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KINGSTON MEDICAL QUARTERLY.

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GREETING.

ONCE more the season of festivities and good wishes has come round. Once more we greet our readers and wish them all and individually a happy and prosperous New Year. We would not have it understood that this wish implies that we desire the general public to be more than usually afflicted with the ills to which flesh is heir, but merely that those of our fellow mortals who are so afflicted may find it to their advantage to call upon the skill of our readers and be able and willing to give freely of this world's goods in exchange for the benefits received from our professional brethren. Again, we would intimate to our readers that the columns of the QUARTERLY are open to them, and that contributions from them will be gladly received and willingly published. Any items of a personal nature regarding the success of any of our confreres, reports of cases, opinions upon matters affecting the welfare of the profession, or discussions upon questions of a purely technical nature, will always be welcome. We would like our fellow practitioners to feel that the QUARTERLY is their organ as well as ours.

Once more we most heartily extend to our readers a most cordial greeting, and to each one we wish a Happy New Year.

THE MEDICAL CURRICULUM.

WE duly received the annual announcement of the College of Physicians and Surgeons of Ontario, and we have carefully perused the contents thereof. As we have had in previous issues of the QUARTERLY to differ materially with the regulations of the Council, it affords us particular pleasure to be able to agree with the new regulations as contained in the latest

Announcement. In the curriculum, as now prescribed, we find that the members of the Council have at last endorsed our views to a certain extent. We now find that a student in order to procure a license must attend "two courses of six or eight months, each consisting of fifty lectures and demonstrations in Pathology," and "one course of three or four months, consisting of twenty-five lectures and demonstrations in Bacteriology." In the *QUARTERLY* of January, 1898, we strongly urged upon the Council the advisability of requiring the student to devote more time to the study of these two important subjects. We do not presume that what we then said had the effect of bringing about the change. Probably the members of the Council never read the *QUARTERLY*. However they were induced to make the change we know not nor do we care. Sufficient for us is the fact that the change has been made, and that two of the most important subjects in the whole range of medical science have now been allotted more time in the Medical Curriculum. Of course it is gratifying to find that opinions which we enunciated a year ago have now been adopted, and, as a consequence, all candidates for a license will have a fair knowledge of these two essentials of a medical education.

Another addition has been made to the Medical Curriculum. Each applicant for a license must now present "a certificate of having attended five lectures and five demonstrations upon the use of anæsthetics." We cannot claim that we had advocated this addition to the Medical Curriculum, but we can and do most heartily congratulate the Council upon the wisdom they have displayed in making this a necessary part of every student's education. No one is properly equipped to enter upon the general practice of medicine who is not conversant with the modes of administering the different anæsthetics, the dangers attending their administration, the reasons for preferring one particular anæsthetic in any given case, and the means of counteracting their untoward effects. We believe that this is a wise addition to the Curriculum, and we again congratulate the Council upon having incorporated this course of lectures in their Curriculum.

Perhaps it is too much to expect that the Council would all at once remodel the Curriculum. They have begun well. May

they at their next meeting continue the good work. We would again call the attention of the gentlemen composing the Council to two other subjects in the Curriculum, viz., Chemistry and Sanitary Science. To the former the student is required to devote just six times as much time as to the latter. Surely no one will claim that Chemistry is of six times as much importance as is Sanitary Science. We would again respectfully ask the Council to reduce the time a student must devote to Chemistry and to increase the requirements for the study of Sanitary Science.

DOMINION OR INTERPROVINCIAL REGISTRATION.

IN the QUARTERLY of April, 1897, we had the pleasure of expressing our views upon the report of a committee appointed by the Canadian Medical Association to consider the feasibility of Interprovincial Registration. In our criticism of that report it afforded us extreme pleasure to be able to congratulate the committee upon the earnest manner in which they had evidently set to work upon this admittedly difficult problem. We considered the committee's recommendations *seriatim* and pointed out what at that time appeared to be insurmountable difficulties, if not to the inauguration of Interprovincial Registration, at least to its permanency. We have not as yet seen anything which would tend to alter our views upon this matter. Our criticism was closed in the following words: "Would it not be well for the Canadian Medical Association to drop this question of Inter-Provincial Registration, which is so beset with difficulties, both present and future, and consider the wider and, to our mind, the more feasible question of a Dominion Council with a Dominion License." Such was our opinion then, and such is our opinion now. Under these circumstances it is particularly gratifying to us to find that Dr. Roddick, of Montreal, who was chairman of the committee whose report we criticized, has now come out in favour of a Dominion Council and a Dominion License, which it is hoped the various Provincial Coun-

cils will accept. At a meeting of medical men, held in Toronto on October 22nd last, Dr. Roddick presented a scheme whereby a Dominion Board might be established with power to issue a license which the various Provincial Councils might at their discretion accept. Should such a Dominion Board be established, and should it adopt as the requirements for its License a standard as high as or even higher than that of any of the Provincial Councils (and we are confident it would do so), we are persuaded that not one of the Provincial Councils would attempt to refuse registration to any one holding such a license. In the interest of the profession, and in the interest of the public, we trust that Dr. Roddick will persist in the good work in which he is now engaged until success crowns his efforts. As we nearly two years ago advocated a Dominion License rather than Inter-Provincial Registration, we can assure Dr. Roddick that anything we can do or say to assist in the good work we will willingly do and say. We further believe that in this endeavour to obtain a Dominion License he will be endorsed and supported by the vast majority of the profession throughout the Dominion, and that he will have the hearty approval of the general public. Let Dr. Roddick formulate a scheme which will meet the legal requirements, and we doubt not that it will be welcomed by the profession as a step onward in the advancement of medical education.

INSANITY AFTER TYPHOID FEVER.*

AMONG the most potent of all causes of perverted mentality is the presence of toxins in the blood. From the simple irritability of temper and general feeling of malaise due to a functionally deranged liver with its resultant deficiency of intestinal antiseptics, to the most pronounced illusions, hallucinations and delusions of acute alcoholism, we observe all gradations of diseased mental activity, which science of the present day attri-

*Read before the Kingston Medical and Surgical Society.

butes to toxæmia. When we have to deal with such a prolonged febrile condition as typhoid fever affords, with its profuse toxic products that are always present, it is not to be wondered at that this occasionally becomes a cause of permanent disease of the brain.

Let us examine for a moment the nervous condition of our patients during the fever. If there be any symptom, besides what the temperature chart affords, and the abdominal changes present, deserving prominence, I would be inclined to emphasize the changes in the mental state of these cases. The first attack on the brain is shown in the cephalalgia, the hyper-sensibility to light and sounds, and possibly delirium. Then ensues the feeling of weariness, disinclination to any disturbing necessity, not caring even for food, to the graver symptom in the involuntary passing of excreta constituting a condition of lethargy. We may be quite unaware of the real mental state of our patients. I have at times been provoked by the caprices of persons whom I had always regarded as exemplary. The patients have afterwards told me that they were suspicious of their best friends, that they felt melancholy and were doomed to die, that they were insane; others have described the presence of insects creeping over the bed-clothing and walls. They see hideous faces laughing at them, and have innumerable illusions and hallucinations of this kind. These symptoms show that the nervous system is experiencing a severe strain or shock.

Usually when convalescence is coming on and our typhoid cases get a few good nights' sleep, all these mental anomalies disappear, and we are impressed with the change in the disposition of our patients who are now hopeful, cheerful and grateful for any attention. In rare instances this happy result is not found, but we ascertain that a more permanent injury has been sustained to our patient's mind.

I will illustrate this by reference to a few examples that have come to my notice:—M. H., admitted to Rockwood May 4th, 1896; female, æt 19; good high school education; habits all to be desired; hereditary predisposition present, maternal uncle being insane. The cause of insanity is said to be typhoid fever. She had been insane 2½ months before her admission. Her physicians describe her symptoms thus:—Total indifference to

persons and circumstances surrounding her. Has periods of silly laughter without cause. Does not associate with other members of the family. Tried to strike her mother with a knife, and also to set the house on fire. She imagines her friends and her physician are trying to poison her. Is melancholy by times, alternating with hours of continuous laughter. Suffers from insomnia. Upon admission we found her condition much as stated above, evidently a case of mania, her symptoms showing the sub-acute type. This formerly bright girl is listless and apathetic; takes no interest in anything, and is only equal to work of the meanest mechanical kind, and is quite void of independent thought. She was put in the calisthenic class, and all efforts made to build up her physical health and to develop her mentally. She has, however, been with us for $2\frac{1}{2}$ years without showing improvement, and her case is now hopeless and chronic. She is destructive, impulsive, weak-minded, is very cruel, and has to be watched closely to prevent her inflicting injury on weak and helpless patients. She has delusions of persecution, and that people can see through her clothing. Her bodily health is excellent, she having gained 15 lbs. in weight during her residence with us. I am able to give you in this case a short history of her typhoid fever previous to the above, for which I wish to thank Dr. Third. Patient had what might be regarded as a very severe attack of the fever. About the twelfth day of her illness took a railway journey from Toronto to Trenton; pneumonia of the left lung complicated, and she had also hemorrhage from the bowel and had been delirious for eleven days. After her temperature had been normal for four days she had a relapse, with nothing of special interest to note until the fourteenth day, when her sleep became interrupted. She was very irritable, said she was married and had labor pains, in fact went through all the performances of the obstetric room. On the twenty-first day her temperature became normal, but she refused food and was suspicious of her father and younger sister, said they were trying to poison her. An aunt induced her to take nourishment, and she gained rapidly physically, but no mental improvement was noticeable. Had amenorrhoea for a few months, was anaemic and waxy in appearance, was given iron and arsenic for two months. She went on as usual for some months, when she threatened and nearly suc-

ceeded in cutting her sister's throat ; after this was sent to Rockwood.

