pence, with hard base, which was seen at operation, about 1 inch from pylorus on duodenum. Commencement of descending part of duodenum bound down by a hard cicatricial mass. Duodenum kinked, hard, and contracted, so as to admit finger with difficulty. On opening this portion of intestine some fresh ulceration is seen. At two places perforation has only been prevented by peritoneal coats. Opening between stomach and jejunum of large size, and union perfect; distal end of jejunum points in same direction as pylorus. The stomach wall is very thin, and cavity of immense size.

SPECIMEN IV, from a patient in whom gastro-enterostomy had been performed by Dr. Hume for cancerous stricture of pylorus five months and a-half before death. On examining this opening between stomach and jejunum it will be seen that the orifice has contracted, and only admits the little finger. The silk threads used to stitch peritoneum and mucous coats of stomach are still adherent to opening.

CASE V.—T. A., aged 56. Six months ago pain commenced after food, and has continued since. Five months ago vomiting commenced; vomit never fermented, or more than a pint at a time. A grey-haired, anxious-looking man, with pinched features; feeble and asthmatic. On examination a tumour of irregular triangular shape was found in the abdomen, on a level with the umbilicus. It extended from 1 inch below the umbilicus to near costal arch vertically, and from middle line to outer edge of rectus transversely. It was tender on pressure, and descended almost 1 inch on deep inspiration, but felt considerably fixed. There was no evidence of dilatation of the stomach, which held a pint and a-half. The operation of gastro-enterostomy was performed on April 28th, 1892. A large malignant growth, involving the pylorus, was seen, and small nodules of excreta on the intestines and omentum were observed. The operation was followed by no constitutional disturbance, and much relief followed. The patient died of disseminated peritoneal cancer on July 28th, 1893, and I am indebted to Dr. Fielden, of Shildon, for this specimen. Examination shows an opening large enough to admit two finger tips between stomach and jejunum. The threads of silver used to stitch the mucous membrane and peritoneal wall of the stomach together are still attached. The stomach is not dilated, and its walls are healthy, except for a large pyloric growth which completely blocks the pyloric opening. The portion of transverse colon in contact with the growth has been invaded by it, and is strictured so as to admit with difficulty the first finger.

REMARKS.

The points to which I wish to draw special attention are:

1. The thin and dilated condition of the stomach wall in Case III and its association with regurgitation of the intestinal contents after operation. A case I saw in consultation with my brother, Dr. A. E. Morison, of Hartlepool, terminated in a similar manner. His patient was a woman with an enormously dilated stomach, who, in spite of medicinal and dietetic treatment and regular washing out, was steadily losing ground. We agreed that gastro-enterostomy gave her the only chance of recovery, and he performed it. Five days after operation she died in the same way as Case III. *Post mortem* the operative result was found to be perfect, but the enormous stomach was distended with intestinal contents. The explanation which has been advanced to account for the occurrence of regurgitation of the intestinal contents in cases after gastro-enterostomy is that the intestine has been so attached to the stomach that the peristaltic movements in each do not correspond. Taking into consideration the irregular stomach movements, I think this is not likely to be the correct explanation. If a large opening is made between the stomach and jejunum there is every reason why the intestinal contents should regurgitate into the stomach unless this viscus offers some resistance. Observations made during the performance of abdominal section, lead me to believe that the stomach, when in a fairly healthy state, is tonically contracted; its walls lying firmly apposed when empty, and embracing their contents when full. In the dilated stomach no such obliteration of the cavity is brought about, and intestinal contents pass easily in and fill it up. It is worthy of note, as my specimens show, that in all cases which recovered the stomach has firm thick walls, and is not unduly enlarged.

2. The tendency to contraction of the new opening, as seen in Specimen IV: A large margin of room for contraction would appear to be necessary.

3. The risk of leaving the colon in close proximity to the pyloric growth, for, as Case v shows, invasion of the healthy intestine may follow this operation.

TREPHINING IN EPILEPSY IN DOUBTFUL CASES.

By W. ALEXANDER, M.D., F.R.C.S.,
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THE immediate cause of epilepsy, in spite of all the observations made upon it and the multitude of theories spun regarding it, seems to remain as obscure at the present time as it was a generation back. Nearly all kinds of gross brain

lesions may be accompanied by epilepsy, and research has hitherto failed to discover a constant, or in fact any, lesion in the so-called essential epilepsy.

