

Cases of intra-cranial tumour / by Byrom Bramwell.

Contributors

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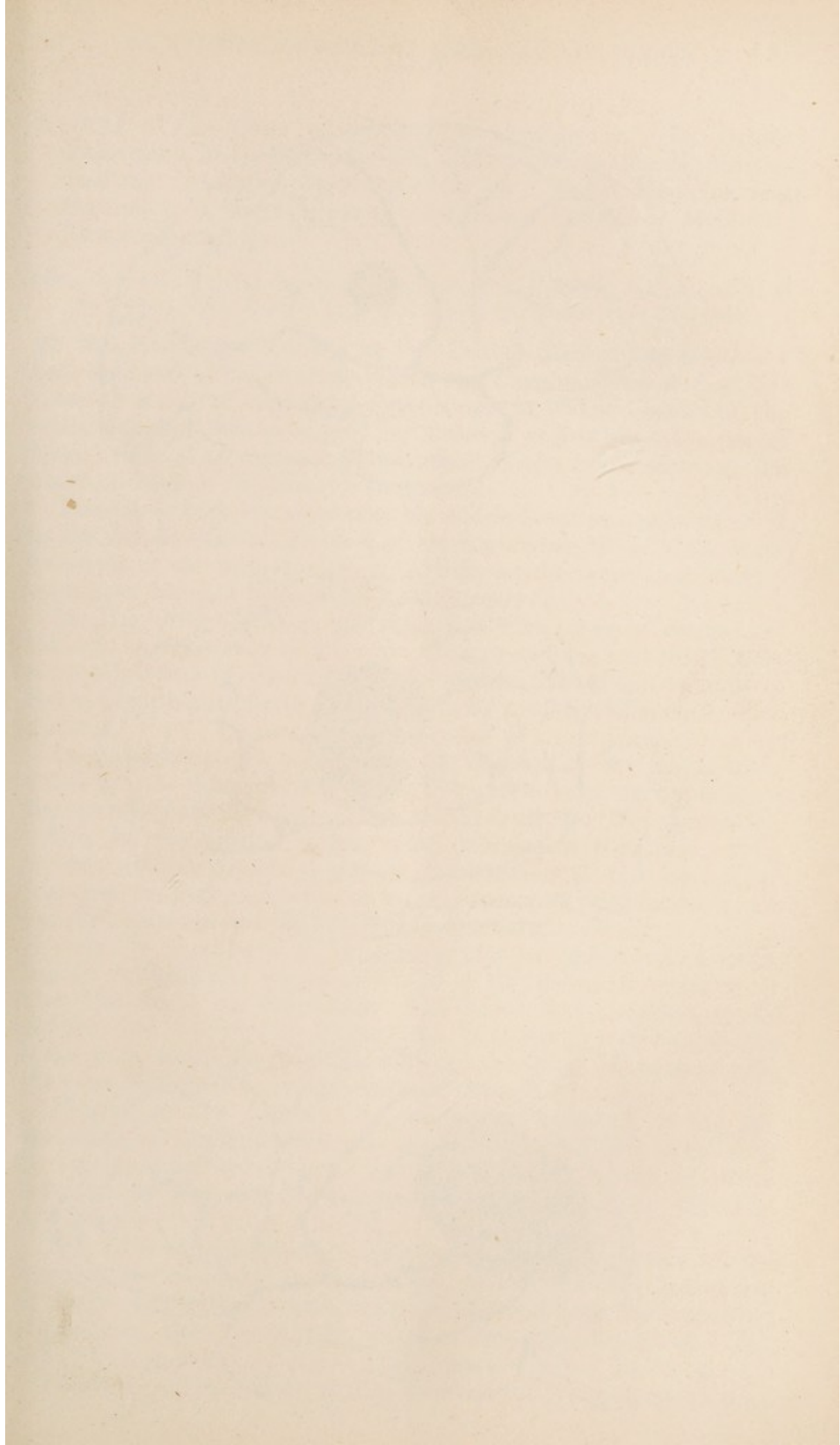


Fig 1.

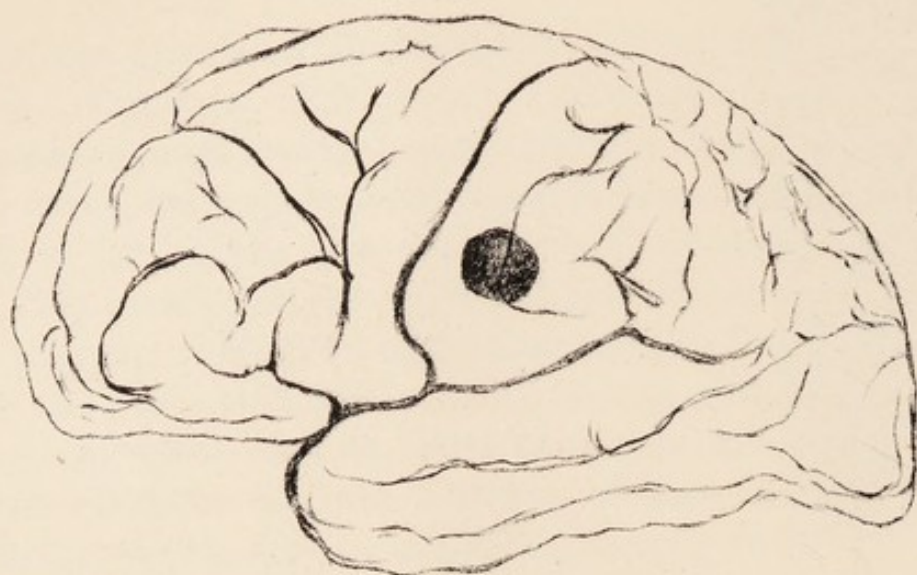
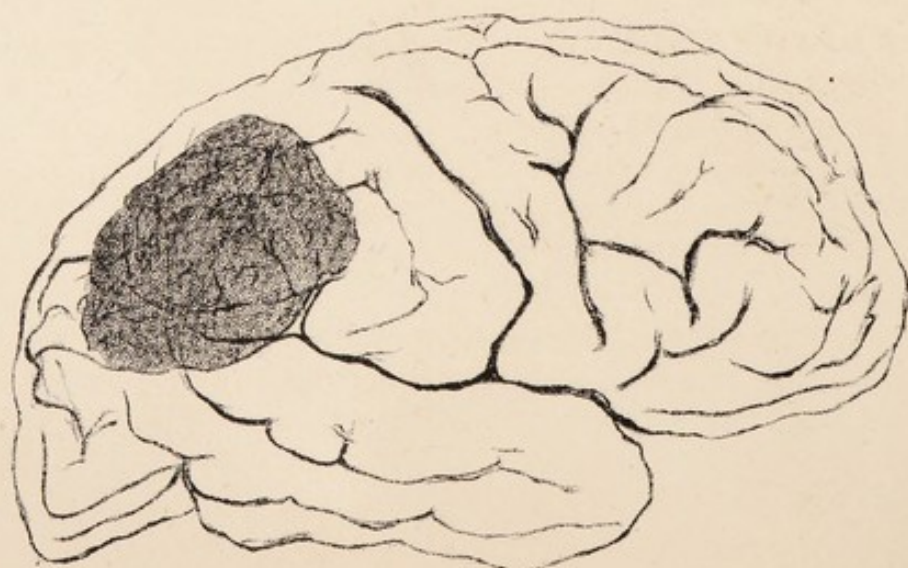


Fig 2.



Fig 3.



ARTICLE VII.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Read before the Northumberland and Durham Medical Society, and communicated in abstract to the Medico-Chirurgical Society of Edinburgh on 5th June.)

AT the Edinburgh meeting of the British Medical Association I had the honour of reading before the Psychological section the notes of a case of unilateral convulsions, in which a lesion of the cerebral cortex was produced by a small projecting spiculum of bone. (The skull cap and photographs of the brain showing the exact position of the lesion were exhibited.)

The case, which is a very valuable and instructive one, is reported in the *British Medical Journal* of 1st September 1877. I am glad, however, of an opportunity of adding to the somewhat meagre comments which I have already made upon it.

Dr Hughlings-Jackson has remarked that cases of disease are the *only experiments* which we can observe *in man*, and that "there is no other way of ascertaining the localization of movements in the cerebral hemispheres of *man*, than by a study of his convulsive seizures."

In most cases the experiment is necessarily a "rough one." Cases of this description—I refer to cerebral tumours implicating the convolutions—are notoriously of long duration. The symptoms, which in the earlier stages were perhaps well-defined, often become complicated towards the termination of the case. The post-mortem lesion is found to be proportionately extensive, hence the deductions drawn are more or less uncertain.

It would be difficult to imagine a case of disease which more rigidly fulfilled the requirements of a physiological experiment than the one I am describing. The lesion was singularly well-defined and of limited extent, the remaining portions of the brain were absolutely healthy, and the resulting phenomena, *i.e.*, the convulsions, were most definite in character.

Position of the Lesion.—The lesion was situated in the left *ascending parietal convolution*, an inch above the fissure of Sylvius. It corresponded to a small transverse fissure which extended between the fissure of Rolando and the parietal fissure. (See Fig. 1, Plate i.)

The very careful microscopical examination which was kindly made by my friend Dr Herbert Major, showed that the destruction of brain tissue was exceedingly small, and yet the resulting phenomena, the convulsions, were of considerable extent. The lesion was, in short, a "discharging," not a "destroying" one.

Character of the Convulsions.—The convulsive paroxysms were

of three kinds—*slight*, *moderate*, and *severe*. In all “the march of the spasm” was the same.

In the *first* or *slight* form, the muscles of the face and neck were alone affected. Both eyes were firmly closed, and the right corner of the mouth drawn down in tonic spasm, the platysma being rigid. The eyes were then partly opened; the head and eyeballs slowly rotated to the right. Clonic spasms next occurred in both eyelids, the right being affected much more powerfully than the left; in the muscles of the tongue, right side of the face and neck, the platysma being chiefly affected. After a short interval the spasms became less frequent, the head and eyeballs were slowly turned back to the middle line; the eyelids were widely dilated, and the patient presented an animated appearance. The eyeballs were finally rotated upwards and to the left, the eyelids closed, and the patient apparently fell asleep.

In the *second* or *moderate* form, the convulsions commenced as before. After the head had been rotated to the right, and as the clonic spasms were commencing, the fingers of the right hand were drawn in to the palm, the hand was then flexed at the wrist, the forearm bent to a right angle and placed across the chest. The muscles of the right leg at the same time became rigid, and the foot strongly inverted. Clonic spasms then occurred in the muscles of the arm and forearm, the flexors being chiefly affected. A few spasmodic twitchings were to be seen in the leg and thigh, chiefly in the extensors. There was never any flexion of the hip or knee.

In the *third* variety the convulsions became general. The fit commenced as before, and passed through the various stages enumerated above. After flexion of the right forearm, the arm was slowly raised at the shoulder until it was nearly at a right angle with the body, the tonic spasm then passed to the muscles of the left arm and of the left leg in the following order:—The fingers of the left hand were first drawn in to the palm, the arm was then raised upwards and brought over to the right side, so that the hand approached the forehead, the left leg was at the same time flexed upon the abdomen, the knee being slightly bent, the toes spread out, and the foot flexed at the ankle-joint. The tonic spasm soon passed off. Clonic spasms of the muscles generally occurred, the patient foaming at the mouth, and making a cackling noise. As the clonic spasms occurred, the left arm was abducted and placed at a right angle with the body, the under surface of the arm, forearm, and hand being uppermost. As the spasm passed to the left arm and left leg, both sides of the face were strongly convulsed.

The muscles of the right side were always more strongly affected than those of the left.

Frequency of the Convulsions.—The *slight* fits occurred every few minutes, the *moderate* ones frequently, the *severe* ones only occasionally—six or eight in the twenty-four hours.

Remarks.—The following conclusions may, I think, be fairly drawn from this case:—

1st, That a limited “discharging” lesion of the human cerebral cortex produces definite and constant muscular movements.

2d, That the action of the hemispheres is in general crossed, but that movements of those muscles which act habitually together, such as the orbiculares palpebrarum, are bilaterally co-ordinated from such hemisphere (Dr Broadbent’s *Hypothesis of the Mechanism of Bilateral Movements*).

3d, That the muscular movements which resulted in this case from irritation of a particular spot in the cerebral cortex closely corresponded to the muscular movements which Ferrier produced by galvanic stimulation of homologous centres in the lower animals.

The position of the lesion corresponds to Ferrier’s centres (11) and (13), and is in close proximity to (a) and (10).

On stimulating these centres Ferrier obtained the following results:—

(11) “Retraction of the opposite angle of the mouth. The platysma myoides is thrown into action, and when this is powerful, the head is drawn slightly to the side.”

(13) “The eyes move towards the opposite side and upwards.”

(a) (b) (c) (d) “Individual and combined movements of the fingers and wrist.”

(10) “Opening of the mouth, with retraction of the tongue.”¹

In the case I am describing, retraction of the opposite angle of the mouth, and rotation of the head and eyes to the opposite side (11) and (13), were always observed. But, in addition, the eyes were closed, and the orbiculares thrown into clonic spasm. Ferrier places the centre for the eyelids (12) in the middle frontal convolution, or its homologue in man, a point at some distance from the lesion in this case. The results then, in this particular, do not exactly correspond.

4th, That the proximate causes of the different epilepsies are, as Dr Hughlings-Jackson supposes, discharging lesions of the centres in the cerebral hemispheres.

5th, “That the limited irritation which manifests itself in a limited convulsion has a tendency to become diffused and to involve the whole of the cortical centres, so that what at first was merely a local convulsive spasm, without affection of consciousness, may gradually gain in range and intensity until, along with the motor perversion, we get the loss of consciousness, which is regarded as an essential factor in the true epileptic seizure.”²

6th, That, in this case, in which the convulsion commenced in the right side and spread to the left, the muscles of the second

¹ *Functions of the Brain*, page 143.

² Ferrier, *Experimental Researches in Cerebral Physiology and Pathology*, *West Riding Hospital Reports*, 1873, page 90.

side first invaded were those most in voluntary use, viz., the muscles of the fingers and thumb.

Cases in which convulsions begin on one side and reach the other, are exceedingly rare. Indeed, no less experienced a physician than Dr Hughlings-Jackson says he has seen few cases, and asks, as to the second side,

"1st, Is the arm or the leg first affected?"

"2d, What part of either of the two limbs does the spasm first reach? Does it first reach their upper parts (shoulder and thigh), or their lower parts (hand and foot)?"

