

Prize Competition, see Pages 286 and xxxiv.

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Original Articles

THE GENERAL MANAGEMENT OF DIABETES.*

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Although pathological knowledge affords the best basis of therapy, it is not always the sole basis. We cured malaria long before we knew its cause. Syphilis was controlled long before bacteriology was born, and all that we know of the cause of syphilis to-day is that it must be dependent upon some form of living organism having the power of indefinite reproduction.

When we use the term diabetes mellitus, let us clearly grasp the fact that we speak probably of a symptom rather than a disease; that the presence of sugar in the urine means a greater or less impairment, temporary or permanent, of the power of the organism to consume sugar; that while our knowledge of the starting-point of such impairment is very imperfect, we have good reason for believing it may be as widely separated as Langerhans' islands in the pancreas, the liver, or several portions of the central nervous system; that during life, at least, we can rarely determine the point of origin in a given case.

Useful as the term glycosuria may be for clinical purposes

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as denoting the milder grades of the condition, in these brief remarks I shall, for simplicity's sake, include all grades of the failure to burn sugar under the term diabetes. Although we treat a condition and a patient, not a disease and a patient, treatment may be of much value, resulting in prolongation of life and promotion of comfort, sometimes in absolute cure. The means to the end are diet and mode of life, the *role* of drugs being, as I am sure my friend Dr. Thomson will agree, a subordinate one.

Prevention, being the highest form of medicine, comes justly first. What can we do to prevent diabetes? Very little. Human life in civilized regions unavoidably tends to become more complex, the struggle for existence fiercer, competition of all kinds, but especially among brain workers, more keen; and we must recognize nerve overstrain as one of the predisposing causes of diabetes. Even if it were practicable and wise to make periodical tests of the sugar-burning capacity of all our adult patients in active life, how many would heed the danger signal of sugar in the urine after the ingestion of a hundred grams of sugar fasting? Some even of the godly say, "Tush! there shall no harm happen unto me," showing an attitude of mind possibly more conducive to happiness and comfort in life than that of Martha, "careful in many things."

I have in mind a man approaching middle age whose great-grandmother, grandmother and mother all died of diabetes, and whose own urine has been saccharine. With such an inheritance it is fairly in place to examine the sugar combustion power of such members of the family as we can, and to enjoin a careful life as to diet and strain. Until we know far more than at present, I do not see much more we can do in either special or general prophylaxis.

Time does not permit, even if the occasion demanded, much detail; and I propose, therefore, to deal mainly with the principles which, as it seems to me, should guide us in the management of our diabetic patients. A diabetic who consults us and has not been treated should, I think, be told to collect his twenty-four hour urine for, say, three successive days, without change in either diet or mode of life, the amount of urine and sugar being important factors in the estimation of the gravity of the case. If, on the other hand, the patient is under rational treatment, which has reduced or done away with his sugar it is rarely desirable to let down the bars, as experience shows that sugar production is in many cases more easily controlled the first than on subsequent attempts. In general, with the exception of cases

which are evidently very mild or severe in type it seems to me wiser to enforce an absolute or nearly absolute diet at once—just as it is more humane to complete the shortening of a dog's tail at one rather than in successive operations. The very mild case probably does not require great restrictions. If acetone and diacetic acid are present, a radical and rapid change in diet is dangerous. The striking improvement in strength, weight, and general symptoms which we so often see rewards the patient for his self-denial, and thus encourages him to persevere.

So wide is the variation between the different cases of diabetes, and so emphatically do we treat the patient, the more we individualize our patients, applying general principles to special cases, the better results shall we have. The diet list should be adapted to each case. I do not like the printed lists disinterestedly furnished us by some of the manufacturers of food products. They encourage laziness and routine—those two cardinal vices. Moreover, quantity is only next in importance to quality in the food of a diabetic. An approximate adjustment of the amount of food to the requirements of the special case must be aimed at. The body weight should be noted at stated intervals, weekly during the earlier part of treatment, at longer intervals later and in the more favorable cases. I doubt the wisdom or necessity in most cases of such accuracy as some of the modern German writers seem to enjoy; and yet, although it may not be essential for the patient to provide himself with scales and weigh out his portions, nor to dine in scales like Dr. Sanctorius of old, he should be given a rough idea of the size of a given weight of bread, meat, and fat. An increase in the amount of fatty food may be of importance nearly comparable to that of a diminution of starch.

The weight of the patient, his general symptoms or their lack, and the condition of the urine, taken together, will generally prove safe guides as to the judiciousness of the diet. Under a strict diet the sugar and polyuria, one or both, are practically sure to diminish, and may disappear. In a favorable case I expect to see the sugar disappear in two or three weeks, the weight increasing. How long a strict diet is to be maintained must depend upon the type of the disease, which, again, largely depends upon the age and nutrition of the patient. In milder cases I believe it to be wiser to keep the patient on a strict diet for one or two months, and then to test the tolerance for starch, giving first two or three ounces of bread daily and increasing the amount weekly as toleration warrants. In more severe cases which are rendered sugar free with difficulty one must be more

careful in allowing bread, and watch its effects even more closely. In the severest cases, in which the diet does not cause the sugar to disappear, it is ordinarily better to allow a fixed amount of bread. It is certainly so if under the strict diet weight and strength fall off. The sugar is then made from the nitrogenous food, or the body tissues and the danger of acid intoxication is increased.

A diabetic who loses weight does so for one of three reasons: His diet is not strict enough; or it is too strict; or, finally, the case is a hopeless one. Every case is a law unto itself. Severe diabetes is not a disease for a lazy doctor to treat, or for a careless or wilful patient to well endure.

As I have grown older I find that I have more and more discarded the use of diabetic breads. No diabetic bread which is palatable for any length of time is safe. We must always reckon with human greed for gold, and I much prefer to give ordinary or perhaps graham bread, the percentage of sugar-forming material in which is known, than to run the chance of deluding myself and my patients. I once visited incognito the agency of a well-known company which purveys for diabetics. "Have you bread for diabetics?" "Yes." "How much starch does it contain?" "None." "What! No starch?" "None!" My friend, Professor Wood, however, said the bread contained 60 per cent. of sugar-forming material. Gluten flour from another manufacturer had a low sugar-forming percentage one year and a high one the next.

If alcohol is considered desirable it is best given in the form of whiskey or brandy, a brut champagne, Moselle wine, or one of the California hocks, some of which contain practically no sugar.

I have never used the skimmed-milk cure as advocated by Donkin. To remove the fat and leave the sugar does not seem consistent with common sense. I concede that it has worked well in some cases, but wonder if the explanation does not lie in the fact that these patients had been eating far too much and would have done equally well under a diet judiciously restricted in quantity as well as quality.

A day of starvation once every two or three months is very useful in some cases. Austin Flint's plan of keeping a patient in bed from Saturday night until Monday morning, fasting, has seemed to me a good one. If hunger is felt a little beef tea may be a comfort without really invalidating the fast.

The bowels should always receive careful attention. All the more so if acetone and diacetic acid reactions are present in the

urine. The skin also should not be neglected. Hot or vapor baths at home followed by active friction, a Turkish or Russian bath at a well-managed establishment, if the general state of the patient permits, are useful adjuvants, especially if the skin be harsh, dry, and inactive. Ralfe thinks he has succeeded in preventing impending coma by the hot bath. In milder cases, with the skin still relatively active, the tonic effects of a daily cool or cold bath, provided that reaction be prompt, thorough, and maintained, is of service. Diabetics are sensitive to cold, and wool or silk underclothing of light or moderate weight is usually desirable. I think we generally err in this country in the colder season by wearing too heavy underclothing. We keep our houses at summer temperature, and voluntarily load ourselves with clothing which we would think justified revolution if a czar compelled its adoption. A diabetic should have several overcoats of varying thickness and warmth, and can scarcely be too well wrapped up while driving in an open carriage, the only form of conveyance really fit to drive in, except in stormy weather.

Worry and anxiety are to be avoided so far as possible. Such avoidance is—alas!—only too often easier to enjoin than to secure; but we must do our best. The man of large affairs and responsibility must be helped to systematize his work, to throw every possible detail on subordinates, and to shorten his working hours. How many of us inspect the down-town offices of our patients in active business, in order to remedy defects of light, ventilation, and heating of the apartments where more time is passed than anywhere save in the bedroom? In many cases the sum of small advantages forms a large aggregate, and sunshine and open fires are better classed among the greater than the small advantages. In a word, we are dealing with a class of people whose resistance and vitality are more or less diminished; in many of whom, we have reason to believe, the nervous system is especially at fault. The desirability of moderating nerve strain is therefore obvious.

Muscular exercise is useful directly, in that it burns sugar; indirectly, in that it aids blood and lymph circulation. It is, therefore, peculiarly adapted to diabetics, provided that thought and intelligence govern its use. In excess it is potent for harm. Outdoor exercise is far better than in any confined space, if the condition and circumstances of the patient permit. As to the form—walking, golf, tennis, horseback—it must depend upon the purse and taste. We are all so constituted that what we enjoy is, on the chances, better tolerated than what we dislike. Calisthenics and the various forms and degrees of massage, care-

fully adapted to the individual patient, are for the severer cases. Patients debilitated from any cause rightly ask direction as to the amount of exercise they can take. If the intelligent co-operation of the patient can be secured, better results will follow, even in sanitarium treatment; and most diabetics are not, and cannot be, under constant supervision. The best rule I have been able to formulate is the following: The patient is told, "You exercise; you feel tired; you rest an hour and fatigue passes. That fatigue was physiological, healthy, beneficial. If, on the other hand, after you rest you are still tired, you have done too much."

A change of climate during our Northern winter, with all that such change carries with it in freedom from care and in the ability to be in the open air, may be of great importance.

I am painfully conscious of the sketchiness of these remarks, but try to derive some consolation from the thought that, after all is said, is not he the best practitioner of medicine who, reasonable diagnostic acumen being assumed, at the expense of his own grey matter most skilfully adapts general principles to the particular needs and circumstances of the special case? In passing it occurs to me to add that, unless my experience has been exceptional, it is unusual to observe a case of diabetes from start to finish. The very rapid cases are not very common. Others co-operate heartily for a time; the restrictions then become irksome, and they sometimes shun the doctor, partly because they see that he does not attach much importance to drugs, the giving of which still represents too largely in the public mind the function of the physician, and partly because they do not want to exercise the self-denial which they feel will be demanded of them. In the milder cases past middle life perhaps no great harm results. It is the cases of medium severity which are most apt to suffer from this ostrich-like procedure. We can roughly classify our diabetic patients into those of (a) severe; (b) moderately severe; and (c) mild type.

The classification of any given case can usually be more accurately made after than before a suitable diet is enforced, as some cases prove more or less manageable than we expect when we first see them. And yet, classify as we will, there is every possibly gradation between the extremes.

I trust that a few illustrative cases will not trespass too much upon your patience. A patient under twenty is sure to be of the severest type, and is, with very rare exceptions, beyond hope; and yet life may be prolonged even for ten years, as in a young man of exceptional resolution and force of character whom I

saw several times. A rigid diet should be enforced as long as it can be tolerated and strength and weight are maintained.

1. Two years ago I saw a girl of ten. Polyuria and sugar had recently and inexplicably appeared. Under strict diet she became sugar free for a considerable time. She now, under the same diet, passes about 50 ounces of urine, containing 8 per cent. of sugar, looks and feels well, and has held her weight.

2. A school girl of eighteen spent Christmas vacation at home and appeared to her mother as well as usual. She returned to boarding school and soon complained of extreme hunger and thirst, with increasing lassitude. Polyuria was also noted. She lost flesh rapidly, and was sent home Jan. 27th. She passed four quarts of urine in the twenty-four hours following her return, and the amount of sugar was 4.6 per cent. There were marked acetone and diacetic acid reactions. In spite of large doses of bicarbonate of soda, and without much change in diet, she went into coma, and died Jan. 30th, three days after her return from school. The whole process, as nearly as could be ascertained, was of a little less than a month's duration.

3. A man now thirty-eight, active, florid, muscular, weighing 206, consulted me seven years ago for marked polyuria and 4 per cent of sugar. The polyuria was recent, but the sugar was probably of older date, as he had had eczema of the penis the previous summer. Under strict diet in two weeks the urine became normal. There was a slight loss of weight. He now weighs 175 to 180. He is in good general condition, in spite of extreme and unavoidable business worries and hard work the past four or five years. He has relaxed, and again restricted his diet, sugar reappearing in the urine with less provocation than formerly. I doubt if he will attain old age, though I hope I may be mistaken.

4. A woman of forty-one, weighing 185, entered the hospital in July, 1891, for sciatica. She had a moderate polyuria with about 1 per cent. of sugar, varying from day to day. Under treatment the sugar disappeared from the urine, and she was discharged much relieved after a month in the hospital. A brief record in 1897 states that she was looking well, sugar present. Two other records the same year show sugar in her urine in amounts varying from 1 per cent. to 1 1-2 per cent. She entered the hospital again in December, 1903, saying she had taken no special care of herself, except to avoid sweet stuffs. During her two weeks' stay in the hospital this time the urine varied between 42 and 72 ounces, the largest amount of sugar being 6 per cent., the lowest, under strict diet, 6-10 of 1 per cent.

She was discharged at her own request, the urine still containing sugar; no acetone or diacetic acid reaction at any time; weight, 175. In twelve years she seems to have lost no ground, and her case is probably to be classed as a favorable one.