Epilepsy is a disease in which the physical and the psychical seem to blend and to influence each other in a remarkable way. Dickens describes in the following words the baneful effect of mental excitement upon epileptics in the case of Mrs. Snagby's little drudge, "Guster," an epileptic: "See what happens," says Mr. Bucket, "another person mixed up in that business and no other, a person in a wretched state comes here to-night and is seen speaking to your maid servant, and between her and your maid servant there passes a paper that I would give a hundred pounds for, down. What do you do? You hide and you watch them, and you pounce upon that maid servant, knowing what she's subject to and what a little thing will bring 'em on, in that surprising manner and with that severity that, by the Lord, she goes off and keeps off, when a life may be hanging upon that girl's words."

Mental worry, depression, and all the relaxing feelings and passions tend to increase epileptic attacks, whilst hope, change, good news, brighter prospects, and the strong desire to accomplish some object prevent the convulsions. Very few fits occur on horseback, going downstairs, or in dangerous places where the mind is kept alert and the automatic functions are being watched by the higher centres.

At the home for epileptics at Maghull it is generally a month, and sometimes more, before we are able to ascertain the normal frequency of attacks owing to the effect of change and the improved surroundings, and were all the patients to stay only a month there, the effects of the home would seem marvellous to those uninitiated in the vagaries of the disease. Probably there are three conditions necessary to an epileptic attack: a sufficiently mobile brain, a weakness of inhibitory power, and a cause capable of liberating the energy stored up in the cells of the cortex. One or even two of these conditions may be normal, and then the others must be more abnormal to produce the convulsions.

We have exemplifications of these conditions in everyday life, and some of them have been already illustrated. That the exciting cause must be of a peculiar kind is proved not only by the fact that identical tumours, indentations of the skull, and degenerations, may or may not be accompanied by epilepsy, and in surgical operations and vivisection experiments, irritations of the cortex by the knife or needle, produce no muscular movement, but a very mild electrical current immediately causes the proper muscle to respond. We have, as I said at the outset, at the present time no idea of the actual cause of liberation of nerve energy in essential epilepsy. When we remove a cerebral tumour, we feel that we may not have removed the cause of the disease, that the tumour was probably only a *causa causarum*, and that causes brought into being by the tumour may exist when the primary cause is removed, or the tumour or other lesion may only have a coincidental relation to the fits, and the operation may either have no effects upon them, or may cure them in an unknown way that has no connection with the removal of the tumour.

This state of ignorance of the true nature of epilepsy, and of uncertainty as to its cause, makes the treatment of the disease irregular, irresolute, and unsatisfactory; and statistics are very unreliable and misleading, unless drawn up with great care, and unless the element of time is allowed sufficient scope to verify the cure.

To take the subject of our paper, "Trephining in Epilepsy," we find Dr. Billings¹ reporting 72 cases; 16 of these proved fatal, 41 are reported as cured, 4 unchanged, and the remainder (11) improved, but not entirely relieved. Dr. Briggs² mentions 92 American operations, of which 63 were cured, 13 ameliorated, 2 not changed, and 14 died. He quotes Walsham and *St. Bartholomew's Hospital Reports*, where 130 are summarised. Of these, 75 cases were completely cured, 18 improved, 7 unimproved or worse, and 30 died. In Dr. Briggs's own statistics, 25 were cured, 3 ameliorated, 1 unchanged, and 1 died.

In the above cases the fatalities are far above what they would be at the present time, but I am afraid the cures are also as

¹ Ranking's *Abstract of the Medical Sciences*, vol. xxxiv, p. 58.

² *Transactions of the American Surgical Association*, vol. ii, p. 121

far above the results of our operations now as are the deaths. We cannot say that nearly two-thirds of our cases of trephining are cured, much less 25 out of 30, as in Dr. Briggs's cases. I have no hesitation in saying that twelve months after inquiry would have told a different tale.