M. M.—Female, 50 years old, habits good. There may be hereditary taint in her family, as three of her cousins were insane. The exciting cause of her insanity is said to be typhoid fever. When admitted to Rockwood her insanity was of 17 years' duration and, of course, quite chronic, approaching Dementia. She has, however, periods of excitement, when she has different delusions of persecution. Her stay in Rockwood has been uneventful ; she mutters to herself ; is rather untidy ; wanders up and down the ward. The only work she is capable of doing is knitting. She has fallen off in weight, and is showing symptoms of developing phthisis.

M. J.—Female. When about 20 years old she had typhoid fever, from which her mental disease dates. Her habits were good ; hereditary taint denied. She was not admitted to Rockwood until Feb. 15th, 1877, although said to have been insane for five years. Her symptoms were those of simple melancholia, fancying she had to fight her way through the world ; that her relations were all her enemies and bad characters. She states she suffers from a confusion of ideas, that the other patients are doing things to annoy her when really taking no notice of her, and that she is under the influence and control of some one ; if out driving she would fancy that a conversation was being carried on between herself and the horse. She mistakes the identity of people and is subject to periodical attacks of irritability and violence. These are becoming less marked as her disease advances towards dementia. She is now very reticent about expressing herself relative to her delusions. She knows we regard them as such, hence she tries to hide them from us. She is a very good cottage patient, except for her constant complaints of everybody. Her friends have on different occasions tried to keep her at home, but have always found this inconsistent with their comfort and safety. She has settled down to a life residence in Rockwood.

A. B.—Female ; 35 years old ; habits good ; hereditary taint denied ; cause of insanity, typhoid fever. She had many delusions of persecution, and developed hystero-epilepsy. After a residence of about a year and a half she was discharged improved, and has remained with her friends for over two years.

She is able to live above her delusions, but I have no doubt is yet mentally infirm.

J. R. Mc.—Male; 41 years old when admitted. Habits good. No hereditary predisposition alleged. Cause of insanity, typhoid fever. This patient's symptoms were those of melancholia, being quite despondent. Is afraid he is going to be killed, and at the same time claims that he is dead. That his bowels never act, etc. After a short residence this patient improved physically and recovered mentally.

The type of insanity which we find exemplified in these cases is an intermediate state between acute and chronic disease, such as we observe in patients passing from acute attacks of melancholia or mania into the chronic forms. In only two of our cases was an acute form of melancholia present. One of these provides our only good recovery. The other man died of exhaustion. It would appear that the acute mental trouble occurs during the progress of the fever, and with the disappearance of the fever results in recovery; or if it passes into a recognized insane condition with a resultant damage to the brain, such as we recognize in the sub-acute forms of insanity. As would be expected in a case of insanity shewing such symptoms the outlook for recovery is not good. In looking over the different authors on this subject I was surprised at the variety of opinions therein set forth as to the prognosis.

OSLER:—"Post-febrile insanity is perhaps more frequent after typhoid than any other disease." "Five cases have come under my observation, in four of which recovery took place."

CLOUSTON:—"Post-febrile insanity may be said to be a very incurable form of insanity from the beginning." I do not think we can set forth a hard and fast rule, but that each case must be judged upon the symptoms presenting. It would seem from my observation that mental disease, appearing in the developmental stage after typhoid, is the least promising. Where the insanity presents acute symptoms, either of agitation or depression, in full manhood, there is a reasonable foundation for a hopeful prognosis, provided there is sufficient physical endurance to bear this strain. We had three such cases. One recovered, one recovered but has had a recurrence, and one died of exhaustion.

The most hopeful cases in many instances never pass out of the hands of the general practitioner, and for this reason our statistics are exaggerated in their hopeless aspect.

With this divergence of opinion in my mind I thought it would be interesting to ascertain what had been the result in the different Ontario institutions for the insane; and I accordingly wrote to some of the medical gentlemen connected with them for a statement, and they have been kind enough to send me the following:—

	Admissions.	Due to Typhoid.	Recovered.	Incurable.
London Asylum.....	2,000	20	7	13
*Toronto ".....				
Hamilton ".....	3,604	17	3	14
Brockville ".....	744	4	0	4
Kingston ".....	2,066	17	2	15
*Mimico ".....				

*No returns received.

These are the figures as nearly as we can get at them. The recovery rate is a very low one indeed, being 20 per ct. There being in all 58 cases with insanity due to Typhoid. Twelve recovered, and 46 became chronic.

Contrary to the usual time for the appearance of insanity, we find that it is in the developmental stage of mind that typhoid is most likely to produce its most pernicious effects on the brain. Last summer I saw a case of a bright collegiate boy, aet. 14, who was affected mentally after undergoing a usual course of typhoid fever. He had no acute mental symptoms, but when spoken to he would respond very quickly and sharply. He would laugh in a foolish manner and fancied he was playing a part out of some dime novel. He loved to get his little brothers fighting. His father took him out sailing regularly for his health, and on one occasion, while there was a good stiff breeze blowing, he gave this boy the tiller while he managed the sails. The boy, realizing his father's position, handled the boat in a most reckless manner, much to his amusement and his father's discomfort. There was marked perversion of moral nature in this case, and a complete change from former conduct. I was much interested in this case and wrote his physician, who kindly makes the following report: "He has not made the progress I would have wished

for. Reads newspapers occasionally; does not find any pleasure in his books, as was his custom before his illness; is more submissive to his parents; attends church and Sabbath school, but not day school. I think there is a slight improvement. It is nearly a year since he had typhoid. He eats and sleeps well."

This boy's physical health is now very good. He has improved somewhat in his conduct by the amelioration of the sub-acute symptoms, but he has been one year affected. His mental faculties have become dulled, and the boy's mental condition is much that of an imbecile. The prospect of recovery now is very poor.

Dr. Ross also mentioned an interesting case in the Brockville asylum, which as a child two years old had typhoid fever and has not developed naturally since, but has grown into physical manhood with a mental state of imbecility.

I shall not detain you long as to the treatment, which without any special data should be supporting. I must emphasize promptness in adopting measures. If your patient is receiving insufficient nourishment through some delusion of poisoning and refusing food, have him cared for by skilled nurses and, if necessary, feed with tube, preferably predigested foods. The outlook is none too promising, and any delay in adopting wise methods of treatment is losing valuable time. Personally, the use of any narcotic I regard with suspicion in the treatment of typhoid fever, and especially when there are prominent nervous symptoms. The ice bag or the cold water coils to the head will usually avert the necessity for their use, together with the persistent employment of hydrotherapy in some recognized form. I believe sedatives and narcotics add to the toxæmia that is asserting its action on the brain already. Hydrotherapy diminishes this.

Theo. B. Hyslop says "lowering treatment is seldom efficacious, and not infrequently the administration of drugs, such as opium, may possibly have had much to do with the excitement." Fresh air and exercise, wholesome full diet, regulation of the eliminatory functions will usually secure sleep; if not, try a couple of ounces of whiskey in a glass of warm milk. A warm pack is often quieting and hypnotic in such cases. The hot bath may be too depressing to the heart. Gentlemen, I selected this

subject because it could not fail to be of interest to most of you, and you have doubtless met with examples. Much good work in our hospitals for the insane is lost by a lack of interest by the general practitioner in our specialty and a lack of association of ideas before and after a case is given into our charge.

In making out your histories and certificates do not only try to fulfil the requirements of the law, but supply us with the main points in the history of the patient, so that your valuable experience may not be lost to the patient's welfare in coming to us, but that we may have your ideas as a guide to any further treatment we may devise. I hope each gentleman will have some criticism to make. I wish to thank Drs. Clarke, Beemer of London, Reynolds of Hamilton, Ross of Brockville, and Eakins of Belleville, for much trouble in supplying information.

J. M. FORSTER.

PRINCIPLES OF THE DIETETIC TREATMENT OF DIABETES MELLITUS.*

I HAVE been greatly honored by this society in an invitation to present before its members some of my views upon diabetes. While such a task is by no means an unpleasant one, in view of the great intrinsic interest of the subject, the importance of the class of cases in clinical practice, and, lastly, the familiarity of the picture to my mind, in consequence of having with considerable care and thought gone over this field with special interest for a number of years, I must, however, confess some hesitation in the undertaking, since very divergent views have been held upon the subject by so many eminent observers, not only as to the etiology and pathology of the disease, but also as regards its proper management. In addition to this the literature of the disease—which is prodigious in volume—is yet so inharmonious and even contradictory, as a whole, that it is exceedingly difficult to glean from it any very uniform or systematic basis of knowledge of the true nature or pathology of the disease. But while our knowledge of the nature and pathology of diabetes

*Read before the Chicago Society of Internal Medicine, Nov. 22nd, 1898.

at present rests very largely upon theory and speculation, experience has taught us much that is valuable in the management of the disease, and therefore, it has seemed to me that the present discussion might prove most valuable and useful if confined largely within the limits of management. I have, consequently, chosen as the subject for present consideration the principles of the dietetic management of the disease, to which has been added a request that I make some special reference to the disease as it appears in the aged.

