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Original Articles

THE BURIED ANIMAL SUTURE: ITS VALUE IN ASEPTIC SURGERY.

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I am glad to avail myself of this opportunity to write a chapter of surgical history which to the young graduate may seem ancient.

In 1869 it was my singular good fortune to have become, accidentally, and in a special way, the first American pupil of the now world-wide famous Lord Lister. I thought I knew surgery at least exceptionally well for a man of my age. As a graduate at Harvard, I had been the student of Warren and Bigelow. From a subordinate medical position in the army, I left the United States service as a Medical Director at the close of the war between the States. I had been a post-graduate pupil and assistant in Harvard until I entered the University in Berlin, in 1869. There I profited much from the teachings of Langenbeck, Virchow and Martin. After a brief period of study in London, in 1870, I had arranged to become the pupil of Sir James Simpson in Edinburgh. Death, sudden and unexpected, had seized upon him in the midst of his active career. Syme soon followed, leaving as his representative in the surgical clinic, his son-in-law, Mr. Joseph Lister, formerly of Glasgow.

I was advised by several surgeons of local repute to have nothing to do with this man, since his opinions were so utterly different from the accepted demonstrations of science, that they must be misleading and harmful. The first morning at his clinic

* Read before Medical Society of Nova Scotia, July 2nd, 1903.

dispelled from my mind all doubt and misgiving; he certainly was doing work utterly unlike any which I had hitherto seen, and I was equally sure that it was contrary to the accepted belief, called surgical science. Several resections of the elbow-joint were undergoing the processes of primary union without suppuration, or even pain. I found that I had to learn my surgery over again, and that, if Mr. Lister was correct in his teachings, operative surgery must be rewritten. It is not my purpose to recite to you of Mr. Lister's work, fortunately now well known to all surgeons, except so far as pertains to the ligature and suture. To him belongs the immortal honor of demonstrating, in a pioneer way, the vital causes of bacterial infection, or then so-called wound inflammations. These studies were inspired by the teachings of Pasteur upon the processes of fermentation, which, hitherto, had been considered, under the leadership of the great Prof. Liebig, *chemic* rather than *vital*. Convinced that a something from without of individual vital existence had been introduced and developed within the tissues, the conclusion was evident that that vital something must be excluded at the time of operation, or afterwards destroyed in, or removed from, the wound. This, to his clear and convincing judgment, made simple and easy, results which had hitherto been considered exceptional, if not accidental; to wit, the primary union of all non-infected wounds. As a corollary, it was evident that the arteries might be ligated in continuity with little or no danger from secondary hemorrhage. In order to demonstrate this important fact, it became necessary for him to pursue his investigations in comparative surgery upon the Continent, the laws of Great Britain prohibiting vital studies upon the lower animals. However, singularly enough, up to this time, it had not occurred to Mr. Lister that which now seems an equal obvious deduction, the burial of sutures, introduced for the purpose of closure of wounds. Naturally, it became evident to Mr. Lister that silk did not furnish the proper material for the ligation of arteries, when the ligature was to be cut short and left buried within the tissues, since this material was non-absorbable, and was likely to remain as a foreign body, and become a possible cause of future suffering. It was an obvious inference that a proper ligature must, for a considerable period, retain a firm grasp upon the enclosed vessel, and yet, in the end, soften and disappear. This material seemed to him ready at hand in the violin string of commerce, provided it could be properly disinfected. He had already pursued a series of investigations with a variety of

material for the purpose of destroying fermentation, and had found that solutions of phenol, carbolic acid, were very effective. Inferentially, it seemed probable that carbolic acid solutions would serve this purpose, and, after a variety of investigations, the result was demonstrated, that cat-gut, immersed for a considerable time in a 10 per cent. solution of carbolic acid crystals in linseed oil, gave, as a resultant product, a strong supple ligature material which was trustworthy. With this, in 1869 and 1870, Mr. Lister was ligating arteries. He was also using it for the through-and-through suturing of wounds, as a substitute for silk, and often called our attention to the fact that the absorption of the cat-gut went on much more rapidly at the contact point with the deeper layer of skin. These sutures were always interrupted, and at varying periods after the operation, were cut and removed. At this period, his wound dressing consisted of a narrow strip of oil silk, taken from a solution of carbolic acid and placed immediately over the edge of the wound, which he called a *protective*. All wounds of any considerable size were drained with comparatively small tubes of rubber, and the external dressing consisted of his so-called lac plaster, a composition of gums containing 10 per cent. admixture of carbolic acid, which was spread upon cotton cloth, making a rather stiff plaster. The primal purpose of this was the destruction of any germs which might gain access to the wound. This material was non-absorbent, and the secretion more or less abundant, until the removal of the drainage tubes about the third day, was absorbed by a large extraneous dressing held in place by the usual method of bandaging.

As all know, the teaching of Mr. Lister met with more, rather than less, favorable reception, although far from being, even in a limited way, adopted. The entire profession has long since been willing to accord him every possible honor, and it belongs to no other surgeon in the history of the entire profession to have lived to receive such universal acknowledgement of merit. The summer spent in his service revolutionized my professional life. In a certain sense, however, this teaching was not altogether new, although there is every reason to believe that with Mr. Lister it was entirely original.

Investigations upon the origin of means adapted to a given end clearly teach that active minds had already subjected its chief factors to careful analytical study, although certain phases of the problem are ever presenting themselves under new aspects. Dominated by such thought, Solomon taught that "there

is no new thing under the sun," and it is quite probable that the animal ligature was known and used by the Egyptian surgeons, at a period antedating this wise Jewish philosopher. The connective tissue of animals was early utilized for a variety of purposes, when it was necessary to secure great strength and high tension. The Homeric poems afford familiar illustrations. In the *Odyssey*, the strings of the old Greek harp are described as made from the twisted intestine of the sheep. The ancient Egyptian harp is said to have been strung in a similar manner. The celebrated Arabian writer Rhazes, who practised in Bagdad, A.D. 900, described the stitching of wounds of the abdomen with the strings of the harp; and Albucasis also mentioned the stitching together of wounds of the bowel with a fine thread from the twisted intestine of an animal.

The careful student of the early history of surgery finds abundant evidence that the ligature was used as a hemostatic agent at a very early date. Celsus, at the end of the first century, described the ligature as of ancient origin, and stated that it was used by the Alexandrian school of medicine, with the teachings of which he seems to have been familiar. He advised placing two ligatures upon the vessel, and dividing it between the points of tying. Galen recommended its use, and Vesalius, in the sixteenth century mentioned the ligature as a relic of the past, greatly underestimated in value because of the lack of anatomical knowledge. Its first application in amputation, on account of gun-shot wounds, was doubtless by Ambrose Pare. At this time such wounds were cauterized with boiling oil, in the belief that the gunpowder in some way poisoned the wound.

Special studies, however, for demonstrating the value of the material used for ligatures do not appear to have been made in the early history of surgery. Indeed there is little doubt that, whatever the material used, it was always considered as a foreign body to be ultimately eliminated from the wound, and the material, selected for its strength without special reference to the irritation which might be induced thereby, was naturally the thread, silk, or hemp, which was in ordinary domestic use.

To our distinguished countryman, Prof. Physick, of the University of Pennsylvania, is undoubtedly due the honor of having first introduced into surgical practice, in modern times, what is known as the animal ligature. His ligatures were made of chamois-leather, and he and Dr. Dorsey usually rolled their ligatures on a marble slab to make them round and hard. The advantages claimed for the ligature by Dr. Physick were that,

being composed of animal tissue, they would serve long enough to obliterate the artery, and be speedily removed by the absorbents, thus avoiding the difficulty, arising from a foreign body however minute. These ligatures were used in this country to a great extent, and Sir Astley Cooper demonstrated their superiority in his own operations. I quote as follows: "Dr. Hartshorn used strips of parchment for his ligatures. My friend, Dr. H. G. Jamieson, Professor of Surgery in Washington Medical College, Baltimore, has for a series of years been employing the animal ligature in an extensive surgical practice. He has used it in many amputations of the limbs, and of the mammae; he has tied the carotid, the iliac, the femoral, the radial, the posterior tibial, the spermatic, and other arteries, with the buckskin ligature, and in no instance had secondary hemorrhage; and he states that he has never seen anything of his ligatures, and, of course, his wounds have generally healed by first intention. Dr. Jamieson gives Dr. Physick the honor of having first introduced the animal ligature, but he contends that the practice of rubbing or drawing, to harden the leather, is highly reprehensible. He advises to tie the artery with a buckskin ligature very soft and little broader than the thickness of the skin, taking care not to tie it too tightly. He states, as the result of his observations and experiments upon sheep, dogs, and other animals, that a capsule will surround the ligature if the capillary vessels be not much disturbed, or the vessel will be surrounded by an abundance of lymph and the ligature dissolved."

The method of Aetius and Celsus, revived by Abernethy, of applying two ligatures and dividing the arteries between them, Dr. Jamieson condemned as unnecessary. Since by a single flat buckskin ligature the artery may be obliterated without destroying its continuity. Hence he opposed all indissoluble ligatures of whatever material; he declared it not only to be unnecessary, but highly hazardous, to cut the inner coats of the vessel, as recommended by Jones and others and agrees with Scarper as regards flat ligatures, but, by the use of the buckskin, he has no need, like him, to remove his ligature on the fourth day. For a very able and interesting account of his views, which are even now of high practical importance, I refer to the thirty-seventh number of the *Medical Recorder*, published at Philadelphia in 1827, and from which I quote the following extracts:

"We believe that the animal ligature will secure the patient from all these dangers except one, to wit, the awkwardness of the surgeon; and even in this respect the animal ligature is pre-

ferable, not requiring the precision of management essential to the cutting ligature. If the ligature is cut from the leather with care, it will always admit of being tied sufficiently tight, but can never be made to cut the coats, provided it is made of soft buckskin, and not hardened by drying it. It is less likely to slip when somewhat insecurely applied, because, being elastic and soft, it is spread over a small space of the vessel, and almost immediately adheres by its glutinous properties." It lies more securely; while the cutting ligature, resting on a mere line, and having neither adhesive properties nor the advantage of a small vacuum between the vessel and the ligature, as is the case with the flattish adhesive ligature, is more likely to slip off. Besides, as we cut off the ends close, there is a risk of pulling them away by an accidental jerk of the hand. In support of these assertions, we have to offer the experience of several years' practice, during which we have used no other than the buckskin ligature, and no such thing as secondary hemorrhage has ever occurred.

"We are, moreover, decidedly of the opinion that in no case whatever have we had reason to suppose that the healing of a wound, accidental or surgical, was delayed by our ligatures; we never see anything of them after their application. Mr. Cooper tied the femoral artery in a female, aged eighty, with a ligature of cat-gut steeped in water, which was cut close, and the wound was healed on the fourth day, and must therefore have healed by first intention. In many cases, we believe the cat-gut would answer as well as the buckskin, but we are confident that a flattish ligature holds best and is most convenient. It may be proper to mention that this case occurred in 1817, three years after Dr. Physick's use of the leather ligature. If we are right in the opinion which we have just expressed, Dr. Physick is entitled to the credit of bringing into use the best ligature as to the material, but here his claim is at an end. Dr. Physick and Sir Astley Cooper have shown the advantage of using a substance which will serve as a ligature till the artery is obliterated, and be speedily afterward in the power of the absorbents, so that they will remove it. We will now proceed to point out our own views, and endeavor to support them by experiment."

It will be observed that in all the essentials, the experiments of Dr. Jamieson, undertaken for a similar purpose, were not unlike those of Sir Joseph Lister, repeated half a century later; and the former at a period when so little was expected of the American people in the way of literary productions, to say nothing of scientific research, that one of England's famous critics asked, "Who reads an American book?"

In the "History of Ovariectomy in the United States," by the late Dr. Peaslee it is stated that Dr. Nathan Smith, Professor of Surgery in Yale College, in 1821, tied the arteries with leather ligatures (narrow strips cut from a kid glove), which were returned into the peritoneal cavity, and the incision was closed, followed by recovery.

Dr. John Bellinger, of Charlestown, S.C., in 1835, successfully performed ovariectomy, tying two arteries in the pedicle with animal ligatures.

Professor Paul Eve, of Nashville, Tenn., wrote me in 1876, "I have been in the habit of using the sinews of the deer for ligating vessels, for forty years. The tendons of the deer, dried and torn in shreds, and rolled into ligatures, are what I employ. They are absorbed. I have occasionally used them as sutures."

These fragmentary experiences, drifting down to us through the years, teach that there was more or less blind groping after a something that should serve a better purpose than that which the routine of daily practice, in the use of hemp or silken ligatures, afforded. It was reserved for the present generation to make possible a scientific basis for the better consideration of ligatures and sutures in their application to the living structures. In the light of our present knowledge of surgical pathology, the opposition to the ligature in the days of Ambrose Pare, which we have been wont to attribute to the conservatism of ignorance and stupidity, is invested with a new and vital interest. The amputated limb seared with a hot iron, as a hemostatic, a measure most barbarous and revolting, gave as a result an aseptic wound. Repair was necessarily slow and tedious, but abundant granulations supervened to protect from septic absorption before decomposition ensued.

The constricting ligature, the septic pocketed wound, with little care as to cleanliness, gave such secondary fatal results that we are led to wonder that the innovation of the ligature in the closing of the great vessels became the established practice. Had it not been for the frightful dangers from secondary hemorrhage, after the use of the cautery slow healing giving imperfect results, it may well be questioned if even the indomitable spirit of Ambrose Pare could have made the innovation survive his own time.

A deeper philosophy sought solution of the problem as to the causation of suppuration in wounds, and if its prevention were not within the possibility of the *rule*, rather than the *exception*, the studies of Pasteur, Tyndall, our own Jeffries Wyman

of Cambridge, and others undertaken for the solution of the problem of spontaneous generation, brought fruitage to the human race little dreamed of by these wise philosophers. The genius of Mr. Lister seized the application of the thought, and with a patient, investigating spirit and painstaking toil, he worked out the fundamental factors of the *role* of ferments in wounds. It was not until rules could be formulated, based upon the scientific deduction, that operative wounds should be free from suppurative processes, hitherto considered almost necessary concomitants, that the proper conditions for the study of ligatures and sutures were rendered possible. Of necessity, in intimate association with the question of the treatment of operative wounds, arose *de novo* a most important and interesting chapter, devoted to the best means of controlling arterial hemorrhage. It was clear that the hitherto prevailing method of ligation, having the ends of the ligature long, extending from the wound, by so much at least, prevented primary union, while cutting the ligature short, and closing the wound, were fraught ever with disastrous consequences, since the septic ferments were thereby deeply buried. When aseptically applied, the constricting silken ligature too often proved an irritating foreign body, to be ultimately slowly eliminated.

In retrospect, with present knowledge, what seems simple factors of the problem, proved extremely difficult of solution. The conservatism of opinion, the prejudices of the large number of the surgical authorities of the time, wedded to present measures, misled by other phases of dominating thought—the so-called vital processes of inflammation, irritation, cell-proliferation, etc., engrossed the subject with many difficulties.

The demonstration that fermentation and suppuration in a wound resulted from the introducing of something from without, was the first real step of progress. To eliminate that something was the next problem for solution. It was clearly shown that the torsion of an artery, to procure rupture and intrafolding of its interior coat, might produce a permanent closure of the vessel, and that the living structures, unpoisoned by germ injection, possessed the power of easy disposition of the aseptic necrotic portion, devitalized by violence.

