improvement whatever had resulted in the patient's condition.

Case 6.—An unmarried woman, aged 45, developed symptoms of exophthalmic goitre in March, 1915. She complained of a "sick nervous feeling," and marked tremor. The pulse rate was about 130. There was considerable improvement after a rest cure, but the slightest exertion brought about a return of the symptoms.

She first consulted me early in October, 1915, when there was definite exophthalmos and tremor, the pulse rate rising to 120 on the least exertion. There was marked prominence of the left lobe of the thyroid, the neck measuring $14\frac{1}{2}$ inches. Hydrobromate of quinine and ergotin were given, with an ice-bag over the heart. Radiation was supplied over the thyroid. After receiving the treatment she returned to her home in the country. When next seen, on November 2nd, she looked and felt very much better. The neck measurement was half an inch less, the pulse at no time exceeded 90, and the nervousness had disappeared. Further radiation was given.

In January, 1916, the patient returned for observation. The pulse was only 76 per minute, even and regular. The left lobe of the thyroid was still somewhat prominent, but the symptoms of hyperthyroidism had disappeared completely.

Case 7.—In this case all the recognized symptoms of severe hyperthyroidism were present with the exception of enlargement of the thyroid gland.

The patient was a married woman of 27. Protuberance of the eyes was first noticed after an attack of influenza in the Spring of 1913, and subsequently dyspnoea and palpitation. During the following winter the symptoms diminished somewhat in severity, but after an attack of tonsillitis in March, 1915, she began to have attacks of vomit-

ing, suffering from palpitation and was very easily excited or startled, the action of the heart becoming very rapid. In June 1915, she was kept in bed for five weeks, when her pulse became normal.

When seen in August, 1915, there was no enlargement of the thyroid, but the eyes were very prominent, and the pulse ranged from 84 to 120. Radiation was given over the thyroid, and in October she reported that she was very much better, the pulse was steadier, and she had gained in weight. In January, 1916, after further treatment, she was able to take short walks and do light housework without disturbing the pulse, nervousness had nearly disappeared, and instead of having become a confirmed invalid she had become a normal young woman.

Hydro-therapy.—Hallevorden,²⁶ whose article is based on 100 cases, has had excellent results from the hydro-therapeutic method recommended by von Winternitz, which consists of packings and demi-baths. The treatment is always agreeable to the patient, and the pulse usually goes down on the application of the packing. With it he gives daily cold applications to the neck and back, and also to the heart if cardiac symptoms are prominent. The avoidance of exhausting and depressing baths is advisable. In slighter cases benefit is often derived from indifferent, salt or gaseous baths of comparatively low temperature. If fever is present it should be treated by tepid full baths or cool full baths, in accordance with the indications. Tight collars and tight lacing should always be avoided.

In conclusion, I should like to refer briefly to the psychological aspect of the condition, and its significance in relation to treatment. In view of the fact, which is now generally accepted, that injury of some kind to the nervous system is—even if not a primary factor—at least a very important factor in the ætiology of exophthalmic goitre, and that as a rule symptoms referable to it predominate in the clinical picture, it follows that one of the essential objects in our treatment is to endeavor to relieve these nervous symptoms, and that therefore psychotherapy plays an important rôle. This being so, it is obvious that it is highly desirable that physicians who have not had much experience of neurotic and neurasthenic people, and consequently do not understand them and have no sympathy with them, should refrain from undertaking the medical treatment of cases of this kind, in which the psychic element is such an important feature.

134 Bloor Street West.

BIBLIOGRAPHY.

1. Bumsted, C. V. R.: *Medical Record*, N.Y., 1915, lxxxvii, p 467.
2. Capelle & Bayer: *Beitrage zur klinische Chirurgie*, Sept., 1913.
3. Matti: *Zeitschrift fur Chirurgie*, Band cxvi.