The results of operations generally will depend on the causes of the disease. Where psychical causes are in the ascendant an entirely irrelevant operation may produce good effects for a long time, but in these cases we must beware the recoil that sometimes occurs with such severity as seriously to endanger life. In some of these cases, however, a complete cure is effected by the improved condition of the nervous system that results after an operation through hopefulness, the fresh interest taken in life, and the strong belief that a cure has been effected. But even with the best, severe misfortunes may at any moment precipitate a relapse. Where the psychical causes are important, but not so prominent, improvement only is obtained. In other cases an irrelevant operation fails to produce any effect, the causes of the disease are too deep to be reached by any moral influence; the patient indeed being sometimes quite ignorant of the fact that he is an epileptic, and the attacks coming on as usual during and immediately after operation. The use of the trephine in epilepsy may depend upon speculation or on a definite diagnosis. Like abdominal surgery, it may be exploratory or operative. The speculative cases are those where medicine has failed, and where mental dulness, imbecility, paresis, or other grave symptoms are threatened. We then grasp at a scar, a depression of the skull, a painful spot, a doubtful aura, a hazy localisation of onset of attack as a clue, and as a relief from our helplessness, and remove a portion of the calvarium over the suspected area. This operation is a perfectly harmless one. I generally perform it by making two large trephine apertures at the extremities of the area to be removed. By means of a spatula-shaped instrument or blunt dissector the dura mater is separated from the calvarium round the apertures, then the area we intend to remove is marked out with a Hey's saw. It is only necessary to saw through the external table, when a strong pair of bone forceps readily completes the removal of the enclosed area of bone, the dura being separated as we proceed in our removal of bone.

During the operation the wound is kept well moistened with weak perchloride lotion (1 in 3,000), and the flap may be replaced without drainage, and with good hope that union by the first intention will take place. Bone may be replaced or not according to the principles on which the operation is conducted. By such an operation we can ascertain whether any cicatrix, adhesion, bony spicule, tumour of brain or of dura mater exists, or whether there is an excess or lack of intracranial fluid. We have removed the impenetrable bony barrier, and palpation and vision have now more power to enable us to form a diagnosis.

When we find nothing that would warrant us in going any further, we finish the operation, not without hope that benefit may accrue, and benefit is sometimes obtained to a very remarkable degree. But how? Well, that we generally do not know, but we guess at explanations. We may have removed a cicatrix, an adhesion—we have certainly performed an operation, we have abstracted a small quantity of blood, we have left a sore, we have diverted the patient's attention, we have relieved the pressure on the brain, we have increased the pressure on the brain, we have altered the diet of the patients, kept them under strict supervision, paid attention to the *prima via*, kept them at rest, free from excitement, and under conditions where their tempers, passions, and desires are restrained. Out of these and other explanations each reader takes his choice according as he is a physician, surgeon, enthusiast, cynic, scientist, or quack. The chief thing for us, however, is to get hold of the facts of these cases, but these are just some of the things there is no getting hold of; up to a certain date we hear of them, and afterwards a silence as profound as the grave is maintained. Let us see what has been the result in my own cases where more or less of the calvarium was removed, and nothing further was done, as these are the only ones we can individually be sure of, and even in our own cases the history after they have left hospital is difficult to obtain.

In 1889 I published two cases of epilepsy³ where circles of

bone had been removed, in one case for a supposed injury and in the other case for a fibro-fatty tumour that swelled and became distinctly more tense during the epileptic convulsions. In the first case a piece of the calvarium, 3 inches by 2, came away. After a few weeks' temporary improvement, we find four months after that no improvement had taken place and the man has not been heard of since.

In the second case a fatty and connective tissue mass was dissected off the temple leaving the calvarium rough beneath, a circle of bone was removed and the wound was closed as no further sign of disease or abnormality was discovered. A doubtful improvement took place, the fits being somewhat less frequent in number and said to be less frequent in severity, but nothing like a cure took place during the year or more that he was under observation.

In the following cases I removed a much larger piece of the calvarium over the suspected area of disease, and opened the dura, letting out more or less fluid.

