

## REMARKS

ON

TEN CONSECUTIVE CASES OF OPERATIONS UPON  
THE BRAIN AND CRANIAL CAVITY TO ILLU-  
STRATE THE DETAILS AND SAFETY  
OF THE METHOD EMPLOYED.(WITH A TABLE.)<sup>1</sup>

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IN the JOURNAL for October 9th, 1886, is published a paper by myself on what I believed to be the best method of treating the brain surgically, a method which, though contravening many of the accepted canons of surgery at the present time, I had previously derived by experiments on the lower animals not only to be the safest, but also to afford the best results. The further experience gained from operations upon man, as might be expected, has added little to the knowledge gained by experiment. However, in the former case, one or two points naturally assume a more important position in considering the justifiability of operating, and as I am anxious that they should receive the attention and criticism of those practising in the same direction, I shall now proceed to discuss them in brief detail.

As regards the preparation of the patient, both generally and locally, there is nothing further to add; but before leaving preliminaries, it is worth while noting that the main factor in each case at the present time, which acts most powerfully in suggesting the advisability of surgical treatment, is the utter hopelessness of any other drugs, etc., proving of any value. This is, of course, the early stage in general adoption of every new departure in medical sciences, but it is obviously needful for us to formulate as early as possible the circumstances conditioning the symptoms of those maladies of the central nervous system which are amenable to surgical treatment. This need lies at the door of imperfect diagnosis.

Diagnosis of disease of the central nervous system means an intimate acquaintance with its physiology and pathology, and this we may hope to see widely generalised in spite of iniquitous opposition to scientific experiment and foolish ignorance, which, so to speak, boasts that it "does not believe in localisation." For the full advantage to be gained from operative procedure it is obvious that the disease must be attacked in an early stage. Nothing illustrates this fact more clearly than the very valuable paper published by Dr. Hale White in the last volume of the *Guy's Hospital Reports*, on the morbid anatomy of certain cerebral tumours. In this paper, Dr. Hale White gives some details from the *post-mortem* room concerning 100 cases of intra-cranial tumour, in which he demonstrates with facility that at about the period when a patient dies from such a cause, surgical interference in the majority of cases would be as powerless as medicine.

When, however, the nature of the malady and its seat are completely diagnosed, as in nine of the ten cases in the table appended to this note, the question assumes an entirely different aspect, as will, no doubt, be conceded on the perusal of the facts there given, from which it will be seen that, with one exception, No. 10, every patient was considerably benefited. After all, however, the proposition that what is wanted in these cases is earlier treatment scarcely needs proving, and so we may pass on to the real object of this note.

**Anæsthesia.**—The first practical point to be briefly dwelt upon is the question of anæsthesia. The method I proposed before, namely, the previous administration of morphine followed by that of chloroform, I see no reason to alter; but, like all kinds of anæsthesia, it has certain special risks to which it seems necessary to draw attention. In the first place, the remarkable proclivity of children to the effect of morphine must be properly discounted. Dr. Wilson, the senior resident medical officer to the National Hospital for Paralysis and Epilepsy, found that while one-twentieth of a grain was amply sufficient in Case 8, the value of the drug in contracting the cerebral arterioles remained unimpaired. With respect to the administration of chloroform, the one additional fact here to be noted is the extremely important one that it is very easy to give too much in a brief space of time. Thanks to the great care of Drs. Wilson and Stedman, who have assisted me in this respect, I have seen no accident; but I have been very deeply impressed

with the startling rapidity with which a patient who has roused up in the middle of the operation is sent off again in a moment with only a few whiffs of the drug. It is perfectly comprehensible, therefore, that an anæsthetist, however careful, might be induced to prolong the administration beyond the point of just sending the patient off again, as, indeed, he would naturally do under ordinary circumstances. Such prolongation, under the present circumstances, is evidently exceedingly dangerous. In the absence of accurate experimental observation it would be foolish to hazard an explanation of this fact, and I do not intend, therefore, to attempt one, but I should like to remark that I am nearly sure this state of sensitiveness to the action of the anæsthetic is more marked when the dura mater is opened.

**Formation of the Scalp Flap.**—In insisting before that the old crucial incision should be entirely abandoned in favour of a large flap, stress was laid upon the fact that it must be so outlined as to preserve in its attachment either the superficial temporal, or occipital arteries uninjured. This can be easily done without disfigurement or hindrance to drainage, and at the same time it perfectly admits of the exposure of any portion of the cranium. As regards the reflection of the flap, it has always been the custom to reflect the periosteum as a separate layer. Now this method has a very obvious disadvantage in considerable and unavoidable laceration of the very thin membrane. This may be prevented by lifting it *en masse*, in continuity with the rest of the flap. It peels off perfectly, and there is no interference with the nutrition of the bone.