4. Berry: *Lancet*, 1913, Vol. I. 583.
5. Klose: *Annals of Surgery*, 1912, p 143. *Beitrage zur klinische Chirurgie*, 1912, lxxvii, 601.
6. Garre: *Verhandlungen d. Deutschen Gesellschaft fur Chirurgie*, 1911, No. 27.
7. Hart (Berlin): *Medizinische Klinik*, 1915, xi, 388.
8. Kocher, A.: *Virchow's Archiv*, April, 1912. *Archiv fur klinische Chirurgie*, 1914, cxiv, 924.
9. Oswald (Zurich): *Zur Theorie der Schilddrusenfunktion. Berliner klinische Wochenschrift*, 1915, lii, 430.
10. McCarrison: *Aetiology on Endemic Goitre*.
11. Hale White: *Proceedings Royal Society Medicine*, March, 1912. Surgical Section, p 81.
12. Mackenzie: *Proceedings Royal Society Medicine*, March, 1912. Surgical Section, p 81.
13. Solis Cohen: Cited by Bumsted.
15. Williams, Leonard: *Practitioner*, 1915, xciv, 94.
16. Muller: Cited by Bumsted.
17. Forschheimer: *Therapausis of Internal Diseases*, Vol. III.
18. Leigh Watson: *Quinine and Urea Injections in Exoph. Goitre. Journal American Medical Association*, 1915, lxxv, 1102.
19. Campbell, H.: *Exophthalmic Goitre. Clinical Journal*, 1915, xlv, 329.
20. Weiland: *Behandlung der Morbus Basedowii. Therapie der Gegenwart*, 1915, lvi, 187.
21. Kienbock: Cited by Weiland.
22. Nagelschmidt: Cited by Weiland.
23. Belot: *Transact. Internat. Congress, London, 1913. Rad. Sect. Part 2, 43.*
24. Dawson Turner: *Radium in Treatment of Hyperthyroidism. Report British Association*, May, 1913, London, 1914, 672.
25. Victor Horsley & Finzi: Cited by Dawson Turner.
25. Halleorden: *Therapie der Gegenwart*, 1913, liv, 347.

VITAL STATISTICS OF ONTARIO.

The report of the Provincial Board of Health for the month of June shows that the Province is almost clear of smallpox, except for Harwich township, in the county of Kent. In all the other municipalities only four cases were reported for the month. The board notes the improvement in the reporting of tubercular cases by the local Boards of Health. The official figures are:

Diseases.	June, 1916.		June, 1915.	
	Cases.	Deaths.	Cases.	Deaths.
Smallpox	44	0	44	0
Scarlet fever	121	2	99	2
Diphtheria	165	17	166	16
Measles	2,039	14	559	17
Whooping cough	135	7	65	3
Typhoid	35	7	38	4
Tuberculosis	153	86	78	58
Infantile paralysis	2	1	1	0
Cerebro-spinal meningitis	11	9	13	8
	2,705	143	1,063	108

PERSONAL AND NEWS ITEMS

Dr. W. S. Verrall has assumed the position of surgeon to the Orthopedic Hospital, Toronto. We wish him success.

The fifteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held in the Parliament Buildings, Quebec City, Que., on Tuesday and Wednesday, 12th and 13th of September, 1916. The fifth annual convention of the Canadian Public Health Association will meet immediately after this.

The first quarterly report on the operations of the Ontario Base Hospital at Orpington has been received. It goes to show efficiency and that many soldiers have been treated in its medical and surgical wards. There were 372 surgical and 264 medical cases. The dental department had 1,222 cases. The hospital has 1,040 beds.

Dr. Hugh McKay, who has been the doctor at the Ontario Reformatory, Guelph, has been transferred to the staff of the Convalescent Hospital for returned soldiers at Cobourg.

The Canadian hospital for the treatment of rheumatism among soldiers has been located at Buxton, in Devonshire, near Chatsworth, the famous seat of the Duke of Devonshire. The hospital is under the control of Dr. Guest, of St. Thomas, Ont. Shortly after opening the hospital one hundred patients had been admitted. Col. McPherson is in command.

The King, at Buckingham Palace, recently conferred on Matron Eleanor Charleson, the Royal Red Cross of the first order, and on Sisters Janet Andrews and Ethel Holmes the Royal Red Cross of the second order.

An order has been passed forbidding the sale of cocaine. General Carleton Jones states that there have been very few cases among Canadians.

The Women's College Hospital in Toronto is still presecuting the effort to raise the requisite funds to complete the enlargement of the hospital. A committee has been formed. The recent campaign secured over \$40,000, but it is hoped to raise this to \$100,000.