Histologic study demonstrated that the necrosed part did not undergo the changes which had formerly been supposed necessary for the elimination of dead material, known as suppuration, gangrene, etc., but that the part became invaded by living cells, which, little by little, produce a local change marked by early

disappearance of the necrosed tissue. This naturally led up to the thought, Could not extraneous animal tissue be prepared in a way, that, introduced into the vitalized structures, a similar result would follow?

Repeated experimentation taught that small pieces of dead tissue, preserved in carbolic acid solutions incorporated into the living structures, were disposed of in a manner not unlike the necrosed portion of a twisted artery, and led to the inference that animal tissues, properly preserved, might safely be used for the construction of vessels. In looking about for a suitable material of animal type to be used as ligature, the cat-gut prepared for musical instruments was again naturally suggested. It proved comparatively easy to render the material non-infective, by immersion for a considerable period in an aqueous carbolic solution, but, being a soft slippery strand, it lacked the necessary qualities for making a secure knot, and, by its early softening in the tissue, it loosened and thereby failed to secure the end sought. A long immersion in an oily solution of carbolic acid, to which a very little water had been added, produced a very marked change of structure—a kind of tanning process thereby resulted, which gave to the material the quality of less easily softening in the tissues, as well as the better retaining a firm knot, and was ultimately disposed of by the surrounding structures.

Mr. Lister's experiments were limited to the ligation of vessels, and there has resulted from his teachings the surgical treatment of the great arterial system with a safety hitherto impossible. He states, "The larger vessels are now tied in continuity, in close relation to their bifurcations, even the greater trunks, with a seeming impunity little less than startling."

Returning from my studies in Edinburgh under Mr. Lister in 1870, liberally supplied with a variety of the antiseptic materials which he then advised to be used in operative treatment. I not only made use of cat-gut for the ligation of vessels, but accident easily furnished me the opportunity for a new application of the ligature in the form of buried sutures. On February 19th, 1871, I closed the structures, necessarily greatly enlarged for the reduction of a strangulated hernia, with deep sutures of cat-gut. This I did in order to retain the abdominal contents, because of a severe asthmatic bronchitis from which the patient was also a sufferer. The resultant permanent cure of the hernia, with a marked proliferation of tissue along the line of the buried sutures, led me to inquire if the sutures buried in the part had not been disposed of in a manner similar to that demonstrated

by Mr. Lister, resulting about the cat-gut ligatures surrounding the arteries?

I instituted a series of experimental histological studies, upon the lower animals, and demonstrated that, along the track of an aseptically buried suture, cell-proliferation rapidly supervenes, and that new cells invade the softened structure, and, *pari passu* with its absorption, a living band of connective tissue cells replaces the suture. If rapidly absorbed, the proliferated cells are minimized; as the process goes on more slowly, the change becomes more distinctive until, in young animals, in ten to fifteen days all trace of the suture as a foreign material is lost. The value of such reinforcement of the tissue along the line of the sutures became at once apparent in their application to the cure of hernia, and, little by little, I early extended their use to the closure of wounds of every description, publishing from time to time my results.

In the pursuance of my studies, I early had occasion to examine a great variety of the specimens of cat-gut offered in the market, although from the first I adopted what seemed to me the wise precaution of preparing my own sutures. In cat-gut there are of necessity certain inherent defects. Its method of preparation is not generally known to the profession, who have rarely questioned the product beyond the conditions in which it is offered for sale, as prepared for the musician. The best of these varieties usually comes from Italy, prepared from the intestine of the sheep of the mountainous districts. The small intestine necessarily undergoes maceration, until the strong connective tissue layer, which, as a fibrous sheath unites the mucous and muscular coats of the intestine, is loosened and can easily be separated, in a manner not unlike that practised in the preparation of the intestine of the pig for the making of sausages. This is split by a cork, armed with sharp blades, drawn through the circular sheath, dividing it into sections to produce the desired size. These ribbons are twisted, dried, and often-times sand-papered, to give evenness of surface, and usually put up in skeins from twelve to fifteen feet in length—the cat-gut of commerce.

The connective-tissue cells of the fibrous coat of the intestine are irregularly disposed, the fine fibres more commonly crossing diagonally to the longitudinal axis of the intestine, a wise distribution of this strengthening portion of the intestine to allow considerable change in its shape. When carefully examined under a low-power lens, the fibres are seen to be irregularly interlaced, not unlike a strip of cloth cut diagonally. The gut, even in

the dry state, has a perceptible yield on tension, and every musician knows the care requisite to protect his strings against moisture. Frequent allusion is made in the classics to the care demanded of the bowman in this respect, when it was customary to string the weapon with animal products.

The above condition is readily apparent if a piece of cat-gut is macerated until it can be easily unfolded. Moreover, its division is rarely uniform, and, when sand-papered, the removal of the irregular projections causes oftentimes large abrasions or rents. No matter how prepared for surgical use ultimately the result obtained will depend, in considerable measure, upon the integrity of its structure, since the component cells are, little by little, separated by the penetration of the new proliferating cells. In the first stage of preparation, the long maceration of the material, remaining for a considerable time a putrefying mass, necessarily damages it, not only by softening the adhesion of the fibres, but infecting them with bacteria; and in the use of cat-gut for all surgical purposes it is important, as the first step in preparation, to destroy any germ infection that may remain. After this has been effected, no method which I have tried gives a result equal to that formulated by Sir Joseph Lister: "Dissolve one part of chromic acid in 4,000 parts of distilled water, and add to the solution 200 parts of pure carbolic acid or absolute phenol. In other words, I use a 1 to 20 watery solution of carbolic acid, only that the carbolic acid is dissolved, not in pure water, but in an exceedingly dilute solution of chromic acid. But, minute as is the quantity of the chromic acid, it exerts, when in conjunction with carbolic acid, a most powerful effect upon the gut. The first effect of the addition of the carbolic acid to the chromic solution is to change its pale yellow color to a rich golden tint; but, if the liquid is allowed to stand without introduction of the cat-gut, it changes in the course of a few hours to a dingy reddish brown, and a considerable amount of grey precipitate is formed. If, however, cat-gut about equal to the carbolic acid is added, as soon as the ingredients are mixed, the liquid retains its brightness, and the only change observed is a gradual diminution in the depth of the yellow color; the precipitate, which I presume still occurs, taking place in the substance of the cat-gut. As soon, therefore, as the preparing liquid has been made, cat-gut equal in weight to the phenol is introduced into it. If you have too large a proportion of cat-gut, it will not be sufficiently prepared: if you have too small a quantity, it may run the risk of being over-prepared. At the end of forty-

eight hours cat-gut steeped in such a solution is sufficiently prepared. It is then taken out of the solution and dried, and, when dry, is placed in 1 to 5 carbolic oil. It is then fit for use."* It improves by age, and is better not to be used until after it has been several months in carbolic oil. The preliminary disinfection of the gut is of the first importance, since the carbolic acid may not penetrate the hardened structure and destroy the bacteria within the strands. I have elsewhere published** in detail the micrococcal infection, developing only along the line of the buried sutures, of four consecutive surgical cases, giving evidence upon which I deduce the conclusion that it could have been owing only to this inherent defect of the cat-gut, which had been selected from freshly opened preparations, preserved in carbolic oil, and sent to me from London.

Owing to these inherent defects in cat-gut, I was led to inquire if there were not animal tissues better suited for surgical uses. The tendinous structures of the body demonstrate the connective-tissue cells parallel and firmly united to each other. Although generally thus disposed, there is considerable variety in the arrangement of the cells, making a parallel separation much more uniform in some tendons than in others. As far as possible, I entered into a detailed investigation of all animal tendons of sufficient size for surgical purposes with varying results. The tendons of the hind leg of the moose or caribou, soaked in a sublimate solution until soft, were the first tested. A considerable portion of the tendon can be subdivided sufficiently fine for sutures, in length from fifteen to eighteen inches. Such sutures were exhibited in London at the International Medical Congress in 1881, this for the purpose of the cure of hernia by the reconstruction of the inguinal canal to its normal obliquity.

The late Dr. John H. Gilman, of Lowell, called my attention to tendons from the whale, stating that he had "used them with great satisfaction in the ligation of vessels." Specimens were sent me from Provincetown, four feet in length and of sufficient strength to draw a cart, but the ultimate fibrils were interfacing;

* In several instances I have known sutures to be ruined by a misunderstanding of the above directions of Mr. Lister, much too large a quantity of chromic acid having been used. It may simplify to remember that the quantity is about four grains of chromic acid to a quart of a saturated solution of carbolic acid.

** "The Surgical Advantages of the Buried Animal Suture," *Journal of the American Medical Association*, July 21st, 1888.

while the whole tendon was interspersed with adipose cells. I obtained ligatures also from the whale tendon which were made under the direction of Dr. T. Ishiguro, of Tokio, Surgeon-in-Chief of the Imperial Japanese Army. The mode of preparation is given as follows: "First, the whale tendon is dissected by the points of needles, and teased out until the fibres look very like those of hemp. Secondly, the longest and finest fibres among them are selected and they are then spun together as ordinary silk thread." There can be no question but that ligatures thus prepared are very serviceable, but the specimens furnished me were not suitable for sutures.

The Sioux Indian women in the North-West taught me, in 1882, their manner of sewing buffalo-skins with the tendinous structures derived from the *fascia lata* of the buffalo, which they preserve for this purpose by drying and smoking. During the summer of 1889, I obtained from Mr. Harry Adams, of the Hudson Bay Company, when in Winnipeg, Manitoba, specimens from the *fascia lata* of the moose, prepared by the Indians as a substitute for that from the buffalo, now extinct, called by them *astis*. They use it in the dry state, stripping it as they sew, occasionally wetting it in the mouth. Imperfect tendon sutures in any quantity can be obtained from this source. My specimens, however, are not more than fifteen inches long, and are in every way inferior to the tendons from the tail of the kangaroo. Some years since a distinguished Russian surgeon sent me specimens from the reindeer, finely divided and slightly twisted. These I prepared and used with good results.

In 1880, Dr. S. G. Simmons, of Charlestown, S.C., sent me admirable specimens of tendons from the tail of the fox-squirrel, with the statement that he had often used them for delicate surgical purposes with great satisfaction. This tendon is composed of exquisitely beautiful, parallel fibrils, which are hardly larger than fine threads. Their extreme length, however, scarcely exceeds nine inches. The opossum has the tendons of the tail distributed in a manner similar to those of the squirrel. Since the opossum is a member of the marsupial family, it was easy to infer that the kangaroo would furnish larger and longer tendons.

Through the kindness of the late Mr. Alonzo H. Newell, of Boston, for many years a prominent merchant in Australia, I secured some most excellent specimens from the wallaby, one of the smaller species of the kangaroo.

At the International Medical Congress, held in London, in

1881,* in a paper upon the cure of hernia, I described the use of the tendon suture from the kangaroo and other animals, as especially to be commended. Reference to my recommendation of the kangaroo tendon and its value in surgery was some time later made in an Australian publication. This came to the notice of Dr. Girdlestone, who wrote me that he had used kangaroo tendons for ligatures with great satisfaction, and that he had published his results.**

The tendons should be taken from recently-killed animals, quickly sun-dried, and kept dry until ready for further preparation. This prevents primary decomposition, which we have pointed out as unavoidable in the preparation of cat-gut. When soaked until soft, they are easily separated into as fine strands as desired with remarkably little waste, and are from fifteen inches to two feet in length. Kangaroos are very numerous in Australia, their skins have a very considerable commercial value, and hundreds of thousands are exported annually; yet it has been with the greatest difficulty that I have succeeded, until quite recently, in securing tendons more than sufficient for my own use, although I sent *carte blanche* orders to various parts of Australia. These are prepared under my personal supervision, and can now be obtained from the various dealers in surgical materials at a cost somewhat in excess of that of cat-gut, to which they are in every way greatly to be preferred.

The larger varieties of the common rat have the tendons of the tail similarly disposed, but are hardly long enough to be of any practical value.

In the *Medical News* for December 5th, 1891, Dr. E. Oliver Belt, of Washington, states that he has made extensive use in ophthalmic operations of a fine fibre derived from the rat's tail. The tail is skinned and soaked in water for several days, when, on slight manipulation, it splits into, perhaps, a hundred fibres, each about eight inches long. They are placed in alcohol and, about once a month for two or three days at a time, they are soaked in a 1 to 5,000 solution of corrosive sublimate. Dr. Belt recommends these fibres in cases where a strong and fine animal suture is required. He says they are much finer than those pre-

* "The Cure of Hernia," Transactions of the International Medical Congress, 1881, Vol. ii., p. 446.

** "Tendon Ligatures," T. M. Girdlestone, *Australian Medical Journal*, 1877, Vol. xxii., p. 356.

pared from the opossum's tail, which he had seen used by Dr. Chisholm, of Baltimore.

Dr. Dudley, of Texas, has written an interesting article upon the use of the tendon of the *lepus*, or mule-eared rabbit, as a material for ligatures and sutures. Dr. Dudley does not state the portion of the animal from which he obtained the tendon, but described them as "an aponeurosis of muscles rolled upon each other, susceptible of being torn into minute threads if so desired." He first had occasion to use the tendon of the *lepus* as a suture, in the fresh state, in 1881, finding he had no silk in his pocket-case. He has continued the use of these tendons with the greatest satisfaction to the time of his report.

The use of the animal suture requires the same, and the only, precautions that are requisite for the successful application of the ligature. It must be in itself aseptic; it must be aseptically applied in an aseptic wound. When thus applied the range of its use should be extended to all operative wounds. It is difficult to conceive if any possible advantage is to be derived in the treatment of any aseptic wound by leaving it open—the so-called open wound method. Before the *role* of bacterial development in wounds was understood, when it befell from chance rather than from scientific care that primary union supervened, it is easy to understand how many, who dreaded the daily experiences of fermentative material retained in pocketed wounds, not only refused to rely upon drainage with occasional irrigation, but insisted, as far as possible, upon allowing no recess in which purulent material could gather. In order to effect this, the lips of the wound were separated and kept apart by dressings, so that the wound might heal by granulation from its very base. This was manifestly safer for the patient, and the result attained was not unlike that from the repair processes which supervene in the secondary healing of infected wounds; but those who still advocate this method, thereby confessedly acknowledge their lack of confidence in the modern methods of wound treatment, and their inability to protect wounds from infection. In rare instances it has been claimed that the resulting cicatricial union gives an increased strength to the parts involved—an opinion which it seems easy to demonstrate is unscientific and contrary to the general consensus of surgical opinion. If it is correct to assume that the theoretic perfection in wound treatment, which it is the ambition of the surgeon to attain, means a reunion of the divided parts, the anatomical relationship to be restored and maintained, then the buried animal suture holds a higher place in

surgery than ever hitherto considered. If the suture itself is replaced by vitalized structures, then its proper application becomes of the highest importance, the value of which the profession, even to the present time, with few exceptions, fails to appreciate. Given, in illustration, the joining of a divided retracted nerve or muscle, and its restoration to subsequent perfect usefulness, the sundered cervical tissues after a hysterectomy where the delicate joining of the peritoneum allows no open wound for hemorrhage or absorption; the reunion of the abdominal wound after laparotomy, where the peritoneum is independently united by a layer of buried sutures, and, where the *linea alba*, or the muscular aponeurosis of the sheath of the recti is carefully joined, since the adoption of which method I have not had a single case of ventral hernia; or again, in the amputation of large tumors of the breast, where the remaining tissues are carefully coaptated, so that retention and pocketing of fluids are impossible, rendering drainage not only superfluous, but harmful. I would not underestimate the importance of drainage in wounds that are necessarily septic, and in this class of wounds the interrupted silk-worm gut or silver wire suture is to be preferred.

