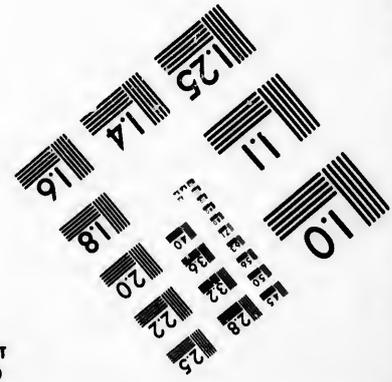
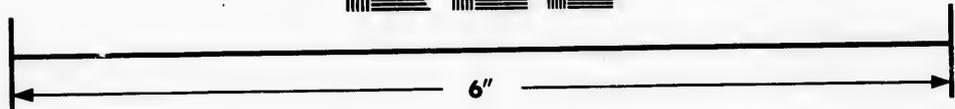
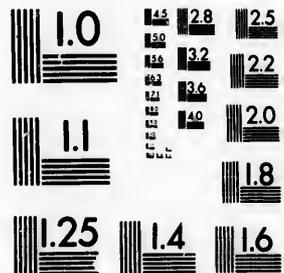


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503



**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques



© 1985

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/
Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

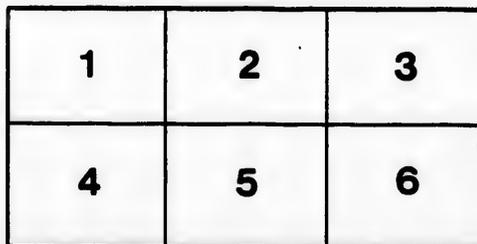
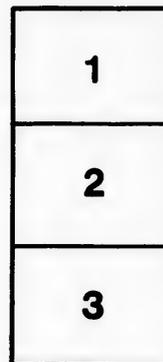
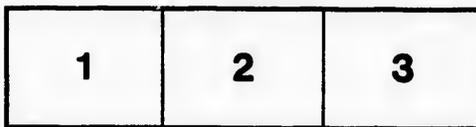
Medical Library
McGill University
Montreal

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Medical Library
McGill University
Montreal

