public demonstration at Boston Hospital. This failed, as the patient was not fully anesthetized; it ruined Wells.

Mr. W. T. G. Morton, who was present at the hospital, had been a partner with Wells, and wished to try the action of nitrous oxide. He called on Dr. Jackson, a practical chemist, for some of the nitrous oxide gas, who could not give him any. He said its manufacture was difficult, and there was the risk of nitrous acid gas being mingled with the nitrous oxide. Jackson advised Morton to try sulphuric ether as being safe and certain, being inhaled often by the students of Cambridge University, U.S., for amusement. Morton used it successfully on September 30th, 1846. The next day he called on a patent lawyer, R. E. Eddy, who thought Dr. Jackson ought to be associated with him. The patent was granted November 12th, 1846, No. 4848. Morton named it "letheon," and flavoured the ether with aromatic oils. The surgeons declined to continue its use until he declared its composition. Numerous litigations from infringement resulted. Government failed to recognize its validity.

The discovery of chloroform in Scotland in 1847, and the enthusiasm in the practice of ether, had caused the neglect of the use of nitrous oxide. Mr. Colton made a fortune in California, and lost it by bad investments on his return to New York. He resumed his lectures on chemistry. He called a meeting of doctors, etc., in June, 1863. He told all about Wells' discovery. He showed numerous testimonials of those operated on. The meeting adopted the practice. Having made more than twenty thousand administrations, Mr. Colton visited London, where he was toasted and feasted. The first operation of tooth extraction in the London Dental Hospital took place in 1868.

The tangle of competing claimants for the honour of discovering anæsthesia was so complex, and their partisans among the Senators of Congress of the United States were so urgent, that, when Morton applied for a reward for his discovery—as Jenner to the British Parliament for vaccination—Congress declined to settle who among the four was the first—Morton, Long, Wells, Jackson each having warm advocates among the Senators. There is due acknowledgment of the great discovery of chloroform by Sir Jas. Y. Simpson, and notice of the attempt by the surgeons of the Massachusetts General Hospital in 1870 to steal this honour from him.

Brown Henderson.

Pyogenic Infective Diseases of the Brain and Spinal Cord; Meningitis; Abscess Brain; Infective Sinus Thrombosis. By WILLIAM MACEWEN, M.D.
Glasgow: James Maclehose and Sons. 1893.

AT the time when the British Medical Association met in Glasgow it was doubtless a surprise to many to find what brilliant work in brain surgery had been carried out in a somewhat unostentatious way, and outside the Metropolis, by the eminent Scottish surgeon whose book is in our hand. It is now, however, the most natural thing in the world for us to have in print a statement of his views and practice in the department of surgery with which he so thoroughly identified himself, in our minds, by his striking demonstration before the Association.

The first section treats of the surgical anatomy of the subject, and includes a very full description of the temporal bone at different periods of life in relation to intracranial inflammations. This is eminently readable and graphic, the detailed facts being impressed upon the memory by their relation to development or surgical importance. As happy illustrations of applied surface marking we may cite the statements that a line drawn vertically through the centre of the osseous meatus corresponds to the posterior wall of the tympanum and the opening into the antrum, and that the posterior superior border of the petrous bone lies in a line

running from the parieto-squamo-mastoid junction to the external angular process of the opposite side. The description of the course of the facial nerve is very full, but it seems hardly so clear as that given by Politzer, although identical in all its facts. The writer revels in the enumeration of the relations of the venous channels connected with the sinuses of the skull. This is obviously the groundwork of his arguments against the practice of ligaturing the internal jugular vein in cases of sinus-phlebitis, and he says: "Though the internal jugular is the main channel "by which infective matter is conveyed from a thrombus of any part of the lateral "or sigmoid sinus, yet it may also be carried by way of the posterior condyloid "vein, the occipital sinus, and the vein through the mastoid foramen, all of which "pour their contents indirectly into the subclavian and innominate, without "passing through the internal jugular" (p. 32). A most interesting account is given of the mechanical arrangements preventing emptying of the venous sinuses by aspiration during inspiration (pp. 33 to 38). The subdural space is defined as "the potential interval between the dura mater and arachnoid." Much ambiguity is thus avoided. The unfortunate application of this term to the extradural space has led to much confusion. Dr. Macewen considers the risk of danger from extravasation of blood into the subdural space so great that, in the removal of very vascular intracranial tumours, he sometimes divides the operation into two stages, the first to secure adhesion of the membranes, thereby obliterating the subdural and subarachnoid spaces, and secondly, proceeding with the tumour removal. He insists on caution in syringing, so that fluids may not be disseminated in this space.

