ing arches, which further bend in to end at the pineal centre. If the parieto-occipital fissure be examined, we find in its depths the mesial fold of the eighth gyrus. Then follow the folds of the hinder part of the brain; the ninth arch lying behind the sulcus (parieto-occipital), and turning over to the pineal centre; and the remaining gyri arching to a line between this point and the pituitary centre—the calcarine fissure reminding us of the manner in which the mantle has folded over in the posterior portion of the cerebrum.

This is the general plan of disposition of the chief parts of the cerebrum. Any one who has endeavoured to trace the complex outlines of the secondary or subsequent folds of the chief gyri, will shrink from the endeavour to follow out the course of these convolutions in the adult brain, or to endeavour to distinguish these structures by distinctive names. There are in all thirteen or fourteen primary gyri; and it seems sufficient to indicate their connections in a numerical order from before backwards, as in Fig. XXVI, and to retain this numbering for the adult brain, grouping the gyri as has been mentioned; for it is not possible with the anterior and posterior gyri to point to the position of each one separately.

During the early stages to which my dissections extend, there is nothing to notice respecting the medulla oblongata after that period at which it exhibits the decussation of fibres to which reference has been made. It has acquired its ordinary characters in a foetus five inches long; but the changes which it undergoes are not of a character to bear upon the general question of the mode of formation of the brain.

In a foetus four inches long, the cerebellum, covered by the mantle, although increased in size, differs little in appearance from that of the tissue which formed it at a much earlier period; but, after this date, it increases rapidly by budding from its side-pieces, so as to form lobes and folia. Its peduncles, which have been visible from an early period (ninth week), are the fibres of the superior tracks continued through on their way to the hemispheres and optic thalami. The cross fibres which form the middle peduncle are not distinguishable before the fourth month as any considerable mass; but, about the third month, tissue passes across between the tracks; and it is worth noticing that here, in connection with the hind-brain, in the mid-brain, and in the fore-brain, these primary commissural fibres unite portions of the superior tracks.

I would suggest that the best method for examining an adult brain, so as to obtain a view of the relations of its various parts, is by making an antero-posterior vertical section through the middle line. The several structures can then be readily inspected in their natural relations; and, although I do not now desire to advocate any new nomenclature, it is evident that the study of the brain would be much simplified if the names of its various parts were reconsidered, so as to enable us to give a more orderly description of them. Our present nomenclature has come to us pretty much by hazard; and nothing can be more unreal or perplexing than the dissection of a brain by sections of its tissues as usually practised.

I have to thank you, in conclusion, for the kindness with which you have listened to these details, and which, like most descriptions of complicated dissections, must, I feel, be difficult to follow as they are narrated. My excuse for bringing them before you is my wish to make clear, as I hope to some extent I have succeeded in doing, the relations to each other of the more important parts of the cerebrum during the early stages of their formation, so as to provide a basis for more exact clinical observations as to the functions of its several parts.

DEACONESSSES' INSTITUTION AND TRAINING HOSPITAL.—The annual meeting of the Evangelical Protestant Deaconesses' Institution and Training Hospital was held on Saturday, at Tottenham, under the presidency of the Earl of Shaftesbury. The report stated that the hospital was now too small for its requirements. The number of in-patients last year was 305. Since the erection of the hospital in 1868, 1,796 had been admitted. The institution, it was regretted, was £1000 in debt. Mr. S. Morley, M.P., said that this institution had been of great service as a local hospital to Tottenham, and also to other parts of the country, for the training of deaconesses or nurses, whose services were in great requisition. The Hon. A. Kinnaird, M.P., thought that, in the matter of providing nurses for the public, this hospital could favourably compare with any other. Dr. Laserson stated that he had conceived a plan for the enlargement of the hospital, which would combine economy with simplicity, and give to the poor inmates every comfort, the estimated cost being from £18,000 to £20,000. Alluding to the work of the hospital, Lord Shaftesbury maintained that nurses should be as carefully and accurately trained as surgeons and physicians. In a great many instances, nurses were superior to the physicians in the treatment of the sick. Subscriptions to the amount of £1,200 were announced at the meeting.

