DIXON (Arch.)

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MR. PRESIDENT, and gentlemen of the Kentucky State Medical Society:

To attempt a general report upon a subject of such vast proportions as Surgery, would be a herculean task and to compress such a report within the prescribed limit of time alloted each paper would be an utter impossibility. The recent advances in surgery have not only been rapid, but they have in some respects, been actually astonishing. This progress has not been confined to any two or three particular branches, but has pervaded the entire domain of surgery and by a comparison of the surgical procedures of the past, the difference in technique, and especially in the rate of mortality, one may very justly ask, To what is this progress due? The answer is simple. To the study of bacteriology, on the one hand, and to the advancement of anti-septic methods

and the improvements in technique on the other. If we look back into the dark ages we find that surgery in all countries is as old as human needs. A certain skill in the staunching of blood, the extraction of arrows, the binding up of wounds, the application of splints to broken limbs, and an instinctive reliance on the healing power of the tissues has been common to men everywhere. As far back as 500 years B. C. we find among the Hindus, as reported by Susruta (1) that some dexterous operations were performed, fractures were diagnosed, among other signs by Crepitus: dislocations were elaborately classified and the differential diagnosis given; the treatment was by traction and counter-traction, circumduction and other dextrous manipulation. Wounds were divided into incised, punctured, lacerated, contused, etc. Cuts of the head and face were sewed. Skill in extracting foreign bodies was carried to a great height, the magnet being used for iron particles under certain specified circumstances. Inflammations were treated by antiphlogistic regimen and appliances, venesection was practised at

several other points beside the bend of the elbow; leeches were more often resorted to than the lance; cupping also was in general use; poulticing, fomenting and the like were done. Even amputations were now and then performed, notwithstanding the want of good control over the hemorrhage, boiling oil being applied to the stump with pressure by means of a cup formed bandage, pitch being sometimes added. Tumors and enlarged lymphatic glands were cut out; abdominal dropsy and hydrocole were treated by tapping with a trocar; and varieties of hernia were understood, omental hermia being removed by operation on the scrotum. Anuerisms were known but not treated; the use of the ligature on the continuity of an artery, as well as on the cut end of it on a flap, is the one thing that a modern surgeon will miss somewhat noticeably in the ancient surgery of the Hindus. Beside the operations already mentioned, the abdominal cavity was opened, by a short incision below the umbilicus slightly to the left of the median line, for the purpose of removing intestinal concretions or other ob-

structions (Laparotomy). Only a small segment of the bowel was exposed at one time; the concretion, when found, was removed, the intestine stitched together again, anointed with ghee and honey and replaced in the abdomen. Lithotomy was practised without the staff. There was a plastic operation for the restoration of the nose, the skin being taken from the cheek adjoining and the vascularity kept up by a bridge of tissue. The opthalmic surgery included the extraction of cataract. Obstetrical operations were various, including cæsarean section and crushing of the fœtus. Susruta describes more than one hundred surgical instruments made of steel. They should have good handles and firm joints, be well polished and sharp enough to divide a hair; they should be perfectly clean and kept in flannel in a wooden box. Among them were various shapes of scalpels, bistouries, lancets, scarifiers, saws, bone nippers, scissors, trocars and needles. There were also blunt hooks, loops, probes (including a caustic holder) directors, sounds, scoops and forceps (for polypi, etc.) as well as catheters,

syringes, a rectal speculum and bougies. There were fourteen varieties of bandages. The favorite form of splint was made of thin slips of bamboo bound together by string and cut to the length required. Wise says that he has frequently used "this admirable splint" particularly for fractures of the thigh, humerus, radius and ulna, and it has been subsequently adopted in the English army under the name of the "patent rattan cane splint." The surgery of the hippocratic collection (Age of Pericles) bears every evidence of finish and elaboration. The treatise on fractures and on that of dislocation as well, are hardly surpassed in some respects, by the writings of the present mechanical age. Of the four dislocations of the shoulder, the displacement downwards into the axilla is given as the only one at all common. The two most usual dislocations of the femur were backwards on to the dorsum ilii and forwards on to the obtrurator region. Tubercles are given as one of the causes of spinal curvature, an antisipation of Potts' diagnosis. Fractures and dislocation were the most

