ART. VI.—*Contributions to Aural Surgery*, Part III.—*Inflammatory Affections of the Membrana Tympani and Middle Ear*. By W. R. WILDE, M. R. I. A., F. R. C. S., Surgeon to St. Mark's Hospital.

(Continued from vol. iv. p. 426.)

II. SUBACUTE INFLAMMATION OF THE TYMPANUM AND ITS MEMBRANES.

BESIDES the acute form of the disease, attended by violent pain, &c., described in my former communication, there is a description of subacute inflammation of the membrana tympani, with which I have been long familiar, and which, although perfectly painless, is equally destructive to hearing. It generally appears in persons between 15 and 30. The first symptom to which the patient's attention is directed is deafness, which has appeared rather suddenly. It may be, but is not always, accompanied by tinnitus. The nature of the disease is only to be learned by a careful inspection of the membrane, which, if we see the disease early, is always of a pink colour, of a tint somewhat paler than that of the monthly rose. Through this, dispersed in various directions, we observe in some cases a few long, tortuous vessels. The transparency and polish of the membrane are seldom much affected at first. The auditory canal does not usually exhibit signs of disease, but the ceruminous secretion is arrested. Generally speaking, there are no constitutional symptoms present, and when tinnitus is an accompaniment, it is usually of a very light character, resembling a slight buzzing or singing. If allowed to proceed unchecked, the membrane becomes thickened and remarkably opaque, from lymphy deposits, and the deafness which ensues is of a most irremedial nature. Collapse or drawing inwards of the tympanal membrane does not usually follow this form of the affection, but

ulceration, even to perforation of the membrane of the drum, is not an uncommon attendant upon it.

This disease is slow in its progress, and requires very careful watching. Cases of this nature have been, I feel convinced, repeatedly treated as "nervous deafness." I am inclined to think that it is a true myringitis, in which the inflammation is seated in the fibrous layer of the membrane. In this disease mercury is just as necessary as in that already detailed; it should, however, be given after a different fashion: to be effectual, it must be slowly introduced into the system, so as to produce a steady and gradual effect. The mouth should be kept sore until there is a decided improvement both in the vascularity and in the hearing, or until all hope of restoration has been abandoned, or other circumstances induce us to relinquish this mode of treatment. After the constitution has been fully affected by the mineral, the bichloride, given in doses from the sixteenth to the eighth of a grain, dissolved in proof spirits, and taken in half an ounce of the cold infusion of bark, and a scruple or half a drachm of Huxham's tincture, three times a day, will be found highly efficacious. The preparations of iodine are also, in the advanced stage of the disease, worthy of trial; but I do not think that the preparations and combinations of iron produce in aural inflammations the same benefit which they do in constitutions labouring under ophthalmic affections of a like character.

Counter-irritation by means of tartar emetic ointment(a), or the continued application of Albespeyre's paper, keeping up a discharge from the integuments over the mastoid process,

(a) Great care should be taken in applying this ointment behind the ears, as it is very apt to produce large unhealthy-looking pustules, not unlike the disease we know as "burned holes" (*pemphigus gangrenosus*), particularly if allowed to spread over the back of the auricle. To make it act more speedily it may be mixed with a little powdered white sugar, and spread upon a piece of lint, which, after the part has been rubbed with the ointment, is to be applied in the form of a plaster, and retained till the pustules are produced.

will hasten the cure. Should the constitution require it, change of air, removal to the sea, and generous living, &c., must be had recourse to.

To relieve tinnitus aurium, after the inflammatory action has been subdued, or the original disease which produced it has subsided, and particularly in cases where we find this symptom present without any apparent lesion of the parts which we are able to inspect, I have latterly found the preparations of the *Arnica montana* of decided benefit; indeed it is the only medicine with which I am acquainted that seems to possess a specific power over this annoying and usually most intractable complaint. The preparation I find most efficacious is the tincture both of the flowers and leaves, of which the patient should commence by taking fifteen drops in a table-spoonful of the infusion of Arnica, and a little of some cordial tincture three times a day. After a few days the dose should be increased one or two drops daily, till it reaches thirty, or even more, unless headach or giddiness be produced, when we should at once lessen the dose, or omit the medicine altogether for a short time (a). The state of the bowels should be carefully attended to during the administration of this drug.

