position of the tongue. In a foetus .9 of an inch long, this arch, which may be called the lingual, consists of a globular cartilage, connected with the periotic tissue below and behind the root of Meckel's cartilage (part of the mandibular arch). In a foetus 1.8 of an inch long, this arch consists of five portions, cartilage and membrane alternating; the lowest nodule of cartilage joining the hyoid arch, and constituting, in the adult, the lesser horn of the hyoid bone: from this the tongue rises.

It is not necessary here to refer in any detail to the remaining arches connected with the base of the skull: they are the hyoid, the laryngeal, and the exoccipital. In their development they follow the growth of the cerebral nerves; the most remarkable being, perhaps, that of the laryngeal, with its extension into the thorax, in association with the pneumogastric nerve, and the development, from the single tube of which it at first consists, of the larynx with the trachea, and of the lower part of the pharynx with the œsophagus. (For a description of these arches, see the *Philosophical Transactions*, 1871, p. 121, pl. i.)

If we take a cartilaginous base of the human skull, upon what must we consider that the fashion of its apparently irregular growth depends?

In a foetus 1.9 inches long, we see that the cartilage forms a central mass, from which, at various points, there are lateral outgrowths (Fig. vi). The central cartilage commences in front, with the flexure of the trabeculae, and, after dividing, to allow of the passage of the spinal cord, reunites and ends at the internal occipital protuberance. From around this cartilage, membrane extends to form the sides and vault of the skull; and of this membrane, the parts which have undergone chondrification on each side from before backwards are the following: 1. In front of and surrounding the optic nerve; 2. Beneath the optic nerve, and joining the preceding; 3. Behind No. 2, deeply notched in front, and posteriorly; 4. Surrounding the facial and auditory nerves. If we examine these outgrowths of cartilage with reference to the position of the cerebral nerves, we can but come to the conclusion that they are developed in connection with, and for protecting, the nerves. The relation in this sense of the olfactory with the trabeculae, of the optic with the presphenoid and orbito-sphenoid cartilages, and of the fissure of the exoccipital cartilage with the exit of the hypoglossal nerve, are evident.

The growth of the ala sphenoidalis (No. 3) leaves in its front a fissure for a group of nerves (Fig. vi, 3) [third, fourth, first and second of fifth, and sixth], and one of these, lying in a deep notch (Fig. vi, 4), the second branch of the fifth nerve, is at a late period shut off from the rest by closure of this notch in front; whilst at the back of the ala sphenoidalis, a second notch (Fig. vi, 5), which at first is common to the third branch of the fifth, the carotid artery (Fig. vi, 5a), the eighth pair of

Fig. 5.

Fig. 6.

Fig. 7.

nerves (Fig. vi, 7), and the jugular vein (Fig. vi, 7a), is modified by the closure of the notch to form the oval foramen, and by the outgrowth of the cartilage of the internal ear (Fig. vi, 6), which partially surrounds and diverts the course of the carotid artery, and which interposes between the foramen antierius and the foramen posterius, which previously formed parts of a common passage for nerves and vessels.

If the subaxial arches be followed in their growth, it will be seen how the cartilage, membrane, and bone, of which in parts and at times they are composed, mould themselves during development to the nerves they grow with. Thus the second division of the fifth determines the formation of the fissures at the back of the orbit, and keeps open the notch in the upper jaw, which does not become a foramen (infraorbital) until after the twenty-fourth week; the process from the frontal membrane ossifies over the nasal nerves; and the course of the anterior dental nerves determines the line of articulation between the maxillae and the corresponding intermaxillary bone (see *Philosophical Transactions*, 1869, p. 166); the provision, by divided growths from the ala sphenoidalis, for the nerves which descend between the palate, pterygoid, and superior maxilla; and, more remarkable than any, the outgrowth of the pneumogastric with the larynx and other structures with which it is functionally related, give further illustrations of the influence of the nerves in determining the growth of various parts.

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.

II.