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

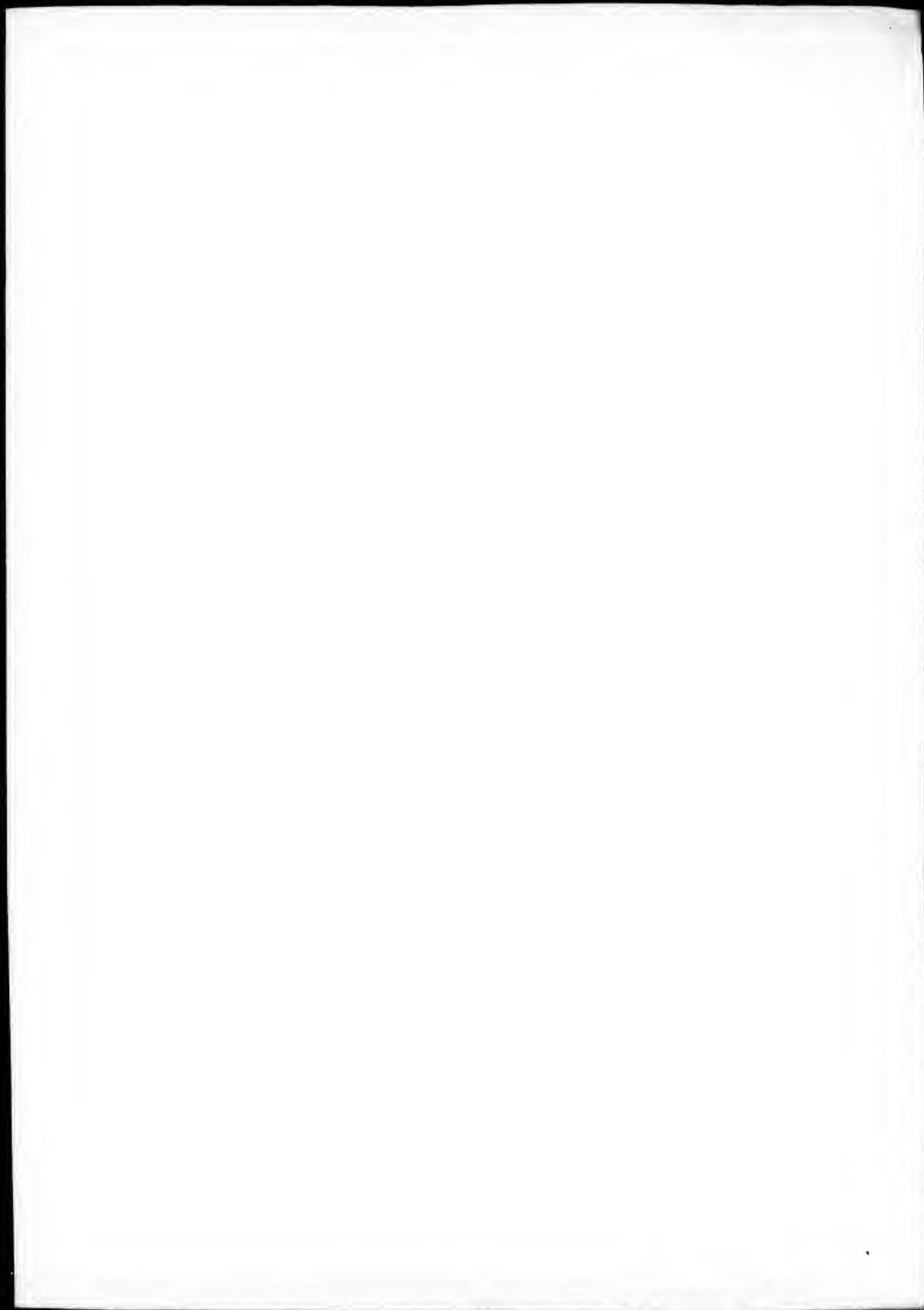
Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

ire
détails
es du
modifier
er une
filmage

es

errata
d to
t
e pelure.
on à

32X



47

ADDRESS ON
SOME OF THE
RECENT ADVANCES IN SURGERY.

BY FRANCIS J. SHEPHERD, M.D.,

Surgeon to the Montreal General Hospital; Professor of Anatomy and Lecturer on Operative Surgery, McGill University.

(Read before the Canadian Medical Association, at Ottawa, September, 1898.)

MR. PRESIDENT AND GENTLEMEN:—When informed by our worthy President that I was appointed to deliver the address on *Surgery* before this Association, I felt that the duty might have devolved on one much more competent to treat this great subject satisfactorily; one who had the faculty of making his address interesting to every one of you. When writing me, Dr. Graham said that the address should be limited to a period of—well, say that of an ordinary sermon, and hinted that the members of the Association did not want to be lectured to. I shall endeavor, to the best of my ability, to carry out these instructions.

It is not so many years ago that Boyer, after the French war, said that "surgery seems to have attained the highest degree of perfection of which it is capable." The history of surgery, which during the past fifty years has been one of continuous advance, has proved the falsity of Boyer's opinion. During the last decade this advance has been almost phenomenal, and now scarcely a month passes without the introduction of some new operative procedure or some daring operation on cavities and