The dietetic management of diabetes has been a somewhat stereotyped matter for very nearly a hundred years, the old diet lists and forms having been perpetuated both in clinics and in text-books with comparatively few alterations since the days of John Rollo. This is the more regrettable in view of the fact that very decided advances have been made upon this subject within a comparatively recent period, so that our power of controlling the disease and of conserving the lives of these patients has been very distinctly advanced.

As regards the disease in the aged. So far as my own individual experience and observations are concerned, I have come to look upon diabetes after middle life as one of the most manageable diseases with which the physician has to do, if he only has entire control of the patient. So strong, indeed, has become my conviction of this fact as it appears to me, that I am in the habit of meeting the issue squarely with my patients in the assurance that if they fall victims to the disease it will be the result either of their own or of my neglect. I refer here especially to primary cases in people over 50 years of age, who have not already been neglected to the extent that the disease has made serious inroads upon the strength, and especially upon the body weight, of the patient. On the other hand, the compact between the physician and patient must be of the most solemn and vigilant order if the concerted assault upon the disease is to prove successful, because no other disease demands more detailed observation and closer watchfulness in all details of management, and the reasons therefor will be considered subsequently.

The diet of diabetic patients should be so ordered as to maintain and, if possible, increase the body weight and strength of the patient, as these are the first to be undermined by the

disease. Now, in order to compass these primary objects, a systematic series of frequently recorded observations must be made of the quantity and quality of the food actually ingested; of the quantity and quality of the waste excreted, especially by the kidneys; and of the actual body weight. By this means only is it possible to detect those disturbances of metabolism caused by the disease and to refer directly to their cause. We shall be in a position still better to estimate these if we first take a brief survey of the relative and actual values of the various food products at our command. By comparing these with the known physiologic requirements in health, we shall be enabled the most readily to supply those deficiencies caused by the disease, and thus maintain that equilibrium of metabolism upon which all successful management depends.

In physiologic observations it has become the custom to adopt Rubner's suggestion of measuring body energy or force, which results from oxidation changes in the economy, by the unit value of the calorie—or the heat unit. We understand by the word "calorie" the amount of heat necessary to raise one kilogram of water one degree Centigrade. It has been ascertained after careful and repeated investigations that all our food products, through their consumption in the body, produce definite amounts of heat, or the equivalent of this measure in the form of force. By grouping together the various food products in their several chemic groups we shall be able readily to glance at the calorie value of each, and thereby adjust our diet list so as to cover the actual requirements of the economy. For example, it has been found that one gram of albumin, through its conversion into urea, water and carbonic acid, yields approximately four calories of heat or force; that one gram of carbo-hydrate, through its conversion into water and carbonic acids, yields approximately the same, *i. e.*, four calories; that one gram of fat, by its conversion into water and carbonic acid, yields a little over nine calories; and that one gram of alcohol yields about seven calories. With these data before us it is easy enough to establish a diet-ration that will readily maintain the equilibrium of metabolism in a healthy individual, since all we have to do is to furnish him food in quantity and quality such as will represent 2,500 to 3,000 calories. Thus from 100 to 120 grams of albumin, 55 to 70 grams

of fat and from 400 to 500 grams of carbohydrate would cover the requirements, and these are about the average proportions of each naturally used in health.

In the case of the diabetic patient the problem is not so simple, because the carbohydrate foods in such cases are rendered more or less inefficient for the reason that they are more or less—indeed, sometimes totally—excreted in the urine as unused or waste material. We can very readily perceive what a serious obstacle is placed in the way of supplying the normal amount of nutritive material by the withdrawal of the whole or even a considerable proportion of the carbohydrate group, constituting as it does normally at least 60 per cent. by weight of the whole daily ration. Fortunately, however, in many cases of diabetes—in fact, in most cases after middle life—a very considerable capacity of utilizing carbohydrates remains. In such cases we may, therefore, give more or less carbohydrates, and the deficiency in heat or force units remaining may usually be made good by increasing the proteids. I have frequently in such cases been able to give from four to six ounces of ordinary table bread daily without causing sugar to appear in the urine, and this represents a calorie value of from 400 to 500 units.

As previously indicated, there exists among diabetic patients the greatest difference in individual capacity for utilizing the carbohydrates. Some can take and utilize comparatively large amounts, as has just been shown; others very much smaller amounts, while a few cannot take carbohydrates in the smallest quantity without their immediate escape by the urine in the form of sugar. Not only this, but also very wide oscillations of the tolerance for carbohydrates occur in the same case at different, and sometimes very briefly separated periods. We are not always able to fix upon the precise cause of these oscillations, because we are not entirely familiar with all the influences which lead to them, but they furnish us one of the strongest reasons for constant vigilance over the balance of metabolism. Again, some cases may ingest 200 grams of carbohydrate food and lose 45 or 50 grams by the urine, leaving available for the system 150 grams, nearly 450 units. In such case it is clearly good policy to allow a moderate proportion of carbohydrate food, both for its value as a strengthening and building material and for the variety it offers the patient in his daily ration.

Unfortunately, in some cases of diabetes, comprising chiefly spare subjects in the aged, and at some time all young subjects of the disease, carbohydrates can not be used without their total escape in the urine. In such cases the use of carbohydrate foods in any considerable quantity is distinctly injurious to the patient in more ways than one. In the first place, if these cases are put upon carbohydrates, in time they develop a decidedly decreased capacity for assimilating starch and sugar in all forms, because the cells concerned in sugar consumption are functionally weak and impaired, and their overwork leads with certainty to total impairment of function. In addition to this, the increased percentage of sugar in the circulation—hyperglycemia—which always occurs under such circumstances, can not but be responsible for at least some of the many secondary complications of the disease; and in the aged especially, I might mention the damage so often resulting to the cardiac muscle, which so suddenly terminates the lives of so many aged diabetics. Again, if carbohydrates be liberally supplied in severe cases, they are not only of little or no use to the patient, but they take the place of other foods which would be valuable in sustaining nutrition. The picture must be familiar to all of you, to see diabetics who tell you that they can not get enough to eat, and are weak and spare. They eat and stuff themselves, yet grow daily weaker and more emaciated because their food largely escapes as waste unutilized by the organism. While the stomach is overloaded the tissues are starved. We may, therefore, safely accept the proposition that the use of carbohydrate foods in the severe grades of diabetes surely proves injurious, if, indeed, not dangerous, and hence we must look to other sources to supply the deficiency made necessary by the withdrawal of this class of foods.

If we turn to the proteid group with the view of making this the exclusive source of supply, we are met by the serious fact that it is an absolute impossibility to introduce enough nutritive value in proteid to compensate the daily loss of material and force in the economy. Noorden points out that "1,000 grams of meat and six eggs furnish at most but 1,500 calories; a deficit of at least 1,000 calories remains with its injurious consequences," if we attempt to diet these cases exclusively on proteids, and yet an exclusive meat diet has among us enthusiastic advocates. It

is clear, however, that we can only increase the ratio of proteids with safety to certain limits, after which we must look to other sources to supply the deficiency resulting from withdrawal of the carbohydrates. It is precisely in this direction that the greatest advance has been made in the dietetic treatment of diabetes in recent times. By the substitution largely of fat we obtain a closely allied group of foods, chemically speaking, which represent a value in units nearly three times greater, and eminently suitable for our purposes. The French school was the first to recognize the value of the use of fats in these cases, and this principle has been incorporated in the French practice for a considerable time past. More recently it has been adopted in Germany and with much success. It has already been shown that the calorie value of fats is over 9 units per gram, while that of proteid and carbohydrates is only 4 units. It so happens in diabetes, for the most part, that there is a remarkable tolerance for fats; indeed, many of these patients have a special liking for fatty foods. In moderate grades of diabetes no difficulty will be encountered in substituting fats for a partial withdrawal of carbohydrates. These cases will, under such management, lose their glycosuria, gain in weight and strength, and progress most satisfactorily. The only question in this connection calling for serious consideration is that of the entire substitution of proteid and fats for carbohydrates in those graver forms of the disease in which all the carbohydrates taken into the system are immediately eliminated, or still more serious when even larger amounts of carbohydrates are excreted than are taken into the organism, as is sometimes the case. The argument that diabetic patients will not assimilate large quantities of fats has been repeatedly disproved, both experimentally and in actual practice, so that the converse of this may be accepted as a rule to which there are few exceptions. Indeed, as much as 150 grams of fat have been given—representing 1,350 calories—and with results most satisfactory. It has been demonstrated through Weintraud's experiments and observations upon metabolism, that the entire substitution of fats for carbohydrates effectually prevents the wasting of the body albumin and conserves the weight and strength of the patient.

There has existed a somewhat prevalent idea—although an

entirely theoretic one—that large amounts of flesh foods predispose to diabetic coma. Now what little we think we know of the nature and cause of diabetic coma at present rests upon pure theory. In actual practice we certainly find that diabetic coma usually arises in those cases attended by a high percentage of sugar in the urine, and moreover, usually at the period or soon after the sugar excretion reaches its maximum. Furthermore, we are taught to believe, and, I think, properly so, that the lower we are able to reduce the sugar percentage in the urine, the further shall we remove the patient from the danger of the appearance of coma. It should be borne in mind that an exclusive proteid diet is not here advocated, but rather the discussion is in favor of a proteid and fat diet in certain cases. I can not, perhaps, more tersely express the advanced views upon this question in conclusion than in the words of Noorden, to whom we owe so much for his classic digest of our knowledge on the subject. He says: "From what I have been able to glean from the literature, from what I myself have seen, and from what has been related to me by other judicious partisans of the fat-and-flesh diet, it appears to me that the dread of coma so produced is wholly unfounded. I believe, therefore, that for every really grave case of diabetic glycosuria, the fat-and-flesh diet to the exclusion of carbohydrates is to be regarded as the ideal regimen, against which no serious objection can be raised."