The chapter on the pathology of cerebral abscess and meningitis is a long one, full of observations and reflections of the most suggestive and practical kind. The various channels of infection (with and without visible tracts of inflammation) and the kinds of injuries and pathological conditions leading to intracranial disease are fully discussed. We may refer to the explanation of the occurrence of infective venous thrombosis backwards against the normal direction of the blood, namely, the reversal of the current which follows obstruction of the larger venous channels on the cardiac side (p. 51). The observations pertaining to intracranial lesions secondary to otitis media are of course those of most interest to us. The writer recognizes the identity of the organisms in the purulent secretion in the brain with those found in the ear, from whose disease it springs, but he holds that "their "variety is such as to prevent a selection of any one as being pre-eminently more "potent than others in producing extension of the inflammatory action to the brain" (p. 53). He warns us against assuming that the fetor of an otorrhoeal discharge is a measure of its virulence, and advises that the pus should be stained and examined microscopically, and by cultivations (p. 55). He asserts that the thin tegmen tympani may readily fracture during the vigorous employment of gouge and mallet in mastoid operations (p. 67), and impresses on us by the relation of illustrative cases the fact that granulations growing from the dura mater may sprout through the tegmen into the tympanum, and that forcible attempts at their removal—as polypi—may set up lepto-meningitis (pp. 69 and 92), a danger apt to be induced even by the removal of granulations arising from the tympanum itself, the wound permitting of septic infection. A special sub-section of great practical interest is devoted to the consideration of tuberculosis and "carcinosis" of the middle ear, the former often insidious and painless, and apt to be overlooked beside the glandular and meningeal affections of which it is frequently the cause. Carcinosis is a rare disease, accompanied by severe pain, which may simulate that of meningitis or cerebral abscess (pp. 124 to 129).

The symptomatology of cerebral abscess and meningitis is admirably analyzed and elucidated in the text, but the cases as narrated form a clinical picture gallery,

full of matter for reflection and instruction to the advanced surgeon as well as the student. Among other less-known details are the occurrence of oculo-motor paralysis of the affected side with hemiplegia of the opposite one in some cases of temporo-sphenoidal abscess (p. 154), the anatomical relation of the third nerve to the temporo-sphenoidal lobe being well shown in plates 41 and 45 of the "Atlas of Sections of the Head" simultaneously published. Again, the occurrence of spasmodic closure of the jaws in cases of cerebellar abscess is indicated and exemplified (p. 195). An explanation is given of transitory aphasia, which is found in some cases of abscess in the white substance of the third left frontal convolution (p. 191). The diagnosis of the various intracranial suppurative diseases is given very clearly, the symptoms produced by combinations and complications being set forth in a few invaluable pages (pp. 221-225). The general pathology of thrombosis—marasmic and infective—is dealt with in the introductory portion of the chapter on infective disease of the cranial sinuses.

The section on phlebitis of the cavernous sinus should be studied by every surgeon who treats the nose, so that he may reckon with the possible—though fortunately rare—consequences of neglected or injudiciously treated disease of the nose and its accessory cavities. One of the most interesting sections of the book is that dealing with the diagnosis of thrombosis of the sigmoid sinus, giving cases of each of the three clinical varieties—the pulmonary, the typhoid or abdominal, and the meningial. The formation of periphlebitic and phlebitic abscesses in the region of the internal jugular vein, or in that of the posterior condylar and other veins in the posterior triangle of the neck, is specially referred to. The writer considers the occurrence of abscesses in the line of the internal jugular rather favourable, "as it shows that for the time there is a localization of the process of "disintegration," for "when these intravenous abscesses do form in the neck, the "portions of the veins below are occluded with a firm thrombus, which though "exposed and liable to the same disintegration as that which overtook the upper "part of the thrombus, is yet frequently sufficiently firm to form a barrier between "the lungs and the abscess" (pp. 265, 266). The prognosis is naturally most unfavourable in cases not submitted to treatment, but we are reminded that "at "post-mortem examinations, however, there are occasionally found instances of "long-standing obliteration of the internal jugular and sigmoid sinus in connection "with infective caries and disintegration in the temporal bone" (p. 268). Every careful pathological dissector of experience must have made a similar observation, without, however, feeling that abstention from operation was justifiable.

The chapter on treatment commences very properly with prophylaxis, and contains an important paragraph, headed "*The Treatment of Middle-Ear Disease—too frequently neglected*," in which occurs the forcible remark that a person might as well have "a charge of dynamite in the mastoid antrum and cells, as "one cannot know the moment when accidental circumstances may arise, which "may cause the infective matter to become widely disseminated all over the cerebro-spinal system" (p. 294).