CASE I.—T. P., 21, farm labourer, was well until four years ago when he was said to have had a sunstroke, and in consequence to have fallen off a horse injuring the left side of his head and leaving a depressed scar. The fits came on soon after and were ushered in with general convulsions and ended in sleep. Sometimes seven or more fits occurred on one day, and the right side, and especially the right arm, seemed to be more affected than the rest of the body. Mania or a muttering stupor occasionally took the place of quiet sleep, and rarely the patient was violent and dangerous. Memory dull, thought slow, disposition indolent. The body was fairly nourished, medium height, weight 9 stone 2½ lbs. Specific gravity of urine 1025, acid, urates, and sometimes phosphates. On October 9th, 1888, an area of the calvarium, about three inches square, was removed at the depressed part. Although the scalp was much depressed it was doubtful if the bone beneath was much depressed. There appeared to have been periostitis and some erosion of bone with adhesion of skin to calvarium by cicatricial tissue rather than distinct depression. The middle meningeal artery ran up the centre of the exposed portion of the dura mater and was uninjured. Now observe the note on the 11th, two days after operation: "Feels better, has had no fits since operation, is clearer in his head, and memory seems better; answers questions much more quickly and more readily than before operation" the usual effect of all operations upon epileptics. On the 16th, he had a series of fits with prolonged states of unconsciousness, and the condition continued on the 17th, when he remained unconscious at one time for five hours. On the 20th, the status epilepticus had passed off. He seemed to understand questions put to him, slept well, could read some words, but power of attention seemed deficient. The improvement continued till November 3rd, when he became noisy, violent, and on the 6th he was removed to the workhouse hospital, where he recovered his normal condition in about ten days. From February till July this patient was in the home at Maghull. During February he had 29 attacks of *petit mal*, and 18 of *grand mal*, 13 of the latter being at night. In March, 24 severe attacks, and 26 light attacks; April, 10 severe, 28 light; May, 14 severe, 19 light; June, 22 severe and 10 light; and till July 17th, 5 severe and 18 light, when he was discharged. During all the time he was in the home he took borax. He was taken home by his friends, with directions to continue the treatment. His mental condition was much improved, the fits not having affected his mind for several months. Dr. Gorham, his medical attendant, looked him up for me a few months ago, and found that he had distinctly improved, was in fair health, and able to work on the farm.

CASE II.—A. B., aged 25, admitted to Royal Southern Hospital May 4th, 1889. Was a steward for nine years and then joined the army; was a soldier for only eight weeks before he experienced his first fit. He ascribes his attacks to an accident which occurred to him in December, 1888, under the following curious and somewhat incredible circumstances: "He was walking along the street, when a stone struck him on the head and rendered him unconscious for perhaps a quarter of an hour; when he came to himself, he was sitting on a doorstep, and the scalp was cut through." The first fit occurred six weeks after. Has had four or five fits since, and lately they are coming more frequently, and are more severe. The day before admission he had two. Memory and sight failing, is losing weight, is nervous, suffers from jerks (*petit mal*). A scar existed on the left side of the scalp just above a point midway between the parietal eminence and the occipital protuberance. No note of state of fundus oculi. The scar is in about the middle of the region where we would expect the angular gyrus. On May 15th the scar was raised from the bone—under the line of the scar was a distinct ridge of bone—and the trephine circle of bone that was removed split into two at this ridge on elevating it. The dura mater was adherent at that line, but elsewhere was smooth. The wound healed by the first intention, and the patient went out on June 17th, having had only one fit since the operation, namely, on May 28th. He had several attacks of *petit mal* during the same period. He has not been seen since.

CASE III.—W. W., aged 20, fell off a wall when he was 7 years old, and received a wound of the right temple. He was taken to the hospital and had the wound stitched. Patient was ill for three months afterwards with convulsions, but after that he recovered and seemed to be well. When 16 years of age epileptic convulsions began, and he was taken to the hospital again, where he was trephined without effect. Some time after he found his way to the workhouse epileptic wards as a pale, thin, phthisical-looking youth, having severe epileptic attacks of the ordinary kind. On March 10th, 1889, he was sent to Maghull, having had 15 fits there for the remainder of that month. In April he had 6 fits; May, 2 fits; June, 2 fits; July, 10 fits; August, 2 fits, and up to September 16th none. During his stay at Maghull his physique had improved so much that his mother did not recognise him at her first visit, three months after his admission to that institution. He became very stupid by the middle of

³ On *Epilepsy*, pp. 130 and 133.

