importance; it is obvious also that it can be easily guarded against in any future case submitted to operation.

In conclusion, it is not necessary for me to dilate upon the strong points of this method of operation, which will be obvious at a glance. Seeing that it can be performed aseptically, it is inconceivable that the formation of the penile urethra should present any difficulty; the very elements of failure are not present.

As to the age at which the operation should be undertaken, its simplicity and ease of performance render it quite unnecessary to wait until puberty, and I should suggest the age of about 8 years as being the most suitable. The great benefit of such early operation will be appreciated at once when we consider that the time intervening between 8 years and puberty might well be a period of great unhappiness and mental injury to a boy afflicted with such a deformity.

I confidently submit to the profession this operation, which I honestly believe will be found to have inaugurated a new era of hopefulness for the relief of the unfortunate victims of this dreadful malformation.

The illustrative diagrams have been executed from my description by a skillful and intelligent lay friend. For the photograph of my patient I have to thank my colleague, Dr. Herbert Hewlett.

A CASE OF SEVERE SUBCRANIAL HÆMORRHAGE: OPERATION: RECOVERY.

BY

F. G. PROUDFOOT, and GABRIEL W. FARMER,
M.A., M.D. Edin., M.A., M.Ch. Oxon., F.R.C.S.,
Oxford. Surgeon to the Radcliffe Infirmary,
Oxford.

History.—S. S., a married woman, aged 56, of intemperate habits, was found on the night of September 8th, 1899, lying unconscious outside a public-house, and was removed home in a barrow at about midnight. The following morning she regained consciousness, and with the assistance of her husband was able to walk to the closet. On returning to bed she complained of pain in the head, and gradually became very drowsy. During September 10th this drowsiness passed into unconsciousness. As the unconsciousness supervened it was noticed the left arm and then the left leg became impaired as regards movement. These facts were elicited from the husband by Dr. Proudfoot, who was summoned to see the patient on the evening of September 10th. Dr. Proudfoot held a consultation with Mr. Farmer, and on both agreeing that it was a case of subcranial hæmorrhage, the patient was transferred to the Radcliffe Infirmary for immediate operation.

Condition on Admission.—Well nourished; slightly obese. Well-defined bruise over right parietal eminence. No fracture to be felt. Some slight bruising over right shoulder and hip. (No evidence as to how she came by these bruises.) Completely unconscious. Breathing deep, slow, and stertorous. Pulse full, regular, 107 per minute. Paralysis of left arm and leg; no facial paralysis discernible. Pupils equal and dilated, giving no reaction to light. No paralysis of ocular muscles to be made out. Temperature 97.2°.

Operation.—The patient was at once prepared in the usual way for the operation of trephining and removed to the theatre. Chloroform having been administered, a large semicircular flap was made on the right side of the head. This flap measured about 3 inches by 3 inches, the centre of the base being approximately 1 inch above the external auditory meatus and included the bruise. Everything down to the bone was reflected in the flap. It was noticed that the tissues were distinctly ecchymosed, but on examining the underlying bone no trace of fracture could be found. A $\frac{1}{2}$ inch trephine was then applied, its centre corresponding to a point about $\frac{1}{2}$ inches above the zygoma in a vertical line running immediately in front of the external auditory meatus. On the removal of the crown of bone (which was placed in sterilised saline) a large clot bulged into the wound. Almost instantaneously the stertorous character of the breathing ceased. The clot on exploration was found to extend beyond the trephine hole in all directions but one, namely, the lower. The whole of it was easily scooped away without enlarging the opening. A large depression in the convexity of the brain presented itself and the dura did not bulge to its normal level. Hæmorrhage was very free coming, not from any single vessel, but from several. Where possible, these were picked up with fine pressure forceps, and tied. Some vessels had to be tied by passing fine sterilised silk with a curved Hagedorn needle through the thickness of the dura mater. There was still some oozing, however, and, as the depression showed no signs of bulging out, the hole was gently packed with sterilised gauze, and the edges of the skin brought together by means of temporary silk sutures without replacing the bone. A plain sterilised dressing was then applied, and the patient removed to the ward.