THE ovaries are liable to certain displacements, which may give rise to many disagreeable symptoms without any actual disease of the glands. Thus one or other, or both, ovaries may, by a relaxation of their peritoneal investments, drop into the retro-uterine *cul-de-sac*, and there be sources of great trouble. This will be especially the case if there be at the same time retroflexion or retroversion of the uterus; for I have known such a displacement of an ovary to utterly prevent the application of any apparatus for the replacement of the uterus, and cause so much suffering as almost to make us discuss the question of ovariectomy. In such displacement, pressure on the gland gives rise to the same sickness and faintness as pressure on the testicle produces in the male, and the passage of a hard motion will give rise sometimes to most alarming symptoms. A more rare displacement of the ovary is forwards, this being generally an excess of embryonic transition, and it may be carried so far as to take the ovary into the labium, after the manner of the descent of the testicle. Cases of this kind are given by Oldham and Rigby; and Percival Pott (*Chirurgical Works*, by Earle, vol. ii, p. 210) actually removed both ovaries displaced in this way; and Dr. Meadows has removed one (*Obstet. Soc. Trans.*, vol. ii).^{*} Cystic degeneration is said to have occurred in this position, and a Spanish surgeon has recorded the removal of a cystic ovarian tumour from outside the inguinal ring. I have had no experience of this displacement.

Klob has described a twisting of the ovary on its axis which is probably congenital, and has not yet been found to be of any pathological importance in an otherwise healthy ovary. In the cystic ovary, a similar twisting has been observed to a more complete extent and with disastrous results. The ovary is sometimes completely detached from its normal position and relations, and forms new attachments elsewhere. This occurs with the healthy ovary, and, as Mr. Spencer Wells has shown, also probably after it has undergone degeneration. How and when it occurs have not yet been satisfactorily explained. In uterine procidentia and prolapse, corresponding displacement of the ovaries occurs.

There is a large class of ovarian disease due to altered hæmic nutrition of the gland, which clinical experience proves to be far more common than pathological investigation has yet shown. Of the prime factors in these cases we are as yet ignorant; but, clinically, they range themselves naturally into three groups, differing probably only in degree of severity, save in the cases where acute ovaritis has a specific origin. They are:

- I. Ovarian Hyperæmia.
- II. Chronic Ovaritis.
- III. Acute Ovaritis.

It may seem a metaphysical refinement to make a distinction between the first and second of these classes, but I have long satisfied myself that it actually exists. Ovarian hyperæmia is the result of an over-sufficient and generally precocious ovarian activity, and is, therefore, the converse of the condition I have detailed under ovarian amenorrhœa and dysmenorrhœa. It is far from being a rare affection, and is invariably well marked in its history, the chief detail of which will generally be found to be menorrhagia. In a typical case which I have now under my care, the following is a summary of the facts. The young lady is the child of parents of markedly nervous temperament, is well-grown, I might almost say prematurely developed in every way, and, when little over 13, began to menstruate. From the first, her periods were profuse and at first painless. She enjoyed excellent health for many months after the accession of menstruation, during which time the flow con-

^{*} I have now to add a hitherto unrecorded displacement of the ovary in a case where it had become developed at the umbilicus during embryonic life and become cystic, and from which situation I successfully removed it.—May 18th.

tinued profuse, generally lasting for six days or a week, and necessitating the use of from four to six napkins daily. By the time she was 14, it was, however, evident that her health was suffering. She became listless, sleepy, fainted when at her lessons, gave indications of loss of memory, and, when I saw her first, she was decidedly anæmic. At that time, it wanted but two or three days before the accession of her period, and steady pressure over the ovaries gave her great pain, which she described as turning her quite sick. During menstruation, this pain was induced by less pressure, and, in the intermenstrual period, it could not be produced at all. She always seemed better in health during the flow, and it was this very common peculiarity that prevented her parents from applying earlier for the much needed advice.