the month, and the scar very red, and it was determined to trephine again and see if any irritating cause existed. A small spicule of bone was removed on September 18th, and as this may have been the irritant cause of the epileptic convulsions, the wound was closed without opening the dura mater. He had no fits till October 7th, when he had a very severe one, and another on October 18th. He was sent back to Maghull on October 20th, and during the remainder of that month he had 3 slight and 5 severe attacks; November, 1 slight, 11 severe; December, 1 severe; January, 2 severe; February, 1 severe; March, 5 severe; April, 13 severe; May, 14 severe; and, up to June 15th, 5 severe. The prodromal redness of the scar and the turgescence during an attack encouraged the idea that there was probably some cause of the disease just beneath. The wound was again examined, and the dura mater opened. A diffuse cystic condition of the dura beneath was found enclosing atrophied cerebral convolutions. The cysts were evacuated and drained by catgut drains. The wound healed well without any complications, and the patient was returned to Maghull on August 15th, where an improvement has resulted as far as the fits are concerned, but his mind has never recovered. He is absent, has completely lost his memory and all interest in his work, and looks pinched and vacant. He still eats well, but his food does not improve his nutrition. He has precursive attacks that are very curious. He is, perhaps, sitting still at his meal, in bed, at a concert, or working apparently quite contentedly, when he suddenly becomes restless and fidgety, moves about on his seat from side to side, or sways to and fro as if in two minds about going or remaining. He then rushes off, walking or running as if he were on a life and death errand, his countenance pale and most anxious, and makes desperate efforts to free himself from any attendant who tries to restrain him. In a few minutes, and, after a run of variable length, he comes to himself, resumes his work, and looks quite surprised when we ask why he ran away just now. He has no idea that he ran, and does not seem to know anything about it. These precursive attacks are recent phenomena, not being noticed until after the drainage operation. Probably degenerative processes are taking place in the right frontal lobes of the cerebra, which the operations did not tend in any degree to improve. The future of this case looks very dark. This was written at the beginning of 1893; now, in July of the same year, the report is much better. He has had no fits for about four months, works at odd jobs at Manor House, and takes much interest in his work; is bright and intelligent, and is very anxious to obtain a situation where he may contribute to the support of his mother. The following description of his condition after his last readmission was given me on July 29th, by the matron of the home, Miss Paley. Readmitted February 25th, 1893: "When readmitted looked heavy and depressed, pale face, eyes congested, memory bad; could remember faces of people he had known before, but not names, except in a few cases. Had forgotten his way about the Home. For the first two weeks or so he would stand about in any corner, looking down examining his hands or feet. When told to go to his work he would hurry off, quite willing to do anything, but without the remotest idea where he was going to, or where he had been told to go. Cleaning brasses was his daily work. If taken to the front door and told to clean the brass there, he would go on polishing away on one spot until someone pointed out to him that he had finished that part. He had to do this kind of work in three or four different parts of the house, but he had always to be taken from one part to the other, otherwise he would stop in one place all day. When he had been here a month or five weeks he began to show signs of improvement, looked quite bright and cheerful, took an active interest in everything that was going on, could talk about people whom he had met in the Home three years ago, and of things that happened when he was 10 years of age. Now takes great pride in all his work, and never has to be told to do it."

CASE IV.—E. M., 30, of no occupation, has been an epileptic for thirteen years, the alleged cause of the attacks being exposure to the sun and prolonged excitement at a picnic party. This patient was transferred to me from Dr. Carter, who had tried purely medical treatment to the utmost, and under whose judicious treatment the attacks could only be kept in check by hypnotics. Even the bromide of potassium failed lately to give the usual amount of relief that it had formerly afforded to her. The case is described at some length by Dr. Carter in No. 22, p. 73, of the *Liverpool Medical Chirurgical Journal*. He does not there point out especially the nature of the attack, but from what I saw of the patient I looked upon her case as one of hystero-epilepsy, where the mental condition influenced the disease to a large extent, and just a case for an exploratory operation on the principles I have previously laid down. A slight drooping of the right eyelid and premonitory convulsive movements of the right foot guided us to the left hemisphere, but I am not sure that they were of much use, as, in the absence of all indications, one would naturally take the left brain for an exploration. On December 3rd, 1891, and after removal of the scalp, two 1-inch trephine holes were made about 3 inches apart, and a rhomboidal area mapped out by scratching lines through the outer table with Hey's saw, having the trephine holes at the extremities of the long axis of the rhomboid. The rhomboid lay over the position of the motor area of the cortex. A pair of strong bone forceps removed the thickened skullcap in hard ivory-like splinters. The dura mater was exposed, and as that membrane seemed healthy and no signs of any opacity or adhesion to the brain beneath appeared, the wound was thoroughly washed out and the scalp replaced. A hypodermic injection of brandy was given during the evening after patient went down to the wards, as the pulse was considered very weak. One-sixth of a grain of morphine relieved the pains and gave the patient a good night's sleep. Temperature, 99.2°. On December 7th, it is stated, the patient complained of pain in the head occasionally, slept well, had ptosis, and a newly-developed internal strabismus of right eye. December 11th. Dressed to-day, wound healed by first intention; no fits since operation. December 21st. No fits nor headache since operation. December 30th. Discharged so far well, under the care of Dr. Carter, who wished to observe the case for some time longer. When the patient went from under my care a deep hollow existed at the part of the skull where the bone had been removed. The base of the hollow was hard and firm, and did not show any distinct cerebral pulsations or tendency to bulge outwards. Since then she has had long intervals of relief, but always complains of headache. She had some attack just lately, but it is difficult to get any

reliable information, as her surroundings do not seem satisfactory. There is no doubt she has benefited by the operation.