It remains in this connection to speak of the place that alcohol should occupy in the regimen of the diabetic, or if its use be advisable at all, and this question should receive careful and sincere consideration. We must, in the first place, keep in mind the well-known dangers of the use of alcohol to the nervous system, especially when employed in considerable quantities; and, moreover, we must not lose sight of the fact that the majority of diabetic patients are decidedly neurotic. So thoroughly has this been recognized, that many observers have claimed for the disease a nervous origin. Without admitting the latter as true, but recognizing the undoubted neurotic tendencies of these patients, it is clear that the use of alcohol has its dangers, especially if allowed in any large amounts, and therefore, if admissible it must be with due caution and only within strictly moderate limits. On the other hand, we can not ignore the fact previously

alluded to, viz., that alcohol is an agent of considerable value as a food, possessing, indeed, about 7 units per gram, or nearly double that of proteid and carbohydrates. Now, in the more serious cases, where the range of diet is so limited, any change whatever comes as a decided relief both to the palate and stomach. The sense of relief to a full stomach by the post-prandial swallow of cognac is well known. We are also aware of the stimulus to the appetite and digestion afforded by the use of a glass or two of good wine, especially when served with the meat course, and particularly is this the case if much fat is served. It is precisely here that alcohol may be made valuable to diabetic patients as an adjunct to food. By serving alcohol in proper quantity with the fatty foods it enables the patient more readily to increase his fat ration, while at the same time, by furnishing in itself considerable potential force—about 70 calories to the average drink of spirits as whisky—it reduces the actual amount of fat required by an equal number of units. This is important where so much fat is to be consumed, but especially so in the more limited class of cases in which fats are not very well tolerated. Noorden lays down the rule that the average daily allowance of alcohol in ordinary cases of diabetes should not exceed 60 grams. This in itself represents a value of 420 units. This quantity of alcohol (60 grams) is contained in about 4 ounces of whisky; in brandy it would be about $3\frac{1}{2}$ ounces; in white table wine, as Moselle, it would be 30 ounces; in medium grades of claret it would be 23 ounces; in good Burgundy it would be 24 ounces. In prescribing alcoholics each case should be studied upon its individual merits. In some cases the amount should be more moderate than above indicated, especially in those who are unaccustomed to its use, in very young subjects, and in the very pronouncedly neurotic. On the other hand, exceptional cases are met with in which 60 grams of alcohol may with benefit be considerably exceeded, notably in those long accustomed to its use.

Having now somewhat broadly reviewed the essential principles upon which the dietetic treatment of diabetes mellitus should rest; I shall, in conclusion, briefly outline what seems to me the most desirable method of their application in practice. In beginning the treatment it is generally conceded that a gradual

enforcement of dietary restriction is safer than an abrupt change from a liberal to a strict diet. Aside from the more serious accidents—such as coma—which some authors fear from abrupt changes, we shall certainly meet with pronounced digestive disorders if we change a liberal mixed regimen for one containing, say 650 grams of meat per day. I usually, therefore, in the beginning furnish the patient with the following list of articles allowed :

All meats, including beef, mutton, veal, ham, bacon, poultry and game of all kinds—roasted, boiled, potted, smoked or preserved in any way except with sugar. Sweetbreads, kidneys, heart, tongue, tripe, brain, giblets and marrow-bones, American canned meats and meat extracts, Australian corned beef.

All kinds of fresh fish, including oysters, crabs and lobsters. Dried, cured or smoked fish, including codfish, haddock, herring, mackerel, eels, sturgeon, salmon, sardines, anchovies, shrimps, caviar, frogs and turtles. Fats, oils (animal or vegetable), butter, gelatine. Eggs, raw or cooked any way except with flour. Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, soft green corn on the cob, mushrooms, onions, cress, leeks, celery, radishes, oyster plant.

Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, chow chow, olives, sauerkraut, tinned French peas. Eggs, cheese, cream, butter, gelatine and all fats and oils. Spices, including salt, pepper, mustard, curry, cloves, nutmeg, parsley, capers, etc. Soups and broths, if clear and unmixed with bread crumbs, flour, barley, rice or cereals. Nuts, as almonds, walnuts, Brazil nuts and filberts. Tart, apples, strawberries, lemons, gooseberries, currants and tomatoes in moderation, if prepared without sugar ; — ounces of table bread a day.

Beverages.—Pure water, all table mineral waters, coffee and tea with or without cream, Rhine wine, Burgundy, claret.

You will observe that a blank space is reserved for bread allowance, which is usually filled in at three ounces per day. Under the head of special instructions to the patient, directions are usually given to aim at the daily use of from 300 to 400 grams of butcher's meat, about 70 grams of fats, after which the balance of the daily ration may be filled in from the list *ad libitum*. On the third day, careful observations should be made and recorded of the following leading features : The weight of the patient as compared with that recorded three days before ; the quantity of the urine ; the total output of urea and sugar for the last twenty-four hours. The patient should now be kept upon practically the

same lines of diet for from ten days to two weeks, observations being made and recorded of the weight, the excretion of urea and sugar every second or, at most, third day, and no specific medication whatever should be employed. Should, however, the twenty-four hours mixed urine at any time be found sugar free, the allowance of bread may be slightly increased—say to four or five ounces daily. At the end of two weeks, if the urine be not free from sugar, the above diet list is substituted by the following more strict one :

All meats, including beef, mutton, ham, bacon, poultry and game of all kinds; roasted, broiled, smoked, potted or preserved in any way, except with sugar or prohibited vegetables. Sweetbreads, kidneys, heart, gizzards, tongue, brain and marrowbones. Fresh fish of all kinds, except oysters. Dried, cured or smoked fish, including cod-fish, haddock, herring, mackerel, salmon, crabs, lobsters, sardines, anchovies, shrimps, eels, caviar, frogs and turtles. Fats, oils (vegetable or animal), butter.

Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, mushrooms, onions, cress, leeks. Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, sauerkraut, chow-chow and olives.

Spices, including pepper, salt, curry, cloves, nutmeg, English mustard, parsley, dill, capers, caraway seed, laurel. Soups and broths, if clear and unmixed with bread crumbs, flour, barley, rice or cereals. Cheese, such as Neufchatel, Gorgonzola, Stilton, Brie, and so-called cream cheeses. Eggs, raw or cooked in any way without admixture of flour. Nuts, such as almonds, walnuts, Brazil nuts and filberts.

Beverages.—Pure drinking water, all table mineral waters, plain or carbonated, clear or mixed with lemon or lime juice, coffee and tea with or without cream. Rhine wine, claret, Burgundy.

It will be observed that in this list bread is omitted altogether and that carbohydrates are practically eliminated from the ration. The patient is now instructed to increase the consumption of butcher's meat to from 400 to 500 grams per day; to increase his daily fat ration to 100 grams; and to take from 20 to 40 grams of alcohol daily. The same systematic series of recorded observations should be continued every second or third day, *i.e.*, of the weight of the patient; the quantity of the urine; the output of urea and sugar.

The majority of diabetic patients will upon this course lose their glycosuria, and begin to gain in weight and strength. In

such cases the further management of the case consists in readjustment of the diet, from time to time, so as to offer the patient as much variety as possible. Thus at intervals a slight increase of carbohydrates may be tried—as an ounce of bread—in order to test the toleration point for this class of foods, but in so doing constant watch must be kept over the output of urea and the presence or absence of sugar in the urine.

In the most serious form of the disease the above lines of management will often be found inadequate to totally eliminate the sugar from the urine, and moreover the patient still slowly loses weight. In such cases the diet must be practically restricted to flesh, fat and alcohol, with perhaps some green salad, as lettuce or cucumber. The daily ration should be made to conform approximately to the following features: 500 to 650 grams of butcher's meat, a pint of broth, 3 to 6 eggs, 130 to 140 grams of fat, and 40 to 60 grams of alcohol. This will furnish fully 2500 units, or calories, or slightly more. The large proportion of fats to be consumed presents, perhaps, the most difficult part of the dietary problem to be solved. This, however, becomes less difficult in most cases, if alcohol be served with the larger meals of fat. Then, too, if every opportunity be improved of working into the ration some form of fat that is found agreeable to the patient, the required amount is often very easily reached. With the view of facilitating this object I furnish my patients of this class the following list of highly fatty foods from which they can select the most agreeable forms for use:

Butter, fats and oils, cream, marrow-bones, bacon, fat part of ham, beef, mutton, pork; beef tongue, fat goose, mackerel, salmon, white fish, eels, sturgeon, sardines in oil, yolk of eggs, German sausage (Cervelatwurst), Cheddar cheese; also cream cheeses, as Stilton, Neuchatel, Stracchino, Gorgonzola, Brie. Green salads, as lettuce and cucumber, with French dressing.