In such a case, there cannot be a doubt that there is hyperæmia, not only of the ovary, but of the whole sexual apparatus, due to, it may be, or more probably only accompanying, the increased ovarian activity. This of itself is not a source of danger, for that lies in the menstrual loss producing anæmia. I have not yet had an experience sufficiently extended to trace such a case throughout its course; but, meeting with many instances which I have had reason to regard as identically of the same nature in later stages, I believe that their menstrual history is much the same as that of other women after they have had a child, the process of gestation seeming to rectify in great measure the abnormal excitement. If they remain unmarried, they go on suffering from menorrhagia, become extremely anæmic, and have the menopause at the usual time, but marked with abnormal profuseness, as might be expected. Marriage, even without resulting pregnancies, seems to modify the menorrhagia in very great measure, as I have repeatedly had occasion to observe.

The treatment of such cases should, if possible, be begun in the first stage. There is no cause of deteriorated general health so certain for a young woman as profuse menstruation due to ovarian hyperæmia. The spanæmic condition induced by a few years' continuation of it is one over which iron seems to have no control; indeed, all ferruginous preparations ought to be sedulously avoided until the menorrhagia has completely ceased.

In the case I have narrated, my first advice was, that the patient should be removed from school, and that, for six months, all instruction, especially in music, should cease. I notice music especially, for I am quite certain that instruction in that art, as carried out in boarding-schools, has to answer for a great deal of menstrual mischief. To keep a young girl, during her first efforts at sexual development, seated upright on a music-stool, with her back unsupported, drumming vigorously at a piano for several hours, can only be detrimental. It is usually the habit of those who superintend the education of girls to make no difference whatever in their physical and mental exercises during their menstrual periods; and at a time when the great necessity of the system is perfect rest, laborious efforts have to be made. This is most pernicious, and I have repeatedly had to trace to it the existence of serious disease in young ladies. Musical exercises are especially hurtful, for the further reason that music, in those who are devoted to it and gifted with its necessary peculiarities, is a strong excitant of the emotions; while, to those not so gifted, and who do not care for it, it is an intolerable and useless burden. Absolute rest is an essential part of the treatment of the early stage of ovarian hyperæmia, and I need scarcely say that it is in its early stage that the treatment is most likely to be successful. This rest ought to be rigorously carried out by the patient being confined to the prone position for a few days before, during and for a few days after the catamenial flow. The application of a counterirritant over the ovarian region just before the period is very useful; but the most potent part of the treatment consists in the administration of ergot before and during the period, and of bromide of potassium continuously during the intermenstrual time. The ergot is best given in the form of ergotin, my favourite formula being half a grain of Bonjean's ergotin made into a pill with sufficient lupulin. The bromide I give night and morning, after meals, in doses from five to ten grains. There is a good deal to be done in moral treatment. It may be only a coincidence, but I have noticed this affection chiefly in girls who have had no brothers, or brothers only younger than themselves, and I am quite certain that great harm is done to many girls by their rigid social seclusion in youth from the companionship of boys. Under proper supervision, no wrong could happen from more unrestricted association of boys and girls at their critical periods; and it seems to me that it is a mischievous plan to draw wide barrier-lines between the sexes at a time when they ought to begin to understand themselves and each other, and, by harmless intercourse, many of the risks may be obviated which afterwards beset them when an unaccustomed association is opened out at an age when passion has the chief ascendancy.

All the cases of ovarian hyperæmia which I have met with at puberty have yielded to the treatment I have detailed, and many cases which I

have had reason to regard as of this nature, but in a later stage, have been benefited by it. It is, however, in the perfect fulfilment of the function of the utero-ovarian organs that we have the radical cure.

Ovarian hyperæmia is sometimes met with as the result of marriage, but only when the marital acts have been indulged in to excess, and then especially when pregnancy has not resulted. This, in fact, is only the mildest form of a serious disease which may end in total inflammatory disorganisation of the ovaries of newly married women. It is not unusual to find a delicate woman, who had menstruated normally previous to her marriage, suffer from severe menorrhagia for the first three or four years of married life, and to find an explanation of this in the vigour of the husband. In these cases, ovarian tenderness is always present, and very frequently there are violent pain and tenesmus, lasting for hours after connection, so that soon the unfortunate sufferer dreads the idea of a marital embrace. The menstrual period becomes prolonged, so that there is left only an intermenstrual interval of a few days. In prostitutes of a tender age, this affection is of extreme frequency, and often ends in the chronic ovaritis with adhesion of the Fallopian fimbriæ to the ovary, and the subsequent atrophy of all the sexual structures so often found in their bodies. The cure depends, of course, on the removal of the exciting cause and the employment of such treatment as has been before alluded to.