CASE V.—J. L., 34, sailor, married, was admitted to the Royal Southern Hospital, December 7th, 1891. He was always a healthy man until the following accident occurred. Twelve months ago his vessel shipped a heavy sea, and the patient was carried by a wave along the ship's deck, striking his head against something which "brought him to" in nautical phraseology but did the very opposite in medical language, for he was unconscious for several days after, and was not able to work for the three remaining weeks of the voyage. Just four weeks after the attack, when in bed and after sexual intercourse, he had his first attack. He was then unconscious for about an hour; some days after he had another fit. The attacks are preceded by a visual and gastric aura; he thinks he sees a person approaching him, and afterwards he feels sick. Then he has vertigo, the head seeming to double between his legs, as if he was about to turn head over heels. After this insensibility sets in; attacks are on an average two per week. Once he was a fortnight without any. He is a robust, vigorous man, with sharp eyes, quick movements, brusque manner, and irritable temper. On inspection there is found a depressed cicatrix, beginning slightly to the left of the median line, 7 inches distant from the vertex, and running obliquely across the vertex to terminate about 10 inches from the occipital protuberance on the opposite side. The curved cicatrix was about 3 inches in length. The fracture is a gutter, and well marked by a depression all the way across. Memory not so good as formerly; remembers dates, and reads the "murder reports" especially. Temper irritable; does not write so well as formerly, and sometimes misses a letter of his name in writing; no headache except just after a fit. On December 9th, 1891, all the depressed area of bone was removed. The calvarium was thick and dense, and near the median line a projecting edge of it pressed firmly against the dura mater. All bone below the ordinary level was removed. The sinuses and dura beneath seemed healthy, and the dura did not seem abnormally adherent to the bone. The wound was dressed for the first time on December 14th, when it was found to be suppurating a little, but afterwards the wound healed without any trouble. The first attack occurred on January 3rd, and the patient went out on January 18th, having had two attacks in the interval. He came to hospital on February 29th, and the report is that his fits have recurred. On examining his head I found another small depression on the vertex, and much behind the one operated on, but whether this occupies any relation to the epileptic attacks it is impossible to say. As the operation is a simple one compared with the grave disease he suffers from I recommended removal of the depression also, but the patient had not the courage to submit to any further operation. We have not heard of him since.

CASE VI.—R. R., aged 13, was trephined by me on January 3rd, 1892, for congenital epileptic convulsions. There were numerous daily attacks of *petit mal*, and more rare attacks of *grand mal* extending back to the period of infancy. He had nystagmus, slight stammering, and post-epileptic slowness of intellect, but he was bright and intelligent when he had sufficient free interval. An aura in his left thumb made me trephine over the right motor area, removing the calvarium 2½ by 2. The dura was opened, and brain explored by eye and needle. Nothing was found except a considerable amount of fluid. The bone was not replaced, and the wound healed without difficulty. The patient gradually improved. During March the fits left him, and he has been free with the exception of two doubtful attacks of *petit mal* since, an interval extending from March, 1892, to July 25th, 1893, when he was last seen. He is bright, active, and intelligent, and so far has been a success.

CASE VII.—M. A., aged 15, was operated on by me on November 29th, 1892, for epilepsy coming on after an injury that caused a depressed fracture of the right side of the upper extremity of the parietal and adjacent occipital bone. The attacks were mixed, and began mostly on the right side, the same side as the lesion. The cicatrix was cut down upon, and the calvarium was imperfect at one spot. The membrane covering this was removed, the adjacent bone cut away, and the dura opened. A cystic condition was found beneath with atrophied convolutions and enlarged veins, one of which bled rather profusely when its walls gave way, the cyst was drained. The wound healed satisfactorily. On October 21st, 1893, the girl presented herself for inspection. The fits are much less frequent, and the mother says they are much lighter.

