A LECTURE ON A CENTURY OF SURGERY.

Delivered in University College Hospital on January 8th, 1900.

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GENTLEMEN,—As I address you to-day for the first time in the last year of the nineteenth century, I have thought I might venture a little out of the beaten path of clinical surgery by giving you a sketch of the surgery of the century.

MILITARY SURGERY.

I would remind you that at the beginning of the century Europe was plunged in war; that Britain was constantly engaged in fighting with Napoleon, either in the Peninsula or elsewhere, and that, lastly, came the final and great victory of Waterloo in 1815; and, therefore, that during the first fifteen years of the century the attention of surgeons was more or less directed to the injuries inflicted on the field of battle.

The surgery of that day was rough and ready. The surgeon followed his regiment to the field of battle. He did his best at the time to arrest hæmorrhage, and then subsequently—either on the field or in adjacent houses, or, if possible, in a hospital, if there were a hospital—he did his best by amputating maimed and shattered limbs to save the patient; but, necessarily, although we have very few statistics of those days, the mortality was exceedingly high. But, still, the Army Medical Service was a very good training for the surgeon.

Samuel Cooper, who was afterwards the Professor of Surgery in University College from 1831 to 1847, and the author of works well known in the early days, but perhaps not so well known at present—namely, *Cooper's First Lines of Surgery* and *Cooper's Surgical Dictionary*—began his life as an army surgeon; he served with the British army for many years, and only on the conclusion of that service did he become a civil surgeon. So also Guthrie, who lived to be thrice President of the Royal College of Surgeons, who was Surgeon to the Westminster Hospital, and founded the Westminster Ophthalmic Hospital, was for many years an army surgeon, and his valuable work upon the surgery of the arteries was based mainly upon the experience he gained in the Peninsular war. So also with the Scotch professor of surgery, Ballingall, who was an eminent man, and who also derived all his experience from the field of battle. Lastly, do not let us forget that most eminent surgeon Baron Larrey, who was so highly esteemed by his master, the first Napoleon, that he said when Larrey was present it was equivalent to an extra army corps, because the soldiers felt that their wounds would be looked after, and that their interests would be considered.

AMPUTATION.

Among the questions which necessarily arose during the period of the wars was that as to how amputation should be best performed. You must bear in mind that in those days all the amputations were circular. They were made as recommended by John Bell, of Edinburgh, by first cutting circularly through the skin and then turning it backwards; then a second section was made through the muscles, which were also retracted, and finally the bone was divided high up. Remember, if you please, that these were the days before anaesthesia, and consider for a moment what such a tedious and necessarily bloody operation must have been for the patient to support.

But in the North there was a surgeon growing up named Robert Liston, who saw that an improvement might be made in rapidity and also in getting a better covering for the bone, by what we call the flap method. He practised that first at the Edinburgh Infirmary, and then when he was called to London to be Surgeon to University College Hospital in 1836, he introduced the practice here, and he was the first surgeon who undertook amputations by the flap method in any London hospital.

His method had the advantage of rapidity—being a very powerful man, over 6 feet in height—he would grasp a thigh, transfix it with a long knife, and cut one flap above and

another flap below the bone, draw back the flaps with his left hand, saw through the bone, and pride himself on doing it all in less than one minute. Well, that was of course quite a new thing. Surgeons had never before seen such rapid amputations, and I need hardly say that to the unfortunate patient who had to put up with the agony of the operation the rapidity was a great gain.

I am not old enough to have had any experience in surgery before the days of anaesthesia, but I have learned from those who had, that they gave their patients a good stiff glass of brandy and water immediately before the operation, and that it was with that kind of "Dutch courage," if one may so call it, that they managed to submit to these terrible mutilations. I had an opportunity once of talking to a patient who had had his thigh amputated before the days of anaesthesia, and I asked him to tell me what it was like. "Well," he said, "you know what a bad burn is." I said, "Yes, I do." He said, "Well, it was exactly like that; when the knife went through the flesh of my thigh it was exactly as if I was burned as severely as possible." One can easily understand that that does represent very fairly the feeling which would be induced by the transfixion of the living tissues of the limb by a long knife carried rapidly through it.

The flap method having been introduced by Liston, it was found by him and by other surgeons that by adapting it to various parts of the body, it was possible to give a better stump, and to make a longer one than by the circular method.