complete chapters of hippocratic surgery. The next most elaborate chapter being that on wounds and injuries of the head. which refers them to a minute subdivision and includes the depressed fracture and contra coup. Trephining was the measure most commonly resorted to, even when there was no compression. · Numerous forms of wounds and injuries of other parts are specified. Ruptures, piles, rectal polypi, fistula in ano, and prolapsus ani were among the other conditions treated. The diagnosis of empyema was known and the treatment of it was by an incision in the intercostal space and evacuation of the pus. The surgeons of the Alexandrian school were all distinguished by the nicety and complexity of their dressings and bandagings of which they invented a great variety. Herophilus boldly used the knife even on internal organs, such as the liver and the spleen, which latter he regarded "as of little consequence in the animal economy." He treated retention of urine by a particular kind of catheter, which long bore his name. Lithotomy was much practised by a few specialists and one

of them (Ammonius) is said to have used an instrument for breaking the stone in the bladder into several pieces when it was too large to be removed whole. The surgery of the Romans, as described by Celsus (*De re Medica*) gives little beyond the maxims and rules of the Greeks. Plastic operations for the restoration of the nose, lips and ears; the treatment of hernia by taxis and operation; in the latter, it was recommended to apply the actual cautery to the canal after the hernia had been returned. The description of lithotomy is that of the operation as practiced long before in India and at Alexandria. The treatment of sinuses in various regions is dwelt upon, and in the case of sinuses of the thoracic wall resection of the rib is mentioned. Trephining has the same prominent place assigned to it as in the Greek surgery. The resources of contemporary surgery may be estimated by the fact that subcutaneous urethrotomy was practised when the urethra was blocked by a calculus. Amputation of an extremity is described in detail for the first time in surgical literature and

mention is made of a variety of opthalmic operations. There is little of surgical interest in the writings of Galen, great as their importance is for anatomy and physiology. Surgical practice was in a flourishing condition all through the period of the Empire, and among the great surgeons were Antyllus who had an operation for anuerism (tying the artery above and below the sac and evacuating its contents) for cataract, and he treated contracted muscles by something like tenotomy. Heliodorus is said to have arrested hemorrhage by torsion, to have operated for scrotal hernia, and to have treated strictures of the urethra by internal section. Antyllus removed glandular swellings of the neck (Strumae) ligatured vessels before cutting them, and gave directions for avoiding the carotid artery and jugular vein. Flap amputations were done by Leonides and Heliodorus. But perhaps the most striking illustration of the advanced surgery of the period is the freedom with which bones were resected, including the long bones, the lower jaw, and the upper jaw. Without a doubt the sixth book of the

writings of Paulus Aeginn (650), as translated by Mr. Francis Adams, (1) contains the most complete system of operative surgery which has come down to us from ancient times, bringing as it does the whole surgery of the ancient world to a focus. Paulus himself is credited with the principle of general depletion; and with advocating the merits of a free external incision and a limited internal one; with the diagnosis of anuerism by anastomosis; with an operation for anuerism like that of Antyllus with amputation of the cancerous breast by crucial incision; and with treatment of fractured patella. From the time of Paulus Aegina, notwithstanding the founding of the medical school of Salerna, (which in the 10th century became famous) and of the University of Naples, nothing of very special interest in surgery is recorded until the time of Parcelsus and of Ambroise Pare. Indeed the 14th and 15th centuries are almost entirely without interest for surgical history, the dead level of tradition being only broken by the revival of anatomy by Vesalius and Fallopius, and by the originality and genius of