CASE VIII.—H., a Jewish (?) boy, aged 13, an imbecile epileptic for many years, had a bump on the top of his head, extending from the middle of the left parietal bone forwards to the left frontal bone and about 2 inches from the middle line. The attacks did not present any indications for localisation, and no history of its duration could be obtained. The attacks were numerous daily, mostly *petit mal*. The patient would go down on his knees, then become conscious and begin to look under the bed, his situation suggesting to him, no doubt, that he had got down there to look for something. In a moment he would get up confused, and with a laugh go on with his amusement as before. On the principles we have already enumerated, we, on June 15th, 1892, cut down and found first a thick fibrous layer, half an inch thick, covering the bone. The bone itself was half an inch thick, and the dura beneath was thickened. One square inch and a-half of this thick bone were removed. The attacks are diminishing month by month, being only one a day during the past month, and several days have passed without any attack. I look upon this case as very hopeful. October 21st, 1893, improvement maintained.

CASE IX.—On February 2nd, 1893, C. O., a girl, aged 16, was trephined over the right motor area on account of numerous epileptic attacks that came on soon after a fall five years ago. The convulsions were observed on the left side of the face and hand, and a scar on the head defined the site for operation. Some excess of fluid was found, but the convulsions seemed natural and were not interfered with beyond a careful examination; the wound healed without anything calling for remark, and the child was afterwards sent to the Home at Maghull. On July 29th she seemed quite bright and intelligent in contrast to her previous depressed state. Her headaches, which were formerly constant, have entirely disappeared, and her fits have become much less frequent. In this case the home country life has no doubt contributed largely to the improvement. The brain does not bulge, and the cicatrix is quite firm and does not give any inconvenience. October 21st, 1893, still improving.

CASE X.—On March 2nd, 1893, I operated on a young girl, named G.,

aged 11 years, a congenital imbecile epileptic, with a depressed area of bone over the left frontal and ascending parietal convolutions. The attacks were one-sided at first, and the symptoms pointed to the depressed area as the seat of the epileptic focus, but the information was never definite. About a year before the operation I had seen the case, and recommended elevation, but the parents did not make up their minds till the latter date, when the depression was distinctly less, but still considerable. An area of bone 2 inches by 2 inches was removed, the dura opened, and an excess of clear fluid found beneath. The convulsions looked healthy. The bone was not replaced, and the child recovered without any bad symptoms. On July 29th the child is much improved, is learning to spell, and has had fewer attacks since the operation. We assisted Nature in this case, and I believe had she been assisted long before the imbecile condition might have been warded off.

I could narrate several other cases, but I have mislaid the notes of some, and the others are too recent to be yet of value. The above are sufficient to show the results of these operations.

CONCLUDING REMARKS.

Reported as these cases are here reported by me, the results have not been very brilliant as far as the cure of the disease is concerned, but they are certainly encouraging, and will probably improve by time. In all there was an antecedent injury, a long or short period subsequently during which it may be said the disease was incubating, and finally, attacks becoming more frequent and severe up to the time of operation. What is it that develops during the period subsequent to the fall, the blow, or the injury? and what is it that can develop in a few days, or that may not appear for years, that can be held in abeyance by so many causes, and that eludes our search when aided by the most refined instruments that we possess? We cannot tell, but we know that it is something that requires developing, and our only chance is to prevent the development if possible by operating on all recent cases, elevating depressed fragments, embedded spicules, and thoroughly cleansing the wounds. Abnormality of skull, tumours on the scalp that become congested, painful areas, scars, etc., should be attended to early in the disease, before the brain has acquired the something that it cannot part from before the accidentally epileptic has become essentially epileptic. By trephining widely, and replanting fragments of bone, we can obtain a complete reformation of the original bone as good as before the accident. In one epileptic that I made a *post-mortem* examination on, trephining had been performed at the age of 5, but a spicule of bone had been left behind, and when death occurred at 18 years of age from phthisis, the spicule still existed as the cause of epilepsy. Strange to say, in this case the epilepsy, which seemed to be quite essential, was arrested for a time by good feeding, and small doses of bromide, and became much worse under starvation, prison fare, and such adverse circumstances.