The Princess Louise recently inspected the Queen's Canadian Hospital at Beachborough Park. Col. Donald Armour is the surgeon in charge.

Sir Victor Harsley, the noted English surgeon, died recently in Mesopotamia from the effects of the heat. He was created Knight in 1902, and was emeritus professor of surgery in University College, London.

Dr. J. H. Radford has been appointed Medical Officer of Health for Galt, in succession to the late Dr. T. W. Vardon.

Since 1st February the Provincial Board of Health has distributed serums to the value of about \$16,000. It is estimated that by the end of October about \$25,000 worth will have been provided.

Dr. C. O. Fissette, of Brantford, has gone to England, where he will be attached to the Army Medical Corps.

The city of Brantford recently carried a vote making a grant of \$58,000 to the hospital for needed improvements, and paying the cost of recent new buildings.

The King invested Assistant Matron Boulter with the Royal Red Cross of the first class, and Sisters Sadie Ferguson, Maud Gardiner, Olive Garland, Kathlean Lamkin, Florence McCallum, Florence Matrice, Eleanor Mercer, Jean Stronoch, Florence West, Katherine Whittick and Dorothy Winter with the Royal Red Cross, second class.

It is proposed to spend about \$40,000 on improvements to the Hamilton City Hospital. On a recent date there were over 300 patients in the hospital.

The following civilian medical practitioners are authorized to examine and attend recruits of the 220th at the points mentioned: West Toronto, Dr. Hopkins; Mimico, Dr. Forbes Godfrey; Weston, Dr. Charlton; Woodbridge, Dr. R. D. McLean; Sutton, Dr. H. H. Pringle; Newmarket, Dr. H. Webb; Aurora, Dr. W. J. Stevenson; Richmond Hill, Dr. Langstaff; North Toronto, Dr. Grundy; Agincourt, Dr. Conn; Markham, Dr. Young; Stouffville, Dr. F. A. Dales; East Toronto, Dr. Walters.

Dr. G. H. Wade, son of Mr. John Wade, Brighton township, has left Hanna, Alberta, to join the 175th Battalion at Calgary as medical officer. Lieut.-Col. Spencer is O.C. this battalion. Dr. Wade resided in Alberta for some time.

The Turks recently sunk a second Russian hospital ship. Such acts seem to be favorite ones with the Teutonic and Turkish combination. There will be a time limit to all this.

Dr. Elie Metchnikoff, the famous bacteriologist, died in Paris on 16th July. He had suffered for some time with heart disease. He was an ardent advocate of the value of sour milk as a means of prolonging life. In 1908 he was awarded the Nobel prize of \$20,000 for his researches.

Major George Musson, M.D., of Chatham, Ont., who has been serving in the Army Medical Corps, is home on furlough.

Dr. George Bassett Moon, chief surgeon on the battle cruiser Lion, who was killed in the battle off Jutland, was a nephew of Mr. Robert

Moon, 42 Concord Avenue, Toronto. Mr. Moon also has a brother, Dr. J. A. Moon, surgeon on H.M.S. Hercules, which took part in the battle.

Six wings of the Canadian hospital at Bushey Park have been completely furnished by the Canadian Red Cross. Each wing will bear the name of one of the King's children.

The formal opening of the new Port Hope Hospital took place on 29th June. This new hospital was made possible by the bequest of the late John Helm. The hospital is modern in every way.

Dr. C. J. Hastings, Medical Officer of Health, has issued a very timely bulletin to those who go to summer resorts, warning them that the sanitation of such places is often bad, and giving needed information.

Additional medical men are required for the Royal Army Medical Corps. They will receive \$6.00 a day, and on their arrival in England grants of \$150 for outfits and \$40 for camp kit will be made. They must sign for one year, at the end of which time they will receive a gratuity of \$300 if their services have been satisfactory.

The nurses of Wellesley Hospital received their pins and diplomas on 5th July. The graduates numbered eleven. The Sir John Eaton scholarship was won by Miss Jean Hoskin. The Herbert Bruce scholarship was awarded to Miss Gladys Bateman. The Sir William Mulock scholarship went to Miss Laura E. Moore, and the Sir Edmund Osler scholarship was secured by Miss Isabel McLeod.