But it was also found that the fleshy flaps were sometimes very inconvenient, and hence when anaesthetics came in, and the necessity for rapid operating passed away, surgeons found that it was possible to make better stumps by other methods than transfixion of the limb. Foremost amongst those innovators must be mentioned the late Mr. Teale, of Leeds, who early in the Fifties introduced rectangular flaps cut from without inwards, and including the whole of the tissues. Mr. Teale gave strict measurements for his flaps; thus the anterior flap was to measure half the circumference of the limb at the point of section both in length and breadth, and the posterior flap was to be a quarter of this in length. Naturally with such unequal flaps the anterior was folded over the end of the bone, and the cicatrix came behind and far from the divided bone, instead of being, as it often was in the transfixion operations, adherent to it. It was found that Teale's method made stumps which would bear pressure well, but were very short stumps, and then gradually surgeons found that they could get all the advantages of the method without its drawbacks by cutting skin flaps, with little or no muscle, long enough to cover the end of the bone and to meet similar flaps behind, and this is the method universally adopted in the present day.

I would just allude to that very interesting amputation which is generally connected with Mr. Syme's name. He showed that by dissecting a flap off the heel of the foot he could take away the foot and leave a limb very nearly as long as the opposite one, and that the patient was afterwards able to walk upon the stump. We still practise that operation, for it is an exceedingly good one in appropriate cases, and it is one of the best examples I know of the improvement brought into surgery by the flap method.

RESECTION AND ARTHRECTOMY.

Up to the middle of the present century, or very nearly so, amputation was done in all bad cases of diseased joints. Patients were encouraged to bear their diseased joints as long as they could, and when they could bear them no longer, or when their strength was giving way, as a last resource the surgeon recommended and performed amputation. But when anaesthesia came in, in the year 1846, the whole thing was altered. Surgeons found then that they had time during the anaesthesia to deal with joints in a very different way from what they had done previously, and it was then, owing to the efforts of Syme and Liston, and Fergusson particularly, that the operation which we call resection came in. By resection we mean that instead of cutting off a limb where there is disease, the joint was opened, the diseased ends of the bone were removed, and the fresh-cut ends, being brought together, united, and the patient recovered with a straight, stiff, and somewhat shortened limb.

Then again, of late years, upon that even an improvement has been made, and we now have the method of "arthrectomy." In a comparatively early stage we expose the interior of the diseased joint, we clip away all the diseased tissues, we scrape away any diseased bone, we apply antiseptics in the form of iodoform to the interior of the joint, we dress the joint antiseptically, and we find that these patients recover with exceedingly useful limbs, and sometimes with movable joints.

ANÆSTHETICS.

This brings me to the date—that very important date 1846—of the introduction of anæsthetics. We owe the introduction of that beneficent method to America, and particularly to the late Collins Warren of Boston, in whose *chambre* it was that the first so-called experiment in anæsthesia took place.

There was a dentist named Morton, who lived in Boston, and he had made experiments with nitrous oxide gas, which, as had been known before, from the time of Sir Humphry Davy, produced a certain amount of excitement, and hence was called "laughing gas," but if pushed beyond that produced a temporary anæsthesia. Morton employed this in extracting teeth, and then he bethought him that he might possibly find something which would be a little more potent and more manageable. This he found in sulphuric ether, and then, having been successful in a good many cases of tooth extraction under the influence of ether, he spoke to Warren of Boston, and asked if he might have the opportunity to give ether for some patient upon whom he was to operate.

Accordingly, in October, 1846, a day was fixed on which an operation was to be performed upon a patient to whom Morton was to administer the anæsthetic. Everything was ready for the operation, but for some reason Morton was late, and Warren rather sarcastically said, "The gentleman is not coming," and evidently thought that he had withdrawn and feared the event. However, just as they were going to begin the operation, Morton arrived, and he administered the ether and Warren performed his operation. The patient was perfectly quiet, absolutely insensible, and would hardly believe, when he woke up, that the operation had been performed. Warren's comment upon it was, "Gentlemen, there is no humbug in this," and that was quite a true word, for it was from that date that anæsthesia began.

We have there the commencement of anæsthesia on October 17th, 1846. The news of this was very soon sent across to England, and a dentist, Mr. Robinson, of Gower Street, extracted some teeth under the influence of ether. He invited Robert Liston to come and see a tooth extracted, and then Liston himself, on December 22nd, 1846, performed two operations in University College Hospital—in this very theatre—an amputation of the thigh, and the removal of a toe-nail, both operations, I need hardly say, being excessively painful ones. The patients were put under the influence of ether by Dr. William Squire, who has only recently died, and with complete success. The news, of course, spread rapidly to Glasgow and Edinburgh, and within a day or two the thing was there repeated, and so anæsthesia became an established fact in Europe.