The greatest skill in the management of these cases consists chiefly in the adjustment of the diet to the individual case; in other words, in so varying the proportions of proteid and fat as to suit the variable individual tolerance for each in each special case. We must in all cases aim to supply in fat and meat combined a food value equivalent to rather more than 2,000 units. The average case will probably tolerate about 600 grams of meat and about 135 grams of fat, which covers the value in units

aimed at. In the beginning it will frequently be found difficult to exceed 100 grams of fat, and in such cases we must try a proportionate increase of proteids until we can increase the toleration limits of facts. The latter is to be attained by judicious use of alcohol, up to 50 or 60 grams per day, served with the fat ration, and by experimenting with different forms of fatty foods until those are found that agree best with the case. The evidences of non-toleration, in other words, excess of proteids and fats, is marked by loss of appetite, sometimes vomiting, attacks of diarrhoea, with gastro-intestinal catarrh. Upon the appearance of such symptoms the quantity of food must be reduced for a time and astringent alcoholics, such as claret or cognac, should be employed. Sometimes a very large supply of proteid food may seem to be tolerated, at least it does not cause any material disturbance of the stomach or bowels, but upon careful observation of the urine, a distinct augmentation of sugar excretion is noted as a consequence. In other words, it is not uncommon to find, in pushing the proteid ration to say 700 grams of meat per day, that considerable sugar appears in the urine and that if the meat be reduced to 500 grams per day, the sugar totally disappears from the urine. The explanation of this phenomenon is as follows: In the decomposition of the albumin molecule of the food in the process of digestion, a very considerable amount of carbohydrate is liberated therefrom—at least 35 per cent. of the albumin by weight. So long as the system is able to utilize all the carbohydrate resultant from the cleavage of the albumin ingested, the proteid ration is below the metabolic toleration point and the urine remains free from sugar; but so soon as this is exceeded the toleration point is passed, even though the stomach may be able to retain more with comfort, and sugar appears in the urine.

It is impossible within the necessary limits of this paper to do more than outline the main features of this subject. The details, if more minutely followed, would occupy altogether more time and space than are at my present disposal. It may, however, be stated in conclusion, that the careful adjustment of the foregoing ration to the daily life of the diabetic patient with comfort and complete toleration, in accordance with the principles laid down, so as to maintain a perfect balance of metabolism, constitutes the highest skill attainable in the dietetic treatment of diabetes. It also probably marks the present zenith line of our dietetic resources in this disease.

CHAS. W. PURDY.

EARACHE.

PAIN in the ear may be considered of so little importance by the patient and his friends that the doctor is not consulted and domestic remedies are employed. There is no doubt that very many of the less severe cases are relieved by these means, which are likely to be either heat applied in some form or instillations of an anodyne or emollient character. If the pain continues, becomes more severe, or be very intense from the onset, then the doctor is certain to be consulted. To treat such a case intelligently the various causes which may produce pain in the ear must be kept in mind, and if this is done a positive diagnosis of the nature of the trouble may be made even without the use of the forehead mirror and speculum.

In the first place the pain may be either non-inflammatory or inflammatory in origin. If it be non-inflammatory there are no signs of local inflammation, no defect of hearing, and no tinnitus. In addition to these marked conditions the pain is intermittent. Such a case is properly called otalgia, and is either reflex or local—reflex when there is evidence of disease of the teeth, tongue or throat, and, when these causes can be excluded, a local neuralgia of the tympanic plexus. It may, in the latter case, be part of a neuralgia of more extensive distribution. Otagia is to be treated by removal of the reflex cause when that is established, particularly by the removal of a tooth, or the treatment of the exciting disease in the throat or tongue. A local neuralgia may be relieved temporarily by phenacetine or ammonol, while the proper remedies are to be exhibited to prevent return of the pain. Quinine and arsenic may be given in the malarial cases; iodide of potash in the syphilitic and rheumatic cases; and in the anaemic, iron and ammonia. The constant current is useful when the pain is in the superficial cervical plexus, and it has been found that when the tympanic plexus is affected the passage of the Eustachian bougie has given complete relief. The cataphoric use of cocaine, as suggested by Masini, may give temporary relief in severe cases.

When the pain arises from an inflammatory affection one of the following conditions is present :

1. Acute circumscribed or diffuse external otitis.
2. Acute myringitis.
3. Acute catarrhal otitis media.
4. Acute suppurative otitis media.

Independent of a physical examination a distinction may be made between the first and second of these, on the one hand, and the third and fourth, on the other. When the deafness is moderate in amount, and does not come on at the very beginning of the pain, when there is no tinnitus or very little, and when tenderness is elicited by pressure in front of the tragus, then the trouble will be found in the external meatus or membrana tympani. On the other hand, when the deafness is considerable and present from the onset of the pain, when the tinnitus is a prominent symptom and, more particularly, of a throbbing character, and when tenderness is present on deep pressure into the glenoid fossa underneath the auricle, then the middle ear is certain to be the site of the inflammatory action. In any case the physical examination with the forehead mirror and speculum shows at once the seat and nature of the trouble.

1. If the examination shows a round sessile swelling in one or several spots on the wall of the meatus, these being extremely tender on the introduction of the speculum, we may with certainty diagnose furuncle or circumscribed external otitis.

When the meatus is uniformly narrowed and reddened, and slight pain is produced by the introduction of the speculum, there being also a scanty discharge from the walls of the meatus, the trouble is diffuse external otitis.

2. If the canal is comparatively normal in appearance, but the membrana tympani dull or congested, with little or no defect in hearing, and if inflation causes pain and makes the hearing worse, then the case is one of acute myringitis.

3. When the pain is accompanied by a high degree of deafness from the first the disease is certain to be localized in the tympanum. If the condition is catarrhal, there is but slight constitutional disturbance and very moderate pyrexia. Gentle inflation gives relief and improves the hearing to some extent. Inspection shows the drum head to be congested around the margin and down the line of the manubrium, or, in the more severe cases, over the whole surface. There may be a horizontal

line showing the level of a collection of fluid in the tympanum, or, if the latter has accumulated still more, bulging of some part of the drumhead will be present.

4. In acute suppurative inflammation of the middle ear there is in addition to the violent pain and disturbance, intense pyrexia, and, on examination, the membrane is found to be intensely red, bulging, perhaps slightly yellow in color at the most prominent point. When the swelling is great it is impossible to recognize the manubrium or the short process. When perforation takes place the pain is relieved and there is seen a discharge of muco-pus more or less copious.

In the successful treatment of all these conditions heat is an important factor. This may be applied dry with the hot water bottle, hot salt bag, hot flannel or as a current of hot air by means of the new electro-thermogen; or the heat may be moist, applied by syringing the meatus with hot water, or irrigating it by means of a special apparatus, or by poultices. In any case the heat will tend to relieve the pain. Sedative instillations are also to be employed. The most effective is cocaine, 2 to 5 per cent., in alcohol instilled warm a few drops at a time, and repeat every 15 or 30 minutes till the pain ceases.

When acute myringitis is complicated by any other affection of the external or middle ear it is best to avoid all possible irritation and simply protect the drum head by a pledget of cotton wool in the meatus.

In the case of circumscribed external otitis the pain will not be permanently relieved until the suppurating point is localized and incised, or until it ruptures spontaneously.

In all severe cases of external and middle otitis, leeches, either natural or artificial, should be applied in front of the tragus.

Catarrhal otitis media will often be speedily relieved by proper attention to the nasopharynx. The use of a mild alkaline lotion through the nose, especially if it be warm, may give immediate relief. The plasma nasal tablet of Murray Macfarlane is well suited for this purpose, the solution being introduced into the nose with a medicine dropper and allowed to run gently through the nasopharynx. Bicarbonate of soda, ten grains to the ounce, may be used for the same purpose. I have no doubt

that I am able to abort many cases of severe middle ear disease by such treatment. When fluid collects to any extent in the middle ear, pain will not be relieved till the fluid is evacuated. Paracentesis of the membrana tympani should be done rather than wait for spontaneous rupture, and this should be at the point where the bulging is greatest, or, if choice may be made, in the posterior-inferior quadrant. If, after the occurrence of perforation, the pain persists or returns, then one of the following may be necessary: enlargement of the perforation, irrigation through the Eustachian, or operative treatment in the mastoid region.

When pain is confined to the mastoid region the condition is likely to be either (1) mastoid adenitis, (2) periostitis, or (3) mastoid neuralgia. If the pain in the ear or in the mastoid is associated with more or less pain throughout the side of the head, with febrile or cerebral disturbances, the condition is likely to be much more serious. The possible causes are: (1) Subperiosteal mastoid abscess, (2) cortical mastoiditis, (3) suppuration in the antrum of the mastoid, (4) retention of pus in the tympanum, (5) acute meningitis, (6) pyaemia, (7) extra-dural abscess, (8) sinus phlebitis, (9) cerebral or cerebellar abscess. These conditions require surgical interference. J. C. CONNELL.

THREE CASES OF WORMS SIMULATING TYPHOID FEVER.

C. M. S. HOSPITAL, NABLUS, PALESTINE,
Dec. 9th, 1898.

DEAR DR. HERALD,—I have in this far-away mountain town received and much appreciated the KINGSTON MEDICAL QUARTERLY, and as a possible matter of interest I send you three selected reports from a number of cases of severe constitutional symptoms induced by the presence in large numbers of the intestinal parasite, "Ascaris Lumbricoides," or "Round Worm." No authority to which I have access ascribes such to their immediate action. All the cases on admission very closely simulated typhoid fever, having besides the high temperature and pulse rate, the usual accompanying symptoms, very severe

headache, furred tongue with dry, red and cracked edges, tenderness and gurgling, especially over the right iliac region, diarrhoea, sinking down in the bed, stupor, delirium, and in case No. 2 tympanites with retention of urine.