The earlier discussions upon the uses and advantages of the buried animal suture are both interesting and profitable. Dr. Werth, of Kiel, is the first surgeon that I have found, eight years after my first publication, to publish his observations upon buried sutures. He advocated the use of cat-gut as an interrupted buried stitch in the repair of the perineum. These were taken between one and two centimetres apart, the gut tied and cut short upon the knot. In cases where the surfaces to be coaptated were large, a second row of stitches was similarly placed. Great care was exercised in making the application under aseptic precautions, and most satisfactory results were obtained.

My own experience with the buried animal suture commenced with its use in the case of hernia above referred to 1871. And this, with other cases, where the cure was believed to be referable to the buried suture, was first published in the *Boston Medical and Surgical Journal*, November, 1871. In 1878, I contributed a paper upon the cure of hernia, based upon the resection of the sac, the at present so-called Bassini operation, and closure of the parts with buried sutures, at the meeting of the American Medical Association. A further contribution upon the same subject, emphasizing the value of the tendon suture was published, 1881, in the "Transactions of the International Medical Congress." These and several other articles giving the results

and surgical advantages of the use of the buried animal suture, and its adaptability to special purposes, were printed and widely distributed to the profession in Europe and America.*

If the premises which I have assumed in the early discussion of this article are correct, that a properly prepared aseptic animal suture, aseptically applied, retains its strength sufficiently long to hold at rest the coapted parts until primary union is effected, and then itself slowly disappears, after having fulfilled its function, to be in a measure replaced by vitalized connective tissue, there can be little wanting to attain the theoretical perfection in the suturing of wounds. The first observations which I published, perhaps naturally provoked only criticism and incredulity, and the results were considered rather as accidental. But the evidence, already accumulated and presented to the profession by a great variety of observers in different parts of the civilized world is quite sufficient to substantiate this claim.

Silk has justly held a high place in the esteem of the profession, because of its exquisite perfection of preparation, and it has been claimed, if rendered aseptic, that it was equally safe as a buried suture. Mr. Laurence, of London, in the early part of the century just passed made many interesting and valuable studies upon the ligation of vessels with silk cut short and buried in the wound. His efforts to minimize what he considered the irritating foreign material are very instructive. "The method I have adopted consists in tying the vessels with fine silk ligatures, and cutting off the ends as close to the knot as is consistent with its security. . . . Of the silk which I commonly employ, a portion sufficient to tie a large artery, when the ends are cut off, weighs between one-fiftieth and one-sixtieth of a grain." He adds, "Although I have not yet ascertained what becomes of the piece of ligature after the wound is united, I have never seen abscess, or any other bad symptom occasioned by them." Mr. Lister early experimented very carefully with silk steeped

* "Animal Ligatures," *Annals of Anatomy and Surgery*, July, 1881, p. 232. "Cure of Hernia by the Antiseptic Use of Animal Ligatures," Transactions of the International Medical Congress, 1881. "Animal Ligatures," *New England Medical Monthly*, June, 1883. "The Restoration of the Perineum by a New Method," *Journal of the American Medical Association*, October 27th, 1883, Reprint. "The Surgical Advantages of the Buried Animal Suture," *Journal of the American Medical Association*, July 2nd, 1885, Reprint. "The Perineum: Its Anatomy, Physiology, and Methods of Repair after Injury," Philadelphia, 1889. "A Treatise on Hernia: The Radical Cure by the Use of the Buried Antiseptic Animal Suture," published by George S. Davis, Detroit, Mich., 1889. "The Anatomy and Surgical Treatment of Hernia," 4to, 1892.

in various substances, immersed in melted wax and carbolic acid to render it aseptic. In further proof of its innocuousness, it has been claimed that it is also an animal product, and that the tissues should be capable of assimilating it into their own structures. My late distinguished friend, Dr. Pancoast, of Philadelphia, believed the fault lies in large measure in the introduction of lead during its preparation, and that hence the use of iron-dyed silk is greatly to be preferred. "It is innocuous, does not produce suppuration along the track of the thread, and the color adds much to the ease with which it may be distinguished for its removal." These are advantages doubtless, but the necessity of removal emphasizes the fault in material, and not in the color, or skill of application, which renders it manifestly unfitted for use as a buried suture.

The general verdict of surgical opinion is that aseptic silk, aseptically applied, may be incorporated into the tissues, but remains encysted, and often after a considerable lapse of time, causes irritation, and is expelled as a foreign body. Somewhat recently I removed a silk suture three years after its introduction; although buried in the tissues, it was still unchanged. At the meeting of the British Medical Association, in 1890, Mr. Timothy Holmes, of London, one of the most distinguished of surgical authorities, delivered a valuable address upon the surgery of the large arterial trunks, in the discussion of which I had the honor of participating. In the consideration of ligatures, he wrote,* "Silk admirably fulfils four of our conditions: It is of trustworthy composition, easily tied, may be relied on not to untwist, and can be tied with any degree of force, but it is questionable whether it is so far unirritating as to bury itself in the tissue of the artery, and become absorbed or disintegrated, without setting up suppuration, and coming away; that is, dividing the artery. . . Stout cat-gut ligatures are very handy, and I have used them on most of the great arteries, and with uniform success; but they are certainly not of trustworthy composition. Ox aorta appears to me an admirable ligature, and I used it with perfect ease and success in tying either the external or common iliac artery in 1879. But the kangaroo tendon ligature has seemed to me to unite all the advantages of the ox aorta, and to be also somewhat more manageable and more smooth, so that it has been employed at St. George's in almost all such operations now for some years. Tendon ligatures are of uniform and

* *British Medical Journal*, November, 1890, p. 1, 110.

trustworthy composition, fashioned by the hand of nature, instead of being prepared by a process, involving an uncertain amount of decomposition. One of the most interesting papers bearing on the subject is Mr. Dent's, in the "Medico-Chirurgical Transactions," Vol. lxiv., describing the microscopic examination of a tendon ligature, ten days after its application to the carotid artery, by Mr. Pollock. In passing the ligature it broke while the second knot was being tied, and therefore a stout piece of cat-gut was also tied around the artery, but no trace of the later was found *post mortem*. The ligature tendon was found still firm, its knot buried in a mass of lymph, the external coat of the artery uninjured, and not ulcerated, the internal coat ruptured in places by the ligature, and with its inner walls lying in contact, the tendon buried in, and closely connected with, the arterial wall, infiltrated with small, round granular cells, or leucocytes, and permeated by blood vessels which, Mr. Dent believed, to be of new formation. As far as a single case goes, nothing could be more satisfactory as proving the unirritating character and firm grasp of the tendon ligature." Mr. Holmes quoted* from a paper by Mr. Ballance, and Mr. Edmunds, "Here it will suffice to say that the authors do not regard silk as a perfect ligature for aseptic wounds, but recommend the use of a small, round, absorbable ligature, preferring tendon for this purpose, for the following conclusive reasons: 'The structure is continuous throughout, and there are no spaces, as there are in cat-gut, due to twisting in its preparation. It does not split or crack during absorption, which takes place from the surface. It is easily aseptic. It is only gradually, and after a long time, acted upon by the living materials which encompass it.' They add that kangaroo tendon is very convenient for practical use, being strong, of ample length, and becomes as supple as silk by soaking for half an hour in tepid sublimate solution; and they believe the tendon ligature to be trustworthy for at least two months."

If absorbable sutures are to be used, how may they best be applied? Coaptation and fixation, at rest, of like structures, with as little force applied as possible, is the object sought. More suture material than is required for these purposes is detrimental. It must be applied with a minimum of devitalization of the tissues. The interrupted suture is faulty in that it holds at only the single point of application; and in order to make complete co-

* "Ligation of the Larger Arteries in their Continuity: An Experimental Inquiry," Medico-Chirurgical Transactions, Vol. lxix.

aptation in large wounds, undue compression, often to the devitalization of the part constricted, must be used. Each stitch necessitates a knot.

The interrupted suture is the legacy of the Fathers, and was used by them distinctly with the purpose of removal, and in order to relieve the tension of the exudation of fluids, a stitch was cut from time to time as thought desirable. If the wound remains aseptic primary union will supervene, and the stitches taken through the skin for the purpose of removal have no advantage in being single. Thus taken, they coaptate far less evenly and securely the included tissues. It requires much more time to apply them. If the seamstress or the tailor made our clothes in this manner, we should wonder at their bungling methods. The principle is precisely the same with the surgeon; and, even if he has to serve an apprenticeship to the tailor, he should certainly not be less dexterous, since Nature's most precious coat should be most artistically repaired.

Like structures, as far as possible, should be coaptated: fascia to fascia, muscle to muscle. Fine continuous running suture-taken rapidly, accomplish this purpose in a manner so as not to leave pockets for the accumulation of fluids. The accumulations as well as larger tendons applied in many layers, we know, if aseptic, will usually be cared for by Nature's processes, but it is a part of our art to minimize the burden, instead of making the effort to determine how much she can accomplish in this direction. The over-and-over suture, glovers' stitch, is undoubtedly the one in more common use, but it does not serve the purpose in the coaptation of wounds nearly so well as the parallel stitch, namely, the needle is inserted deeply within the tissues parallel to the long axis of the wound, and each succeeding stitch is made by introducing the needle exactly opposite the emergence of the preceding one. In this way, upon tension, coaptation is evenly secured, and the suture material crosses the incision at right angles and by this means the suture is completely buried in healthy, closely surrounding structures. Sometimes, for example, in the reconstruction of the inguinal canal, the closure of the peritoneum and *linea alba*, there is a decided advantage in using a double line of sutures, just as the shoemaker sews leather, the needle with eye near the point serving as a shuttle to carry the suture. It must, however, be remembered that much force is inadvisable, since coaptation, and not constriction, is the purpose. In sewing, the needle is of importance as well as the suture, and the profession is greatly indebted to Hagedorn for his valuable

addition to our armamentarium in this direction. The medium sizes of fully curved needles serve best, since they can usually be used by the fingers without the aid of forceps. The continuous suture requires but a single knot, and undue constriction is less liable, since a compensation occurs, equalizing the force applied to the entire suture. This, I consider, of the first importance, since, under the earlier teaching, most surgeons still use too much force. Injury and devitalization of the structure is the necessary consequent. The extraordinary strength of tendon is, in a measure, a fault, since its unyielding character admits easily of undue force. The frequent inquiry is made, "for larger tendon, since I must have it very strong." Some time ago, one of Europe's most distinguished surgeons operated in my clinic. He would have only braided silk, and in its application broke all his sutures finer than No. 8. Such force must necessarily necrose all the enclosed structures.

Fatty tissues are of low vitality, and burying sutures in them is, as far as possible, to be avoided, since an aseptic fat necrosis will not seldom supervene. As a rule they do not require independent suturing, since they are not very vascular, and are in themselves passive, and are in easy juxtaposition, when the other structures are held in coaptation. The skin is evenly sutured by the use of a fine tendon. The needle is introduced parallel to the long axis of the wound, and hence I have called it the parallel suture. Each stitch is entered exactly opposite the emergence of the former one. In this way juxtaposition of the edges of the skin is accurate without puckering, and the iodoform collodion seal completes the operation.

ADVANTAGES.

All aseptic wounds closed with buried aseptic tendon sutures will remain aseptic and in well vitalized structures will be followed by primary union. There is no danger of subsequent infection, no expensive and troublesome dressings are required; the subsequent nursing and care are very greatly reduced; the anxious forebodings of the surgeon "lest something go wrong with his wound" is avoided; no sutures are to be removed, relieving greatly the dread and anxiety of the patient; safety is greatly enhanced and the period of convalescence is shortened. When the work has been done with care the resultant cicatrix is scarcely visible, a matter of much importance in some portions of the body. Operations hitherto impossible have been rendered feasible by the

use of buried absorbable sutures, for example, the reconstruction of the pelvic structures, the closing of rents in the peritoneum, etc. The reconstruction of the obliquity of the inguinal canal for the cure of hernia in the male has become an almost everyday occurrence, and should be yet much more widely practised. Indeed, it was for this very purpose that I first used the buried animal suture in 1870, and am now in my 500th series of cases with over 90 per cent. of resultant cures. The reformed structures may be greatly strengthened by the rejoining of the sundered tissues by means of lines of buried sutures, as contrasted by a single layer of interrupted sutures, for example, the closure of the abdominal wall in laparotomy. Here, in the closure of the wound by a single line of interrupted sutures, about 10 per cent. of the cases result in hernia at the line of the incision. When closed in layers, the composit structures are rejoined, and in primary union hernia should be altogether avoided. In over 1,500 laparotomies of this character, I have had but a single subsequent hernia. Indeed, this is but to be expected, since like structures are joined, and the suture itself is replaced by a living band of connective tissue. To-day the aim of the surgeon is to reconstruct and restore, as far as possible, to the normal pattern, all the healthy tissues remaining for manipulation. To this end a tumor is removed, and the parts completely closed, if possible. Although our mission is necessarily iconoclastic, the service should be rendered with such gentleness of measures that Nature accepts it as her best ally, and a double blessing follows the ministration of the surgeon, not alone in the aversion of the threatened danger, but also in the accomplishment of the same with the minimum of pain and suffering, and the maximum of safety.

With all the emphasis of an earnest conviction, I commend to every aseptic surgeon familiarization with the methods of wound closure by means of buried absorbable sutures, preferably tendon, and not alone predict their early general adoption, but that, in importance, they hold the first place in the technique of modern aseptic wound treatment.

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THE OPERATIVE TREATMENT OF GOITRE.*

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Gentlemen,—When your Committee did me the honor of asking me to read a paper before you on this subject, I decided to confine myself to a brief account of the operation, which I have gradually come to prefer. I shall, therefore, dismiss in a word such methods as dividing the cervical sympathetic, or the use of electricity, about which I hope others may have something to say.

At the outset I think we should lay down some guiding principle as to *when* we should operate. Certainly *all* cases of goitre should not come under the surgeon's knife. For instance, in anemic girls, about puberty, we have seen rapidly-growing, ill-defined goitres, even producing pressure effects, which have gradually disappeared with or without medical treatment.

Again, no goitre should be operated on for purely esthetic reasons. It is not a trifling operation, and should not be lightly undertaken by the novice. On the other hand no patient, however desperate her condition, should be denied the undoubted relief which follows the removal of this obstacle to respiration. In all cases of benign goitre the patient should first be submitted to a course of medical treatment, unless, of course, the symptoms be urgent.

In 1898, Kocher made the statement that 90 per cent. of the goitre cases, coming into the hospital at Berne, were so improved by medical treatment as to require no operation.

To sum up, in all cases of benign goitre, solid or cystic, operation should only be undertaken for the relief of definite symptoms. In malignant disease of the thyroid, if an early diagnosis be possible, extirpation of the gland will be the patient's only hope. Unfortunately, early diagnosis is rarely made, and, when seen, the surrounding glands are involved and all hope of a radical cure must be abandoned.

In such advanced cases of malignant disease my rule has been to advise partial removal, only to relieve pressure from the continued growth, and to render possible the future operation of tracheotomy.

In exophthalmic goitre I have operated twice for the relief of urgent pressure symptoms, and have not regretted doing so. In

* Read before Ontario Medical Association, June 17th, 1903.

both cases immediate relief was experienced, and the symptoms of the disease ameliorated.

