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 emissory 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

interesting as a factor in the production of the otitis, for no other cause could be set down in the history of the case.

This contribution may be justified by the rarity of such cases in otological literature. The latest specimen, and one of the most interesting and important, consisting as it does of a sequestrum of the whole labyrinth, has been described by the President of this Section in the pages of the *Glasgow Medical Journal* for April of last year. Two years before (*JOURNAL*, June 13th, 1885) that contribution was made we were indebted to Mr. Pye, of London, for elaborate notes of a case of the same kind. Mr. Phillips, of the Bolton Infirmary, had also a similar case about the same date. These form the most recent memoirs on the subject in the annals of otology in England. But members will have observed with great interest the most elaborate paper on necrosis of the labyrinth by Bezold, of Munich, that appeared in the *Archives of Otology* for December of last year, in the course of which a comparatively complete list is given of all the reported cases accessible to him, including five of his own. These amount to forty-six, of which he gives a very critical analysis. In addition to these forty-six there are about eight others of which he had not heard or had not obtained particulars while preparing his paper. One of these was reported by Hartmann, of Berlin, in the previous number of the *Archives*, the sequestrum described by him consisting of a portion of the cochlea, including about the two upper turns. Seeing that the records of aural surgery in this country and the Continent only contain notes of over fifty cases of the separation of sequestra of the labyrinth in whole or in part, perhaps the members of this Section will not grudge me the few minutes I have occupied in reading my notes of a recent additional case.

Notes regarding an unusually large Auricular Appendage.—M. Q., aged 29, weaver, came to the Glasgow Ear Institution, last September, for the purpose of inquiring whether a very unsightly appendage, projecting in front of her right ear, could be removed without danger. Apparently, matrimonial prospects had suggested the inquiry with a view to improving her appearance. In the position of the tragus, there were found a very minute nodule and the appendage now shown, in front of it and on a slightly higher plane. The large projection was directed forwards and upwards. Its base measured half an inch, and its length from base to apex was over an inch. The crest of the helix approximated very closely to its upper border, and it extended downwards to the incisura intertragica. A small nodule could be felt just below the crista helicis. Another was present at the lower border of the base of the large appendage. The hearing was perfect.

Under chloroform, the whole of the large projecting structure was removed from its very base by one snip of large scissors. The stump of cartilage which appeared slightly above the level of the skin was pared away as deeply as possible, and the edges of the wound brought together by a wire suture. It was dressed with dry boracic lint, and healed perfectly by first intention.

Small nodules, projecting from various parts of the auricle, are common enough, and Virchow has described such auricular appendages; but I had never seen one so large as the one shown. That is my reason for bringing it before the notice of the Section.

Such specimens as these form examples of the collection of curiosities which every man makes who has the opportunity of examining a very large number of cases in one special department of disease, and no doubt members have many remarkable specimens in their possession. Practising as the most of us are in large towns, we have not the opportunity of exhibiting them except at meetings of societies of general practitioners, where their importance is not sufficiently appreciated. It is exceedingly rare that we can have such an opportunity as the present occasion. It seems to me, therefore, that the President's suggestion of a combination of otologists is most worthy of practical adoption. There might be a Society in Scotland, consisting of the aurists in Edinburgh and Glasgow, which could meet a number of times a year in either of those cities. Similar associations might be formed in England and Ireland. Such meetings would do very much to facilitate the inter-communication of experience and information on the part of individuals, which could not fail to benefit the whole of those surgeons working in this department of disease.

THE Camberwell Guardians have increased the salary of Dr. Samuel Hague, medical officer for the St. George's district, from £130 to £150 per annum.

ON THE TRUE VALUE OF THOSE AIDS TO HEARING USUALLY TERMED ARTIFICIAL TYMPANIC MEMBRANES.

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

By W. LAIDLAW PURVES, M.D.

Aural Surgeon, Guy's Hospital.

IN considering the true value of the artificial drumhead, it should be remembered that the ear, the organ of tune, is suited to receive transverse sonorous vibrations, and that what is required of the ear is: 1. An appreciation of noises. 2. The determination of direction. 3. The determination of intensity. 4. The recognition of a combination of impulses.

We need not, at present, regard the artificial membrane in relation to the two requirements first mentioned. The last two requirements are those which come practically before the surgeon, and they included the others to a great extent. Our assistance is not asked by a patient to enable him to hear the tick of a watch, or the sound of a fork, but to restore him, as far as may be, to conversational intercourse with his fellow men.

This conversational intercourse is interfered with by any changes which damage the mechanism regulating the intensity, the analysis of the several impressions, the conveyance of these to the brain, or the sensations thereby produced. It is with the first cause—changes in the mechanism regulating the intensity—that we have to deal. These are found in abnormal alterations in the reflection, resonance, conduction, and tension of the external and middle ears, and almost exclusively on those in the latter organ.

The changes in the meatus itself, excluding those in the membrana tympani, in which the artificial drumhead might be of service, are somewhat obscure, but cases have come before me in which the benefit effected seemed to be in the size and position of a piece of moistened cotton wadding in the meatus. I shall be happy to learn if any such cases have been seen by any member present, as I have not observed such cases mentioned in the literature of the subject. The so-called, but in such cases mis-called, artificial drumhead is made in the form of a cylinder, and placed on the floor of the meatus, but so that no part of it reaches the natural membrane, or its position in the normal state. If we remember that the vibrations collected by the auricle, and those which strike the meatal wall perpendicularly are reflected frequently in the meatus; and these reflections are influenced by changes in the regularity of surface, both in the cartilaginous and osseous portions of that canal; that these reflected vibrations then strike a membrane standing at an angle of about 140° to the canal causing those reflections; and that this canal acts as a resonator to certain tones, strengthening high tones, and deadening low ones, we must admit that the placing of a body which changes the calibre of the canal irregularly may alter its capacity for exercising these functions, and, when abnormal changes are present, may assist in restoring that capacity.

It may be that in cases of abnormal change in the membrana tympani itself, without meatal changes, this meatal pad may reflect or concentrate vibrations to a part of the tympanum better fitted to receive and convey them to the inner ear.

When we turn to the tympanic membrane itself, and the cavity of which it forms the outer wall, and note its irregularity in stiffness, its irregularity in density, in tension, in movement, and in curvature, the changes which may occur by the placing of an artificial drumhead against a tympanic one in which abnormalities are present are innumerable. When we pass to the cavity with its muscles, joints, ligaments, linings, membranes, and peculiar nervous supply, and then remember that any changes which may arise either in the membrana tympani or in the cavity, must cause anomalies in their relations to each other, is it a matter of astonishment that there has been difficulty in determining the exact mode of action of the artificial drumhead?

It may be that it acts in the many ways alleged, as by restoring the screen between the meatus and cavity, and so increasing the resonant power of the latter, by acting as a medium between