organs which have from time immemorial been regarded as sacred. The causes of this advance have been two in number—the discovery of anæsthesia and the introduction of antiseptic surgery, with which the name of Lister will ever be associated. Formerly, surgery was regarded as a mere mechanical art, and practitioners of medicine looked down upon the surgeon as one who practised a trade. How different is the relationship now. Surgery now takes the lead, and the surgeon has wrested from the physician many regions which he thought to be essentially his own. The abdomen, for a long time the hunting ground of the physician, has been almost completely surrendered to the surgeon, and with what brilliant results you all know. Certain diseases of the kidney, liver, ovaries, lungs, brain, etc., which were formerly purely medical, have become chiefly surgical; and owing to modern methods of operative treatment, many lives have been saved which heretofore the physicians let slip through their fingers as being beyond their skill to cure, though they endeavored by a copious and, it is to be hoped, judicious use of the various preparations in the pharmacopœia to alleviate the sufferings of their unfortunate patients. The brain, within the last few years, has yielded not a few results to surgery which medicine has striven for in vain. The victorious advance of surgery has been positive, and the success which follows its onward course stimulates to further exertions. Still medicine and surgery are not opposed to one another, and should go hand in hand. Without the aid of the physician, many cases would escape the beneficent treatment of the surgeon; and one cannot afford to do without the other. In an address given by Prof. Bergmann before the German Scientific Medical Association in 1887, he says: “There is more or less rivalry between medicine and surgery in the cure of disease, but further progress in surgery can only take place through an increased knowledge of internal medicine. Surgeons must now avail themselves more of the accurate means of investigation which we owe to physicians—auscultation and percussion, thermometry, chemical, microscopical, and electrical investigation. As long as internal medicine remains the guardian of scientific methods and scientific principles, so long will it remain

the parent tree of which surgery is only a branch." Again : " It follows from what has been said that surgery owes all its recent development to clinical medicine, and just as antiseptic treatment is the product of careful observation in etiology, so the energetic procedures of internal surgery will have successful results only when firmly established by the methods of clinical medicine ; otherwise surgery will sink, in the hands of expert specialists, to a mere display of manual dexterity." Such are the opinions of one of Germany's greatest surgeons. His warning note that surgery may degenerate into a mere display of manual dexterity is timely, for what strikes one most in reading the surgical literature of the day is, that it treats almost entirely of surgery in its operative aspects, and those departments of surgery which are not operative seem to be treated with but scant consideration. There is great danger of the surgeon becoming too limited ; already there are men who profess to perform but one or two operations ; they certainly do them well, but such limitation must induce a narrowness of mind which is detrimental to surgery in general, and will in the end have a dwarfing effect on the more scientific branches of surgery. It is to be hoped that this is merely a temporary condition which is induced by the novelty of invading territories hitherto but little known to the surgical traveller.

However, even if it must be admitted that surgery to-day is chiefly operative, still it is more conservative than formerly, as witness the great advance made in the surgery of the joints. Where formerly a limb was amputated, now the joint is excised or the diseased matter removed with scissors and a sharp spoon. How rarely is the foot now amputated for disease of the articulations. I have only once amputated a foot for tuberculous disease of the joints, and have always regretted it. Who would now amputate an arm for disease of the elbow, or a hand for wrist-joint disease ?

But, gentlemen, I fear I am tiring you with my platitudes and generalizations, so I shall pass on and give in as brief a manner as possible an account of the recent advances in some of the more important departments of surgery. At the Toronto

meeting of the Association in 1882 it was my privilege to read the report on surgery. At that time, among other subjects, I discussed the modern treatment of wounds; since then, not much progress has been made in the treatment of wounds. The same principles laid down then are still in force—cleanliness, rest and asepticity. The dressings applied to wounds have become much simpler, and the antiseptics most relied on are soap, water and a good nail brush. Not only should the hands of the operator be cleansed with soap and water, but the parts operated on and their vicinity should also be similarly treated. Faith in germicides is being lost, and although irrigation has supplanted the spray, the solutions used have become weaker and weaker, until some surgeons use water only, especially in operations on the abdomen and thorax, where antiseptics have been proved to be absolutely injurious and often dangerous.* Sponges have become objects of suspicion; their place is now taken by the irrigator, linen, or pieces of washed gauze. The spray, which formerly was a trusted friend, a valued ally, and with some the sheet-anchor of antiseptic surgery, has been all but abandoned, and is now seen as a mere survival of a past condition. Whilst in Germany last summer, I saw in every surgical klinik the magnificent ruins of the spray-producer, looking like some old castle which marked the customs and conditions of other days. Lister himself was one of the first to give it up, and last summer at King's College Hospital he spent some time in explaining to me how especially useless the spray was in those operations on the thorax and abdomen, where it is still retained in a sort of superstitious way by some enthusiastic men. Whilst on the subject of the treatment of wounds, I might allude to one point where it seems to me practitioners in reporting cases might be more explicit. We read of a successful case of abdominal or other operation where the result was, of course, a brilliant success (how few unsuccessful cases do we read of), and the author states that the operation was performed with full antiseptic precautions. Now, what does this mean? "Full antiseptic precautions," with one