In this class of cases there is greater danger of death from the anesthetic; and yet, ordinarily, the patient is too nervous to submit to the operation under local anesthesia. Here an expert anesthetist is required to co-operate with the surgeon. The convalescence is also likely to be decidedly eventful, and to demand watchfulness and keen judgment on the part of the attendant.

Nevertheless, in a case of Grave's disease, failing to respond to prolonged medical treatment, with steady increase of growth, the suffering patient should be given the benefit of operative interference.

Having laid down these working rules as to *when* to operate, the next question to decide is as to *how much* should be removed in a given case. Of course, if but one lobe is involved, only that lobe should be dealt with. I have removed the isthmus alone, when it alone was involved. But, in the ordinary parenchymatous goitre, usually both lobes are unequally involved. At first, it was my practice to remove the whole gland with the exception of a small portion of one lobe. This I now believe to be unnecessary; and, unless both lobes are enormously enlarged, my constant practice is to remove only the larger lobe with the isthmus. Following this method, there has been almost invariably a fairly rapid diminution in the size of the lobe remaining; and, of course, all pressure symptoms are at once relieved.

A word as to the anesthetic:

The ideal in this regard is of course a thoroughly competent local anesthetic. I know that many men on this continent and in Europe are using cocaine anesthesia in this operation. But, so far, I have employed chloroform, administered by an expert.

In bad cases of dyspnea, the anesthetic is stopped as soon as the skin incision is completed, the operation being continued, with little or no further use of it, until the pressure is removed from the trachea and all danger of asphyxia has passed. I believe that by intelligent co-operation between surgeon and expert, a patient can thus be "nursed" along through the operation without suffering on his part and with the minimum amount of danger. At the same time, being so lightly anesthetized, the patient, by his unconscious phonation, is able to give us assurance of the safety of the recurrent laryngeal nerve.

Now as to technique:

The best incision in the vast majority of cases is the transverse or shallow U-shaped one, extending across the tumor from one sterno-mastoid to the other. The horn of the incision, corresponding to the lobe to be removed, may be extended upward

and outward as far as necessary. This incision passes through skin and subcutaneous tissue, platysma and deep cervical fascia.

The two flaps are dissected up and down, and, if necessary, the anterior jugular is cut between ligatures. Next, the pre-tracheal layer of the cervical fascia is recognized and very carefully incised vertically in the medium line. Immediately beneath this layer is the capsule of the tumor, and, if care be not taken, this capsule is opened up and the field of operation is flooded with hemorrhage, very difficult to control. In other words, the operation will be practically bloodless, or a dangerously bloody, one, according as the surgeon is, or is not, extremely careful in working close to, but outside, the capsule.

The opening in the pre-tracheal fascia is enlarged as required, the finger introduced, and, by this means, any adhesions between fascia and capsule are readily broken down. The finger is then swept around the outer and upper margin of the tumor, forcing the pre-tracheal fascia and muscles over the edge of the mass, and the superior thyroid vessels are recognized and cut between clamps.

This usually releases the outer part of the lobe, which may now be drawn forward and, still with the finger as a blunt dissector, everything is stripped away from the posterior wall of the capsule, gradually rolling the lobe over to the middle line. If care is taken to strip everything cleanly and completely from the posterior part of the capsule, the recurrent laryngeal nerve will necessarily be pushed away from the inferior thyroid vessels and all danger of injury to it removed.

The inferior thyroid vessels are tied off, close to the tumor; and the lobe is now completely freed, and we see the rings of the trachea to which the isthmus is adherent. Here there is a decided danger of injury to the trachea, the wall of which is probably atrophied by long-continued pressure. No violence must be used in separating the isthmus, and, indeed, I have again and again left a small portion of the posterior wall of the isthmus, which was adherent to the trachea, rather than risk its separation. The junction of the isthmus with the opposite lobe is now transfixed with silk and tied off, and the mass cut away.

This ligating of the pedicle, while unnecessary so far as hemorrhage is concerned, still, I think, serves a purpose in preventing the escape of thyroid secretion into the wound, which is the probable cause of some rather disagreeable symptoms which occasionally arise during convalescence. Every smallest bleeding point should be tied off with fine silk and some means adopted to obliterate the huge "dead space," which, in cases of large tumors, is left behind sternum and clavicle.

This cavity is a serious menace to the patient's life from the accumulation and decomposition of secretions. I have found the following method of dealing with it to answer well. With a small fully curved needle, armed with fine catgut, I quilt the anterior and posterior walls of the space together by an over-lying series of running sutures. The first line of sutures will be at the bottom of the space, the next a little higher up, and so on until the whole space is snugly obliterated to the level of the top of the *sternum*.

I believe in temporary drainage and now use the method suggested by Cheyne. A button-hole is cut through the lower flap, just above the sternum; and a small tube drawn through, the inner end of which lies in the lowest part of the wound, behind the sterno-mastoid.

A provisional suture is placed in this little wound and, when the tube is withdrawn (after 48 hours), is tied. If the pre-tracheal, or sterno-mastoid, muscles have been cut, they should now be carefully reunited and the wound in the pre-tracheal fascia closed. A running suture of fine silk closes the skin-wound, plenty of dressing applied, and the head is supported between two sand-bags. A very important precaution is to direct the nurse to control all violent movements of the head, while the patient is recovering consciousness, and to compress the dressings gently during vomiting. This latter may often be avoided by a hypodermic of morphia, just before beginning the operation.

The tachycardia and high temperature, which are sometimes so troublesome, may be controlled by digitalin and the local use of the ice-bags.

In case of adenoma or cystoma of the thyroid, the procedure just detailed is modified. When the gland is exposed, the capsule is carefully cut through and the tumor, solid or cystic, is enucleated. Of course, some hemorrhage from the capsule is unavoidable, but is readily controlled.

Partial or complete aphonia may follow the operation. It may result from (*a*) traumatism of the recurrent laryngeal nerve; (*b*) traumatic tracheitis and laryngitis; or (*c*) hysteria. Usually the difficulty is only temporary. From a medico-legal point of view, it is interesting to note the history of one of my cases. She was a decidedly neurotic maiden lady, aged 35 years. Complete aphonia followed the operation of removing almost the whole of both lobes in a very large goitre. The vocal cords were pronounced by the laryngologist, to be cadaveric; and the patient went home improved in every other way, but quite voiceless. Her account was sent her, and, in reply, a rather nasty letter was received, and we

looked for legal complications. Suddenly, one morning, *nine months* after the operation, she awoke with her voice fully restored, and, among other results, a letter from a grateful patient and a cheque were not the least desirable.

As to the mortality of the operation, that as you know has been steadily declining of late years, I have notes of thirty-three cases operated upon, three of which were malignant, and two were cases of exophthalmic goitre. I have had no deaths directly following the operation. One of the malignant cases, an old lady of 70, insisted upon going home to the country two weeks after the operation, and, after a long railway journey, died suddenly at her own railway station, I judge from exhaustion. A second malignant case died some six months later from recurrence. The third was a case of sarcoma with very distressing dyspnea. The operation was a desperate one, artificial respiration having to be carried out during the time she was on the table. She rallied nicely and felt much relieved, but died a week later from uremia. This patient was known to have Bright's disease, but was very anxious for the operation, expressing herself delighted with the result.

SUCCESSFUL OPERATION UPON FOUR CASES OF GOITRE IN A SEPTIC CONDITION.*

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One of the dangers pointed out in all text-books, to be feared in connection with the operation for thyroidectomy, is septic infection, giving rise to cellulitis, and in turn to purulent diffuse mediastinitis. On account of this grave danger surgeons have avoided operating upon goitres, which were already in a septic condition. Having operated upon four such cases successfully I thought it would be of interest to report them rather fully. Not only does the septic condition, which is present in the gland make it difficult to do an aseptic operation, but the gluing together of structures still further embarrasses the operator and adds materially to the difficulty of the operation.

CASE I.—Mrs. W. E., aged 32, gave the following history: Has had goitre since 18 years of age. Her father and one brother had goitre. Has had two children. Since her last child, in 1896, her neck has increased rapidly. The goitre was most noticeable at her menstrual periods. She is very nervous,

* Read before Ontario Medical Association, June 17th, 1903.

and has had rapid heart action for some time. Her eyes are prominent. Dr. Dickson saw her in March, 1898, and gave her galvanic electricity. From this until July, 1900, galvanic and static were used together with the electro-puncture. I saw her January 2nd, 1901, and then there was considerable discharge from the site of the electro-puncture. I sent her into the General Hospital, and on January 8th, she was given an anesthetic, and the discharging sinus was thoroughly curetted. On January 10th the right half of the enlarged thyroid gland was removed under chloroform. The lower part of the wound was drained. She left the hospital on February 15th, the wound being entirely healed. The only feature worth noting in her convalescence was that she suffered from aphonia. This persisted until about four months after the operation, when she completely recovered her voice. I fancy it was due to some traumatism of recurrent laryngeal nerve, perhaps partly hysteria. Her pulse rate, prior to the operation, was 120; six months after it had gone down to 80, and has remained at that since, her nervous symptoms having much improved. I looked upon this case as allied to Graves' disease, although not presenting all the typical symptoms. I have seen her recently, which would be two years and four months after the operation, and she is in the best of health, her former symptoms having practically all disappeared.

CASE 2.—Mrs. C. Gives the following history: She is 45 years of age. Ceased to menstruate at 22. First noticed goitre two years after. Her sister had the same early menopause. No family history of goitre. Thirteen years ago her family physician injected pure carbolic into the goitre. This left a cicatrix, which bound the skin to the gland. She went to Dr. Dickson in March, 1899, for treatment. At that time the skin of the neck was red and inflamed at the situation of the injection. In July of this year she had distressing dyspnea, and in order to relieve this Dr. Dickson applied electricity externally. The old cicatrix broke down and discharged pus. He had only given her two treatments when this occurred. In September of this year there were two openings discharging pus, and this condition continued up until the time of operation. On January 3rd, 1902 I enlarged the sinuses, and curetted them out thoroughly, removing a quantity of greyish slough and putting in a drain of iodoform gauze. This was dressed constantly in the hospital until March, when it had cleaned up sufficiently for me to consider it safe to excise the goitre. The patient was anesthetized with chloroform, and Dr. Dickson assisted me. I first packed the old sinus with iodoform

gauze so as to shut off the pus cavity as much as possible. The incision was made transversely across the tumor from right to left with convexity downwards, and made to surround the opening of the sinus so as to remove the unhealthy skin. After isolating the gland, when an attempt was made to displace it forwards, it was found to be adherent to the vessels of the neck, and it was with great difficulty that it was separated from the internal jugular vein and common carotid, to which it was firmly bound by fibro-cicatricial tissue. When the tumor was separated, it was found that the abscess had extended directly through the thyroid gland, and that the floor of the abscess was formed by the carotid and jugular vein, and that the dressing which was packed in daily was being packed down upon the common carotid artery and internal jugular vein. One can see what a grave danger was run in this way. The gland was also adherent to the upper part of the trachea by an inflammatory mass, and in separating this it was found that the right half of the two upper rings of the trachea were carious and had to be scraped away. The isthmus was transfixed and the right half of the gland removed. Pure carbolic was applied to the fibrous thickening over the vessels, and the whole wound flushed out with 1-40 carbolic solution and a drainage tube left in. She left the hospital in five weeks' time, the wound being entirely closed.

CASE 3.—Mrs. F., age 40. Right half of thyroid chiefly involved, and a discharging sinus about the centre of this. This was due to a puncture made to drain a supposed cyst. Nothing, however, was removed but blood. The wound became infected, and was now discharging pus. Has considerable dyspnea. Operation September 15th; chloroform was administered and right half of thyroid excised in the usual way. The patient made an uninterrupted recovery, leaving the hospital in four weeks' time. Drainage was used.

CASE 4.—Mrs. B., aged 39. She gave the following history: Her mother suffered from goitre. Patient's goitre first appeared sixteen years ago after the birth of a child. She was treated by injections of carbolic acid and iodine, and later on by incision and drainage, as well as internal treatment for seven or eight months. Two years ago she went to Muskoka and was treated by some quack, who ordered vigorous exercise, requiring her to bathe in the cold water in the lake early in the morning, then to row a distance and to walk up and down a steep hill several times daily. No improvement followed. Dr. Dickson saw her in November, 1901, and under an anesthetic aspirated a small cyst, removing an ounce and a half of fluid. He then applied electricity through the cannula. Electricity was continued for three or four months,

galvanic, static, and electro-puncture being used from time to time. In February it commenced to discharge at the seat of puncture, and this has continued ever since. The cicatrices left after the first treatments by injections also broke down and discharged pus. On February 7th, 1903, I saw her in consultation with Dr. E. Hooper. She had a very large goitre, chiefly, if not entirely, confined to the right half of the thyroid. There were two openings discharging most offensive pus. The odor of this penetrated the whole house, and was very objectionable. For several months Dr. Hooper had been dressing this almost daily, in spite of which her temperature went up daily to 102, 103, or 104 degrees. Some six months ago she had an attack of acute articular rheumatism, which affected chiefly her left knee, and which resulted in considerable limitation of movement. She also gave a history of having had chills from time to time. I looked upon these as septic, and considered that she was suffering from sapremia. I advised her removal to the hospital, so that we could try to get the neck as clean as possible before operation. She accordingly went into Grace Hospital, February 16th, and the neck was dressed every three or four hours. While there her temperature went up on one occasion to 103½, and on another occasion to 104½; pulse was also up at times to 120. She had a chill every second day. Her neck became somewhat cleaner, her condition generally improved, and the operation was performed February 25th. I was assisted by Dr. E. Hooper, and Dr. Stevenson gave ether. There were two openings discharging pus. The sinuses were wiped out with pure carbolic, and then packed with iodoform gauze. The transverse incision of Kocher was used. This incision was commenced over the centre of the sterno-mastoid muscle on the right side opposite the upper pole of the swelling, and it extended with its convexity downwards across the neck to a corresponding point on the opposite side. The lower part of the incision in the middle line extended to within an inch of the sternum. Another incision was made around the openings of the sinuses so as to remove all skin in the neighborhood of these. Then the upper flap with the platysma was dissected upwards and the lower flap downwards. There was considerable difficulty in separating the muscles superficial to the gland, owing to their being matted together, and eventually they had to be cut through and dissected off. The superior thyroid vessels were first secured with forceps, then the gland was dislocated forwards, and the inferior thyroid vessels similarly secured. The isthmus of the thyroid was torn through with forceps, then the gland was separated from the trachea and removed.

The operation was an extremely difficult one, owing to the mass of adhesions formed around the gland. It was impossible to bring the divided muscles together, as so much of them had to be removed. The skin was brought together with horse-hair. Iodoform powder was dusted all over the wound. A drainage tube was placed in the lower angle of the wound extending up to the extreme limit above, and iodoform gauze packed in around this. A firm dressing was applied, and held in place by a bandage passed around the neck, axillæ, and forehead. She left the hospital three weeks after the operation, the wound being entirely healed. She had only a slight rise of temperature, to 99½, on the two days following the operation, and her temperature after this was quite normal. Her pulse after the first twelve hours was never higher than 90. The scar is now only slightly noticeable.

HIS MOTHER'S LEGACY.

BY ROBERT A. HOOD, VANCOUVER, B.C.

"Talking of people's dislikes to a *post-mortem* reminds me of rather an interesting case that came under my observation in my very first year of practice."