Parcelsus and Pare, Parcelsus was by no means an innovator in surgical operations. His description of "hospital gangrene" is true to nature; his numerous observations on syphilis were also sound and sensible, and he was the first to point out the connection between cretinism of the offspring and goitre of the parents. Pare was the first to treat gun-shot wounds by a simple bandage, instead of hot oil, according to the practice of the day, but his most memorable service was to get the use of the ligature for large arteries generally adopted, a method of controlling hemorrhage which made amputation on a large scale possible for the first time in history. The 16th and 17th centuries are marked by no remarkable improvements in surgery. The use of the staff in lithotomy; the radical cure of hernia by means of sutures, instead of the application of the actual cautery; the revival of flap amputations by Lowdham, an Oxford surgeon, and probably used by Wiseman, who was the first to practice the primary major amputations. Strangulated hernia became a subject of operation. Lith-

otomy by the lateral method came to great perfection, and the theory and practice of transfusion of blood occupied much attention. The 18th century marks the establishment of surgery on a broader basis than ever before. The study of anatomy, comparative anatomy, physiology and pathology received a great impetus, chiefly by the labors of Alexander Munro, in Scotland, and of the two Hunter's in England. Perhaps to John Hunter more than any other, is due the credit of having lifted the surgical profession out of the company of barbers and enabled it to take rank with the older order of physicians. Among the great improvements in surgical procedures were Cheselden's operation of lithotomy; Hawkins' cutting gorget for the same; Hunter's operation for popliteal anurism, by tying the femoral artery in the canal of the triceps where its walls were sound (1785); Petit's, Desault's, and Pott's treatment of fractures; Gimbernat's operations for strangulated femoral hernia; White's and Park's excision of joints; Petit's invention of the screw tourniquet; his operation for lachrymal fistula;

Chopart's partial amputation of the foot; Desault's bandage for fractured clavicle, and Cheselden's operation of iridectomy.

In the 19th century, the founding of museums of anatomy and surgical pathology, by the Hunter's, Dupuytren, Cloquet, Blumenbach, Barclay and others gave to surgical knowledge a scientific character and a wide diffusion through all ranks of the profession. The discovery of the anæsthetic properties of ether and chloroform has been of incalculable benefit and gave an impetus to surgical procedures never before known. Many important additions were made to the resources of surgical art. Among them being the introduction of thin thread ligatures for arteries, by Jones, (1805); the revival of torsion of arteries by Amussat, (1829); the practice of drainage by Chassaignac (1859); Aspiration by Pelletan; the plaster of paris bandage and other immovable dressings for simple fractures, club foot, etc., (an old eastern practice recommended in Europe in 1814); the re-breaking of badly set fractures; the general introduction of

resection of joints, (Ferguson, Symes and others); successful ligation of the external iliac for anurism of the femoral by Abernathy (1808); ligature of the subclavian in the third portion, by Astley Cooper (1808), and in its first portion by Colles; crushing of stone in the bladder by Gruithuisen of Munich (1819) and Civale of Paris (1826) and perhaps the greatest of all, the cure of ovarian dropsy by the removal of the cyst, by our own Ephraim McDowell, in 1809.

It will thus be seen by the foregoing review that ancient surgery, in so far as surgical procedures are concerned, was not so far behind that of mediæval times nor indeed those of a more modern date, but their rate of mortality was immense, and continued to be of vast proportions until within a very recent period, until to-day, comparatively speaking, the mortality is almost *nil.* Perhaps to Pasteur more than any other is due this fact. In 1860, Lister, from a study of the experimental researches of Pasteur into the causes of putrefaction stated that the evils observed in open wounds were due to the

admission into them of organisms which exist in the air, in water, on instruments, on sponges and on the hands of the surgeons, and he immediately determined to destroy, or at least interfere with the growth of these organisms, either by paralyzing the germ itself before or after it had entered the wound, or by an interference with the soil upon which it grew, for example, by facilitating the removal of the discharges and preventing their accumulation in the wound cavity, aud by doing everything to prevent depression of the wounded tissues, because it has been demonstrated by Pasteur and Tyndall, that these organisms cannot grow on healthy soil and that vitality of tissues was, as it is now, the best of germicides. It is useless to tax your patience by a recital of Listerism. How from a small begining it has grown to such immense proportions that its arms, broad and long, reach out to and encompass the furthermost ends of the civilized world. The object Lister had in view, from the beginning of his experiments, was to place the open wound in a condition as regards the entrance

