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NATURAL COURSE OF DISEASE.*

BY ALEXANDER MCPHEDRAN, M.B., TORONTO.

Until a recent period, our knowledge of therapeutic processes, whether due to drugs or other agencies, was almost wholly empirical. Even yet it is only of a few agencies, of drugs especially, that we possess anything approaching accurate knowledge as to their mode of action, while of the vast majority our knowledge is quite as empirical as that of our forefathers, and in some cases perhaps much less accurate. This empirical knowledge is based on the observations of a great number of observers. It follows as an inevitable result that the great majority of the observations must be inaccurate. There are many reasons for these inaccuracies. For example, the patients on whom the observations are made, both for physical and psychical reasons, differ widely in their response to similar influences. In the next place, the judgment of the observers differs probably more widely than the susceptibilities of patients. Furthermore, the drugs and agents used often vary much in their potency. To form a just appreciation of the general value of any means we may adopt in the treatment of disease requires a very critical insight, on account, not only of the innate difficulties to be overcome, but also of the strong tendency in us to credit to the treatment whatever is favourable in the patient's progress.

The tendency is universal to regard the phenomena following

* Read at the meeting of the Medical Association of Oxford at Woodstock, May, 1907.

a cause as resulting from such cause. The wish is too often father to the thought. To nothing does this apply more fully than to the drug treatment of disease. The masses are still imbued to a great degree with the ancient belief in the existence of a mythical power in drugs; and, relatively, the profession often shows quite as blind a faith. That this is true is made quite evident by the contents of the multitude of one-dollar medical journals that flood this continent. Their pages are filled with innumerable specifics for all kinds of diseases, the only proof assigned for the supposed action of the drugs being the improvement which followed, and which is therefore regarded as due to their use. This kind of reasoning appeals strongly to all, and too often it is only after repeated disappointments that our superstitious faith is shaken, and the drugs discarded as useless. It is on this faith and half-knowledge that the vendors of the innumerable drugs, new and old, and preparations, misnamed prepared foods, have grown fat and prosperous. Their audacity has increased with their prosperity, so that now their agents take possession of our consulting rooms to announce to us discoveries which they think we should receive in blind faith.

We can recall many instances from our personal experiences in which illnesses have presented the greatest vagaries in their courses, uninfluenced by our most careful therapeutic measures. These vagaries are frequent in all diseases, from the mildest to the most severe. We too often forget what the term disease signifies—the condition resulting from the action of some morbid influence on the body and the reaction of the body against the injurious agent. Both the attacking agent and the body are unstable, and therefore the resulting phenomena vary, not only in different persons, but in the same person from day to day. The slight infection which causes a mild naso-pharyngeal catarrh in one child may excite high fever, delirium and convulsions in another; not only so, but a second attack in the second child may be as mild as that in the first.

No better illustration could be cited than pernicious anaemia to show how frequent are the variations in the ordinary course of disease, and how easily they can be attributed to the administration of drugs. Had Biermer been familiar with the usual course of the disease, he could scarcely have prefixed “progressive” to the name. When arsenious acid was introduced as a remedy for this disease, it was regarded as a specific that seldom failed, at least to mitigate, if it did not cure. We all know how greatly experience has blasted the sanguine hopes that were

entertained. In more than one-half of the cases coming under my own observation, arsenic has proved quite useless; not only so, but in many of them its administration has been followed by various untoward symptoms, as loss of appetite, epigastric discomfort, and painful superficial erosions in the mouth. These injurious effects were not coincidences in at least most of the cases, as they always followed the administration of the drug and ceased on its withdrawal.

The variable course of the disease when left to itself is well illustrated in the case of a man of 40 under my care four years ago. He had been steadily growing worse during his stay in the hospital, until he could scarcely be roused to take even water. Blood-stained saliva flowed from his mouth, wetting and staining his pillow cover. I had occasion to be absent for four days, and on my return I found that he had not only regained full consciousness, but also sufficient strength to return home, a distance of 100 miles. He improved so much as to be able to work at his trade of stonemason all the following summer. He relapsed during the winter and died in the following spring. Had this man come under observation when in the extremely low state, and could have been given arsenic freely, the almost inevitable inference would have been that his improvement resulted from the effects of the medicine. But he was able to take neither arsenic nor any other drug.

I may cite another case, that of a physician, a fellow student of my own, showing that an unfavourable change may be equally marked. He had been ailing for three years, sometimes better and sometimes worse. He could not bear 10 minims of Fowler's solution daily for a week without having aphthous patches in the mouth and distress in the epigastrium. In November of the third year of his illness his blood contained over 5,000,000 red corpuscles of nearly normal character per cmm., and he felt himself quite recovered. He resumed his practice, but in a week found himself quite unequal to it. He declined rapidly and died six weeks later.

I have another physician under observation at present whose history is even more remarkable as showing an unprecedented interval of apparent recovery. I treated him in 1889 for a very severe manifestation of pernicious anaemia, from which he recovered so as to be in excellent health, and has been in active practice until March last, a period of eighteen years. He felt himself ailing slightly for the last two years, during which he gradually lost ground. His first attack was a typical one. He took arsenic very freely, and to it possibly, but not necessarily,

he owed his recovery. He has again made excellent progress, but not until he was confined to bed.

What better illustration of the necessity of being fully cognizant of the variable course of a disease can be cited than typhoid fever? What a multitude of drugs and methods of treatment have been tried and vaunted for a time as curative, only in the end to be cast aside as worthless! In the earliest years of my practice I came to the conclusion that a combination of iodine and carbolic acid formed a specific, as all the goodly number of patients I treated did well, but I soon received a rude awakening. A season followed in which the type of the disease was severe, and eight patients were carried out of a hospital ward of 20 beds in one month and laid away in narrower beds, which require no renewing. The undying efforts and eternal vigilance of the profession in the endeavour to discover a panacea for this fell disease, which flourishes because of the general ignorance and apathy of the public, is most laudable; yet were the true nature of the disease and the great variation in its course from year to year fully realized, to what a multitude of foolish methods and useless drugs would we be spared giving consideration!

In no disease is a correct knowledge of the natural course of events of greater importance than in those of the heart. It is said of the late Austin Flint that early in his career he was called to a distant town to see a young girl suffering from grave heart disease, in whom the symptoms were very marked. He gave a very unfavourable prognosis, and advised that the child be fed lightly, kept very quiet, and not allowed any physical exertion or mental excitement. After his departure the parents, in discussing the matter, argued that if the child could not in any event live long, there could be little to gain by restricting her liberties, and that therefore it would be better to let her have as full and happy a life as possible, even if shorter, than a somewhat longer one of a more sombre, restricted character. They wisely, therefore, allowed her complete freedom. About 20 years later Flint was asked to see another child in the same town, whose mother proved to be the little girl, now grown to womanhood, whom he had condemned to a short existence so many years before. She was now the happy mother of several children.

Flint learned what is now well known, that children, if they recover from the acute affection of the heart, may and often do live many years, even to old age, in comfort and without impairment of their usefulness. On the contrary, if the cardiac

affection begins in later life the lesion is progressive, and life is only exceptionally prolonged beyond a few years. In the child the disease of the heart is inflammatory, and therefore self-limited; once arrested, the heart is cured except for the effects of the inflammation. All depends on how much the resulting scar interferes with the function of the heart, and how far that interference can be overcome by the compensatory hypertrophy of the cardiac muscle and the necessary dilatation of the cavity or cavities concerned. In later life, on the other hand, the disease is degenerative, and is not self-limited, but progressive, and when marked the end is not a great way off.

The large class of neuropathic cases have brought much discredit to us on account of our want of definite knowledge of their course and of the readiness with which they yield to the greatest variety of influences, often of the slightest degree. It is from this class that the adventurous quack gathers his followers, whether he belongs to the Christian Scientists, osteopaths, electricians, or the vendors of the multitudes of patent remedies which flood the market. We have been slow to learn that the psychical side of human nature has great influence on the physical. It is probable that all chronic deviations from the normal are greatly influenced in their course by the mental condition. We know that the renal secretion may be as greatly affected by emotional disturbances as can that of the lacrymal gland. Although not so easily proven, there is scarcely a doubt that the functions of other glands may be as much disturbed by the mental state. Within the last few weeks, in the case of a young woman showing symptoms of threatening vicarious menstruation, a luncheon that was vomited two hours after being taken was found barely acid, and contained no hydrochloric acid, while toast and tea given after the vomiting and syphoned in an hour, contained an excess of free hydrochloric acid.

Of all the diseases with which mankind is afflicted, there is none whose natural course we have more sadly failed to grasp than tuberculosis. The great prevalence of the disease and its enormous mortality have made the public very impatient with the defects of our knowledge of its cause, its course, and especially of its cure. The disease has been so closely canvassed that all our shortcomings have been subjected to the white heat of keenest criticism. The pathologists and physicians of more acute vision have been for generations teaching the curability of the disease, but the mass of the profession would not understand. It was not until outdoor treatment demonstrated the curability of tuberculosis, and its application was followed by the cure of

actual demonstrable cases that the profession as a whole was aroused out of its pessimistic attitude. It is not to our credit that the public had so much to do with the change of opinion in the profession. We followed rather than led in this reformation of opinion. When the masses get a new idea they are hampered by no preconceived notions, so that they adopt new doctrines precipitately, while we, who know somewhat of the lions, real and imaginary, in the path, hesitate.

It is often said that medicine is not an exact science, and that we cannot hope to make it such. I am inclined to demur to that statement, although, of course, much will depend on the meaning we attach to the term "exact science." If the interpretation is strict, what science is entitled to the designation? They are all liable to err, and all depend to some extent on other sciences for their foundation. Much in medicine is quite as exact as any of the sciences. We have an accurate knowledge of the cause and process in many diseases, as, for example, malaria, yellow fever, diphtheria, dysentery, and many other infections, while of many others our knowledge is about complete. In some the exact infecting organism which causes the disease is not yet discovered, or, knowing the organism, the missing link in our knowledge is in the exact means by which it gains access to the infected part. Measles, scarlet fever, variola and syphilis belong to the first class, and pneumonia, tuberculosis, pleurisy and cerebro-spinal meningitis to the second. We have good ground for confidence that our knowledge of these and many others will soon be complete.

Of the practice of medicine, however, exception cannot be taken to the charge that it is not exact; the human organism is too unstable to justify us to hope for more than approximate results. This necessitates the bringing of empirical knowledge to the aid of rational therapeutics, and our empirical knowledge depends very largely on an accurate knowledge of the natural or uninfluenced course of disease. It is therefore as essential now as in the days of our forefathers, before the introduction of laboratory methods, that a careful record of the patient's condition be made, noting the variations in the course of the illness, to enable us to intelligently direct the treatment and accurately estimate its effect. With the advent of the laboratory, the tendency has been to rely on it to the neglect of the proper study of the patient, too often forgetting that it is the patient, not his disease, that is to be cared for. What a rich fund of information would be at our disposal if careful records were made of all patients who are under sufficiently close observation to per-

mit of such records being made! Every hospital would then be a storehouse of facts, on which all might draw. We would be able to present an accurate picture of all the diseases that occur in this country. We could then, at small cost, obtain from any hospital an abstract of its records pertaining to any disease of which we desired to make a special study.

The multiple functions of a hospital should not be overlooked; they are threefold. Besides affording facilities for the treatment of patients, every well equipped hospital should also provide facilities for the clinical education of students and for the training of nurses. This is a reasonable view, as otherwise the vaster number of people, who cannot enter a hospital for treatment, would have no provision made for either their professional or nursing care. It is our duty to make the most of the facilities our hospitals afford, and in order to obtain the greatest benefit it is necessary that accurate records be made of the conditions presented by all patients during the whole course of the illness, as well as of the results of efficient laboratory investigations. If this is to be done, the visiting staff must have the assistance of a well trained laboratory assistant, as no physician in active practice can give the time necessary to do such laboratory work. Each of the smaller hospitals springing up all over this province should have at least one such assistant. Such hospital work would have a wonderfully stimulating effect on the neighbouring profession and vastly increase the efficiency of their private practice. Difficult cases could be studied both from the clinical and laboratory aspects. The training in observation necessary to make such records would, I venture to say, do more to advance the science of medicine than even laboratory work, much as that is doing to advance medical science. Neither field of work is independent, but each must be supplemented by the other. The laboratory findings alone are an insufficient basis on which to form a full conception of any disease; the results of the diseased process must be interpreted in the light of the environments in which they develop, that is, the human organism. This is especially true of the use of therapeutic measures.

It will take several years to secure such an improvement in the clinical records of the hospitals all over this country as will be necessary to make a complete change in the methods of medical education. The men at present doing the hospital work will scarcely change their methods, so that we will have to depend on a process of evolution.

The adoption of an improved and uniform plan of hospital

records would do more to raise the status of medicine in this country than can be done by academic discussions, however important. Such records would necessitate close study and accurate observation by all connected with hospitals, the students as well as members of the staffs. The result would not only be more accurate knowledge of the course of disease, without which we cannot estimate the effect of treatment, but a better trained general profession.

Good clinical insight is of inestimable value to every physician; it can be attained only by close study and thoroughness of work. Even the smallest details must receive careful consideration. While our mental attitude should not be that of cold, cynical doubt, yet we must not be hasty in accepting conclusions. We must "prove all things, holding fast that which is good." To this end the critical observation of the processes manifested in the human organism are as essential as of those in the laboratory. The work in neither field can be independent of the other, and in both there should be equal care as to accuracy of observation. Of this fact clinical observers require to be frequently reminded.

MODERN METHODS OF ANAESTHESIA.*

BY SAMUEL JOHNSTON, M.A., M.D.

Official Anaesthetist to the Toronto General Hospital.

Sir Frederick Treves has said, "There is a widespread impression that to give chloroform is a minor act—that the power comes with the granting of the diploma—and the significance of the procedure is sometimes emphasized by the remark, "Well, if a man cannot give chloroform, what can he do?" "

Men are sent out every year from the medical schools, quite ignorant, or at the most with a very imperfect knowledge, of one anaesthetic—usually chloroform. It need not surprise one that the mortality under anaesthetics at the present time is a very heavy one. If the best results are to be obtained, no one anaesthetic can possibly be universally adopted, and although it is difficult for busy general practitioners, long past their student days, to make themselves familiar with the use of inhalers of the different anaesthetics, "one cannot help feeling that chloroform could frequently be replaced by one of these safer agents, with advantage to both doctor and patient, and that the greatly increasing mortality from anaesthetics is largely due to the indiscriminate, not to say reckless, use of this agent." (Luke). Numerous and not very profitable discussions have taken place as to the relative merits of ether and chloroform, and each in its turn has taken first place in the surgeon's favor at different times. We have now fairly arrived at the conclusion that each has its place, that the man who is familiar with the use of both is in a better position to obtain good results than he who is only acquainted with one, and that in regard to all anaesthetics much more depends on the skill and experience of the administrator than on the nature of the anaesthetic or inhaler used.

The position of the general practitioner with regard to the administration of anaesthetics has been admirably summed up by Mr. Marmaduke Shield in "Practitioner" (published in England), October, '96.

"If medical men were well educated in the theory and practice of anaesthesia, they would recognize for themselves that for nose and throat operations, associated with severe hemorrhages, for cases when the breathing is embarrassed by aneurism or tumour, or for prolonged abdominal operations, the administration of the anaesthetic should be intrusted to those who have given more than ordinary time and attention to the subject. The satisfactory administration of anaesthetics in many cases of

* Read at the Twenty-Seventh Annual Meeting of the Ontario Medical Association.

disease—e.g., empyema—is fraught with risk. Safety to the patient and comfort to the operator can only be insured by long experience, caution and skill.