You will observe that in all these cases ether was administered, and ether held its sway for a few years. But Simpson, the great accoucheur, who afterwards became Sir James Simpson, of Edinburgh, was not quite satisfied with ether, and was making a search for some more portable anæsthetic and one which he could give to women in the pangs of labour. After various experiments, some of which were very dangerous, and were carried out on his own person and on that of Matthews Duncan, who was his assistant, he came upon a fluid which was called chloroform. He found that it was portable; that it easily put the patient asleep, and that it seemed to have some advantages over ether. Accordingly, chloroform came into fashion, and held its sway for a good many years, and then from time to time an unfortunate death occurred; and I think there can be no doubt in anybody's mind that if caution is not used in administering chloroform it is rather a dangerous drug, I mean that an overdose of chloroform administered suddenly to a patient may induce stoppage of the heart.

We did our best, however, and then there was a sort of reaction in favour of ether; and about the same time thirty

years ago, it first was brought out rather curiously, that the nitrous oxide gas—the old "laughing gas"—if it was administered pure, without any admixture of ordinary atmospheric air, was a very potent anæsthetic; and it was shown by various demonstrations which were given that teeth might be extracted very readily and without any pain under the influence of the nitrous oxide gas. I need hardly say what a boon that was to dentists, and to the patients who had to resort to dentists. Accordingly, nitrous oxide gas became the fashionable means of producing anæsthesia for dental and other short operations.

But then it was thought that if it was possible to put a patient off quickly with nitrous oxide gas, why should you not go on administering ether afterwards, and so keep up the anæsthesia; and, accordingly, that is what we do nowadays. In the great majority of cases, unless the operations are about the mouth, the patient is anæsthetised very rapidly by being put first under the influence of the nitrous oxide gas, and as soon as he becomes insensible, which will be in something under a minute, the gas is withdrawn, the ether is turned on, and the anæsthesia is prolonged as much as may be necessary for the operation.

There is no difficulty, of course, in keeping a patient asleep for an hour, if necessary; but I think that sometimes surgeons make a mistake in the present day in being too deliberate in their operations. In former days, when there were no anæsthetics, they were obliged to be quick; nowadays, when we have unlimited anæsthesia, I think there is sometimes a tendency for the surgeon to be too deliberate, and, as a result, that his patient gets too much ether. I hear of patients being kept anæsthetised for two or even three hours, and a lady told me not long ago that she herself had been the victim of an operation which took four hours, and I could only say to myself I was surprised she was there to tell it me. When one hears of such lengths as that one cannot but fear that an undue strain is put upon the patient's heart.

ANTISEPTICS.

Let me go on now at once to the other great subject of the century, namely, antiseptics. There can be no question, and no one for a moment disputes it, that Lord Lister is entitled to the whole of the credit of having brought into being what we may call antiseptic surgery.

Mr. Lister, as he was then; was an old pupil and house-surgeon of this hospital, and he made the acquaintance of Syme when Syme came up for a very few weeks to University College Hospital, in order to succeed Liston. Syme, for private reasons of his own, went back to Edinburgh, and Lister followed him there, became his house-surgeon. Then Lister, having settled down in Scotland as it were, was appointed Regius Professor of Surgery at Glasgow; and it was in the old Glasgow Infirmary, a building which was in many respects most insanitary, that Lister was induced first to try whether something could not be done to improve the condition of his unfortunate patients.

He found that, do what he would, all his wounds suppurated, and the great majority of his patients died from infection of the system from the wound; and he happened, more by accident I think than anything else, to employ carbolic acid. Carbolic acid, about that time, was coming into note as an ordinary antiseptic. It was used to throw down drains and to take away offensive smells, and so on, and he used it, and one of his earliest experiments was to take a case of compound fracture and to dress it with carbolic acid, and see what happened. What happened was that, to his very great surprise—and I am told by those who were present at the time and saw it, that Lister himself was perfectly astonished—when he came to open the compound fracture, instead of supuration there was a clot in the wound organising, there was no inflammation, the part was quiet, and it was healing under the influence of what at first sight would appear to be a great irritant.

I am not going to follow out the details. It is sufficient to say that, thanks to Lord Lister, a system was inaugurated which has been modified slightly from time to time, but which is now put upon a firm basis, by which we are enabled to keep our wounds perfectly sweet by having absolute cleanliness, of the patient, of the surgeon, of the nurse, of the instruments, of all surroundings; and then by applying proper

dressings of either an aseptic or antiseptic nature, according to circumstances, we have such results as our forefathers never could have anticipated. I mean that wounds heal without any inflammation, the patients lie quiet in bed and take their food from the first without any fever, and we are enabled not merely to save a great many lives, but we are able to undertake operations which we would never have ventured to undertake except with the assistance of antiseptics.

