containing one small lymphocyte per c.mm., but no excess of protein.

From this time onward the patient began to improve gradually. The chloral was needed less frequently, and the child lay in bed with his eyes open as though wide awake. He was able to indicate by crying when he wanted food, and appeared to recognise his mother, although he did not talk at all, and took no notice of his surroundings. The movements began to be less marked but were brought out by any disturbance of the patient. They were still most marked in the right arm. He commenced to take food very well, especially fluids. The involuntary urination continued. The reflexes began to return, the ankle-jerks and plantar reflexes, and the lower segment abdominal reflexes before the knee- and arm-jerks and epigastric reflex. The patient still lay curled up in bed with a certain amount of apparently voluntary rigidity. He resented being moved.

On the 16th, nine days after admission, the patient began to talk and in a few hours was speaking normally, subsequently to which he began to sit up in bed and take a normal interest in what was going on. Involuntary urination was only present if the patient became excited, and the clonic twitchings were also liable to return in slight degree under the same circumstance. A white cell count showed a total of 5600, with 36 per cent. polymorphs, 6.5 per cent. eosinophils, and 52.5 per cent. small lymphocytes, the other white cells having a normal proportion. This count was unfortunately done rather late in the course of the disease. On two occasions the patient was allowed to get up for a short time, but as generalised though not severe choreiform movements developed the patient was again kept in bed till these had subsided.

On discharge the only demonstrable abnormality was a very slight general incoördination, involving all four limbs and affecting mass movements rather than fine movements, similar to that seen in patients recovering from chorea. The arm, leg, and trunk reflexes were all present and normally active, or possibly very slightly increased. Sensation to pain, touch, heat, and cold, and the stereognostic sense and sense of position were all present and normal. He had gained 8 lb. in weight, and looked perfectly healthy. The treatment given was purely expectant and symptomatic. Chloral was very useful in keeping the patient quiet after the initial dose of morphia. Fluids in as large a quantity as he could take were given, and when he had sufficiently improved iron was prescribed.

Conclusions cannot, of course, be drawn from a single case, but certain points may be emphasised. In the first place the involuntary urination which occurred in this patient was not the result of retention, as in the other three cases of this disease which I have seen,¹ but was a simple involuntary voiding due, presumably, to clouding of consciousness, such as is often seen in the lethargic state of the disease. Secondly, the leucocytosis reported by Dr. A. W. M. Ellis in the previous cases was not present in this patient, though, unfortunately, in this case the white count was not done till late in the disease. Finally, in this patient the increase of fluid intake and the improvement of his general condition were practically synchronous. Whether this increase of fluid intake was cause or effect of the improvement is difficult to determine, but it had been noted in the former cases that owing to the mental condition of the patients only very small quantities of fluid were taken, and that the general appearance of these patients suggested a fluid want. For this reason in this patient attention was paid to this point from the beginning. It may well be that to increase fluid intake by every possible means, with a view to supplying actual lack of fluid and to diminish toxæmia, is a point in treatment worth noting.

In conclusion, I wish to express my indebtedness to Dr. Ellis for permission to and assistance in publishing this case.

A PLASTIC OPERATION TO RESTORE PART OF THE EAR.

USING A SILVER WIRE FRAME.

BY HENRY CURTIS, B.S., M.D. LOND., F.R.C.S. ENG.,
SURGEON TO THE METROPOLITAN HOSPITAL; LATE SURGEON TO
THE MILITARY HOSPITAL, ENFIELD-ROAD, E., AND TO THE
HOSPITAL FOR FACIAL INJURIES, BROOK-STREET, W.

THE following operation was devised by the writer during the war to restore a large part of the external ear shot away by a bullet. The use of the silver wire frame as a model can be extended to meet still greater deficiencies, and even in complete absence of the ear it would, the writer suggests, materially facilitate and expedite the procedure of Szymanowski, which, according to Warbasse, "involves ten or twenty operations, extending over at least a year for the shaping and modelling of the auricle, as there will always remain

room for improvement." Owing to military exigencies and the transfer of the patient, no secondary operation could have been performed; but the appearance presented in the second photograph, though not yet perfect, is a decided improvement on the original condition, and afforded the greatest satisfaction to the patient and, indeed, was a source of the utmost pride. When King George and Queen Mary graciously visited the hospital on March 28th, 1916, three weeks after the operation, their Majesties, according to the daily papers, were very interested in the patient, who was described as "the soldier with the silver ear." The present writer, being engaged in the operating theatre at the time, was unable to prevent currency being given to this fiction!