of organisms as closely analagous as possible to a truly subcutaneous wound, such as a contusion, or a simple fracture, in which the unbroken skin acts as a protection to the wounded tissues beneath. The introduction of this practice effected an entire revolution in operative surgery, involving as it did the great principle that putrefaction in a wound is an evil which can be prevented and that if it is prevented, local irritation, in so far as it is due to putrefaction, is obviated and septicaemia and pyaemia do not occur. Alongside of this great improvement the immense advantage of free drainage is now universally acknowledged, although in abdominal surgery the question of drainage of the peritoneal cavity is still *sub judice*. The fear of septic infection by means of the drainage tube is considered by many a sufficient bar to its use, besides there are other accidents and sequellae which may follow in its track. Since the adoption of the principle laid down by Lister, so remarkable has been the change in operative surgery that one can almost say with Mark Twain, (4), " from a three or four thou-

sand year twilight to the flash and glare of open day, that one has walked in both and yet one is not old." This change is the most sweeping that has ever come over the surgical world since the beginning of its history. In fact, it is the utter reversal of an attitude which has been maintained almost without challenge or interruption from the earliest antiquity. To be convinced of this, one has only to contrast the results of antiseptic treatment with the results formerly obtained under the old or septic treatment, (5). Take for example an amputation above the elbow or elsewhere, which, under the old regime, done by the most skilled surgeon, followed perhaps such a course as this: at the end of twenty-four or forty-eight hours there would be a rise of temperature, ranging from 102 to 105° which would last for several days and was the so-called surgical fever. When suppuration was established, which was the rule and not the exception, the fever gradually subsided and later the suppuration would also diminish. Frequently trouble arose from ligatures, and secondary hemorrhage was one of

the calamities constantly to be watched for. Inflammation of the wound excited no surprise, indeed if the wound healed without inflammation and suppuration it would be recounted as a surgical triumph. The formation of abscesses, erysipelas and gangrene were always to be feared. How different the picture under the new treatment. The temperature of the patient scarcely rises above the normal. Apart from the discomfort from shock, from the anaesthetic, and from loss of blood, he will suffer but little pain. It is not an infrequent thing to see a patient recover even from a severe operation, without having suffered any pain or having lost a single meal, excepting of course, those of the day of operation. By the fifth or tenth day, when the second dressing is applied, the wound is well. No complications ought to occur, save in exceptional cases. Secondary hemorrhage is unknown. Primary union of the flaps is always expected. The formation of pus is a rare accident and if it does occur, the surgeon asks himself "what mistake did I make?" The following case is illustrative; J. H....

aged 32, while in a state of intoxication was run over by a passing train. The right arm was crushed to a pulp, rendering amputation imperative. The arm was taken off immediately below the shoulder joint. In thirty-six hours the drainage tube was removed; the wound was redressed on the eighth day; primary union was perfect, and in two weeks the patient was discharged well. In this case the temperature never was above normal, the patient did not lose a meal, his appetite being exceptionally good during the entire time of his stay in the sanitarium. There was not a drop of pus, save in the track of one of the sutures, nor did the patient complain of any pain. Such a result is the rule and a failure to obtain it the exception. Let us compare the rate of mortality of amputations before the day of antisepsis and since its introduction. From the siege of Spires, 1689, to the close of the France-German war, 1870, a period embracing 180 years, of an aggregate of nine thousand and seventeen amputations in the thigh adduced, five-hundred and forty-nine were undetermined, one thousand four hundred