The speaker was one of three medical men who sat at dinner in a large London mansion house. They had just successfully completed an operation on its owner, and were now in that genial, expansive frame of mind that comes to men conscious of duty well done, after the third course has disappeared, and they settle back in their chairs to enjoy the relaxation of the moment.

"I was a raw, young fellow then," the speaker went on, pausing but to fill his glass, "fresh from college at Edinburgh with my soul full of ambition, and eager and ready to revolutionize the world if it would only meet me half-way. It is a state of mind common to most young men at some period or other of their lives; but it rarely lasts long.

"Well, it wasn't long after I was capped before I got a position as assistant to a rheumatic country doctor whose practice lay in one of the remotest parts of Perthshire. The most of the patients were poor ploughmen and crofters with their families, and there was one old woman who was very bad with cancer of the stomach. She had a son, Hamish, a fine lad who worked all day in the fields and studied at night with the village dominie to

prepare himself to compete for a bursary at Aberdeen University in the autumn.

"I took an interest in the boy. He had an innate sense of refinement and his delicate, spirituelle features, together with a slight, graceful figure seemed altogether out of place in the coarse, manual labor that he every day engaged in. His mother was naturally bound up in him, and every time I went to see her would greatly enjoy a chat about him. Her one hope was to see him at college before she died, and if he could only win the bursary her wish would be fulfilled.

"About this time, Dr. Landon, the great authority, at that time, on cancer, was visiting the laird of Drumbell, a neighboring land owner. One day I happened to be introduced to this light of the profession; and I asked him if he would come to see my cancer patient, at the same time mentioning certain unusual symptoms of the case, which I thought might arouse his interest. I was not disappointed; he came, but could do nothing for her.

"'It is a very interesting case,' he said as I was driving home; 'and might have been helped if taken in time. I should like very much to secure possession of the body after death for dissection if it could possibly be managed. I don't know how the country-folk here regard these things, but I should think that for a matter of fifty pounds, say, if the old woman has a son as you say to leave it to, she ought to be quite willing. Of course it is only the peculiar symptoms in the case that makes me want it at all.'

"Here I differed from him. I knew the Scotch character too well to believe that Elspeth would consider the matter for a moment. The Scotch poor are proud in proportion to their poverty, and besides they are somewhat superstitious, and show a very marked reverence for their dead. The notion of anyone selling his body to be cut up after his death, even for the benefit of humanity, would be only less horrible to them than that of selling their soul to the devil.

"However, as he seemed very anxious about it, and as I really felt indebted to him for coming to see her; I broached the matter to her at the first opportunity. As I expected, my proposal was indignantly rejected. Dr. Landon, when I told him, was much disappointed, but begged me to try and arrange it later on, if an opportunity should open. This I promised to do; but at the same time I did not believe my promise would ever call for fulfilment.

"Two months later, however, on the day that Hamish was to leave to try his fortune at Aberdeen, his mother was taken very

much worse; and for days lay at the point of death. During this time her poor boy, laying aside all chance of the bursary, for which he had worked so hard, for another year at least, scarcely ever left her bedside. Then when she recovered consciousness and was in no immediate danger, he went back to his work in the hay-field.

"One day as I sat beside her, I asked her what she had on her mind, for I could see that something was troubling her in every line of her strong, kindly, old face.

"'Oh, it's about ma laddie, Doctor,' she began, almost in tears, a perceptible note of relief in her voice, as her pent-up feelings broke forth. 'I canna thole to think o' him no gettin' tae college, noo, when his heart is set on it, and he's warked sae hard for it; an' me haein' tae dee leavin' him alane wi' naething to start wi' in the fecht wi' this cauld wicked warld. I hae seven pound notes laid by that I wus keepin' tae bury me an' I never would touch them even when the pinch o' puirtith was maist fell; for it wud be an awfu' disgrace for an honest woman tae hae to be buried by the pairish. I cudna thole the thocht o' that, ye ken.

"'I'm afraid I was gey uncivil, Doctor, tae ye when ye spoke tae me about sellin' masel' efter I dee'd, an' hoo it wud be a fine thing for Hamish tae hae the siller, I've been thinkin' it a' ower an' I doot ye were right about it efter a'. I wus a kin' o' doited wi' the fearsomeness o' the notion. It seems an awfu' thing to be cut up efter a body dees for a' the warld like a pig or a steer. It's like sellin' one's soul to the deil. An' what an awfu' disgrace no tae hae ony funeral tae ask ane's freends tae. It's a terrible thing for a decent woman even tae think o'.

"'But then there's the laddie. Ever since I first crooned him on my knee, I've prayed the Lord to mak' a minister o' him, an' noo if there's a chance for me to help him by daein' without a funeral an' sellin' my puir auld tabernacle, Doctor, I'm ready tae dae it, though I hope the Lord 'll tak' me sune sae I'll nae hae time tae think o't, for the mair I think, the mair awesome it seems.'

"I was delighted to hear the old woman's decision, though I was deeply moved by the self-sacrifice that I knew she was making. I tried to show her that in doing this, she might be helping to cure her fellow-sufferers and so doing an honorable and praiseworthy action instead of one to be ashamed of; but I could see that although slightly comforted, she was not convinced.

"'Ah, well,' she said, shaking her head sadly, 'Hamish 'll get his start in college, an' if he lives to wag his bonnie pow in the pulpit, I'll no hae deed in vain.'

"And Hamish to-day, gentlemen, is one of the ablest men in the Church of Scotland."

Reports of Societies

CANADIAN MEDICAL ASSOCIATION—LONDON MEETING, 1903.

PRELIMINARY PROGRAMME.

- President's Address. W. H. Moorhouse, London.
 Address in Medicine. H. A. McCallum, London.
 Address in Surgery. Alex. Hugh Ferguson, Chicago.
 Address in Gynecology. Matthew D. Mann, Buffalo.
 "The Treatment of the Inebriate." A. M. Rosebrugh, Toronto.
- Paper (title to be announced). Perry G. Goldsmith, Belleville.
- "Total Ablation by Bisecting the Uterus." T. Shaw Webster, Toronto.
- "Inguinal Hernia of an Undeveloped Uterus and Appendages, with Presentation of Specimen." R. Ferguson, London.
- Paper (title to be announced). A. Laphorn Smith, Montreal.
- "Report of Two Cases of Hour-Glass Contraction of Stomach." Henry Howitt, Guelph.
- "Cardiac Affections in Influenza." E. G. Wood, Nashville, Tenn.
- "Amyotrophic Lateral Sclerosis." A. McPhedran, Toronto.
- "Orthopedic Surgery at the Present Time." C. W. Wilson, Montreal.
- "Internal Medication for Direct Remedial Effect." George M. Aylesworth, Collingwood.
- "The Role of Eye-Strain in Civilization and Medicine." George M. Gould, Philadelphia.
- "The Inter-Relations of Diabetes and other Constitutional States." George F. Butler, Alma, Mich.
- "Gun-shot Wound of the Upper Arm, with Non-Union of Humerus, and Destruction of Musculo-Spiral Nerve—Operation six months later—Recovery." Hadley Williams, London.
- Discussion on the "Treatment of Typhoid Fever." W. P. Caven, Toronto; J. Herald, Kingston; W. B. Thistle, Toronto; H. A. McCallum, London.
- Discussion on the "Diagnosis and Treatment of Tuberculous Peritonitis." A. B. Atherton, Fredericton, N.B.; A. Groves, Fergus; Herbert A. Bruce, Toronto, and L. Coyteux Prevost, Ottawa.

"Practical Considerations on Intestinal Anastomosis." Theodore A. McGraw, Detroit.

"The Relation between the General Practitioner and the Specialist in regard to Intra-nasal Work." J. Price-Brown, Toronto.

"Personal Experiences with Alexander's Operation." H. Meek, London.

"Auto-Intoxication." E. Hornibrook, Cherokee, Iowa.

"The Country Doctor." J. S. Sprague, Stirling.

"A Lantern Lecture on Open-air Life in the Treatment of Pulmonary Tuberculosis." J. H. Elliott, Gravenhurst.

"The Size of the Pupil as an Aid to Diagnosis." J. T. Duncan, Toronto.

"Thrombosis of the Femoral Vein following Aseptic Laparotomy." E. R. Secord, Brantford.

"Gastro-Enterostomy with Report of Cases." Ingersoll Oimsted, Hamilton.

"Radical Cure of Hernia." A. Groves, Fergus.

"The Decline and Fall of Atropine." G. Sterling Ryerson, Toronto.

"The Medical Treatment of Diseases of the Nose and Throat." John Hunter, Toronto.

"An Interesting Case." G. Herbert Burnham, Toronto.

"The Surgical Treatment of Hallux Valgus and Bunions." James Newell, Watford, Ont.

"Concealed Accidental Hemorrhage." Adam H. Wright, Toronto.

RAILWAY TRANSPORTATION.

Intending delegates to the thirty-sixth annual meeting of the Canadian Medical Association, which will be held at London, Ont., on the 25th to the 28th of August, should take careful note of the following instructions as regards transportation rates. As a good many wrote to the General Secretary last year for forms to fill in, it might be well to state that no such forms are required. All a delegate has to do is to purchase a single first-class ticket to London, at the same time asking the agent at starting point for a *Standard Convention Certificate*. These certificates, when signed by the General Secretary, will entitle holders thereof to return fare free, providing there are 300 or more at the meeting holding *Standard Convention Certificates*. These arrangements apply as well to the wives and daughters of physicians.

Maritime Provinces.—Delegates travelling to London on the Standard Certificate plan *via* the Intercolonial Railway to Montreal will be given return fare free from Montreal east, provided

that there are ten or more delegates in attendance at the meeting holding said certificates.

Manitoba and the Territories.—From Manitoba and the Canadian North-West, one-way tickets to be purchased to London, and Standard Certificate being secured at the time of purchase, these certificates, when presented at London, duly signed by the General Secretary, will entitle the holder thereof to be returned free, if 300 or more paying railroad fare are in attendance. If less than 300, and more than 50, the same arrangements as for Ontario and Quebec, viz., one-third fare return will be in vogue. Tickets purchased west of Port Arthur, purchased in time to reach London for the Convention, will be accepted for return up to and including September 15th. Delegates taking the Superior and Huron Lake route one way will on presentation of certificate be charged \$4.25 extra. If Lake route is used both ways the charge will be \$8.50 extra.

British Columbia.—The Canadian Pacific Railway officials at Winnipeg have not been able to make arrangements for British Columbia up to the present time. Announcements of these will be made in the daily papers of Vancouver and Victoria, if secured, some time during the first week in August.

ENTERTAINMENT.

The Entertainment Committee at London proposes to entertain visiting delegates somewhat as follows:

On Wednesday afternoon a reception will be held at the Kennels for the visiting ladies by the ladies of London. On the same afternoon at about 4 p.m. the members of the Association will be entertained at Springbank, London's pleasure resort. Leaving Springbank at about 5.30 p.m., the delegates will be taken to the London Asylum grounds, where they will be entertained by the Provincial Government for the balance of the evening. On Thursday, through the kindness of Messrs. Parke, Davis & Company, the Entertainment Committee have provided for an excursion to the celebrated laboratories of this extensive pharmaceutical house at Walkerville and Detroit. Arrangements have been made for a special vestibuled train to leave London at 8 a.m. sharp, Thursday. Walkerville will be reached at about 10.30 a.m., and a visit will be made to the Walkerville laboratories. The delegates will then be taken for a trip up the river, luncheon to be served on board. They will be landed at Messrs. Parke, Davis & Co.'s own dock, at the Detroit laboratory, for the inspection of their Scientific Building at about 2.30. At the conclusion of this inspection other arrangements will be made for the entertainment of the members until 6.30 p.m., when a banquet will be tendered to the

members of the Canadian Medical Association at the Russell House, Detroit, by Messrs. Parke, Davis & Co. Between 9.30 and 10.30 p.m. the physicians will be taken to the Brush Street depot, Detroit, and returned to London by special train.

HOTEL ACCOMMODATIONS.

During the coming meeting of the Canadian Medical Association in London the several large hotels will be able to accommodate most of the visiting members, and in addition to this the Reception Committee having charge of receiving the visiting delegates will have lists of good boarding-houses where those wishing them may have rooms. The Reception Committee at London hopes that no one will stay away fearing lack of accommodation, as the London medical men will do their utmost to make their stay agreeable. Dr. J. S. Niven, 423 Colborne Street, who is chairman of Reception Committee, will be pleased to secure rooms for anyone writing for them in advance. Anyone desiring any further information should address either the Local Secretary, Dr. Hadley Williams, Park Avenue, London, or the General Secretary, Dr. George Elliott, 129 John Street, Toronto.

TRINITY MEDICAL COLLEGE.

THE ADDRESS ISSUED BY CORPORATION OF TRINITY MEDICAL COLLEGE TO DR. GEIKIE UPON HIS RETIREMENT.

We, the Corporation of Trinity Medical College, in accepting the resignation of Dr. Walter B. Geikie, D.C.L., F.R.C.S.E., L.R.C.P. (Lond.), Dean of the Faculty and Professor of the Principles and Practice of Medicine, desire to place on record our sense of the debt of gratitude owing to our late associate for his two and thirty years of earnest and self-sacrificing labor on behalf of the college. At all times, in season and out of season, by night and by day, year after year, the cause of Trinity Medical College has ever been foremost in his thoughts, and the one object around which his affections centered.

With every energy and faculty he possessed, Dr. Geikie labored to promote what he considered the best interests of the college, which was so dear to his heart, and owing in a large degree to these unwearied efforts Trinity Medical College has attained her present proud position.

It is with feelings of regret that the corporation parts with him who is the father in medicine of most of its members, who has presided over its meetings, and piloted its ship through so

many breakers, and we one and all desire that Dr. Geikie may be spared for many years to enjoy the satisfaction of well-earned repose.

Engrossed and signed by all the members of the Corporation: J. A. Temple, F. L. Grasett, W. T. Stuart, Charles Sheard, G. Sterling Ryerson, Luke Teskey, John L. Davison, G. A. Bingham, N. A. Powell and D. J. Gibb Wishart.

Dated June 14th, 1903.

ADDRESS ISSUED BY TRINITY UNIVERSITY TO GRADUATES AND UNDERGRADUATES IN MEDICINE.

To the Graduates and Undergraduates in Medicine of Trinity University and to all Students of Trinity Medical College :

GENTLEMEN,—It is important that you should have a clear understanding of what steps have been taken by the authorities of the college and university towards the federation of Trinity University with the University of Toronto, and the amalgamation of the two medical faculties, and how such arrangements will effect those at present registered as students of Trinity Medical College.

With this object in view we have much pleasure in submitting to you the following statement, by which you will see that your interests have been carefully and zealously conserved, and that provision has been made for the completion of your medical course under the most favorable auspices.

As announced at the medical convocation last May arrangements were concluded whereby the faculty of Trinity Medical College became the medical faculty of Trinity University. One important feature of the changes proposed in this connection was the erection of new buildings adjoining the present Trinity Medical College. While the details of this proposal were being worked out it was strongly urged upon the authorities of the medical college and of the university that the interests of all medical students in Toronto, both present and future, would be better served by co-operation with the medical faculty of the Provincial University than by the perpetuation of two rival institutions in medicine. It was pointed out further that the erection of the proposed building would necessarily mean the indefinite postponement of such co-operation to the disadvantage of medical education generally, and the weakening of both institutions. Accordingly the plans which had been commenced were postponed pending the full discussion of this important question, the result being an almost unanimous decision in favor of co-operation, and the acceptance of the draft appended hereto for an amal-

gamated faculty in medicine, in which provision is made for every member of both faculties, with the exception of the former dean of Trinity Medical College, who resigned his position during the course of these negotiations. We desire to take this opportunity of expressing our warm appreciation of the long, faithful and valuable services of Dr. Geikie, who has been such a power for good in our medical college during the past thirty-three years. In this expression of appreciation we are sure every student of the college will join most heartily.