THE HASTINGS PRIZE ESSAY, 1873.

ON THE PATHOLOGY AND TREATMENT OF OVARIAN DISEASES.

By LAWSON TAIT, F.R.C.S.,

Surgeon to the Birmingham and Midland Hospital for Women, etc.

IV.

MR. SPENCER WELLS has characterised the condition of the medical treatment of ovarian tumours as one of hopeless impotence; and, if we except the general treatment by chalybeates, tonics, hygiene, by which we guard against too rapid exhaustion, and at the same time prepare our patients against the great trial by which alone they can be cured, we may at once accept his statement. Sometimes we are the victims of singular coincidences, which seem to militate against the general experience in such matters, and, only within a few days, I have met with such an instance. More than a year ago, I was consulted by a woman with an enormous unilocular tumour, whose husband declined all operative proposals. Lately, she received from the hands of a physician some inert *placebo* in the shape of an ointment, and soon afterwards the cyst burst and its contents were absorbed. Possibly, she may be permanently cured, but more probably she is not; but, meantime, nature has apparently secured for medicine a triumph which it is only to be regretted is not more common.

The surgical treatment of ovarian tumours has now been simplified into two operations: the minor operation of tapping, which is palliative and, on some rare occasions, curative, and the major operation of ovariectomy, which is either curative or fatal. In the process of development through which the surgical treatment of ovarian tumours has passed, many various and injudiciously strong opinions have been expressed on one or other, or both, of these operations; but, during the last fourteen years, there has grown up an experience in the hands of one man, incomparable with anything else in the annals of surgery, and that experience has been so conscientiously detailed and so critically examined, and its conclusions have been so irresistibly drawn, that there is from it at present no appeal. In my own practice, I have found that, when I have differed from Mr. Spencer Wells, I have only exhibited my inexperience; for case after case has opened out for me the fact, that he had encountered everything before me; that he had previously tried what I have tried, and that there seems but little hope that anyone can surpass his magnificent results.

The operation of simple tapping was formerly regarded as much more serious than we now consider it, for no operation is at present more common in the hands of the ovariotomist. Generally, it is adopted either to gain time, in order that the patient's health may improve, or, paradoxical though it may seem, that the patient's robust condition may somewhat deteriorate; or it may be employed for diagnostic purposes. Sometimes it is curative—a fortunate result that I have met with twice in cases where I have tapped pelvic unilocular cysts through the vagina. It has sometimes happened, as noticed by Mr. Wells, that the tapping of large cysts through the abdominal walls has been followed by cure. It is more than probable that cases which have had a fortunate ending have been cysts of the broad ligament; for a truly unilocular tumour of the ovary—that is, a tumour of one cyst, with nothing else that would be likely to subsequently develop into another cyst, even if the first were cured—I have not yet met with.

Tapping by the vagina is not usually attended with good results in ovarian tumours. I have seen death result three times after it in the practice of others. Mr. Wells has found it better to keep the opening patent, and to encourage suppuration and discharge, than to allow the puncture to close. In the two cases to which I have referred, I fully exhausted the cyst by the aspirator, and to this, perhaps, may be attributed the fortunate result. In tapping through the abdominal walls, whether for the purpose of diagnosis or treatment, the point of puncture should be in the linea alba.

If the cyst be small, the ordinary aspirator will be found a most efficient instrument; but, if the cyst be large, the tapping will be best performed by Mr. Wells's small-sized syphon trocar.

Sometimes I have punctured above the umbilicus, but generally it is better to keep between the umbilicus and the pubes, going above the former spot only when there is some solid matter below, or some suspicious circumstances that may warrant the exception. I have always adopted Mr. Wells's plan of first puncturing the integuments with a

lancet, and then introducing the trocar. In cases where ascitic fluid has to be removed, or where a cyst is tapped to help in the diagnosis, Mr. Wells's blunt trocar will be found of great use, for it will serve as a sound to explore the relations of the tumour. I never take any special precautions for tapping, beyond leaving the patient laid comfortably on her side with the abdomen hanging slightly over the edge of the bed. After having pressed the wound together with my fingers for a few minutes, I seal it with a piece of lint dipped in styptic colloid.