I am old enough to remember what amputation of the thigh came to in Fergusson's practice, and in Erichsen's practice, and in that of other very good surgeons. The patients almost all died. It was quite the exception when a case of amputation of the thigh got well. Nowadays, such a thing as a death from amputation of the thigh is hardly known; and if it does occur, one considers very seriously what could have gone wrong, that a patient with an ordinary amputation of the thigh should have succumbed.

More than this, we are now able to do so much more for patients, the range of surgery has become enlarged, and the amount of surgery is much greater than it possibly could have been before the days of anæsthetics and antiseptics.

VESICAL CALCULUS.

A subject which engrossed a great deal of attention during the century was the treatment of calculus. Calculus, of course, has been known in all countries for many centuries. We have early records of operations for calculus in Egypt and in the East, and we find that operations have been introduced and again abandoned from time to time, so that the whole history of the surgery of calculus in the bladder has been one of constant change.

I would just remind you that there was a great surgeon in England in the early part of the eighteenth century named Cheselden. He was Surgeon to St. Thomas's Hospital, and he had, very rightly, a great reputation for the lateral operation of lithotomy, and, consequently, he impressed upon not only his contemporaries, but also upon those who succeeded him, that the lateral operation was the operation to be performed.

Accordingly, at the beginning of the present century, the operation usually performed was by the lateral method, and with a very fair amount of success. Still, as Sir Benjamin Brodie says in his autobiography, there were no cases which gave him more anxiety than cases of calculus; because he, being in a large fashionable practice in London, necessarily had to do with persons of considerable note, and it was a matter of great importance, of course, that those valuable lives should be preserved. The death-rate of lithotomy was very high, and, accordingly, attempts were made by Civiale in Paris, by Leroy d'Etiolles, by Heurteloup, and by Weiss, the English instrument maker, who gave most important assistance, to devise instruments by which a stone might be broken, and the fragments extracted from the bladder without any cutting operation.

Thus lithotripsy was introduced, and I may say that one of the first attempts to break a stone was made with an instrument, consisting of two blades, in which the force was applied by means of a hammer. It seems now a very rough method of proceeding, and no one would think for a moment of adopting it; and when Weiss, the instrument maker, showed that it was possible to adapt a screw movement, he had very much the same instrument that we have nowadays, consisting of a male and female blade, in which the stone was crushed and broken up into fragments.

Sir Henry Thompson, Consulting Surgeon to this hospital, is well known to you all as a surgeon who has distinguished himself in perfecting the operation of lithotripsy; and I may say that, having frequently witnessed its performance by his hands, I think he brought the method to as near perfection as was possible.

You will remember that at that time, although the stone were broken up by a series of "sittings," it was left to the natural efforts of the patient to evacuate the fragments. The first attempt to assist evacuation of the fragments was no doubt due to the late Mr. Clover, the anæsthetist of this hospital. It struck him that if some form of exhausting bottle were adapted to a catheter of large size, probably a good many fragments might be extracted; and although at first Sir Henry Thompson only used that instrument for the

extraction of the minute fragments remaining at the end of the series of sittings, there can be no doubt that that was the beginning of the evacuation system.

But it is really to Bigelow, the eminent American surgeon, who died only a few years ago, that we owe the great improvement of what he termed litholapaxy, or better called, I think, rapid lithotripsy. As practised by most surgeons nowadays, it consists in putting the patient under the influence of an anæsthetic, and breaking up the stone into small dust by a series of manipulations at one sitting; and then, by means of a powerful evacuating bottle, drawing out the fluid contained in the bladder and all remains of the stone. This method of Bigelow's has no doubt opened up quite new features in the operation of lithotripsy, and has enabled the surgeon to treat cases of stone which he never would have ventured to treat by that method without the instruments which Bigelow devised.

Then, comparatively lately, within the last twenty years, there has been a recurrence to an old operation which dates probably many centuries back, namely, the suprapubic operation of lithotomy; and it is a curious fact that Cheselden, the great lithotomist, undoubtedly at one time performed the suprapubic operation in preference to the lateral, which, as I have said, became his favourite method of proceeding.