History.—Sergt. P. J. K., an Australian in the first Canadian contingent, shortly before admission to the Enfield-road Military Hospital, London, under the writer's care, was struck on the right side of the face by a bullet which passed from before backwards over the right malar eminence, just grazing it. The bullet then pierced the right auricle, making en route a deep, incised, horizontal wound of the cheek, resulting in a >-shaped scar, the lower limb of the > extending to the lower edge of the tragus. This and the scar below the eye are shown in the first photograph, in which also the bullet is seen to have struck the external ear, or auricle, at the base of the tragus, at its junction with the anterior or ascending limb of the lobule, and to have destroyed the lower half, or nearly two-thirds, of the concha—that is to say, the whole of the cavum conchæ and the entire rim of the corresponding segment of the auricle, including the junction with the lobule. The torn free extremity of the fragment remaining of the lobule was found to be turned forward on itself and united to the posterior end of the >-shaped scar in the cheek, obliterating the intertragic notch normally separating the tragus and the antitragus. The lower

A plastic operation to restore part of the ear, using a silver wire frame.

extremity of the rim of the ear—i.e., of the helix and the antihelix—was found to be curled round and united with the upper part of the concha (cymba conchæ). Fortunately, the skin over the mastoid process remained intact, and from this area was obtained the flap used in restoring the auricle. Prior to the war the patient had been invalided out of the army on account of right-sided otorrhœa, which subsequently ceased. It recurred, however, immediately after the present injury, and continued to a slight extent in spite of treatment in the interval during which the plastic operation was purposely postponed. At the operation iodine and a gauze plug were inserted into the external meatus, and during the healing of the plastic operation wound iodoform gauze was used for the same purpose to minimise infection.

Operation.—March 7th, 1916. The deformed fragment of the lobule of the ear, where turned over and attached to the scar on the cheek, was detached and pared, and the lower end of the helix and antihelix attached to the rim of the concha was similarly dealt with, so that subsequently, by suturing, the pared edges of lobule and helix could be united to the adjacent edges of the new flap when prepared and in position, thus completing the rim of the auricle. A broad oblong flap of skin and subcutaneous tissue, having its contracted base at the posterior margin of the bony orifice of the external meatus, was then dissected up from over the mastoid. It measured about 1 inch from before backwards, and was about 1½ inches in width, from above down, extending below, to about the tip of the mastoid. At its base, at the orifice of the external meatus, the sides of the flap slightly converged. Before the operation a model of the outline of the concha, antitragus, and intertragic notch, as far as the tragus, had been made from the sound (left) auricle, from a piece of stout silver wire such as is used for wiring the patella. Placed in the reversed position, this formed an accurate model of the corresponding parts missing in the injured right ear on which to mould the flap used to reconstitute the new auricle. The extremities of this wire model were inserted into short canals burrowed into the antihelix, above and behind, and into the lower edge of the tragus in front.

The wire being thus fixed in position, the flap reflected from the mastoid was drawn over the wire and a fold of skin stitched round the wire, to form a ridge reconsti-

¹ Ellis, A. W. M.: THE LANCET, 1920, ii., 114.

tuting the tragus. The free margins of the flap were then sutured to the pared edges of the lobule, helix, and antihelix, and elsewhere to what remained above of the concha, and behind and below of the antihelix and tragus, and the now restored rim of the auricle. The flap being found more than sufficient for this purpose, it was incised from below upwards parallel with the lower free edge, and part of it was sutured to the back of that part of the flap which had been used to form the outer or anterior surface of the new concha, what remained over being allowed to lie on the exposed surface of the mastoid and stitched to the skin on the posterior edge of this gap, the soft parts coming together without tension. It is probable that in incising the mastoid flap for the purpose described the vitality was endangered by cutting rather too far, thus endangering the vascular supply, for on the third day, while the new auricle appeared healthy, the portion of flap used to cover in the exposed mastoid looked dusky, and it eventually sloughed and was cut away on March 13th. Some of the stitches were removed the same day and most of the remainder on the next. Saline dressings were employed until March 9th, when ganze soaked in hydrogen peroxide was applied to the sloughy area.

The second photograph was taken when the patient left the hospital in May, 1916, with the wound soundly healed and the otorrhoea completely cured. In a few months' time, with the absorption of the cedematous fluid and shrinking of scar-tissue, a very much improved appearance should have resulted. When last heard of, in August, 1916, the patient was on his way to India for garrison duty, as the Military Board decided that he was incapacitated by deafness for further duty on the European front. There was, therefore, no opportunity for any further operation for improving the cosmetic effect, had such been deemed advisable.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOTOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 19th, under the presidency of Sir CHARLES BALLANCE.

The President's Address.