“It is quite impossible to suppose that all medical men can be educated to such a high degree of excellence. They should, however, be enabled during their hospital career to attain a sufficient knowledge to fit them to estimate the limits of their own capabilities, and to know when a given case is difficult or dangerous.

“In districts remote from large cities it is the duty of every man bravely to encounter difficult and dangerous cases, and do his best by them.

“If once the young practitioner grasps the fact that every case of anæsthesia is a study in itself, in the selection of the appropriate agent for safety and for the operator’s convenience, fully appreciating that every case has its peculiar risks and after-dangers, he will continue to improve as years advance.”

In estimating the relative mortality under the various anæsthetics, Dudley Buxton states that the safest known anæsthetic at the present day is nitrous oxide, the death rate of which he gives as one in 100,000. Ethyl chloride ranks second with one in 12,000; then follow ether, one in 10,000; A. C. E. and C. E. mixtures, one in 7,500; and chloroform, at least one in 1,000.

Looking at these figures, one cannot help deducing the fact that some of the known anæsthetics are less likely than others to act in a toxic manner on the human organism, and we are therefore surely bound to use the safest anæsthetic which we possibly can for a given operation, taking the circumstances of the case into consideration. For instance, we have no right to give chloroform to a patient for the extraction of a few teeth, if nitrous oxide or ethyl chloride and ether are available.

Similarly, if a patient is to be curetted and there is no contra-indication to ether, we should administer this anæsthetic, or at any rate C. E. mixture, in preference to pure chloroform.

At the same time unreasonable bias is to be avoided, and if an operation on the brain is to be performed, we are equally bound to administer chloroform or C. E., as in this case the immediate necessities of the operation must be foremost, and the high death rate for chloroform must not make us frightened to use it when clearly indicated.

THE CHOICE OF AN ANÆSTHETIC.

Leaving aside for the moment exceptional cases, the practice of employing one anæsthetic for all cases is now looked upon as

being out of date. To be successful we must vary our anæsthetic and our methods of using it, according to the requirements of the case we have in hand.

The modern anæsthetist has at his disposal not only a considerable number of anæsthetics, mixtures of anæsthetics, and succession of anæsthetics, but also a variety of methods of administration. Of the simple anæsthetics there are four which we have time to briefly discuss, viz., nitrous oxide, ether, chloroform and ethyl chloride. Of the mixtures, that known as C. E. is worthy of notice, and of the successions the following are the most useful:

The nitrous oxide—ether sequence.

The ethyl-chloride—ether sequence.

The C. E.—ether sequence.

The nitrous oxide—ether-C. E. sequence.

In deciding on the means to be employed for producing anæsthesia, in ordinary or routine practice, one of the most important considerations should be the *safety of the patient*.

Two questions here present themselves as to the safest anæsthetic—(1) for short operations, not requiring total relaxation, and (2) for operations requiring deep or continuous anæsthesia. With regard to the first question, it is admitted that nitrous oxide is the safest general anæsthetic known. When administered with oxygen or air, in order to eliminate the asphyxial element, its inhalation is practically free from risk to life. Even when pure, the risk to life is so slight as to be overlooked. It is not unpleasant to inhale, and rapidly destroys consciousness, while there are rarely any unpleasant after effects. On the other hand, the heaviness of the storage cylinders, the comparative lightness of the anæsthesia, the tendency to muscular rigidity, and movement, and asphyxia during the administration of pure gas, and the somewhat lengthy experience required to obtain good results in all cases, combine to limit its employment.

Many small operations, such as the removal of small tumors, the opening of abscesses, the dressing and examining of wounds, removal of teeth, breaking down of adhesions, may be performed under this anæsthetic without the slightest after effects, if the patient is properly prepared.

Within recent years (since 1902-03) ethyl chloride has come into extensive use for brief surgical operations, its great advantages over nitrous oxide being that it is more portable, more manageable, and easier to administer. But from somewhat numerous accidents that have occurred under its influence, the

risk in its use is much greater than at first supposed. Hewitt thinks that the near future will probably see its use limited rather than extended. At the same time, it is useful in certain cases when the anæsthetist is familiar with the principles of anæsthetisation.

These two anæsthetics are, however, not applicable for major operations, and it is important for every practitioner to know the safest routine agent when muscular relaxation or protracted narcosis is needed. It is generally admitted that ether has this distinction. Hewitt says, "Statistics as to the relative safety of ether, chloroform and other agents are unquestionably open to grave fallacies, and must be accepted with caution. So-called 'deaths under anæsthetics' are often deaths partly or wholly applicable to other causes than the influence of the anæsthetic itself, and, conversely, fatalities which should be properly ascribed to anæsthesia are often either never reported or regarded as due to surgical shock, collapse, etc. Again, statistics generally ignore those cases of fatal bronchitis and pneumonia, which undoubtedly occasionally follow the use of anæsthetics, and particularly ether, and which should in all fairness be included in any statistical inquiry. Moreover, the personal element, the experience of the administrators in any given series of cases, is often not taken into account. And, lastly, it must be remembered that desperate cases are often regarded as unsuitable for chloroform, so that ether is chosen for them, with the result that the ether death-rate is thereby unfairly increased. Still, with all these objections to statistics, there can be no doubt that they have their value. Whilst they may be regarded as roughly indicating the relative risks of ether, chloroform, etc., during anæsthesia, they cannot be accepted as representing the true relative death rates."

According to the most reliable figures, ether is about six times as safe as chloroform. The anæsthetist is therefore morally bound in routine cases to use ether in preference to chloroform.

Among the special circumstances that may justify him in employing some other anæsthetic are: (1) extremes of temperature, rendering its use impossible, (2) the impossibility of obtaining or carrying about the apparatus for administering ether, (3) special familiarity with the administration and effects of some other anæsthetics.

Nitrous oxide and ether, then, may be regarded as the two anæsthetics which should be generally employed in the ordinary course of surgical practice—the one for very short operations, and the other, or the two used in succession, for those of longer duration. If air or oxygen is administered with nitrous oxide

the anæsthesia may be extended far beyond the limit which is obtained with nitrous oxide alone, and the same may be said with regard to ether. While the close system for ether, with modification by the anæsthetist, is undoubtedly the best for general use, the want of a special appliance may render the "semi-open" system the most appropriate. For example, in country districts, in which the practitioner is seldom called upon to give an anæsthetic, the administration of ether from some simple form of cone with a sponge at the apex for the ether, will meet the case. This method has the merit of safety and simplicity. The nitrous oxide—ether sequence; the ethyl chloride—ether sequence; and the C. E.—ether sequence, have certain advantages over simple etherisation, the most conspicuous being the prevention of the initial taste of ether, and elimination of excitement and struggling.

In extremely cold climates it is difficult to vaporize ether rapidly enough to produce smooth anæsthesia, and on the other hand, in tropical temperatures, as ether boils at 95 degrees F., its use may be impossible. Under these circumstances chloroform or a mixture such as C. E. will be necessary. When it is impossible to obtain a proper ether inhaler, when portability is important, as on the battlefield, or when it is impossible to keep an ether inhaler in good order, the C. E. mixture, or even chloroform, must be employed. The great portability of ethyl chloride will probably lead to its extensive use for minor operations in military surgery.

The C. E. mixture is undoubtedly one of the best anæsthetics for a large number of cases of major surgery. It is pleasant to inhale, safer than undiluted chloroform, administered by a simple apparatus, and is particularly suitable for bad subjects; but it needs a considerable experience in its administration to produce a smooth anæsthesia, for those accustomed to giving chloroform find themselves at a disadvantage when they first attempt to give C. E. mixture. Owing to the greater quantity required to produce anæsthesia, the administrator hesitates to give the required amount, and thus produces a delayed initial stage of anæsthesia, and a very unsatisfactory condition.

In using any drug as an anæsthetic, the aim should be to produce an even anæsthesia, with as little of the drug as possible, to keep the patient quiet, and yet so near the borderland that when the operation is over the patient is semi-conscious, and fully conscious a few minutes after. Keeping the patient in this way will also prevent much, if not all, after-nausea and vomiting.

One after-effect noted when an anæsthetic has been administered unevenly—that is, giving the patient an overdose to put him to sleep, and then allowing him repeatedly to come out—is a dizziness and jaundiced color persisting for weeks and even months after the operation. This ought to be avoided in the way indicated above.

THE SELECTION OF AN ANÆSTHETIC IN EXCEPTIONAL CASES.

1. With regard to the state of the patient.
2. The surgical operation to be performed.

It is a remarkable fact that one whose health has been somewhat impaired is often a better subject for anæsthesia than one who enjoys robust health.

The laity think that if “the heart is sound” there is no danger from the anæsthetic, whereas in about 90 per cent. of fatalities from chloroform at the post-mortem the heart is found to be normal. The nervous make-up, the amount of alcohol and tobacco used, etc., have much to do with the ease with which the patient takes the anæsthetic. A healthy, robust male adult is not usually an easy subject to anæsthetise. His heart and lungs may be in excellent condition, yet sometimes he will not pass into an anæsthetic state without much struggling and excitement, which will interfere with the respiratory rhythm. Anaemic people usually take anæsthetics well, and with them, ether by the open method should be given owing to the undue depression of the blood pressure, which so readily follows the administration of chloroform.

Fat people nearly always give trouble, especially with ether, having a considerable secretion of mucus and much cyanosis. With this type, C. E. or chloroform, given with plenty of air, is the best.

Edentulous patients often cause trouble by sucking in their lips and so obstruct breathing. To overcome this the lips should be separated from the gums with a pledget of gauze, on either side of the mouth. In valvular disease, patients usually take chloroform, or mixtures containing it, better than ether. Care must be taken to keep even anæsthesia, as there is a marked tendency to syncope, particularly in the later stage, and also when vomiting is imminent. In fatty degeneration of the myocardium, or in simple atrophy, ether or C. E. mixture is strongly indicated, chloroform and nitrous oxide strongly contra-indicated. The majority of fatal accidents at the dentists have occurred with this class of patients under nitrous oxide.

Acute bronchitis, tubercular disease of the lungs with a ten-

dency to hæmoptysis, and any marked tendency to bronchial affections, contra-indicate ether.

In renal disease both chloroform and ether must be given with great caution, for ether unduly congests the kidney, aggravating albuminuria, while chloroform often increases the degenerative changes in the substance of the kidney, so that a long anæsthesia of any kind should be avoided if possible.

Insanity contra-indicates both nitrous oxide and ether on account of the tendency of these to produce cerebral excitement. This sometimes follows chloroform.

In goitre no anæsthetic should be used that would hamper the breathing—a light anæsthesia with C. E. is best.

The choice of an anæsthetic therefore must depend: (1) on the condition of the patient and the presence or absence of pathological conditions, (2) the nature of the operation, (3) the skill of the administrator, (4) the wish of the operator, which, with all due consideration of the patient's condition, etc., should be paramount, for it is undesirable for the patient and obviously unfair to the surgeon to feel for one moment that he is embarrassed in his work in any way.

Again it may be desirable to commence with one anæsthetic and continue to maintain anæsthesia with another. Many deaths from anæsthetics are due to persistence in the use of an anæsthetic which to the initiated is unsuited to the patient. Children under five years take pure ether or C. E. very well. In very young infants it ought to be remembered that chloroform is a powerful protoplasmic poison, which may produce marked degenerative changes after the anæsthetic has disappeared. From 5 to 15 C. E. may be used with confidence, and will give good results, but I usually administer ether with as much satisfaction. From 15 to 70 and over, if there is no respiratory trouble or other contra indication, ether may be used as the routine anæsthetic and C. E. when so desired.

STAGES OF ANÆSTHESIA.

For the convenience of description the period of anæsthesia has been divided somewhat arbitrarily into four stages:

First Stage.—From the commencement of the administration to the loss of consciousness. The phenomena of this stage vary, depending on the way the anæsthetic is administered, and the manner in which the patient breathes. It should not be unpleasant, but it may be made so if the administrator is careless or incompetent, especially when the patient is nervous and holds his breath.

The anæsthetic should be sufficiently diluted with air at first to prevent a feeling of suffocation, and very gradually increased so that the patient should pass into a stage of unconsciousness without being aware of any unpleasant taste or smell. The pulse is quickened, and respiration becomes deeper and faster, and the pupils are somewhat dilated but react easily and quickly to light. As soon as consciousness goes there is a short period of analgesia, during which a short operation, such as the extraction of a single tooth, may be performed without the patient experiencing any pain. This period is of little use, as it is very short, and the beginning and end are most obscure.

The Second Stage.—From the loss of consciousness to the loss of corneal reflex. The separation of the second stage from the first is not easily recognized. This stage is known as the "struggling stage." There is rigidity of the muscles, the breath being sometimes held, and a clonic contraction of the lower extremities is frequently met with in ether anæsthesia. Respiration varies, but in successful cases there is very little change of rhythm, and simply becomes deeper and freer. In this stage the pulse with ether becomes fuller, but with chloroform the depressant quality of the drug is shown, and the pulse does not improve. The pupil is still dilated, but as the breathing becomes freer, the muscles relax and with the loss of corneal reflex, the third stage is reached.

The Third Stage is that of surgical anæsthesia. This is shown by the loss of corneal reflex. If the drug is pushed too freely after this period and an overdose is given, the fourth stage is reached, that of poisoning. In the third stage the breathing is deep and regular, and gradually becomes more abdominal in character, quicker and more noisy, with ether, on account of congestion of the air passages; very quiet and sometimes almost inaudible with chloroform.

Circulation in this stage shows a marked difference according to the drug which is being used. With ether the pulse will be full and bounding, regular and increased to from 80 to 100 per minute.

With chloroform the pulse is generally about the normal fullness of the individual, and of the usual rate, or somewhat slower.

Color of the face under ether will be somewhat florid, while in chloroform the face is paler. The pupils should not be widely dilated, but a moderate size, and react to light.

The principal differences in the condition of a patient under ether as compared with that of one under chloroform are due

to the fact that while ether is a powerful stimulant, chloroform is distinctly depressant in action.

The Fourth Stage is the stage of overdose, and is not separated from the third stage by any sharp line of demarcation; but the patient presents such a marked difference when in this stage, that the onset should be easily recognized. The respiration gradually becomes more shallow and slower with chloroform, though with ether it is often very rapid and shallow. It will eventually stop, but before this happens it sometimes becomes intermittent and jerky. The pulse becomes smaller and faster until the beats can hardly be counted at the wrist, quickly becoming imperceptible. The face of the patient is now pale and livid with chloroform, but more dusky with ether; nose is cold to the touch, and the forehead is covered with a cold, clammy sweat, the eyelids are separated and the globes exposed and rotated upwards. Pupils are widely dilated and do not react to light. A patient showing all these signs would be in a very serious condition, but there are many degrees of overdose. In the case of ether, when an overdose is given the circulation will be affected much later than it is with chloroform, and although the patient may show distinct signs of the too free use of the anæsthetic, if the condition is recognized, the inhaler removed, and proper measures taken, the patient will recover in almost every instance. With chloroform, unfortunately, irreparable damage may be done before the serious state of the patient has been appreciated, and all measures of restoration may fail to restore the patient to life.

THE ADMINISTRATION OF NITROUS OXIDE.