I have had no personal experience of such plans of treating ovarian cysts as injecting them with iodine or forming fistulous openings into them. The former I have seen several times fatal, years ago, in the practice of others. The great success of the radical cure by ovariectomy will soon, I think, entirely supersede any such methods, save in very exceptional cases.

The proper selection of cases for the performance of ovariectomy is one of the many difficulties we have to encounter in practice, and can alone be based on experience. The proper consideration of the various symptoms and signs of the tumour, the age and health of the patient, and, most of all, a careful watching of each case for some time, are one and all essential conditions for the success of the operation. Ovariectomy is an operation for the success of which it is not very easy to pick cases; that is, that a surgeon who selects some cases and rejects others, simply with a view to a good mortality bill, will, in all probability, find himself egregiously mistaken. In my opinion, there can be only two reasons for refusing to do ovariectomy in any case; and these are either that the case is not far enough advanced, or that the tumour, in all probability, could not be removed.

It is in my own experience, and I am glad to find it is also in that of Mr. Wells, that about the most unfavourable case for ovariectomy is to be found in a young healthy woman with a medium sized tumour. A woman past the middle age, or pulled down in health by the growth and the confinement necessarily incident to its later stages, has a far better chance of recovery than the other; and, in the case of the younger and healthier woman, it will be found advantageous to temporise by tapping or other advisable expedient. Indeed, as Mr. Spencer Wells has laid down, as long as the patient's visceral functions are not interfered with by the pressure of the growth, nor her life made uncomfortable by her unwieldy size, or by her disfigurement, or by pain, it is unwise to interfere with an ovarian tumour. In fact, the rule ought to be to delay an ovariectomy as long as is consistent with the patient's chances of recovery, bearing in mind that it is not the healthiest that recover best. On the other hand, the major operation must not be too long delayed; for, though Mr. Wells's statistics show that one or two tapings do not affect the mortality of subsequent ovariectomies, yet the results of multiplied evacuations of the cyst are far from favourable.

It is almost a matter of routine in the major operations of surgery, that it should be carefully ascertained that the patient is not suffering from organic or serious functional disease of any important organ, and this, for ovariectomy, must never be neglected. Especial care must be taken to examine the condition of the urine, for the condition of both kidneys and bladder are most important factors in its success.

Presupposing that a proper case has been selected, and that any defect discovered has been rectified, we come to discuss the stages of the operation, the precautions to be taken before and the treatment after it. First of all, there is the position of the patient—where shall she be? Experience answers that the more nearly her surroundings resemble those of a healthy private house the better; and the statistics show that the performance of ovariectomies in a large general hospital is altogether unjustifiable. There is no operation in the whole range of surgery where the patient seems to be so apt to be infected by septic influences, and no precautions against them can be too great. The room in which the patient is to be treated ought to be fairly large, and so arranged that ventilation may be possible from window or door to the fireplace without the current crossing the bed of the patient. There should be no unnecessary furniture, and as little upholstery work as possible. Two small iron couches, with firm hair-mattresses and a water-pillow, are needed; and an intelligent woman for nurse, who will do as she is told, and *nothing more*, is absolutely essential. If two such can be got to act as relays for the first eighty hours after the operation, it will be found a great advantage.

The patient herself requires a little preparation for the change that is about to be made in her alvine actions. For this purpose, I direct that her food should be limited to soup and a very little bread for forty-eight hours before the operation, and that, on the morning of the day previous, she shall have a small dose of castor-oil, followed, early on the morning of the operation, by a dose of eight or ten drops of laudanum. I generally operate in the afternoon, and I do so, almost invariably, on the bed the patient is to occupy, the only precaution taken being to place a thick draw-sheet under the patient. The time of the operation

should be about midway between two menstrual periods. The instruments for the operation are chiefly scalpels, dissecting, artery, and vulsellum forceps, two syphon trocars of different sizes, various sizes of clamps, a chain *éraseur*, cautery irons, needles, silk thread and wire, some solid perchloride of iron, and good sponges. As the operator grows in experience, he will find that there are many other instruments that he may have near him with advantage, such as an aspirator. Especial care must be taken to have the sponges clean and of good quality. To secure this, I generally get a very large and fine cup-shaped Turkey sponge and cut it into four, six, or eight pieces. These I soak for twenty-four hours in a solution of muriatic acid sufficiently strong to be disagreeably acid to the taste, and thus get rid of the chalky sand which infests them. It used to be my custom to use fresh sponges to every case, but I find that, after being used, if they be well cleansed in cold water, and then soaked for a day or two, first in a strong solution of sulphurous acid and then in a strong brine, and afterwards once more well washed, they are quite as good as new.