Case No. 1 was admitted, diagnosed typhoid, and treated accordingly. On the second day after admission the English nurse in charge informed me that the patient had passed a few worms. Thinking to remove an additional source of irritation to the ulcerating bowel I decided to administer a dose of santonine and gave it in the form of the compound powder noted below. The next morning I was astonished to find that with the passage of a large number of worms there was a decided fall in the temperature and pulse-rate with marked general improvement. Owing to the fact that to this patient I had at first given a lighter dose than that indicated in the formula, it was necessary to repeat the santonine, when the remainder of the parasites were passed, the temperature and pulse-rate returned to the normal, and in a few days the patient was discharged quite well.

Case No. 2 presented very grave symptoms, and after the administration of the "Pulv. Sant. Co.," continued to pass worms in almost incredible numbers. The estimate of 200 is, I think, well below the total. The patient also suffered from stupor, severe tympanites and persistent retention of urine.

Case No. 3 also exhibited in a marked degree, the rapid and permanent disappearance of all alarming symptoms following immediately upon the administration of the vermicide and the expulsion of the parasites.

The santonine is invariably administered in the following form :

Santonini, gra. iv.

Hydrarg. Subchlor., gra. ii.

Pulv. Rad. Jalapae, gra. x.

Sig —To be taken at bedtime.

This powder acts as an efficient vermicide and vermifuge. I have administered it in a very large number of cases and have never known it to fail in its effect. No anterior preparation of the patient, such as abstention from food, etc., is necessary. For children the dose is reduced proportionate to age. With regard

to the life history of this parasite my observations up to the present have tended strongly against the theory of an intermediate host: but I do not yet feel in a position to speak very confidently about the question.

If you find any facts such as the above which may fall within the range of my experience, of interest either for your clinics or the pages of the JOURNAL, I shall be glad to forward from time to time. With kindest regards,

Believe me, very sincerely yours,

S. GOULD.

NOTES OF SURGICAL CASES.

INTESTINAL OBSTRUCTION.

CASE I.—This patient came into the Kingston General Hospital under the care of Dr. Herald, who kindly furnishes the following history:

Mrs. C.—Age 54. Family history good. Previous history—More or less constipation for several years. Present illness began three weeks before she came under my observation. Had not had a free motion of bowels for three weeks. Pain in abdomen, especially over pyloric end of stomach and lower border of liver. Had been vomiting for several days. I first saw her on Oct. 31st last. She was then suffering from intense pain in the region mentioned, the pain being so severe that deep palpation was impracticable. The abdomen was not distended. She was vomiting a dirty, brownish, viscid substance, which on examination gave the following analysis:

1. Minute traces of blood.
2. Starch granules.
3. Fat globules.
4. Considerable bile.
5. Free acid; could not test for hydrochloric acid.
6. Putrefactive bacteria in large numbers.
7. No trace of faecal matter.

The patient also complained of intense thirst.

The abdomen was discolored, as the result of counter-irritating applications which had been employed before the patient came under my care. Temperature $99\frac{3}{4}^{\circ}$; pulse 130.

An enema was given, and was followed by a fairly free motion. This must have come, as the after history shows, from the lower bowel.

Nov. 1st.—Pains more severe and extending over the abdomen. No particular distention. A complete examination was impossible on account of the pain. Urine had to be removed by catheter. Temperature $97\frac{1}{4}^{\circ}$; pulse 112. Morphia was administered hypodermically.

Nov. 2nd.—Abdomen distended; tympanitic, especially over the small intestines. Three distinct transverse ridges could readily be seen on the anterior abdominal wall, marking the position of the distended small intestines. The movement of the gas within the intestines could be seen as wave-like motions. The colon was not distended. Three ten-drop doses of turpentine were then given at two hours intervals. This not relieving the distension an enema containing one ounce of turpentine was then given. No results. I then attempted to pass a long rectal tube of soft rubber. When this reached the sigmoid flexure it met with obstruction and returned upon itself. Several attempts were unavailing. Recourse was then had to a hard rubber tube, and this being attached to a douche bag, by the aid of a continual stream of water I succeeded in passing the tube its full length, viz., 20 inches. The patient was on her back, hips elevated and foot of bed raised. A gallon of water was used. No motion of the bowel followed. The water that returned was merely stained with faeces. From the failure to pass the soft tube and the difficulty in passing the hard one beyond the sigmoid flexure, and the fact that when the hard tube was passed and a copious injection of warm water used without producing an evacuation of faeces, I concluded that I had to do with a constriction at the sigmoid flexure with an obstruction higher up.

Nov. 2.—Before deciding upon the necessity of an operation I determined to try high rectal injection again. Asked Doctors Anglin and Mundell to be present. Together we made a complete examination, and with their approval again tried the high injection of one gallon of warm water. No results. Operation

then decided upon and the case handed over to Dr. Anglin, who will continue the history of the case.

The patient was prepared for a laparotomy, as it was evident there was obstruction somewhere in the continuity of the small intestine, and the prospect of spontaneous relief was nil.

A median incision was made below the umbilicus, and this was enlarged during the operation so as to readily admit the surgeon's hand. Coils of distended small intestine were extruded from the wound and carefully covered with warm aseptic towels. The site of the obstruction was found to be in the ileum, at a considerable distance from the ileo-caecal valve, the portion of intestine between being collapsed and intensely congested. The cause was clearly demonstrated to be a *volvulus*, the twist being from left to right. By careful manipulation of the extremely distended bowel the twist was reduced, and it was then seen that a loop of small intestine was strangulated by a band from the mesentery. Upon dividing this band between two ligatures the released portion of intestine suddenly burst and allowed the escape of faecal contents. This portion of bowel was quickly isolated, and it was found that fully two inches of the gut was gangrenous. This necessitated a resection of the sloughing portion and reunion of the divided intestine by means of a Murphy button. The abdominal cavity was thoroughly flushed out with normal hot saline solution, and the abdominal wound closed, leaving provision for drainage.

The patient did not rally from shock and died some eight hours after leaving the operating room.

At the autopsy it was evident that the congestion of the intestines was completely relieved, and the button was found where placed, 54 inches from the ileo-caecal valve, with the surrounding bowel in good condition. Not more than half an ounce of fluid remained in the abdominal cavity. This case emphasizes the necessity for early diagnosis and opening of the abdomen. Treves places the mortality of the operation for acute intestinal obstruction very high, possibly 75 per cent.

EMPHYEMA—SUBPHRENIC ABSCESS WITH GANGRENE OF SPLEEN.

Case II.—E. R., aet 45; widow; was admitted to the hospital on Nov. 14th, complaining of acute pain in the left hypochondriac region. A history of two weeks' illness was given and

a possible diagnosis of nephritic abscess. Temperature $103\frac{1}{2}^{\circ}$ F.; respirations 54; pulse 122.

She stated that she had not been well all the summer, complaining of more or less pain extending up her left side to the shoulder. Two weeks before her admission to the hospital, while seated at the breakfast table, she was seized with sudden intense pain, located in the left side, between the ribs and the iliac crest. She had to be carried to her bed, and remained there under treatment, which consisted of the free administration of morphia to control the pain, while various counter-irritants were applied over the painful region. Urine (12 oz.) was withdrawn per catheter, and examination proved it to be normal. The bowels were moved per enema.

Physical examination revealed marked dullness over the base of the left lung and distant tubular breathing. A needle introduced into the 8th interspace gave exit to the most intensely fetid pus. It was observed that the patient was expectorating the same offensive pus.

There were no abdominal symptoms, with the exception of a marked rigidity of the anterior and lateral abdominal walls on the left side.

It was very evident that we had an Empyema to deal with, and the patient was accordingly prepared for operation the following morning. Stimulants and salol were given meanwhile. The patient came to the operating table with a temperature of $102\frac{1}{2}^{\circ}$, and pulse 116. A free incision was made in the eighth interspace in the axillary line, opening into a large empyema cavity. After the extremely offensive pus had been evacuated the finger was used to explore the cavity, and a bulging membrane was noticed pressing towards the opening made between the ribs. This membrane gave such a decided sense of fluctuation as to lead to the use of an exploring needle. Pus identical in character with that which had been previously evacuated was found, and an incision allowed fully 16 ounces of pus to escape along with several masses of necrotic tissue. Drainage was provided for by the use of two rubber tubes placed side by side, and suitable dressings applied. Two drams of stimulant were ordered every two hours, and strychnia $\frac{1}{2}$ gr. hypodermically every four hours. At 3 p.m. the patient's temperature had dropped to 99°

F., pulse 114, and she was resting easily. The cavity was flushed out daily with warm boracic solution, and the discharge soon lost its offensive odour. The respirations continued to be frequent, and the temperature fluctuated between 99° and 102° F. On the 17th and two following days the patient was given anti-streptococcic serum hypodermically, but with no appreciable result. She continued to expectorate fetid pus and experienced much difficulty in breathing. Collapse set in on the 21st, and death occurred at 5 a.m. on the 22nd, eight days after admission to the hospital.

A partial autopsy was performed by Dr. W. T. Connell, and his concise report, which follows, will prove interesting, throwing light upon a somewhat rare sequence of pathological conditions.

The thoracic and abdominal organs were removed entire and examined after removal.

