always at command. With regard to the beneficial effect of the operation on the head symptoms, I am, however, inclined to attribute importance to the bleeding from the lateral sinus.

As to the method of opening the mastoid, I am strongly of opinion that it should be done as close to the meatus as possible, and, by working towards the antrum, on the accepted anatomical data—that is, using either *spina supra meatum* or the upper wall of the meatus as a guide to the highest point of the osseous opening—by means of a hammer and gouge. Indeed, I cannot but think that trephines and borers are hardly justifiable. That a measure of success attends their use seems to me to show that, in the majority of cases, the layer of solid bone which has to be penetrated is not deep. My chief objection to their use is that, if the lateral sinus be wounded, the danger is not detected immediately, as in cases where the gouge is used, and irreparable mischief may result.

I have already occupied too much time, although I have endeavoured to avoid anatomical and operative details which are familiar to all present. In conclusion, I may just mention that in those cases where the operation is undertaken to relieve the effects of chronic middle-ear suppuration, as it usually is, I utterly fail to understand the insistence of certain otologists on antiseptic precautions. That antiseptic washes should be used goes without saying; but to carefully render the skin antiseptic before making a wound over the surface of which putrid secretion is destined to pass seems to me, to say the least, superfluous; unless, indeed, the operator wishes in every case to provide against possible ills from opening into the cranial cavity.

In the majority of these cases—especially when they are not treated in a general hospital, where various microbes may be supposed to be collected together, and ready for an attack on any open wound—I am inclined to apply as little dressing as possible, and to have the wound syringed with warm boracic lotion every hour or two, the fluid being made to pass both from the meatus to the wound and *vice versa*. As all who have any experience in this operation are aware, this through current cannot always be produced immediately after the operation, probably owing to reactive swelling. One of the greatest difficulties in after-treatment is to keep the channel leading to the antrum open. Equally well-known is the fact that the wound often tends to fill with granulations, which require to be scraped away. For drainage purposes I prefer to use a lead tube, as it is more easily introduced when the channel has become narrowed; but, on the other hand, it also is more difficult to keep comfortably in its place.

As the cause which necessitates these mastoid operations and which so often endangers life in chronic middle-ear suppuration is the inspissation and subsequent putrefaction of pus, together with the tension so produced, my mind has for some time past been exercised by the question, whether a better means of cleansing the recesses of the middle ear than we at present command could not be found. It has occurred to me to use for this purpose the digestive ferments. I hope to discuss this subject at length on a future occasion, but may be permitted now to mention that trypsin and papayotin in solution seem to me most likely to prove suitable. The former I have already employed (in the form of Benger's liquor pancreaticus mixed with sodæ bicarb. to secure alkalinity), and it acted most efficiently and painlessly in the case of a boy whose tympanum was filled with a choleostomatous mass. Such experiments must of course be conducted with care; but on general grounds we are entitled to assume that trypsin is likely to act strongly on most if not all dead tissues and to spare living structures. If by its means we are enabled to break up hardened masses of pus, cholesteatin, and epithelium, and, perhaps also, dead bone, a distinct advance in treatment will be thus achieved.

SUPERANNUATION.—Mr. Joseph R. Donald, F.R.C.S.Eng., late medical officer for the Lower Holloway district of the parish of St. Mary, Islington, has obtained a superannuation allowance of £77 16s. 1d. per annum.

GEORGE BERNARD HOFFMEISTER, M.A., M.B.Cantab., B.Sc.Lond., M.R.C.S.Eng., has been associated with his father (Sir William Hoffmeister) and brother, as Surgeon at Osborne, as well as to the Royal Yacht Squadron, Cowes.

BEQUEST.—By the will of an Ayrshire farmer, Mr. Peter Connor, Ayr County Hospital benefits to the extent of £200, the Glasgow Asylum for the Blind £100, and the Glasgow Asylum for the Deaf and Dumb £150.

A CASE OF DEEP CELLULITIS OF THE NECK WITH PARTIAL PARALYSIS OF RIGHT ARM FOLLOWING ACUTE OTITIS MEDIA CAUSED BY A BLOW.

Read in the Section of Otology at the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888.

By CHRISTOPHER LEWIS, M.D.,

Assistant-Surgeon Ear and Throat Hospital, Birmingham.

THIS case, presenting as it does points of unusual interest, is I think worthy of recording before the members of this Section.

I was called in consultation by Dr. MacMunn, of Wolverhampton, in January last, to see a strumous, delicate boy, aged 13, with the following history: some fourteen days prior to my visit the lad had received a box on the ear at school—a fact not brought before the attendant's notice. He complained of sore throat and occasional earache; in a few days these slight symptoms rapidly developed into a more serious condition, for the temperature ran up to 102°, delirium came on at night, obstinate vomiting and pain in the head. These symptoms became more pronounced, particularly the delirium; deafness became marked, and the temperature ranged between 102° and 104°.