This drug is supplied by the manufacturers in iron cylinders which contain the agent in a liquid state under considerable pressure. The anæsthetist should have two cylinders coupled together, in case one should work badly or fall short. It is also a good plan to work from one cylinder and only to go on with the second in case of the first becoming exhausted. In administering nitrous oxide, the following rules must be observed:

1. Make sure that there is a sufficient supply of gas before commencing. The average may be estimated as six gallons per patient, but tall, plethoric, or alcoholic subjects may require more.

2. Run a small quantity of nitrous oxide through the apparatus to free it from air. Fill the bag to about two-thirds full and then turn off the screw-valve of the cylinder.

3. Make sure the valves are in good order, adjust the mouth-prop, should one be necessary, and ask the patient to commence breathing through the mouth.

4. Gently adjust the face-piece, and fit it accurately. On this largely depends success in N_2O anæsthesia.

5. When the patient is freely filling his chest with air through the apparatus, turn on the nitrous oxide, and do not let the gas bag become more than two-thirds full.

6. When the nitrous oxide is admitted, a stream of gas should be allowed to flow gently into the bag from the cylinder. Any excitement must be met by a slight increase in the fullness of the bag, as such symptoms are probably due to air passing in by the side of the face piece.

7. To-and-fro breathing of nitrous oxide should not be permitted except under certain circumstances, and then only toward the end of the administration. In the first stage, the sensations should be agreeable, the patient breathes quickly and deeply, the pulse grows fuller and loss of consciousness should occur in from 20 to 30 seconds. The second stage is now reached, and the patient may sleep or become excited if roughly handled. Nitrous oxide is sometimes accused of producing imperfect anæsthesia, because operations are sometimes begun at this stage. Respiration is quicker and deeper than normal. Pulse still full and quicker than before, and conjunctiva quite sensitive to the touch; pupils dilated; duskiness of complexion, and slight twitching of the eyelids. The respiration indicates the third degree of nitrous oxide anæsthesia. The breathing loses its rhythm, and a characteristic throat sound is heard. This is probably due to irregular and spasmodic elevations of the larynx towards the epiglottis and base of the tongue, and indicates a tendency to obstruction in the air passage at this point.

The pulse is very quick when the patient is fully anæsthetised, and it immediately becomes slower and fuller when air is admitted.

A tendency to clonic muscular contractions occur in all cases and tonic spasm in many.

The pupils are usually dilated and the conjunctival reflex becomes less marked as the administration proceeds.

The color of the face is invariably altered, the change being most marked at the height of the muscular phenomena. Apoplæctic looking patients usually become deeply cyanosed.

With the pure gas, and close coaptation of the mask, the time taken to produce anæsthesia is about one minute.

THE ADMINISTRATION OF ETHER.

Ether may be administered alone or with some other anæsthetic to avoid the suffocating sensation of ether as well as to hasten the period of unconsciousness. When given alone, it should be given gradually, and sufficiently diluted so as not to excite laryngeal irritation. The methods of administration are classed as (1) closed and (2) semi-open. In the closed method the patient inhales ether from a bag closed from the air, and whatever air enters does so through valves arranged for that purpose. In the semi-open type, ether is poured on a sponge or on gauze which is surrounded by more or less impervious material, and being open at the top the patient breathes air through the sponge containing ether. The method of using inhalers of the Clover type is as follows: Two ounces of ether are placed in the reservoir, the mask adjusted, and the indicator turned to zero. The patient is told to breathe freely, and the mask is gently and firmly applied. When the patient has taken two or three deep breaths, the air-bag is filled by placing it in position as the patient expires the air from the lungs.

He now breathes in and out of the bag. The indicator is gradually moved one-quarter the distance round, when the patient breathes one-quarter ether and three-quarters air; this vapour is breathed until tolerance for it is established, and then the indicator is rotated slowly round until the patient is getting full strength of the vapour.

During ether narcosis the pupils are not much used as a guide; they are more uniformly influenced in chloroform anæsthesia. Excessive doses produce a slowly reacting pupil and wide dilation. We get the same result when much shock is present with loss of blood and the anæsthetic has been freely given. It does not do to push the ether so that the light reflex is almost abolished. The younger the subject, the more active is the pupil reflex; but in testing all eyes it is important to avoid rough handling, and to compare the two eyes, since one eye rapidly loses its reaction. Unconsciousness supervenes in from 90 seconds to 2½ minutes, first with rigidity of the muscles, which quickly give place to flaccidity. As soon as the conjunctival reflex is abolished the indicator may be brought back so that the patient is getting half ether, half air, and kept there until the operation is over. The degree of narcosis varies, depending on the region of the body being operated on. Operations on the abdomen, the genitals, the rectum and perineum, a deep anæsthesia is required, and if not kept up during the

operation, movement and vomiting will result. The advent of returning consciousness is commonly shown by the patient's efforts at swallowing, also the return of conjunctival reflex, and alteration in respiratory rhythm. It should be borne in mind that the severity of the after-effects depends on the amount of anæsthetic inhaled and the toleration the patient has for it.

THE ADMINISTRATION OF CHLOROFORM.

The inhalation of two per cent. of chloroform will produce the ordinary phenomena up to the fourth stage. A stronger vapour is required to produce the last stage of anæsthesia and an overdose.

First, at the beginning, there are impairment of consciousness, fullness in head and ringing sounds in ears, with palpitation. Pulse is at first fuller, but soon becoming weaker. Pupils are sensitive to light and moderately dilated. In the second stage the mental powers are impaired. The patient may sleep or be noisy, and sensation is blunted. This amount of anæsthesia is sufficient in parturition. Respiration and circulation are both quickened, but the pulse later slows down and becomes weaker. Pupils are still dilated, the light reflex present, and globes move easily.

In the third stage, that of complete anæsthesia, when all voluntary movements are gone, the muscles first stiffen and then relax. Respiration and circulation become about normal, and usually grow weaker as narcosis is continued. The pupil contracts and remains smaller than normal in this stage, globes are fixed and pupil reflex persists, but the conjunctival reflex is gone.

In the fourth stage the patient is profoundly unconscious, respiration and circulation are enfeebled, pupils widely dilated, and do not react to light. This depth of narcosis is decidedly dangerous. When the condition lapses into stertorous breathing, gradually becoming dyspnoic, irregular and shallow, feeble, quick, compressible pulse, the state of paresis is reached.

Regarding the effects of chloroform on the circulation, all competent authorities agree that after a slight initial rise the pulse gradually becomes feeble from a fall of blood pressure. What causes the fall is a matter of dispute. Some say that the heart muscle is the primary cause, losing its contractility by direct absorption of the drug from the coronary arteries; others again maintain the nervous centre is first affected, and a paralysis of the vasomotor system follows. blood then accumulating in the large veins of the abdomen.

In the administration of chloroform many methods are used, and may be generally divided into, first, those which use some form of a dosimetric inhaler, and second, those in which the drug is given by dropping on a towel, mask, etc.

The first inhalers designed to supply a definite percentage of chloroform were those of Snow, Clover, Sanson, Squire and Junker. Junker's, much modified and improved, is the only one of these in present use. The principle of the construction of these instruments, that is, to regulate in definite proportion the quantity of chloroform inhaled, is the right one. At present those devised by Dr. Rapheal Dubois, Vernon Harcourt, and Dr. Levy are used.

There is one method of administering chloroform and C. E. in operations on the face, jaw and tongue which has been used with much success.

This method is the use of tubes passed through the nares into the nose-pharynx, and packing the mouth with a strip of gauze, or a bandage from the opening in the larynx, as far forward as the nature of the operation will allow.

The tubes are then brought over the head and inserted into a special mask, and the anæsthetic dropped on the mask. The drug can thus be given continuously without interference with the surgeon, and the blood is also prevented by the packing from flowing back into the throat.

THE ADMINISTRATION OF ETHYL CHLORIDE.

Within the last few years ethyl chloride has been employed as a general anæsthetic. Although it has been known as such since 1849, owing possibly to impurity in the drug, it was found to produce convulsions and respiratory failure, and consequently fell into disuse. Even now certain of the preparations give unsatisfactory results, so that it is necessary to use care in obtaining the drug from reliable makers.

No very complete research with regard to the action of this drug has yet been undertaken. Dudley Buxton says, "It is extremely difficult to arrive at an accurate estimate of the safety of chloride of ethyl. . . . It is probable that chloride of ethyl is less safe than nitrous oxide, and must be placed between ether and chloroform in normal patients, but before ether when lung and kidney complications exist. Some authorities believe ethyl chloride to be safer than nitrous oxide and other anæsthetics for administration to quite young children. The prudent will recognize, however, that it is not the wholly in-

nocuous agent which some persons have asserted. In the hands of the experienced it is no doubt a fairly safe anæsthetic, but not one to be employed by the inexpert or incautious."

The occurrence of syncope and respiratory failure, the latter particularly in children, has been recorded by several observers. In the administration of ethyl chloride for routine work, it is best administered from a closed inhaler, with partial or complete exclusion of air. When an inhaler is not used, a towel folded into a cup shape serves the purpose very well in very young children or extremely nervous patients.

SPINAL ANÆSTHESIA.

In 1885 Bier was the first to attempt the production of surgical anæsthesia through injections into the spinal canal. Cocaine was the first drug employed, but considered by him too dangerous for general application. Later adrenalin chloride was combined with cocaine, which lessened somewhat the dangers associated with this method, but did not altogether overcome them. Among other similar drugs, stovaine and novocaine have proved less toxic, and are now the most generally used. The fatalities and sequelæ following spinal injection have been attributed not only to the toxicity of the drugs used, but also to the use of water and normal saline for the purpose of solution. To overcome the latter, cerebro-spinal fluid drawn from the subarchnoid space has been used as a solvent for the drug, and this has to be done with great antiseptic care. The puncture may be made between the third and fourth or second and third lumbar spines.

With this form of anæsthesia I have had no personal experience, but some of the dangers and after-effects of this method of anæsthesia given by the authorities are: "aseptic" meningitis, convulsions, fever, severe headache, nausea and faintness, while persistent paraplegia has been met with. Sometimes there is failure to establish anæsthesia. However, the more common after-effects are, and some of these always occur: intense headache, inability to sleep, nausea, vomiting, cramping pains in the abdomen, and great depression.

Dudley Buxton says, "Summing up the arguments in favour of spinal analgesia, those who have employed the method fail to show that it is safer than chloroform or more free from unpleasant sequelæ. Hare regards it as only applicable to cases for which general anæsthesia is an impossibility. It may be pointed out that the use of regulating apparatus for giving

chloroform has reduced the dangers to a minimum, so that it seems hardly justifiable to employ a method, the safety of which is not by any means established, in place of one, the dangers of which may be accurately estimated and are extremely small when entrusted to competent hands."

ACCIDENTS OF ANÆSTHESIA AND THEIR TREATMENT.

1. Accidents connected with respiration:

Foreign bodies becoming loose in the mouth, and either get drawn into the larynx and farther into the trachea, or become fast in the larynx and set up spasm.

Profuse salivation may suffocate the patient unless prompt measures are adopted.

The falling back of the tongue so as to occlude the air passage is another common accident.

Treatment.—If a foreign body becomes loose, a gag must be inserted, and the finger used to seek out the obstruction. The head and shoulders should be lowered and laryngeal reflex excited, by slapping the thorax and drawing forward the tongue by means of tongue forceps. In long operations the head should be turned to the side, to prevent the tongue falling back and to hasten the egress of blood, vomited matter, etc. When blood, pus, etc., have been aspirated into trachea, the head is turned to one side, mouth opened and propped, and pharynx mopped out. When these measures fail the patient should be inverted and the fluids allowed to drain out. Artificial respiration should also be used.

If a solid body cannot be removed by forceps, tracheotomy is to be performed.

In emergency operations, when food has usually been taken within a few hours of the operation, vomiting is pretty sure to occur either at the beginning or end of the operation, and consequently danger of asphyxia from this vomited matter being drawn into the larynx. In such cases it is wise to wash out the stomach before inhalation. Respiration may also be interfered with by pressure on the chest due to assistants leaning upon him, or tight bandaging, and also with edentulous patients sucking in the lips; feeble and fat people with fluid in chest; rickety children—any of these, when placed on the side with compression of the lung, may cause failure of respiration.

When respiration grows feeble, with duskiuess arising from too little air, the inhaler must be removed. Rhythmic traction on the tongue and vigorous compression of the chest will usually suffice to restore respiration in minor difficulties.

In intestinal obstruction there is danger of regurgitation of stomachic and intestinal contents into the mouth, and subsequent aspiration into the larynx. When this occurs the head should be immediately turned on the side.

To prevent this condition lavage should be done before the operation, the anæsthesia should be light, so that the larynx may remain sensitive.

In operations on the lung, for hydatid cyst, or for empyema, the patient may cough up large quantities of pus, blood, etc., from the lung, or this may pass into the lung and interfere with respiration.

Beyond being prepared for such emergencies and keeping such light anæsthesia that the patient does not lose the power of coughing, little can be done. Posture is important; the sound lung should be kept uppermost and the patient turned to the diseased side. Artificial respiration is extremely dangerous in these conditions, Schafer's method being the only one that should be employed. Cyanosis must be watched for and air or oxygen given.

In accidents connected with the circulatory system the chief symptom is syncope. This may be caused by fright just before anæsthesia, from shock in prolonged operations, profuse hemorrhage, from entrance of air into a vein, or from overdose of the anæsthetic.

Treatment varies according as the patient is suffering from slight syncope, or from poison by an overdose of the drug. He should be placed supine, legs and arms raised, and head dropped lower than the body; smelling salts given; rubbing of the præcordium; inhalation of nitrite of amyl, and the artificial respiration practised at once. An enema of brandy, a half to two ounces in hot beef tea, may be tried.

In grave cases bandaging the abdomen is certainly good, and should be used in surgical shock. Of course, artificial respiration by Sylvester's and Howard's methods used together must be begun early.

Hypodermic injections of digitalin and strychnine, as well as solution of gum camphor in olive oil, are of service when chloroform was the cause of the failure. When the cause was hemorrhage, transfusion of normal saline with a half to two drams of adrenalin chloride, either into a vein or subcutaneous tissue, is exceedingly valuable.

In the post-anæsthetic stage accidents may happen from faulty position, collapse from shock, and chilling of the body. Faintness and vomiting are dangerous, if the patient's position is

not supine, with head low, or turned to one side to prevent aspiration of vomited matter.

Treat collapse by heat applied to the body. In syncope associated with surgical shock, brandy rubbed over the lips, tongue and gums, sinapisms over the præcordium, epigastrium and calves of the legs assist in producing reaction. The head should be kept low. Hot water or hot saline (110 degrees F.) injected into the bowel, in large quantities, with hot water bottles to the feet and sides, raising the feet and rubbing the limbs from the extremities towards the trunk, would give the most satisfactory results.

INTESTINAL OBSTRUCTION.*

BY INGERSOLL OLMSTED, M.B., HAMILTON.

Intestinal obstruction, or as the Germans term it, "ileus," is a condition which on account of its high mortality demands the attention of every practitioner. During the last few years some very interesting examples have come under my care, and it appeared to me that a review of the subject might be of interest to the members of this Association.

In cases of acute obstruction, the symptoms soon become very alarming, and unless relieved quickly death usually results. Although for many years laparotomy has been performed by surgeons to relieve the obstruction, success has not been as frequent as it should have been, and only in recent years, since the general practitioner has learned the great danger of procrastination, has the mortality been lowered. Even at the present time many physicians hesitate to advise surgical treatment. It is often impossible in these cases to determine the site and nature of the trouble. Too often the patient is saturated with opium, has a distended abdomen, weak, rapid pulse; low temperature, and fecal vomiting. As yet we do not know just why an acute obstruction of the bowel should cause such a depressing effect on the heart and nervous system.