We can imagine the brain labouring under the conditions of having too much room or too little, and this will mean diminished or increased quantity of cerebral fluid, serous or sanguineous. The dura mater that before operation was attached firmly to the dome-shaped roof may after operation and according to circumstances either bulge through the aperture in the skull or fall back by atmospheric pressure upon the brain. In the latter event, by shrinking it will assume the position of the string of a bow, instead of the arc of a bow, which was its original position, and thus permanently diminish the size of the cavity of the skull. The outward bulging of the fluid or brain is determined by the tense membrane and can never be very great if the dura has not been opened, whilst the depression may be very marked. When the dura is cut into a tendency to hernia is produced, as in the case of the boy (Case vi) lately operated on, where a bulging has taken place. In all the others a depression is found that neutralises, if it does not more than neutralise, the increased space allowed by the removal of the bone. If the dura mater is opened and weakened by being stitched together again just as the abdominal wall is weakened by abdominal section, then the outward pressure may have some influence in making more room for the contents of the cranial cavity, but if the dura mater is uninjured it is such a dense resisting membrane that it would require great force to push it beyond its dome shape. On the other hand, atmospheric pressure will tend immediately to push the dura mater inwards and to diminish the brain, but this influence is removed as time goes on by the skin and tissues forming a dense resisting membrane or by

new bone being formed and the original condition of the calvarium restored.

The greatest chance of relief by trephining, without opening the dura mater, exists in those cases where an inequality of the skull may act as an irritating cause, and where the inequality is removed by the operation. Alteration of the condition of cerebral pressure may act in a few cases beneficially to a permanent extent, but it is nearly always temporary, and its permanent influence upon the disease depends on the improvement of the mind and brain during the operative treatment, and for a short time after, till the skull returns to its original condition.

In most other cases the operation has only moral or accidentally favourable effects. It is a perfectly safe operation, justifiable for exploration purposes, and should always be complete, so as to thoroughly explore the area likely to be affected.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

THYROID FEEDING IN SKIN DISEASES.

IN view of the important results obtained by some observers by thyroid feeding in psoriasis and other dermatoses, the following brief notes of cases carefully observed as in-patients are of interest. The only case benefited was that of xeroderma; the results in three cases of psoriasis, and in one of eczema were quite negative.

CASE I.—B. B., aged 13. Infiltrated eczema of face and backs of hands, dating from infancy. On August 24th 5 minims of brandy and Martin's thyroid extract was ordered to be taken daily, without any topical remedy, and was taken for nine days. The result was that the eczema was not so well. The fluid was continued for a time, and later changed to Burroughs and Wellcome's tabloids, two or three a day. The thyroid treatment was continued for two months, and pushed until symptoms of thyroïdism were produced, but without any beneficial effect upon the disease.

CASE II.—M. L., aged 35. General acute psoriasis guttata. She had suffered from outbreaks of the disease once or twice a year since the age of 16. On August 11th brandy and Martin's extract was ordered, 10 minims daily, afterwards increased to 15 minims; later, six tabloids a day were given. The rash was rapidly fading when treatment was begun, and this involution continued while under thyroid treatment; nothing approaching exfoliation, however, was seen. The case remained stationary for a time, and then a manifest increase of the spots took place on the chest. The thyroid treatment was continued till September 30th, when it was stopped, and the skin easily cleared of the disease by means of the usual remedies.

CASE III.—M. G., aged 12. Widely distributed chronic guttata psoriasis. Thyroid treatment was given for a month, but no difference in the disease was noticeable.

CASE IV.—T. W., aged 44. Xeroderma, with dry, silvery, fine desquamation. August 19th, thyroid extract (Brady and Martin), 10 minims daily. No other remedy. In twelve days the skin was softer and more scaly. On September 19th he left the hospital, showing very marked improvement. The skin was much less dry, and the scalliness was gone. Moreover, he asserts that he has perceptible perspiration while in bed.

The same treatment was adopted in three cases of psoriasis in out-patients (two chronic cases with indurated scales and one subacute), but in neither case did it lead to improvement. In one, T. R., the disease was in the erupting stage, and the thyroid treatment appeared to determine a large increase in the number of guttate lesions, which rapidly increased in size, became confluent and more scaly. The disorder under this treatment became much worse than before its adoption, when the patient was being treated with salicylic acid ointment.

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MALARIA ON SHIPBOARD.

IN the BRITISH MEDICAL JOURNAL of October 21st, 1893, there was a letter from Surgeon Lieutenant-Colonel O. Baker directing attention to attacks of ague on board steamers. Having had some years' experience as a practitioner in India and tropical Africa, I am of opinion that perhaps my few general remarks may go far towards throwing light on these seemingly mysterious outbreaks. Malarial poison may be conveyed chiefly in three ways, namely: 1, owing to prevalence of malarial mists due to breezes blowing off the land; 2,