"3d, Does it specially affect any groups of muscles, e.g., extensors or flexors?"¹

In this case, the *upper* extremity was first affected. The spasm commenced in the *fingers and thumb*. The *flexors* of the fingers, hand, and forearm were chiefly involved. (For the exact order of the spasm, see page 142.)

This is contrary to Dr Hughlings-Jackson's theoretical view. He says, "We should expect, then, that when a fit begins in the hand of the 'first side,' that the spasm in the convulsion of the 'second side' would invade the parts of the second side in a manner different from the invasion of the first side." And, again, "From a few observations, and from hypothetical considerations, I should expect that when a convulsion begins in the hand, the spasm reaching the 'second side' would affect first and most the parts affected last and least in the 'first side' (head, eyes, leg, trunk first, and limbs last)."²

Before passing on to the other cases of intra-cranial tumour which I propose to record in this paper, I will relate a case of acute tuberculosis in which a lesion of the *right ascending parietal and ascending frontal* convolutions caused left-sided unilateral convulsions.

CASE II.—*Acute Tuberculosis. Cough. Shortness of Breath. Sudden Loss of Power in the Fingers and Thumb of the Left Hand. Left-sided Unilateral Convulsion without Loss of Consciousness. Post Epileptic Hemiplegia and Aphasia. Convulsive Twitchings of Left Platysma and Left Orbicularis Palpebrarum. No Headache. Autopsy: General Tuberculosis; Limited Deposit on the Surface of the Right Ascending Frontal and Ascending Parietal Convolutions; Healthy Condition of the Membranes of the Base.*

G. S., æt. 27, a labourer, single, was admitted to the Newcastle-on-Tyne Infirmary, under my care, on 27th January 1876, suffering from cough, shortness of breath, and left-sided hemiplegia.

His illness had commenced five weeks previously, after exposure to cold. The first symptoms were cough and shortness of breath.

¹ *West Riding Hospital Reports*, 1873, page 338.

² *Ibid.*, vol. vi. page 293.

There had been neither pain nor expectoration. Before the attack his health had always been remarkably good.

On 8th January, three weeks before admission, and two weeks after the commencement of his illness, he suddenly lost the use of his left hand, so that the shovel with which he was working fell to the ground. There was no trembling nor twitching in the muscles before the paralysis set in. He was not giddy. There was no headache nor affection of speech.

On 13th January, at 9.30 P.M., he was seized with a convulsive trembling in the left arm, leg, and left side of the face. The fit continued for three quarters of an hour; both eyes "worked." He was quite conscious during the attack. When the convulsion passed off he found that he was unable to speak, and that he had lost the use of his left arm and leg.

On 15th January he had a second and similar fit.

On 17th January a third.

Since the date of the last fit he has been gradually regaining the power of the arm and leg. Speech returned on 18th January. When he did begin to talk, he had no difficulty in finding words, only hesitation and difficulty in pronouncing them. He has been in the habit of using his left hand as much as his right, because, he says, of a rupture on the right side. He is not, however, left-handed in the true sense of the word.

He has not had any headache or vomiting.

He has not suffered from syphilis.

The family history is good.

Present Condition.—The patient, who is an intelligent man, is very drowsy, and looks extremely ill. The temperature is 103° F.; pulse, 100; respiration, 34; the lips dry and cracked; the tongue brown and tremulous. Both lungs are extensively consolidated, the left at its apex, the right at its base. On auscultation metallic crepitation is heard over the dull areas, and sibilant râles over the other parts of the chest. There is frequent cough, but little expectoration.

There is marked loss of power in the left arm, left leg, and left side of the face. The tip of the protruded tongue is turned to the left side. The paralysis is complete in the fingers and thumb of the left hand. Sensibility is lost in the left thumb and forefinger, impaired in the other fingers, and in the forearm.

There are frequent convulsive twitchings of the left platysma, left orbicularis, and left levator palpebræ superioris.

The pupils are equal and moderately contracted. On ophthalmoscopic examination the discs look red, and the veins are large and tortuous, but there is no cedema.

The other organs seem normal.

Progress of the Case.—On 1st February the urine contained a small quantity of albumen and some hyaline and granular casts. After this date he rapidly got worse, and died on 9th February,

No new nervous symptoms developed. The temperature averaged, morning $102^{\circ}5$, evening $103^{\circ}3$, the highest morning temperature being $104^{\circ}8$, the highest evening temperature $104^{\circ}6$.

The pulse averaged, morning 106, evening 115. The highest evening pulse was 148, the lowest 82.

The post-mortem was made twenty hours after death. The lungs were stuffed with miliary tubercles. There were several small cavities in the left apex; both bases were consolidated. Some of the deposits were caseous. The peritoneum was studded with tubercles. The pelves of both kidneys were studded with tubercles, the deposits varying in size from a pin's head to a split pea.

The arachnoid and pia mater were adherent to the brain tissue in the neighbourhood of the right fissure of Rolando, and there were on the surface of the ascending parietal and ascending frontal convolutions numerous tubercular deposits surrounded by greenish lymph. These appearances were most marked at the lower parts of the ascending parietal and ascending frontal convolutions. At these parts the brain substance was invaded and softened. (See Fig. 2, Plate i.) The softening extended through the various layers of the cerebral cortex, but did not involve the white matter. There were a few tubercular deposits in the right Sylvian fissure, and one or two in the left. The membranes at the base and over the left hemisphere were normal. The other parts of the brain were healthy.

Remarks.—The lesion in this case was much more extensive than in the one previously related. The parts involved corresponded to Ferrier's centres (*a*), (11), (10), posterior halves of (9), (8), and (7). The resulting phenomena were—convulsions of the opposite arm, leg, and side of the face; paralysis and loss of sensibility in the parts convulsed, and aphasia.

The paralysis which followed the convulsions was evidently "post epileptic" in character. The aphasia, too, was clearly of the same nature. It is interesting to observe that this loss of speech was associated with left-sided convulsions. In explanation I may notice the circumstance that the patient had for some years been ambidextrous; possibly, therefore, in him the speech centre was not confined to the left hemisphere. This explanation must be taken for what it is worth, for the next case shows that in a right-handed person this form of aphasia (post epileptic) may follow left-sided convulsions.

I am doubtful as to the character of the paralysis of the fingers and thumb. The circumstance that the loss of power in these parts was not preceded by any tremor or convulsion gives some weight to the supposition that the paralysis was genuine, *i.e.*, not epileptiform. The fact that the lower end of the ascending parietal convolution was the part most destroyed by the lesion, supports this theory, and confirms Ferrier's observations.

The motor phenomena of the case, then, corroborate the views

of the localizers. It is difficult on the same theory to account for the loss of sensibility, for no lesion of the sensory tract was discovered.

Other points of interest in the case are—

1st, The fact, that the tubercular deposit within the cranium was almost entirely confined to the convexity of the left hemisphere, the membranes of the base, with the exception of a few tubercles in the Sylvian fissures, being healthy.

2d, The entire absence of headache.

3d, The previous robust health and good family history of the patient.

(*To be continued.*)

ARTICLE VIII.—*Note of a Case of Retroversion of the Gravid Uterus.*
By J. B. BUIST, M.D., M.R.C.P. Edin.

(*Read before the Obstetrical Society of Edinburgh, 27th March.*)

ON the 20th of February last I was consulted by J. M., a married woman, 38 years of age. She had had seven living children (being delivered of twin girls on one occasion) and three miscarriages, and she calculated that she was about the middle of the fifth month of her tenth pregnancy. The catamenia last appeared in the beginning of October last year, and she first felt the movement of the child a week before I saw her. She complained of having had some difficulty in passing water ever since the disappearance of the menses, and that the difficulty had increased somewhat during the preceding ten days. She had no pain, but felt a burning sensation during the act of micturition. Her bowels were habitually confined, so that she required to take aperient medicine regularly. Except an occasional feeling of lassitude, her health was otherwise good. She had been troubled with difficulty in passing her water during two former pregnancies, but a mixture prescribed for her by her medical attendant gave relief on both of these occasions, and she now wished me to prescribe something similar for her. I ordered an alkaline mixture, and told her that if she was not relieved by it, that it would be necessary for me to make a local examination to ascertain the cause of the difficulty. On 24th February she had felt considerably better since she commenced taking the medicine.

On the 28th of February I received an urgent message to go to see her, as she had been taken very ill during the night. On my arrival she informed me that she had been washing and hanging out clothes on the previous day, but that she did not feel anything wrong till about three o'clock that morning, when she was suddenly seized with violent pain in the lower part of the bowels. She felt so uneasy when in bed that she had got up and dressed herself. She could neither sit nor lie down without great discomfort, and

felt easier when walking about. The difficulty in passing water had increased very considerably, but it was not entirely stopped. She could only pass a little at once, and the desire to micturate was more frequent.

As she was out of bed I did not make a local examination, but prescribed a grain of opium and two grains of camphor in a pill to be taken every three hours till the pain was relieved. She was also to have hot applications to the bowels. On 1st March she was no better. She was in bed, and had passed a very restless night. There was still great pain in the lower part of the abdomen, accompanied by a constant desire to pass water, but she was now unable to pass any.

On examining the abdomen, it was not uniformly distended. There was a large rounded swelling to be seen immediately above the pubes, occupying the hypogastric region, and extending upwards nearly to the umbilicus. It was well defined, fluctuating, and very tender on pressure. It was also dull on percussion. There was no pain on pressure in either of the inguinal regions beyond the boundary of the tumour. From the history of the case, the physical signs, and situation of the swelling, there was no doubt that it was the distended urinary bladder. Before passing a catheter to empty the bladder, I made a vaginal examination. On passing the finger into the vagina, it was stopped about an inch from the posterior fourchette by a large rounded tumour which filled up the hollow of the sacrum, and caused the posterior wall of the vagina to bulge forward till it was close behind the pubes. The cavity of the pelvis was completely filled by the tumour, which appeared to be as large as the head of a child at full time. On searching for the os uteri, it was found high up behind the pubes directed upwards and forwards. In front and above it could be felt the distended bladder. The forefinger could be passed into the os externum. Both lips were tense. The cervix and posterior vaginal wall were stretched tightly over the tumour. The tumour itself was firm, elastic, and tender on pressure. On making a sharp, sudden impulse against it, a body, apparently floating in fluid, could be distinctly felt to move away from the fingers. From the foregoing particulars I concluded that the retention of urine was caused by the complete retroversion of the gravid uterus.

Having fully satisfied myself of the nature of the case, I first passed a catheter into the bladder, and drew off about three pints of urine. This at once relieved the pain. I then tried to remedy the uterine displacement. The patient being on her left side, I introduced two of the fingers of my right hand into the vagina, and stretched the perineum backwards towards the coccyx till I got well behind the tumour. I then directed the palmar aspect of the fingers forwards, and pressed steadily and firmly upon the tumour upwards and forwards in the axis of the inlet of the pelvis. I exerted the pressure successively upon what appeared to be its

distend the bladder to a large size, distention of the rectum is all that is required to make the parts suitable for the operation.

4th, That the pouch of Douglas is always raised by distention of the rectum. In Case No. V., where the rectum is absolutely empty, it is situated at a distance of 84 mm. below the level of the conjugata vera; but in Case No. I., it is only 22 mm. below that level.

5th, That the displacements of the bladder by distention of the rectum with an indiarubber bag are, as may be seen in Fig. 1, not caused by the raising of the perineum, but by the stretching of the urethra in its so-called fixed parts. The prostate is stretched to nearly double its ordinary length, and is also flattened. The membranous part is not quite so much stretched, but is longer than normal. The urethra, therefore, is apt to vary in its length, and curve according to the state of the distention the rectum is in. Of course, besides this, there are other causes which make its length and curve vary.

6th, That the distance of the peritoneum from the anus varies not only in different individuals, but also in the same individual at different times, according to the greater or less distention of the rectum.

In this paper we have only treated of the displacements that take place in the male; but as it is equally important to know what displacements occur in the female under similar conditions, we hope to make that the subject of future investigation.

EXPLANATION OF PLATE.

FIGURE I.—Longitudinal section through a frozen body with the rectum much distended (artificially).

FIGURE II.—Longitudinal section through a frozen body with the rectum filled (naturally), but not distended.

1. Peritoneal fold passing over the bladder from the abdominal walls.
 2. The bladder.
 3. Internal orifice of urethra.
 4. The prostate.
 5. Dorsal vein of penis.
 6. Bulbous portion of urethra.
 7. Cowper's glands.
 8. The upper end of the membranous portion of the urethra.
 9. Peritoneal fold forming Douglas's pouch.
 10. Prostate.
 11. Abscess in the bulbous portion of urethra.
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ARTICLE IV.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Continued from p. 147.)

CASE III.—*Female, æt. 19. Head injury, followed by some hours of unconsciousness, two years before admission. Second fall a year after the first. Probable Syphilis. Constant and severe headache, worse at night. Left-sided Unilateral Convulsions, commencing in the Fingers of the left hand, and preceded by a well-marked Aura. Post-epileptic Aphasia. Speech clear and distinct during the fits. Relieved by Iodide and Bromide of Potassium.*

H. W., æt. 19, a governess, was admitted under my care on 30th March 1876, complaining of headache, difficulty in speaking, and fits.

She stated that she had enjoyed good health until two years before admission, when she got a fright and became nervous and hysterical. In September 1874 she fell on the ice, striking the back of her head. She was unconscious for some hours afterwards. In June 1875 she fell off her horse "in consequence of a giddy feeling in the head." In July 1875 she had a second fall from her horse and rolled down a steep bank, hurting her head severely. In November 1875 she began to suffer from constant and severe headache, and soon afterwards to take fits. After the third convulsion her speech became affected. The headache and fits have continued almost daily until the present time. Her memory and powers of application are so much weakened that she has been obliged to relinquish a good situation in America.

In June 1875 she suffered from sore throat, and soon afterwards some brown spots appeared on her chest.

The Family History is good.

Condition on Admission.—The patient is very intelligent and well educated. Her memory is extremely bad. She complains of severe headache. The pain, which is generally worse at night, is referred to the right side of the head and to the vertex.

The exterior of the skull is normal.

Sensibility of all kinds seems natural.

Hearing, taste, and smell are natural. *Sight* seems good, though she says it is slightly impaired. The pupils are equal and moderately contracted. The veins of the fundus are large, but there is no œdema of the disc.