In these cases, no line can be drawn which will define where simple hyperæmia ends and acute or chronic ovaritis begins. As acute ovaritis is, however, always, or has been at least in my own experience, due to specific causes, it is more than likely that the ovarian hyperæmia passes into chronic ovaritis without an intermediate acute stage.

Concerning chronic inflammation of the ovary, but little is to be found in the writings of our authorities in gynecology; and it has only been by the careful grouping of the symptoms of a large number of cases that I have been able to satisfy myself that the condition may be accurately defined and readily diagnosed, and, further, that it may be successfully treated in the majority of cases.

As I have already indicated, chronic ovaritis may be a later stage of moliminal hyperæmia. It may also be the result of acute ovaritis, but the majority of the cases occur from sexual excess and masturbation, or as a sequelæ of exanthemata and rheumatic fever, and probably of syphilis. I have only once had an opportunity of dissecting a case where I had recognised chronic ovaritis in life, and then it certainly was the result of acute rheumatism. It occurred in the case of a girl 17 years old, who had suffered from eight or nine attacks of rheumatic fever. In two of them, she was under my care as a dispensary patient; and, after the recession of the articular affection, an attack of pelvic pain came on, which was increased by pressure, and the attack was accompanied by an irregular menstrual flow. The whole passed off in a few days after the application of a blister, but ever afterwards her menstruation was irregular, profuse, and painful, and she suffered more or less from the symptoms I shall describe immediately. I regarded the attack as one of mild acute or subacute ovaritis, followed by a chronic stage. She died subsequently of embolism of a cerebral artery, and I found her ovaries large, soft, covered with lymph, and dotted with enlarged follicles, and the peritoneum thickened round them. The left ovary was partly adherent to the rectum, and it had nearly the whole of the fimbriæ of the corresponding tube glued on to it.

There is probably a chronic ovaritis of occasional occurrence in chronic phthisis; for, though the rule in that disease is to have ovarian atrophy, evinced first in dysmenorrhœa and finally in amenorrhœa, yet I have seen a few cases where the menstruation was profuse, irregular, and characterised by the other symptoms of chronic ovaritis. I have seen such conditions temporarily after small-pox, and frequently after scarlet fever in adolescent women. One case I have also satisfied myself of in early acquired syphilis. There is a distinct form of syphilitic metritis, as pointed out long ago by Mr. Langston Parker, and no doubt in these cases the ovaries are involved. Chronic metritis, the result of subinvolution or other uterine accident, and chronic endometritis from catarrh or gonorrhœa, in all probability have some amount of accompanying chronic ovaritis.

Out of eighty-one dissections, Henning found the ovaries diseased in fifty-three cases, and of the latter number six had exudation over them that was, in all probability, inflammatory. Chronic ovaritis, then, is not an uncommon disease. Chronic ovaritis is very often unilateral, and in these cases it probably has had an origin more or less independently of the uterus. Thus, as the result of acute septic ovaritis, it has been, in my experience, invariably unilateral. When it is the result of sexual excess or moliminal hyperæmia, it is generally, though not invariably, symmetrical.