Sir Richard Havelock Charles, sergeant-surgeon to the King and president of the Medical Board of India, has accepted the position of dean of the London School of Tropical Medicine, in succession to the late Sir Francis Lovell.

Col. Noel Marshall, chairman of the executive committee of the Canadian Red Cross, reports that this society has rendered excellent services to the wounded and convalescent soldiers. President Poincaré gave Col. Marshall an audience and expressed the sincere thanks of France for the great generosity of the Canadians. Every detail is carefully looked after by Col. Dr. Hodgetts. All the demands of the hospitals and the London Red Cross are being met.

At Columbia University, where women medical students are admitted, Dr. Rosalie S. Morton has been appointed to the staff of the Medical School. Dr. Morton is an able speaker and has written a good deal on preventive medicine. She is professor of gynecology at the Polyclinic Hospital.

It has been found that radium is of much value in treating septic war wounds. The salts of radium are used in solution. The wounds

are cleansed thoroughly and the radium used to destroy infection. The wounds are irrigated with a saline solution containing a few microgrammes of radium salt. Radium tubes are used in chronic sepsis.

A strong and energetic committee of ladies purpose making an effort during October to raise the funds necessary for the erection of a nurses' home for the Toronto Western Hospital in memory of Edith Cavell.

The Perkins-Bulls Hospital for Canadian officers at Putney Windows, which overlook the famous heath, was opened recently by the Lord Mayor, Sir Charles Wakefield. He said that William Pitt died in the adjoining house, that Oliver Cromwell had lived closely, and that Dick Turpin and Jack Shepherd knew every inch of the district. Surgeon-General Jones read letters from officers who had been in the hospital. Sir T. McKenzie, of New Zealand; Sheriff Touche, and Sir R. McBride also spoke.

The Toronto Women's Patriotic League has received word that in Britain and France there are sufficient supplies of surgical dressings for the present. The communication said that socks, pyjamas, dressing gowns, kit bags, hospital night shirts, sheets, pillow cases and towels are urgently needed.

Three years ago the Ontario Government bought 650 acres of land adjoining Whitby. A colony of buildings has been erected thereon for the care of the insane. At short time ago the first consignment of patients arrived. The buildings are very complete in every way. Each college is self-contained, with a complete diet kitchen. The maximum of comfort will be afforded the patients.

The native Chinese doctor is a curiosity. He passes no examinations; he requires no qualifications; he may have failed in business and set up as a physician. In his new profession he requires little stock in trade, medical instruments being almost unknown. Acu-puncture takes a prominent place. There 337 body markings to be learned. Each of these corresponds with internal organ.

The blockade is telling severely on surgical supplies for Germany. Dr. Eggers, of New York, who has recently returned from Europe, states that there is a great shortage in rubber gloves, surgical catgut, and plaster.

Dr. A. B. Macallum, Professor of Physiology in the University of Toronto, has been elected president of the Royal Society of Canada.

The death-rate in London, England, during April last was 17.2 per 1,000 of the population.

Charles Edward Fitzgerald, ex-president of the Royal College of Physicians of Ireland, died in Dublin on 27th May, at the age of 73. He was a noted ophthalmologist.

The resolution adopted by the Ontario Medical Council was as follows:

Moved by Dr. Hamilton and seconded by Dr. Connell:—

“That the members of the Medical Council of Ontario desire to place on record their appreciation of the discovery of ‘Serum Therapy,’ by Dr. (now Sir James) Grant, in the County of Carleton General Hospital, Ottawa, in 1861, and the credit only recently announced (May 20, London Lancet). We are truly proud of the honor and glory achieved by our sons in the battlefield for ‘King and country,’ and to gain the highest position of the world in medical science is a record alike creditable to Canada and our institutions of learning.”

A number of prominent physicians of New York City are serving on a special committee for the purpose of assisting the American Red Cross in its campaign to attain a membership of 1,000,000 throughout the United States. An appeal to the medical profession to join the Red Cross is signed by Dr. G. D. Stewart, Dr. G. E. Brewer, Dr. G. L. Gibson, and Dr. N. E. Brill, representing the Red Cross Units of Bellevue, Presbyterian, New York, and Mt. Sinai Hospitals, respectively.