Intestinal obstruction may be divided into two groups: 1. Strangulation ileus, in which the lumen of the intestine is obstructed, and in addition to this, the mesenteric blood supply is interfered with. 2. Obturation ileus, in which the bowel is blocked, but the blood supply remains undisturbed.

Among the more usual causes of ileus may be mentioned: peritoneal adhesions, which may share a loop of the small bowel; growth in bowel wall, or tumor of neighboring organ compressing the bowel; torsion of a loop of bowel; invagination; and block by foreign body, as a ball of hair, gall stone, etc.

In intussusception death may result without the lumen of the bowel becoming completely obstructed.

Where the obstruction is chronic there are usually alternate periods of constipation and diarrhœa. The small bowel is more frequently strangulated by bands than the large bowel, and volvulus usually takes place in the sigmoid. When this occurs most marked distension of the abdomen may follow if the case is allowed to go without operation.

The most frequent causes of peritoneal bands are: appendi-

* Read at meeting of Ontario Medical Association.

citis, tuberculous peritonitis, abdominal operations, diseases of the gall bladder, hernia, etc.

Appendicitis, perhaps, has given rise to more examples of ileus than any other single cause. When suppuration has occurred and more or less localized or general peritonitis has followed, the ileum frequently gets bound down in an unusual position, giving rise later to angulation and obstruction.

In strangulation ileus we have two important conditions present—interference with the flow of the intestinal contents, and disturbance of the arterial circulation. The pain, shock and reflex vomiting are due to the blocking of the blood supply, causing thereby injury to the nerves and peritoneum. One should never wait until the vomiting becomes fecal in character. These are the cases where we get marked toxemia, necrosis of the bowel, and peritonitis.

In cases of chronic obstruction due to a growth, or other cause, constipation is the first symptom which attracts attention. This is followed by distension, and later, vomiting.

When a patient, previously in good health, has acute abdominal pain, nausea, vomiting, and symptoms of shock, without local tenderness or muscle spasm, obstruction should be suspected. If a distended loop can be palpated and peristalsis observed, the diagnosis can be made. An enema will often bring away fecal matter, but relief is not secured. A blood count will show usually a leucocytosis.

In obturation ileus, as for example, cancer of the bowel, there is usually a history of previous attacks of constipation and colic, which have been relieved by high enemata or purgatives. The symptoms are not as characteristic as in the strangulation variety. Distension of the abdomen comes on later, and the constipation is obstinate. The distended bowel becomes evident, and peristalsis will show itself. Before the abdomen becomes distended, a careful examination by palpation will often reveal the presence of a tumor. When the obstruction is in the small intestine, peristalsis is seen early; when in the large bowel, it occurs much later, and vomiting does not occur for some days, as a rule. Absolute constipation, early vomiting with or without pain, indicate a block of the small bowel high up.

Undoubtedly cases of obturation ileus will survive much longer without operation than those of strangulation, yet in both forms an early operation will offer a better chance of recovery. In cases of block by a gall stone, the symptoms are usually very urgent, and require immediate relief.

Kocher has well said, that ileus, being a mechanical condition,

mechanical means only should be employed for its relief. Intestinal obstruction should always be looked upon as a surgical lesion. With the exception of high enemata and lavage of the stomach, no conservative means should be employed. When great pain is present, morphia may be given once, but a surgeon should be immediately called. Any food or liquids should be avoided, and cathartics should not be given. The abdomen should always be carefully observed, as in the early stages peristalsis can frequently be seen. This will often assist the surgeon in deciding where the incision should be made.

When it is decided to open the abdomen, the surgeon should be prepared for all forms of obstruction. A carefully taken previous history will aid very much in arriving at the proper diagnosis. The various forms of internal hernia should be remembered, such as in the foramen of Winslow, paraduodenal fold, slits in the mesentery, Meckel's diverticulum, etc.

Before operating wash out the stomach and give a general anæsthetic. Only in extreme cases, where only an enterostomy seems advisable, will local anæsthesia be preferable. When it is possible to remove the obstruction and close the abdomen this should be done, for the small bowel is very prone to form adhesions which will materially interfere with the subsequent success of the case. The discharge from the small bowel is extremely irritating to the skin, and should seldom be allowed to come in contact with it. When the patient is in such a low state that it seems inadvisable to prolong the operation, the bowel may be drained by means of a Paul tube, or drainage tube stitched in the bowel by the method recommended by Kader in gastrostomy. The bowels should be exposed to the air as little as possible, and they should always be emptied before returning them to the abdomen. If a resection be required, an end to end anastomosis is preferable to a lateral anastomosis. With a Doyen or Moynihan clamp this can be quickly and safely done. For the large bowel the Connell suture is perhaps better than the continuous suture.

It is most important when operating in such cases to keep the gauze or other drain from remaining in contact with the small bowel. The omentum should always be utilized to cover the bowel. The exaggerated Fowler position, with saline by the bowel, as recommended by Murphy, will assist materially in the recovery of the patient.

The following cases exemplify some of the varieties of obstruction met with:

Case 1.—O. F., aged 15, seen with Dr. Bennett, of Jarvis, on

17th December, 1906, gave the following history: In September, 1905, patient had an acute attack of appendicitis, from which he recovered. He had two slight attacks in March, 1906, and again in November a severe attack, with general peritonitis. He was in bed for two weeks at this time. On the 13th of December, that is, about three weeks after his last attack, symptoms of obstruction appeared. He had crampy pains in his bowels, beginning on the right side and extending all over the abdomen. No feces or gas passed per anum. On the 14th and 15th his condition was much the same, except that the abdomen became distended, and he vomited. On the 16th the pains were severe, vomiting became fecal. There was no tenderness on pressure. At 4 a.m. on the 17th of December, after vomiting fecal matter, he passed some flatus. This gave him great relief.

On examination the patient seemed weak; pulse 90, small and thready; temperature normal. The abdomen was moderately distended and not tender on pressure. Peristalsis could be seen and felt in the lower right quadrant of the abdomen. He had not vomited since the early morning. At twelve noon, with Dr. Bennett assisting, the abdomen was opened through the right rectus. The ileum was found distended, hypertrophied and matted together by recent adhesions. Near the caecum the ileum was found kinked by the proximal and distal portion being bound together by adhesions. These were all divided, the bowel opened and emptied by drawing it on to a long glass tube, to the end of which a rubber tube was attached, as suggested by Moynihan. Great care was taken to handle the bowel gently and expose it as little as possible to the air. The abdomen was then closed. The patient rallied nicely, and convalescence was rapid and uneventful. In this case the appendix was not removed.

Case 2.—W. S., aged 43, referred to me by Dr. Manes, of Sheffield; was admitted into the City Hospital, Hamilton, on the 21st of February, 1906. In December, 1905, he had a fairly acute attack of appendicitis, from which he had a rather slow convalescence, but was able to return to work about the middle of January, 1906. He remained well for one month, when he had some crampy pains in the abdomen. For three days previous to his admission he had very severe pains, which required hypodermics of morphia. He vomited. There was no tenderness found when palpating the abdomen.

When admitted the patient looked and felt well. With the exception of a slight fullness in the lower part of the abdomen, the examination was negative. No peristalsis could be seen. He had not vomited since that morning, but had had little crampy

pains during the day. With Dr. Manes assisting, the abdomen was opened through a right oblique incision. The ileum was found very much hypertrophied, distended and bound down to the caecum by adhesions which caused angulation of it at a point four inches from the ileo-caecal valve. The bowel was freed, and the diseased appendix removed. The ileum was then opened, emptied and closed.

As it seemed extremely probable, from the presence of the large abraded area, that there would be a repetition of the obstruction, a lateral anastomosis was made with sutures between the ileum, ten inches from its termination, and the right side of the transverse colon beneath the omentum. The abdomen was then closed. He seemed perfectly well for four days, when there was a return of his old symptoms, crampy pains, and also some peristalsis of the bowel. I opened the wound and found the bowel distended and anastomotic union perfect. The ileum was again opened, emptied and closed. The abdominal wound again carefully sutured. He made a perfect recovery, and has been well ever since.

In this case there was tremendous hypertrophy of the ileum. The obstruction the second time was evidently due to partial paralysis of the lower end of the bowel, due to the previous distension.

Case 3.—A. R., aged 27, admitted into the City Hospital 12th August, 1905, in order to have an operation for a left inguinal hernia, which he had had for two years, and for which he had worn a truss.

His previous history was good, with the exception of a severe attack of typhoid when in Africa with the first Canadian Contingent.

On the 15th of August, three days after admission, a modified Halsted operation was performed. The only point of interest observed at the operation was a calcareous plate in the sac wall. For five days after the operation the patient felt comfortable and well. His temperature and pulse were normal. On the evening of the fifth day he was taken with pains in the abdomen. Some friends had visited him during the day, and he had eaten a lot of solid food. There was no rise in temperature, but his pulse increased from 60 to 80 beats per minute. He vomited frequently during the night, and the pain was quite severe in spite of several doses of morphia. When I saw him the next day he looked ill and in great distress. Weak pulse, clammy perspiration, and slightly distended abdomen. The wound was examined and found nicely healed. I felt certain that the hernia had noth-

ing to do with his present trouble. He had vomited several times, and the vomitus consisted of undigested food. The pulse was 110 and of poor volume; temperature 98. The abdomen was moderately distended and tender on pressure.

A median incision was made between the umbilicus and pubes. A large distended red small bowel presented. Some turbid serous fluid escaped from abdomen. In the pelvis was the collapsed small ileum. On the left side of the spine a stricture of the bowel was found. The distended bowel was opened and emptied. Several large lumps of undigested meat were found in the intestine, just above the stricture. These had blocked the bowel. The proximal bowel had been shoved downwards over the fixed constricted portion, causing acute angulation. The mesentery was contracted about an old diseased lymphatic gland from which an old band extended on to the bowel.

After closing the enterostomy wound, I resected six inches of intestine together with the diseased gland and atrophied mesentery.

The stricture bowel was about three feet from the duodeno-jejunal fold. An end to end junction was made with sutures. The abdomen closed with through and through sutures of silk-worm gut.

The patient recovered nicely, with the exception of an infection of the abdominal wound. This had to be opened up, and necessitated a subsequent operation to prevent hernia. He recovered perfectly.

The cause of the trouble in this case is interesting, coming on after a hernia operation, and due most likely to the old diseased mesenteric gland.

Case 4.—Mrs. J. T., aged 60, was brought to the City Hospital by Dr. Quance, of Hagersville. She had had no passage from the bowels for six days. During the past two years she had diarrhœa, at times there were ten or twelve stools daily. They then became constipated. Enemata were given, but no result. Only a small quantity of fluid could be given at a time by the bowel. Purgatives were without effect. The abdomen became distended and irregular pains were felt.

On admission her condition was as follows:

A small, spare woman, in good condition. Pulse 90 and regular. No vomiting. The abdomen was moderately distended, especially on the left side and above. Liver dullness absent. A lump could be felt on the left side to the inner side of the anterior superior spine of the ileum.

Under ether anæsthesia a six-inch median incision was made

between the pubes and umbilicus. The sigmoid was very much distended, and its lower part was encircled by a hard growth which involved about two inches of the gut. The uterus was small and several small fibroids could be felt. The small bowel was not enlarged. The liver was palpated, but no nodules were felt. The gall bladder normal. There were no enlarged glands in the meso-sigmoid. The growth was brought into the wound and removed.

The divided ends of the bowel were joined by circular sutures of celluloid linen. This was rather difficult in accomplishing owing to the low position of the growth. The omentum was then brought down and tucked around the suture line. The abdomen was closed. A large rubber tube was passed through the anus into the rectum, and a large quantity of fecal matter escaped.

The patient stood the operation well. She was placed in bed with shoulders slightly elevated. Other than a slight infection of the abdominal wound, her recovery was uneventful.

It was impossible during the operation to protect the abdominal wound properly with gauze, and to this fact is attributed the wound infection.

Case 5.—A. H., 63 years of age, referred to me by the late Dr. Ross, of Dundas, resembled very much the last case. In this case, however, there were nodules in the liver. The growth was excised, bowel ends cauterized, and closed with purse string sutures. The distal end was inverted into the rectum. The upper end was brought through a small lateral split muscular opening. The bowel was attached to a Paul tube and drained. Abdominal wound closed and sealed with a collodion dressing.

This patient was operated on on the 21st February, 1907. He returned to his home and has been living in comparative comfort since.

It appears to me wise in such cases to remove the growth and make an artificial anus. This can be done nearly as quickly as an inguinal colotomy, and the result is more satisfactory.

DISCUSSION ON DR. OLMSTED'S PAPER.

Dr. McKeown considered that intestinal obstruction may be suspected when a patient complains of requiring a constantly increasing purgative dose to cause a bowel movement.

I have noticed lately slight oedema of the abdomen in cases of obstruction, and feel that this is a common although unrecognized symptom.

There are two causes for large percentage of deaths following operation: Firstly, the depleted condition of the vessels

caused by the persistent vomiting; this may be so great as to completely check the secretion of urine. The second is the danger of suffocation caused by the contents of the bowel being forced by the distended abdomen into the pharynx, and during anaesthesia being drawn into the trachea. I would strongly advocate sub-cutaneous or intravenous salines before operation, and during operation the placing of the head in such a position as to allow regurgitated fluids to flow out by gravity.

During operation the site of the obstruction may always be found by following in the direction in which the congestion increases.

Dr. Anglin, then congratulated Dr. Olmsted on the very full presentation of the main points of diagnosis and treatment of intestinal obstruction. He spoke of the danger of delay in these cases of obstruction, characterized by the cardinal symptoms of pain, vomiting, constipation, collapse and distention, and emphasized the futility of persisting in giving cathartics, and the importance of early operation if life is to be saved. He described several illustrative cases given, showing unusual conditions.

Dr. Marlow spoke concerning the necessity of emptying the intestine and the saving value of a fecal fistula, whether occurring itself or artificially made. Illustrated by recent case where a large appendicial abscess was opened. During the first week pus and fecal matter was discharged in abundance. On the seventh day the discharge ceased abruptly to contain fecal matter. Vomiting soon followed, and rapidly became fecal in character; was very abundant, and continued for twenty-four hours until relief was afforded by inserting the small finger into the wound and manipulating about until a discharge of gas and fecal matter was established. This was soon followed by cessation of vomiting, and steady progress was made towards recovery.

Also in reference to the early appearance of distension in cases of obstruction due to strangulation. This is not always the case, as seen in a recent case of strangulated right inguinal hernia, reduced en masse about twelve hours after its descent and referred for operation. About twelve hours still later, on account of persistent and severe abdominal pain, and marked elevation of pulse rate, distension was not present, and the abdominal wall was very rigid and tender.

On opening the abdomen there was very little distension of the intestines. After incising the hernial ring, a gangrenous portion of intestine was drawn out and resected to the amount of

nine feet. The immense amount of gangrene that had occurred within little more than twenty-four hours was due to spreading thrombosis of the mesenteric vessels. In this case an æsthenic condition ensued, and death followed five days later. The post-mortem examination revealed only slight localized peritonitis, there being no leak, no further gangrene or mesenteric thrombosis.