5. Seven years ago a man, then sixty-three, of large business responsibilities, first consulted me. Ten months before that a competent observer had found no sugar in his urine. I found a moderate polyuria, and a percentage of sugar. Weight 184. He was easily rendered sugar free, and after a time could tolerate a moderate amount of starch. From time to time he broke loose, has gradually developed a marked arterio-sclerosis, which last spring led, through rank imprudence, to a uremic attack. This has necessitated some change in his diet, and he has never fully regained the weight he lost last spring, now weighing 165, and passing about 2 per cent. of sugar without polyuria. He feels well and is in active work, having few mental resources outside of his business.

6. Shortly after this his brother, one and a half years younger, came to me with great polyuria and much sugar, recent in onset. All symptoms disappeared rapidly under diet, and I have not seen him professionally for six years. About that time he was elected to Congress, and has been since active in political and campaign work, feeling very well with moderate dietary restriction. These brothers are fair examples of diabetes coming on after middle life, in well-nourished though not obese persons—the milder type of the disease. It is usually not necessary to enforce an absolute diet in such cases long; moderate restriction can then be allowed. Some of these cases can later return to practically an ordinary diet without reappearance of sugar. The experience of all of you can, doubtless, duplicate such cases as I have sketched.

In the young, treatment can at best only delay the fatal result. In those in the prime of life great service can generally be rendered, though actual cure occurs only in the minority of cases. In those past middle life the disease is usually well tolerated, and may be of comparatively little moment, provided that reasonable care be exercised; and yet, now and then we encounter cases the course of which proves other than first impressions would lead us to expect.

SOME NOTES ON GASTROPTOSIS WITH SPECIAL REFERENCE TO ITS RELATION TO PREGNANCY.

BY GRAHAM CHAMBERS, B.A., M.B.

Among the causes of gastroptosis in women, pregnancy, and especially repeated pregnancies, is one of the most active. This causal factor is more marked when the pregnancies occur at short intervals.

The process by which pregnancy tends to produce this displacement of the stomach is probably in some cases complex. Abdominal flaccidity following parturition, preceded by increased intra-abdominal tension during pregnancy, must, I think, be looked upon as the most active factor in these cases; but there are no doubt other causative agents, such as emaciation, flat chest, congenital weakness of the nervous system, and tight lacing, which act concomitantly with it.

Although after parturition there is a tendency to downward displacement of the abdominal organs, it is a common observation that when a patient suffering from gastroptosis becomes pregnant the condition of the gastric digestion is improved. The subject under consideration may therefore be conveniently discussed under two headings:

- (a) Pregnancy as a cause of gastroptosis.
- (b) Pregnancy in the treatment of gastroptosis.

Pregnancy as a Cause of Gastroptosis.—Flaccidity of the abdominal wall following pregnancy no doubt tends to cause a downward displacement of the abdominal organs. Naturally, the more frequently the pregnancies occur the stronger this causative factor becomes. In some women repeated pregnancy has very little if any effect on the position of the abdominal organs, while in others the result is marked. This condition can only be explained by taking into consideration other causative factors. Of these the condition of the nervous system is, I think, the most important. Some form of depression of the nervous system is frequently present and this tends to diminish the tone of the ligaments of the abdominal viscera as well as that of the abdominal wall.

The symptoms of downward displacement of the abdominal organs or enteroptosis are very variable. In some cases, though I think they are uncommon, the patient has little or no

complaint. In others the stomach, the kidneys, the uterus, etc., may one or all be at fault.

In these notes I shall refer more particularly to the symptoms of downward displacement of the stomach, or gastroptosis, in women.

According to my experience, downward displacement of the stomach is a cause of a considerable proportion of the cases of indigestion in women who have born children.

The gastroptosis in these cases is usually accompanied by downward displacement of other abdominal viscera, which no doubt increases the digestive disturbances.

The subjective symptoms referred to the stomach, of gastroptosis are of very little use in determining the nature of the disease.

The functions of the stomach are frequently disturbed. In the majority of the cases the gastric secretion is increased, but normal or diminished secretion is not uncommon. The motility of the stomach is probably always depressed.

In this type, as in all cases of gastroptosis, the physical signs are the most important in diagnosis. The abdomen is flaccid, and one is frequently struck with the ease with which right kidney, and in some cases other abdominal organs, may be palpated. In this connection I may state that during the last two years I have been on the outlook for patients with palpable pancreas. In two cases I could feel the head of the organ very distinctly and in many others indistinctly. The patients in whom this sign is found are emaciated and have flaccid abdomens, with downward displacement of the stomach.

The most important physical sign in gastroptosis is the recognition, by inspection, of the position of the stomach. Both the curvatures of the stomach are lower than normal and the lesser is frequently visible.

This character can readily be made out by inspection after inflation of the stomach. All that is necessary in many cases is to have the patient drink a glassful of soda water and then breathe deeply, when the distended stomach may be seen moving up and down in the abdomen. The position may also be determined by means of the splashing sound and auscultatory percussion.

Indigestion is not the only complaint of these patients. They are weak and reduced in flesh and suffer more or less from neurasthenia. Emaciation and weakness are very common symptoms. So constant is this the case that when a thin married woman consults me on account of indigestion I always think of gastroptosis as a likely cause of her complaints.

Moreover, while the patient is under treatment I always give special attention to this character. If there is an increase of weight the treatment is successful, even if the patient continues to suffer from indigestion. The deposition of fat not only indicates that the treatment is correct, but by increasing the intra-abdominal tension favors the further treatment of the disease.

The nervous symptoms are usually very marked in this type of patient, and are referred to the brain, spine, kidneys, pelvis, heart and other organs of the body. They usually cause the patient a great deal of distress. Frequently it is for the relief of these symptoms that the patients seek advice. Gastric symptoms are present, but are insignificant in her opinion compared to the pain in the back, headache, palpitation of the heart, and other symptoms of neurasthenia.

It is on this account, I think, that mistakes are sometimes made in the treatment of these cases. For instance, I have had patients suffering from downward displacement of the abdominal organs who had been operated on for movable kidney, diseased ovaries, laceration of the cervix of the uterus, etc., without receiving any benefit. In one case hysterectomy had been performed. In some of these cases I am satisfied the nervous symptoms were greatly aggravated by the operations.

With regard to the relation of the nervous manifestations to the stomach, a vicious circle may be said to exist, as the downward displacement of the abdominal organs tends to produce indigestion and neurasthenia, and the latter disease augments the digestive disturbance. That such a sequence is present I have frequently obtained clinical evidence, as the application of a perfectly fitting abdominal support relieved not only the gastric disturbance, but almost immediately the neurasthenic symptoms. This is particularly true of cases of gastroptosis of recent origin. The following clinical notes of a case will be of interest in this connection:

Case 1.—Mrs. A., mother of three children. After the birth of her second child, in 1900, she suffered from indigestion, sleeplessness, pain in the back, etc., and was unable to nurse her child. The patient remained in poor health for about two months and then gradually regained her health. She became pregnant again in 1901, and the condition of her health was good until two weeks after her third child-birth, when she began to suffer from indigestion, with vomiting, weakness, lightness in the head and extreme nervousness. The symptoms referred to the abdomen were to me of a rather unusual character. She complained of a bruised feeling around the waist and of a

very uncomfortable sensation like as if all the organs of the abdomen were hanging from the heart.

An examination of the patient revealed the presence of a very flaccid abdomen, ptosis of the stomach and movable right kidney. The abdominal bandage was applied and rapid improvement took place. In two weeks she was able to do her household work and to nurse her child. She continued to wear the bandage for nearly a year and then she was able to get along without it. During the earlier part of her illness the patient found that if she removed the bandage the weakness, indigestion, etc., began to reappear.

Pregnancy in the Treatment of Gastropotosis.— A pregnant uterus increases the intra-abdominal tension, and one should expect that when a woman suffering from gastropotosis becomes pregnant the condition of the patient to improve. That such is the case I have frequently obtained evidence in the histories of patients who have told me that during their pregnancies the condition of their digestion was greatly improved. Moreover, during the last two years I have watched the improvement in several cases, the history of one of which I shall give below, and by lengthening the period of confinement in bed after labor as well as by careful bandaging, attempted to retain the advantage in health gained during gestation.

The following are short clinical notes of the case:

Mrs. C., aged 30, mother of three children, consulted me in 1901 on account of indigestion. Patient was very thin and had poor health with indigestion since her second child was born. An examination revealed the presence of gastropotosis and movable right kidney. I ordered an abdominal bandage and a diet and medicines suitable for the disturbed functions of the stomach. Her gastric symptoms were relieved and she gained a few pounds in weight. About six months afterwards the patient became pregnant and discarded the abdominal support. During her pregnancy the state of her health was greatly improved and she gained considerable in weight. After the birth of her child she remained in bed or reclined on a couch for six weeks, and during this period an ordinary bandage was carefully applied to the abdomen. Then she wore an elastic support for two months. Since that date she has had good digestion and has retained the increase in weight gained during pregnancy.

URINARY CALCULUS.

BY J. F. UREN, M.D., TORONTO.

Urinary calculus is one of the abnormal products of nature's wonder-working laboratory. So far as the patient was aware, for several years previous to its removal he was in perfect health.

After his illness he remembered having had slight pains in the glans penis. On Sept. 24th, 1902, the patient consulted Dr. W. J. McCollum, to whom I am indebted for the case and for these notes.

Mr. E., aged 77, fairly well preserved, family history



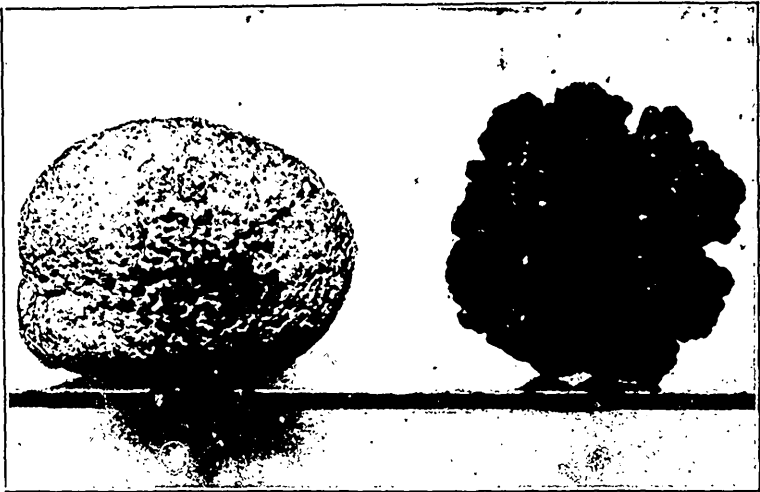
not relevant. He had a slight illness five years ago and with little done for him but rest, he fully recovered. He does not give a very clear account of the symptoms, but there was no difficulty referred to the bladder.

About thirty-five hours before his operation the patient found himself suddenly unable to urinate. His physician easily relieved him with a soft rubber catheter. Twelve hours later he was again catheterized with more difficulty by means of a gum elastic catheter. In twelve hours he was again in difficulty and

sent to the St. Michael's Hospital, where, in spite of several efforts, we failed to catheterize him.

On rectal examination a very large prostate could be felt. The patient was in great distress, the bladder distended to the umbilicus, and the urethra sensitive and strongly contracted. He was advised that an operation was necessary and he was immediately prepared.

On opening (Sept. 26th) the bladder suprapubically we immediately came on the stone encysted in the upper and posterior aspect of the bladder wall. It was freed from its adherent tissue and with some difficulty, on account of its numerous mulberry processes, brought through the abdominal wall.



The softened and engorged prostate pushed the bladder upward and surrounded it so that the finger could be passed into a funnel shaped lower part of the bladder for two inches at least. On account of his condition no attack was made on the prostate.

The bladder was irrigated with boracic acid and drained through the wound.

Convalescence was uneventful, and Mr. E. is still enjoying his nearly four-score years. The stone is a black oxalate of lime, mulberry formation, weight 583 grains, and is a most beautiful specimen.

NEW ERA IN MEDICAL TEACHING.—UNIVERSITY OF
PENNSYLVANIA ABOUT TO DEDICATE MOST
COMPLETE MEDICAL LABORATORY IN
AMERICA.

BY GEO. E. NITZSCHE.

(Specially prepared for the DOMINION MEDICAL MONTHLY.)

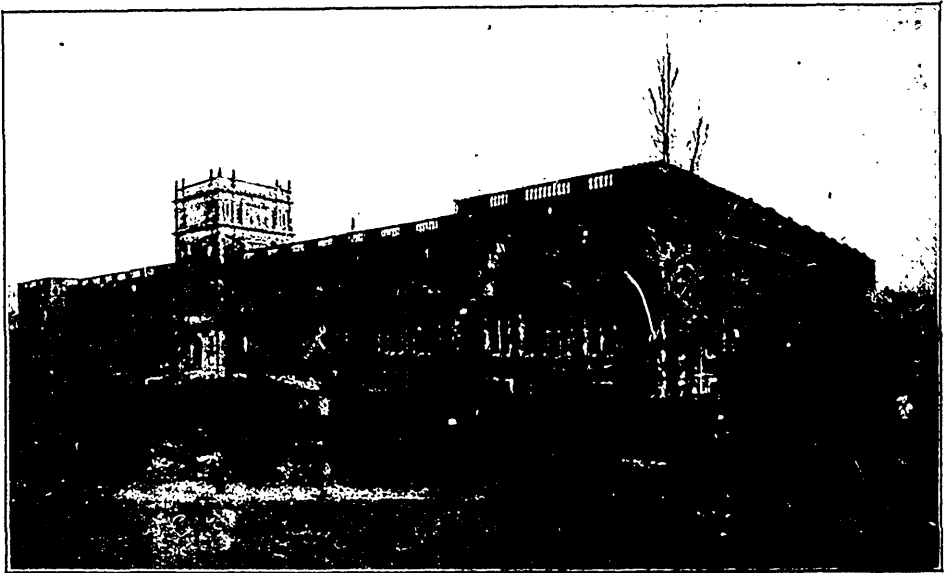
The last quarter of the nineteenth century witnessed the conversion of the teaching and practice of medicine from a theoretical to a practical and demonstrative basis. This momentous change, than which nothing more revolutionary and beneficent has been achieved in the history of the intellectual development of the race, has been the result of the establishment of laboratories in which research in medical science might be conducted. By means of the facilities offered in these laboratories, workers have not only enormously increased our knowledge of the structure and functions of the human body and of the nature of disease, but have provided methods which have already robbed some of the most direful pestilences of their chief terrors. Hitherto America has scarcely kept pace with foreign countries in the provision for scientific studies in medicine and in incentives to the prosecution. While this aspect of medical education has not been wholly disregarded in this country, the limitations placed upon institutions of learning by their inability to provide adequately out of their means for the support of laboratories, has had a detrimental effect upon the growth of American medicine. In other countries, the national and municipal governments have done what in this country is left to private inclination and benefaction.