A six-story home for the nurses of the Manhattan Eye, Ear, and Throat Hospital, New York, is to be erected on East Sixty-third Street, directly in the rear of the hospital building. The structure will have a frontage of 125 feet and a depth of 40 feet, and will, it is estimated, cost \$300,000.

A public health department has recently been organized in the province of Kiangsu, China, in which Shangai is situated. The department will regulate food, drug, and sanitary inspections, as well as control home sanitation and medical education.

The Victor Electric, The Scheudel-western x-Ray Co., The Macalaster, Wiggin Company, and the Snook-Roentgen Manufacturing Company, of Chicago, Cambridge, New York, and Philadelphia, have sold their properties and interests to the “Victor Electric Corporation,” of Chicago.

Dr. A. W. McKay, resident physician at Victoria Hospital, London, has been appointed Superintendent of St. Luke’s Hospital, Ottawa.

Dr. Allen Baines, of Toronto, is steadily regaining his health, and has resumed his practice.

Dr. G. S. Gordon, of Vancouver, has joined the army service, and will not resume his practice till the close of the war.

Dr. Harold McNaught, son of W. K. McNaught, is a member of the Medical Faculty of Leland Stanford University of California.

Dr. McMichael, a graduate of Trinity Medical College, and formerly a practitioner in Ontario, died in Detroit where he had resided for many years.

Dr. Frederick Townsend, a Toronto graduate, died at Sault Ste. Marie, Mich. For some time he held the chair of anatomy in the Detroit College of Medicine.

A Home for Incurables is to be opened at Longue Pointe, Montreal. The funds were raised by a committee of five ladies.

A theatre tax of one per cent. in Montreal goes to the hospitals. The amount this year is \$61,344.

The sum of \$60,150 was recently collected to pay off the debt on the Montreal Western Hospital.

Dr. John Hicks has been appointed by the Manitoba Government to succeed Dr. J. J. McFadden, as superintendent of the Brandon Asylum.

Dr. H. G. MacKid, of Calgary, has been elected an honorary life member of the St. John Ambulance Association in recognition of his valuable services.

The Calgary Hospital Board has decided to secure more accommodation for infectious diseases.

Dr. A. D. Campbell, of North Battleford, has been appointed resident physician at the Provincial Asylum for the Insane. Dr. J. W. Stewart has been appointed medical officer of health in succession to Dr. Campbell.

OBITUARY

THOMAS W. VARDON, M.D.

Stricken with heart failure while playing golf on 20th June, Dr. Thomas W. Vardon, Galt's veteran medical practitioner, passed away an hour later in the club house.

He was seventy-three years of age, and was born a few miles from Toronto in Pickering township. He was a graduate of Victoria College, and commenced practising his profession at Markdale, and after two years there moved to Hawkesville, where he remained until 1866, when he came to Galt. Despite his years he was quite active and in good health.

He was an ex-Mayor of the city, ex-president of Waterloo Golf and Country Club, an officer of the Horse Show Association for eight years, a member of the Ontario Medical Council, a member of the executive of the Provincial Board of Health, and Medical Officer of Galt for sixteen years. He was an elder of Knox Church, and a staunch and prominent Conservative. He was a Mason and Oddfellow, and one of the oldest

members of both lodges in the county. He was an ardent golfer, and spent most of his leisure time on the links.

His wife and three of the family survive.

W. A. HARVEY, M.D.

After an illness extending over a year there passed away on 9th July one of Harriston's respected citizens in the person of Dr. W. A. Harvey. The doctor had always taken an active interest in promoting the welfare of the town, and the poor have lost a good friend for he ministered to their wants with an unselfish hand. His widow and one son, Fred, and one daughter, Bessie, survive.

I. R. WALKER, M.D.

Dr. I. R. Walker, for upwards of 50 years a medical practitioner of Ingersoll, and one of its best-known residents, died 25th July, at London, where he had been living for over a year. Ill-health consequent upon his advanced years necessitated his retirement from his professional career about two years ago. He was widely known throughout the county. He was a man of keen public spirit, and as a member of the Board of Education for many years rendered valued service. He was strong in his advocacy of a thorough educational system. In the early days he was actively identified with the Mechanics' Institute. He was an enthusiastic curler, being a member of the Ingersoll Club for many years. The widow and one son, Dr. Harry Walker, of Western Canada, survive.