Petersen, a Danish surgeon, deserves the credit of having brought this suprapubic method again into practice. He showed, what every anatomist knew, that by distending the bladder with fluid it could be raised up sufficiently to avoid any danger of opening the peritoneum, when an incision was made above the pubes. But he also showed, which was not so well known, that by distending the rectum with an india-rubber bag the tendency would be to elevate still more the bladder, and therefore to keep the peritoneum more out of danger. Accordingly he devised the modern suprapubic operation, which is now recognised by surgeons as being, perhaps, the safest method of lithotomy, so much so that at the present time, in England at least, the perineal operation has fallen into disuse, and I know that students in the London hospitals now hardly ever, if ever, see the old lateral operation performed. No doubt the suprapubic operation has the great advantage of inflicting no injury on very important and vital structures, and it certainly does give, as I know in my own practice, the opportunity of extracting very large stones, which could not by any possibility be removed by any other method.

PROSTATIC DISEASE.

While on this subject let me mention a treatment which came into vogue some twenty years ago, mainly by the efforts of the surgeons of the Leeds Hospital, for the relief of that very common affection of old age—enlarged prostate. It was found by several of the Leeds surgeons that it was quite possible to open the bladder above the pubes and to remove with scissors any prominent portions of the prostate gland, with exceedingly good results. Although this operation for some time had a certain amount of credit, it has fallen somewhat into disuse in Great Britain, and I do not hear of many operations of that kind being done now, nor have I thought it well to do any myself of late.

There is another matter in connection with the same subject to which I must just allude, which has come up of late, and mainly through the influence of an American surgeon, White, and that is the possibility of the operation of castration having a very marked effect upon the development of the prostate. The question is still *sub judice*, but so far as we can tell there is a good deal of truth in it, and I think that in suitably selected cases it is quite a legitimate and proper procedure, and the same may be said of Mr. R. Harrison's proposal to divide the vas deferens.

OVARIOTOMY.

Next I must refer to the operation of ovariectomy. There can be no question that the first ovariectomist was Ephraim McDowell, who was born in Virginia in 1771. He went over to England, as was very much the custom with Americans in those days. At Edinburgh he came into relation with Lizars, who was a surgeon of that city, and who had the notion, though he had never carried it out, that it might be possible to remove an ovarian tumour.

McDowell went back to the United States, and settled down

in a small practice in a mere village (Danville, Kentucky), and there he happened to have a patient come before him in the year 1809—a Mrs. Crawford—who had a large abdominal tumour. The woman, as is so often the case, had supposed herself to be pregnant; but when months went on it became clear that it was not a case of pregnancy, and she applied to McDowell for relief. McDowell, entirely on his own authority, and apparently without consultation with anybody else, performed the first ovariectomy in this country village, and, most providentially, that patient got perfectly well.

There we have the history of the first ovariectomy. It did not make a great sensation. McDowell wrote to Lizars, and told him what he had done, and Lizars had a case or two himself; and then Clay of Manchester, Frederick Bird and Baker Browne of London, had each a few cases; but the operation was a very fatal one, and it did not seem to have been much taken up. In fact, ovariectomy was not really established as a recognised operation until Spencer Wells took it up in the year 1858.

Sir Spencer Wells died in 1896, at a good old age, and he had performed nearly 2,000 ovariectomies in the course of his life. He began as a naval surgeon, he went out to the Crimea as one of the civil surgeons sent to Smyrna, and when he returned at the end of the Crimean war he was appointed one of the surgeons to the Samaritan Hospital, where he was seeing pretty constantly cases of abdominal tumour. At that time nothing was done for these cases except to tap them, and sometimes to inject iodine, which very seldom did any good.

Wells made up his mind that he would perform ovariectomy, and that he would continue to perform ovariectomies until he had ascertained whether or not the operation was a justifiable one; and he pledged himself from the first to publish all the cases and to show all the specimens, and he very carefully carried that out. I need not go into details, but he soon was able to see that, with due attention to the surroundings, with care in the selection of the cases, and with a certain amount of skill, which he soon acquired in the operation itself, it was not such a fatal operation as was supposed.

I may say that McDowell's original operation was to tie the pedicle, and leave the ligature out of the lower end of the wound. Wells adopted the same plan at first, but, finding that was not very successful, he then fell back upon a suggestion of Mr. Jonathan Hutchinson—namely, to pull the pedicle out as far as possible in the wound, and then to clamp it with a sort of callipers outside the wound; and for a very long time, for many years in fact, that was the method which he adopted.