**The Bone.**—Sawing of the bone is most rapidly, and therefore best, accomplished by first taking out an inch disc with a trephine, to learn its thickness, and then by cutting out a piece of the size required with a circular saw, mounted on Bonwill's surgical engine,<sup>2</sup> the separation being completed with very powerful bone forceps. Following Dr. McEwen's method in cases where it has been possible to preserve the dura mater, I have replaced fragments of the bone between the same and the skin flap; but although the vitality of the fragments has invariably been perfectly preserved, I have not so far observed much ossification of the cicatrix. This, however, I take to be of little practical importance, since the cavity becomes roofed over with the tough fibrous membrane I have before described, which well preserves the parts beneath from injury. In cases where it has been necessary to remove a large area of bone, the patient has worn a perforated celluloid cap, which, though light, is nevertheless very strong.

**The Dura Mater.**—Portions of this membrane which are adherent to tumours are usually very considerably altered. If the mischief has but lately begun, the dura mater will be found simply highly vascular. In very advanced cases it may be yellowish, and in some instances, on separating it from the growth beneath, it is found to be of a dirty reddish colour. In all cases where it is adherent, of course the membrane must be freely excised.

**The Brain.**—Almost the only addition now to be made to what I have said before on the subject of the treatment of the brain is to advise that plenty be removed, especially in the case of new growths. From the experience gained from Case 4, it is clear that even the most malignant tumours may be successfully attacked, and life thus prolonged and ameliorated, but it also shows plainly that the malignant growths must be excised very freely from among the white fibres. In the instance referred to, the recurrence was almost entirely confined to the latter part of the brain. The details of this case, however, which are specially interesting, will be published elsewhere, this note being only intended to illustrate the most important facts of the operative procedure.

**Drainage.**—In the first few cases operated upon, I employed a drainage-tube in the usual fashion for the first twenty-four hours, and then left it out. I now sew the wound all round closely except for one inch at the most dependent part, where any tension of wound-discharge can relieve itself by escape between the edges. I am more than ever convinced that the object to be attained is immediate union of the flap, and that the arachnoidal, like the peritoneal, cavity may be trusted to absorb excess of fluid.

**Mode of Dressing.**—As before, I employ the original form of strict Listerism, and wider experience prompts the suggestion for further stringency in attention to details. I have experimentally tested the method of irrigation, to see whether the carbolic spray could be easily dispensed with, and the results of the inquiry have been to show that the spray still affords the best method of continuously douching the wound with disinfectants. It, besides, offers no inconvenience, so far as I can see. After the first four or five days, when the wound is healed, it seems preferable to scatter powdered boracic acid

<sup>1</sup> Very kindly compiled for me by Dr. Thomas Wilson, Senior Resident Medical Officer to the National Hospital for Paralysis and Epilepsy.

<sup>2</sup> A powerful form of which Messrs. Mayer and Meltzer have made for me, after the plan of the original engine, presented by the inventor to St. Bartholomew's Hospital.

TABLE OF FIRST TEN CASES, ARRANGED CHRONOLOGICALLY.