In view of these contingencies the University of Pennsylvania has constructed a new medical laboratory, which will be formally dedicated on June 10th, 1904. In completeness and equipment this new building is without rival. It provides for the teaching of students and the carrying on of research work on physiology, pathology, and pharmacology, in which departments of medicine the greatest advances have been made in the past and may be predicted for the future.

The opening of these laboratories is not simply of local but of national interest. About four years have been occupied in

the construction of the building, which, exclusive of its ground and equipment, has cost in the neighborhood of \$700,000. The erection of a new medical hall, an anatomical building, and auxiliary buildings, which will adjoin the building about to be dedicated, is also contemplated in the near future. These, with the present hospitals and clinical laboratories, will form one of the most extensive systems of buildings devoted to the teaching of medicine in Europe or America.

The new building is quadrangular in shape and is located on the south side of Hamilton Walk, between Thirty-sixth and



NEW MEDICAL LABORATORY BUILDING.

Thirty-seventh Streets, on the site of the old Veterinary Hall and Hospital. The building is two stories in height above a high basement, and measures 337 feet in front by nearly 200 feet in depth. The long front faces north, securing a maximum amount of the best light for laboratory purposes. All along the front are arranged small rooms for research, professors, assistants, etc. These open into private corridors, so that those employed in these rooms may pursue their work without interruption from those passing through the main halls.

Perfect lighting of all the laboratories has been obtained,

the courts being large enough, with the low front building, to furnish good north light to the laboratories of pharmacy and pharmacodynamics on the first floor, and to the large laboratories on the second floor devoted to pathology, where microscopic work is to be done—the north front of these rooms facing on the courtyard being almost wholly of glass and extending higher than the front so that steady north light will be thrown to the back of the room.

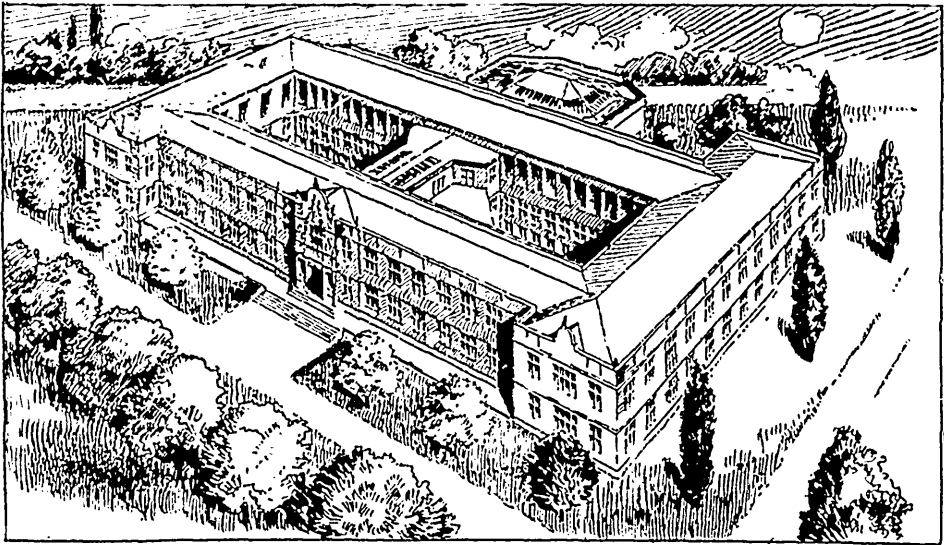
The first floor of the new laboratories is to be devoted to physiology and pharmacodynamics. The basement rooms are also well lighted. Here will be located locker, recreation and toilet rooms for the students, janitor's quarters, rooms for practical instruction in physical diagnosis, and bandaging rooms for sub-section teaching in physiology, store rooms, research rooms, etc.

The department of physiology on the first floor will have provided one large room in which there will be ninety cabinets fully equipped with such apparatus as is required in the practical exercises in physiology carried on by the students. Three rooms have been specially constructed and equipped for aseptic operations on the lower animals, one of them being a preparation room for the operator, another a preparation room for the animals, and another for operating. These will be equipped with the most modern appliances, so that operations may be carried on under the most favorable conditions known to modern surgery. In the north front are a number of small rooms which have been set apart for the professor and his assistants, for instruction in advanced physiology, etc. A well equipped shop has been provided for the construction and repair of apparatus. In the east wing are a number of rooms for sub-section teaching, etc., in special departments in physiology—digestion, circulation, respiration, calorimetry, nerve-muscle, special senses, etc., respectively. There has also been provided a photographic dark-room, and an adjoining room for projection and other optic apparatus, the importance of which in the making of diagrams, charts, and lantern slides, will be apparent.

The department of pharmacology has also been provided for on the first floor. This contains one large laboratory for practical pharmacodynamics, a large laboratory for practical pharmacy, a museum, a library and various rooms for the professor and his assistants, for research work, etc.

The second floor will be devoted exclusively to pathology, with temporary accommodations for the professors of other departments until the completion of future building operations

looking to the final transfer of the entire medical school to buildings adjacent to the present new building. An examination of the plans will reveal the general purposes of the floor. Aside from the provisions for lecture rooms, the chief purpose of the plan of operation and construction looks to laboratory instruction. The entire north front of the building (with the exception of the temporarily arranged private rooms for various professors and the general pathological office) is devoted to laboratories for advanced students in experimental pathology and pathological bacteriology and the special research and assistant's rooms. The east wing accommodates the laboratory of advanced pathological histology and a seminar and journal



BIRD'S-EYE VIEW NEW MEDICAL LABORATORY BUILDING

room; the west wing is occupied by the pathological museum, the gross morbid anatomy demonstration room, a room for museum preparation, photographic rooms and rooms for animal operations. The museum and gross morbid anatomy demonstration rooms are in close proximity to the large class laboratory of pathological histology in the west end of the southern part of the building for the obvious purpose of closely relating the instruction carried on in each. This last laboratory, that of pathological histology, the front of which consists almost entirely of glass, is located so as to face a spacious court to the

north, thus ensuring excellent and uniform light and admirably adapting it for microscopic work carried on by a large class. In a similar section of the building, east of the central hall, with similar front arrangements to ensure light for microscopic work, are located two smaller laboratories to be employed in the teaching of surgical pathology, neuropathology and clinical pathological technology; and private rooms for the instructors of those branches are arranged to open upon these larger laboratories. In order to provide for special occasions when a larger body of men are likely to require temporary accommodation than is ordinarily contemplated in either of these laboratories, it has been arranged that a movable partition may be withdrawn so as to throw the two rooms into one. In addition to the above apartments a number of small rooms devoted to storage or special technical work are provided upon this floor or elsewhere in the building in connection with the general chair of pathology.

Besides the numerous laboratories, research rooms, etc., there are two demonstration and two lecture rooms in the building. The two demonstration rooms each seat 185 students. These rooms communicate with two preparation rooms each. At the rear of the building there are two large lecture rooms, each seating 400 students. Students enter these rooms from a landing at the main stair midway between the first and second floors. The floor of the lecture rooms are on a level with the basement, and the lecturer will enter directly from the basement level, and all specimens needed to illustrate the lectures will be brought through this entrance, thus saving the crossing of the halls through which classes move. The most modern apparatus has been installed for light and heat and ventilation.

The architecture is distinctly "Pennsylvanian," and conforms to that of the dormitory system, the new law school building, gymnasium, engineering hall, and the stadium of the University. It forms at present one of the most imposing sights in Philadelphia.

Selected Article

DIETETIC TREATMENT OF CHRONIC NEPHRITIS.*

BY VICTOR C. VAUGHAN, M.D., ANN HARBOR, MICH.

The most reasonable hope of doing this lies in making a radical change in the proteids of the food.

Before going into this, however, I wish to make some brief statements concerning the employment of medicinal agents in chronic nephritis. I am led to do this for fear that it may be thought that I would discard all drugs as valueless, and this is far from my opinion. No one of experience can deny the value of digitalis in passive hyperemia of the kidney due to disease of the heart, and which is often accompanied by albuminuria and more or less extensive dropsy. Indeed, these are the cases of so-called Bright's disease that are so satisfactorily treated by the proper administration of heart tonics, the best of which, so far as these cases are concerned, is, in my experience, digitalis. Neither can one of experience deny that great and more or less lasting good is secured by the administration of hydragogue cathartics, such as elaterium. Under the proper employment of this drug and the subsequent use of heart tonics, I have seen extensive edemas of the lower extremities wholly disappear, and the patient able to return to his work and continue at it for years. Furthermore, the value of mercury in syphilitic diseases of the kidney and the benefit of quinine in malarial nephritis cannot be questioned. We must always strive in the treatment of any disease to find the causative agent, and direct our treatment accordingly. It is true that we may empirically discover a cure while the cause remains unknown, as has happened in the treatment of both malaria and syphilis, but happy hits of this kind are not to be expected to occur with any great frequency. However, just this thing has, if I may express it, partially happened in the dietetic treatment of chronic nephritis, inasmuch as the milk diet in this disease was tried with more or less success long before we knew anything of the differences between the proteids of milk and those of meat.

*Abstract of paper read at meeting of the Washington State Medical Association, Spokane, September, 1903.

Clinicians generally recognize the importance of diet in chronic nephritis, and much has been written on this subject. Thus, Pel says: "The question, what diet shall we prescribe for our patients with kidney disease, is of great practical importance, because I know of no organic disease in which the manner of life and food so largely influences the course of the disease as in chronic nephritis." And still there is the greatest difference of opinion among these same clinicians when it comes to the point of saying just what foods shall be prohibited and what allowed. It may not be amiss to briefly refer to some of these differences. As a rule there is agreement that a meat diet is harmful, and yet at least one writer recommends an exclusive meat diet, but this is so generally condemned that we may overlook it altogether. Some of our most recent authorities lay but little stress upon the desirability of restricting meat, or omit mention of it altogether. In discussing the treatment of what he calls chronic productive nephritis (intestinal nephritis), Delafield says: "As regards the diet, the quantity of sugars and starches taken should be restricted, and the ingestion of fats encouraged. The use of wine, spirits and tobacco should be discontinued," and this is all he has to say about diet in the treatment of this form of nephritis. Under the head of chronic productive nephritis with exudation (parenchymatous nephritis) he is even more brief, for he contents himself with the following: "For the nephritis the patient should be kept in bed and placed on a fluid diet." Under the treatment of chronic parenchymatous nephritis, Osler gives one sentence to diet, and this reads as follows: "Milk or buttermilk should constitute the chief article of food," and under interstitial nephritis, he says: "The diet should be light and nourishing, and the patient should be warned not to eat excessively, and not to take meat more than once a day. Care in food and drink is probably the most important element in the treatment of these early cases."

All have heard of the interdiction of dark meats, but von Noorden claims that the distinction between light and dark meats, so far as they affect the kidney, is a myth. Fish is condemned by Bouchard on the ground that it contains toxins and increases the toxicity of the urine, but is permitted as a substitute for beef by Klemperer, while Pel thinks that we should distinguish between the kinds of fish, and sees no reason for the exclusion of easily digested species from the dietary of the nephritic. Ortnor forbids every part of the calf except the sweetbreads and the brain, while Kolisch thinks these the very organs that should be excluded on account of their large nuclein con-

tent. There seems to be a general condemnation of game, even when the flesh of domesticated animals is permitted either with or without restriction. Why the flesh of the quail, grouse or other wild bird should be so much more harmful to the renal cells than that of the barnyard fowl, no one, so far as I know, has attempted to explain. Probably the interdiction of game is due to an unconscious effect of the old theological dogma that whatever man enjoys is bad for him.

The differences of opinion about the placing of eggs on the menu of the chronic nephritic are quite as marked as those concerning meat. Early in his career as a clinician, Senator prohibited eggs because it has been shown that a more or less lasting albuminuria could be induced in experimental animals by the intravenous injection of solutions of egg-albumin, also that a like albuminuria might result in man by swallowing a large number of raw eggs, but in later years he has seen that his conclusions were hardly justified by the data, and now permits that article of diet in moderation. Oertel and others have found the eating of eggs in moderation may be granted to the nephritic.