After-History.—September 11th. Consciousness returned. Some movement of left leg. General condition good. Temperature 98.4°, rose to 100° in the evening. Pulse rose from 68 to 104, respirations 20. September 12th. More power in leg. Plugging removed; dura well up to its proper level. Skin flaps sutured with silk. Temperature normal, pulse 80, respirations 20. September 13th. Movement in left arm began to return. September 16th.

Sutures removed. Wound healed completely. From this time the patient made a perfect recovery, regained complete power over left arm and leg; left hospital on October 14th.

REMARKS BY DR. PROUDFOOT.

I saw the case for the first time on Sunday evening, September 10th, 1899, and the points which enabled me to come to the diagnosis of subcranial hæmorrhage were the recovery of the patient from the original unconsciousness, which I attributed to the concussion caused by the injury, the gradual return of the unconsciousness after some exertion, due this time to compression, and, as has been already stated, the discovery on examination of the head of a well-defined bruise over the right parietal eminence.

REMARKS BY MR. FARMER.

The symptoms in the above case clearly pointed to hæmorrhage from the anterior branch of the middle meningeal artery rather far back, causing compression over the mid-Rolandic area, spreading upwards. The bruise practically corresponded with this region. I was thus guided with regard to the point of application of the trephine. The above case would have been admirably adapted for opening the skull by Wagner's method, namely, reflecting a flap of bone with the skin, and thus preserving the anatomical relations between the outer table of the bone reflected and the skin. My reason for not adopting this method was simply the fact that I had not a suitable osteotome at hand. I have on several occasions seen Wagner's method performed on the Continent with a chisel, and cannot help feeling that the vibration thus produced must be harmful, especially in a case of subcranial hæmorrhage. The most troublesome part of the operation was the stopping of hæmorrhage, and at one time I felt inclined to trephine over the main trunk of the middle meningeal artery. By adopting the method of passing fine silk sutures through the dura, where one could not pick up the bleeding point, I was finally, however, able to reduce the bleeding to a slight general oozing. It was obviously essential to plug the large depression in the brain, owing to this oozing; for this reason I did not feel justified in replacing the crown of bone. If the bone had been replaced it would have been resting for twenty-four hours upon gauze and covered by skin. It would then have been removed and replaced during the first dressing when the gauze was removed. I think it very doubtful whether under these conditions it would have retained its vitality. The patient was shown before a Branch meeting of the British Medical Association about three months after the operation. The trephine area was marked by a slight depression in which the pulsation of the brain could be seen and felt. There was absolutely no sign of any yielding of the cicatrix, and the patient stated that she felt as well as she had ever done in her life.

NOTES OF TWO CASES OF EXCISION OF THE GASSERIAN GANGLION FOR EPILEPTIFORM NEURALGIA.

By J. CRAWFORD RENTON, M.D.,

Surgeon and Lecturer on Clinical Surgery, Western Infirmary, Glasgow;
Examiner in Surgery in the University of Edinburgh.

THE two following cases illustrate the value of the operation for excision of the Gasserian ganglion in cases of epileptiform neuralgia. Along with the cases recorded by Mr. Victor Horsley, Mr. Hartley, Mr. Krause, and Mr. Jonathan Hutchinson, jun., they encourage us to hope that one of the most severe complaints can now with safety be relieved:

CASE I.

History.—A. B., aged 57, was placed under my care by Dr. Haldane, of Bridge of Allan, and Dr. White, of Stirling. He had suffered for seven years from increasingly severe attacks of epileptiform neuralgia of the left fifth nerve, so much so that he sometimes had as many as thirty attacks in the hour, with spasm of the left arm, and he was compelled to be kept under large doses of morphine, having sometimes 4 grs. daily. Professor Chiene and Dr. Beatson saw him also in consultation, and we were all agreed that the only operation which would permanently relieve him was removal of the Gasserian ganglion. He had the typical appearance during the attacks of pain with convulsive spasm of the facial muscles and depressors of the lower jaw, invariably covering his face with his left hand to try and stop the spasm, the left hand twitching during the attack.