He was seen in consultation by Sir Walter Foster, who was inclined to the belief that it was probably a case of cerebro-spinal meningitis, so allied were the symptoms to this disease; indeed, with no appreciable discharge from the ear and the cerebral symptoms so pronounced, some meningeal irritation was the most natural conclusion to draw in a case so obscure.

About the ninth or tenth day the true nature of the disease showed itself by a swelling and redness over the apex of the mastoid, and the cerebral symptoms, which had been gradually improving for a few days, now almost disappeared. The mastoid puffiness subsided, only to be followed by a deep-seated inflammation of the neck, which rapidly assumed an alarming size. It was at this stage of the disease that I saw him. I found a slight muco-purulent exudation in the external meatus of the right side, which was generally congested and tender to touch, but no inflammatory thickening. The tympanic membrane had a boggy appearance, its lustre had gone and the pyramid of light was obliterated; there was, however, no perforation.

The hearing distance with Politzer's acoumeter was barely one inch, and the conduction over the mastoid was distinctly impaired. The temperature was 102.2°; the patient was emaciated and complained of violent pains in the neck, shooting up the scalp and around the ear. Antipyrin had been given by Dr. MacMunn; the temperature was by this means kept under, and it further aided in modifying the pain.

The whole inflammatory mischief was now centred in the neck, where an enormous swelling had developed, as hard as a board. This induration extended to some distance beyond the edge of the sterno-mastoid posteriorly, anteriorly to the median line of the neck, inferiorly on a level with the clavicle, and superiorly in a line with the floor of the meatus. There was some difficulty in swallowing, and the breathing was slightly laboured. Singularly enough there was no history of rigors, nor was there the least tendency to pointing, the pain, however, was so great and the constitutional disturbance so grave that it was a matter for serious consideration whether some attempt should be made at once to relieve the pressure. We decided, however, to wait a day or so. On my next visit, as the symptoms did not appear to subside, it was decided to make an incision, although no fluctuation could be detected. I chose a point a few inches above the clavicle, and, dividing the skin and superficial fascia, I groped about with a grooved probe until I at last struck upon a caseous mass. The wound was now enlarged, and after the caseous substance had reached the surface there was some discharge of pus. As the hæmorrhage was rather profuse the wound had to be plugged firmly with strips of lint. The pus welled up freely during the night, and the following morning there was a decided improvement in the patient's condition, and from this time virtually the whole symptoms began rapidly to subside. Dr. MacMunn made a counter opening later on. It was at this stage that some diffi-

culty of movement was noticed in the right arm, owing of course to the injury received by the cervical plexus. This in itself is sufficient to show how deep-seated and extensive the inflammation was.

Curiously enough, owing to some trophic changes, he lost the nails from three fingers. The details of the paralysis I need not, however, dwell upon in this Section. I may add that he gradually lost his deafness, so that now his hearing is to all tests and appearances normal. The recovery, indeed, has been in every way complete, although his convalescence has been both prolonged and tedious.

The points of special interest which this case presents are—1. The unusually severe cerebral symptoms in a case of suppurative otitis media, and such occurring after a blow. 2. The absence of perforation of the membrane, which so generally takes place in such cases. 3. Rapid formation of deep cellulitis of the neck following so quickly the appearance of mastoid swelling and puffiness. 4. An unusual paralysis of arm following cellulitis.

This case affords a striking instance of the absolute necessity that exists of making a thorough examination of the ear in all cases of cerebral symptoms, both in children and adults. Many cases of apparent meningitis may be cleared up and more accurately diagnosed by the use of a mirror and speculum. There are few practitioners, when obscure fever and delirium set in, who do not make a practice of examining the chest for evidence of pneumonia: if they observed the same routine with regard to the ear many a grave disease might be checked, and perhaps it is not too much to say, lives saved by a timely incision into the membrane.

The suppuration of the middle ear in this case was, in all probability, due to concussion—the severe shock to the delicate structures of the ear by the sudden compression of the column of air within the external meatus, and consequently the forcing inwards of the tympanic membrane is sufficient to account for this. The severe cerebral symptoms may be due to the want of free egress to the pus when formed, and the immediate effects of pressure in the labyrinth, for the impaired conduction over the mastoid pointed to some extent that the labyrinth was implicated; but it is a well-established fact that in acute inflammation of the ear the cerebral symptoms are more severe in children than adults.

These symptoms would probably have been less severe had the membrane become perforated either spontaneously or by artificial means. That suppuration of the middle ear without perforation, although a somewhat rare coincidence, is not impossible, was proved by a case reported by Toynbee, where a *post-mortem* examination revealed the presence of pus in the tympanum, but the membrane was intact.