and nineteen had successful results and seven thousand and forty-nine were fatal, a death rate of 83.2 per cent. In the war between the States (7) an aggregate of six thousand two hundred and twenty-nine cases of amputation in the shaft of the femur, two thousand eight hundred and thirty-nine had successful and three thousand three hundred and ten fatal terminations, a mortality of 53.8 per cent. In three thousand seven hundred and twenty-eight amputations of the leg, two thousand three hundred and fifty-four recovered, and one thousand two hundred and fifteen were fatal, one hundred and fifty-nine undetermined, a mortality of 34 per cent. (8). In Billroths Clinic in Vienna, in the seventeen years from 1860 to 1877, there were 315 major amputations done in the most approved methods of the days before antiseptics were introduced. Of these 173 or 54 per cent. died. From 1877 to 1880, 94 such amputations were done by the same surgeon with antiseptic precautions and the mortality was reduced to 19.7 per cent. Of the 91 cases, 56 were uncomplicated and of these not one died. In Von Bruns Clinic 47

major amputations were done antiseptically and not one died. Busch reports 57 similar amputations with a mortality of 3.5 per cent. Schede 31 amputations with a mortality of 4.37 per cent. Socin 48 amputations and a mortality of zero, and Volkman 220 amputations with a mortality of but 3.5 per cent. The statistics of compound fractures from a half dozen of the best hospitals of America and Europe, for varying periods, from 12 to 20 years before the introduction of antiseptic methods, gave a mortality varying from 26 to 68 per cent, the majority of deaths being from serious complications, the result of blood poisoning. The introduction of antiseptics caused a falling off of the death rate of Billroth's cases in Vienna to one-tenth of what it formerly was, and in the other hospitals in similar, though in varying proportions. Still more remarkable are the results recently reported by Dennis, of New York, Of 443 compound fractures of all grades, from the most severe down, of which 335 belonged to the class of severe fractures, only two died, the mortality being less than one half of one per cent. Less than two in 400 in contrast to the rate

previous to the introduction of modern surgical methods of from 104 up to 272 in 400. Last year his list of cases had reached 900 without a single death from blood poisoning. Nothing can add force to such a statement. (4)

In abdominal surgery the advance has been marvellous and the contrast in the treatment of wounds of the abdominal viscera is even greater than in that of amputations. The result of wounds of this character as tabulated in the Medical and Surgical History of the War (9) shows that of 79 cases of shot wounds of the stomach the mortality was over 75 per cent. In 653 cases of wounds of the intestines the mortality was over 80 per cent. When the small intestine was injured only, five recoveries were recorded, and only fifty-nine from wounds of the larger bowel. Compare the results which have been obtained by Bull, Parker, Senn and others. Keene (10) in his very valuable article on the "Recent Progress in Surgery," in commenting on gun-shot wounds of the intestines says: "While it is true that a small rear guard in the surgical army would fold their hands and give opium until the patient

died, there is scarcely a man abreast with modern ideas who, in such a case, would not open the abdomen, tie bleeding vessels, sew up a rupture or wound of the stomach or bowels, remove the lacerated kidney, and in general repair any damage done. Of course large numbers of such patients either from immediate hemorrhage or from the severity of the wound inflicted (shock) most always die. But to say nothing of the numerous other cases in which recovery has followed operative interference in such wounds, even though multiple, the possibilities of modern surgery are well shown in a case reported by Senn, in which eleven perforations of the bowels were sewed up, and another by Hamilton in which there were so extraordinary a number as thirteen wounds of the intestines, besides wounds of the omentum and the mesentery, and yet both of these patients made uninterrupted recoveries. In a recent table by Morton of nineteen cases of stab wounds (all of course by dirty knives and one even by a ragged splinter of dirty wood) with hemorrhage and protrusion of the bowels, twelve recovered, but seven died, and even of 110

gun shot wounds of the intestines in which the abdomen was opened, 36 lives were saved. In a series of tables (11) by W. B. Cooley, the records of 74 cases of penetrating shot wounds of the abdomen in which operations were performed, 39 of the cases were operated on in the first twelve hours with a precentage of recoveries of 43.6, twenty-two cases operated on after the first twelve hours gave a percentage of recoveries of 22.7. The other 13 cases in which the time of operation could not be discovered gave a percentage of recoveries of 57. The results reported by Park, Bull and others surpass even these. In abdominal surgery for the removal of tumors, for abscesses, for exploration, etc., the results reached are simply phenominal. In the first 1000 cases reported by Mr. Lawson Tait, 92 patients died, 9.2 per cent. and in the second 1000 only 53 died, 5.3 per cent.