In the course of time, about the year 1873, Lister's antiseptic treatment came in, and Sir Spencer Wells adopted it, and at the same time—because of course it was very important that the abdomen should be closed—adopted the plan of “tying and dropping,” as it is called, the pedicle—by which I mean that the pedicle was secured firmly by a ligature—dropped into the peritoneal cavity, and never heard of any more, the whole of the abdominal wound being closed. Now whether Wells was right in attributing the great improvement in his cases to the adoption of the antiseptic method, or, as maintained by some authorities, that his improvement dated from the time when he tied and dropped the pedicle, I do not care to consider. It is quite sufficient to say that his mortality diminished, and that he was, at the time of his death, the most successful ovariectomist that the world has ever seen.

Of course there have been many others. Ovariectomy is now a well recognised operation, and out of it have grown many other operations. I mean that surgical gynaecology has become developed to a very great extent as the result of these successful ovariectomies, and that the removal of the ovaries when they are not enlarged, the removal of uterine tumours, and even of the uterus itself, have followed upon the successful introduction of ovariectomy.

ABDOMINAL SURGERY.

There is another subject that I would say a word about, and that is the great advance in abdominal surgery generally; because it is not merely in the pelvic organs that so great an improvement has been made, but the other organs of the

abdomen, which were formerly thought to be quite beyond the surgeon's skill, are now reached and relieved with the greatest facility. I would remind you that gall stones can be removed, not merely from the gall bladder, but from the ducts leading from the gall bladder, and that they can be picked out or broken down and extracted with very great success, and of course the relief for these unfortunate patients must be enormous. This applies not only to the liver, but also to the kidney, for it is now a matter of everyday occurrence that stones should be extracted from the kidney itself, and if that organ be extensively diseased it may be removed.

The surgery of the intestinal canal dates from 1839, when Amussat introduced his operation of lumbar colotomy for the relief of malignant obstruction of the rectum. During the last thirty years, not only has the operation been undertaken much more frequently and much earlier than formerly, but the introduction of inguinal colotomy has given us an easier and more certain operation, and one which renders the patient more independent afterwards than the older method. Then, following upon colotomy and to some extent dependent on it, came the removal of the rectum, at first by the anus and latterly by the operation with which Kraske's name is connected, and which you have frequently seen performed here by Mr. Godlee.

The whole subject of what is termed “intestinal anastomosis” has been worked out in the last twenty years, and Mr. Barker is entitled to the credit of much good work in that department, having had one of the earliest cases of gastro-enterostomy. The revival of the Lembert suture, with the various modifications of it, the ingenious contrivances of Senn and others, and last, but not least, the excellent button of Murphy of Chicago, have enabled the modern surgeon to perform operations previously impossible, with very considerable success. Even the operation of gastrostomy, which dates from the present century, and was at one time so uniformly fatal as to be almost abandoned, has been revived with much more hopeful results by the proceeding of Franke.

NERVOUS SYSTEM.

Even the head and its contents have been the subjects of surgery, and not only has the diagnosis of brain affections been simplified by the researches of Ferrier and Horsley, but abscesses have been opened and brain tumours have been removed with a certain amount of success.

The same may be said of the spinal cord, where laminectomy has in some cases proved very efficient in relieving the pressure due to accident or spinal caries. In connection with this subject I would remind you of the very successful case of Calot's operation for straightening a distorted spine, which was in my ward last summer.

CONCLUSION.

Time will only allow me to refer in the briefest manner to the various instrumental aids which surgery has obtained during the century. First comes the microscope, which, at first employed only by the few anatomists who made minute anatomy their study, is now the daily servant both of the physician and surgeon for the diagnosis of disease. About the middle of the century the ophthalmoscope came in and revolutionised the whole of the surgery of the eye. A little later the laryngoscope shed light upon the diseases of the air passages and nose; and still later the endoscope, and particularly the electric endoscope, has enabled the surgeon to investigate the interior of the bladder and urethra, and to diagnose diseases of the kidney by watching the discharge of pus from the orifice of a ureter.

Lastly, let me mention the application of photography to the illumination of the deeper structures of the body. The Roentgen rays, as they are called, are no doubt extremely valuable. They bring into relief parts which are hidden from view by the skin and soft tissues covering them. But I think a little caution will have to be used, because it is not every structure which shows up equally well under the Roentgen rays, and I am afraid, if we do not take care, that we shall get into difficulties over our fractures. I find, as a matter of fact, that the callus or new material which is thrown out in order to unite the fracture does not show at all under the Roentgen rays. You can see the outline of the fracture, and you can see the broken ends of the bone, and to the

unlearned it looks as if the surgeon had made a hash of his business. We must take care that this is clearly understood, or we shall be liable to actions for malpraxis.