D. H. LANCASTER, M.D.

Dr. Lancaster, of Culloden, Ont., died at his home in his eightieth year. He was well known throughout Oxford county.

J. OSCAR PILON, M.D.

Dr. Pilon, of Montreal, died last April, after a short illness. He was in his twenty-eighth year and left a widow and child.

E. B. C. HANNINGTON, M.D.

Dr. Hannington died in Victoria, B.C., where he followed his professional work. He was born in New Brunswick in 1851, and graduated

from McGill in 1875, He was a son of the late Hon. Daniel Hannington. He left a widow, one daughter and two sons.

W. J. TEASDALE, M.D.

Dr. Teasdale, of London, Ont., died in his 56th year. He was born in Markham and graduated from Toronto University. For twenty-two years he was a member of the London Board of Education.

LT.-COL. JAMES ROSS, M.D., C.A.M.C.

Dr. Ross died at his home in Halifax at the age of 50. He had always taken a keen interest in military matters and had volunteered for overseas service. He was the son of the late Senator William Ross, of Halifax. He graduated from McGill in 1890, and devoted himself to the practice of dermatology. Apoplexy was the cause of death.

BOOK REVIEWS

KANAHEL ON INFECTIONS OF THE HAND.

A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. By Allen B. Kanavel, M.D., Assistant Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley and Cook County Hospitals, Chicago. New (3rd) edition, thoroughly revised. Octavo, 498 pages, with 161 illustrations. Cloth, \$3.75 net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

The importance of this work to all surgeons is demonstrated by the fact that it has passed so quickly through two large editions. The urgent demand for a third has given the author an opportunity to enhance the value of his monograph by a thorough revision and by the addition of two chapters: the first upon the "Relation of Acute Infective Processes to Industrial Pursuits," and the second upon "Plastic Procedures Instituted for the Correction of Deformities." The entire work has been thoroughly revised and enlarged, and a number of new illustrations have been added.

The enormous economic significance of infections of the hand is coming to be universally recognized and there is probably no other class of cases where malpractice is more common or unfortunate results of treatment more frequent. The subject of this book is, therefore, of the greatest importance to every surgeon and general practitioner. The surgeon who does casualty work or has charge of industrial accidents will find the work invaluable, and many deformed hands might be pre-

vented if every practitioner were familiar with the importance of this subject and with the complete manner in which this book handles it.

The practical character of this work may be shown by the following quotation from the preface: "The chapters are so grouped that the busy practitioner can find the part dealing with his particular case quickly. Given a case in which the practitioner is in doubt, he should read the chapter upon 'Diagnosis and Treatment in General.' This will indicate the group into which his case falls, and will also direct him to the proper sections of the book where cases of that nature are treated in detail." Any physician who carefully follows Kanavel will have his conception of the subject greatly clarified. The various chapters on treatment of different conditions are very full, the technique is well described, and the after-treatment is carefully given. The illustrations are remarkably clear and instructive. Following several of the chapters, a definite, complete resume is given, which will be found most helpful.

INTERNATIONAL CLINICS.

A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Paediatrics, Obstetrics, Gynaecology, Orthopaedics, Pathology, Dermatology, Ophthalmology, Otology, Laryngology, Rhinology, Hygiene and other Topics of Interest. Edited by H. R. M. Landis, M.D. Vol. II., 26th Series, 1916. London and Philadelphia: J. B. Lippincott Co. Price, \$9.00 per year. Charles Roberts, Montreal.

This volume has articles on treatment, medicine, psychiatry, obstetrics, public health and surgery. Under each heading are to be found several lectures and articles by leading clinicians. This number of the series keeps well abreast of the teachings of the day, and also maintains the high standard of the entire series, now known throughout the world. These volume would make an excellent addition to any library.

BILIARY TUBES AND CYSTIC ARTERY.

Anatomy of the Biliary Tubes and of the Cystic Artery. By W. Pedro Below, Professor of Descriptive Anatomy in the Faculty of Scientific Medicine of Buenos Aires.