By reference to the subjoined list of the proposed amalgamated faculty you will at once see what excellent provision has been made for advancing the best interests of medical education in Toronto. It is generally acknowledged that such a faculty, possessing as it does, ability, strength, and efficiency in medical teaching, will render signal service to the entire medical profession of the province, and we confidently anticipate that under the new conditions now created Toronto will more than ever occupy a proud and leading position among the educational centres of this Dominion and continent.

When not only the strength and efficiency of the new amalgamated faculty is considered, but also the excellent and ample provision for all branches of medical teaching in the now completed new medical buildings of the University of Toronto, and we reflect that before our new buildings could have been erected and equipped (in view more especially of the delay necessarily incident to the unsettled conditions of the labor market) most of the present students of Trinity Medical College would have been far advanced in their course, we feel confident that they will frankly recognize that their best interests have been served by the arrangements outlined in this letter.

As bearing more particularly upon the status of matriculants and the rights of non-matriculated students of Trinity Medical College, we beg to draw attention to the following provisions:

"The non-matriculated students of Trinity Medical College shall be allowed two years from the date of federation for matriculating in Trinity University, under the regulations in force in that university at the time of federation.

"Those who have already matriculated, as well as those matriculating within the time specified above, will have the option of either proceeding to the degree of M.D., C.M., of Trinity University, on the conditions under which they entered, or proceeding to an M.D. degree in the following year, if desired, from the Provincial University. In both instances students will attend and receive lectures from the amalgamated faculty.

"All graduates in medicine of Trinity University will be en-

rolled in the Provincial University, and their names will appear in the various calendars with their degrees designated."

As defining more clearly the status of graduates and undergraduates under federation, we quote the following extract from the Articles of Agreement:

"All graduates and undergraduates of Trinity University, excepting those in theology, are, from and after the date of federation, to have and enjoy the same degrees, honors and status in the University of Toronto, as they previously held in Trinity University, and shall be entitled, subject to the provisions of the University Act of 1901, to all the rights and privileges pertaining to such degrees and status so long as such federation continues."

"The Fellowship of Trinity Medical College (as the medical faculty of Trinity University) will be granted to such students as are now enrolled in Trinity Medical College upon their complying with the requirements and passing the examinations necessary to entitle them to receive such fellowship."

The Corporations of Trinity Medical College and Trinity University wish their graduates and undergraduates to be clear upon the point that their interests, both now and for all time, have been most carefully safeguarded, and they will enjoy the same rights and privileges in the Provincial University, of which institution each one of them will under federation form an integral part, that they do now enjoy and have heretofore enjoyed as students and graduates of Trinity University.

It is highly desirable that the students who have been in attendance at Trinity Medical College should register their names with Dr. Primrose, the Secretary of the medical faculty, Biological Department, Queen's Park, Toronto, at as early a date as possible, as seats in the lecture theatres are assigned according to priority of the date of registration.

No fee will be required from students in the third and fourth years. Students of the second year will require to make a locker deposit of \$2.00, and those in the first year, the registration fee of \$5.00, in addition to the locker deposit.

Signed on behalf of Trinity University,

T. C. S. MACKLEM, *Vice-Chancellor.*

Signed on behalf of Trinity Medical College.

J. A. TEMPLE, *Dean.*

D. J. GIBB WISHART, *Secretary.*

CHARLES SHEARD, *Treasurer.*

TORONTO, 27th July, 1903.

PROFESSORS, LECTURERS AND DEMONSTRATORS.

ANATOMY.

Professor and Director of the Anatomical Department: A. Primrose, M.D., C.M. (Edin.).

Associate Professor: H. Wilberforce Aikens, B.A., M.B. (Tor.).

Demonstrator: C. B. Shuttleworth, M.D., C.M. (Trin.), F.R.C.S. (Eng.).

Assistant Demonstrators: W. J. McCollum, M.B. (Tor.); W. J. O. Malloch, B.A., M.B. (Tor.); T. B. Richardson, M.D., C.M. (Trin.), F.R.C.S. (Edin.); George Elliott, M.D., C.M. (Trin.); C. P. Lusk, M.D., C.M. (Trin.); S. W. Westman, M.B. (Tor.); E. S. Ryerson, M.D., C.M. (Trin.); E. R. Hooper, B.A., M.B. (Tor.); W. J. Wilson, M.B. (Tor.); A. C. Hendrick, M.A., M.B. (Tor.); A. J. MacKenzie, B.A., LL.B., M.B. (Tor.); D. McGillivray, M.B. (Tor.).

SURGERY.

Professors of Surgery and Clinical Surgery: I. H. Cameron, M.B. (Tor.), F.R.C.S. (Eng.); F. LeM. Grasett, M.B., C.M., F.R.C.S. (Edin.); G. A. Peters, M.B. (Tor.), F.R.C.S. (Eng.); L. Teskey, M.D., C.M. (Trin.).

Associate Professor of Clinical Surgery and Clinical Anatomy: G. A. Bingham, M.D., C.M. (Trin.), M.B. (Tor.).

Associate Professors of Clinical Surgery: A. Primrose, M.B., C.M. (Edin.); N. A. Powell, M.D., C.M. (Trin.), M.D. (Bellevue, N.Y.); W. Oldright, M.A., M.D. (Tor.); H. A. Bruce, M.B. (Tor.), F.R.C.S. (Eng.); F. N. G. Starr, M.B. (Tor.).

Associate Professor of Clinical Surgery, in charge of Orthopedics: C. L. Starr, M.B. (Tor.).

Demonstrators of Clinical Surgery: W. McKeown, B.A., M.B. (Tor.); C. A. Temple, M.D., C.M. (Trin.); A. H. Garratt, M.D., C.M. (Trin.); C. B. Shuttleworth, M.D., C.M. (Trin.), F.R.C.S. (Eng.); T. B. Richardson, M.D., C.M. (Trin.), F.R.C.S. (Edin.); J. F. Uren, M.D., C.M. (Trin.).

PATHOLOGY.

Professor of Pathology and Bacteriology and Curator of the Museum and Laboratories: J. J. MacKenzie, B.A., M.B. (Tor.).

Professor of Clinical Pathology: H. B. Anderson, M.D., C.M. (Trin.).

Associate Professor of Pathology and Bacteriology: J. A. Amyot, M.B. (Tor.).

Laboratory Assistant in Bacteriology: T. D. Archibald, M.B. (Tor.)

Demonstrators: G. Silverthorne, M.B. (Tor.); C. J. Wagner, M.B. (Tor.)

Assistant Demonstrators: W. H. Pepler, M.D., C.M. (Trin.); H. C. Parsons, B.A., M.D., C.M. (Trin.); M. M. Crawford, M.B. (Tor.); F. A. Clarkson, M.B. (Tor.).

MEDICINE.

Professor of Medicine and Clinical Medicine: A. McPhedran, M.B. (Tor.).

Associate Professors of Medicine: J. T. Fotheringham, B.A. (Tor.), M.D., C.M. (Trin.); R. D. Rudolf, M.D., C.M. (Edin.), M.R.C.P. (Lond.).

Professor of Clinical Medicine: J. L. Davison, B.A. (Tor.), M.D., C.M. (Trin.).

Associate Professors of Clinical Medicine: A. M. Baines, M.D., C.M. (Trin.); W. P. Caven, M.B. (Tor.); W. B. Thistle, M.B. (Tor.); J. T. Fotheringham, B.A. (Tor.), M.D., C.M. (Trin.); A. R. Gordon, M.B. (Tor.); R. J. Dwyer, M.B. (Tor.), M.R.C.P. (Lond.); H. B. A:derson, M.D., C.M. (Trin.).

Associates in Clinical Medicine: G. Boyd, B.A., M.B. (Tor.); R. D. Rudolf, M.D., C.M. (Edin.), M.R.C.P. (Lond.); G. Chambers, B.A., M.B. (Tor.); F. Fenton, M.D., C.M. (Trin.); H. C. Parsons, B.A., M.D., C.M. (Trin.); W. Goldie, M.B. (Tor.).

PREVENTIVE MEDICINE.

Professor of Preventive Medicine, Didactic and Clinical: C. Sheard, M.D., C.M. (Trin.).

MATERIA MEDICA AND THERAPEUTICS.

Professor of Materia Medica, Pharmacology and Therapeutics: J. M. MacCallum, B.A., M.B. (Tor.).

OBSTETRICS AND GYNECOLOGY.

Professor of Operative Obstetrics and Gynecology: J. A. Temple, M.D. C.M. (McGill).

Professor of Obstetrics: A. H. Wright, B.A., M.B. (Tor.).
 Professor of Gynecology: J. F. W. Ross, M.B. (Tor.).
 Associate Professor of Obstetrics and Pediatrics: H. T. Machell, M.B. (Tor.).
 Associate Professor of Pediatrics: A. M. Baines, M.D., C.M. (Trin.).
 Associates in Obstetrics: K. C. McIlwraith, M.B. (Tor.); F. Fenton, M.D., C.M. (Trin.).

OPHTHALMOLOGY AND OTOLGY.

Professors: R. A. Reeve, B.A., M.B., LL.D. (Tor.); G. S. Ryerson, M.D., C.M. (Trin.); G. H. Burnham, M.D. (Tor.), F.R.C.S. (Edin.).
 Associates: C. Trow, M.D., C.M. (Trin.); J. M. MacCallum, B.A., M.B. (Tor.).

LARYNGOLOGY AND RHINOLOGY.

Professor: G. R. McDonagh, M.B. (Tor.).
 Associate Professors: D. J. Gibb Wishart, B.A. (Tor.), M.D., C.M. (McGill).
 Associate: G. Boyd, B.A., M.B. (Tor.).

HYGIENE.

Professor: W. Oldright, M.A., M.B. (Tor.).

TOXICOLOGY

Professor: W. H. Ellis, M.A., M.B. (Tor.).

MEDICAL JURISPRUDENCE.

Professor: N. A. Powell, M.D., C.M. (Trin.), M.D. (Bellevue, N.Y.).

MENTAL DISEASES.

Extra-Mural Professors: N. H. Beemer, M.B. (Tor.); J. C. Mitchell, M.D., C.M. (Trin.).

CHEMISTRY.

Associate Professor: W. T. Stuart, M.D., C.M. (Trin.), M.B. (Tor.).

BIOLOGY AND PHYSICS.

(As in Calendar.)

Therapeutics.

Skin-colored Ointments and Varnishes in Dermato-therapy.

Rausch (*Bulletin de Therapeutique*) gives the following formulæ:

R Red Clay.....gr. ss.
 Glyceringtt. vi.
 Zinc ointment.....gr. cl.

M. For external use.

R Red clay.....gr. iv.
 Glycerin.....gtt. xx.
 Red rosin solution, 2 to 1,000.....gtt. viii.
 Zinc ointment.....℥x.

M. For external use.

R Red clay.....gr. ss.
 Red eosin solution, 2 to 1,000.....℥xlv.
 Distilled water.....℥xiiss.
 Gelatin.....℥liii.
 Glycerin.....℥viiss.
 Zinc oxide.....℥v.

M. For external use.

With the foregoing formula, the consistency of the varnish may be varied by increasing or diminishing the quantities of gelatin and zinc oxide or glycerin and water:

R Red clay.....gr. ℥.
 Red eosin solution, 2 to 1,000.....gtt. ii.
 Zinc oxide.....gr. vi.
 Glycerin.....gr. xlv.
 Gelatin.....℥v.

M. For external use.

The last formula has given Rausch great satisfaction in the treatment of dry, facial seborrhea.—*N.Y.M.J. and P.M.J.*

Pertussis.

The following outline of treatment, according to an abstract in *Month. Cyc. of Med.*, is the most satisfactory in the treatment of whooping cough: Antisepsis of the buccal and nasal mucous membrane; painting the pharynx several times a day with validol containing some oil of bitter almonds, and a 5 per cent. solution of cocain; inhalation of oxygen saturated with validol and cherry laurel water, several liters, five or six times a day; a daily change

of bedroom and daily fumigation of the vacant room with sulphur; internally equinin and belladonna:

(Validol contains 30 per cent. menthol, 70 per cent. valerianic acid, and is a nerve sedative, given internally in 10 to 20 drop doses.)

Kilmer, in *N.Y. Med. Jour.*, recommends inhalations of pure steam or creasote vapor to allay the paroxysm. This may be administered by means of the croup kettle and repeated two or three times daily. Where there is marked spasm of the glottis, inhalations of chloroform are of benefit. Antipyrin, sodium bromid and quinin are the drugs preferred by the author. For a child two years of age the following combination:

R Sodii bromidigr. iii.
 Antipyrinigr. i.
 Syr. ipecac. ℥iv.
 Aquæ q. s. ad.....℥i.

M. Sig.: One such dose every two hours for three or four days.

The patient is then given three grains of quinin sulphate every three or four hours for four days and then put back on the liquid combination.

He advises, as a mechanical measure, the use of a stockinet band similar to that employed by the orthopedic surgeon before applying a plaster-of-Paris bandage. This band is made to extend from the axillæ to the pubes and fits the body snugly. This bandage is used to control the vomiting, and thus in nurslings prevents the inanition which would otherwise occur on account of the vomiting.

This band, it is stated, will also aid in aborting the paroxysmal stage, as it is manifest that the paroxysms are very much milder when the band is worn. There is some liability, unless care is observed, to an eczema, which soon disappears when the band is taken off.—*J.A.M.A.*

Treatment of Scalp Wounds.

Bayard Holmes, in *Denver Med. Times*, gives the following suggestions in the treatment of scalp wounds:

1. Shave three inches about every scalp wound.
2. Make every scalp wound a large incised scalp wound, so that it may be explored with the finger.
3. Use no probe except the index finger.
4. Trim with the scissors the edges of the scalp wound; the razor and the brush are not effective.

5. Scrape out an old wound with a sharp spoon as a part of the mechanical removal of infection.

6. Sew up clean and bloodless scalp wounds without drainage, inserting the stitches half an inch or more from the edges of the wound and tying on one side.

7. Remove the stitches at the end of forty-eight hours, being careful to cut the stitches near the skin so that none of the exposed and infected silk will be drawn through the scalp.—*J.A.M.A.*

Trachoma.

The following treatment of trachoma is recommended by *Medicine Orientale*: An installation of iodic acid (1 to 100) and the conjunctiva swabbed with the following solution:

R Potassii iodidi ʒiss.
 Acidi iodici..... gr. lxxv.
 Aquæ..... ʒiii.

M. Sig.: Apply locally. Any granulations present should be touched with a stick of iodic acid, and the membrane massaged after applying the following powder:

R Acidi iodici.....gr. xv.
 Sodii iodatigr. lxxv.
 Acidi borici.....ʒiii.

M. Sig.: Apply locally to the affected membrane.—*J.A.M.A.*

Excellent Egg Shampoo.

The last German edition of Dietrich's excellent manual contains the following prescription for a shampoo, to be used in cases of dandruff and falling hair:

R Eggs, whole, ʒ.
 Aq c.c. 800.0.
 Beat eggs and mix with water. Add:
 Spir. of soap c.c. 50.0.
 Aq. ammonia c.c. 10.0.
 Borax, grm. 20.0.
 Perfume, to suit.