TWO CLINICAL LECTURES

ON

RETENTION OF MENSTRUAL BLOOD FROM ATRESIA OF THE VAGINA

WITH SOME REMARKS ON THE INDICATIONS FOR LOCAL
EXAMINATION IN THE DISORDERS OF
MENSTRUATION.

Delivered at St. Thomas's Hospital November 14th and 17th, 1899.

By CHAS. J. CULLINGWORTH, M.D., F.R.C.P.,
Obstetric Physician to the Hospital.

LECTURE II.

THE next case illustrates a similar condition in a somewhat older patient. I am indebted for the following notes to my clinical clerk, Mr. Barnicot:

CASE II.—M. A. M., aged 21, single, a laundress, was admitted into St. Thomas's Hospital October 2nd, 1899. She had never had any menstrual discharge. She had felt no pain or inconvenience until the last twelve months. She had suffered during that time from "bearing-down pains," lasting five or six days at monthly intervals. About seven months ago she first noticed some abdominal swelling, which had since gradually increased in size. Her general health had been unaffected. She had had no trouble with regard either to micturition or defecation.

She was a light-complexioned, healthy, cheerful woman. There was a large prominent swelling situated centrally, in the lower and middle portions of the abdomen, reaching from the symphysis pubis to a line about an inch above the umbilicus, where it was most prominent towards the right. The right upper corner of the swelling was harder and firmer than the rest, and was more or less definitely differentiated from the other part of the tumour, which was elastic and obscurely fluctuating. The tumour was not painful or tender. It was dull all over on percussion. It measured $8\frac{1}{2}$ in. in height, from the crest of the symphysis, and 7 in. in maximum width—namely, 3 in. to left of middle line and 4 in. to right. The temperature and pulse were normal.

On examination, October 10th, 1899, the vulva and neighbouring parts were seen to be bulged downwards, forming a rounded projection. The labia minora were separated to a width apart of about $\frac{1}{2}$ in. Between them a tense membrane was seen, of bluish colour, entirely closing the vaginal orifice. The tension was evidently due to the presence of a thick fluid. On examining the rectum the anterior wall was felt to be bulged backwards by a globular swelling. The pelvic tumour was shown by bimanual examination to be part of the swelling that was seen in the abdomen. The general health was good.

On October 12th, 1899, the patient was anaesthetised, and the following measurements were taken, namely, transverse diameter of visible portion of occluding membrane, 1 inch; antero-posterior diameter of same, $1\frac{1}{2}$ inch. The perineum measured $1\frac{1}{2}$ inch from before backwards. The distance from the clitoris to the anterior border of the perineum measured $2\frac{1}{2}$ inches. An incision which, in the then tense condition of parts must have measured about $1\frac{1}{2}$ inch in length, was now made by a scalpel through the thick membrane closing in the lower part of the vagina. The incision was antero-posterior in direction. The withdrawal of the knife was followed by the pouring out of a thick viscid stream of dark reddish-brown chocolate-coloured fluid, evidently altered blood. This stream flowed without any abdominal pressure being made by the hand, and continued, with a few pauses, to flow for fifteen minutes. Sickness expedited the flow. The total quantity that had passed when the patient left the table was three pints. No douche was used.

Two fingers were passed into the vagina, but the uterus could not be reached. The vaginal walls were much thickened, and showed no rugae. On the posterior wall there was a thick semilunar fold of tissue with concavity upwards. The external genital organs had now resumed their normal appearance.

The flow continued into a dry vulvar pad of wood wool somewhat slowly and scantily for three days. On the evening of October 14th, the third day, the patient was allowed to sit up in bed. This resulted in a more copious discharge. The following day the discharge became thinner and less coloured. Two days later (October 17th) it had almost ceased. The temperature and general condition remained normal the whole time.

On October 19th, a week after the operation, the parts were examined. The tissues incised were seen to be of considerable thickness. The free edge of the hymen could not be seen; it seemed to be incorporated with the occluding membrane. On introducing the finger, the walls of the vagina were felt to be of considerable thickness and without rugae. Across the middle of the posterior wall the tissues were still felt to be thrown into a thick semilunar fold. High up above and in front of this was the os externum of the patulous and funnel-shaped cervical canal. A Sims's glass vaginal rest was passed through the incision and fastened *in situ* by means of a vulvar pad and T-bandage.

A considerable flow of serum commenced on the 22nd and continued, diminishing daily in quantity up to the 26th.