In ovaritomy alone the percentage fell from 8.1 per cent. in the first 1000 to 3.3 per cent. in the second. I am justified in using the word phenomenal when we consider that only a quarter of a century ago the mortality of ovaritomy was but

little, if at all, under 50 per cent. In our own country results are being obtained almost equally as good by such operators as Jos. Price, Gil Wylie and others, and our own state makes a most creditable showing in the report made to the Southern Surgical and Gynaecological Association at its last meeting, by Dr. L. S. McMurtry, and in the work of Wathen, Johnston, Yandell, Roberts and others. Indeed the abdominal cavity is being opened daily and its entire contents subjected to surgical interference. In 90 cases the spleen has been removed, followed by 51 recoveries and in 10 cases of removal of "floating spleen" there were 8 recoveries. Kocher, (13) in commenting on expiration of the spleen says, "the mortality has increased in direct proportion with the size and immobility of the tumor and with the number and firmness of the adhesions. The difficulties of technique of course increase greatly at the same time. It is essential for success in splenectomy that the operative procedure be so cautious and deliberate that the adhesions are not torn or cut at points where the contained vessels cannot be ligated, or at least compressed by the hand

or forceps. The incision advocated by Czerny and Pean, upon the border of the rectus is to be preferred." In 78 cases of cholicystotomy recorded last year there were 64 recoveries, and of 22 cases in which cholicystectotomy was done, 19 recovered. In 100 operations therefore on the gall-bladder the mortality has only been 17 per cent. Mr. Tait himself has performed 54 such operations with a mortality of less than 4 per cent. (12). In 375 cases of nephrotomy, 197 reecovered. In 197 cases of nephrectomy for abscess, calcui, etc., 152 recovered. In 25 cases of nephrorrhaphy 24 recovered. A total of 597 operations on the kidneys shows therefore recovery in 373. A mortality of less than 40 per cent. The researches of Hitsig, Fritsch, Ferrier, and others, in cerebral localization has been applied in the operative treatment of endocranial lesions, and since the report made by Bennett & Godlee (14) in 1884, of the location and removal of a tumor in the brain, many such operations have been done, and the brain has been invaded not only for the removal of tumors but for paralysis, epilepsy, abscesses and endocranial hemorrhage. In

20 cases of removal of tumors from the brain, 17 from the cerebrum and 3 from the cerebellum, of the 17, 13 recovered and the three cases where the cerebellum was invaded, all proved fatal (15), but the operative treatment of tumor of the brain does not seem to have gained the same footing as that of cranial lesions, and of cerebral abscess, and the efficacy of surgical interference in traumatic epilepsy still remains *sub judice*.

During the past year two very valuable papers on brain surgery have been read by American surgeons. One before the Pennsylvania State Society, by McCann (16), "Observations on the Present Status of Brain Surgery," and one by Park on "Surgery of the Brain Based on the Principles of Cerebral Localization," (17) read before the Congress of American Physicians and Surgeons, at Washington. Senn says (18) "It must be a source of pride to the profession of this country that during the last year a number of the most brilliant results of cerebral surgery have been reported by American surgeons." Macewen of Glasgow was the pioneer in cerebral surgery, having in 1879 diagnosed and located a cerebral

abscess; operation was not permitted. Twenty-four hours afterward the patient died and he was allowed to operate as he would have prior to death. Removing a bone and incising the dura, nothing was seen, but passing a scalpel into the brain substance, an abscess was opened. In 1883 Macewen did perhaps the first operation of this kind on record, trephining over the upper portion of the ascending parietal convolution and evacuating an abscess. The patient, a woman, made a perfect recovery. Spinal localization has, whilst not quite keeping step with that of the brain, received and attracted much attention, and a paper by Ross (19) on the "Segmental Distribution of Sensory Disorders" is most instructive and will prove of interest and value to the general practitioner. Tumors have been removed and laminectomy in cases of spinal caries and old fractures has of late been done frequently and with good results. It is also advocated for pressure paralysis from angular curvature and successful cases have been reported by Willard of Philadelphia.