* See Senger's paper read at a recent meeting of the Berliner Medicinischer Gesellschaft.

surgeon, may mean an elaborate ritual, and with another simple cleanliness. It would be a great improvement if, when reporting cases of remarkable recoveries from astonishing operations, the reporter would state exactly the method of treatment employed to which he attributes his great success. The patient gets but little credit for the part he plays in bringing about a favorable result, and nature gets still less.

In the *surgery of the abdomen* much progress has been made. In ovariectomies and extirpations of the uterus, the mortality is being steadily diminished, chiefly by the simplification of the methods of performing the operation. Rapidity of operation and a not too elaborate "*toilette* of the peritoneum," with drainage if there be bleeding, have been most successful in reducing the mortality in these operations. Following the lead of such men as Tait, Bantock, etc., antiseptic solutions are being discarded for plain water.

In cases of *acute intestinal obstruction* it is now becoming a recognized custom for the physician to call a surgeon in consultation, and the result has been that many lives have been saved. In my opinion these cases should be placed in the hands of the surgeon from the first, as in the great majority of cases there is little hope of relief being afforded by medical means alone. Not a few cases of *intussusception* have been cured by early operations, and also many cases of strangulation due to bands, twists, etc. It is now an axiom of surgery not to let any case of acute intestinal obstruction die without at least an exploratory incision. Soon patients will be as anxious for operations in these cases as they are now in cases of strangulated herniæ. Physicians still procrastinate in cases of intestinal obstruction. They often do not advise operation until all hope of recovery has been abandoned, and operation is looked upon as a *dernier ressort*. The treatment by rest, starvation and opium has still charms for most practitioners, who are always hoping that "something will turn up." Cases of operation are reported where no cause could be found for the obstruction, and where an opening was made in the distended bowel with the best results. The artificial anus which resulted being, after some time, spontaneously closed. This

affection, in spite of operation, will always be a very fatal one until some better means of diagnosis are available before collapse sets in. On many occasions the gravity of the case is overlooked until the patient is almost moribund.

In *inflammation of the cæcum and appendix*, surgical interference has been attended in numbers of cases by remarkable success. It is now held by many surgeons that all cases of so-called typhlitis ending in suppuration are due to perforation of the cæcum (rare) or appendix, and that early operation in this most fatal affection is the proper procedure. In some cases the perforated bowel has been closed with sutures or the diseased appendix has been excised. The results have been most satisfactory. It has been attempted to close by operation perforations due to the ulcers in typhoid fever, with but little result; the condition of the patient and the state of the bowel itself render it improbable that much progress will be made in this direction. The operation has been performed by Küssmaul of Strassburg, Bartleet of Birmingham, and Morton of Philadelphia, with fatal result in each case.

In *tubercular peritonitis*, most brilliant results have been effected by operation. The early operations were chiefly cases of mistaken diagnosis for ovarian disease, or were doubtful cases in which an exploratory operation was called for; the good results following these mistakes led to the adoption of incision and drainage as a recognized treatment for this affection. Many remarkable cures are reported, but in the majority of cases this treatment is only palliative.

In *suppurative peritonitis*, the treatment by incision and drainage has also afforded some remarkable results, and in all cases this method should be adopted even if the cause, which is usually perforation of the intestines or appendix, cannot be discovered.

In *perforating gunshot wounds of the abdomen*, good results have been obtained by immediate operation. W. T. Bull and Deanis of New York, and Parkes of Chicago, on this side of the Atlantic, have led the way in showing the profession what excellent results may be obtained by immediate operation. Prof. N.