Speech is slow and indistinct, and is attended with great effort and twitching of the facial muscles. The patient often hesitates

in the middle of a sentence, and after a great effort gets out what she wants to say. At other times she stops short apparently unable to remember the word she wants. She can repeat the alphabet, but cannot say it herself, nor can she write it correctly. In writing she often makes the same mistakes as in speaking.

Convulsions.—She is seized, four or five times a week, with epileptiform convulsions. The fit is preceded by a well-marked aura: She invariably feels a stinging sensation in the tip of the middle finger of the left hand; this sensation lasts for about three minutes and then passes slowly to the metacarpal joint of the finger; after reaching this point it passes with great rapidity up the ulnar aspect of the forearm to the elbow; she then becomes unconscious and convulsed. The spasm commences in the fingers of the left hand. (I never myself saw the commencement of a fit, and was unable to ascertain the finger first affected.) The muscles of the left arm, left leg, and left side of the face are affected. A few twitchings also occur in the right orbicularis palpebrarum. Sometimes during a fit, and while she is apparently quite unconscious, she talks distinctly and without any hesitation. I myself saw her on one occasion when the fit was fully developed. She was apparently quite unconscious; the conjunctivæ were insensible; tonic and clonic convulsions of the left arm, leg, and side of the face were occurring; and she was talking without any hesitation or difficulty. During this attack, which lasted for three minutes, the facial muscles were only slightly affected.

As a rule the duration of a fit is from ten to twenty minutes. The fit always commences in the same manner, and the spasms are always limited to the left side. After a fit she generally complains of numbness and weakness in the left arm.

She can arrest the fit by tying a ligature tightly round the finger at the commencement of the aura. She does not, however, make a practice of stopping the fit in this way, as it causes her to be "queer and stupid in the head." This sensation lasts until the occurrence of another fit, which soon comes on, and is invariably severe.

The patient is well developed and extremely well nourished. The *alimentary, circulatory, respiratory, urinary, and integumentary* systems are normal. Menstruation occurred on the day of admission to the hospital. It had not been present for two years previously.

Progress of the Case.—She improved considerably under full doses of iodide and bromide of potassium, and was made an out-patient on 2d May. She continued to attend for several months. When last seen her condition was as follows:—The headache had almost disappeared; the fits occurred much less frequently, one every six or eight weeks; the character of the convulsions had changed, the aura commenced on the inner side of the left thigh, and the spasm first affected the calf of the left leg; speech was very much better, though still far from natural.

Remarks.—This was a typical case of unilateral convulsions. If we accept Ferrier's localization, we may conclude from the facts that the spasm commenced in the fingers of the left hand, and that the upper extremity was chiefly affected, that there was a discharging lesion of the right ascending parietal convolution. That the exciting cause was the presence of a gross syphilitic lesion is, I think, probable from—

1st, The style of the symptoms; severe localized headache, worse at night; repeated unilateral convulsions; and the good condition of patient.

2d, The history of sore throat and rash.

3d, The improvement under iodide of potassium.

4th, The absence of any other apparent cause of limited softening, such as embolism.

The lesion probably consisted of a limited adhesion of the membranes with softening of the subjacent brain tissue. Possibly, too, from the severe character of the headache, there was some affection of the bone or periosteum. The absence of swelling of the discs showed that there was no great increase of the intra-cranial tension.

The chief point of interest in connexion with the case is the remarkable fact that speech, which was very greatly affected during the intervals, was sometimes quite natural during the convulsive paroxysms. I am unable to give any explanation of the circumstance, which seems quite contrary to all experience, and content myself with simply placing it on record. Dr Hughlings-Jackson says—"Elaborate mental states do not occur during an epileptic discharge—as a direct result of the discharge we mean. . . . Except at the onset of epileptic seizures, when there are crude mental states, such as coloured vision, there occur no *psychical states* of any kind during, but only *physical effects from*, the excessive local discharge, whatever the part of the 'organ of mind' may be in which the 'discharging lesion' is situated. . . . No ideas of objects, of words, nor any kind of states of consciousness, occur during the excessive discharges, excepting crude sensations at the outset."¹

The aura in this case was particularly well marked; and the patient's experience as to the effect of arresting the fit is quite in accord with that of Niemeyer. He says, "On the whole compression of a limb, from which the aura seems to proceed, is not advisable, even although we may avert the fit by so doing, since, in the first place, the patient feels worse after thus repressing an attack than if he had had one; and, in the second place, because his next seizure is apt to be of unusual violence."²

The next case is another example of post-epileptic aphasia resulting from intra-cranial syphilis. In it, however, the convulsions were right sided.

¹ *West Riding Lunatic Asylum Medical Reports*, vol. vi. pp. 276 and 280.

² *Text-Book of Practical Medicine*, vol. ii. p. 369.

CASE IV.—*Male, æt. 23. Syphilis Seven Years before Admission to Hospital. Severe Secondary and Tertiary Symptoms. Headache and Epileptiform Convulsions Six Years after the Primary Affection. State on Admission: Intense Headache, worse at Night, and confined to the Left Side of the Head: Periostitis of the Left Temporal Bone: Convulsions of Two Kinds; "Slight," without Loss of Consciousness, confined to the Muscles of the Right Side of the Face and Tongue; "General" preceded by a well-marked Aura, and attended by Loss of Consciousness: Right-sided Post-epileptic Hemiplegia; Post-epileptic Aphasia.*

R. C., æt. 23, single, a sailor, was admitted on 29th August 1875, complaining of intense pain in the left temple and left ear, difficulty in speaking, and fits.

Previous History.—At the age of sixteen he contracted syphilis. The attack was a severe one, and he has never been well since. Fifteen months ago he began to suffer from pain in the left side of the head. Soon afterwards he began to take fits. Four months ago his speech became affected. For several weeks past the headache has been intense.

Family History.—Unimportant.

State on Admission.—He is thin and emaciated. There are numerous white cicatrices, the remains of tertiary ulcerations, on the arms and legs. The left temple is swollen and tender to the touch; the swelling is hard, and extends backwards towards the left ear.

Expression and Mental Faculties.—The expression is dull and heavy; it may be called epileptic, for so characteristic is it that my friend Dr Herbert Major, in coming into the ward, at once said "that is an epileptic." The patient is intelligent and well educated. His memory is very defective.

Sensory Functions.—He complains of great pain all over the left side of the head, and of numbness in the right thumb and right side of the face. Sensibility seems otherwise natural. The pain is always worse at night, and is sometimes agonizing. He sleeps badly, and is much disturbed by dreams.

Speech is hesitating and difficult. He seems unable to get hold of the word he wants, often stopping in the middle of a sentence, frequently stammering and repeating the same word over and over again. He can repeat the alphabet after me readily enough, but when he attempts to say it alone he sticks after a few letters, and says he cannot say the rest. He is, too, unable to write it. Twitchings of the facial muscles are very frequent during his attempts to speak.

Special Senses.—*Sight* is considerably impaired in the left eye, less so in the right. The right pupil is irregular and fixed. On ophthalmoscopic examination, marked neuro-retinitis is seen in both eyes; in the left there is a considerable effusion of lymph

about the disc. *Taste* and *smell* are natural. *Hearing* in the left ear, both to external and skull sounds, is, he says, gone. Hearing in the right side is normal, except that he professes not to hear the skull sounds when the tuning-fork is placed over the swollen part of the left temple. This observation was repeated several times, and always with the same results. The skull sounds were conducted from all other parts of the head, the right ear being of course closed by the finger in the usual manner.

Muscular System.—The gait is somewhat peculiar, the patient swaying from side to side every third or fourth step. There is no paralysis, but he says he has loss of power in the right side after the fits.

The Convulsions are of two kinds: slight and severe. In the slight form the muscles of the right side of the face and tongue are alone affected, and the patient does not lose consciousness. In the severe fits all the muscles of the body are convulsed. The severe fit is always preceded by a well-marked aura—a stinging sensation in the tip of the right thumb, which quickly passes to the fingers of the right hand, and thence up the right arm to the cheek; he then loses consciousness, and is convulsed. The spasm begins in the right hand and right side of the face, but soon becomes general. The right side is, however, always affected much more powerfully than the left. I was never able to ascertain the exact manner in which the spasm commenced, *i.e.*, whether in the hand or face.

The severe convulsions are generally followed by loss of power in the right side of the face, in the right arm, and sometimes in the right leg. The aphasia, too, is always worse after a bad fit.

The *co-ordination* and the *reflex functions* are natural.

The *temperature* is 99° F.; the *pulse* 100.

The *other organs* are natural.

The *treatment* consisted in the administration of full doses of iodide of potassium and the application of tincture of iodine locally.

Subsequent progress of the case.—On 9th September he was almost free from pain, and was sleeping well. The swelling and tenderness over the left temple had almost disappeared. The power of hearing was returning in the left ear. There had been no severe fit since his admission.

On 10th September he fell off his chair and remained unconscious for two hours. The attack was not attended by any convulsive spasm. When he came to himself he could not speak, and was quite unable to move the right arm, leg, or right side of his face. I saw him eight hours after the attack. He was then beginning to regain motor power and could say a few words. He could move his tongue in any direction, but was some time in making any particular movement with it after having been told to do so.

On 12th September he was very much better. The paralysis had

almost passed away. The urine contained large quantities of phosphates.

On 1st October it was noted: For some days past the face has been swollen and puffy about the eyelids. The swelling exactly resembles the œdema of Bright's disease; it is worse in the morning; there is no pain nor redness, nor is there any trace of conjunctivitis. The urine contains no albumen, but is loaded with phosphates.

On 7th October the iodide was discontinued on account of dyspepsia, and a mixture containing iron and quinine was subsequently ordered.

On 14th October he had a severe fit, but it was not followed by paralysis.

On 17th October there was another severe fit.

On 21st October there were two general convulsions. The iodide was again prescribed.

On 28th October he felt so much better that he applied to be made an out-patient, and was discharged accordingly. Since the iodide was recommenced there had been no severe convulsion. He was free from headache, sleeping well, and eating heartily. Sight was considerably improved, the swelling of the discs had almost disappeared, but there was still some lymph remaining about the vessels.

The patient attended, after his discharge, as an out-patient, and continued to improve.

On 6th January 1876 he felt sufficiently well to be able to take a situation as a brewer's travelling clerk. For some months previous to this date he had not had any severe convulsion. He still suffered from slight fits, which he described as "a choking sensation in the throat." He found that reading or fixing his eyes intently on any object, invariably brought on one of those choking fits. He still continued to take the same dose of the iodide.

Toward the beginning of October 1876, the fits became more frequent and the headache returned; his mental condition underwent a marked alteration; he became stupid and childish; his memory, which had greatly improved, again failed.

On 30th October he was readmitted under my care. For several days he had been quite "wild" and unmanageable. He had a severe fit in the train on his way to the hospital. On admission he was stupid and excited, throwing himself about and talking wildly. The tongue was very foul and the pupils markedly contracted. His mother stated, that for some days he had complained of a pain at the back of his head, more to the right than to the left side. A brisk purge was administered, ice bags were applied to the head, and the iodide was again prescribed (xxx. gr. three times daily), together with mercurial inunction.

On 3d November he was improving; the quantity of iodide was increased (xxx. gr. five times daily).

On 20th November he was very much better, the fits less frequent, the headache less severe.

On 27th November he was worse, shouting out continuously because of pain in the back of his head. Opiates, bromide of potassium, and chloral hydrate were all in turn tried. The dose of iodide was discontinued.

On 9th January he was free from pain, but very stupid and imbecile. He had a severe convulsion and several slight ones.

On 12th January it was noted: He has been very costive for several days, two drops of croton-oil being required to produce a moderate evacuation.

On 12th February he was very much worse. On this day he had eighteen or twenty slight fits.

On 13th February he was completely comatose, passing his urine and fæces in bed. He continued in this condition for five days, and then, contrary to expectation, recovered.

On 18th February he was sensible, but unable to speak; the lower jaw seemed retracted.

On 20th February a papular eruption, exactly like the eruption of smallpox, appeared on the face and upper half of the trunk. Some of the papules subsequently became pustules, but none were umbilical. Ten drops of liquor strychniæ were ordered to be taken thrice daily. From this date he improved.

On 22d March he was better than he had been for months.

On 23d March he had a severe general convulsion. The iodide was again repeated, and a mercurial bath was ordered every other day.

On 31st May he was discharged considerably improved, but still unfit for work. He continued to attend from time to time as an out-patient. When last seen, 1st July 1878, he stated that the fits occurred on an average once a week, that he very seldom suffered from headache, and that he was able to do housework, run messages, etc.

Remarks.—The case is a good example of the ups and downs of cerebral syphilis, and strikingly illustrates Heubner's remarks on this subject. He says—"But what gives to this disease (*i.e.*, cerebral syphilis) its special peculiarity is not the somewhat rare occurrence of a rapid transition into symptoms leading to a fatal end, but rather the fact that this cerebral disturbance, apparently so severe, and hardly capable of recovery, may sometimes, under suitable treatment, but sometimes without it, be completely removed, and again give place to an almost normal condition. The peculiarity which, in addition to the great varieties of the symptoms, gives to cerebral syphilis this paradoxical, vacillating, startling character, is this, that its accidents, just as they develop unforeseen up to a certain intensity, may again vanish in the same remarkable way."¹

¹ Heubner on Syphilis of the Brain and Nervous System, *Ziemssen's Cyclopædia of Medicine*, vol. xii. p. 327.

The practical lesson to be drawn from such cases is, that however grave the symptoms may be in a case of cerebral syphilis, the prognosis is never utterly hopeless; and since the syphilitic is the only form of intra-cranial tumour, which, so far as our present therapeutic resources go, can be with any certainty influenced by treatment, it behoves us in all cases of cerebral tumour to adopt an energetic anti-syphilitic treatment — large doses of iodide of potassium, 30 or 40 grains three times daily, and mercury, until moderate salivation is obtained.

In the administration of the iodide I at once begin with the full dose—30 grains three times a day—and I have no hesitation in continuing it for months. I have never seen albuminuria or any bad result, other than a temporary dyspepsia, produced by it. This particular patient, for example, took 30 grains of the drug three times daily for at least twenty months without the slightest injurious effect.

Before leaving this case I should like to draw attention to the fact that œdema of the face, exactly resembling the œdema of Bright's disease, was associated with the presence of phosphaturia. I have met with at least three other examples in which the same circumstance occurred; in all three cases the urine was carefully examined for albumen both during and after the attack, but none was found.