But few instances have been recorded during the past year of succecsful surgi-

cal intervention in the treatment of pulmonary affections, and it may be well to recall the fact, as mentioned in the early portion of this paper, that Hippocrates in writing of abscesses located within and without the lung tissues, describes the proper point at which to open them, the method of draining and cleansing the cavities and even mentions the proper instruments. Two thousand years have flown by on the wings of time, and to-day we have not departed from the principles laid down by this Grecian Sage. The value of suprapubic cystotomy as a convenient and safe method of removing calculus, morbid growths or foreign bodies, as well as for chronic cystitis has been confirmed. Epcystotomy for the removal of enlarged prostate has almost within the past year been placed among the recognized surgical procedures.

Loretta's operation of digital divulsion of the pylorus for stricture has of late commanded much attention both in England and America. In addition to 18 cases tabulated by Bull, Barton of Philadelphia has collected a total of 24 cases showing 15 recoveries and 10 deaths. In the majority of cases the relief afforded

seems to have been complete and lasting. The question of intestinal anastomosis by means of decalcified bone plates introduced by Senn, has also attracted much attention and numerous experiments have been made in that line. It has been proposed by Abbe to substitute for the bone plates, rings made of catgut, by Brokaw of St. Louis segmental rubber rings, and Davis of Bimingham claims that mats and plates made of catgut are superior to either or any of these. In a paper (20) read before the Southern Surgical and Gynæcological Association at Nashville, in November, he claims that approximation catgut mats and plates can be made of any size in less than an hour, that they are rapidly absorbed, that anastomosis by means of these mats and plates furnishes the best conditions for the healing of visceral wounds. That anastomosis can be performed by means of catgut mats and plates without division of bowel in five minutes; and with division or resection in fifteen minutes, including a continuous outside safety silk suture around the circumference of the mats or plates. Certainly an immense improve-

ment on the method of dealing with lesions of the intestines. The question of the removal of the vermiform appendix in recurrent cases of typhlitis and perityphlitis has been the subject of much discussion during the past year. Treves (21) divides typhlitis in regard to treatment into three classes; the simple form due to fecal impaction or the retention of some rritating substance in the cæcum with a resulting stercoral ulcer; the form which ends in suppuration and which nearly always depends upon disease of the appendix, and the relapsing form, in which the appendix is probably in every case involved. In regard to treatment, the simple form yields, as a rule, to the ordinary medical measures. The second variety, that which leads usually to suppuration, demands surgical treatment. In these cases Mr. Treves considers that the use of the knife will very rarely be called for before the fifth day and condemns very early operative interference. He also condemns absolutely the use of the exploring needle, which is so extensively employed in these cases by American surgeons. The incision should be placed over the part of the inflamed area which

appears to cover the seat of suppuration, it being desirable that the pus should be reached by the shortest route and allowed to escape in the most direct manner. The view that every recurring or relapsing case of typhlitis has its cause in the vermiform appendix has gained many adherents but the propriety of exploring or renewing the appendix in such cases still remains *sub judice*. W. T. Bull in a paper (22) read before the American Surgical Association, on the Surgical Management of Typhlitis and Perityphlitis, recorded the results in seventeen cases in which incision or laparotomy had been performed. Two deaths occurred in the seventeen operations. Bull does not limit the term perityphlitis to the inflammation of the peritoneum investing the cæcum but employs it in a general way to indicate an inflammation of the cæcum or appendix together with their peritoneal investment or the cellular tissue of the iliac fossa, giving as a reason, that we are not yet in a position to clinically distinguish between an inflammation of the cæcum or its appendix. Most recent writers agree that ulceration leading to perforation is by far most frequent in the appendix, but

admit the frequent occurrence of catarrhal inflammation in the cæcum in which the appendix participates. The term typhlitis alone or appendicititis doe not express the entire pathological condition. Either may be the starting point but the invasion of the peritoneum or the cellular tissue is the more significant lesion at the early stage when we are capable of appreciating it. He concludes with the following propositions :

1. Our present knowledge justifies the statement that both cæcum and appendix may be the starting point of an inflammation, which spreading to the peritoneum and cellular tissue of the iliac fossa constituted a complicated disease which for convenience sake we call "Perityphlitis." This may be in its clinica course resolving or suppurative, each marked by definite symptoms in some cases, in others difficult to distinguish.