THE PRESIDENT, in a short address, reviewed the progress of otology during the last 20 years, especially in autoplasmic grafting, adding interesting items concerning the personnel of those who had identified themselves with the specialty in London. He said he looked forward to the eventual establishment of a great central Institute of Otology in London, not for the purpose of controlling individual clinics, but to coördinate and strengthen the work of teaching and research. These should go hand-in-hand, for the teacher who did no research failed to inspire his pupils. Such an institution should be endowed by whole-time men. The profession was as yet only on the threshold of knowledge of diseases of the ear; the internal ear presented problems in physiology, pathology, and treatment which so far had eluded the most sagacious. The labours of otologists would not be finished until the complications now regarded as fatal were no longer so looked upon, nor while the deaf still remained deaf. The council of the section had decided to memorialise the Royal Colleges to grant a diploma in otology. He concluded by the quotation from *King John*: "Be stirring with the times; put on the dauntless spirit of resolution."

Sir WILLIAM MILLIGAN read a paper on

Chronic Catarrhal Otitis Media.

He said the brilliant results obtained from operation in suppurative affections of the temporal bone and its intracranial sequelæ had somewhat thrown into the shade the treatment of the common condition adhesive catarrh, in which treatment he thought there had

been no real advance during the past 20 years. The changes in this condition he divided into three: (1) surface epithelial changes; (2) connective-tissue changes; (3) atrophic changes. These might occur either separately or collectively. The principal cause of chronic adhesive catarrh seemed to be repeated attacks of exudative catarrh of the tubo-tympanic mucosa resulting from naso-pharyngeal catarrh, naso-pharyngeal adenoids, and catarrhal conditions of the upper respiratory tract. He described in detail the pathological changes in the various structures. The hypo-tympanum served as a reservoir for some residual secretion which, while out of sight, was too often out of mind, and it acted as a mild but continuous irritant. In time a small tuft of organised connective tissue was formed, which was really an intratympanic buttress, causing a blocking of the tympanic orifice, and so impairing the ventilation of the middle ear. In the treatment of the condition in young children sufficient care was not usually exercised in clearing the middle ear of all exudate. A properly performed operation for removal of adenoids brought such quick relief that there was a tendency to conclude that all was well. But a number of the cases returned in a few years with definite evidence of adhesive changes, and he thought the main reason was that the middle ear had not been drained of all secretion at the time. He advocated incision of the membrana tympani by a fine galvano-cautery and epithelialisation of the edges of the wound for the purpose of draining the middle ear. Reliance upon inflation meant a mere scattering of the exudate for the time being, some of it being blown into the tympanic antrum, later trickling down into the hypo-tympanum, there to remain as an irritant. He believed that intratympanic injections in cases of advanced sclerosis of the middle ear frequently did much harm. Such injections should only be used in the form of a lavage, a wash-through. He held a strong objection to the pumping of fluid into a cul-de-sac whose lining membrane had practically lost its powers of absorption. Future progress in the treatment of chronic adhesive catarrh lay not so much in the use of local applications as in the employment of radio-active substances whose rays had the power of softening and rendering pliable dense sclerotic tissue; he referred to the β and γ rays of radium or its emanation, always with due care as to dosage, duration of exposure, and filtration.

The paper was fully discussed, and Sir WILLIAM MILLIGAN replied.

Streptococcal Leptomeningitis due to Chronic Suppurative Otitis Media.

Among the interesting cases shown discussion was chiefly concentrated upon a remarkable case exhibited by Mr. SYDNEY SCOTT, that of a girl, aged 10, who had streptococcal leptomeningitis due to chronic suppurative otitis media. There was a rapid onset of coma. Mr. Scott performed the radical mastoid operation, with trans-labyrinthine and lumbar thecal drainage, and the patient completely recovered. Ear discharge had been noted by the parents for several months, but had not, apparently, caused ill-health until a week prior to admission, when earache was complained of, and the child lay down in preference to playing. During the week she felt ill and sick, had vomiting and headache, followed by a sensation of falling and twitching of arms and face. She reached the hospital in an unconscious state, when the temperature was 104° F., pulse 130, respirations 30. There were head retraction and extensor rigidity of hamstrings. The discharge from the left ear was purulent and fetid, and double rotatory nystagmus was present. The operation was done immediately. The mastoid antrum and cells contained pus, granulations, and cholesteatomatous material, and an extradural abscess contained nearly a drachm of pus. The cochlea was extirpated in order to open up the fundus of the internal auditory meatus and establish trans-labyrinthine drainage. The wound was packed open with dressings. The cerebro-spinal fluid contained streptococci. Lumbar puncture was repeated 12-hourly during the next few days, and by the fourth day it was pronounced clear and sterile. On the day following the