No.	Initials, sex and age.	Object of Operation.	Diagnosis.	State before Operation.		Operation.	Mode of Dressing Wound.	Mode of Healing.	State after Operation.			Physician seen with.	Result.
				Mental.	Paralysis.				General.	Mental.	Paralysis.		
1	J. B. M. 22	Removal of scar in brain from old depressed fracture of skull, giving rise to fits beginning in the right leg; 2,370 fits during 41 at 18 days of stay in hospital (twice in status epilepticus)	Scar involving hinder end of superior frontal sulcus	Incomplete of right arm and leg	Dull	May 25th, 1886. Trephining at seat of adherent scar in skull, and removal of scar extending into brain by free incision	Strict Listerism with spray 5 per cent. carbolic gauze. Drainage-tube left out on second day	Immediate union. Highest temperature 100°	Improved	As before	Dr. Ferriert	No fits since.	
2	T. W. M. 20	Removal of irritative lesion in thymus-area causing epilepsy and spasms of thumb; 1 fit or more a week; spasms constantly	Lesion in anterior border of motor centre for thumb. (?) Tumour	Incomplete of left upper limb	Fair	June 22nd, 1886. Trephining at seat of lesion; exposure of localised tubercular tumour and removal by free incision	Strict Listerism with spray 5 per cent. carbolic gauze for 4 days; then boracic acid and encalyptus gauze. Drainage-tube left out on second day	Immediate union, but afterwards a superficial portion of skin at edge of flap (which was turned upwards) sloughed. Highest temperature 100.3°	As before	"	Dr. Hughlings Jackson	No fits for 3 months afterwards; since then 8 fits, all confined to the arm and of shouler-type, in September, October, and November, 1886; none since.	
3	A. W. J. M. 24	Removal of irritative lesion in the motor cortex causing severe epileptiform seizures in attacks every 3 weeks or less	Old punctured fracture of skull involving cortex	Slight of right upper limb and face	Dull; headache frequent	July 19th, 1886. Trephining at seat of minute scar and removal of small piece of inner table of skull depressed in a traumatic cyst with the brain surrounding this for thickness of 5 to 8 mm.	Strict Listerism with spray. Drainage-tube left out on second day	Immediate union. Highest temperature 101.3°	Improved somewhat	Dr. Buzzard	No fits since operation save three slight attacks of petit mal.		
4	J. H. M. 38	Removal of irritative and destructive lesion in brain, which caused complete left hemiplegia, and epileptiform seizures beginning in the left shoulder	Tumour of cortex involving the upper part of the anterior centre in the right hemisphere	Complete of left arm and leg	Semi-comatose for 10 days before operation	September 23rd, 1886. Trephining over the disorganised seat of tumour and removal of glioma, the portion removed weighing 4½ ounces	Strict Listerism with spray and carbolic gauze. Drainage-tube left out on second day	Immediate union for most part; small portion of wound was reopened on the eighth day, remained open for 40 days, a large quantity of clear serous fluid draining away for that time. Highest temperature 100° on the normal side (right), 103° on the paralysed side (left)	Much improved	Much improved	Dr. Ferriert	No fits after operation; patient gradually improving for 8 months after which tumour began to give symptoms of recurrence, and patient died on March 18th, 1887, six months after operation.	
5	O. S. H. M. 10	Removal of irritative lesion causing epileptiform seizures beginning at left angle of mouth; 8 to 6 fits every day	Lesion in motor cortex; 1 small hemorrhagic cyst	Incomplete of face, tongue, and articulation	Moral imbecile	October 19th, 1886. Trephining over facial centre, and removal of cortex composing that centre, as determined by faradism at the time	Strict Listerism with spray 5 per cent. carbolic gauze. Drainage-tube removed on second day	Immediate union. Highest temperature 99.6°	Improved	As before	"	Twitchings at left angle of mouth second night after operation, fits third night afterwards about half as frequent as before; still later fits had intervals of 3 weeks without fits. General improvement.	
6	G. W. M. 37	Removal of irritative lesion caused by blow on head 14 to 15 years ago; first fit 3 years later	Cicatrical lesion in and behind centre for removal of half lux, that is, fissure of upper end of Rolando. (Beever and Horsley.)	Paralysis of right arm and leg; especially of hand. Paralysis is of sensation as well as motion	Very dull; memory very much impaired	November 6th, 1886. Trephining over disorganised seat of lesion. Bone normal. On incision of dura large cystic cicatrix removed from cortex. Excision of lesion incomplete owing to collapse of patient.	Strict Listerism with spray and carbolic gauze. Drainage-tube left out first day after operation	Immediate union. Highest temperature 100°	Much improved	Much improved	Dr. Savill	Four fits day after operation, 2 on sixth day, and a slight attack about once a week; no loss of consciousness.	
7	J. W. M. 37	Relief of severe localised and intractable headache of 8 years' standing, which incapacitated the patient from work	Relief of severe localised and intractable headache of 8 years' standing, which incapacitated the patient from work	None	Good	November 12th, 1886. Trephining at seat of pain. Removal of piece of parietal bone, inner table of which had been perforated and was being eroded by a Paechliouan body	Strict Listerism with spray. No drainage-tub.	Immediate union. Highest temperature 99°	As before	None	Dr. Hughlings Jackson	Relief of pain after operation; no return since.	

TABLE OF FIRST TEN CASES, ARRANGED CHRONOLOGICALLY—continued.

No. Sex, and Age.	Initials.	Object of Operation.	Diagnosis.	State before Operation.		Operation.	Mode of Dressing Wound.	Mode of Healing.	State after Operation.		Physician seen with.	Result.
				Mental.	Paralysis.				General.	Paralysis.		
8	F. W. M. 4	Exploration and removal of lesion causing 3 to 14 fits every day	Lesion beneath motor cortex; probably old hemorrhagic cyst	Semi-comatose most of time	Almost complete of right arm and leg	November 29th, 1886. Trephining over left "motor area," exploration of brain by incision.	Strict Listerism with spray. No drainage tube; small portion of incision left free	Immediate union. Highest temperature 99.4	As before	?	Dr. Bastian	No fit for a month; then six slight ones; then no more.
9	W. T. M. 37	Removal of irritative and destructive lesion causing gradually increasing right hemiplegia, and fits beginning in the right forefinger; no fit for three months before operation	Tumour in motor cortex involving right "hand-centre"	Good; headache constant	Complete of right hand and forearm, incomplete in leg; slight defect of speech	December 7th, 1886. Trephining over seat of lesion, and removal of tumour weighing 4½ ounces.	Strict Listerism with spray. One inch of incision left approximated but without suture for drainage	Immediate union except at one small piece of incision left for drainage. Highest temperature 100°	Improved	As before	Dr. Ferrer	No headache since; no fit; no further increase in the paralysis.
10	J. B. M. 18	Removal of progressive destructive lesion causing headache, vomiting, optic neuritis, increasing weakness of all limbs, especially left arm and leg, and epileptoid attacks with turning of head and eyes to right	Tumour involving right lobe of cerebellum chiefly	Good	Incomplete of all four limbs, especially the left arm and leg; sphincters affected	December 17th, 1886. Trephining over right lobe of cerebellum, and removal of tubercular tumour weighing 7 drachms	Strict Listerism with spray	—	—	—	Dr. Bastian	Died 19 hours after completion of operation, having only partially recovered consciousness for a short time. Patient had been a year in bed. Operation as <i>dermier ressort</i> . Post mortem: generalised chronic tubercle in viscera.