So long as any vascularity or recent deposit exists in the membrana tympani, notwithstanding manifest improvement of the hearing, we should not desist from employing means to remove it, as these cases are of a most insidious and protracted character. When ulceration exists, we should touch the part

(a) The following is the formula for the tincture prepared for me by Messrs. Bewley and Evans. One ounce and a half of the *flowers* to a pint of rectified spirit of wine; macerate for fourteen days and strain; or, for the tincture of the *leaves*, the same quantity infused for a similar period in proof spirits. In prescribing these I usually order them in equal proportions.

Dr. Neligan says: "This tincture may be readily prepared by percolation, having previously macerated the flowers with a little of the spirit for twenty-four hours; or it may be prepared with the cut and bruised root in the proportion of ʒii. of the root to Oj. of rectified spirit. Dose, f. ʒ ss. to f. ʒii."—*Medicines and their Uses*. Second Edition.

daily with a solution of lunar caustic, applied with a fine brush. The same mode of treatment is applicable to perforation of the membrane, and I have latterly been astonished at the number of cases in which, under this treatment, or touching the edge of the perforation with a fine point of the solid nitrate of silver, applied upon a *porte-caustique*, together with proper constitutional treatment, these apertures have healed up. After an extensive trial of various other escharotics, such as the nitrate of mercury, and the sulphate and nitrate of copper, I find the preparations of silver the best.

In all the inflammations of the middle and external ear, the secretion of cerumen is arrested, and it is long after the disease has been relieved, that the ceruminous glands resume their healthy functions, the auditory passage remaining dry and its lining scaly: or the wax which is produced being insufficient in quantity, of a very dark colour, and soon becoming hard and inspissated, &c. This deficiency of cerumen, which is but a symptom, is often set down as a disease, and various applications of ox-gall, creasote, &c., have been recommended to restore it. I find, however, that nothing produces a healthy action in the parts so soon, while, at the same time, it immediately supplies the best artificial succedaneum, as the *unguentum citrinum fuscum*, the soft brown citrine ointment, applied to the auditory passage in a melted state with a soft brush(a).

(a) There is no other medicine in the whole materia medica so frequently prescribed by the practitioner, which presents the same differences, both in appearance and effects, as citrine ointment. According to the ordinary method of preparing it, as directed in any of the Pharmacopœias of the three kingdoms, it is impossible to procure it alike in any four different establishments. It is found of all shades of colour,—straw-coloured, grey, green, yellow, orange,—and of every degree of consistence, dry and hard, or soft and pasty. Many apothecaries in Dublin do not adhere to the pharmacopœial formula, but make it up according to a form of their own; some use fresh butter instead of lard and oil, and others different kinds of oil, as from habit or experience they find best. Some of these, however, are liable to the objections already stated. Moreover, if mixed with almond oil, as in diluting it into an eye-salve, although it looks yellow for a day or two, it soon becomes

CASE IV.—*Subacute Tympanitis with Paralysis of the Portio Dura.*

Patrick Rooney, aged 35, suffered from typhus fever about fourteen years ago, during which he had violent pain in his left ear, accompanied by a discharge which has continued ever since. He is quite deaf upon this side, and upon examination the membrana tympani is found to be perforated at its anterior portion, and the whole membrane, auditory passage, and middle ear as far as can be seen through the aperture, are of a bright florid red; the ossicula, however, remain *in situ*. The hearing in his right ear remained perfect until the beginning of May last, when he began to perceive a deafness upon that side, which after a few days was accompanied by a most distressing noise resembling "the escape of steam;" he had also a rolling noise in his head, but no pain in either head or ear. He applied for

green, and gets a very unpleasant smell, no matter whether covered up or not, and in this state it is often very irritating. On explaining my difficulties, some two or three years ago, to Mr. Donovan, he procured me a citrine ointment of a very dark orange or brown colour, soft, perfectly and equally smooth, and which does not alter in any way by keeping, by exposure to light, by mixing with oils, or even by being gently heated to the point of fluidity: and it never acquires an acid smell. Its therapeutic effects I have had long experience of, and they are decidedly superior to those of the ointment in common use;—Mr. Donovan has not made known its constituents, nor its mode of preparation. Mr. Nicholls has made for me a citrine ointment precisely similar in colour, smell, consistence, and effects. He informs me that he has used rape oil instead of olive oil, and has never let the heat employed during the preparation exceed 200°. Mr. John Evans has employed cod-liver oil, and also seal oil, and the preparations thus produced are exceedingly elegant and useful ones. Messrs. Bewley have obtained for me a brown citrine ointment somewhat like those already mentioned, and they inform me that it is by using only the very purest olive oil. I find this ointment a decided improvement on the old preparation, and its composition should be investigated by those engaged in the preparation of medicines and pharmacopœias. When about to be used, it should be melted to the consistence of cream by placing the vessel containing it in hot water. It forms an admirable application in ophthalmia tarsi.

medical advice, and had "drops" of an irritating nature poured into the meatus. Not having derived benefit from these, he applied at St. Mark's Hospital on the 29th of May, 1847. The noise and deafness were as already described; in addition he suffered from headach and pain in his face.