This superb work is in Spanish. It is printed on very heavy quoted paper, and is illustrated in a most attractive style. Both the letter-press and the plates and illustrations throw much light upon this important subject. For the surgeon this volume is a very timely and valuable one. Many of the plates are beautifully colored.

MISCELLANEOUS

CIRCULAR OF THE PROVINCIAL BOARD OF HEALTH,
ONTARIO RE INFANTILE PARALYSIS.

The following instructions regarding Infantile Paralysis are issued by the Provincial Board of Health:

Infantile Paralysis, also called Anterior Poliomyelitis, is a communicable disease chiefly of children between the age of two and fourteen years. Older children and adults may also be affected by the disease.

The cause is unknown. It is known, however, that the agent causing the disease is present in the secretions of the nose and mouth and in the intestinal tract from being swallowed.

The disease is epidemic in some United States cities and in at least one town in Ontario.

It is believed that Infantile Paralysis is spread from one child to another by means of the secretions of the nose and mouth by direct transfer. It is possible also that it is spread by flies which have been in contact with intestinal discharges. It may become widespread in country as well as in crowded city districts, and persons who have been in contact with cases of the disease may harbour the contagion and give it to others without contracting the disease themselves; that is they are "carriers."

- (1) Every case must be quarantined for a period of six weeks.
- (2) All children who have been in contact with a case must be quarantined and kept under observation for a period of two weeks.
- (3) Adult members of the family who are wage earners may be allowed to go about their work subject to the regulations of the Provincial Board and on the discretion of the Medical Officer of Health.
- (4) Where there is an outbreak, gatherings of children, such as picnics, picture shows, and playgrounds, should be prohibited.
- (5) The source of origin of each case should be carefully enquired into in order that proper quarantine may be maintained.
- (6) In houses where cases appear all doors and windows should be screened, the premises kept clean, and no accumulation of garbage or waste permitted.
- (7) All cases should be at once notified to the Medical Officer of Health, and by him to the Chief Officer of the Provincial Board.
- (8) Mild cases, showing slight headache, rise of temperature and vomiting persisting for a few days, with slight muscular weakness and absence of paralysis, should be quarantined. These are probably one of the chief sources of contagion.

(9) As Infantile Paralysis is a most serious disease and in the present epidemic giving a high death-rate, the public is urged to second the efforts of the authorities in every way in order to prevent a severe outbreak in the Province.

(10) All materials such as cloths, etc., carrying secretions and discharges from patients should be burned, boiled, or disinfected.

If the disease shows any tendency to spread, special quarantine measures may be necessary.

JOHN M. McCULLOUGH,

Chief Officer of Health.

MEDICAL PREPARATIONS

THE PROPHYLACTIC TREATMENT OF HAY FEVER.

The best way to treat disease is to prevent it. This is not a new thought. The expressive (if possibly inelegant) "prevention is better than cure" is as old as medicine. Unfortunately, prophylactic therapeutics has its limitations, and, while the science of preventive medicine is undoubtedly expanding, these limitations are still rather sharply defined.

So far as the preventive treatment of hay fever is concerned, there is reason to believe that some real progress may now be recorded—an agreeable augury when one reflects upon the long and profitless search for a curative agent worthy to be called a specific.

Ragweed pollen extract, for example, gives promise of being an efficient immunizing agent in the autumnal type of hay fever. Its use is based upon the generally accepted theory that the ordinary hay fever of late summer and early fall, with occasional exceptions, is due to the pollen of ragweed, or to the toxic effects of other pollens closely analogous to ragweed in their protein content.

A reliable, accurately standardized ragweed pollen extract is supplied by Parke, Davis & Co. Each package contains three 5-mil (5-Cc.) vials, of 10 units, 100 units and 1,000 units per mil (Cc.) respectively; one vial of physiologic salt solution for use as a diluent, and one syringe. The extract is administered hypodermatically. Injections may be made with any small hypodermatic syringe, the so-called tuberculin syringe being well adapted to the purpose. Literature giving all necessary information as to application and dosage accompanies each package. The extract may be procured through any retail pharmacist.

While good results have attended the use of ragweed pollen extract after the disease has become established, the best effects are said to be obtained by early immunization. This prophylactic treatment should begin a month or six weeks before the expected manifestation of symptoms.