There cannot be a doubt that an important item of success in ovariectomies lies in the anæsthetic employed; and, however valuable chloroform may be in obstetric work or in general surgery, in this operation its use is quite inadmissible, on account of the frequent and very persistent vomiting which follows its use. I have seen this vomiting have a fatal result, and it has so often given me great anxiety that I strongly urge the discontinuance of Simpson's anæsthetic for ovariectomy. Sulphuric ether is not much better, and has other disadvantages. The safest and most satisfactory anæsthetics are the bichloride of methylene and the methylene ether of Dr. B. W. Richardson.

The patient having been completely anæsthetised, and properly placed, and the bladder emptied, I make an incision in the median line between the umbilicus and the pubes, the latter having been shaved, not less than four inches long. This incision should go at once through skin and subcutaneous fat. A pause then is made, and any bleeding point of the slightest consequence is seized by Mr. Spencer Wells's scissor-handled forceps, than which I do not know a more valuable instrument. The bleeding having been entirely checked, the central tendinous line is sought for, and not always so easily found as might be imagined. The easiest way to find it is first to make a short diagonal cut across it, and then to follow it. The tendinous expansion is laid open, as is also the extraperitoneal fat until the peritoneum is reached. Another pause is then made, and again all bleeding points must be secured. While the surgeon makes this incision, he will find a soft towel in his own left hand far more useful in letting him see what he is about, than any number of sponges in the hands of assistants. To open the peritoneum, a variety of devices are in use; but I trust to nothing but a sharp knife, and open the cavity at the middle of the wound to as great an extent as will admit my left forefinger. Passing this downwards, I extend the wound in that direction by a probe-pointed bistoury. In this way, there is no possibility of cutting anything the forefinger cannot feel, and that always must be the best director. The wound should be brought down as close to the pubes as is consistent with the safety of the bladder, so as to diminish the subsequent strain on the pedicle, if it should happen to be short, and have a clamp applied to it. If there be no adhesions between the cyst and the peritoneum in front, this part of the operation is very simple; but, if there be adhesions, it is no easy matter, in some cases, to find the point of union, and, in spite of the greatest care, occasional instances will probably happen of mistaking the peritoneum for the cyst. The peritoneum is often so altered in appearance, being thick, leathery, and gelatinous, as to deceive any but the most experienced operator. When the cyst is reached, it should be tapped by a large-sized syphon trocar, and emptied as quickly as possible. Sometimes the cyst-contents are glairy, or even gelatinous, and will not pass through a trocar; in which case the cyst must be laid open for three inches, either edge of the wound into it seized and dragged outwards by forceps, and the contents scooped out as well as may be. After the major cyst has been emptied, traction should be made on it, so as to ease it gently out through the wound. Two kinds of obstacles may hinder its exit—secondary cysts or adhesions. The secondary cysts should be punctured or broken down from within the cavity of the major sac, thus preventing as much as possible the escape of the morbid fluid into the cavity of the peritoneum—a most important matter. Adhesions are mediate or immediate, the former being generally parietal or omental, existing in the shape of round or flattened bands of peritoneum. They seem to be formed by isolated patches of adhesion, dragging off the peritoneum from the abdominal wall by pieces of adherent omentum. They are seldom large, and are only of any moment when traversed by a large blood-vessel, which, however, may generally be secured by torsion or by ligature. The immediate adhesions, if of old date, are often very serious, so much so as to render it sometimes impossible to complete an operation when they occur in

the pelvis or to some important organ, as the liver or stomach. When the tumour is adherent only to the anterior wall of the abdomen, the complication does not seem to be of great moment. I have, in one case, separated very extensive adhesions in the pelvis successfully, but I have also seen an iliac vessel torn across, fatal hæmorrhage being the result. I have removed a very large tumour which was adherent almost universally, but the patient died in forty hours of shock. I had diagnosed extensive adhesion before the operation.