The exclusive milk diet has been greatly lauded by some, and milk as an important article of food is not only generally permitted, but is prescribed. "*Le regime lacte absolu*" of the French has been probably more frequently prescribed and less frequently followed than any other diet prescribed in chronic Bright's disease. Generally, however, the prescription is given in the words of Dieulafoy, who says: "Follow the milk diet as absolutely as possible." It has been said that a pregnant woman who follows an absolute milk diet for weeks never has eclampsia. As to the truth of this statement, I cannot testify, because I never knew a pregnant woman to follow such a diet, but Pel states that he has known eclampsia to occur when the milk diet has been "very closely" followed. An exclusive milk diet has been in my experience an impossible thing to secure with nephritis, and, moreover, I do not believe that it is the best. Many clinicians have had a like experience so far as the difficulty in carrying out this regime is concerned, and some think that it is harmful in its effects.

On this point Pel makes the following statement: "This exclusive diet is not well borne by many, and disturbances in the functions of the stomach and intestines occur not infrequently. Everyone does not bear it well, and idiosyncrasies are seen. Moreover, we must not forget that on this diet one obtains too much water, much phosphoric acid, much albumin, and too little iron for the needs of the organism. Not infrequently there is an un-

desirable increase in adipose tissue, and a decrease in hemoglobin, especially when the individual has a predilection for the accumulation of fat or toward anemia. Three litres of milk contain more than 100 grams of albumin, from which more than 30 grams of urea will be formed, and still we are cautioned against an excess of proteid. Furthermore, I think the amount of phosphoric acid, which varies from three to four grams daily, is harmful to the kidneys. Von Noorden suggests that the phosphoric acid may be partially eliminated by the addition of lime water, which forms an insoluble phosphate, and this is eliminated by the bowels. The deficiency of iron can be made good by the administration of medicinal preparations, but still the large amount of water may be harmful. To many patients with contracted kidneys, and whose blood pressure is high, whose vessels show the well-known changes, and who are already cachectic, the drinking of so much milk is directly harmful, for the blood pressure is further increased, the hydremia is intensified, and the diseased heart still further endangered. Still further, the increased water acts as an unnecessary and undesirable irritant upon the kidney, and especially upon the glomeruli. For these reasons the amount of milk taken daily should be limited to from one to one and one-half litres daily, especially in contracted kidney, and in those cases of parenchymatous nephritis where the amount of urine is small and the anasarca great; in these the dropsy will be increased because the water will not be eliminated, but will accumulate in the subcutaneous tissue." While I do not agree with all the statements in this quotation, I believe that the argument against exclusive diet is well put. Pel concludes his argument in favor of a mixed diet, and on this point I certainly do not agree with him.

Passing on to the consideration of vegetable foods, we find the same differences among writers. Pel cautions us against those fruits and vegetables that contain benzoic acid, such as plums and green vegetables, but if anyone has shown that the small amount of benzoic acid found in the few plums that a patient would consume at a meal or in a day would be at all harmful, I am not aware of such a demonstration. Asparagus has been condemned, I suppose, because it imparts an odor to the urine. Certainly I know of no other reason for this interdiction. Certain vegetables have been condemned on account of their large potassium content, but as Pel states, it was formerly the custom to give saltpetre in doses of half an ounce per day without any evidence of harmful action on the kidneys.

The diet which I have found most serviceable in chronic ne-

phritis is, with the exception of cream and butter, wholly vegetable. I forbid meat in any and every form, eggs and milk. As I have already stated, the object which I desire to accomplish is to profoundly alter the proteids in the circulating blood, and both theoretically and clinically I believe that I have the best of reasons for the selection of this diet. The urine for twenty-four hours should be collected and the quantity of albumin in it should be accurately determined, and the result expressed both absolutely and in percentage. At the same time the amount of urea and of total nitrogen should be ascertained. Then the patient should be placed on the diet, and after three days or longer corresponding analyses should be made. The diet permits cream, which should be separated from the milk as completely as possible, and should not contain more than 1 per cent. of proteid, and the amount of cream allowed per day is limited to 500 grams, or one pint. Corn meal mush I prefer among the cereals, and this is allowed *ad libitum*, and oat meal or cracked wheat may be substituted. Sugar is allowed *ad libitum* for the mush, and Zwiebach and butter and potatoes complete the substantial of the ration, although I permit the legumins peas and beans, either fresh or canned, green vegetables, fruits and melons. There is no difficulty in living on such a diet, and after a few weeks patients lose all desire for meat and eggs and wonder why they were formerly so fond of them. That the necessary calories are furnished by this is shown by the following table:

	Proteid	Carbohydrate	Fat
500 grams of cream.....	5	27.60	150
200 grams corn meal.....	20	130.60	8
100 grams Zweibach.....	14	60.00	24
50 grams butter.....	40
20 grams sugar.....	..	20.00	...
	<hr/>	<hr/>	<hr/>
	39	238.20	222

This gives 39 grams of proteid, 238.2 grams of carbohydrate and 222 grams of fat. The caloric value of each gram of proteid and carbohydrate is 4.5 and of each gram of fat is 9; therefore the calories represented in this ration are shown by the following figures:

$$\begin{array}{r}
 39 + 238.2 = 277.2 \times 4.5 = 1274.4 \\
 222 \times 9 \qquad \qquad \qquad = 1998.0 \\
 \hline
 3245.4
 \end{array}$$

It will be seen that this ration furnishes more than 3,000 calories, and we have taken no account of fruits and melons. Fur-

thermore, the proteids can be increased by substituting in part legumins for cereals, or by substituting oat meal or wheat for the corn meal. I have had hard-working-men live on this diet with ease, and at the same time the amount of albumin in the urine has gradually decreased.

The proper thing to do in order to scientifically demonstrate the value of any diet in chronic nephritis will be to test the relative toxicity of the blood serum of the patient on animals, with especial reference to its action on the kidneys of the animals, under different diets. This has not been done, but it offers a promising field of research to the young and enthusiastic student of pathology.

I regard the selection of a diet in chronic nephritis quite as important as it is in diabetes, and so far as my experience goes in the management of both of these diseases, diet is the most important thing. The digestive organs of the chronic nephritic need to be watched closely. Lavage of the stomach is often indicated, and an analysis of the gastric juice should be made in all cases. The bowels must be kept in good condition, but copious purgation, except during exacerbations, or for the removal of dropsical accumulations, or in threatened uremia, is not desirable or beneficial. I have already spoken of the value of elaterium and other hydragogues when free catharsis is needed.

The skin should be kept in a normal, but not too active, state. I think that the hot bath is in some cases given too frequently. Of course, one case gives no rules to govern the frequency of the hot bath, because so much depends upon the condition of the patient. As a rule I recommend the hot bath (temperature above 90 degrees F.) two or three times a week, and a Turkish bath once a month. Flannel underclothing, medium to heavy in the winter and light in the summer, is prescribed, but I do not insist, as some do, that the patient should sleep between blankets in hot weather. Blood counts and hemoglobin estimations furnish evidences that may be of value and should not be neglected.

The only reason that I have for writing this paper lies in what I have said concerning the nature of chronic nephritis, and its dietary treatment. On these points both my study and experience have led me to conclusions that differ from those held by others who have written upon the subject.—*Northwestern Medicine*, September, 1903.

Reports of Societies

ONTARIO MEDICAL ASSOCIATION.

June will bring to us the twenty-fourth annual meeting of the Ontario Medical Association. Under the presidency of Dr. J. F. W. Ross and with Dr. A. A. Macdonald and Dr. Allan Baines as the respective Chairmen of the Committees on Papers and on Arrangements, the success of the meeting is already practically assured.

The sessions will be carried on during three days, June 14th, 15th and 16th.

An outline of the provisional programme includes the following list of papers, a number still awaiting acceptance:

"Prophylaxis of Diabetic Coma," Dr. John Caven, Toronto.

"Uncertainties of Diagnosis and the Necessity of Early and Vigorous Treatment of Diphtheria," Dr. McMahon, Toronto.

"Anemias, More than Ordinarily Severe," Dr. Frank Trebilcock, Enniskillen.

"Modified Smallpox," Dr. Charles Hodgetts, Toronto.

"Electro-Therapeutics," Dr. Lipsey, St. Thomas.

"Functional Heart Murmurs," Dr. Rudolf, Toronto.

"A Case of Landry's Paralysis," Dr. Hugh McColl, Milton.

"Inflammations of the Laryngeal Apparatus," Dr. G. H. Burnham, Toronto.

"A Discussion of the Subject of Life Insurance from the Standpoint of the Expectancy of Life in Conditions of the Various Systems," to be participated in by Dr. E. Ryan, Kingston; Dr. R. J. Dwyer, Toronto; Dr. H. R. Frank, Brantford; Dr. B. L. Riordan, Toronto; and, it is hoped, two physicians associated with large insurance companies in Canada.

"A Restatement of the Attitude of the Profession toward Placenta Previa," Dr. McIlwraith, Toronto.

"Myxomatous Degeneration of the Chorionic Villi," Dr. C. J. Hastings, Toronto.

"Occipito-Posterior Positions in Obstetric Practice," Dr. A. A. Macdonald, Toronto.

"Anomalies in Fetal Development, with Exhibition of

Specimens and Descriptions of Cases," Dr. J. Peters, Hamilton, and Dr. F. J. R. Forster, Caistorville.

"Clinic upon Diseases of the Skin," Drs. McPhedran and H. B. Anderson, Toronto.

"An Exhibition of the Methods of Intestinal Anastomosis, dealing especially with the Elastic Ligature," Dr. N. A. Powell, Toronto.

Tumors of the Prostate Gland—

"Etiology, Symptoms and Pathology of," Dr. F. W. Marlow, Toronto.

"Surgical Relief of," Dr. G. A. Bingham, Toronto.

"Lithotomy *versus* Lithotrity," Dr. Chas. Shuttleworth, Toronto.

"Thiersch's Method of Skin Grafting," Dr. Primrose, Toronto.

"Report of a Case of Congenital Dislocation of Both Hips treated by Lorenz Method, and Exhibition of Photos, Skiagraphs and of Patient," Dr. H. P. H. Galloway, Toronto.

"Some Cases Illustrating Difficulties of Differential Diagnosis and Treatment of Tumors," Dr. Wm. Oldright, Toronto.

Of the distinguished visitors who are to be present, Sir Frederick Borden will discuss "The Evolution of the Medical Department of the Militia of Canada and the Possibilities of its Future Development"; Sir Wm. Hingston, a paper dealing with the subject of "Cancer."

Papers are promised by the following gentlemen, but the titles are not yet known: Dr. H. A. Bruce, Toronto; Dr. Hodge, London; Dr. Perry Goldsmith, Belleville, and Dr. Elliott, Gravenhurst.

The Committee hopes to announce presently as guests of the Association the names of two of the foremost men in the United States.

A very pleasant feature of the meeting will be the tenth class reunion of 1894, Toronto University, under the presidency of Dr. W. J. McCollum. Between thirty and forty men have already signified their intention of coming to the city that they may conjointly meet as a class and attend the sessions. The yearly meeting of the Association ought to serve as a nucleus for many such reunions.

The Committee on Arrangements, notwithstanding the success attending the meeting of last year, promises a programme of entertainment that will be in keeping with the larger interest exhibited in the forthcoming meeting of this year. We want

every medical man in the Province that can get away from duty to be present.

The fusion of collegiate interests into one grand college, one of the largest on the continent, offers a special setting for the meeting of this year. Additional interest is due to the fact that the meetings will be held in the New Medical Buildings, where an opportunity will be available of seeing what has been accomplished in the advancement of medical education in the Province.

Therapeutics.

A New Method of Treating Foreign Bodies in the Cornea, as Evincd in the Treatment of 808 Recent Consecutive Cases.

Edwin M. Fuller, in *The Journal of Medicine and Surgery*, advocates a new departure in the treatment of the cornea when foreign bodies have become imbedded therein, which consists in denuding the cornea at the point where foreign bodies have been removed. In the series of 808 cases thus treated there were but two corneal scars left after the cases were discharged.

The cases upon which Dr. Fuller has followed this treatment have resulted from flying bodies of steel, iron and emery travelling at great speed and nearly always red hot. To remove both the foreign body and the burned necrotic tissue is indicated, else a corneal ulcer follows. In removing bodies from the cornea successfully, it is necessary to paralyze the eye with cocaine. Dr. Fuller always uses one, two or three drops of a six per cent. solution. After removal of the foreign body use hot water every half hour, or hour, for the first day, and drop in three or four drops of a glycerio-tannin solution, ten drops to the ounce of water. If pain or conjunctivitis arises use scopolamine, gr. 1-3 to two drams of water. Rest to eye and cover with smoked glasses.

Ergot in Typhoid Fever.

On the ground that the fundamental factor in each of the fatal conditions in typhoid fever is insufficient tone of some area or areas of the vital or unstriped muscular fibre which comprises the muscular coat of the blood vessels, lymphatics and alimentary canal, Alfred T. Livingston, Jamestown, N.Y., in *N. Y. M. J. and P. M. J.*, believes that the more thoroughly and promptly this class of tissue is placed upon the highest attainable

plane of tone and so maintained, the less is the likelihood of a fatal issue. He therefore urges the use of ergot hypodermically. The solution of this drug which he has found most satisfactory is made by dissolving one drachm of solid extract of ergot in one ounce of sterilized distilled (cooled) water, and then after filtering the solution adds two minims of chloroform. The dose is one-half to one drachm, which he gives from two to six times per day, or oftener. Some of the more important results obtained are prevention or relief of general nervousness, insomnia or delirium, prevention and relief of headaches and abdominal pains, relief or modification of tympanites and better general action of the bowels, modification of local inflammation, thus lessening likelihood of ulceration, hemorrhage or perforation, reduction of frequency of pulse, and lessening action of heart.