2. Needle exploration is a justifiable and desirable method of diagnosis though attended with some risk.

3. Suppurating perityphlitis may be a spreading or a limited (circumscribed) peritonitis. Both begin with the same set of symptoms, and it is important to

discriminate in the first twenty-four or forty-eight hours, or even on the third day between them. The presence of any of the local or constitutional signs of general peritonitis justifies the diagnosis of a spreading inflammation and calls for the performance of laparotomy. The absence of the symptoms or their strict localization warrants a delay of varying length. Any time after a week the abscess may be opened by an incision which must reach the pus whether it be extra or intra-peritoneal.

4. In doubtful cases the risk of exploration is less than the risk of the disease.

5. The propriety of exploring or re-removing the appendix in recurrent cases must still remain *sub judice*.

The radical cure of hernia, a surgical procedure of vast importance has been canvassed much, both at home and abroad. The discussion at the Third French Congress of Surgery and during the meeting of the British Medical Association had been reviewed by C. B. Keetley (23) and most of the operative methods described. Socin advocates the total extirpation of the sac above its neck and thinks that approximation of

the pillars by sutures is only exceptionally required.

Lucas Chapmionniere removes the sac completely as high up as possible and insists upon the most thorough attention to every antiseptic detail. Macewen does not remove the sac, but forces it into a pad which is returned through the canal and placed on the abdominal aspect of the internal ring. Banks dissects out the sac, replaces the bowel, and ties and cuts away all adherent omentum. The sac is then pulled down, ligatured high up and removed, and lastly the pillars of the ring are drawn together by silver sutures. Almost all of the operations involve either removal of the sac, suture of the neck of the sack, or of the walls of the canal, or both, or else some modification of this operation. In this country McBurney, whose operation has been adopted by our best surgeons, affirms that the actual cause of hernia and that which acts continuously as a propelling force, when once started is the natural peritoneal pouch. This exists in almost every individual and it leads to a natural deposit of intestines and, consequently, to

ressure at that point. In operating for

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hernia his endeavor has been to get at the root of the evil and to interfere in such a way that the original condition causing and maintaining the trouble should be removed. He therefore strives to get at the sac at the very highest point and to absolutely obliterate it. The skin and subjacent tissues are drawn together to such an extent that a space of only about one eight of an inch is left, that is, the smallest space which will admit the packing of iodoform gauze. Healing takes place from the bottom of the wound and the result is a very strong and dense cicatricial tissue. In a paper, read in the Surgical Section, American Medical Association, last year at Newport, Dr. Henry O'Marcy advocated the use of buried animal sutures in the radical operation for hernia. He lays much stress upon the restoration of the obliquity of the canal which can only be effected by the open dissection method, since the restoration must commence at the internal ring. The wound is closed by buried animal sutures which restores the canal, enclosing the cord, to its normal size, length and obliquity. The superficial tissues as well as the skin are closely and evenly approxi-

mated and the necessity of the drainage tube dispensed with. Marcy quotes reports of operators who have given 779 cases with only five deaths and these are explained as having been produced by causes other than from the operation. How many of these cases may be classified as permanently or radically cured is difficult to say. The question is still under discussion as to the permanency of cure in any of these operations, but there can be no doubt that good results follow any method which closes the mouth of the sac and causes its obliteration.

In concluding, I wish to lay stress upon the statement made in the beginning of this paper, that the marvelous improvements in operative surgery and the wonderful results obtained, are due to the study of bacteriology on the one hand and to the advancement of antiseptic methods on the other.

Henderson, Ky., April 13th, 1890.

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