Operation.—In November, 1898, assisted by Dr. Beatson, Dr. Bryce, Dr.

White, Dr. Guthrie, and Dr. Campbell, I removed the ganglion, adopting the method of Hartley and Krause, which we may call the high road, in contradistinction to the low road through the base of the skull, after removing the zygoma or following the inferior orbital nerve to the ganglion. By the high road a flap of skin, fascia, and muscle is turned down with its base either below or in front of the ear, and a large portion of bone removed by the trephine or burr ($\frac{1}{2}$ inch), the aperture being increased in size by the clipping forceps close to the zygoma. The tendency is to be too high up. The opening being sufficiently large for working purposes, the dura was punctured and carefully separated from the skull until the foramen spinosum was reached, and out of which the middle meningeal artery was seen emerging. It gave no trouble; I did not, therefore, attempt to put a double ligature on it or to plug the foramen. After some delay with oozing, which is the great difficulty of the operation, I exposed the foramen rotundum and foramen ovale, and drew out the superior and inferior maxillary divisions of the fifth, dividing them with scissors, avoiding the ophthalmic division, which is best left alone on account of troublesome eye symptoms which may follow its removal. The ganglion was then raised up and pulled away. A gauze drain was left to prevent collection of blood, and the soft parts stitched without replacing any bone.

After-History.—The patient suffered from shock for twelve hours, but gradually recovered, and made progress daily until a month after the operation he was able to sit up in bed. He would not have been so long kept at rest, but he was so exhausted with pain, and required so much morphine previous to the operation, that it was ten days after it before he realised clearly where he was or what was going on around him. Since the operation in November, 1898, he has remained quite free from spasm and pain, and has been able to attend to his business. On two occasions he had a slight general epileptic attack, one at the commencement of an attack of influenza.

CASE II.

History.—R. S., aged 67, a patient of Dr. Love's, had suffered from epileptiform neuralgia for five years, the pain being principally referred to the right inferior dental nerve, was admitted to the Western Infirmary under my care in August, 1899. I had previously removed the inferior dental nerve with complete relief for three months, but the pain was now so severe and constant that she and her family begged that something more should be done. Her husband said he could not bear to see her suffering so much any longer.

Operation.—Assisted by Dr. Fortune, Dr. McDonald, and Dr. Lindsay, I performed the same operation as in the first case, removing the ganglion and dividing the superior and inferior maxillary divisions of the fifth, avoiding the ophthalmic branch.

After-History.—This patient had no shock, and three days after the operation wished to get out of bed and go home. In three weeks she was out of bed, and went home at the end of the fourth week, and has remained quite well since the day the ganglion was removed.

Rose's operation by the pterygoid route seems more dangerous than that performed in these cases, and the view obtained of the ganglion is not nearly so satisfactory as by the temporal or high road. Septic infection is more apt to occur, owing to the possibility of opening the Eustachian tube, and the danger of necrosis of the zygoma resulting must also be borne in mind.

Regarding the operation by the high road, it is laborious, and requires great patience, as the bleeding is very troublesome; and in one case which Mr. Hutchinson recorded in 1893 he had to divide the operation into two stages, on account of the hæmorrhage. Elevation of the head during the operation diminishes the oozing considerably. Having separated the dura mater from the bone with a small, slightly curved, periosteum detacher, the temporo-sphenoidal lobe, covered with dura, is held up with thick glass retractors, and, when the foramen spinosum is reached, the middle meningeal is generally secured by a small wooden plug being pushed into the foramen. I did not find this necessary in either case. Should any difficulty be experienced in drawing up the brain from tension of the dura mater, the dura may be punctured with a tenotomy knife, and the escape of fluid will materially increase the space to work in. Continuing to separate the dura inwards from the foramen spinosum, the ganglion with the foramen rotundum and foramen ovale are seen, and the nerves drawn out with a strabismus hook, and divided either with a knife or scissors. Separating the divided nerves, the ganglion is raised up and removed, leaving the ophthalmic branch intact. This saves any ulceration of the cornea, and the possibility of having to remove the eye.