Eneuresis in Children.

The treatment of this complaint (Percy Lewis, Folkestone, England, in *The British Journal of Children's Diseases*) which has for some years been successfully carried out by the writer, was suggested by the consideration of a similar condition which occurs in infants fed on starchy foods. Such children always pass a larger amount of urine than normal. Their nurses complain that they are always soaking their diapers. When their starchy food is cut off this symptom disappears. It is the same with the victims of eneuresis. In most cases a rigid anti-diabetic diet removes the symptoms in a few days. The cause, however, due to a general depression of health produced by an excessive starchy diet, requires general tonic treatment at the same time. During the cure starchy food may usually be allowed for breakfast without "accidents" occurring during the night. Without any other treatment hospital cases are relieved often at once, and finally cured, by being taken as in-patients and fed on the ordinary hospital diet. In private cases even small quantities of bread or cake, given at dinner or tea early in the treatment, cause the bed wetting to recur. In about three to four weeks, sometimes sooner, if the tonic treatment is finished as well, a normal diet may be given without eneuresis happening.

The Treatment of Puerperal Mastitis.

Puerperal mastitis, when suppuration has taken place, is usually treated by means of bold incisions into the inflamed area, that thorough drainage of the abscess and infiltrated tissues

may be afforded. Such incisions are made to radiate from the nipple, which organ is naturally spared. The mastitis as a rule readily heals after this operation, and the function of the gland is not impaired to any material extent. The objection to this mode of treatment, however, is that the period of recovery is apt to be long and the scars left by the incisions to be very disfiguring, especially if situated in the upper part of the breast. With a view to hastening the healing process, Boeckel (*Gaz. Med. de Strassbourg*, No. 10, 1901) suggested that after evacuation of the pus, the whole of the inflamed area should be excised by means of two elliptical incisions, and that afterwards the wound should be carefully closed by means of buried and superficial sutures.

This operation, however, is seldom likely to be resorted to, for unless the inflammation were very limited in extent it would involve too great a sacrifice of the gland tissue. A more valuable suggestion as to the best mode of dealing with such abscesses is the following: its originator, Professor Bardenheuer, claiming for it that not only does it favor the rapid healing of the inflammation, but that it avoids the unsightly scars and damage to the milk-ducts, which in the customary operation are the great drawbacks. His method of treatment is as follows: A semi-circular incision is made at the periphery of the lower half of the breast, which is then dissected from the pectoralis major and turned up by sharp retractors, so that its posterior surface is exposed. The abscess is then opened from the posterior surface by free radiating incisions into each abscess cavity, a large drainage tube is inserted, and the breast replaced in its normal position. These drainage tubes running from above downwards, now project beneath the gland, and are most favorably placed for the free escape of the pus.

On account of this excellent drainage, the healing process is shortened, the operation scar is completely covered by the overhanging breast, and the large superficial milk-ducts remain uninjured. In the first few cases which Bardenheuer treated after this fashion the recovery was somewhat delayed by the large operation wound being allowed to granulate, but in subsequent cases he partially closed this by sutures.

Bardenheuer believes that this operation is advisable when concerned with any large abscess situated in the breast tissue, whether superficial or deep. For sub-mammary suppuration, a similar operation has long been in use; for removal of circumscribed innocent mammary tumors this method may

often be adopted with advantage, and was advocated by G. Thomas in 1882.—*Birmingham Medical Review*.

The Treatment of Flatulency.

Charles D. Aaron, Detroit, Mich., in *Southern Clinic*, says: "The dietetic treatment of flatulency is of primary importance. Foods contain principally 4 of the 82 elements: carbon, hydrogen, oxygen and nitrogen. Carbon, hydrogen and oxygen are found in the fats; nitrogen in the proteids. Fermentation of the carbohydrates and fats occurs in the stomach or upper part of the small intestine; the proteids undergo putrefaction in the lower bowel, the extent of which can be measured by the amount of indican in the urine. If we have fermentation, give foods upon which the bacteria cannot exist; we thus starve them out. If we have putrefaction, forbid proteids. The substances which excite fermentation are beer, champagne, kumys, starches, sugar, vegetables rich in cellulose, cabbage, potatoes, beets, peas, beans, rye bread, fresh bread, cakes and fatty foods. Artificial and natural mineral waters are to be forbidden. In many people a milk diet will produce flatulence. The drugs usually used to aid the expulsion of gas are the carminatives, which stimulate gastric and intestinal movements. It being absolutely necessary to get normal evacuations of the bowels, Dr. Aaron has found nothing better than chemically pure oleum petrolatum. This is colorless, odorless and tasteless, and can be given in tablespoonful doses four times daily. After mentioning cold water injections, turpentine, stomach tube, massage of abdomen, electricity, the author states that the use of a cannon ball from two to five pounds on the abdomen has been found very valuable in these cases. It should be rolled over the large intestine every night for five minutes and continued for some time.

Lumbago.

Capitan recommends in *Presse medicale*, for March 9th, 1904, an intramuscular injection in the painful area of the following:

R. Antipyrine..... 5 grammes (75 grains).
Cocaine hydrochloride 30 centigrammes (4½ grains).
Distilled water, a sufficient quantity to make
10 grammes (½ ounce).

M. Inject 2 grammes.

—*N.Y.M.J. and P.M.J.*

The following combinations are recommended by L. Webster Fox, in *Med. Bull.*, in the treatment of diseases of the eye:

Edema of the Lids.

R. Liq. plumbi subacet. dil.	ʒii.
Tinct. opii	
Tinct. belladonnæ, āā.	ʒiiss.
Tinct. arnicæ	ʒi.
Aquæ camphoræ	
Aq. destil., āā, q. s. ad.	ʒiv.

M. Sig.: To be applied locally.

(It seems from the ingredients included that great care should be employed in using the foregoing combination.)

Conjunctivitis.

R. Acidi borici	
Sodii biboratis, āā.	ʒss.
Aq. menth. pip.	ʒiii.
Ext. hamamel. dest.	ʒiv.
Aq. camphoræ	
Aq. destil., āā	ʒii.

M. Sig.: Bathe the eyes freely.

Ophthalmia Neonatorum.

R. Hydrastin hydrochlor	gr. iv-vi.
Acidi borici	gr. xx.
Tinct. opii deod	ʒii.
Aquæ destil	ʒiv.

M. Sig.: As an eye lotion.

Ulcers of the Cornea Following Purulent Conjunctivitis.

R. Eserin. sulph.	gr. ¼.
Hydrarg. oxid. flav.	gr. ⅛-i.
Liq. petrolati	ʒi.

M. Sig.: A small amount to be placed in the eye once or twice daily, followed by a light massage of the lid.—*J. A. M. A.*

The Physician's Library

The following will shortly be issued from W. B. Saunders & Co., Philadelphia:—

Nothnagel's Practice of Medicine:

—*Tuberculosis and Acute General Miliary Tuberculosis.* By DR. G. CORNET, of Berlin. Edited, with additions, by WALTER B. JAMES, M.D., of the College of Physicians and Surgeons, New York. Handsome octavo of 806 pages. Cloth, \$5.00 net; half morocco, \$6.00 net.

—*Diseases of the Intestines and Peritoneum.* By DR. HERMANN NOTHNAGEL, of Vienna. Edited, with additions, by HUMPHREY D. ROLLESTON, M.D., F.R.C.P., of St. George's Hospital, London. Octavo volume of 1032 pages, containing 20 insert plates. Cloth, \$5.00 net; half morocco, \$6.00 net.

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Medical Laboratory Methods and Tests. By HERBERT FRENCH, M.A., M.D.(Oxon.), M.R.C.P.(Lond.), Medical Registrar, Guy's Hospital; Gielson Scholar, Society of Apothecaries of London; Radcliffe Travelling Fellow, Oxford University. Price, \$1.00. London: Bailliere, Tindall & Cox. Canadian Agents: J. A. Carveth & Co., Yonge Street, Toronto.

This small volume fills a long-felt want in that it is a handy book dealing with the chemical and microscopic tests most useful to the medical man. The commoner methods in use are set forth in detail, with the conclusions drawn from the various tests, stress being laid on the fallacies to which each test is liable. The author has simply intended the book for easy reference in the medical laboratory.

Manual of Materia Medica and Pharmacy. Specially designed for the use of Practitioners and Medical, Pharmaceutical, Dental, and Veterinary Students. By E. STANTON MUIR, Ph.G., V.M.D. Instructor in Comparative Materia Medica and Pharmacy in the University of Pennsylvania. Third edition, revised and enlarged. Crown octavo, 192 pages, interleaved throughout. Bound in extra cloth, \$2.00 net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

The first edition of this "Manual of Materia Medica and Pharmacy" appeared eight years ago, and a second some four years later. Every alternate leaf is blank for use in making notes or entering formulæ. It has this value attached to it, which is of more particular importance to country practitioners, that is, dosage is given for horses, cattle, dogs, and cats, as well as for human beings. A splendid chapter on Pharmacy enhances the worth of the volume.

The Bacteriology of Every-day Practice. By J. ODERY SYMES, M.D., D.P.H. Bailliere, Tindall & Cox, 8 Henrietta St., Covent Garden, London. Canadian Agents: J. A. Carveth & Co., Toronto.

It may safely be said there are few things in medical literature which appeal so much to the average practitioner as a well-written monograph—a handy little volume to be slipped into the pocket for perusal in odd moments. Such a work is “The Bacteriology of Every-day Practice.” The same average practitioner often finds it inconvenient to wade through considerable literature, to refresh his memory on some little detail of bacteriological technique. This work is not a primer, but a busy man’s monograph, very well written, and, of course, quite up-to-date, and we can therefore highly recommend it.

Lea's Medical Epitome Series.—Anatomy. A Manual for Students and Practitioners. By HENRY E. HALE, A.M., M.D., Instructor in Surgery and Anesthetist and Instructor in Anesthesia at the New York Polyclinic Medical School and Hospital; Deputy Genito-Urinary Surgeon to the Out-Patient Department of the New York Hospital; Physician in Charge, St. Chrysostum’s Dispensary; Anesthetist to the Roosevelt Hospital (First Surgical Division). Illustrated with 71 engravings. Lea Brothers & Co., Philadelphia and New York.

This handy volume presents in a clear, concise manner something more than the mere essentials of anatomy. It is a splendid hand-book for students to review just prior to examinations.

Tuley's Epitome of Pediatrics. A Manual for Students and Practitioners. By HENRY ENOS TULEY, A.B., M.D., Professor of Obstetrics in the Medical Department of Kentucky University, Louisville, Ky. In one 12mo volume of 266 pages, with 33 engravings. Cloth, \$1.00 net. Lea Brothers & Co., Publishers, Philadelphia and New York. 1903.

Much has been said pro and con regarding epitomization, but the resultant fact remains that when well done it is highly useful. Professor Tuley’s compact work justifies this statement. He considers the whole subject of Pediatrics from the

moment of birth to adolescence, including the anatomy, development, care and examination of infants, the therapeutics peculiar to that age, and the feeding of infants and older children, in full detail. He then covers the various diseases systematically and clearly with the necessary directions and prescriptions. This little work may readily be carried in the pocket and consulted at times when larger volumes are inaccessible. In this way the physician may refresh his knowledge and gain practical points when needed. For the benefit of the student, questions are appended at the ends of the chapters, so that he may test his own knowledge. The volume is a fitting representative of the excellent "Medical Epitome Series."

Squint Occurring in Children. An Essay by EDGAR A. BROWNE, F.R.C.S., Ed., Lecturer on Ophthalmology, University Liverpool. Assisted by EDGAR STEVENSON, M.D., M.Ch. Aberd., Demonstrator of Ophthalmology, University Liverpool. London: Balliere, Tindall & Cox. Canadian Agents: J. A. Carveth & Co., Yonge Street, Toronto.

This is a small book of seventy-four pages, and the price is 75 cents net. It represents the teaching of the author-in-chief for some years past. It deals only with the concomitant divergent squint of childhood, and is an account of squint reduced to its simplest expression. An entire chapter is devoted to treatment.

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And Ontario Medical Journal

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THE ONTARIO MEDICAL ASSOCIATION.

A reference to the preliminary programme, on other pages of this issue, of the coming annual meeting of the Ontario Medical Association, to be held in this city on the 14th, 15th, and 16th of June, under the presidency of Dr. J. F. W. Ross, will convince any one that there is every promise of a splendid meeting. Dr. Macdonald, as chairman of the Committee on Papers and Business, has been able to get together a very attractive programme; whilst his confrere, Dr. Baines, as Chairman of the Committee of Arrangements, is quite at home in fulfilling his part of the proceedings. Though the latter has not shown his hand to us, it is safe to promise that there will be a good time forthcoming. Toronto with a medical population of 450

should easily turn out 200 alone, and the balance of the province with a population of 2,000 should at least contribute 10 per cent. June is not a very busy month; and the fact that there has been inaugurated a post-graduate course by the Medical Faculty of the University of Toronto, to commence about the same time, should be an additional incentive to make the attendance better and larger than ever before. The growth in the annual meetings of all our medical societies has within the last few years greatly advanced. This is a sign of the times, and is evidence that the medical man appreciates now more than in former years the advantages of commingling more with his fellows. No man who attends any of these meetings can go home without feeling that he has done himself a great deal of good. He owes it to himself, his confreres, and his patients, that he gets out at least once a year and see what is going on in the world of medicine. The narrow spirit which keeps him at home, fearful that a fellow may profit by his absence, should have no place in the profession of medicine. The sympathies of that profession are too broad and generous for the harboring of selfishness. We urge upon the practitioners to come out and support the Ontario Medical Association, and we are satisfied in saying that the members of the profession from any of the other provinces would be thrice welcome. There seems to be no reason why we should not participate in one another's gatherings.