along the dry line of incision, and to fix by colloidon a little cotton-wool over all. At any rate, there is clearly no reason why the original dressing should remain on the head after the wound is sealed and dry.

*After-Treatment of Patient.*—The only symptom of inconvenience that the patients treated so far have suffered has been thirst. Possibly this is in the main due to the morphine. As an additional though minor trouble, the liquid diet of the first three days makes the tongue very furred and unpleasant. To remove this, the mouth should be thoroughly brushed several times a day with strong chlorate of potash solution. The patient should be put on solid food as soon as he asks for it. If the case be a comparatively trifling one, he may be allowed to get up at the end of a week. Ten days, however, is a very good average for the stay in bed, and in severe cases a fortnight should be insisted upon. Recovery of power may be accelerated by the use of the faradic current from the vertex to the weakened muscles (Ferrer).

Many other questions offer themselves for discussion—for example, the question of further operation in case of recurrence, the curative effect of the operation on epilepsy, etc.; but the facts at our disposal are too few to make such discussion either practicable or profitable.

In conclusion, I think the details of the cases contained in the accompanying table show that the operation of exposing and removing considerable portions of the brain is not to be ranked among the "dangerous" procedures of surgery.

**DONATIONS AND BEQUESTS.**—King's College Hospital has received £1,000 stock anonymously (per Messrs. Haggard, Hale, and Pixley), and £100 from the Duke of Bedford.—Mr. William Middlemore, of Edgbaston, bequeathed £250 to the General Hospital, £250 to the Queen's Hospital, £100 to the Hospital for Women, £100 to the Eye Hospital, £100 to the Hospital for Sick Children, £100 to the Sanatorium, and £100 to the General Dispensary, all at Birmingham.—Mrs. Susannah Beloe, of Gravesend, bequeathed £250 each to the National Hospital for the Paralyzed and Epileptic, the Gravesend Hospital, the Hospital for Consumption and Diseases of the Chest, and the Cancer Hospital.—Miss E. K. Brumby has given £105 to the Richmond Hospital, Surrey.—Mr. George Stubbs, of the Ferns, has given £100 to the Madeley Infirmary.—Mr. Francis Dunsford, of Tiverton, bequeathed £100 to the local infirmary.

## ABSTRACTS OF LECTURES ON MALARIAL FEVERS.

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### LECTURE I.—DISTRIBUTION AND GENERAL CONDITIONS OF PREVALENCE: HISTORY IN THE PROVINCE OF ROME.

The wide distribution of malarial fevers and their disastrous effects upon the population of countries in which they prevail, and the obstacle they constitute to all material progress, is not generally realised, whereas it is a subject which should attract the attention of governments, inasmuch as these diseases materially increase the cost of administration. We as a nation have had a vast experience of them, and the literature of the subject is enormous, but, withal, little or nothing has been done towards understanding their etiology, or the precise conditions necessary for their existence or production. If we examine the malarial chart of the world, we cannot fail to be struck by the gradation of the disease from the equator to the poles, and by the characteristics of the countries where it prevails. They are, briefly, countries where Nature has her own way, and swamps, jungle, and virgin forests abound. The map suggests a relation of the disease to temperature and water. If we compare the malarial chart of Europe with a physical map of the Continent, the relation of the disease to low land, abundant water, and hot, moist climate, is very evident. Make the same comparison between a physical map of Italy and the map of Senator Torelli, showing the local distribution of the malarial, and the relation of the disease to water, temperature, and altitude of the land becomes a certainty. A study of the local distribution and variation of intensity of malarial fevers in the province of Rome shows us that local conditions have a most important bearing on the subject, and are, therefore, worthy of minute and careful examination, and the general conclusions drawn from the consideration of large areas are still found to apply, and we find the disease to be generally most severe on low-lying ground, in valleys, and in marshy districts.