Dr. Oldright saw a lady aged about 75, who had an old femoral hernia, which she frequently reduced herself. On this occasion she had done so, but pain and vomiting, almost as acute as before the reduction, continued. Rectal lavage was employed without permanent relief. Later Dr. A. A. Macdonald saw her with me, and we did not consider it advisable to operate, except as a last resort, on account of chronic bronchitis and feebleness. So we ordered free and repeated lavage by high enemata, with small doses of hydrorg. sulph. Before leaving, however, I made a rectal and vaginal examination, and discovered a mass behind the pubes. Making *taxis per vaginam*, I succeeded in freeing the intestine from its containing sac, and the symptoms at once subsided.

A second case worth referring to was one on which I operated last summer, and where palpation had revealed a mass above and to the left of the umbilicus, which gave the semblance of intussusception. On opening the abdomen the mass which had caused the obstruction was found to be several coils of intestine glued together by tubercular peritonitis. Separation of the coils relieved the obstruction, and an outdoor life has resulted in the restoration of the patient.

In a third case of obstinate refusal of the bowels to move, attended with vomiting, I found an enlarged gall bladder; jaundice was present. I opened the gall bladder and removed a number of calculi, one of them from the common duct. There were no adhesions in adjacent portions of intestine, and no mass felt in them, nor was any afterwards discovered in the stools. What was the cause of the constipation? Is it possible that it was simply the mechanical pressure of the distended gall bladder?

Dr. Hay spoke as follows: In spite of the constantly recurring discussions on this subject; in spite of the volumes that have been written on it, we are slow to learn the lesson that prompt action means life, and delay means death. Once the diagnosis of obstruction is made, proceed to operate; do not lose valuable time in waiting for the particular cause of the obstruction. Tait has said, "Absolute accuracy of diagnosis is far from

possible; only the ignorant assert that it is, and only the fools wait for it." Septic paresis is the condition that is most likely to be mistaken for the ordinary obstruction; but fortunately the call for operation is as loud in this condition as though it were caused by a non-inflammatory anatomical bar. Colicky pain, vomiting and absence of abdominal rigidity, and no rise of temperature should always excite suspicion.

A little gas may escape as result of your enemata, not followed by relief. A large amount of offensive gas escaping suddenly may lead us to hope that the obstruction has been overcome. Visible intestinal peristalsis is a confirmatory symptom, after which there must be no delay.

If on inspection or placing the hand lightly over the abdomen, distended coils are found *without* peristalsis, paresis has set in and the condition is very grave indeed.

Morphia should not be given till the diagnosis is made and the line of treatment decided upon.

Dr. MacKinnon, after congratulating Dr. Olmsted on the instructive character of the paper presented to the Section, drew attention to the great harm done to the patient by the use of purgatives, in elderly patients especially, except of the simplest and mildest nature. "In a case which I saw some years ago, a patient, aged 73, complained for several years of gradually increasing constipation. Ten days before I saw her the abdomen began to show distension, and she occasionally had vomiting. The attending physician used reasonable purgatives for two or three days, then asked for a consultation. A physician of large experience urged continuance of active purgation. On opening the abdomen two or three days later a cancerous stricture of the splenic flexor of the colon was found; but the condition of the patient—now almost moribund—left no possibility but to resect the bowel, and though an artificial anus was made to give relief, the patient survived only a few weeks. Had she been operated upon a few weeks earlier, or even had she been spared the purgation, the resection could easily have been performed."

Dr. MacKinnon was glad that attention had been called to lavage in every case of obstruction before the anæsthetic was given. In no case should the anæsthetic ever be given until the stomach is thoroughly washed out. In that way alone can death from asphyxia on the operating table be avoided.

Progress of Medical Science.

MEDICINE.

IN CHARGE OF W. H. B. ATKINS, H. J. HAMILTON, C. J. COPP,
F. A. CLARKSON AND BREFNEY O'REILLY.

Myatonia Congenita (Oppenheim).

Ludwig Rosenberg (*Deutsche Zeitschrift für Nervenheilkunde*).

In 1894 Oppenheim discovered in children a localized palsy in the distribution of the ulnar nerve which he described as delayed development of the interossei muscles, and in 1898 he made the differential diagnosis between this condition and infantile paralysis. In 1900 he made the following observation:

“On several occasions I have had opportunity, especially in the last few years, to observe in children in the early months or in the first or second year, a condition which, so far as I know, has not been mentioned in the literature. The parents complain that the entire body, or more particularly, certain parts, particularly the lower limbs, remain flaccid and motionless.”

The principal objective symptom is a striking condition of hypotonicity or actual atony of the muscles, associated with definite weakness or absence of the tendon reflexes. The flaccidity is so great that the extremity lies in a position of extreme extension of all joints, and there exists a more or less definite tremor. There is always diminution of active motility, varying in degree in different cases. In the parts where disturbance is most outspoken, the extremities lie motionless, as if there were complete paralysis. By more exact investigation, however, it is found that individual muscles or groups of muscles are involved, and these cause weakness and inability to walk. If the disease is only moderately developed, the hypotonicity is most pronounced, and the muscle-deficit is shown only in the incompleteness of certain movements. In only one of Rosenberg's cases was the disease so extensive as to weaken the musculature of the lower limbs and that of the trunk and neck, so that a child of eight months could neither sit erect nor lift the head. In this generalized distribution of the myatonia the muscles of the eyes, tongue and throat escape. The diaphragm also acts normally, although the intercostal muscles have been seen to be affected.

The muscles are atrophied, and in severe cases show quantitative loss of electrical excitability, or even complete loss, but

only once has a sluggish response to the galvanic current been observed. There is no loss of intelligence, sensation or acuteness of the special sense, so far as it is possible to test these functions.

The disease appears to be a congenital affection, and is antipodal to Little's disease.

The lesion is probably located in the muscles. The prognosis is not entirely unfavorable, and entire restoration is regarded as possible, though the development of normal muscle conditions may require months or years.—*Albany Med. Annals.*

The Significance of Cytological Examination of the Cerebrospinal Fluid.

F. Apelt (*Monatsschrift für Psychiatrie und Neurologie, Band xx, Ergänzungsheft*).

The differentiating value of lumbar puncture has been actively discussed in Germany and France, particularly with reference to the diagnosis of certain nervous affections. Several investigators vaunted its importance, though Oppenheim believed it not certain in cases of tabes, cerebrospinal syphilis and alcoholic neuritis. Merzbacher believes that lymphocytosis is one of the most constant symptoms of general paresis, and Nissl agrees with this, but insists that it is only one manifestation, and is to be considered with others as an enormous increase of cellular elements as found in tabes, syphilitic infections, tuberculous and other forms of meningitis and also in alcoholism. He has also found lymphocytosis in patients years after a luetic infection. Merzbacher studied twenty-six patients with reference to this point, and all uncertainties rejected, determined lymphocytosis in 57.5 per cent.

The technique comprised the use of the tubes and pipettes of Nissl; the specimens were centrifugalized with a water-centrifuge giving 2,500 revolutions a minute and a pressure of three atmospheres. Small or large, clear or dark, mononuclear elements and larger, lightly tinted, irregular cells (endothelia) were seen. The specimen is first viewed with a small magnification of sixty to eighty diameters, which reveals by the abundance of cells, whether a "strongly positive" result is had, or simply a "positive result." With magnification of 350 to 450 diameters the number of elements in one field varies from sixty to one hundred in the marked cases, and from eight to fifty or sixty in the other class. A pressure of over 150 millimeters of water was regarded as pathological. Apelt made 150 examinations in 134 patients and summarizes the results as follows:

1. In general paralysis the cytological examination of the cerebrospinal fluid gives valuable confirmation of the diagnosis. Sufficient has been done in this direction to justify this conclusion. As to whether lymphocytosis is an early symptom or not, further work must be done.

2. In tabes the fact is established that a positive lymphocytosis is present, whereas in alcoholic multiple neuritis the reverse is true. Furthermore, this lymphocytosis is not only a definite symptom of tabes, but appears in the early stage. That the lymphocytosis in manifest and long-standing syphilis fluctuates at about fifty per cent., and is less frequent, is also a significant fact.

3. The determination of tabes in cases of neurasthenia with syphilitic history with symptoms resembling tabes cannot now be established by the lymphocytosis.

4. Of other organic nervous diseases, as multiple sclerosis and cerebral tumor, an increase of lymphocytes has been found in a small number of cases.

5. Patients suffering with neuroses or other internal maladies and healthy persons, present no lymphocytosis. When a positive result was obtained, there had been either a preceding lues, or it was explained by certain physical symptoms, as increased pressure or choked disc, suggestive of brain tumor.—*Albany Med. Annals.*

Exploratory Puncture of the Pericardium with a Report of Three Cases.

Sears (*Boston M. and Surg. Journal*), and Doek "Paracentesis of the Pericardium" (*Brit. Med. Jour.*), contribute their experience in this operation, while the general aspects of the subject are discussed by each. Sears has had personal observation of thirteen cases with positive results in eight cases. He chose the fourth and fifth right spaces, the fifth and sixth left inter-spaces, at or beyond the extreme limit of dulness, making twenty-three attempts. His greatest number of successes were obtained through the fifth or sixth space at or beyond the outer limit of dulness. This route has the great disadvantage of traversing the pleura and often the lung, and is especially unfavorable in purulent pericarditis. Sears says the needle always comes in contact with the heart during some part of the process. In fact that organ is sought when the flow is not immediate in order to insure the presence of the needle in the sac. The heart seems very tolerant of puncture, and according to evidence here adduced from West and others, the operation

from the point of view of cardiac injury must be considered reasonably safe. Sears regrets that paracentesis pericardis is so rarely resorted to and so reluctantly undertaken, and urges its early and more frequent adoption where there is marked pericardial effusion. Dock discusses the methods of paracentesis and opening of the pericardium, remarking that operations upon the pericardium are never free of danger, but they are justified by the possibility of more serious danger that exists in many cases.

Pilocarpine in Pruritus.

We note in the May number of the *Medical Record* a short article by John Reid, of New York, in which he recommends the use of Pilocarpine in doses commencing with 1-8 grain (Wymouth), combined with 1-120 grain atropine, to counteract the tendency to sweating, in repeated doses. He finds its greatest value to be in those cases associated with icterus, but also useful in those cases occurring without discoverable cause, and in pruritus vulvæ or the various skin lesions.

Decomposition of Chloroform.

The following is from the *Medical Record*, and may prove of value to the professional anæsthetist:

An ingenious device for automatically indicating decomposition occurring in chloroform intended for use as an anæsthetic has been suggested by Breteau and Woog. It consists in making use of the indicator congo red for determining the development in the chloroform of even the minutest traces of hydrochloric acid. In order to do this conveniently a small disc of elder pith stained with a solution of congo red in absolute alcohol is placed in each bottle containing the chloroform. Normally the stained disc retains its color indefinitely, but if, as the result of the action of air, light, moisture, etc., decomposition begins, hydrochloric acid is set free and the indicator changes from red to blue. The chloroform then should be either discarded for internal use or be repurified. The *Lancet* states that it has tested this method, and has found it extremely delicate.

Rapid Demonstration of Tubercle Bacillus.

Bloch, in the *Berlin Klinisch Wochenschrift*, April 29th, 1907, suggests the following modification of the ordinary intra-peritoneal injection, into guinea pigs, of tubercular material for diagnostic purposes, and finds that results may be expected in about 10 days, instead of as at present from three to six weeks.

He injects the material (say centrifugised urine) into the animal's groin, then palpates the inguinal glands, which are felt as minute kernels, and with considerable pressure crushes them. The result is that the tubercle bacilli multiply with far greater rapidity in the damaged gland tissue than if injected into a healthy part. The method requires many control observations before it can be accepted as reliable.

The Pernicious Anaemias. *Gazette des Hôpitaux*, M. E. Agasse-Lafont.

The author uses the term "pernicious anæmia" in its widest sense. Under this heading he includes all cases where there is a marked impoverishment of red blood cells produced in a gradual, progressive and continuous manner, the possibility of remissions or of cure not being excluded. He divides the cases into two classes:

1. *Symptomatic pernicious anæmia.* The more important conditions include intestinal parasites, chronic intoxications, such as lead and carbonic oxide gas, chronic infections, such as malaria, tubercle and syphilis, repeated small hemorrhages, chronic nephritis, cancer of the stomach, and pregnancy.

2. *Idiopathic pernicious anæmia.*

The author does not believe that it is possible to differentiate between the two classes, either by the blood picture or the symptomatology. The symptomatic group is distinguished merely by the presence of an exciting cause.

The author gives a full description of the symptoms, pathology, prognosis and treatment. He is of opinion that the essential cause of the disease is a failure of hæmatopoiesis which may be due to a variety of causes, and careful search into the past medical history and into the hereditary predisposition is necessary. He does not accept the hemolytic theory. As regards prognosis, he is inclined to Hayem's view that the worst prognostic sign is a decrease in the number of blood platelets occurring coincidentally with want of retractibility of the blood-clot. The most valuable methods of treatment are the exhibition of arsenic and of bone marrow, serum therapy and radiotherapy. An extensive bibliography is appended.—*The Medical Chronicle.*

The Three Doses of Digitalin in Cardiac Disease.

Prof. Huehard, who is the greatest French authority on heart disease, recommends three methods of administering digitalin in cardiac affections. The first is a massive dose, which is also anti-systolic and diuretic. Fifty drops of the solution of crystal-

ized digitalin (1-1000) are given in one or two doses for one day. After 36 or 48 hours, abundant diuresis sets in; absorption of edema and decrease of visceral congestion and elimination of chlorides follow. If the effect is not sufficient, the same dose might be repeated eight or ten days afterwards. As soon as the diuretic action ceases, which is observed by the disappearance of the edema, and if the cardiac contraction remains weak, very small doses of digitalin should be prescribed after a fortnight, and continued two or three weeks.

The second consists in the administration of weak or sedative doses which have an effect on the palpitations and the dyspnoea of mitral disease even at its period of perfect compensation.

From five to ten drops are given for five consecutive days and repeated every three or four weeks.

The third and last is the cardio-tonic dose, which exercises only a cardiac and not diuretic action, and can be continued for weeks and months with intervals of rest from time to time; three to four drops of the solution once a day are sufficient.

By following these rules laid down by Prof. Huchard no trouble nor fear need be experienced in the administration of digitalin.—*Paris Correspondent Med. Press and Circular.*

SURGERY.

IN CHARGE OF EDMUND E. KING, GEORGE A. BINGHAM,
C. B. SHUTTLEWORTH AND F. W. MARLOW.

Extirpations of the Thyroid.

A paper was read by Kocher, of Berne, at the German Congress of Surgery, held in April, 1906, dealing with his third thousand of extirpations of the thyroid. These included all kinds of cases, with a total mortality of seven. Out of 36 malignant cases, the deaths numbered three, due rather to damage to adjacent structures, as trachea or œsophagus, than to the thyroid-ectomy. In 52 cases of Graves' disease there was one death, due to secondary hemorrhage. Three deaths occurred in 904 operations from ordinary goitre. Thus it is justifiable to declare that at the present time surgical treatment is without danger to life, even in deep-lying thyroids of considerable size, and in old people, if their hearts are sound. Kocher's assistant had one death in 661 cases among robust charity patients. No case of dangerous infection occurred in this series of 1,000 cases. The average stay in hospital of benign cases was 10 days. The

simplest asepsis only is used. Much stress is laid on thorough checking of hemorrhage, which is accomplished by the "Kocher haemostats." Kocher uses drainage, as Friedrich has shown the great value of the outward flow in protecting from infection. He also believes that Bier's treatment by suction is a valuable resource in cases of open suppuration. He advises removal of drainage tubes as soon as discharge ceases, usually in 24 hours.