CANADIAN MEDICAL ASSOCIATION.

As already announced in these columns, the Thirty-Seventh Annual Meeting of the Canadian Medical Association will be held in Vancouver from the 23rd to the 26th of August. Those who contemplate attending this meeting should put themselves in communication with the General Secretary, Dr. George Elliott, 129 John Street, Toronto, without further delay, as it

is imperative that all delegates present a certificate to the railway ticket agents from the General Secretary certifying to their membership or that they are delegates to this convention, if they desire to take advantage of the reduced rates. The return fare can be readily ascertained from any ticket agent, and this fare will be single first-class rate to Chicago, plus \$50, from all points east of Port Arthur. From all points in Ontario and Quebec tickets will be on sale from August 15th to 21st, inclusive, and from points east of Vanceboro, Maine, August 14th to 20th inclusive, final return limit being October 23rd, which means that delegates must reach home that day. Tickets will be issued good going via Canadian Pacific Railway, via Port Arthur, or via Sault St. Marie, St. Paul, thence Soo-Pacific route, Great Northern and Northern Pacific Railways; returning same route or any of the above routes. It is also proposed to allow variation via St. Louis from St. Paul and Chicago on return trip on payment of \$10 additional. Stop-overs will be granted west of Port Arthur on going and returning journey and west of St. Paul when tickets are routed on return journey by that point. Those who wish on return journey to visit the Yellowstone Park can do so on payment of the extra charge made for the trip through the Park from the junction with the Northern Pacific Railway at Livingstone. The arrangements as to rates in Manitoba, Northwest Territories and British Columbia are as follows:—From Port Arthur, Fort William, Rat Portage, \$50; from Winnipeg, Emerson, Gretna, Portage La Prairie, Brandon, Indian Head, \$45. From points in the Northwest Territories, Qu'Appelle and west, round trip tickets to Vancouver and Victoria, B.C., will be issued at single fare. These rates cover the transportation of delegates and immediate members of their families. Passengers ticketed at stations Medicine Hat and east have the option of going via the main line and return Crow's Nest, or *vice versa*, when purchasing tickets. Already a fine list of papers has been promised, and there is every indication that this meeting will be one of the most successful in the history of the Association. It is not likely that there will be any special train.

EXTRACTS FROM THE MOSELY EDUCATIONAL COMMISSION.

As Mr. Mosely and Professor Rose Bradford, two of the members of the Mosely Commission, visited Toronto and Montreal last fall, some extracts from the report of this commission as it affects medical teaching in Canada may prove interesting reading. In the report, Dr. W. H. Gaskell deals with the teaching of anatomy and physiology. In Canada the medical schools visited were at Toronto, Montreal, and Quebec; in the United States, New York, Philadelphia, Baltimore, Chicago, Ann Arbor, Boston, and Ithaca. "The schools in question were those in connection with the universities in the above-mentioned cities. The hospitals in most of these cities were only indirectly associated with the medical departments of the universities and their clinical facilities were not exclusively employed for the instruction of the students of a single university or school. In some cities, however, as in Baltimore and Montreal, one hospital is entirely devoted to the needs of a single medical school—namely the Johns Hopkins at the former and the Royal Victoria Hospital at the latter."

"The system of student clerks and dressers scarcely exists in the United States except at the Johns Hopkins Hospital, though it is in full operation in Canada."

Professor Rose Bradford summarizes the first portion of his report as follows:

"These two points—on the one hand the limit of service of the visiting and teaching staff, and on the other the absence of the clerk and dresser system—were those which most impressed an English teacher as indicating the main points of difference in the relations of the hospitals to the teaching medical schools. Many of the American teachers are alive to the advantages of the clerk and dresser system, but they point out that under their system, the students get the practical acquaintance with diseases subsequently during their period of office as 'internes,' at a time, moreover, when they are more fully capable of making use of the opportunities afforded them. In the English system, the student becomes a clerk or dresser at a period in his career when he knows little or nothing of medicine or surgery, and thus they argue that the great opportunities afforded him are to a considerable extent wasted. With their system the 'interne' has already graduated, and has acquired a knowledge of medi-

cine and surgery which should enable him to make full use of his opportunities. The great and obvious disadvantage of the American system is that all students cannot possibly become 'internes,' and thus a number of men must start in practice without the advantages that the daily life in the ward in contact with disease imparts."

As Professor Bradford states, this is the striking difference between the system of medical education in vogue in the United States and that followed in this country—meaning England—and also in Canada.

According to Dr. Gaskell's report, the anatomical and physiological laboratories are far ahead on this side of the Atlantic, those of Toronto and Johns Hopkins in particular, especially as regards the system of physiological units, and these impressed him very much.

Some of the summarized conclusions of Dr. Gaskell are as follows:

"In our medical and scientific schools separate laboratories with a separate staff of teachers ought to be provided for anatomy, histology, physiology, physiological chemistry, experimental psychology, and perhaps neurology."

He states that he is not convinced that didactic lectures are a mistake; and advocates a six or seven years' conjoint course for the academic and medical degree. Concluding, he states that there is much to be said in favor of taking into account the work done by the student during the term, in his examination.

MARMOREK'S ANTI-TUBERCULOUS SERUM.

The fact that Dr. Marmorek may pay a visit to Canada during the coming summer; that he may possibly be induced to make a presentation before the approaching annual meeting of the Canadian Medical Association at Vancouver; that his serum has been tried in Montreal and is at the present time being experimented with in that city by Dr. Richer, renews interest in this subject throughout Canada. In *The Lancet* of the 9th of April, Dr. Arthur Latham publishes his observations on selected cases at St. George's Hospital and at the Brompton Hospital for Consumptives. These observations have import-

ance lent to them from the fact that Professor Marmorek came over from Paris to London on three separate occasions, so that Dr. Latham had the benefit of his personal advice. At the commencement of the experiments in December last, Dr. Marmorek stipulated that the serum should only be given to "severe or to urgent examples of the disease." Upon thirty severe cases were the experiments conducted, extending over a period of three months. It is therefore interesting and important to record some facts and observations as regards the necessary technique, the dosage and action of the serum, and the complications which sometimes occur. The method of injection, the sites, the preparation of same and subsequent treatment of the injection point are practically the same as for anti-toxin or streptolytic serum. In these selected cases, the injections amounted to over 450 in number. Dr. Marmorek prefers to give the serum between 9 and 11 in the morning. In chronic cases the doses given were 10 c.c. every day for two, seven, eight or nine days; then an interval of a week or ten days. At the end of that time 5 c.c. for two days and 6 c.c. for further two days. Another week or ten days would elapse and a third series similar to second, and so on. These were found to be too large, and at the latter end of the treatment 5 c.c. for four days and three days' rest; after the third series an intermission of two weeks. The main point to watch, apparently, is the capacity of the individual to support the serum. In acute cases, in meningeal tuberculosis, and in surgical cases, doses up to 30 c.c. may be given for four days without harm. The serum effects are seen in rise of temperature, a cumulative action, the ordinary serum rashes—urticaria, erythema and scarlatiniform eruptions being most common. After eight or nine injections, "pins and needles" in the limbs, followed by neuralgic pains, and edema at site of injection. In some instances after injection the patients became drowsy and listless.

Dr. Latham sums up and states: "As a result of my experience of this new treatment up to the present time, I think I may say that the serum when given in carefully graduated doses, with proper precautions and in suitable cases, does no harm. Further, my experience tends to show that the serum does produce a specific antitoxic effect. In any case, there can be no doubt that an extended trial of this remedy should be made, more especially in less severe cases than those to which I have hitherto confined my attention. It must not, however, be forgotten that great care must be exercised in the adminis-

tration of this remedy, and that the treatment may have to be extended over a considerable time before permanent results are obtained."

All we can say in this connection is to express the hope that the serum may prove valuable, and it would be especially of great moment if there would be evolved a cure for that form of tuberculosis which is now practically always fatal—tubercular meningitis.

THE "PATENT MEDICINE" CURSE.

Written below the above title there is a remarkably interesting article from the pen of a layman in the May number of *The Ladies' Home Journal*, which, with its gigantic circulation of over a million copies, and ten thousand additional for this issue, will strike a blow right over the solar plexus of the patent medicine traffic. It is especially interesting at this time because we understand that a certain patent medicine house of wide notoriety has issued a writ against the above journal, claiming one or two hundred thousand dollars for damages. It is most scathing in its denunciation of alcohol by the patent medicine route, not to mention the exceeding great dangers from the cocaine and morphine ingredients these hundreds of nostrums on the market contain. It is a sign of the times that the people are awakening to the awful dangers of self-prescribing of drugs; and it is no doubt due to the persistent onslaught which has been waged by the virile pens of *American-Medicine* and the other medical journals without exception, against this wide-spread evil. It will be interesting to watch the course of events to see which will be the great periodical circulating freely amongst the people of Canada to first step out and cut out these obnoxious ads. from their columns.

MUNICIPAL COMPENSATION IN QUARANTINABLE CASES.

Is it a just law which puts a man to expense and inconvenience because his child has been unfortunate enough to contract scarlet fever or diphtheria at school or otherwise? His house

is placarded, he is driven from his home and sick one, and is forced to find board and lodging elsewhere, for which he must pay himself, in order that the balance of the community may be protected. It is surely no fault of his that disease of this character appears amongst the members of his household, and why should he individually be asked to protect other members of the community at his own expense? Surely it would be just and right for the community to pay for protecting themselves; and whatever money the man who is driven forth from his home has to expend, should be returned by the law and the people who put him to any such expenditure.

HAS CANCER RESEARCH FAILED?

So far as the State of New York is concerned, cancer research has failed to establish the cause of cancer up to the present time, and for the immediate future there is to be no more of it, state-aided. The Legislature of the State of New York has refused to vote the usual annual appropriation of \$100,000 to the laboratory at Buffalo, on the ground that there has been nothing gained by the expenditure of these large sums of money.

Editorial Notes

UNIVERSITY OF TORONTO FACULTY OF MEDICINE.

I am instructed to inform you that it is the intention of the Faculty of Medicine to conduct a Post-graduate Course extending over the two weeks immediately preceding the meeting of the Ontario Medical Association. The programme from day to day will be as follows:

9 a.m. to 11 a.m.—Operations and Surgical Clinics in the various Hospitals. 11 a.m. to 1 p.m.—Clinical Laboratory Methods and Practice in the Laboratories of the University of Toronto. 2 p.m. to 4 p.m.—Medical Clinics in the various Hospitals.

A fee of \$10 will be charged for the Clinical Laboratory work.

The details of the time-table will be printed in due course and will be distributed at the Secretary's office in the University on the first day of the course.

It is requested that members of the profession who wish to take this course should notify the Secretary before coming to Toronto.

The course will begin on Wednesday, June 1st, and will terminate on June 15th.

A. PRIMROSE,
Secretary.

WHEN YOUR CASE IS WEAK ABUSE THE OTHER SIDE.

This maxim has been a favorite standby with the legal profession from time immemorial and unfortunately certain pharmaceutical manufacturers have recently seen fit to make use of that maxim. This is particularly true of the manufacturers of a certain iron preparation.

The impudence and effrontery with which these people try to hoodwink the medical profession is rather remarkable.

No other preparation ever came before the medical practitioner with so little details as to methods of preparation, composition, therapeutic effect, etc., etc., and nevertheless the profession is asked to accept the wildest and most extravagant statements as to its wonder-working capabilities. This is not all. The makers of this preparation, in seeking the support of the profession, covertly attack and sling mud at all other iron preparations that have been before the profession for years. They single out Pepto-Mangan, a combination which has stood the tests of the leaders in the scientific medical world both here and abroad, an organic iron combination in which, in its results, the general practitioner and the hospital clinician have learned from experience to place implicit confidence.

This unbusiness-like method of attempting to cast discredit upon other reliable and thoroughly tested combinations we cannot term otherwise than despicable, and furthermore, we know our readers cannot be influenced by unsupported statements of financially interested parties, but will always bear in mind that Gude's Pepto-Mangan was submitted to the profes-

sion as an organic iron product, and the results obtained by its use, as also the scrutiny of analysis by chemists of repute, substantiate all that has ever been claimed for it.

Attempting to foist upon the attention of the physician a product simply by insinuation that known articles are inferior, is a manner of doing business which should receive the stamp of disapproval by every one of our profession.

NEWS ITEMS

DR. JAMES BELL has returned to Montreal from Europe.

DR. LORNE STAUFFER has removed from Millbank^e to New Dundee.

DR. MOORE, late of Moorfield, has moved to Carthage and opened up an office.

DR. MOORE, who for many years was a resident of Clinton, died recently in California.

THE WESTERN HOSPITAL, MONTREAL, needs a new wing, and funds are being solicited for the purpose.

DR. W. T. CONNELL, of Kingston, has been appointed Assistant Bacteriologist to the Ontario Board of Health.

CANADIAN MEDICAL PROTECTIVE ASSOCIATION.—Have you joined this worthy organization? If not, why not?

A NEW by-law on vital statistics for the better provision for the registration of births has been adopted in Montreal.

DR. JOHN L. DAVISON, Toronto, Professor of Clinical Medicine in the University of Toronto, has gone to England.

DR. J. T. HALSEY, Lecturer in Pathology at McGill University, will sever his connection with that institution shortly.

DR. JAMES F. W. ROSS, President Ontario Medical Association, has returned to Toronto from a three months' trip to Egypt.