On October 30th the following note was made: "The vaginal walls are still thick, and are even more folded in transverse ridges. The uterus is still high up, only just within reach of the finger, and so irregular and ill-defined that it is not easy to trace out its boundaries. The canal entered

by the sound lies to the right of the median line, and the point of the instrument can be felt on that side just below the level of the umbilicus. No thickening of the uterine wall is apparent or elongation of the canal, but the lower part of the canal is irregularly funnel-shaped, with widest part at the os sternum. A little blood-stained serum passes each time the glass plug is removed. The incision is quite healthy, and, with a little difficulty, admits two fingers."

The patient left the hospital on November 1st, and was directed to wear the glass rest either night and day, or night only or day only, as she might find it most convenient, and to present herself for examination in three weeks.

This case differs from Case I, not only in the age of the patients (21 in this case, 13 in the former), but in the length of time during which the symptoms of menstrual disorder had been present. In the younger patient there had been no menstrual molimina, and the first symptoms to attract notice had presented themselves only a week or two before her admission. In the present case the periodic pains and discomforts known as the menstrual molimina had been regular in their occurrence for twelve months. Yet notwithstanding this difference, the accumulation had probably been in course of formation almost as long in the one case as the other, for in both it had formed a tumour, filling the pelvis and rising to a considerable height in the abdomen. It is true that the quantity in the younger patient was only $1\frac{1}{2}$ pint, while in the elder it was 3 pints, but this difference is scarcely more than would be accounted for by the difference in size, age, and development of the two patients.

Another point of difference between the two cases is that while in the one case the bulging membrane was not visible on inspection of the external genitals until the labia minora had been separated, in the other the membrane bulged between the labia, separating them to the extent of about $\frac{3}{4}$ or 1 inch.

A third point in which the two cases differed was in the length of time that the coloured discharge continued after the operation, in the one case being eleven days, in the other five.

The third case I have to present to your notice is that of a patient still under observation in the ward. For the following notes I am indebted to my clinical clerk, Mr. F. M. Bingham:

CASE III.—F. K., aged 14, an imbecile, was admitted into St. Thomas's Hospital, October 17th, 1899. Seven weeks before her admission she was subject during two or three days to paroxysms of pain, made evident by her screaming and by the clenching of her hands. After a month's interval the symptoms recurred. This time they persisted, and at the end of three weeks she was brought up to the casualty department of the hospital, where occlusion of the vagina and retention of menstrual fluid were diagnosed. She was accordingly admitted.

On October 19th, two days after admission, she was placed under the influence of an anaesthetic. The external genital organs presented the appearance natural to the age of commencing puberty. The pubes were covered with a fair quantity of hair. The hymen was as usual deeply seated and concealed from view by the labia minora, which met as usual in the middle line. On separating them the parts had a normal appearance, except that there was no vaginal ostium. There was no bulging membrane visible, or projection downwards of the perineum or vulva. By the rectum there was felt to be a globular bulging backwards of the anterior rectal wall just above the apex of the so-called perineal body. The lumen of the rectum was not seriously encroached upon.

Bimanually, a recto-abdominal examination showed the swelling felt *per rectum* to be continuous with and to form part of a swelling equal in size to that of an ordinary orange. The upper part of this swelling was perceptible on deep palpation of the suprapubic region, but formed no visible projection there, and did not reach as far forward as the under surface of the anterior abdominal wall. It was central in position. The diagnosis was therefore confirmed.

A scalpel was passed directly upwards through the tissues occluding the vaginal orifice, the blade entering immediately in front of the anterior border of the perineum, with its cutting edge directed backwards. The blade penetrated a fairly thick intervening tissue, and was then felt to enter the cavity of the distended vagina. On rotating the blade through a quarter of a circle so as to separate the edges of the incision, a quantity of thick, dark-brown fluid of the consistence of treacle made its escape. The quantity that escaped on the operating table measured 5 fluid ounces. The opening was enlarged so as to easily admit one finger. The vaginal canal was felt to be distended and its walls smooth. Half-way up on the posterior surface was a thick, semilunar fold. The os uteri was perceived high up as an opening on a level with the roof of the distended vagina. There was no projection of cervix or evidence of distension of the cervical canal.

On the second day the discharge was dark red, on the third chiefly serum, after that it ceased. At the end of a week a glass tube was passed, but it caused much pain and could not be retained; a little discharge followed its introduction, but this soon ceased. A smaller tube was obtained, and from and after November 1st it was passed two or three times a day, and retained a minute or two to keep the opening patent.

Several attempts have been made to keep the track open, by inserting gauze plugs whilst the patient was anaesthetised, but each time she has removed the plug on recovering her consciousness. So feeble is her intellect that she cannot be made to understand that she is not to disturb the dressings. Meantime she is kept under observation, with a view to