Senn of Milwaukee, at the International Congress held last year in Washington, read a remarkable paper on "Intestinal Surgery." His experiments were made on dogs, and he showed how gunshot wounds of the intestines could be healed by omental grafting, with or without scarification of the serous surfaces.* Dr. Senn has also quite recently devised a method for the detection of perforating wounds of the intestines, by means of hydrogen gas insufflated per rectum; the escape of the gas from the abdominal wound can be recognized by its inflammability, and this, of course, is proof positive that the intestine has been perforated.

At the meeting of the British Medical Association held in Dublin last year, some admirable papers on the *radical cure of hernia* were read by such surgeons as Macewen of Glasgow, Mitchell Banks of Liverpool, Ball of Dublin, Barker of London, etc. The results of operations by excision of the sac and stitching up the wound were most encouraging. Macewen reported sixty-five cases operated on by his method, without a death, and only one failure. Banks, who was one of the first advocates of this method of operation, reported 106 cases; Ball, 22 cases without a death, and Barker 35. Macewen does not excise the sac, but after reducing the hernia makes use of the sac as a pad, by drawing it up through the internal ring and fixing it there. Banks, Barker, and others advise excision of the sac and fixing the stump at the internal ring, whilst Ball's method consists in torsion of the sac before excising. The open method has been advocated on this continent by McBurney of New York. French surgeons, after ligature and excision of the sac, do not advocate closing the inguinal canal by sutures, as is done by English and German surgeons. My experience in this operation has been small, but some months ago I operated on a very formidable case, the details of which I shall venture to mention. A blacksmith, aged 52, had an enormous, irreducible, scrotal hernia of the left side, from which he had suffered for many years. The tumor had become so large that he could not wear trousers or follow his occupation. He was, besides, a rather corpulent man and a hard drinker. I performed the operation

* Meeting of the American Medical Association, 1888.

for radical cure of the hernia on the 25th of April last. The sac was dissected out and opened, and the contents reduced with the greatest difficulty. The sac contained all the small intestines, the transverse and descending colon, and the sigmoid flexure, together with a large mass of omentum. Nearly two pounds of the latter were excised, and it was only by suspending the patient by his heels (a suggestion of Dr. Bell's) that I was enabled to reduce the protruded bowel. The intestines had not been in the abdomen for some years, and that cavity now seemed too small to contain them; and when, after an hour and a half's exertion, the intestines were all returned, the abdomen was as tense as a drum. The sac was excised and the stump fixed to the internal ring according to Barker's method, and the canal closed by suturing the conjoined tendon to Poupart's ligament. The patient made an excellent and uninterrupted recovery, and is now pursuing his occupation as a blacksmith with comfort. I saw him a week ago, and there was not the slightest tendency to a return of the hernia.

In the victorious advance of surgery the *liver* has not escaped. Langenbuch of Berlin has successfully resected the greater part of the left lobe, and Dr. Dalton of St. Louis, and Prof. Postemp-ski of Italy, have successfully sutured the liver for gunshot wound and stab wound respectively. Hydatid cysts have been frequently and successfully evacuated.

The *surgery of the gall bladder* has been making steady and uninterrupted progress. Lawson Tait has reported no less than thirty cases of operation on the gall bladder, with one death. He differs from Langenbuch of Berlin, who prefers excision of the gall bladder to incision and drainage. Mr. Tait says*: "The more experience I have in dealing with these cases the less necessity, it seems to me, arises for anything more than the simple process of cholecystotomy, and the extremely favorable results obtained from it put it in the first rank of modern operative procedures." Diseases of the gall bladder are among those affections which should be looked upon as surgical, and which the judicious practitioner should treat as such. In some cases

* *Lancet*, April 14th, 1888.

of obstruction from gall-stones, the gall bladder is shrunken and can be with difficulty brought to the surface. It is often difficult to say whether a case of obstruction of the common duct is due to impacted calculus or malignant disease; when the cystic duct alone is obstructed there is no jaundice. In doubtful cases an exploratory incision is now considered justifiable. When the gall-stone has escaped from the common duct it may still prove a source of danger. Obstruction of the intestine due to gall-stone is more common than is supposed; a small stone may cause symptoms of complete obstruction and consequent death. Such cases should be treated by early laparotomy. It is not necessary to incise the bowel to free the stone, for it may be passed on through the ileo-cæcal opening by external manipulation, as has been done by Mr. Clutton of London, or broken up *in situ* with a needle, as recommended by Mr. Tait.