The symptoms which, in my experience, have enabled me to class a number of cases together as chronic ovaritis are, first, in the history of

the case, that from the molimen the periods have been irregular, generally too frequent, and that they have been too profuse. If the affection have a subsequent origin, then there can be obtained some story of a reason for the disease, either in a gonorrhœal infection or a puerperal accident leading to acute inflammatory attack, or an overindulgence in sexual congress. There is always a sense of weight and fulness in the ilio-hypogastric regions, and there may be positive tympanitic swelling. The discomfort is often so great, that the patient cannot bear her stays tightened or the weight of her dress. Sickness and nausea are frequently present, and almost always for a few days before the menstrual periods. The sufferings from sick headache are often intense. There is always more or less tenderness on pressure over one or both ovaries, and this is invariably increased before, during, and after the catamenia. By tactile examination, this tenderness may easily be demonstrated to be ovarian, and in very many cases the ovaries may be found to be enlarged and tender by the bimanual method of examination. Sometimes examination by the rectum permits a better investigation, especially if the patient be anaesthetised. As a rule, there is not much menstrual pain; for the uterus, sympathising in the disturbance, is often enlarged, and the discharge comes away almost painlessly.

The treatment should consist mainly of organic and systemic rest as perfect as possible during the menstrual periods, and the administration of ergot. Between times, counterirritation may be used with advantage, and the best form of that I have found to be painting a circumscribed spot of skin in the inguinal region, about two and a half inches in diameter, with linimentum iodi every morning as long as the skin will bear it. When the spot has become too painful to allow a repetition of the painting, the cuticle is allowed to peel off and the skin to become firm, and then the process is repeated as often as may be found necessary. I have had patients going on with this for months, and it nearly always does them good. Further, I give bromide of potassium internally, sometimes combined with ergot. I have also found arsenic and cod-liver oil very useful, and one case yielded to large doses of quinine when everything else had failed.

It is probable that a good deal of the disturbance in these cases is kept up by the extravasations of small clots into the peritoneum by a want of adjustment to the ovary of the Fallopian mechanism, and the majority of the ova are lost in the retrouterine *cul-de-sac*.

As far as I know, acute ovaritis is the result of three conditions only:

- I. Injury;
- II. Gonorrhœal infection;
- III. Septic poisoning in the parturient condition.

In one woman, I diagnosed acute ovaritis following injuries inflicted by her husband kicking her; and, though it may have been general pelvic peritonitis, yet the uterus never became fixed as it does in that condition, and the subsequent permanent disturbance of menstruation, accompanied by other signs of chronic ovaritis, confirmed me in my opinion.

Acute ovaritis from gonorrhœa is a common result of the infection, and is a frequent cause of sterility. It seems to be precisely similar to the acute epididymitis of the male, as first pointed out by Bernutz and Victor de Méric. In this affection, the patient is found with an anxious face, agonising pelvic pain generally only on one side, the knees drawn up, and all the signs of a severe inflammatory attack. The patient can lie with comfort only on the back, and micturition and defæcation are productive sometimes of excruciating pain. It is often impossible to make a vaginal examination without anaesthesia, and this had better be used at once, for it is a matter of consequence to diagnose between acute ovaritis and pelvic cellulitis. In the latter case, the tumour will be found attached to the uterus, and, moving with it and with the whole roof of the pelvis, will be found to be more or less fixed, while in ovaritis the enlarged ovary may usually be easily made out. The treatment should consist in leeches to the perineum, a blister over the ovary, diuretics, and small frequent doses of opium. The rectum should be well evacuated by an enema, and the bowels kept quiet for a few days. This affection, as far as is known, generally results in disorganisation of the gland and the formation of adhesions round it; if both glands be affected, permanent amenorrhœa may result. I have seen this in one case. I have not met with any indication of the formation of abscess in this affection, nor do I know of any record of such a result. I do not think the hypothetical stages and varieties into which the affection has been divided of any practical use.

Of acute ovaritis from septic causes in childbed, I have had no experience; but Simpson, Bernutz, and others, give cases, and in some of them abscesses have resulted. The symptoms are shivering, pain, increased temperature, night-sweats, drawing up of the knees, inframammary pain, and pain shooting down the thigh and leg. When an

abscess forms, the result seems always fatal from its bursting and producing general peritonitis. The chief remedies are counterirritants, as turpentine stupes and blisters, together with the administration of quinine and opium. If the presence of pus can be determined, it ought to be removed by the aspirator *per vaginam*. A large number of cases are on record of so-called ovarian abscesses which were only suppurating ovarian cysts, frequently dermoid.