The escape of pus through the mastoid in all probability saved the patient's life and prevented spreading to the brain, for, instead of bursting the membrane, the fluid forced its way into the mastoid cavity, and then through its apex, for it was at this point that the redness and swelling presented itself, and thus the products of inflammation were brought into contact with the deep cervical fascia, and so accounting for the formation of cellulitis.

Bezold was, I think, the first to point out that when the inflammation of the mastoid process is confined to the inner aspect of the apex of the mastoid, such extension takes place, for a very thin osseous layer here protects the air-cells, so that, if any pus is formed, it easily forces its way through it at its inner aspect, and thus readily extends beneath the sterno-cleido-mastoid muscle, and so the pus escapes into the deep tissue. From the time that the mastoid puffiness showed itself to the development of the enormous swelling in the neck could be counted by hours rather than days. Deep-seated abscess not infrequently forms in the muscle of the neck near the affected mastoid cavity, but it rarely spreads so deeply. Again, phlebitis of the emissary veins of the mastoid may occur in the course of an inflammation of the ear, but the induration is peculiar; and, although a cellulitis may develop, I am not inclined to the belief that the case could be classified among those due to such a cause. The explanation which I have given appears to me the most reasonable one. I saw a few days ago a case where there was a history of a discharge from the ear some days previously, although there was none present at the time of examination, where a large induration appeared below the ear, which, after examination, proved to be glandular; and these glandular masses, when the induration is great, are liable to be mistaken for a cellulitis, but the course of the one is totally different from the other.

Chronic cellulitis of the neck is occasionally met with as a sequel to mastoid abscess and caries. The worst case that I have

met with was one where the pus had so burrowed that sinuses formed over the whole neck, which lasted, off and on, for a year or more. The origin of the mastoid was due to a surgeon plugging the ear firmly with boracic acid. The patient died some six months back, from, it is thought, cerebral abscess.

NOTES OF A CASE OF CHRONIC OTITIS PURULENTA, FROM WHICH SEQUESTRA OF THE LABYRINTH WERE REMOVED.

Read in the Section of Otology at the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888.

By J. ERSKINE, M.A., M.B.,
Surgeon Glasgow Ear Institution.

M. C., aged 24, married, was brought to the Glasgow Ear Institution in May last, complaining of deafness in both ears. The patient could neither read nor write. She had not learned the digital signs used by the deaf and dumb. It was, therefore, impossible to obtain a complete history of the case from the patient. Her sister stated that there had been a discharge of matter from the right ear for the last four years, until two months ago, when that side of the face became paralysed. About three years ago the left ear began to discharge, and matter has been coming from it ever since.

On examination the nasal passages were found to contain polypi, and adenoid vegetations were present in the naso-pharynx. In the meatus of the right ear a mass was lying, which, on being removed by the forceps, appeared to consist mainly of steatomatous material and *débris*. When this mass was placed in water it was observed that sequestra of necrosed bone were embedded in it. These, by further washing, were separated completely from the soft *débris*, and proved to be, on careful inspection: (1) the cochlea; (2) a sequestrum of the inner wall of the tympanum, containing the fenestra ovalis and the Fallopian canal for the facial nerve above and behind it, and appearing to run into it, on account of the erosion that had taken place; (3) a small scale of bone, apparently from the wall of the cochlea; and (4) the long process of the incus. Viewing the sequestrum of the cochlea from the cupola through a perforation in its wall in that situation, the modiolus is plainly visible with the helicotrema, and also the bony spiral lamina throughout the most of the extent of the uppermost one turn and a half. The outer wall was also complete in that part when the sequestrum was first removed. On the inner aspect or base of the specimen the cochlea is incomplete, and no vestige appears of the vestibule. No granulations or polypi were present in the right meatus where these sequestra were found, but on their removal a small quantity of thick viscid pus was discovered behind the mass in which they were embedded. The facial paralysis of the same side was very well marked, the face being drawn to the left side. The paralysed muscles gave no response to the faradic current, and responded very weakly to the galvanic. Sensation was not diminished. The right eye could be closed to a very slight extent. There was no deviation of the tongue, and the sense of taste did not seem to be affected.

There was no indication of abscess connected with the mastoid process during the history of this case. The region of the mastoid antrum, externally, was perfectly free from any cicatricial appearances. There was no trace of the tympanic membrane, and a probe could be passed into the antrum.

On testing the hearing the patient was found to be totally deaf in the right ear; the tuning-fork being applied to the vertex was only heard in the left ear. The latter meatus contained a great mass of polypi, but no sequestra of necrosed bone, so far as the case has been observed. The patient only attended twice at the Ear Institution, and then failed to put in an appearance for six weeks. When she returned after that interval the growths in the left ear were very exuberant, and up to the present time treatment has not been carried out so successfully as could have been desired, on account of the very irregular attendance of the patient.

It is worthy of note that nasal polypi and adenoid naso-pharyngeal growths were present in this case, and, so far as could be ascertained, had existed prior to the ear disease. This is very