The *stomach* has been frequently successfully opened for the removal of foreign bodies, or the performance of Loreta's operation of dilating a contracted pylorus; operations of excision of malignant growths of the stomach are not growing in favor, the game, as a rule, is not worth the candle. The *pancreas* has been successfully operated on for cystic disease, and the *spleen* has been so frequently successfully excised that the subject is no longer a matter for wonderment.

We come now to the *surgery of the kidney*. Since Simon first extirpated a kidney in 1869, great advances have been made. The surgery of no other abdominal organ has been so rapidly developed and perfected. No doubt many kidneys have been removed unnecessarily, and too often, unfortunately, with a fatal result; but surgeons are now beginning to see their way more clearly in this, until recently, little known branch of surgery. It is now a well established rule that no kidney should be removed without a previous nephrotomy or exploratory incision. Again, no kidney should be removed until the condition of its fellow is ascertained. Several cases are on record where the surgeon has removed the only kidney in the patient's possession. A preliminary nephrotomy enables the surgeon to avoid this fatal mistake. The most brilliant results have been obtained

in the operation of *nephro-lithotomy*. During the past year Mr. Jordan Lloyd* of Leeds, England, has introduced a method of exploration of the kidney which is a great improvement on the old needle puncture. He advises puncture of the lower end of the kidney with a long-bladed tenotome in a direction upwards and inwards till the lowest of the calyces is reached; a small, short-beaked child's bladder sound is then introduced, and the calyces and pelvis explored. In June last I had an opportunity of putting Mr. Lloyd's method into practice, and found it a simple and admirable one. The patient had been subject for several years to attacks of renal colic; latterly the pain had been continuous, and was located in the left lumbar region and down the course of the ureter; great pain was felt on pressing over the left kidney. He had never had any blood or pus in his urine. Knowing the comparative harmlessness of the operation of nephrotomy, and having had experience in several other cases, I determined to cut down on the painful kidney and examine it. When the kidney was reached the exploration was made with the greatest facility and with but little disturbance of the parts. After incising the lower end of the kidney with a bistoury, the short-beaked sound was introduced and the pelvis and calyces of the kidney thoroughly explored, but without result; no stone was found. The hemorrhage from the kidney, which was free, was easily controlled by pressure. The wound was closed and a drainage tube placed at its lower end. Urine ceased to come from the wound after the second day. In ten days the patient was out on the gallery, and in two weeks the wound had soundly healed. The pain which previously had been most intense was much relieved, and has since almost entirely disappeared. When last seen the patient was attending to his work and looked strong and healthy. I might mention that a woman from whom I removed a kidney in September, 1884, for calculous pyelitis, is still alive and in good health, and since the operation has given birth to three healthy children. Another operation which is finding favor in the eyes of surgeons is *nephrorrhaphy* or fixation of a floating kidney. Removal of the kidney was formerly prac-

* Practitioner, September, 1887.

tised for the relief of the pain and inconvenience of a floating kidney; the substitution of nephrorrhaphy for nephrectomy in these cases is a decided advance, for the former operation is a much safer as well as a more scientific one.