The ovary is, of course, always, or at least frequently, involved in pelvi-peritonitis or perimetritis; but I do not regard this as an ovarian disease. Ovarian apoplexy would seem to be an occasional accident of ovulation, found in *post mortem* examination, but without much clinical importance, unless, by the same process, a pelvic hæmatocele is formed. Hæmorrhage into an ovarian cyst, described by Kiwisch as a variety of ovarian apoplexy, cannot be considered in any such light.

Hypertrophy of the ovaries occurs in two forms, as it affects the follicles of the gland or its fibrous tissue. There may be, as Dr. Ritchie and Dr. Fox have pointed out, an increased formation of the number of follicles, this, in all probability, forming a pathological feature of the ovarian hyperæmia I have described. Follicular hypertrophy may take the form of increase in size of individual follicles, and form, as first shown by Rokitansky, a variety of cystic formations. Hypertrophy of the stroma of the ovary is a more common affection than is supposed, and seems to be one especially frequent in the better ranks of life. Cases may partake of a combination of one or other variety of the follicular hypertrophy along with the fibrous.

The fibrous hyperplasia is probably very often the result of chronic ovaritis of a kind which attacks less the peritoneal surface of the gland, and more its internal structure. It results in follicular atrophy, or arrest of development of the proper ovarian cells, and cirrhosis of the trabeculae.

The cases which I have seen have all been in the middle and upper ranks of life, with one exception in a hospital patient, but even she had a look and air of delicacy and refinement that belied her station; and she, moreover, is the only one in whom I have yet succeeded in getting the utero-ovarian function fulfilled. She is now pregnant. To illustrate my observations, I may quote at length from my note-book the case of Mrs. —, as illustrating many of the points of ovarian pathology on which I have dwelt, and as a typical case of fibrous hypertrophy of the ovaries, resulting probably from chronic ovaritis. She is now 24 years of age; is a pretty delicate blonde of nervous temperament and most refined caste of features, and has been married nearly three years. She has a history of hyperæmia of the ovaries at an early age, and has had always very profuse, and generally irregular, menstruation until within the last three or four years, when it has been scantier and less frequent. From November 1871, until she came under my care, she had had only one normal period (in seven months), and another in April 1872. Since the former date, a constant, offensive, brown discharge had been present, which was increased by exertion. She had pain and straining after coitus, pain on defæcation, loss of appetite, and frequent sickness. Examination revealed a condition of enlargement and tenderness of the uterus, openness of the cervix, and decided retroflexion of the fundus, with a tendency to retroversion of the whole organ. The cavity was not larger than normal, but the passage of the sound gave great pain. The displacement was easily reduced, and then it was found that both ovaries were very much enlarged and tender, the left especially. They could both be distinguished by bimanual touch as quite free from adhesion, readily moving about. I introduced a ring pessary to rectify the displacement, much to her comfort, and directed the use of iodine paint in the manner previously described. She also took a tonic mixture consisting of cinchona and angostura, and the uterine cavity was occasionally washed out with a weak solution of neutral acetate of lead. The latter part of the treatment was discontinued after a few months, but the counterirritation and the pessary were persevered in, along with occasional recourse to tonics. In October last, the brown discharge had almost disappeared, and the right ovary could be felt to have distinctly diminished in size. The uterus was also straight and the cervix closed, and the whole organ of a much less size. Early in November, there was a slight menstruation lasting three days, and, in January of this year, there occurred quite a normal period of four days, followed by rather profuse leucorrhœa. In February, as the expected period did not occur, I ordered her small doses of iron in the form of ten drops of Parrish's syrup of the phosphates, taken thrice daily. In March, she was unwell from the 16th to the 20th, and I have little doubt that her patience will be rewarded by complete recovery of the functions of the right ovary, and possibly the occurrence of pregnancy.

Such a condition of the ovaries as I believe exists in a case like this is frequently met with in *post mortem* examinations, and has recently been twice found by Chantreuil, who does not, however, give its micro-

scopical characters. I have not been fortunate enough to have examined an ovary so affected.