Another point worth noting is the fact that an eruption, at first papular, afterwards pustular, appeared on the face and trunk after the internal administration of large quantities of croton-oil. This was probably only a coincidence, for Professor Sydney Ringer tells me he has never heard of the internal administration of croton-oil producing pustules. I should perhaps add, that some time before the occurrence of the rash the iodide and bromide of potassium had been discontinued.

(*To be continued.*)

ARTICLE V.—*On Hydrophobia: Its History and Cure.*

By Dr ANDREW WILSON.

(*Concluded from page 212.*)

ONE of the most unaccountable features of this disorder has long been recognised in the varying periods of incubation, which intervene between the reception of the poison of hydrophobia and the manifestation of the symptoms of the disorder. This fact is one of the best known regarding the disease, and it is not without its due and often serious effect on the popular mind. For, as may readily be supposed, a person once bitten by a dog which has been rightly or wrongly supposed to have been rabid is regarded, through the belief in a long period of incubation or latency of the disease,

as a doomed man. With a sure and fixed idea regarding the eventual appearance of the symptoms, and with the knowledge that the disease *may* manifest itself after the lapse of a long interval between the bite and the occurrence of active symptoms, the unfortunate individual may be said to live with a veritable sword of Damocles suspended over his head. As we shall afterwards note, a person who has been bitten by a hydrophobic dog is by no means to be regarded as a patient either certain of death or hopeless of cure. And one very important effect of the common belief in the invariable occurrence of hydrophobia after the bite of a rabid dog, is that of inducing a nervous horror of the disease, and of inciting a mental state which unquestionably predisposes to the exhibition of its symptoms. A belief no less erroneous and injurious than the preceding, is that which maintains that a person bitten by a perfectly healthy dog will become hydrophobic if the dog should subsequently become rabid. That this belief is absolutely without foundation, is a conclusion which can be readily arrived at from the exercise of a little common sense, apart from scientific knowledge. Cases in which the bite of a dog, alleged to have been perfectly healthy, has produced symptoms of hydrophobia, will probably be found to present evidence that the dog has not been wholly free from indications of canine madness. Indeed, as every investigator into this matter well knows, even a case which at first presents him with the plainest record of circumstances, will be found on closer examination to require both time and trouble to procure exact evidence of the state of the dog—that is, evidence which will satisfy the demand for accuracy on the part of the scientific investigator.

The fact, however, that a longer or shorter period of inactivity of the poisonous principle, or a period of “incubation,” as we have termed it, intervenes between the bite and the occurrence of active symptoms of hydrophobia, is indicative of the specific nature of the disease. In all disorders arising from the exhibition and development of a special poison within the living body, a latent period occurs. During this period the virus may be supposed to develop its strength and characteristic properties. Assuming that the poisonous material is analogous in its nature—as most physicians now regard the *materies morbi* of specific diseases to be—to low forms of animal or plant life, we may readily explain the occurrence of a period of incubation by a reference to the phenomenon of development, and by supposing that the specific organisms contained within the virus require a certain period to accommodate themselves to their surroundings. A drop of yeast introduced into a sugary solution contains a few *torulæ* or yeast-plants. After an interval, the action of fermentation begins within the solution; and we explain the interval that elapses and the ensuing and characteristic action that commences, by saying that the original and introduced *torulæ* have been developing others in immense numbers, and that only

begun. The latter, as on the previous occasion, was laid aside a few days before the menstrual function was expected to resume its activity, as the patient thought it drove away the pains which she considered peculiar to her being unwell, and from which she now, as in the last month, began to suffer.

She felt assured that at the ensuing period she should see the natural discharge; and at this conclusion she arrived because of the sensations which she experienced. The period occurred, and she came to me to tell me that the menses had begun to flow, and that the distress, mental and physical, was removed.

The second case which I shall mention is that of Miss V., aged 37. For some time she had been, she states, in delicate health, and had been losing flesh. She is of spare habit, but she was some little time since in plump and good condition; the face is pale, thin, and the features are drawn and pinched; the entire of the body is wasted, and its surface pale and unhealthy looking. The bowels are generally constipated, and require medicine to move them.

Suspecting habits of delection, I inquired if she suffered from irritation, and learned she did so, and that to procure herself ease she had recourse to rubbing the parts where the irritation existed.

In tracing the history of her present affection, I gained from her the information, that about six months previously, whilst she was unwell, she got a fright and damp feet; that the menstrual flow was at once arrested and had not since returned, and that from the time of such occurrence she had grown thinner each day, had lost all inclination for food and for society, had been attacked with the violent irritation referred to, and had fallen into the bad state of health which now obtained.

The first indication of treatment was to procure a free evacuation of the fæces, and this was done by means of the sulphate of magnesia. Afterwards the remedial measures were the same as in the case of the first patient quoted. On the morning of the day upon which the menses were looked for, there was a bleeding of the nose, and in the course of the day the catamenial discharge made its appearance. It, however, again on the same day disappeared; on the following morning the epistaxis returned, and with it also the menstrual flow. Since then the patient did well and has been restored to health.

I could recount many other similar cases, but for practical purposes I consider two typical ones sufficient.

The points of interest to which I would draw particular attention are,—1st, The general conditions of the two patients—almost diametric; 2d, The similarity of treatment; 3d, The successfulness of it, though in general conditions the patients were so dissimilar; 4th, The method of applying the electric current, and the effect through the mammary and generative systems aided by the medicinal treatment employed.

ARTICLE IV.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Continued from p. 315.)

The last case which I related was a good example of the pseudo-apoplectic attacks which occur during the course of intra-cranial syphilis; the next is another illustration of the same condition, and is interesting from the fact that motor power was regained before sensibility.

CASE V.—*Left Hemiplegia : Optic Atrophy : Syphilitic Choroiditis : Dementia : Motor Power regained before Sensibility. General Convulsion. Coma. Death. Syphilitic Tumour pressing upon the Right Parietal Convolution and causing Extensive Softening.*

R. S., æt. 41, chemist, single, was admitted to the Newcastle-on-Tyne Infirmary under my care on 12th November 1874, suffering from left hemiplegia.

Previous History.—The patient has led a dissipated life, being both a spirit and opium drinker, and has had syphilis. (The exact date of the primary affection could not be ascertained.) His present illness commenced about a year ago with severe headache and rheumatism. Three months ago he awoke one morning to find that he had completely lost the use of his left arm and leg. For some weeks after the attack he was confined to bed, but of late he has been gradually regaining motor power, and is now able to walk with the aid of a stick. He has never, so far as he knows, had a fit. For some time past his eyesight has been failing.

Present Condition.—He looks much older than his years, his hair being quite grey. He is, however, fat and jovial; his appetite is voracious. His mental powers are very much impaired, memory in particular being very defective.

Motor Power in the left arm and left leg is considerably impaired, and there is complete loss of sensibility in the same parts.

The optic discs are in an advanced stage of atrophy, and the results of extensive (syphilitic) choroiditis are seen in both eyes. There are some characteristic nodes on both tibiæ.

The urine is loaded with phosphates, and is often passed in bed. The other organs are natural.

Progress of the Case.—There was considerable improvement under full doses of iodide of potassium; motor power continued to be regained, and sensibility was partly restored.

On 5th, 6th, and 7th December he suffered from severe headache.

On 8th December he was seized with a severe general convulsion, followed by profound coma, and death in twelve hours.

The Autopsy was made eighteen hours after death. The skull-cap was natural. The dura mater was firmly adherent along the line of the vertex, and was considerably thickened over the posterior part of the right hemisphere. A nodulated mass, the size of a large walnut, and consisting of several distinct tumours, sprang from the dura, and pressed upon the right hemisphere in the neighbourhood of the upper parietal convolution. The cerebral substance surrounding the tumour was almost diffuent; the softening extended throughout the whole of the upper and middle parietal and the upper occipital convolutions, and involved a large tract of the subjacent white matter (see Plate I. Fig. 3, page 141 of this *Journal*).

The other parts of the brain, notably the corpora striata, were healthy. The membranes were in places somewhat thickened and opaque. There were no signs of hæmorrhage, either old or recent. The condition of the vessels is not noted in the post-mortem record.

The tumour was of firm consistency, in some parts almost cartilaginous. On section it was in places of a yellowish green colour. Thin sections presented at first sight a uniform granular appearance, but on more careful examination, especially after teasing, were found to consist of small round and angular cells, many of them in a state of fatty degeneration. In some parts of the tumour a few delicate fibres were seen.¹

There were two cicatrices on the upper surface of the liver. The other organs were loaded with fat, but otherwise healthy.

Remarks.—Clinically this case is chiefly interesting in a diagnostic point of view, for it illustrates the fact that hemiplegia, the result of cerebral softening, may occur suddenly, resembling in its onset an attack of sanguineous apoplexy; indeed, such was the opinion I formed (hemiplegia from cerebral hæmorrhage) when the patient first came under observation, my diagnosis being based upon the history of the attack (the paralysis occurred suddenly during the night), and the fact that the paralysis was evidently organic, *i.e.*, due to a destroying lesion, and not functional (post epileptic). On further examination, however, and after

¹ Some doubt having been expressed at the meeting of the Medico-Chirurgical Society as to the nature of the tumour, I sent a small portion of it to my friend Dr D. J. Hamilton, who very kindly examined it and reported as follows: "About the other tumour, what I have seen of it in the small piece you sent me would lead me to suppose that it was not properly a syphilitic gumma. It consists in great part of the structure of a gumma, namely, caseating inflammatory products; but one thing which would lead me to suppose that it was non-specific, is that there is none of the obliterative affection of the small arteries which one so often almost constantly meets in specific gummata. It is quite possible, however, that the arteries at some other part were thickened in this way. Were such a state of the vessels present, I should say without hesitation that it was a gumma."

having obtained from my brother, Dr J. W. Bramwell, a more accurate account of the previous symptoms, it was evident that the case was not so simple as it at first appeared. The repeated attacks of severe headache, the fact that the patient was manifestly syphilitic, the optic atrophy, and the abundant phosphaturia, suggested the presence of some gross syphilitic lesion, but did not, of course, invalidate the diagnosis of cerebral hæmorrhage,—in fact, rather the contrary, since hæmorrhage in the neighbourhood of a tumour, *i.e.*, in the softened brain tissue around the tumour, is by no means uncommon. The termination of the case, too,—severe general convulsions, followed by profound coma and death,—exactly resembled the effects of a large hæmorrhage.

The lesion was an extensive one, the parts of the brain immediately invaded were the upper and middle parietal and the upper occipital convolutions (see Fig. 3, Plate 1, page 141), the subjacent white matter was largely destroyed, but the exact extent of this destruction I am unable to define; the post-mortem record is silent on the point, and I dare not at this distant period trust my memory to fill in details. The omission is unfortunate, and destroys the value of the case in a localizing point of view. One very interesting point is the fact that motor power was regained before sensibility. Ferrier places the tactile centre in the hippocampal region,¹ and says clinical observers “have demonstrated that rupture or disorganization of that part of the internal capsule, or peduncular expansion of the crus cerebri which lies external to the optic thalamus, causes hemianæsthesia of the opposite side of the body.”² It is probable, therefore, that the lesion extended deeply inwards towards the great ganglia, and if so it is easy to suppose that some of the motor fibres going to the corpus striatum, which was itself healthy, may have become involved. In this way the motor paralysis would be satisfactorily accounted for.

Nature of the Tumour.—Notwithstanding the fact that no obliterative affection of the arteries was found by Dr Hamilton, I am still firmly of opinion that the new growth was syphilitic, for, firstly, the patient was manifestly syphilitic, as proved by the tibial nodes, the extensive choroiditis, and the cicatrices on the liver; and, secondly, the tumour, both in its naked eye and microscopical appearances, exactly resembled the hard syphilitic gumma so well described by Heubner³ in the following words:—“The new growth appears (second) as a yellow, firmer—often as firm as cartilage—dry, friable substance, upon section homogeneous and cheesy, which is found either in the form of somewhat sharply circumscribed larger or smaller tumours, or invading the grayish-red substance just described We find them (the yellow masses) in the form of completely circumscribed, often almost encapsuled

¹ *The Functions of the Brain*, p. 175.

² *Ibid.*, pp. 181, 182.

³ Heubner's “Syphilis of the Brain and Nervous System,” *Ziemssen's Cyclopædia*, vol. xii. pp. 303, 305, 306.

tumours (like cerebral tubercles), around which remains of chronic inflammation, or gray-red new formation may be found. They are as large as an almond or dove's egg, and, in the first place, several often lie together Upon microscopic examination, it seems that this homogeneous mass consists of a granular substance, entirely uniform upon their sections, apparently without further structure, and completely devoid of vessels. When broken up or torn apart, however, it sets free for the first time a multitude of angular or roundish granular elements, which resemble shrivelled or broken cells of roundish shape, and may correspond very well to the remains of the round cells which form the grayish-red syphiloma. Of the other elements, connective tissue fibres, spindle cells, etc., nothing more is to be seen This neoplasm has two favourite seats—the dura mater and the subarachnoid space.”

The dementia in this case was considerable, and bears out Dr Hughlings-Jackson's views as to the functions of the posterior lobe of the right hemisphere.

Dementia to a less degree occurred in the next case which I shall report, and was associated with the presence of a tumour in the fore part of the right frontal lobe. In that case a condition of temporary mania, a symptom of very rare occurrence in cerebral tumours, was observed.

I have no note as to whether the voracious appetite was an early or a late symptom—in all probability it was due to the dementia, and was in no way characteristic of the tumour. I shall afterwards relate a case in which the same symptoms (voracious appetite) occurred early. That is, however, the only case in which I have been able to confirm the observations of Drs Lawson and Bevan Lewis on this point.¹

CASE VI.—Injury to Head: Change in mental disposition: Headache: Vomiting: Convulsions: Optic Neuritis: Paresis of left arm and leg: Sudden attacks of loss of power in both arms and legs, the loss of power being much greater in the left than in the right: Mania: Imbecility: Coma: Death. Interior of Skull-cap studded with minute Spiculæ; Tumour in the middle of the right frontal lobe involving the superior frontal convolution.

D. M., æt. 40, married, formerly a sailor, but lately a pitman, was admitted to the Newcastle-on-Tyne Infirmary on 22d March 1875, complaining of headache, fits, and loss of power in the left arm and leg.

Previous History.—He was an extremely healthy man until a year ago, when a large piece of coal fell upon his head, injuring him severely. He was laid up for a fortnight, and has never been well since. His mental disposition has quite altered. Instead of being quiet and good tempered, he has become irritable and pas-

¹ West Riding Hospital Reports, vol. vi. p. 125.

sionate. His wife thinks his illness is partly due to mental anxiety. (He "got wrong" with a neighbour's wife; the husband was so distressed that he killed himself.) He has suffered from intense headache, and has had several severe epileptic fits. For twenty years he has been a hard drinker, but has not had syphilis.