No doubt many die from the sequelæ of chronic suppurative otitis, but the stress laid by the author upon the "fact that the records of most aural hospitals show that their patients are all confined to the earlier decades of life," is certainly too apt to lead to the extreme interpretation that none survive to enter the later decades, in view of the "fact" that aural surgeons have constantly to deal with the functional disturbances due to the cicatricial conditions accompanying the healing of long-exhausted suppurative otitis in adults. The indications for mastoid operations, and the details of the manner of performing them, are most succinct. The author agrees entirely with Schwartz's indications, but makes no

reference to the modifications of Schwartz's operation effected by Stacke and others, and now approved and practised by Schwartz himself. Dr. Macewen prefers the rotating burr to the chisel and mallet, and certainly his claims on its behalf seem very convincing, though we cannot help thinking that in the hands of the average general surgeon the latter instruments are less dangerous. The anatomical points are particularly clearly described, and the cautions with regard to safeguarding the facial nerve, and to the possibility of granulations finding their origin in the dura mater, are invaluable. The method of occluding the upper two-thirds of the sigmoid sinus, which the author considers sufficient in most cases after removal of the disintegrated part of the clot therein contained in septic thrombosis, consists in pushing the outer wall inwards, and keeping it compressed against the inner one by means of a plug of iodoform gauze or catgut, after the application of a quantity of boracic acid and iodoform.

In regard to ligation of the internal jugular in cases "where the infective thrombus has undergone such extensive disintegration as is unlikely to be reached by obliteration of the upper two-thirds of the sigmoid sinus" (p. 310), there is no record of its performance in any of the cases narrated. The details of the management of patients after the evacuation of abscesses are fully laid down. In acute cerebral abscesses he employs no drainage tubes, and in the chronic only those of decalcified bone. The cautions with regard to syringing are most pertinent.

The results are analyzed most candidly and intelligibly. The author's acumen in the classification of types of cases is, in this chapter, pre-eminently conspicuous. The cases calling for "ablation of the mastoid" are divided into those in which the disease is confined to the mastoid antrum and cells, and those in which it has extended forwards and upwards to the internal ear. In the former a cure of the discharge was always obtained, but in the latter in five out of sixteen, the other eleven being much improved. In this latter class of cases the permanent opening in the mastoid afforded great safety. Seventeen cases of pachy-meningitis were operated on and recovered. Of twelve cases of lepto-meningitis six were operated on with recovery, the *previous* six all died without operation, the author having "at that time" considered them hopeless. We cannot offer our readers a more convincing or inviting evidence of the solidity of the whole work on which this monumental treatise is founded than the statistical tables of results which we append in full, conscious that in so doing we are not "giving away" what is likely to satisfy intending readers who will not procure the work, but rather encourage them to provide themselves with the full text of the instructions how to achieve similar, if not equal, success.

1.—*Statistical Table of Ablations of Mastoid Antrum and Cells for Pyogenic Otitis Media.*

Disease.	No. operated on.	No. cured.	No. relieved.
Purulent otitis media, with extension limited to mastoid antrum and cells	38	38	—
Purulent otitis media, with extension in addition to petrous bone and its recesses	16	5	11
	54	43	11

II.—*Statistical Table of Infective Intracranial Lesions.*

Disease.	No. of Cases.	No. operated on.	No. cured.	No. died.
Pyogenic pachy-meningitis externa ...	17	17	17	0
Extradural abscess.....	5	5	5	0
Pyogenic cerebral lepto-meningitis ...	12	6	6	6
Pyogenic cerebro - spinal lepto - meningitis ..	6	5	1	5
Superficial brain abscess and ulceration	4	4	4	0
Cerebral abscess—				
Temporo-sphenoidal	10	9	8	2
Frontal	2	1	1	1
Parietal	1	1	1	0
Cerebellar abscess.....	8	4	4	4
Meningo-encephalitis of frontal lobe ...	1	1	0	1
Total necrosis of temporo-sphenoidal lobe.....	1	1	0	1
Thrombosis of longitudinal sinus	4	3	3	1
Thrombosis of cavernous sinus	5	0	0	5
Thrombosis of sigmoid sinus	18	17	13	5
TOTAL.....	94	74	63	31

III.—*Statistical Table of Intracranial Abscess.*

Disease.	No. of Cases.	No. operated on.	No. cured.	No. died.
Cerebral abscess—				
In temporo-sphenoidal lobe.....	10	9	8	2
In frontal lobe	2	1	1	1
In parietal lobe	1	1	1	0
Superficial (ulceration of brain)	4	4	4	0
Cerebellar abscess.....	8	4	4	4
TOTAL.....	25	19	18	7
Extradural abscess	5	5	5	0
TOTAL.....	30	24	23	7

Dr. Macewen needs no further evidence of the masterly character of his work, from a scientific and practical point of view, to place him in the very front rank of Scottish or any surgeons.

Dundas Grant.