This makes an excellent cleansing and stimulating wash for the hair. It may be supplemented in suitable cases by a good sulphur cream or ointment, such as that of Dr. Jackson, the formula of which appeared in the *Standard* for August, 1901.—*The Medical Standard.*

Pruritus and Fissures of the Anus.

Dr. W. C. Black (*Merck's Archives*) states that the following treatment is successful in severe cases of pruritus ani, especially those complicated with fissures. The sphincter ani is stretched until there is complete relaxation and the mucous membrane within the sphincter is painted with the following:

℞ Ichthyol
 Glycerine aa ʒi.
 M. Sig.: Apply locally.

This treatment has proven in his hands more successful than any other remedy that has ever been recommended. Recently he has had good success with ichthyol injected in full strength, just within the sphincter two or three times a day.—*The Hot Springs Med. Jour.*

Gastric Fermentation.

The following formula is recommended by Musser. It is known in the University Hospital of Philadelphia as "carbolic soda":—

℞ Acidi carbolicægtt. vi.
 Sodii bicarbʒii.
 Spts. ammon. aromat.ʒiv.
 Spts. chloroformiʒii.
 Mist. sodæ menthæʒiii.

M. Sig.: Teaspoonful after meals and at bedtime.—*Clinical Review.*

Removal of Odors from the Hands.

Dr. Powell recommends carbolic acid to remove the foul odors that cling to the hands after opening abscesses or after work in autopsies. The acid should be used in the strength of a dram to the ounce of water.—*Jour. Amer. Med. Asso.*

Painless Application of Corrosive Sublimate.

L. F. Appleman (*Amer. Med.*) states that when solutions of bichloride of mercury are made with normal salt solution, instead of water, they do not cause the slightest pain when applied to mucous membranes.—*Denver Med. Times.*

The Physician's Library

A Text-Book of the Surgical Principles and Surgical Diseases of the Face, Mouth and Jaws. For Dental Students. By H. HORACE GRANT, A.M., M.D., Professor of Surgery and of Clinical Surgery, Hospital College of Medicine; Professor of Oral Surgery, Louisville College of Dentistry, Louisville. Octavo volume of two hundred and thirty-one pages, with sixty-eight illustrations. Philadelphia and London: W. B. Saunders & Co. 1902. Cloth, \$2.50.

This text-book, designed for the student of dentistry, succinctly explains the principles of dental surgery applicable to all operative procedures, and also discusses such surgical lesions as are likely to require diagnosis, and, perhaps, treatment by the dentist. The arrangement and subject matter cover the needs of the dental student, without encumbering him with any details foreign to the course of instruction usually followed in dental colleges at the present time. The work includes, moreover, such emergency procedures as not alone the dentist and physicians, but also the layman, may be called upon to perform. These, like the other subjects in the book, have been described in clear, concise language, admitting of no unequivocalness. Whenever necessary for the better elucidation of the text, well-selected illustrations have been employed. For the dental student the work will be found an invaluable text-book; and, indeed, the medical beginner, also, will find its perusal of more than passing benefit.

The Practical Application of the Rontgen Rays in Therapeutics and Diagnosis. By WILLIAM ALLEN PUSEY, A.M., M.D., Professor of Dermatology in the University of Illinois; and EUGENE W. CALDWELL, B.S., Director of the Edward N. Gibbs X-ray Memorial Laboratory of the University and Bellevue Hospital Medical College, New York. Handsome octavo volume of 591 pages, with 180 illustrations, nearly all clinical. W. B. Saunders & Co. 1903. Canadian Agents: J. A. Carveth & Co., Limited, 413-415 Parliament Street, Toronto. Cloth, \$4.50 net; sheep or half morocco, \$5.50 net.

It has been the aim of the authors of this work to elucidate fully the practical aspects of the subject. It is evident that all the authentic literature which has developed since Rontgen's wonderful discovery has been carefully digested, this being supple-

mented by the extensive experience of the authors. The value of the X-rays in diagnosis has been discussed in a thoroughly practical manner, and their limitations in this field indicated. Particular attention has been devoted to the use of the X-rays in therapeutics. Nearly all the illustrations in this section represent actual clinical subjects, and show with unusual fidelity the condition before the use of the X-rays, at various stages of their application, and, finally, the therapeutic results obtained. Full details are also given as to the use and management of the apparatus necessary for X-ray work. All the methods with which the best results have been achieved have been carefully described in a comprehensive way. There are chapters on X-ray tubes, induction coils and controlling apparatus, static machines, fluoroscopy, radiography, photographic materials used in radiography, etc. This section is also fully illustrated with instructive photographs and drawings of the apparatus, including four beautiful full-paged colored plates of X-ray tubes. In fact, the work will be found of valuable assistance, not only to the general practitioner, but also to the dermatologist, presenting, as it does, the very latest advances in X-ray therapeutics and diagnosis.

A Text-Book of Chemistry. For Students of Medicine, Pharmacy and Dentistry. By EDWARD CURTIS HILL, M.S., M.D., Medical Analyst and Microscopist; Professor of Chemistry and Metallurgy in the Colorado College of Dental Surgery; Professor of Chemistry and Toxicology in the Denver and Gross College of Medicine, University of Denver. With 78 illustrations, including nine full-page half-tone colored plates. Pages xii, 523. Crown octavo, extra cloth, \$5.00, net, delivered. Philadelphia: F. A. Davis Company, publishers, 1914-1916 Cherry Street.

This work covers the whole field of chemistry as taught to medical and pharmaceutical students. Chemical physics, inorganic and organic chemistry, qualitative and quantitative analysis, and physiological and pathological chemistry are all considered. This, we think, is too large a field for the author to cover in one volume. No doubt, in a manner, he does consider all the subjects, but in doing so he has to a certain degree neglected to teach the science of chemistry. A text-book for medical and pharmaceutical students should first of all teach the science of chemistry, and then should consider every substance of interest to students in these sciences. In other words, after the principles of the science are described chemistry should be taught as applied to the subjects

of medicine and pharmacy. This manner of presenting the subject greatly aids a student in remembering chemical facts. As far as the application of chemistry to medicine and pharmacy is concerned this volume is a good one. The text covers the whole field, and includes sections on incompatibles, urinary analysis, analysis of gastric contents and on other subjects of interest to physicians and pharmacists.

Surgical Asepsis. Especially Adapted to Operations in the Home of the Patient. By HENRY B. PALMER, M.D., Consulting Surgeon to the Central Maine General Hospital. Ninety illustrations. Page vi.-231. Size, large 12mo. Extra cloth, \$1.25 net, delivered. Philadelphia: F. A. Davis Company, publishers, 1914-1916 Cherry Street.

In the field designed to be covered by the work before us, we have had, within recent years, some half-dozen small volumes, the leading ones being: "The Aseptic Treatment of Wounds," by Schimmelbusch; "Surgical Aseptic Technique," by Hunter Robb; "Surgical Asepsis," by Carl Beck, and "Aseptic Surgery," by Lockwood. In the main these works were all intended to aid in perfecting the details of surgical procedures, as conducted in hospitals. Dr. Palmer's book is, on the other hand, written for the guidance of those, who, from choice, or from necessity, operate in the homes of their patients. For all such, whether recent graduates or grey-beards, it can be commended without the least reserve, and its purchase will prove to be an exceedingly good investment.

A Text-Book of Modern Materia Medica and Therapeutics. By A. A. STEVENS, A.M., M.D., Lecturer on Physical Diagnosis in the University of Pennsylvania; Physician to the Episcopal and St. Agnes Hospitals, Philadelphia. Third edition, greatly enlarged, rewritten and reset. Handsome octavo volume of 663 pages. Philadelphia: W. B. Saunders & Co., 1903. Canadian Agents: J. A. Carveth & Co., Limited, 413-415 Parliament Street, Toronto. Cloth, \$3.50 net.

Since the appearance of the last edition of this book such rapid advances have been made in materia medica, therapeutics, and the allied sciences, that the author has wisely rewritten the entire work. He has altered the general plan of the book considerably, and instead of considering the drugs in alphabetical order, as in the previous editions, he has classified them according to their pharmacologic action. This arrangement, notwithstanding the

present unsettled state of pharmacology, possesses certain advantages in that it aids the student to correlate established facts, and to apply them more readily to the treatment of disease. The part devoted to therapeutics has evidently undergone a thorough revision; and we note that all the newer remedies which have been shown by competent observers to possess real merit and to be worthy of a more extended trial at the hands of the profession, have been considered. Indeed, the work is in every particular thorough and accurate, and its title, *Modern Materia Medica and Therapeutics*, is fully justified. We heartily commend the work to students and practitioners.

Atlas and Epitome of Traumatic Fractures and Dislocations.

By PROF. DR. H. HELFERICH, Professor of Surgery at the Royal University, Greifswald, Prussia. Authorized translation from the German. Edited by JOSEPH C. BLOODGOOD, M.D., Associate in Surgery Johns Hopkins University, Baltimore, Md. Fifth edition, revised and enlarged, with 216 colored illustrations on 64 lithographic plates, and 190 figures in the text. Philadelphia and London: W. B. Saunders & Co.

This is a translation from the fifth German edition; the illustrations of which are supplied both by X-ray shadow and by colored plates. The latter are complete in the minutest detail. Some are artistic triumphs. It is difficult to conceive of any fracture, however rare, which has not been illustrated. The skiagraphs are explained by accompanying the abnormal with a skiagraph of the normal joint, and the difference clearly pointed out in the text.

A Reference Hand-Book of the Medical Science. Embracing the Entire Range of Scientific and Practical Medicine, and Allied Science, by Various Writers. A new edition, completely revised and rewritten. Edited by ALBERT H. BUCK, M.D., New York City. Vol. VI. Illustrated by chromo-lithographs and seven hundred and sixty-three half-tone and wood engravings. William Wood & Co.

The sixth volume (Moss to Rutland) is in every way equal to the volumes preceding it. Several subjects of special interest are taken up, as for instance: Pneumonia in Adults and Infants, Reparative Surgery and Diseases of the Nasal Cavities (the latter illustrated by excellently executed colored plates). The article under Neurones is written, as we might expect, by Dr. L. F.

Barker. Dr. Shepherd, of Montreal, has contributed an extensive, well-written and most instructive article on Muscle. Other Canadian contributors include Dr. Small, of Ottawa, and Morrow, Nicholls, Lockhart, Archibald and Armstrong, of Montreal. The work is well balanced, and each subject considered at such length as its importance justifies. The volume just issued convinces us of the correctness of our original estimate of the work, which, when completed, will probably rank as the most ambitious achievement of American medical publications.

Atlas and Epitome of Abdominal Hernias. By DR. GEORGE SULTAN, First Assistant in the Surgical Clinic, in Gottingen, Prussia. Authorized translation from the German. Edited by WILLIAM B. COLEY, M.D., Clinical Lecturer on Surgery, Columbia University; College of Physicians and Surgeons; Surgeon of the General Memorial Hospital; Assistant Surgeon to the Hospital for Ruptured and Crippled, N.Y. City. With 119 illustrations, 36 of them in colors. Philadelphia and London: W. B. Saunders & Co.

The claim is made by the editor of this work that this is a publication which will fill a long-felt want on the part of the general practitioner, and further, that the illustrations excel in character those of any other work with which he is acquainted. As regards the first part of this claim the success of this edition can alone prove its correctness; but as to the second part of the claim, we feel that anyone who looks over the illustrations, particularly the colored ones, will readily admit that it is justified. The plates are very numerous, the coloring is beautiful, and what is after all of most practical importance, the mental picture conveyed is so striking as in some instances to give, at a glance, an appreciation of the condition illustrated, which could be obtained in no other way.

The Expectant Mother. A Treatise on the Care of the Expectant Mother during Pregnancy and Child-birth, and the care of the Child from Birth to Puberty. By W. LEWIS HOWE, M.D. Pages viii.-63. Size, small 12mo. Extra cloth, 50c. net, delivered. Philadelphia: F. A. Davis Company, publishers, 1914-1916 Cherry Street.

This is a little book, which is especially fitted for nurses and young doctors. We say young doctors, because too often the young practitioner goes into practice with a knowledge of the technique of a hysterectomy, or a perineorrhaphy, but with very

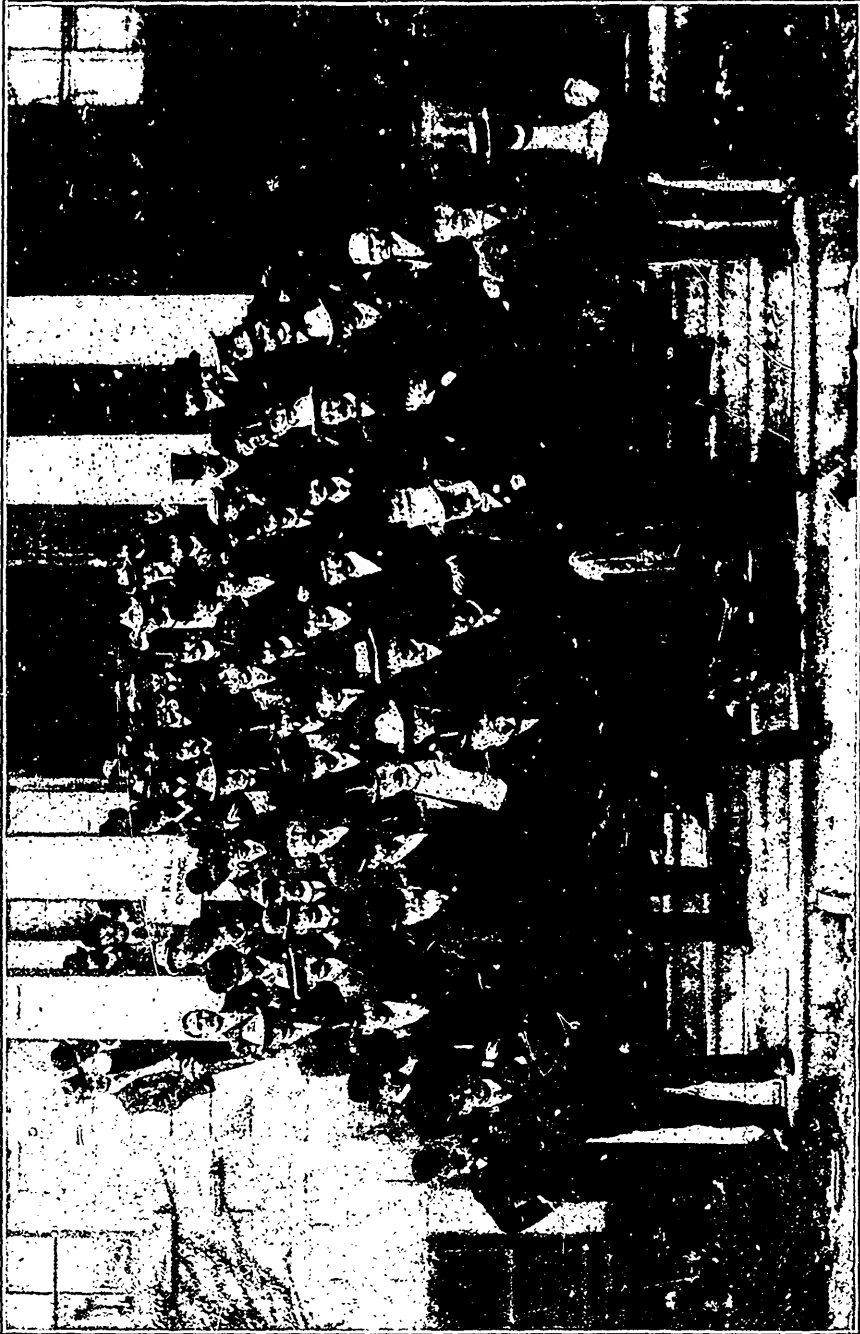
few of the minor details necessary to coach the expectant mother with. Herein he will find many little, but valuable points which even the nurse will not be able to tell him for the first time.