State on Admission.—He is an unusually strong muscular man. His expression is silly, and he frequently bursts into a meaningless laugh. He answers questions readily, but his statements cannot be depended upon. Some days he is much more stupid than others. He sleeps well, dreams frequently, and often grinds his teeth.

Two inches above and slightly behind the right ear there is a cicatrix, the result of the injury mentioned above.

The headache is at times agonizing; it is generally frontal, and is not worse at night. Stooping causes him to feel giddy and increases the headache.

The right eye is blind from an old injury, but he sees well with the left. The pupils are equal, and moderately dilated. The left disc is markedly œdematous, the veins large and tortuous; the right fundus shows extensive results of the former injury—atrophy of the choroid, with large deposits of pigment and atrophy of the disc.

Hearing, taste, and smell are natural.

He often falls to the ground in consequence of sudden loss of power in the muscles of the left side of the body. In these attacks there is no apparent loss of consciousness, and no convulsive twitchings. There is decided loss of power in the left arm and leg; the motor power in the right arm, right leg, and in both sides of the face, is also somewhat impaired. The muscles on both sides of the body are extremely well developed. He walks without any help, but the gait is peculiar—he takes a few quick steps to the left, and then a few quick steps to the right, often breaking into a short run. There is no muscular tremor.

Co-ordination, sensibility, and speech are natural.

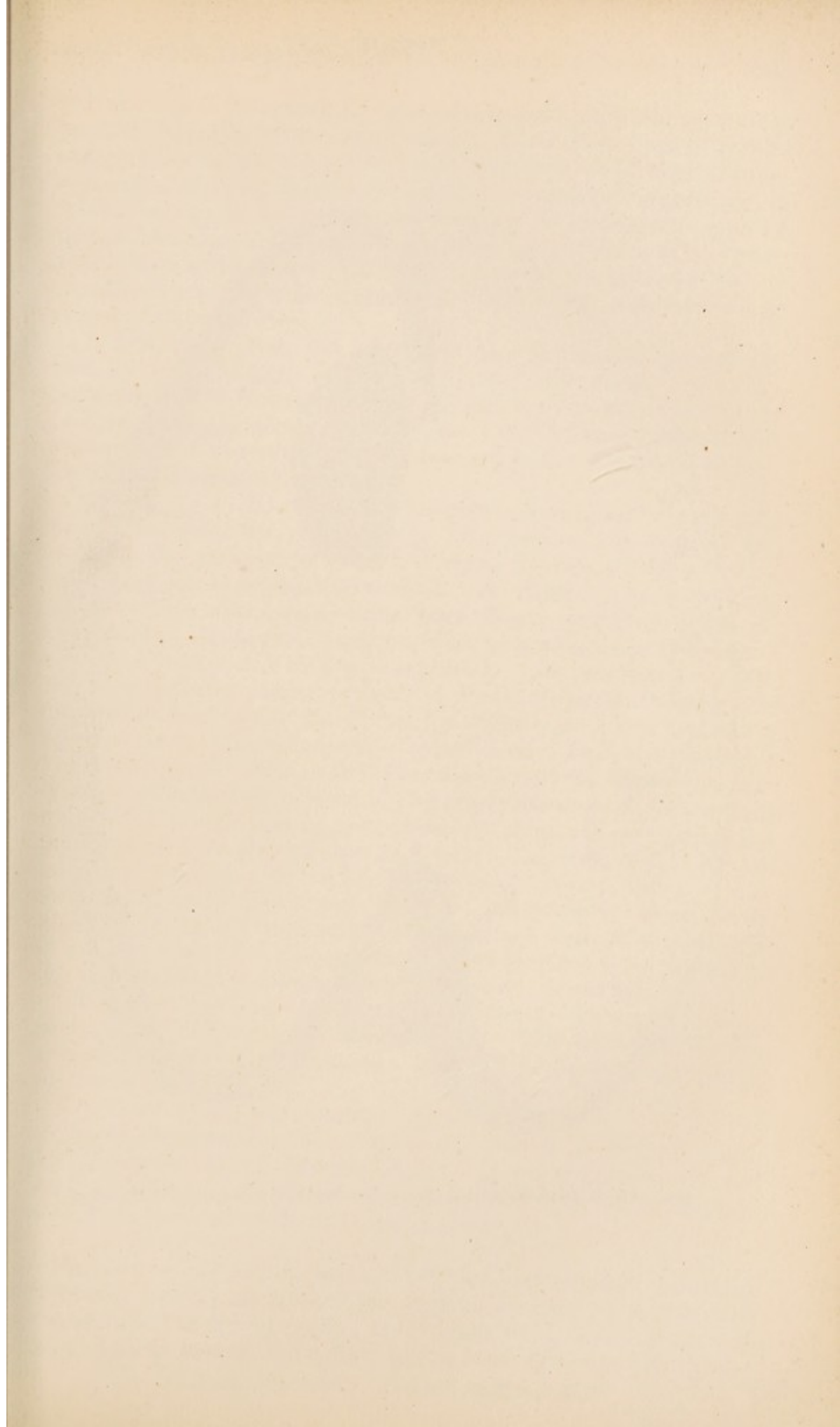
Reflex action is more marked in the right than in the left leg. The *bowels* are costive. He often vomits. The vomiting is evidently cerebral, the tongue being quite clean, and the digestive organs normal. It generally occurs first thing in the morning on getting out of bed.

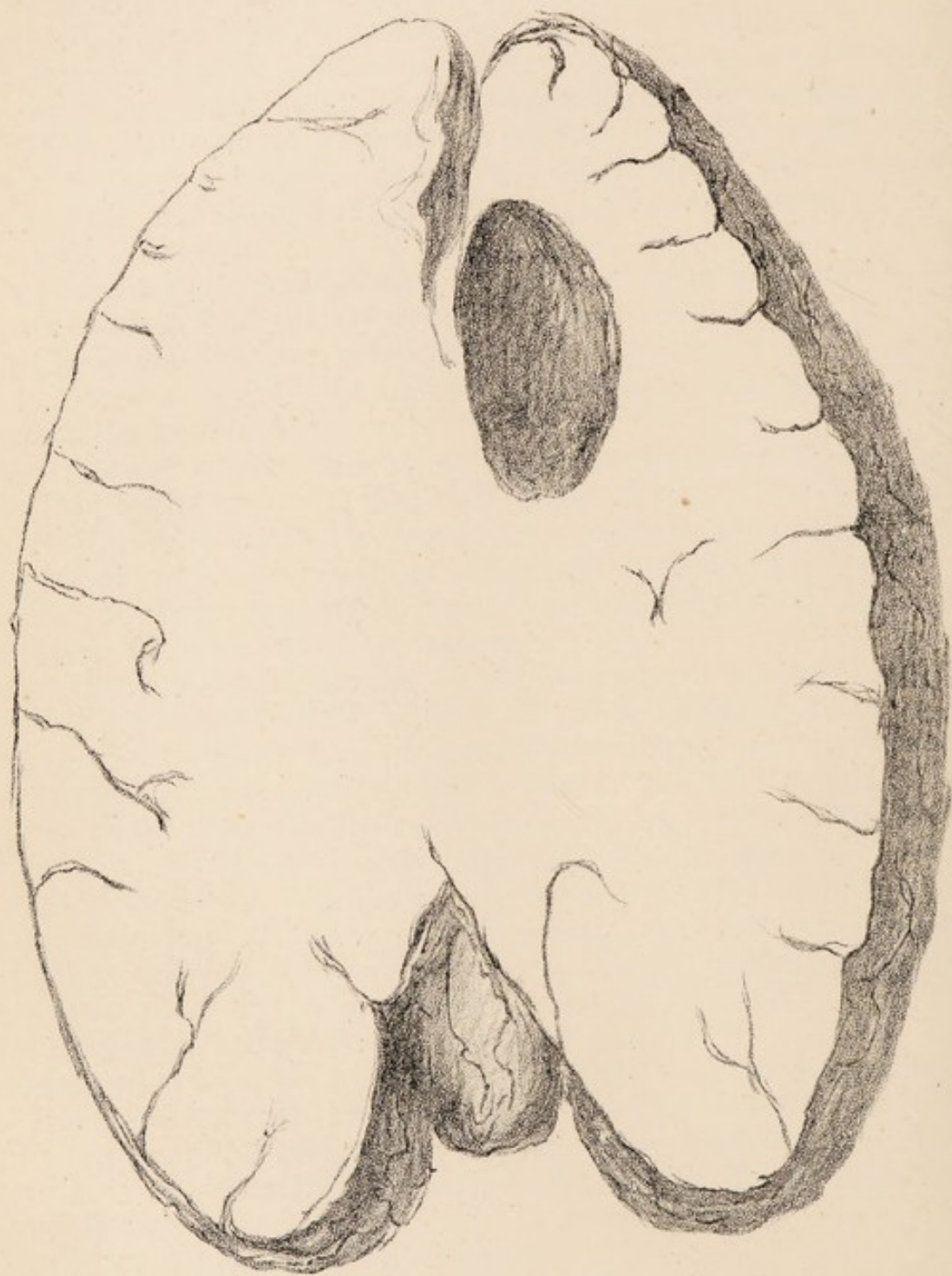
The urine is loaded with phosphates.

Treatment.—Iodide of potassium, bromide of potassium, mercury, ergot of rye, cold to the head, and counter irritation to the back of the neck, were all tried, but without benefit, as is seen in the following notes:—

6th April.—He has been very much worse for the past few days; the headache is intense; he looks stupid; the face is deeply congested. For some days the pupils have been widely dilated.

10th May.—The paresis is so much worse that he is unable to get out of bed without assistance.





Brain of D. M. above the corpus callosum, showing position and extent of the lesion.

14th May.—The muscular weakness has all gone, and there is a marked alteration in his mental state. He is suspicious of everything and everybody; says his wife has been unfaithful to him; will take neither food nor medicine, thinking everything is poisoned; wanders about the ward trying to escape, and says he will do for himself and others if he does not get out. His expression is wild and haggard; the conjunctivæ are deeply congested.

15th May.—He was "quite wild" last night, and was to-day sent to the Asylum.

A few days after his admission the excitement passed off, and he relapsed into his former quiet, silly state. On 18th September 1875 he became comatose, and died on 20th September.

Through the kindness of my friend Dr Wickham I visited him twice, and was present at the post-mortem, which was made twenty-four hours after death.

Autopsy.—The face was pale, the pupils equal, and of moderate size. The scalp was adherent to the bone at the seat of the cicatrix, the position of which I have described above. The exterior of the skull-cap was normal. On removing the calvarium many minute sharp projections were found springing from the inner table. These little spiculæ were pretty equally distributed over both frontal and both parietal bones. The pacchionian bodies were particularly large; several of them projected through the dura mater, and one at the tip of the right frontal lobe had made a considerable excavation in the frontal bone. The dura over both hemispheres was thickened. The vessels on the surface of the brain were gorged with blood. The arachnoid and pia mater were here and there thickened and adherent, these appearances being best marked over the right frontal lobe. The membranes at the base were normal. The convolutions were greatly flattened, and the sulci effaced. The ventricles were considerably dilated. The upper right frontal convolution was softened and gelatinous, and of a pinkish colour. The subjacent white matter in the middle of the right frontal lobe was similarly affected. (See Plate II.)

The other parts of the brain were normal. The vessels were natural, and there was no embolism. The contents of the encephalon weighed 59 ounces; brain, 50½ ounces; cerebellum, 8½ ounces.

The other organs were particularly healthy.

The degenerated portion of brain was placed in Müller's fluid, and forwarded to Dr Herbert Major. It unfortunately did not harden sufficiently to permit of section. From its recent appearance I am inclined to think it was a glioma.

Remarks.—The mental condition of this patient, until the attack of mania, exactly resembled the mental condition of a man who was admitted under my care on 1st October 1874, suffering from an intra-thoracic tumour. In that case¹ a large cyst was found after

¹ See *British Medical Journal*, 3d March 1876.

death in the left frontal lobe. The position of the lesion in the two cases was identically the same, the one being in the right, the other in the left hemisphere. In both cases the superior or first frontal convolution was invaded, and yet there was nothing abnormal in the condition of the eyes, nor was there any apparent loss of extension of the opposite arm and hand—a point of some importance, since Ferrier places the centres for these movements (5) and (12) in this region. It is perhaps worthy of remark, that in the case in which the lesion was on the left side, there was a decided aphasia, whereas in the case of D. M., speech was unaffected.

Another point of interest is the fact, that in both cases the motor power in the side opposite the lesion was frequently suddenly lost and quickly regained, these temporary attacks of hemiplegia not being preceded by any convulsion. In the case of D. M. these attacks of left hemiplegia were associated with decided paresis of the right arm and leg, *i.e.*, the arm and leg on the *same* side as the lesion,—a fact which seems to support Dr Hughlings-Jackson's theory, that an epileptic discharge of one hemisphere may give rise to convulsions of *both* sides of the body, the spasm travelling to the second side by the route of the direct fibres, and not through a secondary affection of the other cerebral hemisphere, pons, or medulla. Dr Hughlings-Jackson has not demonstrated the occurrence of any paresis on the second side, but he supports his proposition by the fact that two sets of wasted fibres "descend" into different columns of the cord; into the lateral column of the opposite side (first side); and into the anterior column of the same side (second side); the wasting of the lateral column affecting that part of it where there are most fibres of smallest diameter, the part of the anterior column being that where there are the thickest fibres of that column—the largest of all the cord.¹

The peculiar spiculated condition of the inner table of the skull which was present in this case, is a pathological condition which I have not before met with.

Another pathological point was the great weight of the brain—59 ounces. Turner² gives the weight of the adult human brain as 49 to 50 ounces. In this case the cerebellum weighed 8½ ounces. Its proportionate weight, therefore, to the contents of the encephalon was considerably above the average, which, according to Quain and Sharpey, is as 1 to 8.

The head injury was in all probability the exciting cause of the tumour. In several of my other cases, too, the same connexion was observed—indeed, in my experience, external violence is a very frequent cause of the disease. As a rule, too, I find that the position of the tumour bears some relation to the point of external violence. The tumour is often found beneath the seat of the injury or at the point of *contre-coup*.

¹ *West Riding Reports*, vol vi. p. 292.