In the *surgery of the bladder* progress has also been made, though not to the same extent as in that of other abdominal organs. Tumors of the bladder are now successfully removed, and Guyon of Paris and Thompson of London have done excellent work in this direction. The introduction of the electro-endoscope has much facilitated diagnosis. The old supra-pubic operation is now the fashionable one for the removal of stone from the bladder, and it is being practised largely everywhere. The operation has been much improved by the introduction of Petersen's rectal bags and the practice of moderately distending the bladder before operation with an antiseptic solution. The operation is suitable for cases of large and hard stones, and for the removal of tumors and foreign bodies, but it will no more supplant the old operation of lateral lithotomy than did lithotripsy. In some cases of stone in the bladder, Mr. Reginald Harrison* of Liverpool justly remarks, "it is necessary to do something more than merely remove the stone. In cases of cystitis with enlarged prostate where stone has formed, removal of the stone is necessary, but it is also necessary to prevent further formation by getting the bladder into better condition." The bladder, says Mr. Harrison, is like a chronic abscess with a stone in it, and it is quite as necessary to drain the one as the other. These cases are unfit either for supra-pubic lithotomy or lithotripsy; but the lateral operation provides an excellent means not only for the removal of the stone but of after-drainage of the bladder. Ruptured bladders have recently been *successfully treated by abdominal section* and suture of the bladder rent. An early diagnosis is, of course, important in these cases.

I fear I have already exceeded my allotted time, and although many other subjects of intense interest to the surgeon might be touched upon, yet I feel constrained, for the remainder of my address, to confine myself to giving a short account of the re-

* Lettsomian Lectures, 1888.

markable advance which has been made during the past two or three years in the treatment of various *diseases and injuries of the brain and spinal cord* by surgical operation. Brilliant results have been obtained in this department of surgery—results which, a few years ago, would have been looked upon as Utopian. The operation of trephining the skull is a very old one, and was frequently and often unnecessarily performed by surgeons in the early part of this century. I have heard that it was quite the fashion for Dublin surgeons to have their pockets full of buttons of bone which had been removed with the trephine from the skulls of pugnacious Irishmen. However, the surgeons at that time only trephined for injury, and their explorations did not extend further than the *dura mater*; it was considered injudicious and dangerous to interfere with the brain itself, not, as in earlier times, from superstitious motives, but owing to such interference being followed by fatal inflammation. It is only with the introduction of antiseptic surgery, and a more accurate knowledge of the localization of brain functions that the brain itself has been interfered with. Our knowledge of the functions of the brain has been greatly extended by the researches of such men as Broca, Hughlings Jackson, Fritsch and Hitzig, Goltz, David Ferrier, Yeo and others. The observations of these investigators chiefly go to prove that many areas in the brain are connected with separate and distinct functions. It was found that if these areas on the surface of the convolutions were stimulated electrically, distinct movements were excited in certain groups of muscles on the opposite side of the body. These facts were not discovered all at once, but were the result of prolonged clinical observation and careful experiments on the brains of animals. Many cases of severe injury to the brain have been saved in the past by early trephining. Abscesses of the brain following injury have been frequently opened successfully. Again, many cases of epilepsy due to injury have been cured by trephining over the spot injured; but it is only quite recently, in fact only since the truth of the theory of Broca's localization has been established on a firm basis, that operations have been undertaken where there was no external indication of injury or

disease. The lesions have not only been successfully diagnosed, but the brain and its membranes have been incised without resulting in fatal inflammation. It has been clearly shown that inflammatory conditions following operations are due to sepsis. If the wound be kept aseptic the case does well. Dr. Macewen of Glasgow, an old pupil and house-surgeon of Lister's, noticed that cases of severe injury to the skull, with extensive loss of cerebral substance, were quite amenable to treatment, and exhibited no tendency to inflammatory action as long as the tissues were kept aseptic; hence, he said, if such injuries can be recovered from, how much more likely is recovery from a carefully planned operation. His first case was in 1876 for abscess, which he diagnosed to be in the vicinity of Broca's convolution; operation having been refused during life, he was permitted to trephine over Broca's convolution after death; the abscess was found as diagnosed and easily evacuated. In 1879 Dr. Macewen successfully evacuated from beneath the dura mater of a boy, who had previously received an injury of the head, some fluid which had collected there and had given rise to convulsive seizure of arm and leg. In the same year a tumor of the brain was diagnosed and successfully removed from the frontal lobe of a woman, who lived for eight years after and then died of Bright's disease of the kidneys. Up to 1884 Macewen had operated on seven brain cases, with one death, a case of abscess of the temporo-sphenoidal lobe. In December, 1884, the first case of tumor of the brain was operated on in London, having been previously diagnosed by Dr. Hughes Bennet, and removed successfully by Mr. Rickman Godlee; the patient lived four weeks relieved of his previous symptoms, and then died from septic complications. The report of this case, at a meeting of the London Medico-Chirurgical Society in May, 1885, gave rise to a most interesting and important discussion, in which Drs. Macewen and Ferrier took part. Dr. Macewen related several cases on which he had successfully operated, and mentioned his method of reimplanting the removed disc of bone. Up to this time MacEwen had operated on seventeen cases for the relief of cerebral pressure and other brain lesions. At the Brighton