I have met with a small group of cases which I can only class under the head of ovarian neuralgia. They have been characterised by acute lancinating pain, referred to the region of the ovaries, generally on both sides, coming on paroxysmally, without any reference to the ovarian functions. No physical signs of disease have been found in these cases, and they have all occurred in women approaching the menopause. They have all been addicted to outbursts of overindulgence in drink, taken, as they allege, to deaden the pain. Whether this inebriety was a cause or a result of the neuralgia, or whether the neuralgia in some of the cases may have had any actual existence, I am unable to say; though the special character of the pain and its site have been described by the sufferers with a constancy which would seem to vouch for its reality. In connection with this affection, I would here strongly urge the necessity for the medical profession combating strongly against the wrong women are often allowed to do themselves by taking spirits to relieve ovarian and menstrual pain. No habit can be more pernicious, or more likely to lead to the most deadly mischief, both physical and moral.

As one of the unusual conditions described in connection with ovarian abnormalities, I may here just allude to ovarian gestation, only to say that I cannot recognise its occurrence. With the solitary exception of a case referred to by Ritchie, as reported by Dr. Willigk in the *Prager Vierteljahrsschrift* for 1859, all the cases have broken down on examination. I have been unable to gain access to the original account of this case, so that I am not in a position to give an opinion on it. I have had occasion elsewhere to investigate the pathology of extrauterine gestation, and I have quite satisfied myself that all such cases are tubal in their origin, and that even those cases where it has been asserted that the sac was formed by the trumpet-like expansion of the tube united to the ovary are open to suspicion.

[To be continued.]

CLINICAL LECTURE

ON

A CASE OF CEREBRAL TUMOUR: GLIOMA.

Delivered at the Bristol Royal Infirmary.

By R. SHINGLETON SMITH, M.D.Lond., B.Sc.,
Physician to the Infirmary.

WM. PARSONS, aged 38, labourer, married, was admitted to the Bristol Royal Infirmary on January 17th, 1874. Six years ago, he met with an accident—"some concrete fell on his head". He was stunned at the time, but soon recovered, and was not obliged to give up work. After that time, he complained occasionally of pain in the head, but continued his work till two and a half years ago, when he was admitted to the Infirmary in consequence of a fit. Twelve months ago, he again gave up work, and was admitted for "whitlow". At that time, he complained of pain in the right side of the head; there was some tenderness over the right parietal eminence; he had several attacks of convulsions whilst in the house, and he was found to have well-marked optic neuritis. His mental condition was also defective; memory was very deficient, and he talked in an imbecile manner. He occasionally got out of bed, and went back to another bed by mistake. There was no motor paralysis. The distal phalanx became necrosed from the whitlow, the finger was amputated, the wound healed, he was sent home, and he again continued his work.

Five months ago, he was again admitted for fits and other nervous phenomena. The optic discs were in a condition of commencing atrophy, but he did not complain of any defect in vision. His mental condition was that of semi-imbecility, but no local paralysis, either motor or sensory, could be detected. He still complained of pain, and some tenderness on pressure, always at the same spot, the right parietal eminence. The head showed a want of symmetry, in consequence of slight but distinct prominence at the right temporo-parietal region. There were no gastric phenomena requiring notice.

He again left the house, and endeavoured to work as before. He continued to go through his regular daily work as a navvy on a new railway in process of construction, till eight weeks ago. His master, however, had noticed his condition, and, although he accomplished a fair amount of work, did not consider it safe to trust him in any post of danger. He seemed so senseless and careless that there was some risk of his being run over by the engines at work on the line.

Eight weeks ago, he fell off a plank, and again struck his head on the

right side; he lost his senses for a time, but walked home afterwards, and in the night following he had a fit. Since that time, he had two other attacks of convulsions. Six weeks ago, some weakness in the left arm and the left leg was first observed; this was gradually increasing, and he, therefore, again applied for admission to the Infirmary.