² *Introduction to Anatomy*, p. 296.

with the walls of the uterus, no gap, and naturally also no mucous mass filling up any such, is demonstrable.

From the edges of the placenta to the ring the decidua exhibits the same condition. A difference between its lower and its upper portions is not to be made out. The cylindrical epithelium, so strongly asserted by Küstner, is completely wanting.

From the ring downwards, which we may name provisionally still as the os internum, to the external os uteri, the covering of the canal, even indeed microscopically, exhibited quite the character of the cervical mucosa. This condition of matters is essentially different from the results of Küstner's investigations. I wish merely in the meantime to asseverate this difference. Surely, there will be investigations, undertaken by the other side also, to throw more light upon the origin of this latter (difference), as well as upon the question in general.

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ARTICLE III.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Continued from p. 504.)

CASE VII.—*Male, æt. 34. Syphilis Seven Years before Admission to Hospital. Epileptic Convulsion. Good Health for a Fortnight. Second Convulsion, unattended by Loss of Consciousness and followed by Left-sided Hemiplegia. Admission to Hospital Five Weeks after second Fit: Great Emaciation: Headache: Marked Neuro-retinitis with Perfect Vision: Left Hemiplegia. Uninterrupted Recovery under Iodide of Potassium. Good Health for several Months. Severe Head-injury. Return of Fits: Convulsions occurring every Four Minutes, and lasting without intermission for Fifteen Days. Readmission to Hospital: Great Emaciation: Bed Sores: Left Hemiplegia: Severe Convulsions unattended with Loss of Consciousness, Left Side chiefly affected. Speedy Recovery under Chloral and Iodide of Potassium. Second Relapse. Death. Syphilitic Gumma in the First and Second Right Frontal Convolution.*

J. M., æt. 34, single, foreman bricklayer, was admitted on 4th November 1875, suffering from left hemiplegia.

Previous History.—He enjoyed good health, until seven years ago, when he contracted syphilis; the attack was, however a slight one, and was followed by few secondary symptoms. For the past two years he has suffered from rheumatic pains, which are worse at night. The present attack commenced seven weeks ago. One evening while measuring a road he fell down unconscious. He was carried home to his lodging, which was close at hand, and in about

twenty minutes "came to himself," and found that he had bitten the left side of his tongue. The next day he was all right, did his work as usual, ascending a chimney forty feet high. He continued to work for a fortnight and was then seized a second time, the fit occurring as he was getting into bed. He did not lose consciousness, and was able to call for assistance. The convulsion was severe, it affected the left side, and lasted for ten minutes. When it passed off he found that he had completely lost the use of his left arm and leg. He has been in bed ever since, and has lost a great deal of flesh. He has had several attacks of severe headache. His habits have been very temperate.

The Family History is good, and free from any tendency to nerve disease.

Condition on Admission.—There is very great but not total loss of power in the left arm and leg; there is also a trace of paresis in the left side of the face. The muscles of the body generally are very much wasted, the atrophy being as marked on the sound as on the paralyzed side.

Reflex Action is greater in the right than in the left leg.

Sensibility is fairly normal, except in the parts supplied by the left median nerve, where it is decidedly impaired. His memory is evidently defective, and all his mental powers are blunted. He sleeps well. He frequently complains of headache, the pain being referred to the forehead and vertex.

Special Senses.—*Sight* is perfect; the pupils are equal and moderately dilated; marked optic retinitis is seen in both eyes. *Taste* and *Smell* are natural. *Hearing* is good for aerial sounds. He professes not to hear the skull sounds in the left ear.

Speech is natural.

The *bowels* are obstinately constipated. The *urine* is sometimes passed involuntarily; it is loaded with phosphates, but is otherwise quite normal. The *heart* is normal, and none of the superficial vessels show any signs of atheroma. The radial pulse is 64, and weak; the temperature 98° F.

Diagnosis.—Syphilitic gumma situated in the motor area of Hitzig and Ferrier on the right side.

This opinion was based on the following grounds:—

1st, The fact that the paralysis followed an attack of unilateral convulsions of face, arm, and leg, in which consciousness was retained—a certain indication, in my experience, of a discharging lesion in the cerebral cortex. A discharging lesion in the corpus striatum might, of course, produce the same symptoms, but I have never met with such a case. The fact that there was no loss of consciousness excluded cerebral hæmorrhage.

2d, The healthy condition of the heart and the absence of any cause of embolism.

3d, The age of the patient, 34, a strong point against cerebral hæmorrhage.

4th, The healthy condition of the arterial system and of the kidneys, also against cerebral hæmorrhage.

5th, The presence of optic neuritis, a very strong point in favour of tumour as against cerebral hæmorrhage and embolism; optic neuritis including under this term the choked disc, being the most constant and important symptom in cerebral tumour, but comparatively rare in cerebral hæmorrhage, and almost never seen in embolism.

6th, The history of severe headache.

7th, The fact that the patient had had syphilis.

Treatment.—Half a drachm of the iodide of potassium three times daily. On 6th December the dose was increased to 150 grains in the twenty-four hours.

Progress of the Case.—4th December.—There is great improvement; he can walk without assistance. Sight is now somewhat impaired, owing to deposits of lymph about the disc. Small doses of mercury were prescribed as an addition to the iodide.

7th January.—Some headache; stomach is out of order; the iodide to be discontinued for a few days, and to have a brisk purge.

31st January.—He discharged himself to-day, saying he felt quite well. There is not now a trace of paralysis. He has gained three stones in weight since his admission. Sight is still somewhat dim. To come back as an out-patient.

14th Feb.—Says he never felt better in his life. Has been at work for a week, and has on several occasions walked without the slightest inconvenience across a narrow plank thirty feet above the ground. Was strongly advised to be careful, and to continue the iodide.

22d April.—Has continued perfectly well since date of last note, and is working regularly.

I heard nothing more of him until 23d February 1877, when he was carried into the ward, at the time of my visit, in a fit. His friends stated that he had continued perfectly well until 23d September 1876, when a scaffold, on which he and others were working, fell to the ground. His right collar-bone was broken, and he received a severe cut on the back of the right side of the head. He was laid up from the effects of this accident for a month, and during the whole of that time suffered from internal headache. At the end of a month he returned to work. He worked regularly in spite of not feeling well until 9th February when he took a fit.

The convulsion came on about 8 P.M., and lasted for five minutes. He had hardly "come out of the first when he took a second;" a few minutes after the second he took a third, and has continued to "work in the fits" ever since. They have never left him for more than five minutes at a time during the whole fifteen days. He has been quite sensible during the whole time, and has been able to take nourishment and medicine. The left

side has been almost exclusively affected by the convulsions. The left side became paralyzed "after the first few fits."

Condition on Readmission.—The patient presents a most miserable appearance. He is emaciated to the last degree; the conjunctivæ are deeply injected, the eyelids gummed together by a purulent secretion; the left arm, leg, and left side of the face are paralyzed; there is a large bed-sore over the sacrum; the urine and fæces are passed without warning; the left side of the tongue is fearfully lacerated and covered with a dirty brown slough. The tip of the organ, when protruded, is turned to the left side; the pupils are contracted, vision is somewhat dim, the result of commencing optic atrophy; no recent changes are seen in the fundus. The patient is quite conscious, and when free from convulsive spasms, is able to speak freely and well. The emotional centres are not under proper control, for he frequently sobs and weeps. Epileptiform convulsions occur every three or four minutes, each fit lasting from eighty to one hundred seconds. The order of the spasms is as follows:—Both legs are first drawn upwards and slightly away from the middle line, as if the patient were going to place himself in the lithotomy position, the right leg being generally affected before the left. After the drawing up of the legs the right arm is drawn across the chest, and the left, the paralyzed arm, becomes rigid as it lies parallel with the body. The head and eyeballs are at the same moment rotated to the left. Tonic spasms then powerfully affect the left arm, the left leg, and left side of the face, the mouth being widely opened and drawn down towards the left side. Clonic spasms next occur in the left side of the face, left arm, and left leg, the right orbicularis being affected, though much less powerfully than its fellow on the opposite side. A few convulsive twitchings occasionally occur in the muscles of the right arm and right leg. The convulsive spasm after a few seconds becomes very powerful; the patient foams at the mouth, makes a cackling noise; the left side of the tongue is evidently lacerated during each fit, for the saliva is markedly bloody. As the fit passes off the head and eyeballs are rotated back to the middle line, and the pupils are noticed to be widely dilated. The patient is quite conscious during the fit. There was no doubt about this fact, for as soon as the spasm passed off he could tell what we had been talking about while the convulsion was at its height. All sorts of subjects were selected in order to test him.—The *temperature* is normal (there is no note in the case-book as to the comparative temperatures on the two sides).

Treatment.—Half a drachm of chloral hydrate, to be repeated as often as may be necessary, and thirty grains of iodide of potassium every four hours.

Progress of the Case.—On 24th Feb. he was in *statu quo*; only one dose of chloral had been administered, and the nurse had neglected to give the iodide.

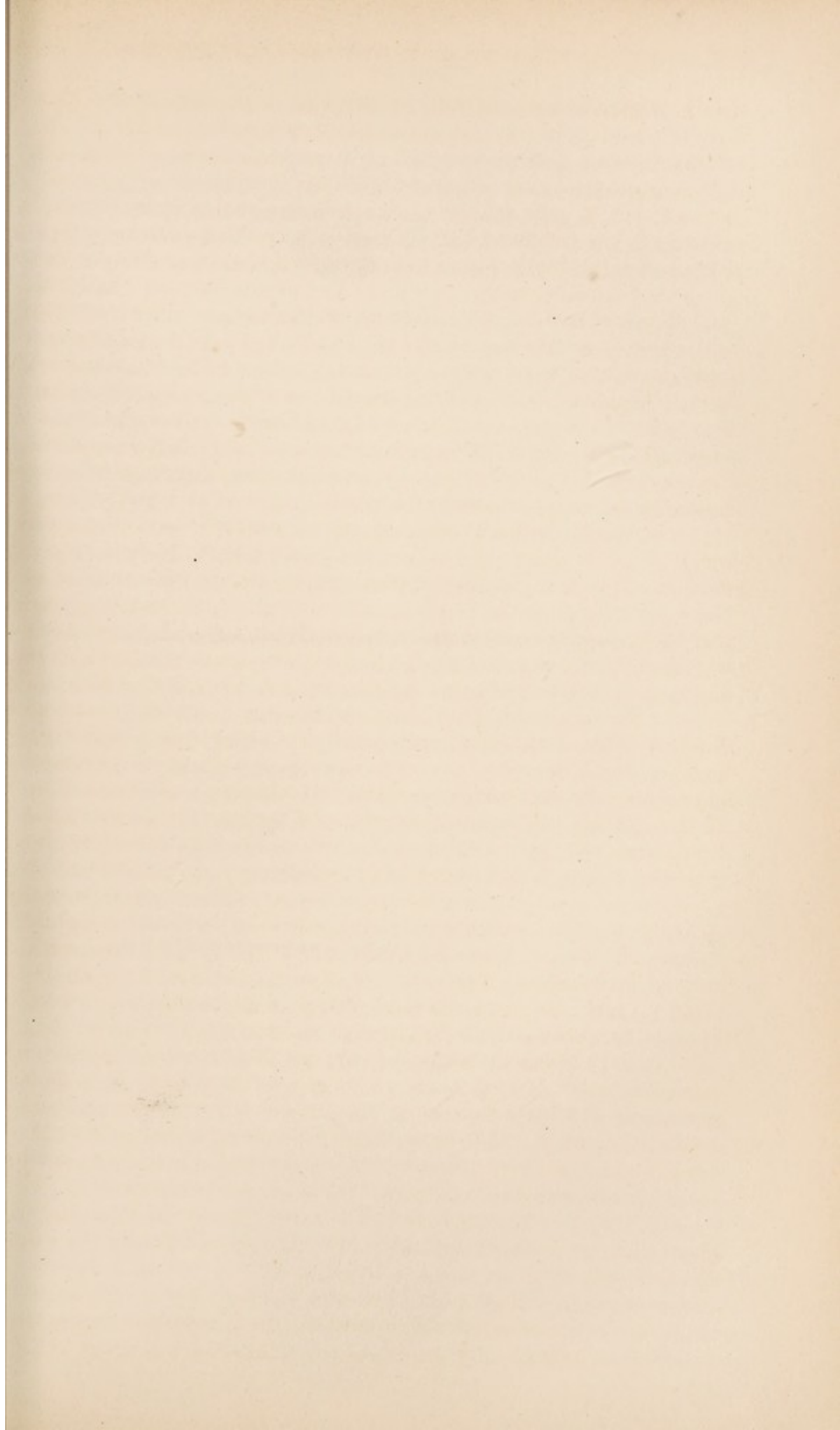


PLATE III.