Hæmorrhage from adhesions is sometimes troublesome, and may require considerable patience to overcome it. If a bleeding point be within sight, and it be limited to one mouth, it had better be secured by a ligature cut short, if torsion fail to stop it. If it consist of oozing from a surface, either a touch with the solid perchloride of iron or the hot cautery is better.

If there be no adhesions and no large secondary cysts, ovariectomy thus far is a very simple operation, which seldom takes above five or six minutes to complete, and this simplicity has been a great snare to many; for there is no operation usually performed which requires the surgeon to be more alive to possibilities, and to be prepared for them, than ovariectomy. The complications and unexpected difficulties are endless, and sometimes extremely trying to the presence of mind and ingenuity of the operator. Thus a second dermoid cyst may be found packed down in the pelvis, as has twice happened to me, and to get it out may be a matter of no little trouble. For such a condition, the aspirator will be found invaluable, and it ought always to be within reach. The cyst-walls may be found so thin, that any kind of forceps will tear them, and the contents so glairy, that they will not run through a trocar, as I have more than once experienced; or the secondary cysts may be found so numerous and so small, that there is no alternative but to bring them one by one to the surface and slit them open, brushing the escaped contents immediately off with a sponge. This has occurred in my practice several times, and I have always adopted this plan rather than carry the incision above the umbilicus.

As the tumour is being withdrawn, an assistant should be ready, on the left side of the patient, to insert the forefinger of his right hand into the wound, and, by grasping the integuments on the one side with his thumb and on the other with the remaining fingers, to close the wound, and thus prevent the escape of the intestines. If he be sufficiently alert, the bowels need never be seen in a well conducted ovariectomy. Having got the tumour fairly out, the surgeon's first duty is to examine the pedicle and decide how it is to be treated. I have tried four methods of treating the pedicle, namely, by the long and short ligatures, division by the *écraseur*, and inclusion in the clamp, and I have arrived at the firm conviction that the clamp is the best in every way when it can be applied. The form I prefer, after a trial of all the kinds I have seen, is the calliper-clamp of Mr. Wells. I have divided the pedicle ten times with the *écraseur*, and only one of these patients has died, the case being that of the very adherent tumour I have referred to, and which would have died no matter how the pedicle had been treated. I have a distrust of the *écraseur*, however, because, in two of my cases, a pelvic hæmatocele formed coincidently with menstruation a few weeks after the operation. In neither of them was there any danger to life produced by the hæmatocele; but, considering how frequently an irregular menstruation occurs a day or two after ovariectomy, I have given up the use of the *écraseur* in the treatment of the pedicle, dreading an unfortunate result. Moreover, Mr. Wells has shown that a divided pedicle dropped in back is very apt to contract adhesions to the intestines, and give rise to serious trouble. One case I treated by carbolised ligatures, and she died on the fifth day from pelvic peritonitis and suppuration. In one case, there was no pedicle, and I removed the tumour as well as I could, partly by the *écraseur* and partly by scissors, tying the bleeding points as I found them. This patient died on the fourth day. Any similar case I may meet with in future, I shall treat by Dr. Miner's plan of enucleation. In two cases, I tied the pedicle with silver wire and dropped it back. Both these patients made excellent recoveries, and both carry their wire-rings to this day without inconvenience; and I think I shall adopt this plan when I cannot use a clamp. In one case, I used the long ligature, and she died on the fourth day. She will be the last in which I shall so treat the pedicle. I have had no experience of the use of the cautery.