All the evidence that I have been able to collect as regards this operation has strongly impressed me with the importance of its being performed earlier than formerly, before the patient has been weakened by continuous pain and large doses of soothing remedies; and, further, there seems little use in operating on the terminal branches of the nerve, as no permanent relief results unless limited to one branch.

The examination of the ganglia by Dr. Bryce and Dr. Fortune has not shown any disease. Adhesions round the nerves have been found in some cases, but there seems little doubt that Mr. Horsley is correct in ascribing most of the cases to a descending neuritis.

THE MANAGEMENT OF THE SOFT PARTS IN THE MASTOID OPERATION.

By JAMES KERR LOVE, M.D., C.M.,

Aural Surgeon, Glasgow Royal Infirmary; Aurist, Glasgow Institution for the Deaf and Dumb.

SCHWARTZE'S OPERATION.

THE more thorough treatment of the antrum and middle ear rendered possible by the radical operation of Schwartze is the greatest amongst the many recent great advances in the surgery of the mastoid. The principle of this radical operation is that the middle ear, its attic, the aditus ad antrum, the mastoid antrum, and the air cells surrounding the antrum are laid into one smooth bony cavity. But it is a curious fact that to the soft parts—so much more easily dealt with—the same principle has not been, and is not yet often, applied. The usual practice is to drain the resulting large cavity in the bone through the mastoid wound, and either to keep it permanently open or to close it slowly after very long packing when the surgeon deems it safe. By this method the posterior wall of the cartilaginous external auditory canal is left as a partition between the two channels, the mastoid and the external auditory canal.

ITS DISADVANTAGES.

Several difficulties arise during this treatment, which might be called that by the double channel operation:

(a) The patient must wear an external dressing for a long time—generally some months—to cover the mastoid wound.

(b) When it is determined to close the wound there is great doubt as to the conduct of the inner end of the mastoid channel. Will it become an undrained sinus or pocket in which pus will collect and give trouble in the future? It is at least quite certain that chronic suppurative discharge continues after the most careful treatment in many cases.

(c) Even if healing eventually occurs, there is apt to be an unsightly pit left behind the auricle.

(d) The surest result is to keep the mastoid wound permanently open, or to keep it open till all discharge from the middle ear has ceased, and then to close it by a plastic operation. But it may take many months or years before this can safely be done.

MR. BALLANCE'S OPERATION.

The above difficulties amongst others have suggested to Mr. Ballance a very ingenious operation by which the mastoid wound is more rapidly closed and the middle ear and antrum more rapidly healed. After the radical operation on the bone has been done the posterior wall of the external canal is slit and the canal packed, the mastoid wound being carefully stitched. From ten to twenty days after this operation the mastoid wound is deliberately ripped open, and pieces of skin grafted into the middle ear and antrum. Again the mastoid wound is closed, and all further treatment conducted through the external canal. This treatment, which I have tried, undoubtedly hastens healing and gives good results.

It is curious that although the idea of grafting the middle ear had not occurred to me, I had been groping in the direction of a simpler method of dealing with the soft parts, and had, like Mr. Ballance, begun to slit the soft parts behind so as to do away with the mastoid channel altogether. This is the operation which, minus grafting, I do in nearly every case, and which I should like to name the single channel operation for the cure of mastoid and middle-ear disease.

There is one serious objection to Mr. Ballance's operation. Just as the patient is convalescing from the first operation he has to be put under chloroform a second time, the mastoid wound ripped open, and the surgeon has to spend almost as long as at the original operation in placing skin grafts and covering these with gold leaf, a procedure which would have assuredly given rise to a new English word, had not the name of Tantalus already given us a fit one. This means a month with the head of the patient swathed in unsightly bandages, and the unpleasant vision of a second operation before his mind during the first fortnight of his treatment. With professional and business men the first consideration is of importance, for a fortnight would do if the mastoid wound were not interfered with; the second consideration appeals to every patient.