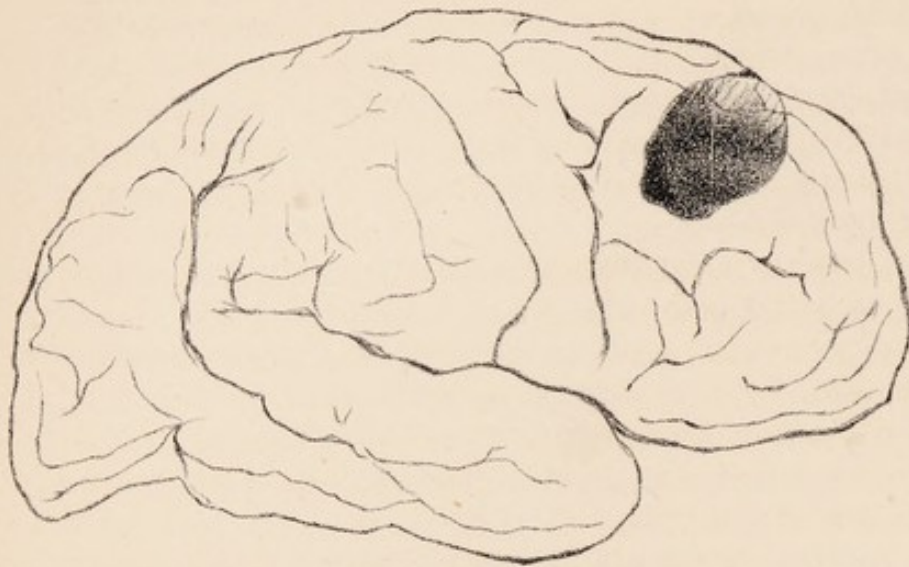
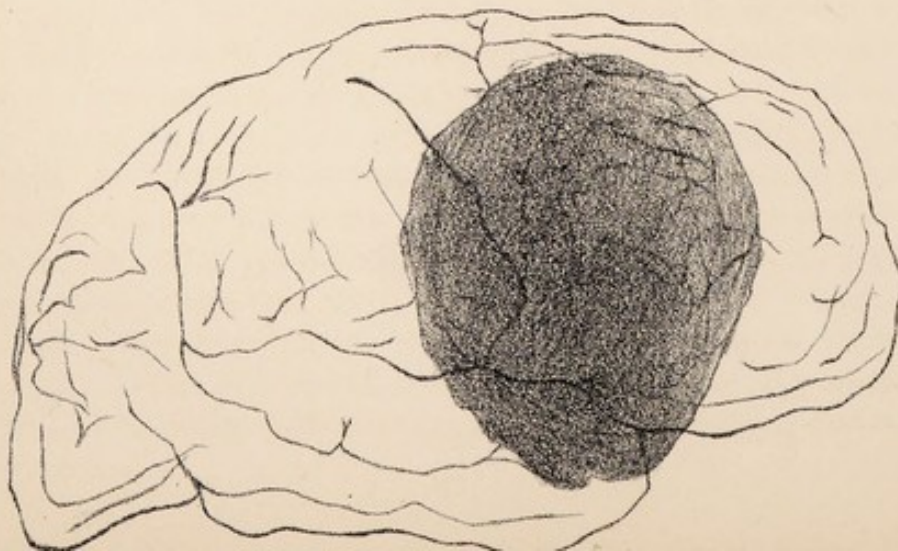


FIG. 1.—Outline of brain of J. M. (Case VII.), showing the position of the lesion

FIG. 2.—Outline of brain of M. D. (Case VIII.), showing the position of the lesion.



On 25th Feb. he was easier, taking a fit every half-hour.

On 26th Feb. very much better; there had only been five fits in as many hours. He said—"I have a craving for the medicine (iodide of potassium), and feel that every dose does me good, particularly that it relieves the cramps in my left leg."

On 3d March he was wonderfully improved; all congestion of the conjunctivæ gone; the fits had almost left him, and he could move the left leg a little.

9th March.—No fit since date of last note. He looks bright and cheerful, is rapidly gaining power in the left arm and leg, in fact can get out of bed without assistance; the ulcer on the tongue is almost healed, the tongue is clean, the appetite good.

2d April.—For the last eight days has been walking about the ward; the bed-sore is almost healed; the dose of iodide has been reduced to ninety grains daily.

20th April.—He was to-day made an out-patient. He had not had a fit since 3d March; the paralysis had completely disappeared, and he looked stout and well.

In the early part of December he again turned up, saying he "felt the fits threatening." The relapse was apparently due to mental worry. The iodide was again prescribed. I heard no more of him until 2d Jan., when I learned that he was dead. Three days previously he had been seized with severe convulsions, and had shortly afterwards become insensible. Through the kindness of Dr Thornhill, his local medical attendant, I was able to make a hurried post-mortem examination.

The scalp and skull-cap were natural. The dura was firmly adherent over the fore part of the right frontal lobe. On more careful examination the adhesion was found to be limited to a circumscribed spot, corresponding to the posterior part of the second right frontal convolution. The surface of the brain, at the part of adhesion was depressed, and, on cutting into it, this was seen to be due to the contraction of a new growth (syphilitic gumma). The brain tissue corresponding to the posterior part of the first and second right frontal convolutions (see Plate III. Fig. 1) was replaced by a firm, yellow, new-growth, which, on microscopical examination, presented the usual characteristics of a hard gumma (specimen shown to Medico-Chirurgical Society). The ascending frontal, ascending parietal convolutions, and corpus striatum, of the right side, and the other portions of the brain, were normal. The other parts of the body were quite healthy.

Remarks.—In this case a circumscribed syphilitic gumma, situated in the first and second right frontal convolutions, gave rise to epileptiform convulsions of the opposite side (face, arm, and leg), the convulsive seizure commencing with drawing up of both legs, as if the patient were about to place himself in the lithotomy position. The lesion corresponds to Ferrier's centre (12); "the centre for the lateral movements of the head and eyes,

with elevation of eyelids and dilatation of the pupils." The case at first sight seems decidedly opposed to the strict localization of Ferrier, though it may be perhaps argued that the disagreement is more apparent than real.

It has been conclusively shown that a local spasm produced by the irritation of a particular portion of the cerebral cortex may become general by the spreading of the discharge, first to adjacent and then to more distant centres; and in this case we have only to suppose that the discharge, generated at the seat of the lesion, was a stronger discharge than is usually seen in a case of local softening, or that the adjacent and more distant centres (the centres for arm and leg) were in an abnormal state of irritability, to account for the fact that all the centres in the right hemisphere were involved at an early stage of the convulsive seizures. And that there was great irritability of these motor centres is conclusively proved by the frequent recurrence of the fits.

If the statements of the patient's friends are to be relied upon, this man must have had no less than 4320 fits during the fifteen days of the attack. And this statement is corroborated by the fact, that when admitted to hospital he was taking a fit every three or four minutes. During the first hour after admission he had at least fifteen fits. Althaus states that one of his patients had 1350 fits in a month, and mentions a case described by Delasiauve in which 2500 fits occurred in one month. These were cases of ordinary (typical) epilepsy, and it is well known that fits depending upon a local cause (coarse lesion), as a rule, occur much more frequently than the fits of the so-called "genuine" or "idiopathic" epilepsy.

It is noteworthy that, during this attack, there was no loss of consciousness. As a rule, when the fit is so severe as to cause cackling, foaming at the mouth, etc., consciousness is lost. Where, too, the fits recur with such great frequency, a condition of *epilepticism* (Althaus) is established. "There is no recovery of consciousness between the seizures, which follow each other like thunder-claps; the respiration is much accelerated; the pulse rises to 140 or 160 beats in the minute, and is excessively small; the temperature ascends to 106° or 107°; there is deep stupor and collapse, and the patient dies after two or three days, without having recovered his consciousness. Epilepticism is not, however, invariably fatal, and the most reliable sign of improvement in the patient's condition is a lower temperature."¹

The case is a good illustration of the proposition advanced previously in this paper, namely, that the prognosis in cases of intracranial syphilis is never utterly hopeless. To anyone unacquainted with this fact, the patient's condition, when readmitted on 23d Sep. 1876, must have appeared desperate, and yet I had no hesitation in taking a somewhat hopeful view of the case.

The case is a typical one of syphilitic epilepsy—epilepsy occur-

¹ *Diseases of the Nervous System*, Althaus, page 241.

ring in an adult, over thirty years of age, previously healthy, the seizures being unaccompanied by the shrill cry which usually announces the outbreak of a paroxysm of "genuine" epilepsy,¹ partial in range (unilateral), unattended with loss of consciousness, and followed by temporary paralysis. We can easily understand that the syphilitic gumma which is developed on the surface of the cerebral cortex, and which gives rise to irritative (in contradistinction to destructive) changes, will, when it impinges on a motor centre, give rise to these results.

The case further illustrates the proposition, that in cases of epileptiform convulsions, the frequency and severity of the spasms are not the factors which determine the mental deterioration which is so often seen in "genuine" epilepsy. The factor which does determine the mental deterioration is the *nature* of the centre, or portion of gray matter, which is first discharged. When the discharge begins in the highest centre—the seat of consciousness, wherever that may be—the mental deterioration is greater than when a lower centre is first discharged. This fact has been insisted upon by Dr Hughlings-Jackson, who quotes W. A. F. Browne and Jaccoud to the effect that, in cases of *le petit mal* (epilepsy in which there is no convulsive seizure, but only loss of consciousness), the mental deterioration is often greater than in cases where there are severe spasms.²

The case is a good illustration of the immense diagnostic value of the ophthalmoscope, and shows the necessity of examining the fundus, as Dr Hughlings-Jackson has so long taught, *as a matter of routine—i.e.*, in all, cases whether vision be perfect or not. In the next two cases which I shall report, the diagnosis mainly depended on the presence of optic neuritis, and in both vision was intact.

(To be continued.)

ARTICLE IV.—*Notes of a Case of Successive Aneurisms.* By HENRY STEELE, M.D.

THE following case is an unusual one, and may possess sufficient interest to justify its publication:—

J. C., a shoemaker, aged 63, came under my care ten years ago with a femoral aneurism on the left side, seated a little above the commencement of Hunter's canal. He was a temperate man and in fair health, though somewhat anæmic and nervous. Several years before I had cut him for fistula in ano. He had never had syphilis or been salivated; the superficial arteries gave no sign of degeneration, and his heart was apparently free from disease. A well-marked arcus senilis, however, existed in each cornea. On

¹ M. Fournier, *Lectures on Epilepsy*, as quoted by Dr Dowse in the *Practitioner*, Oct. 1878, p. 273.

² *West Riding Lunatic Reports*, vol. vi. p. 304.

the present occasion a compress was applied, but did not receive a fair trial, for, finding it irksome, he took it off during the very first night and begged it might not be again put on. I then tied the artery at the usual place in Scarpa's triangle. Excepting that there was profuse suppuration for some time, nothing untoward occurred, and in a few weeks he was well.

He had no more trouble with his blood-vessels until fifteen months ago, when he presented himself with another aneurism at the corresponding spot on the opposite thigh. I tied the vessel as before, and he again did well enough, although the ligature remained fast till the end of the sixth week and kept up a good deal of irritation. Unfortunately, he was scarcely on his feet when he was attacked by acute rheumatism, which involved his heart and told severely on his general health. Part of this summer he spent in a Highland village, but was never able to shake off his enemy.

In the beginning of last August he again sent for me, and to my regret I now found an aneurism pulsating strongly in the left groin—the side first affected. It lay directly underneath Poupert's ligament, reaching further up than down, and was rather larger than a golf-ball. On August 11, with the assistance of Dr Lawrence of this place, I tied the external iliac, employing cat-gut and, to the best of my knowledge, every antiseptic precaution. Ether, which now for the first time was mixed with the chloroform, proved in one respect anything but an auxiliary, for it brought on most inconvenient fits of coughing, which threatened to project the peritoneum against the edge of the knife. Happily, however, there was no accident. The bleeding vessels having been secured with the cat-gut, and a drainage tube inserted, the parts were brought together by deep sutures and covered up with gauze, &c., in the midst of a cloud of spray. Notwithstanding, at the second dressing, four days afterwards, a number of putrid clots were pressed from the wound, and subsequently the suppuration was both free and offensive; nor did it cease till the end of the third week, by which time, also, the external parts had mostly healed. But an orifice still existed at the upper end of the cicatrix, and a portion an inch long remained ununited at the lower, while a probe could be passed deeply up along the track of the wound, and down towards the pubes. Having now left home, I did not again see the patient for a fortnight, and at the end of this time, finding but little improvement, though pressure and strapping had been steadily applied, I pared the ununited edges and brought them together with pins—partial union only ensuing.

On September 30, exactly fifty days after the ligature of the vessel, a new and serious symptom made its appearance. Bleeding from the wound took place, and recurred at intervals during the next two days. It was small in quantity, but was followed, on October 3, by a gush of several ounces, and next day by another also profuse. It now became evident that the man must either

valves, an early stage in the process of valvular disorganization, or of dilatation of the aorta without valvular disease. It is, therefore, of much value as an aid to precise diagnosis, and in determining the probable duration of life."¹ It will be of great value to us as practitioners if we can discover the diseased condition previously to the more complete disorganization when the fatal regurgitation commences; and still more important if, when discovering it, we can suggest any means of arresting the danger.

ARTICLE IV.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Continued from p. 605.)

CASE VIII.—*Female, æt. 20. Headache; Vomiting; Double Optic Neuritis, with Perfect Vision; Relief under Iodide of Potassium and Chloral; Convulsion; Death; Large Tumour pressing upon and causing Extensive Atrophy of the Ascending Frontal, Ascending Parietal, Inferior and Middle Frontal Convolutions, and of the Island of Reil, on the Right Side.*

M. D., æt. 20, single, shop girl, was admitted to the Newcastle-on-Tyne Infirmary on 5th January 1877, complaining of headache, vomiting, and giddiness.

Previous History.—When nine years of age she fell and hurt her head; the injury was a severe one, and was followed by vomiting. With this exception she has never been laid up until the present attack. It commenced three years ago with headache. Eight months ago the headache got worse, and she vomited occasionally. Two months ago she had to leave her situation. She says she has never had a fit, but has more than once tumbled off her chair when sitting, in consequence, she thinks, of giddiness. She has only menstruated once, and that was two years ago. She knows no cause for her illness. There is no suspicion of syphilis.

The family history is good.

Present Condition.—She is a well-developed and well-nourished girl, and, with the exception of a slightly coated tongue, is, as regards the circulatory, respiratory, alimentary, and urinary systems, perfectly healthy.

She seems intelligent, but her friends say that she is very much quieter than she used to be. The face at times has a somewhat dusky, congested hue. The eyes are unusually prominent, but have always been so. The headache is severe, and is worse at

¹ *Diseases of Heart and Aorta*, p. 238.

night; the pain is referred to the forehead and to the vertex. There is no tender spot on the surface of the cranium.

Special Senses: Sight.—The pupils are equal and moderately dilated. Vision is so perfect that she can read with ease the smallest type, and yet the ophthalmoscope shows marked double optic neuritis. *Hearing*—The skull sounds are not heard in the right ear. *Smell* is imperfect in both nostrils. (This was probably only temporary, the result of iodism.) *Taste* is perfect.

Speech is natural. *There is no trace of paralysis.* The temperature is normal.

Diagnosis.—An intra-cranial tumour. This opinion was based on the headache, vomiting, and above all the optic neuritis. There were no localizing symptoms; the seat of the tumour, therefore, could not be defined.

Treatment.—Full doses of iodide of potassium, and anodynes for the headache.

Progress of the Case.—On 18th and 19th January she frequently vomited, and the headache was intense. Croton chloral, 10 grains three times daily, was prescribed.

On 28th January she was very much easier; indeed, she felt so well that she expressed a wish to go home.

On 5th February there was some return of the headache, but she said it was nothing; and that she felt quite able to go home the next day as she had arranged.

On 6th February.—At 1.30 A.M. my clinical clerk, Mr Tait, was suddenly called to see her. He found that she had just died in a convulsion.