Danger lies in accompanying organic disease of other organs, especially of the heart. Every patient suffering from goitre is carefully examined for absolute or relative insufficiency. A low blood pressure makes the prospective operation serious, and when this is coupled with severe dyspnoea, Kocher abandons a general anæsthetic, if the patient is willing to bear some pain. Narcosis endangers life by further lowering blood pressure, and besides compromises the asepsis through vomiting, and also increases the risk of damaging the recurrent laryngeal nerve. Early operation is advocated, to avoid the heart complications, the greatest of dangers. Kocher condemns the use of excessive and protracted doses of iodine and the mis-application of thyroid preparations, which often produce more harm than good.

Increasing dysphonia and rapid growth of the tumor are indications for thyroidectomy. Instead of treating the disturbed heart by medicine, treat it by early operation. In Graves' disease especially should surgical treatment be advocated, as only in the early stage of the disease is operation without menace.—*Annals of Surgery*, Nov., 1906.

Acute Abdominal Conflux and the Incision of Incidence.

In *The Lancet*, April, 1907, C. P. Childe draws attention to what he terms the area of "Acute Abdominal Conflux" and the "Incision of Incidence." A line (a) is dropped to Poupart's ligament from the œsophageal opening of the stomach, which is behind the left seventh costal cartilage, one inch from the sternum. Another line (b) is drawn upward from the right anterior superior iliac spine to the costal margin. Within these two lines almost every acute abdominal crisis occurs. He therefore terms this area the area of acute abdominal confluent. A line drawn through the umbilicus will divide this area into an upper and lower zone.

The "incision of incidence" is a vertical one midway between these two vertical lines, that is, just about the outer border of the right rectus muscle. The author claims the following advantages for this incision: (1) That it directly ex-

poses to sight that part of the abdominal cavity which, in a large proportion of cases, *must* contain the offending organ. (2) That in a great many cases it will enable the surgeon to deal directly with the lesion without the necessity of further incisions, unless required for drainage. (3) That it will therefore give the best aggregate of results, because it avoids delay and difficulty, two essentials in the treatment of these cases. (4) That in the minority of cases in which it fails to expose the offending organ, the abdomen can be examined just as well through this incision as through a median one. (5) That in cases of intestinal obstruction, where the patient can stand no more than the establishment of an artificial anus, it is close to the seat of election for this operation—the caecum or lower part of the ileum.

Drainage in Operations upon the Biliary System.

Dr. Howard Lilienthal read a paper entitled "Drainage in Operations upon the Biliary System," before the New York Academy of Medicine, on April 5, 1907. He pointed out that the percentage of mortality was low in operations on the gall bladder, in uncomplicated cases. When jaundice appeared as a complication, however, and surgical interference with the common duct was required, the death rate was appalling. From his experience of 300 cases, including nearly every known operative procedure on the gall bladder and its associated ducts, he had reached the conclusion that in operative jaundice, especially the chronic variety, biliary drainage was the most essential measure in reducing the mortality, and the longer the jaundice had existed, the greater should be the care in relieving the condition. Chronic obstruction leads to biliary cirrhosis, with its dangers, the most important of which is hemorrhage. Just as in the operation for the relief of renal obstruction reflex anuria may occur, so in long-continued hepatic blocking, constant or intermittent, surgical drainage of the liver through its ducts might be followed by suppression of bile, which might be gradually relieved in a few days or cause fatal cholemia. The writer sums up as follows: (1) The scientific and judicious employment of preliminary drainage in obstructive jaundice would probably lessen the dangers of such steps as might be necessary for permanent cure. (2) This drainage should form the sole object of the surgeon's work until the factor of cholemia had become eliminated. (3) Radical operations should, in most chronic cases, be postponed until hepatic engorgement and icterus no longer exist.—*Abstract from Medical Record*, May 4, 1907.

C. B. S.

Editorials.

RADIUM AS A THERAPEUTIC AGENT.

A number of physicians, who were associated with visiting representatives of several of the English Universities to Paris, were on the 27th of May last favored with a demonstration of radium (the discovery of the late Professor Curie) at the laboratory founded for the purpose of research in connection with radio-activity. There is nothing, it may here be said, in America or any other part of Europe to compare with this laboratory, which is essentially French. Dr. Lewis Wickham, Physician to Saint Lazare, and chief of the service for the application of radium to diseases of the skin, demonstrated to the delegation the apparatus and its methods of employment, and also exhibited a large number of patients who had been treated, and others who were then undergoing treatment, for various pathological conditions of the skin. Dr. Dominici, First Assistant to Professor Robin, of Hospital Beaujon, and chief of the pathological department, afterwards conducted the visitors through the various laboratories with which he is associated.

Among the affections of the skin which had improved rapidly under the application of radium were naevi, vascular and pigmentary, epitheliomata, tumors and chronic ulcerations of the skin non-cancerous, vegetations, keloids and lupus, ulcers—varicose, syphilitic and tubercular. The effect of radio-activity was also demonstrated in other conditions, such as lichen planus, eczema, and chronic prurigo. Experiments are also being conducted to ascertain its value in certain affections of the eye. In glaucoma, remarkable results have, we are told, been obtained.

After very careful observation, we are fully convinced of the utility of radium as a therapeutic agent, producing tissue change which cannot be accomplished by any other known substance, and effecting cures of a very surprising character.

The cost of radium at the present time is unfortunately such as to practically preclude its general use except in institutions, hospitals and endowed clinics; and we therefore hope that the finances of the hospitals here may be found to be ample to per-

mit of the purchase of the necessary apparatus—the same to be used under careful scientific control—and that the philanthropic and public-spirited Trustees of the Toronto General Hospital, who are always alive to the best interests of the institution, may be among the first to favor its introduction into Canadian hospitals, and will authorize their able and progressive Superintendent to seriously consider the question of purchase, so that numbers of cases in this country which have refused to yield to the hitherto prescribed remedies may be treated.

In this connection we have pleasure in stating that Dr. Wickham, to whom reference has already been made, has kindly consented to write a special paper bearing upon "Radium as a Therapeutic Agent and its Mode of Application," for *THE CANADIAN PRACTITIONER AND REVIEW*, which we may safely predict will be perused with special interest by this journal's many readers.

W. H. B. A.

UNIVERSITY OF TORONTO.

Many and varied are the opinions expressed as to the condition of things in the University of Toronto. The newspapers of Toronto give to its University a generous support. We reproduce a somewhat remarkable article from the *Toronto World*. It deals with almost unspeakable things in a very frank way, and was evidently written by some one who knows much about University affairs. We do not wish to discuss this article in detail, but we desire to say that we do not agree with all the expressed opinions and covert insinuations:

"Dr. Falconer, *The World* wishes you success as President of Toronto University. We would hold up your hands and steer your feet from pitfalls. You are about to tread upon boggy ground; beware the guides you choose.

"Already you have made one mistake, not irretrievable. Your introduction to the press of this city took place in the office of the Rev. J. A. Macdonald, editor of *The Globe*. It was kind of the Rev. J. A. Macdonald to take you under his wing; but it was not tactful. As President of Toronto University, your place was in

University halls, and there the press and the people should have made your acquaintance. As it is, you may be looked upon as the Rev. J. A. Macdonald's man; in which case it were well for you to pray to be delivered from your friends.

"From a distance *The World* has seen you, Dr. Falconer, and we thought we detected much of the cleric about you. It may have been your associates, or your garb, or your manner that impelled the thought. Clothes do not make the man, but they oft proclaim the cleric. Not as a cleric must you approach your duties, but as a man holding high the torch of truth. We are touchy regarding our religious beliefs, and the torch held low may precipitate an explosion. Sometimes even the cut of a coat is an offence. Shall we change our tailor, Dr. Falconer?

"Many men will come to advise you, Dr. Falconer; then put on the whole armour of isolation. Beware of the man, whether professor or ordinary citizen, who tries to solve your problem for you. Beware of appearing to side too much with any one faction of University builders, and the factions are legion. You are human, and you will be known by the company you keep. Yet you must lend your ear alike to the faithful and the faithless. How shall you divide the sheep from the goats? That is your problem, yet you will not go wrong by taking former President Loudon as your chief counsellor and Professor Hutton as your tutor. These two know the University, and its progress is their constant, unselfish ambition.

"Germ-bearing humans cluster about Toronto University, Dr. Falconer. Not all are harmful. None is innocent. But too long exposure to any one is fatal. Keep an eye open for the Wright germ as well as the Wrong germ. Germs that have the family name of Mac are pestiferous, but under the microscope you may find security. One of long activity is the Mavor germ, but the virulency of its attacks is lessening. In an inner chamber of University College you will come across the Fraser germ. Great stories are told of its ravages, but you needn't believe them all. Still, don't expose yourself needlessly. When you come face to face with the Macdonald germ, or the Flavelle germ, or the Mulock germ or the Hoskin germ, flee for your life. But if you are ever pursued by the Greck Letter germ, use a club.

“From these germs there is only one absolute security, Dr. Falconer; and that is the Isolation Hospital. Until you become acclimatized, shut yourself up in the University tower and disinfect every friend, every news-bearer, and every bit of information. Denude yourself of the trappings put on in the past. Acquit yourself as a man, unswayed by sentiment, physical, mental, moral or social. Your problem must be solved by you alone. Only in splendid isolation will the solution come, and come it will if you are THE MAN.

“Not by outward show, not by exposure to the germ-bearer, but by playing to the boys who attend the University, will the President come to his own.”—*The Toronto World*.

The Chancellor, Sir William Meredith, delivered an important address at the recent meeting of the Alumni Association, in which he spoke in high terms of commendation of the valuable work done by Dr. Maurice Hutton as acting President for many months. He admitted that the Governors of the University might well be asked, under the circumstances, why Dr. Hutton had not been made permanent President. As we understand the learned Chancellor, he holds the opinion that it was better on account of the cliques which *were supposed to exist* in the University circles, to import an outside man for the position. We have no objection to the argument in the main, but we regret that the speaker should have mentioned the word “*cliques*” in connection with the admirable work of the late acting President; because if any man, inside or outside of University circles, absolutely avoided the appearance of *cliquism*, that man was Maurice Hutton.

Of course, now all eyes are turned towards Dr. Falconer. Up to the present we have heard only good reports respecting him, and there appears to be nearly a consensus of opinion that he possesses the combination of character, brain-power and administrative ability which qualify him for the highest educational position in Canada. We gladly welcome the new President, and wish him the highest success. We were more than pleased that the Governors were able to find a Canadian whom they considered qualified for this position. We speak thus with

pleasure, although we acknowledge the fact that narrow views as to "Canada First" have done the University much harm in the past.

ONTARIO MEDICAL ASSOCIATION.

We are much pleased to be able to state that the last meeting of the Ontario Medical Association was one of the best which that society has known. There were present 244 members, besides a certain number of guests. Of these there were 44 new members.

The history of this association is in some respects peculiar. During the early years it was in a flourishing condition, but after 1889 interest in the meetings appeared to decrease for a number of years. The officers for 1907 showed a very praiseworthy determination to make this meeting a pronounced success. We believe, however, it is only simple justice to say that the marked success of the meeting was largely due to the untiring work and the great popularity of the society's president, George A. Bingham.

The Committee on Papers and Business, under the Chairmanship of Dr. Gibb Wishart, did exceedingly good work in arranging for thorough discussions on eminently practical subjects, and were fortunate in obtaining the assistance of Dr. Crile, of Cleveland, who delivered the address on Surgery, and Dr. Ravenel, of Philadelphia, who delivered the address in Medicine. They were also fortunate in obtaining the assistance of our able and genial friend, Justice Riddell, of Toronto, who discussed the legal aspects of providing means for the care of confirmed inebriates.

We desire also to congratulate the Committee of Arrangements, under the Chairmanship of Dr. Herbert Hamilton, on the admirable character of the programme which they provided.

In addition to the work of these Committees, it was generally conceded that the association did a very graceful act in adding to its list of honorary members the names of Dr. Thomas T. Harrison, of Selkirk, and Dr. James H. Richardson, of Toronto. The next meeting will be held at Hamilton, under the Presidency of Dr. Ingersoll Olmsted.

BRITISH MEDICAL ASSOCIATION.

The 75th Annual Meeting of the British Medical Association will be held in Exeter July 22nd to August 2nd, inclusive, 1907. Exeter is a comparatively small city of 50,000 inhabitants, situated in the south-west corner of England, in the beautiful county of Devonshire. There are many beautiful and interesting places in the neighbourhood, especially in Cornwall, Somerset, Dorset, and various parts of Devon.

The local Committee has arranged for various trips in many directions. The City of Exeter is easily reached from all parts of England. Passengers may come from London either by the Great Western or the London & South Western R. R. to Exeter in about three hours or a little more. The visiting members will be entertained in several ways, especially at receptions and garden parties.

The headquarters of the meeting will be at the Royal Albert Memorial, where the secretarial office, post office, ticket office, reading rooms, and some of the sections will be accommodated.

The Address in Medicine will be delivered by Dr. Wm. Hale White, of London; the Address in Surgery by Mr. Henry Trentham Butlin, of London, while the popular lecture will be delivered by Sir William Moore.

There will be 13 sections, of which some will meet in the Royal Albert, while others will be grouped in buildings within easy reach.

LORD LISTER AND THE CITY OF LONDON.

At a meeting of the Corporation of the City of London, held on May 30th, Mr. Alderman Alliston moved that the honorary freedom of the city be presented to Lord Lister in a gold box, in recognition of his eminence as a surgeon, and the valuable services he had rendered to humanity by the discovery of the antiseptic system.

We learn from the *British Medical Journal* that the speaker said, the resolution, if carried, would do honor not only to a great man, but a noble profession. Over 100 years had elapsed since the Court bestowed the freedom of the city on a member

of the medical or surgical profession. The last was that given to Edward Jenner, the discoverer of vaccination, in 1803. Since then the Court had welcomed Royal personages, great warriors, eminent statesmen and others; but the still, small voice of the personal ills that flesh was heir to—their amelioration and remedy—had, he feared, somewhat escaped the city's notice. That deficiency he hoped the Court would make good that day by the gift of the freedom of the city to Lord Lister. To his research and patient discoveries they owed the cure of disease, the prolongation of life, and the lessening of suffering; and Lord Lister's beneficent discovery of the antiseptic treatment in surgery was now fully acknowledged and practised all the world over. The resolution was carried with acclamation, and the City Lands Committee were empowered to make the necessary arrangements for the presentation of the freedom to Lord Lister at an early date.

Canadian Medical Association—Annual Meeting.

Arrangements have been completed for the annual meeting of the Canadian Medical Association in Montreal on September 11th, 12th and 13th, 1907. The authorities of McGill University have placed the University buildings at the disposal of the Local Committee of Arrangements, and it has been decided to hold the General Meetings of the Association in Molson Hall, the Medical Section in the Lecture Room of the Redpath Museum, and the Surgical and Pathological Sections in the Lecture Rooms of the Arts building.

The President's address, for which the first evening, September 11th, is reserved, will be delivered in the large hall of the Students' Union, and will be followed by a reception to the visiting members of the Association and their friends. The Students' Union is situated on Sherbrooke street, opposite the University grounds, and is admirably suited for such a function. On the evening of September 12th there will be a smoking concert in the Victoria Rifles Armory. A garden party, golf match, and drives, to fill in the afternoons after the business of the sections has been concluded, have also been planned.