In the eighth interspace, left side, in the axillary line, there was an operation wound, two inches long, through which pus was discharging freely. This opened into an empyema sac, surrounding completely and replacing lower lobe of left lung, which was firmly compressed. This sac had thick, firm walls, and was certainly of some months' duration. It was found that at the operation an opening had been made through the diaphragm, opening up a localized large abscess sac about spleen. The old empyema sac was found to lead to this sac by a small opening near oesophagus through diaphragm. This lower abscess sac, opened at operation, completely surrounded the spleen and was walled off by adhesions between the left lobe of the liver, the abdominal parietal, cardiac end of stomach, transverse colon, the sac reaching exactly to costal margin and retired going down to, but not involving the capsule of left kidney. A portion of the upper part of spleen (which lay suspended by the gastro-splenic omentum in the abscess sac) was gangrenous. This sac was well drained by the incision and tube through diaphragm. Above the old empyema sac on left side there was a recent (certainly not more than ten days') sac lying mainly behind the upper lobe of the lung and walled off by recent adhesions about two inches from costal margin anteriorly. This sac contained sero-pus and also a fetid gas. The small portion anteriorly of the upper lobe of left lung, which still was acting, was the seat of a very recent

purulent pleuritis. The right lung was also developing a purulent pleurisy. No communication directly between any of the sacs and the bronchi could be demonstrated, though there was a fetid purulent matter in the tubes. It was in all probability formed in the tubes themselves. The heart, apart from cloudy swelling of its fibres, was normal. Portions of the ileum were markedly injected, but elsewhere the bowel was normal. Other organs, as liver and kidneys, showed simply cloudy swelling.

CONGENITAL DEFECT—IMPERFORATE ANUS.

Case III.—In October last a male infant, aet. 6 months, was brought to my clinic, and upon examination it was seen that the child had no anus. The abdomen was distended, and the little patient was in evident distress. All the faecal discharge since birth had been of a liquid character, gaining exit by means of an opening on the left side of the scrotal raphe two inches distant from the normal site of the anus.

This opening was only large enough to allow of the introduction of a probe which could be passed in a downward direction towards the rectum. There was absence of proctodæum, the rectum terminating at the lower outlet of the pelvis in a narrow channel leading to the scrotal opening. Under chloroform anaesthesia incisions were made through the skin removing an oval piece half an inch in length at the proper site for the anus. The probe was then introduced into the sinus and pressed down towards the newly-made skin opening and an incision made into the rectum, cutting down upon the probe. This opening was enlarged by the little finger and at once there was an evacuation of well formed, light colored fæces. An enema syringe was brought into use and there followed a very vigorous emptying of the bowels with great relief to the little patient. The lower edge of the rectum was then caught by pressure forceps and by means of combined traction and peri-rectal dissection with blunt pointed scissors the edge of the gut was brought down and carefully sutured to the skin margin by seven points of silk suture. A rubber drainage tube was introduced and kept in place by means of a safety pin and perineal bandages. The aftercourse was uneventful—the tube was kept in place for several days, being removed at intervals for cleansing. The result in this case has

been very satisfactory as the evacuations are free and a very efficient internal sphincter controls the motions.

The sinus was curetted a few days later with the object of causing its obliteration—there was no communication with the urethra.

CANCER OF RECTUM—FORMATION OF A PRETERNATURAL ANUS.

Case IV.—Mrs. D., *æt.* 54, a ward patient in the Doran building, was kindly referred to my care by Dr. Garrett, in October last. She was suffering from a large cancerous mass involving the whole circumference of the rectum and the perirectal tissues to such an extent that operation for its removal was deemed impossible with any hope of the ultimate result. Accordingly, as a palliative measure, it was decided to form a preternatural anus, thereby giving complete rest to the affected tissues, and relief from the symptoms—pain, bleeding, straining and tenesmus.

The patient was prepared for a laparotomy and the operation of iliac colotomy performed. In comparing iliac with lumbar colotomy Treves states that the advantages claimed for the former are that the operation is more easily and more readily performed, that the bowel can be examined and a diagnosis made, and that the situation of the artificial anus is no more inconvenient than when placed in the loin.

An incision, two and a half inches in length, was made in the left iliac region, one inch and a half internal to the anterior superior spine. The colon was readily found, and the extent of the cancerous mass was explored by the finger from within. The loose folds of the sigmoid flexure were gently drawn out and passed in at the lower angle of the incision—a provisional silk ligature was then passed through the longitudinal muscular band opposite the mesenteric attachment, and the bowel temporarily returned into the abdominal cavity, while the parietal peritoneum was attached to the skin surrounding the incision by several points of silk suture. The bowel being again drawn out, a slight opening was made in the mesentery and a glass rod four inches in length passed through and allowed to rest on the abdominal wall. Over this rod the loop of intestine hung while about eight points of suture (fine black silk) were passed on each side through the skin and peritoneum and through the muscular coat of the

bowel—the suture at each angle of the incision going across from one side to the other. After all these sutures were passed they were tied with moderate tightness. The wound was cleansed, a piece of oiled silk placed over the bowel and an antiseptic dressing applied, making firm pressure with a binder. Primary healing of the wound was obtained and on the sixth day the projecting loop of colon was divided transversely upon its convexity by means of the thermo-cautery to the extent of about half an inch. This opening was progressively enlarged at intervals of a few days until the lumen of the bowel was laid open from side to side.

The patient rapidly improved in appearance, losing the former cachectic expression, and has perfect freedom from former distressing symptoms. It is hoped that a considerable prolongation of life with the prevention of much suffering will be the result of this procedure.

W. G. ANGLIN.

THE USE OF THE CURETTE IN OBSTETRIC PRACTICE.

THE subject of this paper has been chosen—first, because it is of interest to the general practitioner; the great majority of those doing general practice find it necessary to use the curette frequently; while comparatively few of the readers of this paper will ever be called upon to resect the bowel or do a hysterectomy;—second, in the whole range of minor surgery there is no other operation so effective in relieving distress and in preventing the development of serious diseases

The reckless manner in which this operation is done is in many cases simply appalling. That the curettement of the puerperal uterus is a surgical operation and that all the laws of asepsis and anti-sepsis should be observed are facts admitted by all, but regarded by few. The operation is often undertaken by men who fail to appreciate the value of aseptic precautions—they do not even wash their hands, their instruments or the patient on whom the operation is to be performed. Again, no man should attempt to curette a puerperal uterus until he has a definite knowledge of the case he is dealing with, and clear cut ideas of what he is going to do and how he will do it. The

treatment should, in every case, depend upon the conditions that exist. Is the case one of inevitable abortion, or of incomplete abortion, is there puerperal infection, if so, is it saprophytic or septic, and if septic are the germs confined to the endometrium or have they already penetrated the walls of the uterus or gained admission to the lymphatics and blood vessels? Is it a case for the sharp curette or the dull curette, for antiseptic irrigation or sterile irrigation, for gauze packing or gauze drainage, or neither? In the after treatment will repacking, or repeated irrigation or vaginal douching only be required? All these features must receive due consideration in each case in order to insure success. No man can afford to use the curette empirically. The result will be disastrous to the patient and disappointing to the operator.

The first case for treatment is one of inevitable abortion at the end of second month. There is the usual history of malaise chills, pain in back, followed by hemorrhage. Upon examination we find the uterus enlarged, the os patulous, the ovum barely within reach of the finger, contractions feeble, and hemorrhage free. To leave this case to nature is to subject the patient to a serious risk of hemorrhage and sepsis, and the attendant open to the charge of criminal negligence. We therefore decide to empty the uterus.

As there is sufficient dilatation no anæsthetic will be required. The patient is placed across the bed, hips well over the edge, and limbs supported by an assistant. The external genitals and vagina are thoroughly scrubbed with green soap and douched with sterile water. The hands of the operator, the instruments and dressings to be used are rendered aseptic, with the same care for this operation as for an abdominal section. The cervix is now exposed; the anterior lip grasped by a vulsellum, the uterus drawn down and steadied. With placental forceps we remove the greater part of the ovular tissues, then with a medium sized sharp curette scrape away any adherent portions of the placenta or decidua. We now carefully explore the whole cavity with the finger, and if the work be complete the uterus is well washed out with sterile water, some iodoform gauze loosely packed into the vagina, an occlusion pad applied, held in place by a T bandage. The gauze will be removed in 24 hours, and a vaginal douche with hot sterile water given

each day until all discharge ceases. The patient will be made to rest in bed for a week.

Our next patient tells us she had a miscarriage three weeks ago, but the discharge has not ceased, and at times hemorrhage has been quite severe. Three days ago she had severe chills and fever. Her temperature is now 103° , pulse 120. The uterus is large, soft, and the cervix readily admits the finger. The discharge is dark-colored and very offensive. This is clearly a case of neglected abortion. The sudden rise of temperature, rapid pulse and offensive lochia, all point to putrid infection. Microscopic examination confirms this diagnosis by excluding streptococci and other septic germs. We feel assured the disease is limited to the endometrium, because saprophytic germs cannot be absorbed into or exist in the blood or in living tissues. If we, therefore, curette and cleanse the endometrium, we remove the source of infection and the absorption of toxins will cease. The patient is prepared as before, and with a large, dull curette we carefully scrape away the retained decidual shreds, decomposing blood clots and other dead tissues in which the bacteria of putrefaction have been multiplying and developing. A small, blunt curette may be used to clear out the cornua. After curetting the uterus is thoroughly irrigated, first with a 1-2000 sublimate solution, then with sterile water. The vagina is loosely packed with gauze and the after treatment carried out as in the first case. It is in these cases of putrid and even septic infection where the disease is confined to the endometrium that curetting gives its most brilliant results.