The Autopsy was made eleven hours after death. The head only was examined. The scalp was natural. The lower part of the right parietal bone, the inferior frontal sub-division of the right frontal bone, and the upper part of the squamous portion of the right temporal bone, were reduced to half their normal thickness. The dura was not adherent to the bone, but was firmly attached to the subjacent membranes in the right inferior frontal and inferior parietal areas. On removing the dura a large tumour was seen to be situated in these regions. It seemed to spring from the commencement of the right Sylvian fissure, and had destroyed the posterior half of the inferior frontal convolution, the lower half of the ascending parietal convolution, the lower half of the ascending frontal convolution, and the outer half of island of Reil on the right side. It had also invaded the superficial surface of the posterior half of the middle frontal convolution, the anterior part of the supra-marginal convolution, and the anterior part of the superior sphenoidal convolution.

The tumour measured from before backwards three inches, from above downwards three inches, and from without inwards $1\frac{1}{2}$ inches.

The surface of the tumour, where it was unadherent to the

dura, was of a reddish colour, and had a striated, granular appearance. It seemed to be made up of delicate fibre bundles. The margins of the tumour were very thin, and seemed to be gradually applying themselves to, and invading adjacent convolutions. The section of the tumour was of a dark purple colour, granular in appearance, and very soft and friable. After hardening in spirit it was readily separated from the subjacent brain tissue, and was found to be surrounded by a delicate fibrous capsule. Several large vessels passed into and out of the tumour. On *microscopical examination* it was found to be a sarcoma. The fibre cells were large and were arranged in bundles. In addition to cells, the tumour contained numerous large oval nuclei and granular protoplasmic material.

There were no signs of hæmorrhage about the tumour.

The convolutions of the left hemisphere were much flattened, and the sulci effaced. There had been evidently great squeezing of brain tissue. With this exception, however, the other parts of the brain were quite normal.

Remarks.—This tumour was of great size, and had caused extensive destruction of nerve tissue in regions which are now acknowledged to be motor, and yet there was no paralysis. In this respect the case contrasts remarkably with cases I. and VII. previously related, in which limited lesions of the same parts of the cerebral cortex gave rise to marked motor symptoms, *i.e.*, convulsions.

This radical difference can only be explained by supposing that the pathological changes induced in the nervous tissue by the foreign body, *i.e.*, the tumour, were different in the two cases. In Case VIII. there was slow and gradual destruction. In Cases I. and VII. irritation of the nervous elements. In fact, in Case VIII. there was a "destroying," and in Cases I. and VII. a "discharging" lesion.

Now, as Dr Hughlings-Jackson has pointed out, a discharging lesion of necessity gives rise to symptoms—convulsions, in the base of a motor centre—but a destroying lesion may be unattended by paralysis *provided that the destruction is a slow and gradual process.*

The absence of paralysis in these cases is explained by supposing that other motor centres carry on the functions of those which are destroyed. It is generally supposed that these "substitution" centres are situated in the same hemisphere, and such, probably, is the rule. This case, however, in which the destruction was so extensive, and the remarkable case which I shall next relate, in which the left corpus striatum was destroyed, and in which there was no paralysis, seem to show that the "substitution" centres must, sometimes, be situated on the opposite side of the brain.

Destruction of a large part of the right hemisphere is more likely to be compensated than destruction of the left, for the latter is the more active or "driving" side.

The age of the patient is also of importance. In young subjects

the processes of repair and compensation are much more efficiently carried out than in the fully formed being. In young subjects, too, movements are much more automatic, much less highly specialized, than in the adult. These facts may help to explain, in accordance with the substitution theory, the absence of paralysis in Case IX.

The absence of obvious paralysis, when a motor centre is destroyed, gives a clue to the mode in which muscular movements are represented in the motor centres, as the following quotation from Dr Hughlings-Jackson's *Clinical and Physiological Researches on the Nervous System* shows:—

"Then it may be said that one convolution will represent only the *movements* of the arm, another only those of speech, another only those of the leg, and so on. The facts above stated show that this is not the plan of the structure of the nervous system. Thus, to take an illustration, the external parts x , y , and z , are each represented by units of the corpus striatum. But the plan of representation is not that some units contain x largely only, as x^3 , others y largely only, as y^3 , but that *each* unit contains, x , y , and z ,—some, let us say, as x^3 , y^2 , z , others as x^2 , y^3 , z , etc. When we come to the still higher evolution of the cerebrum, we can easily understand that, if the same plan be carried out, a square inch of convolution *may be wanting*, without palsy of the face, arm, and leg, as x , y , and z are represented in other convolutions; and we can also easily understand that *discharge* of a square inch of convolution must put in excessive movement the *whole* region (face, arm, and leg), for it contains processes representing x , y , and z , with gray matter in exact proportion to the degree of complexity."—(Page xv.)

Again, "A region of the body is not permanently paralyzed when a part of the brain representing it is destroyed, because the neighbouring parts also represent the very same region. This is what we should expect on the Principle of Evolution; for the higher the centre, the greater the number of *different* movements and impressions represented in it. This implies a greater number both of nerve fibres and cells. Now, of course, the more fibres in the centre, the less loss of movement will result from the destruction of part of it; and, of course, the more ganglion cells the more over-movement from discharge of an unstable part of it."—(Page xvii.)

The circumstance that the skull sounds were not heard in the right ear is a point to which I wish briefly to refer. Nothing in the auditory nerve nor in the internal ear was found to account for this condition. It will be observed that the bone over the tumour was very thin. The question arises whether this abnormal condition of the bone could in any way account for the non-conduction of the skull sounds. The point is, I think, worth noting, for in other cases of intra-cranial tumour in which there has been no post-mortem, I have remarked the same fact, namely, that the patient professed not to hear the skull sounds. It is just possible that we may have in this a localizing symptom of some importance.

CASE IX.—*Boy, æt. 5. Headache; Vomiting; Optic Neuritis, with Good Vision; Voracious Appetite; Phosphaturea, with Puffy Face and Eyelids; General Nutrition Good; No Paralysis. Complete Temporary Relief under Iodide and Bromide of Potassium. Gradual and Increasing Mental Apathy; Excessive Sleepiness; Attack of Right Internal Strabismus; General Convulsion; Failure of Vision, due to Optic Atrophy; Severe General Convulsion, followed by Left-Sided Hemiplegia, Coma and Death. Six Scrofulous Tumours in various parts of the Cerebral Hemispheres: Left Corpus Striatum destroyed.*

J. W., æt. 5, was admitted on Feb. 27th, 1877.

Previous History.—His parents stated that his illness commenced three months ago with headache and vomiting. The vomiting was slight, and only occurred once or twice. The headache was generally worse at night. For the past week it has been so bad that he has cried for the greater part of the night. His parents know no cause for his illness. Eighteen months ago he had a severe attack of scarlet fever; he had, however, quite recovered from it months before his present complaints commenced. Two years ago he fell down stairs and injured his head severely, but has not suffered from headaches until the present attack. There are no signs of congenital syphilis.

The family history is good, the parents and all the other children being healthy.

Condition on Admission.—He is a sharp, intelligent, and lively boy, very active, and well nourished. The face is pale and somewhat puffy about the eyelids, but the urine is free from albumen; it is, however, loaded with phosphates.

The exterior of the skull is natural, and there are no tender spots on percussion. The headache is frontal, and, as a rule, only comes on at night. The pupils are equal and dilated. Sight is good, but marked optic neuritis is seen in both eyes. The other special senses are normal. There is no trace of paralysis. The gait is natural. He has never had a fit. His appetite is voracious, in fact, he bolts everything that comes before him.

The left wrist joint is swollen and evidently in a state of scrofulous degeneration. He does not complain of it, and it is only slightly tender on pressure. The sensibility of the skin both to touch and pain seems lessened. This loss of sensibility is general, and apparently is not complete at any part. His parents say that the wrist has been in its present state for several weeks.

The *pulse* and *temperature* are normal. The *digestive, circulatory, and integumentary systems* are normal. The *respiratory system* is normal. (This statement needs qualification. There never were any subjective signs of lung disease, nor was any physical change detected during life, owing, probably, to the fact that the bases of

the lungs were not examined; otherwise the lesion found post-mortem must have been detected. The apices were carefully examined, as I suspected the intra-cranial disease to be tubercular.)

The *diagnosis* was an intra-cranial tumour. The position of the tumour could not be ascertained as there were no localizing symptoms. From the associated condition of the wrist joint, and from the age of the patient, it was thought to be scrofulous.

Treatment.—A mixture containing iodide and bromide of potassium was prescribed. Tincture of iodine was painted over the swollen wrist, and it was supported by a splint.

Subsequent progress of the case.—On *March 10th* it was noted:—He is apparently quite well. There has been no headache for several nights. Indeed, so well did he seem that the nurse repeatedly asked me why I did not send him home. He continued well until *March 20th*, when an internal squint in the right eye was noticed; the eyeball was turned inwards and upwards, and the squint was increased by looking at distant objects. The dose of iodide was increased to 10 grains.

On *March 26th* it was noted:—For some days past he has been dull and heavy, and has slept a great deal. The left wrist joint was to-day opened under antiseptic precautions; a quantity of thick cheesy pus was evacuated.

On *April 5th* he had a series of severe general convulsions; both sides of the body were affected, the left more powerfully than the right. The convulsions continued more or less for three hours.

On *April 6th* he looked pale, but seemed otherwise much as usual. The squint was less marked, and on *April 20th* it had disappeared. For the next two months he remained in a passive state, making no complaint, eating voraciously, and sleeping too constantly. He gradually became more dull and stupid. His eyesight failed, and the ophthalmoscope showed the steady progress of optic atrophy. All this time the body continued to be well nourished, and there was not now, nor at any subsequent period, until after the final convulsion, the slightest trace of paralysis.

On *30th June* an herpetic eruption appeared underneath the left eyelid.

On *4th August* he vomited several times without any obvious cause.

On *17th August* he was seized with convulsions; the spasms again chiefly affected the left side. After the attack the left arm and leg were found to be paralyzed.

The patient remained in a semi-comatose condition until *21st August*, when he died at 11.30 P.M.

The *post-mortem* was made nineteen hours after death. The body was well nourished. There was nothing noteworthy in the external appearances.

Head.—The scalp, bones, and membranes were natural. There was evidence of great intra-cranial tension, the convolutions being

very much flattened, and the sulci effaced. The brain weighed 2 lbs. 14½ oz. On cutting into the cerebral substance, nodules of new growth were found in the following situations:—

1st, A pyriform nodule, size $\frac{3}{4}$ inch by $\frac{1}{2}$ inch, in the extremity of the first left frontal convolution, where it turns over to become the supra-marginal convolution.

2d, An irregular-shaped nodule, measuring $1\frac{1}{4}$ inch in length by $\frac{3}{8}$ of an inch in breadth, in the left gyrus fornicatus, at the junction of its middle with its posterior third.

3d, An irregular nodule slightly larger than the preceding nodule in the corresponding part of the right gyrus fornicatus. This nodule extended upwards through the gyrus fornicatus and the supra-marginal convolution to within a quarter of an inch of the vertex of the hemisphere.

Nodules two and three were joined by a connecting band of new growth, which rested upon the posterior part of the corpus callosum.

4th, An oval nodule, $\frac{3}{4}$ of an inch in length by $\frac{1}{2}$ an inch in breadth, in the tip of the left occipital lobe.

5th, An irregular nodule, $\frac{5}{8}$ of an inch in length by $\frac{5}{8}$ of an inch in breadth at its broadest part, in the angular gyrus of the right side.

6th, A large round nodule, $1\frac{1}{4}$ inch in diameter, in the position of the left corpus striatum, which was almost entirely destroyed by it.

All the nodules of new growth presented the same character. They were of a yellowish colour, very firm in consistence; none of them presented any trace of softening. They were separated from the surrounding healthy brain tissue by a narrow line of softened material. After some days' immersion in spirit all the nodules could be easily separated from the surrounding brain tissue. On microscopical examination they were found to present the usual characters of the tubercular brain tumour. The line of softening between the nodules and the brain tissue proper contained numerous bloodvessels. The fibrous element in the nodules was greater than is usually seen in this form of growth.

The vascularity of the brain seemed normal. The ventricles were normal. No nodules were found in the cerebellum. The upper portion of the spinal cord was placed in hardening solution, but unfortunately was mislaid; a circumstance which I much regret, for one of the most interesting points in the case would have been the course of the degenerated fibres in the cord.

In the lower lobe of the left lung there was a large dry caseous mass. Some gray tubercles were scattered throughout the rest of the left lung. A few were also situated in the apex of the right.

The peritoneum, intestines, and other organs of the body were normal.

The left wrist joint was in a state of scrofulous degeneration.

Remarks.—The great point of interest in this case is the fact that nearly the whole of the left corpus striatum was destroyed without any resulting paralysis. I have already commented on it in my remarks on the previous case.

The other nodules of new growth were situated in regions which experimental investigations have shown to be non-motor.

According to Ferrier, a lesion of the anterior part of the frontal lobe would be attended with mental apathy, dulness, and a tendency to sleep,—an opinion which is confirmed to a great extent by clinical observations in the human subject. In this case the lesion in the frontal lobe was small, and it would be exceedingly rash, I think, considering the number and extent of the other lesions, to attribute the mental lethargy and tendency to sleep, which were marked features of the latter stages, to it alone. That Ferrier's conclusions as to the frontal lobes are correct I believe, and they are confirmed, I think, by cases already reported in this series.

According to Ferrier the angular gyrus is the centre for vision of the opposite side. In this case, in which there was a lesion in the right angular gyrus, vision was considerably affected towards the end. The loss of vision was, however, clearly due to the local changes in the fundus. The case, therefore, neither proves nor disproves Ferrier's most interesting observations on this point.

Other interesting points in the case are—

1st, The voracious appetite. I have already referred to the opinions of Drs Lawson and Bevan Lewis, and stated that they believe a voracious appetite to be an early symptom of cerebral tumour. Their opinion seems to me to be corroborated by this case. It is the only one, however, in which I have noted this symptom.

2d, The general good condition of the patient, associated as it was with the presence of tubercles in the lungs, and with the extensive cerebral lesions. The absence of wasting was probably due to—

(a) The absence of fever.

(b) The voracious appetite, and healthy condition of the digestive organs.

(c) The apathetic condition of the patient. The fact that there was little or no pain in the wrist-joint is probably to be explained in the same way.

3d, The fact that the cerebellum, which is the most frequent seat of intra-cranial tubercles, was healthy.

4th, The absence of any softening in the cerebral lesions.

(To be continued.)