No history of syphilis could be gathered from him at any time, nor were there any traces of syphilis to be discovered. He was looked upon by his friends as a steady, hard-working, strictly temperate man.

His condition, on admission, was as follows. He dragged his left leg in walking; the left arm was weaker than the right; no deviation of features or strabismus. He was half conscious; answered questions in a slow and hesitating manner. He complained of giddiness, and occasional pain on the right side of the head. Pulse 56; appetite good; no vomiting; temperature, in the evening, 99.4. On the following day, January 18th, he was noted less conscious than before; he only spoke when roused, and then muttered unintelligibly. Both pupils were insensible to light; the right widely dilated, the left small. There was very little motor power in the left arm, but he drew the left leg up when directed to do so. His tongue deviated slightly towards the left, but there was no asymmetry of the mouth, nor strabismus. Sensation was unimpaired; the bladder was distended and overflowing, requiring the catheter. He seemed very restless, occasionally shivered, and the left leg and left arm were drawn up and became rigid. He took any food given him, but did not ask for anything. There was no vomiting. The urine was specific gravity 1020, not albuminous. Temperature, morning, 99.6; pulse 64; respiration 28. Some thickening in the skin over the right temporo-parietal region was noticed, but he did not indicate any manifestation of pain on pressure over this part.

During the day, he had five or six attacks of bilateral convulsions, became completely unconscious, was sick only once, after a purgative powder had been given, and died at half-past ten in the evening.

POST MORTEM EXAMINATION. *Head.*—There was some induration in the scalp of the right temporo-parietal region; no abnormal adhesion of the scalp. The cranium was slightly unsymmetrical, being somewhat more prominent on the right side. The calvarium was thin at the right parietal eminence; the bone was paler than elsewhere, slightly softened, and allowing the light to be seen through. The dura mater separated without difficulty from the bone. The right side of the brain was visibly larger than the left. Induration was to be felt over the right temporal and parietal convolutions (middle and posterior lobes) with firm adhesion of the dura mater. Two distinct nodular masses were embedded beneath the convolutions of this region; one of the size of a small orange, but more of an elongated oval shape; the other, of the size of a large walnut, with fairly distinct outline, "shelling out" with some difficulty from the brain-tissue. In section, these masses were of a greyish yellow colour, marked with vessels, here and there, of distinctly harder and firmer consistence than the surrounding brain-matter; the convolutions around these tumours were flattened out, and gelatinous looking, but indurated. There was sclerosis of a considerable portion of the surface of the middle and posterior lobes of the right hemisphere, with considerable thickening of the dura mater, and partial adhesion. The central white substance was pale and somewhat softened. Both lateral ventricles were distended with an opalescent fluid containing flakes of lymph. Nothing abnormal was seen at the base of the brain, and there were no traces of any former injuries (from accident) to the bones or meninges.

Thorax.—The left side was contracted; the left lung was firmly adherent everywhere, a mass of old cavities, quite honey-combed, the cavities being lined with a smooth shining membrane and having vessels running across and through them. The lung-tissue between the spaces was in a fibrous condition. The right lung was large; crepitant everywhere. The other organs were healthy; there were no traces of syphilis, nor any other tumours besides those found in the right hemisphere of the cerebrum.

Microscopic Examination.—The tumours were found, on section, to present a finely granular appearance, with a faintly visible reticular stroma, studded sparingly with blood-vessels. In parts, a cellular structure could be made out, the cells being scattered about in a fine stroma in an irregular way, with no tendency to any alveolar arrangement. For the most part, the cells seemed to have undergone granular degeneration and to have lost their original outlines, but not uniformly so, for here and there the cellular structure was very evident. The cells were of a somewhat varying character, the more numerous having the appearance of free nuclei of about 1-500th of an inch in diameter, whilst the larger ones were distinctly nucleated, and measured about 1-250th of an inch. The edge of the tumour was visibly distinct from the nerve-tissue, the tumour being surrounded by a membrane of a finely fibrous texture, containing a very large number of blood-vessels. In section, a dark coloured ring, consisting of a number of vessels lying almost side