After the pedicle has been satisfactorily dealt with, the state of the peritoneal cavity ought to be the subject of the surgeon's attention; for it is certain that the careful removal of any clots or cystic fluid that may be there, is a necessary part of the success of any operation. Large flat sponges are best for this, and they should be stuffed well down into the pelvis and round into the lumbar regions, and left there for a few minutes. The operator should always know how many sponges are in use, and they should be counted before the wound is closed. Previously to this last step of the operation, it must be carefully ascertained that

the other ovary is healthy. If it be enlarged by cysts, it had better be removed, or, if it contain only one or two small cysts, they may be opened and their contents pressed out. Any tumour of the uterus had better be left alone, unless it be markedly pedunculated. If the uterus be found enlarged by pregnancy, it must be left alone; but, if unfortunately punctured in mistake for a cyst, as has happened several times, the safest treatment is to lay it open and empty it, as has been done successfully by Mr. Spencer Wells. The closure of the wound I usually effect by silver sutures passed by a handled needle; and, when a clamp has been applied to the pedicle, I pass the first stitch as a double wire immediately above the clamp, and fasten it at once. I always act on Mr. Wells's suggestion, and leave a sponge in the abdomen, just within the wound, until the other stitches are passed, and withdraw it before they are fastened. Care must be taken to include the peritoneum on both sides in the stitches, and to enclose no intestine or omentum in them, nor in the clamp. In fastening the deep sutures, the lips of the skin-wound must be carefully adjusted, and, if necessary, superficial sutures should be inserted. For the closed wound, a variety of dressings may be used. In my own practice, when I have treated the pedicle by returning it within the peritoneum, I have always used Lister's lac plaster, and I have found it a very convenient form of dressing. I may say that I did not take any other antiseptic precautions, nor have I ever seen a case where they seem to have done any good. In cases where the operation has been done under a carbolic spray, the only difference observable was in the comfort of the operating surgeon, and this difference was no advantage. When I have used the clamp, I have always adopted Mr. Wells's dressing, which consists of little squares of dry lint tucked in under the clamp and laid over the wound. It is extremely neat and convenient, and, if covered by little bags containing Skinner's disinfecting powder or a pad of oakum, it is, perhaps, the best of all. Instead of Mr. Wells's strapping, I employ a linen binder fastened by safety-pins. The wound rarely requires to be dressed more than once in twenty-four hours, and, for cleansing it, some old linen or lint should be used without moisture. The wound generally heals by first intention, and the stitches may all be removed on the seventh or eighth day, except the one nearest the pedicle, which had better be kept in somewhat longer. The clamp generally comes away between the eighth and twelfth days, but its separation ought never to be hastened. In one or two cases where I have helped it a little, I have had reason to regret my haste by seeing the stump slowly sink downwards, keeping me in suspense for a few days as to whether or not the peritoneum would again be opened. When the clamp has come away, the dry lint dressings should be continued until the wound has healed, and the patient should be warned that the wound may open up slightly and discharge some menstrual fluid for a few months after the operation. In a case where I removed both ovaries and included both pedicles in one clamp, this after-discharge did not occur.

[To be continued.]

EXTRACTION OF A PIECE OF STEEL FROM THE VITREOUS HUMOUR BY THE MAGNET: RECOVERY OF ALMOST PERFECT VISION.

By WILLIAM A. McKEOWN, M.D.,
Surgeon to the Ulster Eye, Ear, and Throat Hospital, Belfast.

EDWARD MILLS, aged 15, apprentice in an iron ship-building yard, consulted me at the hospital on the 21st of November last. He stated that on the previous day, whilst he and another lad were striking a rivet, the two hammers struck each other violently, and a piece of metal flew from the hammer and wounded his right eye. A wound appeared in the cornea, beginning in its centre, and passing out towards the outer margin. It seemed to be superficial at the centre, and to become deeper and penetrate as it passed outwards. The sphincter of the pupil was cut at the outer margin, and the iris at that part retracted towards its peripheral attachment. The boy could count fingers easily; but no accurate determination of the degree of vision was made, in consequence of the extreme tenderness of the eye. The ophthalmoscope showed no trace of opacity of the lens; and the fundus of the eye could be seen distinctly, except a small part at the temporal side. Deep in the vitreous body at that part were observed, by direct illumination, opacities situate near to the retina, and showing a marked tendency to a dependent position, as if somebody were pulling them down. Sometimes, at the lower part of one of the opacities, a silvery streak appeared, as if from the sharp margin of a bright metallic body. On throwing the light obliquely from the mirror held to the left of the middle line of