Atlas and Epitome of Otolology. By GUSTAV BRUHL, M.D., of Berlin, with the collaboration of PROF. DR. A. POLITZER, of Vienna. Authorized translation from the German. Edited by S. MACCUEEN SMITH, M.D., Clinical Professor of Otolology, Jefferson Medical College, Philadelphia; Otolologist and Laryngologist to the Germantown Hospital, Philadelphia. With 244 colored figures on 39 lithographic plates, and 99 text illustrations. Philadelphia and London: W. B. Saunders & Co.

This is a book of 275 pages characteristic, as stated in the editor's preface, of the thorough and comprehensive methods of German authors and instructors. It is intended to act as a substitute for personal instruction in a specialized clinic, the colored plates adding greatly to its value in this respect. The association of Prof. Politzer in the preparation is sufficient to secure for it an authoritative position among works devoted to diseases of the ear.

Progressive Medicine. Fifth annual series. Volume II., June, 1903. A Quarterly Digest of Advances, Discoveries and improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 427 pages, with 46 illustrations. Per volume, \$2.50, by express prepaid. Philadelphia and New York: Lea Brothers & Co., publishers.

This work has become so well known to the medical profession that it seems hardly necessary for us to again commend it. The excellence of the preceding volumes is the best recommendation of a series of this kind. The present issue is devoted to "Surgery of the Abdomen," by William B. Coley; "Gynecology," by John G. Clark; "Diseases of the Blood and Ductless Glands," by Alfred Stengel, and "Ophthalmology," by Edward Jackson. Reference is made to all the recent advances in these subjects. The medical journals have contained of late a great amount of valuable literature bearing on these subjects, and by far the easiest way for a physician to become acquainted with these articles is to read this work.



A GROUP AT THE CANADIAN MEDICAL ASSOCIATION, MONTREAL, SEPT., 1902, ON THE STEPS OF M'GILL MEDICAL BUILDING.

Desiring to make a practical, useful journal for the General Practitioner, the Editors respectfully solicit Clinical Reports from subscribers and others.

Dominion Medical Monthly

And Ontario Medical Journal

EDITORS:

GRAHAM CHAMBERS, B.A., M.B. WALTER McKEOWN, B.A., M.D.

MANAGING EDITOR:

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TORONTO, AUGUST, 1903.

No. 2.

CANADIAN MEDICAL ASSOCIATION.

On another page will be found the Preliminary Programme of the thirty-sixth annual meeting of the Canadian Medical Association, to be held this year at London, Ont. Will you attend? Will you contribute by your presence this year in making this, our great national medical organization, one of the foremost, in point of numbers, of medical associations in America? You cannot fail to be benefited in renewing old acquaintances, or in making new friends in your chosen profession. The scientific and practical knowledge let loose and rubbed in will make it well worth your going; whilst the social festivities and entertainments provided for your pleasure by our friends in London, who are all earnestly looking forward to the pleasure of your company, will repay you ten times over for the time spent away from your practice, and will make you go back home a new man. Doctor, if you have not been a regular attendant at the annual meetings of the Canadian Medical Association during the past five years, you are losing the best assemblies of medical men in the Dominion. You are losing very much more than you may perhaps think. Try it this year, and you will prove to yourself that you owe it to Canadian medicine to become an active participant in medical society work, if only even by lending your presence thereto. There are many medical men in Canada who are locked up in their prac-

tices. They claim that they cannot get away, that they have no one to leave in their places, that it is all right for the city man to attend these annual meetings, as he can arrange with a friend to look after his patients. You can do the same if you only make the effort. There are 1,500 medical men in Western Ontario alone. At least twenty per cent. of these should be at the annual meeting this year. If it is utterly impossible for you to go, why not be generous and arrange with your nearest neighbor for him to go while you stay at home and look after his practice. Next or another year he can return the compliment to you. It should not be too much for every county in Ontario this year to send twenty per cent. of its medical population to London. The making of friends in your profession from the Atlantic to the Pacific will be good for you, good for medicine in every way, and especially good for the Canadian Medical Association. Put your best effort forward and COME.

THE DUTY OF WESTERN ONTARIO.

The medical men of London to a body have set themselves earnestly to the task, which to them will be a pleasure as well, of preparing for the reception of medical confreres from all over this wide Dominion. Canada, our country, has truly been said to be a "country of magnificent distances"; and it might perhaps be too much to expect that great numbers from every province in the Dominion will journey to this annual meeting of the Canadian Medical Association. It is quite safe, however, to predict that every province will be represented at the thirty-sixth annual meeting. It speaks well for the heartiness and whole-souled manner with which the profession has gone to work in London, in making preparations for this meeting, when even at the date of writing this, the 15th of July, the arrangements are almost complete—over a month ahead of the time. That month will be spent in making everything perfect; and a most enjoyable outing is awaiting all who attend thereat. Particularly does this meeting come home to the doctors in Western Ontario. This is your meeting; it is at your doors. Show the balance of the profession in Canada what you can do when you have the opportunity. Satisfaction is assured, is guaranteed; for no one ever heard any one going away from a meeting of the Canadian Medical Association saying that they had not profited by the meeting, that they had not enjoyed themselves more than they had anticipated.

Gentlemen of Western Ontario! Yours is the opportunity to make the thirty-sixth the greatest and largest meeting in the history of the Association. Do not have it said that you failed to respond; that when the Canadian Medical Association met on your threshold you failed to appreciate its proximity. Set a big example for the other provinces and other centres, and make this meeting one which will not be equalled or surpassed for many years.

THE FEDERATION OF TORONTO AND TRINITY.

On another page our readers will find the address issued by the Corporation of Trinity Medical College to Dr. Geikie upon his retirement from that body, and also the address issued by Trinity University to the graduates and undergraduates in medicine of that institution. The former is a splendid magnanimous testimonial to one who has done a great deal for Canadian medicine; the latter announces the reasons for federating with the Provincial University, clearly sets forth the advantages to be derived therefrom and succinctly states the terms of agreement to amalgamate. From it it would appear that there has been made a fair bargain and a most equitable adjustment of the two medical faculties arranged. The step is a most important one in medical educational matters in this province, and most particularly in this city of Toronto. The consolidated faculties will make a single faculty second to none on this continent; and "Toronto Medicine" should rapidly gain for itself a name abroad, especially so when the faculty commences to work under the new order of things. The amalgamation of these two schools of medicine means much to "Toronto Medicine." We would expect, now that the scheme, as espoused by Dr. J. F. W. Ross, of consolidating the existing medical societies with the Ontario Medical Library Association, and thus securing for all these societies a permanent home, will follow with renewed enthusiasm and zeal; and that this city will become more and more, day by day, and year after year, a medical centre of prominence and importance. "Toronto Medicine" should look forward to the day when at least her own graduates in medicine will be returning to do post-graduate work in her laboratories and hospitals. Once that time arrives others will be sure to follow suit. Out of the new order of things should evolve also a Canadian medical literature. The time has surely arrived when our leading men should be more ambitious in this respect,

and not lag so woefully behind American and English confreres, who are not one whit better. True, quite a number have been asked and have contributed special articles to leading works on medicine and surgery, but this is helping more to make American medical literature strong and complete. We are quite satisfied that the profession of Canada and others would appreciate something of this sort from our recognized leaders.

Editorial Notes

WE are in receipt of an exceedingly handsome and valuable bacteriological chart from the well-known pharmaceutical house of M. J. Breitenbach & Co., New York, who are probably better known to the medical profession as the importers of Gude's Pepto-Mangan. Of this chart the *New York Medical News* states: "No text-book and no one work on pathogenic bacteria contains such a number of excellent diagnostic illustrations, nor such beautiful examples of lithographic art as these." The full set of sixty cuts has been prepared to send to any physician who writes for them, from the firm of M. J. Breitenbach & Co., New York.

News Items

MONTREAL may build a hospital for the tuberculous.

DR. F. LEM. GRASSETT has returned to Toronto from England.

DR. BLACK, of Paisley, has been appointed a coroner for the County of Bruce.

CANADIAN MEDICAL ASSOCIATION.—London, August 25th, 26th, 27th and 28th.

DR. THOMPSON, of Toronto, has purchased Dr. Stirling's practice in Alvinston.

BRITISH COLUMBIA has secured a site for a consumption sanitarium near Kamloops.

DR. J. S. SPRAGUE, Stirling, Ont., has been appointed examiner for the Ontario Medical Council.

DR. J. E. BROWN, Arkona, has sold his medical practice and property to Dr. Huffman, of Alymer.

DR. KIRK COLBECK, a recent graduate of Toronto Medical College, will locate in Grand Valley.

DR. W. J. CLARK, of Orangeville, has been appointed associate coroner for the County of Dufferin.

CANADIAN MEDICAL ASSOCIATION.—Secure your rooms in advance; it will be a largely attended meeting.

DR. FRANK HALL, Victoria, B.C., is at present visiting the hospitals of Chicago, New York, Toronto and Montreal.

THE Ontario Medical Council will now allow the medical schools to fix the time students should spend in any one subject.

OVER three thousand school children have already this year been debarred from Montreal schools, having refused vaccination.

DR. G. H. BOWLBY, of Berlin, has sold his practice to Dr. C. J. W. Kern, of Picton, formerly of Woodstock, and will remove to Toronto.

DR. A. I. BROWN, of Holstein, has gone to New York, where he intends taking a special course in surgery. He will be absent two months.

CANADIAN MEDICAL ASSOCIATION.—The programme is full and complete; the titles of the papers signify that they will be of a high order of excellence.

DR. HODGE, of London, has been appointed by the National Sanitarium Company examiner for all patients going from the west to the sanitarium at Gravenhurst.

CANADIAN MEDICAL ASSOCIATION.—London expects a big turnout to the thirty-sixth annual meeting; and the profession in that city are looking forward to handling a big crowd.

THE Montreal Orthopedic Hospital, which is being organized by Dr. A. McKenzie Forbes, has received a bequest of \$25,000 by the will of the late Mr. James Cooper, of that city.

DR. H. McCORDIC, a graduate of the Toronto College of Medicine, and late of the Sarnia General Hospital staff, has decided to locate in Forest, and will shortly open an office on King Street.

THAT vaccination is a beneficial operation has been abundantly proven in Montreal by the fact that out of the last three hundred smallpox cases in that city, but one had been properly vaccinated.

DR. W. R. COOK, of Elmwood, has gone to New York. He will be away for about six weeks, and during his absence will take a course in surgery in some of the best hospitals of the American metropolis.

DR. MIDDLEBRO, of Owen Sound, has been honored by the appointment of Examiner in Surgery for the College of Physicians and Surgeons at Toronto and Kingston in November and May next.

AT Sidney Mines, C.B., there are thirty cases of smallpox in hospital; there are over fifty cases quarantined in the town. In all, there have been one hundred cases since May. The town is completely isolated.

THROUGH the generosity of the late Mr. James Cooper, Montreal, the McGill Faculty of Medicine will receive \$60,000, which will take the form of an endowment to establish and maintain a chair of internal medicine.

CANADIAN MEDICAL ASSOCIATION.—The opportunity which will be offered those attending the annual meeting this year at London of visiting the celebrated laboratories of Parke, Davis & Co., should be taken advantage of.

DR. JOHN W. RUSSEL, for the past six months house surgeon at Victoria Hospital, London, will practise at Highgate. Dr. Russel is a graduate of the Western University, and was formerly associated with the late Dr. McKillop, of Wardsville.

DURING the season of 1902, of 4,986 persons inspected at the port of Montreal by the U.S. Immigration officials, 2,028 were rejected, and of these 496 were rejected as having loathsome and contagious diseases. The question is: Were these added to our population?

AMONG those who passed the final examination of the Ontario College of Physicians and Surgeons recently is C. A. Jones, of Mount Forest. Dr. C. A. Jones, jr., will, we understand, at once enter into practice in Mount Forest in partnership with his father, Dr. C. A. Jones, sen.

DR. CHARLES LANG, of Granton, who has been taking post-graduate courses in Britain and Europe for several months is home. Dr. Lang obtained diplomas from the Royal Colleges of Physicians and Surgeons of England and took special courses in surgery and diseases of women from the most noted specialists. He will resume practice with his father, Dr. Lang, of Granton.

THE regular quarterly meeting of the Lambton County Medical Association was held in the Council Chamber, Sarnia, on July 8th. The first paper on the programme was "Cystitis," by Dr. R. G. Kelly, of Watford. "Disease of the Liver and Bile Ducts," was discussed by Dr. Angus McLean, of Detroit. The next meeting will be held in Wyoming the second Wednesday in October.

DR. D. G. REVELL, a member of the staff of the Department of Anatomy, University of Chicago, who is a Canadian, a medalist of the University of Toronto Medical College, and formerly of Paris, has recently been offered an excellent position as assistant professor in the University of St. Louis at a salary of \$2,000 a year. Dr. Revell, however, has declined the position, preferring his present work, in which he has been strongly urged to continue by the university authorities, who have shown an earnest appreciation of what he has accomplished during his connection with Chicago University. Dr. Revell is a graduate both in arts and medicine of the University of Toronto. Accepting an appointment in Chicago University soon after graduating, he has already won an excellent place and has an assured future.—*Canadian American*.

Nose and Throat Work for the General Practitioner. By G. L. RICHARDS, M.D., Fellow American Laryngological, Rhinological and Otological Society; Fellow American Otological Society; Associate Editor Annals of Otolaryngology and Rhinology; Otolaryngologist Fall River Union Hospital, Fall River, Mass. Profusely illustrated, bound in cloth, about 375 pages, \$2.00. International Journal of Surgery Co., 100 William Street, New York.

Obituaries

DR. HERBERT MICKLE.

Dr. Herbert Mickle, formerly of No. 528 Delaware Avenue, Buffalo, N.Y., died recently of consumption at Asheville, N.C.

Dr. Mickle was born at Guelph, Ont., April 30th, 1861. He was one of the most prominent surgeons of Buffalo, and a graduate of Edinburgh University in Scotland, and of Trinity College in Toronto. Several years ago he was house surgeon at the Emergency Hospital and demonstrator of anatomy in the medical department of Niagara University. Later he lectured on different branches of medicine in the university, and was also attending surgeon at nearly all of the leading hospitals of Buffalo.

A few months ago he was appointed medical agent for the New York Life Insurance Company, with headquarters in Cleveland. Dr. Mickle was married, but had no children. Mrs. Mickle was with him when he died. The funeral was held in Toronto, on Saturday, the 25th of June.

DR. MACLEAN.

Dr. Donald MacLean, a noted surgeon in Detroit, died recently at his home in that city from gastro-enteritis. Dr. MacLean was born in Seymour Township, Ont., in 1839, and graduated from Edinburgh University in 1862. He practiced medicine in Kingston, Ont., until 1870. He was for a number of years chief surgeon of the Michigan Central and Grand Trunk Railroads, and in 1894 was president of the American Medical Association.