meeting of the British Association in 1886, Mr. Victor Horsley excited the admiration of the meeting by his remarkable paper on the *Advances in the surgery of the central nervous system*. In this paper he minutely detailed his method of operating, and showed how, if performed carefully, the brain might be incised and tumors removed without any great risk to the patient. His experience was chiefly derived from operations on monkeys. He also showed three patients on whom he had successfully operated (one for tumor and two others for scarring of the convolutions, causing epileptiform fits). Since this time operations on the brain have become comparatively frequent for epilepsy following injury, for abscess of the brain (especially that form connected with suppurative disease of the ear), and for tumors. On this side of the Atlantic, Drs. Keen and Roberts of Philadelphia, and Drs. Weir and Seguin of New York, have done good work. Dr. Keen has recently successfully reimplanted, in one piece, the bone removed by the trephine.

At the recent meeting of the British Medical Association in Glasgow, Dr. Macewen read an epoch-marking paper in the surgery of the "Brain and Spinal Cord." He related how for years he had been working at this subject, and with what great results. His paper is certainly a wonderful contribution to surgical science. He says: "Of twenty-one cerebral cases (exclusive of fractures of the skull and other immediate effects of injury), in which operations have been performed by me, there have been three deaths and eighteen recoveries. Of those who died all were *in extremis* when operated upon. Two were for abscess of the brain, in one of which pus had already burst into the lateral ventricles; in the other, suppurative thrombosis of the lateral sinus had previously led to pyæmia and septic pneumonia. The third case was one in which, besides a subdural cyst over one of the hemispheres, there was extensive softening at the seat of the cerebral contusion in the opposite hemisphere, accompanied by œdema of the brain. Of the eighteen who recovered, sixteen are still alive, in good health, and most are at work; leaving two, who have since died, one eight years after the operation from Bright's disease, the other forty-seven days after operation from tubercular enteritis."

These results are certainly remarkable, and very encouraging as to the future of the surgery of the brain. I had the pleasure last year, while in Glasgow, of seeing some of Dr. Macewen's cases, and some were most interesting. In one case the diagnosis of the lesion was made from sensory phenomena alone, and successfully operated upon. Notwithstanding the success of such men as Macewen and Victor Horsley, operations on the brain should not be rashly undertaken. Each case should be studied on its own merits, and the surgeons who attempt these operations need not only experience in general surgery, but an accurate knowledge of motor and sensory phenomena in connection with the localization of the functions of the brain.

Dr. Macewen's name is also associated with the surgery of the spinal cord; he has operated on no less than six cases. In all, the posterior arches of the vertebræ were removed; four to relieve paraplegia, caused by pressure from connective tissue neoplasms and displacements of the vertebræ due to caries or traumatism. Out of the six cases operated on four were successful and two died. The first case was operated upon as early as 1882. Mr. Victor Horsley successfully removed a tumor, diagnosed by Dr. Gowers, from the posterior end of the nerve opposite the third dorsal vertebra. The patient suffered from paraplegia. He completely recovered, and was shown to the London Medico-Chirurgical Society, January 24th, 1888. I have frequently trephined the spine in the dead subject, and I can say that the operation itself presents no great difficulties. The cases which call for this operation are, however, rarely met with.

There are many other interesting subjects on which it might be profitable to dwell, such as intubation of the larynx, re-implantation of bone, transplantation of the eyeball and conjunctiva, new theories as to the cause of inflammation, tetanus, etc., surgery of bronchocele, surgery of lungs, joints and many others, but time will not allow me to more than mention them.