The staffs of the various hospitals have arranged to give clinics in the hospital theatres each morning at 8.30, at which members will have an opportunity of seeing rare and interesting cases in the service of the hospitals.

Personals.

Dr. Herbert Bruce left Toronto for England June 25th.

Dr. F. E. Grant, of Athens, Michigan, has gone to Vienna for a year's post-graduate course.

Dr. John McCollum, of Toronto, passed his primary for the Fellowship examination. May 10th.

Dr. J. Algernon Temple, of Toronto, went to Quebec June 15th and sailed from Quebec for England June 29th.

Dr. Harry Anderson went to Europe early in May. At last accounts he was doing special work in medicine in Munich.

We are glad to be able to announce that Dr. Andrew B. Eadie, of Toronto, has recovered and is now engaged in regular practice.

Dr. Geo. W. Badgerow, who has been practicing in London, England, for some years, visited his friends in Toronto about the middle of June.

Dr. W. H. B. Aikins returned from Europe June 14th, after visiting some of the more noted points of professional interest in France and Germany.

Dr. Walter McKeown, of Toronto, announces that he has retired from general practice, and in future will confine himself to the practice of surgery.

Dr. Kennedy McIlwraith, of Toronto, announces that after August 1st, 1907, he will limit his practice to midwifery, gynaecology, and the care of infants.

Doctors R. A. Reeve, Irving Cameron, and F. N. G. Starr, of Toronto, started early in July for England, and will attend the meeting of the British Medical Association.

Dr. Helen MacMurchy will attend the International Congress on School Hygiene, to be held in London, England, in August, as a delegate of the Ontario Medical Association.

Dr. E. C. Dudley, of Chicago, has removed from his former location. His consulting office now is Room 1116 Reliance Building, south-west corner of State and Washington streets.

Dr. Samuel Johnston, of Toronto, has announced to the profession that after July 1st, 1907, he will give up the general practice of medicine and devote his attention entirely to anaesthesia.

Dr. A. W. Mayburry, of 569 Spadina avenue, sailed by the Ionian, June 28th, for Liverpool. He will attend the meeting of the British Medical Association and return to Toronto September 1st.

Dr. Allen Baines left Toronto June 27th and sailed for Liverpool June 29th. He and Doctor Temple will spend some time in travelling through the south of England, and will attend the meeting of the British Medical Association.

Dr. John Malloch, who, after being admitted to Fellowship of the Royal College of Surgeons, England, spent about fifteen months at special work in connection with Surgery, Pathology and Anatomy in London, expects to return to Toronto about the first of August.

Obituary.

WESLEY JAY SCHOOLEY, M.D.

Dr. Schooley, of Welland, died suddenly while attending to his professional work on the morning of June 4th. After receiving the degree of M.D. from Burlington University, Vermont, in 1862, he took a one year's course in Rolph's School, and graduated from Victoria in 1863. He practiced his profession for many years in Welland, where he was well-known and highly respected.

PETER W. McLAY, M.D.

Dr. McLay died at his home in Aylmer, June 5th, 1907, aged 62. He was one of the best-known physicians in Elgin County, where he had practiced since he graduated from Victoria University in 1870.

Book Reviews.

THE PRACTICE OF OBSTETRICS, IN ORIGINAL CONTRIBUTIONS BY AMERICAN AUTHORS. Edited by Reuben Peterson, B.A., M.D., Professor of Obstetrics and Gynæcology in the University of Michigan, Ann Harbor, etc.

The names of the contributors to this valuable work are: Doctors Chas. S. Bacon, Chicago, Ill.; Montgomery A. Crockett, Pinehurst, N.C.; Newman Dorland, Philadelphia, Pa.; Carl Huber, Ann Harbor, Mich.; Hugo Ehrenfest, St. Louis, Mo.; Henry F. Lewis, Chicago, Ill.; Walter P. Manton, Detroit, Mich.; John F. Moran, Washington, D.C.; Benjamin R. Schench, Baltimore, Md.; Aldred S. Warthin, Ann Harbor, Mich.

Most of these men are recognized in Canada as excellent teachers and writers of Obstetrics.

The editor and contributors have endeavored above all things to make this work thoroughly practical. Each contributor has developed his subject in accordance with his own experience, and at the same time in accordance with the plan carefully designed, to insure completeness and uniformity of the whole work.

Without going into detail in connection with this excellent book, we may say, in a general way, that both editor and contributors have done their work well.

ESSENTIALS OF HISTOLOGY, DESCRIPTIVE AND PRACTICAL, FOR THE USE OF STUDENTS. By E. G. Schäfer, LL.D., Sc.D., F.R.S., Professor of Physiology in the University of Edinburgh, formerly Professor of Physiology in University College, London. 7th Edition. Published by Lee Bros. & Co., Philadelphia and New York, 1907.

In reviewing this new edition of so well known a work, it is hardly necessary to do more than draw attention to some of the newer additions and changes that have been made in order to keep the volume fully up to the present date. The present book is somewhat larger than its predecessors, being not only more fully illustrated, but also more lengthy as regards the text. We note with pleasure the introduction of colored plates, which undoubtedly serve to impress certain points on the mind of the student, those of the nervous structures are especially instructive. The book is divided into 50 chapters, each one of which has been arranged so as to occupy from one to three hours' work

in the laboratory, and then the division can be utilized with advantage by the demonstrator, as the session work is fully provided for, much time being saved in arranging for future lectures.

The chapters on the Nervous System have undergone the most radical changes, and are fully written up to the present date; the plates are unusually clear. We congratulate the author on the whole production, and take great pleasure in recommending the volume to every student of Histology.

MODERN METHODS OF DIAGNOSIS IN URINARY SURGERY. By Edward Deanesley, M.D., B.Sc., Lond., F.R.C.S., Head Surgeon Wolverhampton and Staffordshire General Hospital. London: H. K. Lewis, 136 Gower street, W.C., 1907.

The above is a small handbook of about 100 pages. It is intended as an aid to the general surgeon in localising and distinguishing the various diseases of the urinary organs.

The interpretation of the symptoms complained of in this class of cases are first discussed, as pain, frequent micturition, etc.; then follows a chapter on clinical urinalysis, cystoscopy, the methylene-blue test, etc. Other paragraphs more worthy of notice are those on the Cystoscope, Radiography, and the Different Collection of Specimens of Urine.

GREEN'S ENCYCLOPEDIA AND DICTIONARY OF MEDICINE AND SURGERY. Vol. IV. Gum-Resins to Intussusception. William Green & Sons, Edinburgh and London.

This volume contains 372 subject-headings, 52 of these articles being over 1,000 words in length. The cross-references, as in the former volumes, have been prepared with great care, and will, it is hoped, prove of much value in facilitating the employment of the work by the busy practitioner.

We note with pleasure extensive articles on the Heart and its Diseases, Insanity in its Various Aspects, Hysteria, Infant Feeding, etc. The recent views on Immunity, including the Opsonic Index, new articles on Diagnosis in Gynæcology, Heart-block, etc., especially attracted our attention. On the whole the book is fully up to the standard of the previous issues. More than that it is unnecessary to say.

Selections.

SURGICAL HINTS.

Prostatic abscesses can never be safely left alone. If pus is suspected incision should not be too long delayed, and at any rate the abscess should not be allowed to rupture into the urethra or rectum.

One of the characteristic symptoms of syphilitic disease of the joints is that the pain is more intense when the patient is resting than when moving about.

In every case of sciatica it is advisable to make a thorough examination of the entire limb for the possible presence of some condition causing pressure upon the nerve, such as a bursitis in the gluteal region.

In cases of cystitis in young women for which no distinct cause can be assigned, it is well to think of the presence of foreign bodies in the bladder. Such objects, even when sharp-edged, may be tolerated for long periods without causing marked irritation. Such patients are usually hysterical.

In furunculosis or beginning carbuncle do not hesitate to make a crucial incision and with a sharp curette scrape out the mass.
—*International Journal of Surgery.*

Distinction between Tuberculous and Other Forms of Pus by Millon's Reagent.—E. Müller (*Zentralbl. f. Inn. Med.*)

Small porcelain vessels, or better, a porcelain slab, in which are a number of depressions, such as is often used for staining serial sections, are required. The vessels or depressions are filled almost to the brim with Millon's reagent prepared according to the writer's modification (1 part of Hg is dissolved in 1 part of HNO₃ of s.g. 1.4, and the solution is diluted with 2 parts of water; if a crystalline precipitate forms, the fluid is decanted). If one or two drops of purely tuberculous pus are placed in the centre of the vessel filled with Millon's reagent and one or two drops of pus formed by ordinary pyogenic organisms are placed in another vessel a striking difference is at once apparent. The latter form a liquifiable pellet; the former form a tough pellicle. If an attempt is made to lift or submerge the pellet with a platinum loop, it disintegrates. But the pellicle is of such consistence that it is easily removed *in toto*; if it is submerged

it usually assumes the form of a pea or bean. A few minutes later—at most 30 minutes—a further distinction is manifest. The Millon's reagent, to which pus due to cocci has been added, assumes a bright red color, which eventually turns to yellow, but that to which tuberculous material has been added remains colorless. In both cases the detritus floating in the fluid becomes reddened.

The differences are due to the greater percentage in tuberculous pus of solids and of material which is coagulated by Millon's reagent—hence the formation of the pellicle—and to the large amount of soluble products of albuminous catabolism which are contained in ordinary pus as the result of proteolytic leucocyte-ferments. These become diffused in the reagent and produce the red color characteristic of the aromatic series.

The test may fail if there is mixed infection of an originally tuberculous process with pyogenic organisms, or if an active autolysis has been produced by injections of iodoform in glycerine, which attracts numerous ferment carriers. It may not be decisive if the pus is inspissated, as in chronic pyosalpinx, because then a firm coagulum may form even with pus due to cocci. The best results are obtained with thin pus free from blood. Though in some cases more elaborate bacteriological investigation is necessary, the test gives reliable results in the great majority of cases. It is clinically extremely valuable, as it allows of a speedy diagnosis of the nature of exudations, *e.g.*, of an empyema.—*Ex.*

The Significance of the Chlorids in the Urine.

Next to the urates, the chlorids may be regarded as the most important group of solids in the urine. From ten to fifteen grams, estimated in sodium chlorid, are excreted daily. Of course the amount of chlorids excreted depends ultimately upon the amount ingested, but no satisfactory explanation has been offered for the great diminution of the excretion which is observed in fevers. The gradual increase is as important a sign as the fall of temperature. The increase of chlorids excreted is often the first sign of improvement in pneumonia. The disease has reached a grave crisis when the chlorids are absent. Strangely in these conditions the ingestion of chlorids may go on while the excretion becomes less and less, and still an excess of chlorids is not present in the blood, but accumulates in the other fluids and tissue of the body. The sudden return to normal of the ingestion-excretion ratio has been termed by Achard and Sanbry "chlorine crisis."

In five fatal cases of pneumonia, Emerson (Clinical Diagnosis, 1906, p. 122) describes a steady fall in the chlorids until the end in three of the cases. In one case death was preceded for six days by entire absence of chlorids in the urine. In cases in which the fall in temperature was succeeded by several days of very slight fever, the chlorids did not increase until the temperature fell to normal.

In chronic disease, it is shown that if the output drops as low as two drams, not depending upon a diminution of the amount ingested, it is a grave sign. Without explanation it is high in some conditions and low in others. The inhalation of chloroform increases the chlorin excretion. It is very low in meningitis. In typhoid it is only moderately low. It is said to be increased in cirrhosis of the liver.

The work of Widal has shown its retention in nephritis. In this disease, even when the excretion of other solids is normal, there may be a retention of chlorids. The presence of these salts in the tissues gives rise to edema. Many of these observations remain to be reconciled. We have learned practically that the estimation of the chlorids excreted gives a key to the severity of certain diseases, and that, inasmuch as these salts in the tissues cause the edema of nephritis, this edema may be overcome by diminishing the amount of chlorids ingested.—*New York State Journal of Medicine.*

Early Diagnosis of Typhoid Fever.

Conradi (*Muench Med. Woch.*) discusses the various methods for the early diagnosis of typhoid fever, calling particular attention to the great advantage of the new bile medium as a diagnostic aid. He has shown that in the blood of the typhoid patient, taken for the purposes of the Widal-Gruber reaction, the bacillus of typhoid may be found by means of the bile culture medium. The usual mode of procedure is as follows: The ordinary capillary tubes used for the Widal agglutination test are employed. These usually contain about .05 to 0.2 Cc. of blood coagulium and serum. The thread of coagulium is removed from the capillary tube and put in the bile medium. This consists of oxible, to which 10 per cent. of peptone and 10 per cent. of glycerin have been added, the tube being sterilized two hours in a steam sterilizer. To loosen up the coagulium, it remains in the bile medium for from twelve to sixteen hours at a temperature of 37 degrees C. After this 0.1 to 1 Cc. of the fluid is inoculated on a litmus, milk-sugar, agar plate, and examined for colonies in the ordinary manner. As a result, in 60 patients

investigated, about 40 per cent. of the cases proved positive in the first week of the disease. In 24 of the 60, 21 showed typhoid organisms, and three paratyphoid bacilli. The author believes that he is justified in saying from the material to hand that the bile cultures of slightly coagulated blood are capable of affording a diagnosis in the early weeks of typhoid in at least 50 per cent. of cases. If larger quantities of blood are used than those usually supplied by the Widal test, it is fair to infer that a higher percentage of success would be recorded.—*Charlotte Medical Journal*.

The Coronary Arteries.

The literature relating to the anatomy and physiology of the coronary arteries represents an unusually extensive field of investigation, but the results have so far been more or less unsatisfactory in that they have been full of contradictions. The ordinarily accepted view that the coronary arteries are end arteries—if not in the strict sense of Cohnheim, at least from a functional standpoint—has been contested by numerous observers, and in a recent contribution by Hirsch and Spalteholz in the *Deutsche medizinische Wochenschrift*, 1907, appears to be definitely disproven. Spalteholz, who studied the problem from the anatomical standpoint, by means of a specially devised injection method combined with a process for rendering the tissues translucent, comes to the conclusion that the coronary arteries, far from being end arteries, possess numerous anastomoses both on the surface of the organ and in the substance of the myocardium. Each papillary muscle is supplied by several afferent vessels communicating with each other by numerous branches. These studies for the most part were made on the hearts of dogs and monkeys, but comparisons showed that the results could legitimately be transferred to the human organ as well. The fact having been established that the heart is not deficient in arterial anastomoses, but, on the contrary, is remarkably rich in these, the clinical application of this observation had to be determined by experiments on the living organ. Bier has already shown that the different organs behave very differently in regard to the consequences of ligation of their arterial trunks and that the anatomical picture alone does not suffice to explain the results of the occlusion of the afferent vessel. This part of the investigation was conducted by Hirsch, who found by work on dogs that in the heart muscle the conditions attending coronary obstruction or occlusion depend largely on the anatomical or functional state of the vessels, and to a still greater degree on the *vis a tergo* or

cardiac power. The sudden blockage of a coronary artery is therefore a particularly serious occurrence, if the vessel is arteriosclerotic, and observations of the blood pressure in these cases are practically important as affording an insight into the force of the heart's action. In angina pectoris associated with a low blood pressure the use of rapidly acting heart stimulants is likely to restrict the dimensions of a resulting infarct, but if there is increased vascular tension any further elevation of pressure must be avoided and morphine and the vasodilators are indicated.—*Medical Record.*

Good for One Condition but Bad for Another.