In cases of puerperal infection following labor we meet with two well marked types—the putrid and the septic. The symptoms and treatment of putrid infection—sapræmia—have been already discussed. Cases of septic infection may be, first,—local, where the germs fail to pass nature's barrier, giving us a localized septic endometritis, diagnosed from sapræmia by the slow onset of the fever, the sudden variations in the temperature, and the presence of streptococci. Here, as in sapræmia, the blunt curette and irrigation are useful, great care being taken not to injure the mucosa or open up fresh channels for infection. Second,—general, where the infection is active and virulent and nature fails to bar the entrance of the germs. They may infect

the walls of the uterus—septic metritis—or the cellular tissues around the uterus—para-metritis—or the peritoneum covering the uterus and its appendages—peri-metritis—or the entire peritoneum—suppurative peritonitis—or may enter the lymphatics and blood vessels—systemic infection. These forms of general infection present few if any local symptoms, in the most virulent types, the temperature may be normal or slightly above, the lochial discharge free of odor and abdominal tenderness late in appearing.

It is in these cases of puerperal infection after labor that a correct diagnosis, including the nature of the infection, is absolutely necessary. Nature is endeavoring to prevent the absorption of poison and the entrance of germs into the system by the formation of a zone of granulation tissue at the base of the endometrium. If we in the process of curetting or douching weaken or break through this protecting wall we favor the extension of the disease and lessen or destroy the chances of recovery for the patient. The frequent occurrence of chills and sudden rise of temperature after these operations is direct evidence of the injury that has been inflicted.

In recapitulating we would emphasize the importance of—

- 1st, surgical cleanliness ;
- 2nd, a careful estimate of the conditions present in each case, and of the treatment to be applied ;
- 3rd, prompt evacuation and curetting of the uterus in every case of inevitable abortion, except where hemorrhage is slight and the case progressing ;
- 4th, curetting and irrigating all cases of incomplete and neglected abortion, whether infected or not ;
- 5th, curetting and irrigating all cases of puerperal infection following labor, where the infection is confined to the endometrium—after the infection has invaded the system the curette will do no good ;
- 6th, using the sharp curette in cases of inevitable abortion—the blunt curette in all others ;
- 7th, using antiseptic solutions for irrigation in cases of infection only ;
- 8th, using no gauze for drainage in the puerperal uterus, first, because we do not think gauze favors drainage ; second, because the uterus is a glandular organ specially adapted for drainage, able to take care of itself if left unobstructed.

I. WOOD.

THE POSITION OF THE APEX BEAT OF THE HEART AS AN AID TO DIAGNOSIS.

NORMALLY the apex beat of the heart is found on the left side of the thorax, between the fifth and sixth ribs, about two inches below and one inch within the nipple line. This position of the apex beat may be altered, not only in disease of the heart, but also in a number of other diseased conditions in which the heart itself is not affected. Therefore when the apex beat is displaced it is necessary to examine, not only the heart, but also other organs, a diseased condition of which may result in displacement of the apex. My purpose is to point out a few of the conditions which lead to this displacement and some of the aids to determine the cause of the displacement.

I. *In disease of the heart itself.*

In hypertrophy and in dilatation of the various cavities of the heart we find the apex beat displaced. Hypertrophy of the left ventricle causes displacement downwards and to the left. This displacement will be accompanied by an enlarged area of heart dullness, and in the majority of cases by evidences of disease either of the mitral or aortic valves. Dilatation of the left ventricle causes the apex to be displaced to the left. Here we will find increased heart dullness, evidences of valvular lesions, and a tremulous or wave-like impulse over the region of the heart. Hypertrophy or dilatation of the right ventricle leads to displacement of the apex beat to the left. The area of heart dullness will now be increased, the increase being more to the right. Accompanying this condition there will generally be found murmurs at either the pulmonary or tricuspid orifices, or at both.

II. *In disease of the Pericardium.*

In case of pericardial effusion the apex beat is displaced upwards and to the left. This condition is accompanied by increased area of heart dullness. The apex beat may be found as high as the third intercostal space.

III. *In diseased conditions outside the Pericardium*

i. Displacement towards the right.

Effusion into the left pleural cavity, emphysema of the left lung, pleural contractions on the right side and fibroid phthisis

of the right lung, all tend to draw the heart towards the right side. Here the impulse may be felt in the epigastrium, along the margin of the ribs or along the right border of the sternum in any interspace from the third to the sixth. In case of pleural effusion we would have dullness upon percussion, the area of dullness changing with the position of the patient and distant indistinct breath sounds. The hypodermic needle would be an absolute test. In emphysema we would find hyper-resonance on percussion, with, perhaps, a bulging of the left side, especially at the intercostal spaces. In case of adhesion the physical signs above referred to would be absent, and the heart would be less moveable during the act of respiration. In fibroid phthisis of the right lung there would be dullness upon percussion with flattening of the right side.

2. Displacement to the left.

Effusion into the right pleural cavity, emphysema of the right lung, pleural contractions on the left side and fibroid phthisis of the left lung will cause displacement of the heart's impulse to the left. These conditions may be differentiated in the same manner as was pointed out for displacements to the right from similar causes.

3. Displacement downwards.

Disease of the mediastinum, as, for example, aneurism, abscess or enlarged glands will tend to push the heart downwards and to the left.

4. Displacement upwards.

Enlargement of the liver or spleen—distention of the stomach or colon—tend to displace the heart's impulse upwards and to the left. These conditions may readily be differentiated by percussion. Distension of the stomach by gas may enormously displace the heart's apex beat. I have now a case under my care in which the stomach at times is very much distended with gas and the apex beat is found exactly at the left nipple.

Thus we see that while the apex beat is displaced in lesions of the heart, heart lesions are not the only cause of such displacements. To make a diagnosis, other organs, as the lungs, liver, spleen, stomach and colon must be examined before a definite diagnosis of the cause of displacement can be confidently made.

JOHN HERALD.

KINGSTON MEDICAL AND SURGICAL SOCIETY.

A REGULAR monthly meeting was held Nov. 7th, the President, Dr. Herald, in the chair, and seventeen members present.

Dr. W. T. Connell presented the specimens from an insane patient, aged 34, shewing softening caseous phthisis of the upper lobes of both lungs, a generalized and very extensive miliary tuberculosis of the peritoneum, including the serous coat of intestines; and also recent tubercular meningitis, confined as usual to the base and posterior fossae. The other organs showed only rare tubercles. The comparative infrequency of tubercular meningitis was commented upon.

Dr. Connell also showed the last foot of the ileum from a fatal case of typhoid fever, during the third week, showing the separating sloughs and typical ulceration.

Drs. Herald and Anglin described the clinical history and operation, and presented the specimens from a fatal case of volvulus of the ileum. This case is reported in full in this number.

Dr. Neilson then presented his paper on Psycho-Therapeutics. In this paper Dr. Neilson considered treatment by suggestion only (along with ordinary medical measures) and treatment by suggestion after the induction to a greater or lesser degree of hypnosis, giving illustrations of each. The Doctor practically illustrated his methods of inducing the hypnotic state, and gave a list illustrated with cases, in which such treatment had proven efficacious in his hands, as e.g. insomnia, neuralgia, toothache, sciatica, migraine, obstinate constipation. Dr. Neilson advocates the more extensive use of suggestive therapeutics in general practice, and in selected cases advises hypnosis as preliminary to the suggestion.

A regular monthly meeting of the Society was held this evening, (Dec. 5), Dr. Herald, President, in the chair, and nine members present.

Dr. Anglin gave the clinical history and presented the specimens from a case of empyema with secondary abscess about the spleen, a full report of which appears in this issue.

Dr. W. T. Connell shewed a specimen of "waxy" liver, also somewhat cirrhotic. The surface showed numerous old de-

pressed scars, evidently syphilitic in nature. There were, however, no gummata anywhere present. There had been no suppurative lesions, so the waxy degeneration was evidently syphilitic in origin. The patient died within three days after admission to the hospital showing only asthenic symptoms.

Dr. Connell also presented an appendix from a child aged 7, showing a small perforation about its middle, with extensive ulceration of the mucous and muscular coats. There had been a fatal suppurative peritonitis due to the *B. Coli Communis* excited. The child took sick on Tuesday, and died Saturday, and when first seen presented all the features of general peritonitis.

Dr. Forster then presented his paper on "Insanity following typhoid fever," which is published in this number. The paper was discussed by Drs. Clarke, Third, Herald, Anglin and Phelan.

BOOK REVIEW.

A TEXT-BOOK OF PATHOLOGY. By ALFRED STENDEL, M.D. W. B. Saunders, Philadelphia, pp. 813. Price \$4.

The range of Pathology is now so great that it is hard for an author to confine within limits the subject matter that must be treated, so that though Dr. Stengel has dealt with the subject in a fairly concise manner, his book runs to a large sized volume. The author deals just with the general principles of Pathology, and then passes to the etiology and pathological features of the infective diseases, and then considers regionally the special pathology of the organs. Pathological Technique is not touched upon at all by the author, with a few minor exceptions. We can see comparatively little of major importance to criticize in this book. In dealing with the general principles of inflammation we hardly think Dr. Stengel has given to it the length and treatment its importance as the basis of the majority of tissue lesions would warrant.

The book is well illustrated throughout; most of the illustrations are well chosen and include many standard cuts.

This volume can be recommended to physicians requiring a good treatise covering the subject entirely. It is rather a bulky volume to place in the hands of the already "overloaded" student, still it is one of the best volumes yet to hand and ought to rank with Ziegler as a general text-book. Further, its reasonable price ought to lead to quite a general adoption.