ORGANIZED labor in Victoria, B.C., has donated \$150 towards the furnishing of a room in the Strathcona wing in the Jubilee Hospital.

DR. R. R. ROGER, of Russell, Man., has for the past five months been in the Old Land, visiting the hospitals of London, Edinburgh and Glasgow in the interests of his profession.

A SANITARIUM for consumptives was opened at Kentville, N.B., on May 1st. The building occupies a beautiful site on the north bank of the Cornwallis River, and overlooks the town of Kentville.

A NEW ASYLUM PHYSICIAN FOR ONTARIO.—The Provincial Secretary's Department is considering the appointment of a general assistant physician for the various asylums of the province to act as a relieving officer.

THE Toronto Isolation Hospital recently opened a new wing for the accommodation of 100 patients. It was erected at a cost of \$32,000. The ceremony was performed by Ald. Dr. W. T. Harrison, chairman of the local Board of Health.

CANADIAN DOCTORS IN NEW YORK.—The following Canadian doctors recently visited New York: Dr. E. Haanel, Ottawa; Dr. J. A. Temple, Toronto; Dr. Allen Baines, Toronto; Dr. W. H. B. Aikins, Toronto; Dr. E. Farrell, Halifax.

DR. D. A. SINCLAIR, who received his primary education at the Glencoe High School, has recently returned from England, where he has been taking a post-graduate course at a hospital in London, and will locate at Melbourne, his birthplace.

KINGSTON'S College of Physicians and Surgeons is to be reorganized, with the Hon. Dr. Sullivan as President. The intention is to grant fellowships, viz., F.R.C.P.S., to doctors of five years' standing upon examination and an approved thesis.

DR. J. P. CHARTRAND, Montreal, Professor of Surgery at Laval University, died suddenly on the morning of the 26th of April, aged forty-two years. He had been attached to the staff of Laval for six years, and received his medical training at Victoria University.

DR. A. W. HOTHAM, St. Marys, has sold out his medical practice to Dr. A. A. Knox. Dr. Hotham has left for Waskada, Southern Manitoba, where he will take up practice.

MCGILL PROFESSOR HONORED BY HIS CLASS.—At the close of the session of 1903-1904 at McGill, Dr. George Wilkins, Professor of Medical Jurisprudence at McGill, was presented with a handsome illuminated address inscribed in Chinese characters.

A METHODIST HOSPITAL FOR TORONTO.—*The Christian Guardian*, recently advocated editorially the establishment in Toronto of a Methodist hospital. Under the will of the late Hart A. Massey, \$100,000 was left for this purpose, on condition that a similar amount should be subscribed.

DR. W. T. HAMILTON, of Stratford, formerly of Motherwell, has returned from the Old Country. He was absent fifteen months, during which time he spent one year in London, Eng., attending the Royal College of Physicians, from which he graduated, obtaining the degrees of M.R.C.S. and L.R.C.P.

PROVINCIAL APPOINTMENTS.—Dr. W. P. Chamberlain has been appointed associate coroner for Toronto; Dr. N. J. Amyot, Belle River, associate coroner for Essex County, to succeed Dr. J. O. Reaume; Dr. J. H. Bull, Holland Centre, associate coroner for Grey County; Dr. C. P. McPherson, Prescott, associate coroner for Leeds and Grenville.

NEWS was received by cable from London that Dr. Brefney Rolph O'Reilly, son of Dr. Chas. O'Reilly, of the Toronto General Hospital, has successfully passed the examinations in medicine and surgery, entitling him to the honorable degrees of L.R.C.P.(Lond.) (Licentiate Royal College Physicians, London), and M.R.C.S.(Eng.) (Member Royal College Surgeons, England). Dr. O'Reilly was born in Toronto, educated at Upper Canada College, and took his degree of M.D.C.M. in Trinity University, when he won the gold medal. He is probably one of the youngest holders of his various degrees.

CANADIAN MEDICAL ASSOCIATION.—It is understood that the coming 37th annual meeting of the Canadian Medical Association gives promise of equalling, if not eclipsing, any of the previous meetings yet held, both in point of attendance and character of papers. So far as entertainment is concerned—well, don't miss the meeting in the Pacific province!

APPOINTMENT AT QUEEN'S.—Dr. Frederick Etherington, of Kingston, has been appointed by Queen's Medical Faculty to the newly-inaugurated tutorship in human and comparative anatomy. Dr. Etherington is now at Edinburgh, pursuing his medical studies, but will return in the autumn and henceforth devote all his time to the position to which he has been appointed.

APPOINTMENTS AT QUEEN'S.—The following appointments have been approved by the Trustees of Queen's University to the staff of the Medical Faculty. To be Professor of Pediatrics and Associate Professor of Obstetrics and Gynecology, Dr. Wood; to be Assistant Professor of Anatomy, Dr. Mylkes; to be Professor of Medical Jurisprudence and Toxicology, Dr. Williamson.

CONSUMPTION SANITARIA FOR THE PROVINCES.—A deputation recently waited on Sir Wilfrid Laurier from the Association for the Prevention of Tuberculosis, asking aid for the establishment of a sanitarium in each of the provinces of the Dominion. Sir Wilfrid will consult with the Minister of Justice to see whether the Dominion can legally grant aid to such institutions.

MEDICAL APPOINTMENTS AT THE UNIVERSITY OF TORONTO.—The Ontario Cabinet has approved of the following appointments: H. S. Hutchinson, M.B., and W. M. Meldrum, M.S., assistants in the chemical laboratory of Toronto University; R. H. Mullen, M.B., Assistant Demonstrator in Pathology; F. W. Marlow, M.D., F.R.C.S. (Eng.), Assistant Demonstrator of Anatomy.

TORONTO CLINICAL SOCIETY —The following officers have been elected to the Toronto Clinical Society for 1904-1905: President, Dr. Herbert J. Hamilton; Vice-President, Dr. Adam H. Wright; Corresponding Secretary, Dr. W. J. McCollum; Recording Secretary, Dr. George Elliott; Treasurer, Dr. Geoffrey Boyd; Executive, Drs. H. B. Anderson, H. A. Bruce, D. Gibb Wishart, W. H. B. Aikins and John T. Fotheringham.

NEW PROFESSOR OF GYNECOLOGY AT LAVAL.—Dr. L. deL. Harwood, of Montreal, has been appointed to succeed the late Dr. Brennan as Professor of Gynecology at Laval University, and will also be chief of the gynecological clinic in Notre Dame Hospital. Dr. Harwood has also been chosen President of the Section on Gynecology of the Medical Congress of the French-speaking Physicians of North America, which is to meet in Montreal this year.

CANADIAN MEDICAL ASSOCIATION.—Do not forget the dates of the coming annual meeting at Vancouver on the 23rd, 24th, 25th, and 26th of August. British Columbia is anticipating a large crowd, and should be nobly supported by the eastern provinces. In order to take advantage of the reduced rates, those who contemplate going out should get into communication with the General Secretary, as they will require a special certificate signed by that official before purchasing their transportation. This is imperative.

ST. JOHN, N.B., PUBLIC HOSPITAL.—In 1903, 982 patients were treated in this hospital, there being 379 medical cases, 489 surgical, and 114 eye and ear cases. Of these patients, 498 were discharged cured, 307 were discharged as improved, 24 by request, 1 because of being disorderly, 28 unimproved, 75 died, and 48 remained in the institution at the end of the year. The out-door departments showed, medical and surgical cases, 373; eye and ear, 227.

QUEBEC MEDICAL LAW DEFECTIVE.—A good deal of interest has been evoked amongst the medical fraternity of Montreal over the appearance in the legislature of that province of a bill having for its purpose the making of doctors out of students who have failed to obtain a certificate of admission to practice. The proposed legislation affects some two hundred medical students of the Province of Quebec, and proposes to admit without the necessary matriculation examination all those who began the study of medicine prior to September of last year.

THREE GENERATIONS OF PHYSICIANS.—A remarkable photo is at present on view in the window of Messrs. Wm. Notman & Sons, representing three generations of medical men in the Church family, including eleven names, and, with one exception, graduates of McGill University. It is of unique interest in view of the fact that its graduation dates include almost the

entire life history of McGill University, beginning with the name of Dr. Peter Howard Church, 1845, and ending with the names of the two most recent graduates in 1896. The design is artistically carried out, and includes reprints of the three buildings occupied by the medical faculty since its foundation, with dates complete.

TORONTO CLINICAL SOCIETY'S ANNUAL BANQUET.—Fellows of the Toronto Clinical Society to the number of forty, sat down to the annual banquet in the Albany Club on the evening of the 7th of May. In the absence of the President, Dr. H. J. Hamilton, Vice-President, filled the chair in a very happy manner. A pleasing feature of the evening was the hearty and cordial manner in which the toast to the health of the President, Dr. Fotheringham, was received. This was proposed by Dr. Temple, and replied to by Dr. Hamilton, Dr. Fotheringham being on the ocean on his way to England, convalescing after a very severe attack of septicemia. Altogether it was one of the most enjoyable dinners in the history of the Society.

DR. WILSON BANQUETED.—The medical profession of the County of Elgin entertained Hon. J. H. Wilson to a banquet at St. Thomas on Friday, April 8th. There was a large attendance of the physicians of the city and county. Dr. Cascadden, of Dutton, presided, and in proposing the health of the guest of the evening, said that Dr. Wilson came of a fighting stock. Dr. Wilson, however, had passed that stage and had passed into the serene and quieter atmosphere of the Senate. In tendering him this honor, the greatest that could be conferred, the Government acted wisely. His long experience in public life had made Senator Wilson intimately acquainted with the country. He would, he said, not be surprised if Senator Wilson received further honors, and hoped to see him appointed Minister of Health and Sanitation. He had known the Senator for forty years, and they always had the most harmonious relations personally and professionally. Senator Wilson, in replying, said he could not find words to express his feelings. It was a question with him whether the position was an elevation to him or not, as he felt no greater honor than working side by side with his medical brothers. There were no harder workers, or men who made themselves less conspicuous, than the medical profession. He could look back for thirty-three years, when he fought the battles of the profession in the local legislature, and assisted in carrying a bill for the higher standing of the profession, and

all were benefited thereby. After referring at some length to matters pertaining to the profession, the Senator said he asked for forgiveness if he had ever thoughtlessly injured any one's feelings. Remaining in the ranks of the medical profession was a greater honor than being a Senator. Had he stuck to the ranks and kept out of politics he would have been worth thousands of dollars, but he had no regrets for the course he had pursued. Among the other speakers who eulogized the new Senator, both as a public man and as a physician, were Dr. Kains, Dr. Luton, Dr. Guest, Dr. Sinclair and Dr. Marlatt.

Correspondence

MUNICIPAL SANITARIUM—TORONTO NEEDS ONE.

To the Editor of DOMINION MEDICAL MONTHLY :

Sir,—I have been frequently asked this question: Is there need of a municipal sanitarium exclusively for our citizens suffering from consumption? Unhesitatingly, I answer, Yes!

The sanitarium at Muskoka is only for cases in the early stages of the disease, and is open to patients from all parts of the Dominion, and therefore has only limited room for Toronto, and, secondly, it is too far away to attract our consumptives in any considerable numbers, and thus inadequate to meet the needs of this city.

The so-called Toronto Free Hospital for Consumptives in the advanced stages of the disease (near Weston), and open to all Canadians, is no doubt an attractive card for securing subscriptions from all parts of the Dominion.

In this city there are continuously at least 600 persons in the advanced stages of the disease, in this province about 5,000, and in the Dominion not less than 15,000.

Now, it is reasonable to believe that from the extensive advertising that is being done at least 5 per cent. of these 15,000 may direct their faces towards this city, and that upon their arrival at said hospital will find the fifty to one hundred beds all occupied, and realize that they are within a ten-cent car fare of the great city whose name had been used to attract them.

Thus year after year consumptives from all parts of the

Dominion will be dumped into this city and become an intolerable nuisance, instead of being cared for in a sanitarium in their own county municipality.

In 1897 a meeting was held at Calgary, Alberta, to take steps to inform the citizens of the Dominion that the Territory of Alberta was a favored place for consumptives. The news spread and many consumptives turned their faces towards Alberta.

Dr. Lafferty, of Calgary, who had favored this movement, in addressing the Canadian Medical Association at Winnipeg in 1901, warned the medical men of the East not to send their consumptives to Alberta, as there was no sanitarium accommodation, that the hospitals, hotels and boarding-houses would not take them in, and that their condition was deplorable.

This, together with the experience of Colorado, California, and other states, should be warning enough to our citizens.

The burning question in Toronto to-day is, Shall our citizens contribute \$25,000 so as to take advantage of the \$50,000 voted by the ratepayers and of the Government aid of \$4,000 for land and buildings and \$1.50 a week for each patient, and establish a municipal sanitarium under the act exclusively for our citizens suffering from consumption, or shall the city become the dumping place of the whole Dominion for advanced cases of this disease?

April 18, 1904.

E. J. BARRICK.

Special Selection

THE SOLUBLE FERMENTS OF COW'S MILK.

BY JOSEPH LESPERANCE, M. D. (PARIS), MONTREAL, QUE.