We have been somewhat interested by a series of letters which have appeared recently in the *British Medical Journal* in regard to the use of calcium salts as cardiac tonics in pneumonia and heart disease. The subject was first brought forward, at least in the present discussion, by a letter written by Sir Lauder Brunton, in which he advised not only the free use of oxygen and strychnine in many cases of pneumonia, but also the use of calcium chloride, chiefly with the object of obtaining the well-known stimulant effect of this salt upon the cardiac muscle. Sir Lauder Brunton was promptly attacked by Sir James Barr, of Liverpool, who claimed that his suggestion concerning this plan of treatment was by no means original, and that he (Barr) had employed this method a long time before Sir Lauder had published his suggestions concerning it. Sir Lauder Brunton returns to the fray with the statement that he made his contribution solely because he had found these methods of value; that he thought that a certain number of lives could be saved by their use, and as far as priority was concerned, he was most happy to recognize the early use of these substances by Sir James, provided it could be proved that he had employed them at an earlier period. He emphasizes the fact, however, that he recommended calcium chloride as a cardiac tonic, and not because the urine contains a small quantity of chlorides in pneumonia.

Into the debate Dr. Ewart, who is well known to many American physicians, next entered, and sends a letter in which he points out that while it may be correct to consider that calcium chloride exercises a stimulant effect upon the heart muscle, it must not be forgotten, on the other hand, that many practitioners are now employing this salt for the purpose of increasing the coagulability of the blood, and that if it is freely used, as advocated by Sir Lauder Brunton and Sir James Barr, that most dreaded complication of croupous pneumonia (heart clot) may

be precipitated upon the patient. He therefore emphasizes the fact that there is danger in this method as well as value, and that the chief object of the physician should be to maintain, if possible, a steady rate of elimination of the infecting agents and of their toxins, asserting that calcium chloride can have no place in our treatment of the early stages because it will probably increase the exudate within the alveoli. He insists that the more urgent duty of relieving local congestion by leeches, the use of cardiac stimulation, and an endeavor to stimulate excretion in every way, should be the plan of campaign. Finally, he urges, instead of using drugs which will increase the coagulability of the blood, that we employ the citrate and iodide of potassium to diminish the coagulability of the blood, and for the purpose of ultimately aiding in the absorption of the exudate.—*Therapeutic Gazette*.

Digitalis Preparations.

It is an old experience that digitalis leaves are very variable in their activity. Withering, who did so much to encourage the use of this remedy, insisted that the leaves should be gathered only at the time of the plant's blossoming, not in moist weather, and should be dried carefully in not too high a temperature and kept in a dry place. Further observations have shown that wild plants alone are valuable, and that those which grow in sunny spots contain more active principle than those which grow in the shade; and Focke, in a most thorough investigation (*Therapie der Gegenwart*, 1902, p. 44), showed that there were regular variations in therapeutic efficiency in the leaves during the time of their development, leaves gathered early in the year being only one-fourth as active as those gathered late in the summer. The importance of many of these and other significant facts was not lost to the revisers of the last edition of the United States Pharmacopœia, and the progressive druggist should know the essential features of leaves which come up to the standard.

One feature of this study has been somewhat neglected, and in view of the wide use of dry preparations (tablets, etc.) of digitalis, a research of E. Wang (*Festskrift tillagnad Olof Hammarsten*, Upsala Läkareförenings Förhandlingar xi) is of immediate practical interest. He sought to determine what changes took place as the leaves themselves after gathering grew older, for which purpose extracts made from the leaves gathered from the years 1884 to 1906 were carefully tested on frogs, and the activity of the glucosides determined.

Focke's contention that if good leaves were carefully dried

and powdered and kept in dry and sealed containers they lost very little of their efficiency, was confirmed by the author's researches, but he found that leaves which were kept in the ordinary manner rapidly deteriorated. Thus those gathered in 1903 had lost one-half of their strength as contrasted with those gathered in 1905. Inasmuch as the leaves of digitalis are highly hygroscopic, enzymes that break down the glucosides act very readily on those exposed to the air and its moisture. It is not at all improbable that many tablet triturates of digitalis, which are notoriously untrustworthy, deteriorate by reason of precisely the same enzyme reduction.—*New York Medical Journal*.

The Value of the Opsonic Index.

During the past year a number of laboratories in this country, under the stimulus received from Sir Almroth Wright at the time of his visit, have been investigating the opsonic index in various conditions. These workers have engaged in this study with an enthusiasm born of the magnetic personality of Wright and the numerous reports of the brilliant results obtained from vaccine therapy when guided by estimations of the opsonic index. This enthusiasm has been tempered by the calm judgment and critical spirit inculcated in these workers by their previous extensive experience in laboratory investigation. It was, therefore, with particular interest that the symposium on the opsonic index was listened to, at the meeting in Washington of the Association of American Physicians, since it presented the results obtained during the past year by these different laboratories.

The combined judgment of the American investigators represented at this meeting seems to have considerably discredited the importance of the opsonic index. Speaker after speaker expressed the view that there were many possibilities of error inherent in the method, and that the variations that resulted might be great. Under these circumstances the results of estimates of the opsonic index should be interpreted with great caution. Some even went so far as to state that they believed that a determination of the opsonic index was of very little value. A few favored opsonic estimates, but the mass of opinion was far more against than in favor of the index. Possibly the pendulum has swung too far, but these opinions coming from such sources cannot be neglected. The future may give us a better method of estimating body resistance than that of determining the opsonic index as now practised. This will probably be the case for, notwithstanding unfavorable criticisms of the

opsonic index, the value of bacterial vaccines as a therapeutic measure in many conditions was fully recognized, though not especially discussed. Some measure of this action is needed, and if discovered will aid much in treatment. Work along the lines of the opsonic index should then be continued, but it seems to us that this should be more in the nature of laboratory investigation than as a clinical procedure. On the other hand, vaccine therapy along the lines already established should continue to be practised, and from it good results are to be expected in many patients.—*Boston Medical and Surgical Journal*.

Ichthyol as a Pain Dispeller. By Johann Hirschcron. (*Deut. Aerzte-Zeitung*).

The author writes from his experience of 16 years of the value of ichthyol in relieving pain, and upon the widely varied usefulness of the remedy. Applied externally, it has proved an excellent treatment for all cases of rheumatism. In such cases a lukewarm 1 per cent. solution of ichthyol-glycerin is used to moisten a gauze dressing for the affected part of the body, and a hot-water bag is also applied if heat is desired. In the form of salve, ichthyol, with a small addition of menthol, acts with magical results; the foundation of the salve should be of equal parts of vaselin and wool-fat, six per cent. of ichthyol, and one per cent. of menthol being added. For patients who cannot bear heat, ichthyol is applied in a glycerin salve form, protected by a compress. Such an application is especially effective in cases of painful swelling, which it will often reduce over-night. It is also recommended in gonorrhoeal rheumatism for the swellings in the large and small joints.

Added to the bath, ichthyol gives good results in the treatment of neuralgia, particularly neuralgia of the back. To a full bathtub, add two ounces of ichthyol for instant relief from pain. The value of a salt-water bath is heightened by a previous use of ichthyol on the affected part.

In its original use as a remedy for every form of skin disease, the author claims that ichthyol still remains unrivalled.

Given internally, ichthyol is equally effective in allaying pain. In the form of pills, capsules, or diluted with water, it affords immediate relief in chronic catarrh of the stomach, does away with the pain attending the process of digestion, and relieves the painful accumulation of gases so common in stomach and intestinal troubles. Ichthyol is also a valuable remedy in cases of asthma, tuberculosis, hemorrhage, etc.

The writer concludes:

“It is well known that for several years past various sub-

stitutes for ichthyol have been placed upon the market. As these are always as costly as ichthyol, and should, therefore, be just as good, I have sometimes tried them in my practice; but I have always gone back to ichthyol, for I do not find these other preparations so effective and reliable, and besides, they seem to vary in strength."—*The Post-Graduate*.

Diagnosis and Therapy of the Disease of Hirschsprung.

Dr. Friedrich Neugebauer, in *Archiv für Klinische Chirurgie*.

The author cites two cases of a disease first described by Hirschsprung, which occurs in children.

The disease consists chiefly in an extreme dilatation of the sigmoid flexure, sometimes extending to the rectum in one direction and involving the ascending colon and partially the transverse colon.

The common symptoms are: Occurring in children from less than a year upwards. Patient may be fairly well nourished; but there is never a stool without enema, and if not given, patient would go a week, when by lying in a certain position in bed there would be expulsion of gases followed by hardened masses of feces.

When a rectal tube is inserted high and enema is given, then after that if the abdomen is pressed there will be a great abundance of feces expelled; though this should not be done too energetically, as it has been found that when too much evacuation has taken place at one time there would follow a collapse, and in one reported case where by voluntary effort the child passed a stool as long as itself and as thick as its arm, death followed immediately. Liver dullness is very high, heart is located between the second and fourth rib, large belly with much tympany, and through the usually thin belly the intestinal peristalsis may be seen distinctly.

As a means of diagnosis a metal sound devised by Kuhn is inserted into the rectum, which can be passed far up, so that by means of a radiogram its position can be plainly seen to be as high as the epigastrium.

Almost the entire abdominal cavity is occupied by this enormous gut.

Another means of diagnosis used is the injection of bismuth in the proportion of about one to three of oil. This is allowed to run high up and then by means of a radiogram the outline of the bowel can be made out.

As treatment the author recommends anastomosis of some part

of the large bowel with the rectum so that the dilated portion may be left out of the usual course. In one case he united the transverse colon near the hepatic flexure with the rectum with good results.—SCHULDT, in *St. Paul Medical Journal*.

Elimination of Sodium Chloride.

Gennari points out that sodium chloride is only sparingly found in the fæces (*Clin. Med. Ital.*) By the use of purgatives, however, the amount found in the fæces can be enormously increased, while a corresponding diminution of chlorides in the urine takes place. When very large quantities of chlorides are ingested moreover, either by healthy individuals or by sufferers from Bright's disease, the quantity in the fæces increases. The author believes that this effect of purgatives explains the value of such medication in cases of kidney disease, as it must aid the general dechlorinization, which has been shown to be of so much value in diminishing the edema and effusions into serous cavities.—*Medical Press and Circular*.

Mastitis.

Zacharias advocates the Bier treatment (passive congestion) as an excellent procedure in mastitis. In only two cases in a series of thirty-three was operative treatment found necessary, and this was due to late application of the treatment. Among the advantages attending Bier's procedure is the fact that nursing may proceed during the treatment, and if it is on account of pain and tenderness, the secretory activity of the breast is not stopped. The apparatus is applied two or three times daily for about thirty minutes at a time, the globe being removed and re-applied about every ten minutes. Treatment is not found necessary, as a rule, for longer than three or four days. When applied early it affords very satisfactory results, and although it is very simple, the author advises against permitting the patient to apply it herself, as the results of the treatment cannot be judged by the latter.—*Munich Med. Moch.*, April 9, 1907.

The eighth annual meeting of the British Columbia Medical Association will be held on August 1st and 2nd, 1907, in the Parliament Buildings, Victoria, B.C. The medical men of all Provinces are most cordially invited to be present. Any intending to do so should communicate with the secretary, Dr. R. Eden Walker, New Westminster, B.C.

Miscellaneous.

The Institute Smell.

The Institute Smell is a term applied to that peculiar and indescribable odor so frequently met with to-day in many of our finest hospitals and other institutions. The real cause of this odor was for a long time unknown, and many ineffectual efforts to eradicate it were made, such as the isolation of the kitchen, laundry, and all other rooms, which might have caused it, and the adoption of the "cottage plan" of building, by which the institute is not made of one large building, but of a number of smaller ones, each for its own particular use. But in spite of all these efforts the disagreeable odor still haunted the institute and seemed to increase rather than diminish with frequent cleanings.

A determined attempt to run down the cause of this smell led to the discovery that it emanated from the floors of the building. It was then noticed to be specially prominent in those buildings which had wood, or other organic and absorbent floors, and to be totally lacking in institutes which were provided with inorganic and non-porous flooring material. Further investigation led to the discovery that the wooden floor which daily absorbs dirt and moisture finally became the breeding place for myriads of bacteria, known as the "anaerobic" germ, which term means germs which live out of contact with air and light. These micro-organisms caused the wood to decay, and to emit a peculiar musty odor. The washing of the floors did not injure them, as they lived within the wood, but on the contrary furnished them with the very moisture which was essential to their existence. As the wood became decayed it, together with the cracks between the boards of the floor, became infested with countless other bacteria. The effect of their destructive action was not visible to the eye, but was plainly evident to the sense of smell.

The most aseptic, non-porous, germ-proof floor which we have to-day is the floor covered with the baked clay tile. The clay tile is harder than marble, slate or any other natural stone; even a sharp steel point will not scratch it. It is absolutely non-porous and can not absorb dirt or moisture. It is absolutely sterile as far as germs are concerned. The joints between the tiles are filled with a dense grouting of pure cement. A tile floor is very easy to keep clean, and washing it supplies no nourishment to micro-organisms for the two excellent reasons that these micro-organisms cannot work their way into the tile, and even if they were there not the slightest amount of moisture could reach them.

—C. J. Fox, in *St. Paul Medical Journal*.

The Business Side of Medicine.

"We are professional men in every sense of the word; we have the mental labor of lawyers, the moral standing of ministers, the technical knowledge of organized artisans, and the business qualifications of school children. The average man will give a lawyer \$300 to \$500, together with a lifetime's praise, to keep him out of the penitentiary for from two to ten years, and at the same time he will raise a phosphorescent glow and a kick that can be heard around the world if a doctor charges him \$50 to \$100 to keep him out of hell for a lifetime."

"The average doctor tries to do too much work. Every doctor wants everybody to patronize him. He likes to be going night and day, rain or shine, Sunday or week-day, hot or cold. This is a business mistake. It wears a doctor to a frazzle. It gives him no time for bill collecting and business matters; no time for patients who naturally feel neglected and are slow pay as a consequence. A doctor can do better work, more good, and build up a more enviable reputation if he coolly takes his time and is careful and painstaking in his examinations and if he takes into consideration the pathologic conditions he meets."

"We are the only people under God's ethereal tent to-day who keep open shop 24 hours each day and 365 days in each year. We are also the only labourers to keep on working for people who do not pay."

"I can carry my part of charity with as good a grace as most men. I can go through rain, snow or mud and do my best, provided the case is one of worthy need, but to reward continually downright rascality, wilful drunkenness and wanton laziness is getting out of my line."—*J. E. Diddy, in Texas State Journal.*

From my point of view, one type of saintliness makes a bad father or mother. I mean the hard, rigid, ultra-religious person who thinks all pleasure sin, and all beauty from the devil; who thinks so constantly about what is going to become of his soul, as to forget he has other duties in the world; who forgets that possibly to give pleasure to others is "to acquire merit"; who represses all manifestation of pleasurable emotion, and who, in truth, is a supreme egotist masquerading as an altruist. Such a person is biologically a bad parent.—*Burr, J. A. M. A.*

Too PARTICULAR.—Matrimonial Agent—"I can strongly recommend Mr. Softy. He's financially solid, and he neither drinks, smokes, nor takes snuff."

Applicant—"Do you think I will marry a man that I can't find fault with?"—*Fliegende Blaetter.*