It is a well-known fact that milk is in itself a complete food, since it contains the three alimentary elements by which all life is sustained, namely, the albuminoids, the fats, and the sugars. But, although human life may be indefinitely maintained by the exclusive use of milk, the seemingly paradoxical fact has been established that an artificial mixture of albumins, fats, and sugars, although in the same proportions as when contained in natural milk, will not sustain life beyond a limited period. The following experiment made by Lunin demonstrates this interesting fact:

Mice, as well as men, can live indefinitely on natural milk as a sole diet. But when they are fed on artificial milk containing all the chemical constituents of an excellent milk, they die in from twenty to thirty days. In this experiment Lunin prepared his milk in the following manner: The milk was diluted with water, and then precipitated in acetic acid. The flaky precipitate was then washed with acidulated water, leaving it a mixture solely of casein and fat. To this quantity of albuminoid and fatty matter, he added cane-sugar in the proper physiological proportion to represent the carbohydrates. Finally he added the salts that are contained in natural milk, in the exact quantities in which they are found in that substance. Theoretically this artificial milk constituted a perfect food, since it contained the three principal groups as well as the salts. Nevertheless, the mice on which the experiments were made did not live, although they relished the diet and ate plentifully of the food.

Lunin was studying the rôle played by the mineral salts in nutrition, and at the time when he announced the results of his experiments the scientific world was considerably surprised.

It is now well understood that the factor which was lacking in Lunin's artificial milk, that which was necessary in order to make this product capable of sustaining indefinitely the life of

his mice, was that chemically intangible constituent, the active living force, in fact the enzymes or unorganized soluble ferments that were destroyed by his method of preparing and treating the milk. This fact explains why sterilized milk and other sterilized foods have not fulfilled the general expectations of the scientific world. Received at first with enthusiasm by the medical profession, it was gradually shown in the course of time, that they did not constitute an ideal method of feeding. Many medical men, recognizing the lack of result without knowing the real cause of failure, returned to good natural milk, either simply diluted with water, or not. Careful observation showed that milks that had not been heated beyond a natural temperature were more easily digested, and gave greater vitality to the system. It was observed that sterilized milks produced in children soft muscles, a generally irregular development, and a weakened resistance to infectious diseases. Some men even stated that they were the indirect cause of infantile scurvy. And these unsatisfactory results were observed even when the very best methods of blending were being used, and the milk had been modified so as to make it, from a chemical standpoint, not only merely resemble mother's milk, but actually almost identical with it.

These facts were verified, but without any reasonable explanation of the cause. However, the work and thorough investigation to which milk has been subjected within the last few years, have thrown an entirely new light upon the subject. The constituents which are lacking in sterilized milk, or more properly speaking, are destroyed when the temperature of the milk is raised to 176 deg. Fahrenheit, are the enzymes, those mysterious ferments which govern the equilibrium of the protoplasm. Not only in the animal kingdom, but in the vegetable kingdom as well, every vital phenomenon seems to be dependent on these ferments. The grain of wheat, planted in the soil, owes its development and growth solely to these special ferments. Under the influence of soluble substances secreted by microbes in the bosom of the earth, the grain of wheat emerges from its lethargic condition and becomes a living organism, capable of growth and reproduction. It has been shown that absolutely sterilized earth is useless for the growth of seeds, and that these do not come to maturity in such soil. (Ref. Nobbe, Dresden.)

The same thing applies to the animal kingdom. Animals kept in an aseptic atmosphere and fed on sterilized foods cannot live. The quantity and proportion of albumen, of carbohydrates

and of fats may be perfect, but that particular force which separates and disintegrates them into their ultimate terms of absorption no longer exists, and these food substances become inert. According to Kejanitzin, the distasteful effect of the sterilized air breathed, continues even after the animals have again been placed in a normal atmosphere. This author explains, that in breathing ordinary air the microbes inhaled are absorbed by the leucocytes, which separate the ferments which these microbes contain and spread them throughout the organism, where they regulate oxidation and prevent the accumulation of leucomains and other toxic principles.

It is a path abounding in beautiful discoveries that science has opened. It is found that the malignant ferments, producers of illness and death, are in reality only an accident in nature. If there exists those that are responsible for the shortening of some lives, on the other hand their very kin are they that since the creation of the universe have perpetuated species, and finally, the evolution of the higher organisms is corollary to that of the infinitely small. Although there are injurious germs whose secretions disturb the vital harmony and cause a disturbance of the physiological phenomena, yet by way of retaliation or compensation there are a much greater number of those whose secretions are of a direct benefit. It is true that, as yet, we know but a small proportion of these, but the list is growing and continues to grow as time passes. Let us salute *en passant*, the noble germs, creators of fine wines, of good ciders, of fragrant vinegars, and of savory beers.

If we have entered somewhat fully into the above considerations, it is because the ferments that are found in milk originate both in the organic cell and in the bacterial cell; the former, being necessarily in the milk because they are contained in the organism and in the gland cells which give rise to the milk; the latter, being accidental, but at the same time always found in the milk, since they are secretions of the bacteria which exists everywhere and consequently gain entrance into the milk, many of them even before it leaves the galactiferous ducts. These bacterial ferments were thoroughly studied long before the cellular ferments, and since the observations and work of Duclaux are known intimately: They are for us less interesting than the others, and to them, the cellular ferments, we would more particularly devote our attention.

The clear ideas which we at present possess regarding the soluble ferments of milk, have taken a long time to come to light. While the first work on the digestive ferments of the

human alimentary canal dates back some fifty years, only five years have elapsed since any serious attention has been given to those of milk. After having discovered ptyalin in the saliva, pepsin in the gastric juice, and the tryptic fomenters in that of the pancreas, science rested. Bacteriology acquired a tremendous impetus from the ideas of Pasteur; a keen interest was aroused that engrossed all thinking minds. But by a return to the original ideas, bacteriology, in discovering the secretions of the microbes, brought these same thinkers back to the study of the secretions of the organic cells, and demonstrated that the two are identical, and that there are no biological difference between the constituent cells of our organism, and those minute cellular individuals, the microbes.

Babcock and Russell, of Wisconsin, were, so far as we can learn, the first to demonstrate the presence of soluble ferments in milk.

In the earlier days the various phenomena that take place in milk were explained as being solely chemical—the re-action of one body on another. Then, in the time of Pasteur, the facts became a little better known, and all the transformations of milk were ascribed to the action of bacteria. Lloyd and Freudenreich made known the considerable part played by bacteria in the maturing of Cheddar and Emmenthaler cheeses.

Babcock and Russell, struck by the fact that all the changes taking place in milk could not be explained by the activity of bacteria alone, undertook a long series of experiments in order to elucidate the apparent difficulty. They experimented partly with natural milk and partly with milk that had been worked by cheese-makers. To samples of fresh milk they added in some cases chloroform, in others ether, both of them substances which arrest bacterial growth. They found that coagulation of the milk set in within a few days without any corresponding increase of acidity. In these experiments the anesthetic would have prevented coagulation if that phenomenon were due entirely to bacterial life.

Then, as Conn had announced that saprophytes possessed the power of secreting an enzyme analogous to rennet, and capable of coagulating milk, and as Duclaux, in a lengthy communication had brought to light the important rôle played by the saprophytes in the phenomena of the maturing of cheeses, Babcock and Russell determined to investigate the question as to whether the coagulation of the milk in spite of the use of the anesthetics had been caused by bacteria. They took every precaution, surrounding themselves with every safeguard in

order to prevent the contamination of the milk by saprophytes. The udder of the cow was carefully sterilized, the first milk was thrown away, and then the balance was milked direct into bottles containing an excess of an antiseptic preparation. By this process the bacteria with spores which produce the coagulating ferments were excluded, and if by chance any of them, coming from the lactiferous ducts, reached the milk, they were immediately paralyzed. Under these conditions which would eliminate all bacterial activity, the same phenomena of coagulation and transformation of the casein took place as before, and in the same time. These experiments were repeated with all antiseptics known to arrest microbial reproduction, such as fluoride of sodium, salicylic acid, etc., and the results were always the same. Moreover, in proportion to the age of the various samples of aseptitized milk, these exhibited a gradual increase in the percentage of albumoses, formed at the expense of the casein. For example, in milk twelve days old, the proportion of the products of this digestion was 30 per cent., while in the same milk, two hundred and forty days old, the proportion was 63 per cent. Babcock and Russell then arrived at the conclusion that besides the organized ferments, there are in milk other ferments which are inherent in the milk itself. In pursuing their investigations further, they found these ferments in the milk of all the mammals that they studied (ass, mare, goat, sheep, sow, buffalo, and woman). In the cow's milk it is particularly abundant and more easy to isolate.

To this ferment they gave the name of Galactase, and classified it in the same family as Trypsin, the pancreatic enzyme.

This view of the matter was confirmed in the very same year. Bertrand and Bourquelot, without knowing anything of the work of Babcock and Russell, demonstrated by other processes the presence in milk of oxidizing ferments. As long ago as 1881, Arnold had found that fresh cow's milk became blue on contact with tincture of guaiac, and that this reaction is no longer produced if the milk is heated to a temperature of 80 deg. C. In 1890 Kowalesky established undeniably that the same reaction takes place in milk when mixed with old turpentine. But at that time this reaction was attributed to the presence of ozone. Later it was recognized that free ozone cannot exist in the system, and Bertrand and Bourquelot demonstrated that the reaction of milk toward oxidizing agents is due to the presence of a ferment. Of itself it is powerless to oxidize oxidizable substances without the assistance of an intermediary agent highly oxygenated, such as the tincture of

guaiacum, old turpentine or oxygenated water. But, when these agents yield their oxygen to this ferment, the latter is able to hold it, and in consequence to oxidize any oxidizable substance with which it comes into contact. For example, if some drops of tincture of guaiac are added to fresh milk, this does not change color. But if at the same time some drops of oxygenated water are poured into the milk, a blue color begins to show itself at once. The ferment has absorbed a portion of the oxygen, and coming into contact with the guaiac has oxidized the latter. Thus this ferment belongs to the family of anaerocydases. At this same time Dupouy, and in the following year (1898) W. Raudnitz, studied this oxydase and found that it is present in the milk of the goat, the cow, and the ewe; and that it is absent, or that its action is very weak, in the milk of the ass, the mare, the dog, and in human milk. Marfan and Gillet have also studied this ferment, and confirm its presence in the milk of the cow.

In 1901 Spolverini took up this line of research and recognized in cow's milk the presence of pepsin and trypsin. Working on milk aseptically treated, and in which perfect asepsis was maintained by thymol, he placed in a drying-stove, at 104 deg. F., various quantities of milk, some acidified for the research for pepsin, others alkalized for the research of trypsin. After a certain time he determined the quantity of soluble albumen in it by the biuret reaction. A boiled sample served as a means of verification. By proceeding in this manner, Spolverini found that the pepsin and trypsin were to be met with in all the milks, but were most abundant in cow's milk. The proportion diminishes in the milk of the dog, the goat, human milk, and that of the ass.

Besides these ferments, of which we have already spoken still another is to be found, which Spolverini identifies with the glycolytic ferment of the blood. If the sugar contained in a given quantity of fresh milk is determined, and the latter is placed in a drying-stove at a temperature of from 38 to 41 deg. C., and the quantity of sugar is again determined after a lapse of twenty-four hours, it will be found that the quantity of sugar has considerably diminished. A portion has been destroyed. This is by the action of a glycolytic ferment. This ferment shows itself fairly active in cow's milk, but slightly less so in other milks. Moreover, in 1901, Luzzati, Biolchini, and Marfan, and in 1902 Gillet, as well as Spolverini, separated still another ferment that belongs to the family of hydrolytic ferments. Under the influence of this ferment monobu-

tyrin resolves itself into butyric acid and glycerin. These authors operated by distilling a mixture of milk and monobutyryn, and in then determining the acidity of the distilled products. They encountered this reaction of splitting up monobutyryn in the milks of the woman, dog, cow, goat, and ass, stronger in the former, and less energetic in the latter. They have agreed upon giving this ferment the name of lipase, a name which Bourquelot had given to a ferment of the same nature, which Hanriot was the first to discover in the blood.

Summing up the various researches and discoveries made in connection with cow's milk, we find, then, that this milk contains numerous ferments. We have determined definitely the presence of trypsin and of pepsin, of the lipasic and oxidizing ferments, and of a glycolytic ferment. There is, moreover, reason to expect further discoveries in this direction, and this is not improbable when the extremely complex nature of milk is taken into consideration.

BIBLIOGRAPHY.

- Lunin : Cited by Richet in Dictionnaire de Physiologie, p. 328.
 Babcock and Russell : Annual Report of Agricultural Experiment Station, University of Wisconsin, 1897.
 Lloyd : Bath and West of England Soc. Repts. Vol. II., 1891—2, p. 180.
 Freudenreich : Landw. Jahr., Schweiz, 1894, s. 207.
 Com : Fifth Rept. of Stor's Exp. Station, 1892, p. 106.
 Duclaux : Le Lait, 1894.
 Bertrand : *Annales de Chim. et de physiol.* Serie 7, T., XII. 1897.
 Bourquelot : Remarques sur les matières oxidantes que l'on peut rencontrer chez les êtres vivants
Journ. de Pharm. et de Chimie. Serie 6, T., V. 1897.
 Arnold : *Archiv. der Pharm.*, 1881, No. 41.
 Kowalesky : *Zentralblatt für medizinische Wissenschaft*, 1890, p. 145.
 Dupouy : Thèse de Bordeaux, 1897.
 Raudnitz : *Zentralblatt für Physiologie*, 1898, T. XII.
 Marfan et Gillet : *La Presse Médicale*, 1901, Janv.
 Spolverini : Atti del IV. Congres. Ital. di Pediatria. Firenze, 1901, 15-20 Oct.
 Luzzati et Biolchini : Atti del IV. Congres. Ital. di Pediatria. Firenze, 1901, 15-20 Oct.
 Noblecourt et Prosper Merklein : *La Presse Médicale*, 1902.

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