The right side of the face was then completely paralyzed, presenting the usual appearance of fulness and smoothness; the mouth drawn to the left side, the eye staring from inability to close the lids, the tears flowing over upon the cheek, the nostril collapsed, the colour of the skin somewhat heightened, and its temperature considerably raised beyond that of the opposite side. The auditory canal was dry and red; the tympanal membrane had completely lost its polish, and presented an uniform pink appearance, not unlike blotting-paper. He had no pain anywhere around or about the ear, nor could pain or soreness be produced upon making pressure in any of the usual situations. He was able to inflate the tympanum; but could not hear the watch placed to the ear or any part of the head, and could with great difficulty distinguish the voice.

He was slightly mercurialized by the use of the hydrargyrum cum cretâ with cicuta; leeches were applied several times round the meatus, and small blisters over the mastoid process. As soon as his mouth became sore (in about ten days), the hearing returned, so that he could hear ordinary conversation very well; the vascularity of the membrane lessened considerably, and the noise decreased. On the 15th of June the paralysis had quite disappeared; he was then obliged to discontinue his attendance at the hospital, but was given some of the iodine and hydriodate of potash solution to take occasionally. Wishing to learn the result of this case, I sent for the patient, and again examined him upon the 10th of September last(a). He had

(a) I would strongly recommend those engaged in hospital or dispensary practice in a large city, to make a note of the address of any patient whose case is interesting, in order that they may be able to learn the final result of such.

no return of the paralysis; the hearing remained much the same; the meatus still red; the membrana tympani, over the head and handle of the malleus, was bright red; the rest of the membrane, with the exception of one clear spot in front of the point of the malleus, presented a dull, pearly hue; there were no folds observable in it, but a very opaque rim, like a broad arcus senilis, round its lower attachment.

The paralysis in this case seemed to have been caused by the inflammation in the ear extending to the portio dura. Now may not many of those cases of facial paralysis, so frequently met with, and some of which are apparently the result of cold, have been produced by a like affection? The state of the drum in all such cases should be accurately investigated.

CASE V.—*Sub-acute Myringitis; Mercurial Treatment; Recovery.*

The following case affords a good example of the subacute form of the disease, of the inattention paid to the early symptoms of deafness by practitioners in general, and the efficacy of anti-phlogistic treatment. As the subject of this case, Mr. S., aged 19, is a young gentleman of very great intelligence, I give the history of his case, as far as possible, in the words of the narrative with which he has furnished me. "About the year 1836 I felt symptoms of deafness in both my ears for the first time, but on the application of blisters these symptoms passed away. From being but a child at the time, I have an imperfect recollection of the peculiar symptoms of my case. Again, in 1840, I became quite deaf in my right ear: this I mentioned to our family physician, but for some time he treated it as a joke, telling me merely that I was idle and wished for some holidays; however, on my frequently asserting that I really *was* deaf, he directed me to syringe my ear night and morning, and afterwards he dropped some liquid into it which he prescribed for me, but he did not make any particular examination of my ear. I continued to follow his advice for some weeks, but without any beneficial effect. I was then advised to get some

rusty bacon, cut it into small shreds, and put one, morning and evening into my ear,—but with no better success(*a*). At last I applied a blister behind my ear, and kept it open for six months. This treatment, which may, and very probably would, as experience has since shewn me, have been successful, had it been resorted to in the first instance, was then of no avail. On two subsequent occasions, about Christmas, 1841, and July, 1842, I had an ear-ache in that ear, and the only application which gave me relief was dropping warm laudanum into it(*b*). At the close of September, 1845, I felt my left ear one morning as if it were stopped, and perceived a buzzing sound in it, such as one feels on applying a sea-shell to it. This noise was increased at night when I lay in bed; it then resembled a constant, loud hissing. I became very deaf, and my difficulty of hearing increased daily; I also experienced an uneasy sensation, and a feeling of stuffing, in this ear, but no pain.”

On the 21st of the November following I first saw this young gentleman. I found, in addition to the symptoms already described, a bright pink hue diffused over the left tympanal membrane, which, however, had not lost its polish, nor become opaque. He was with difficulty able to inflate the drum, and when he did so, the stream of air caused a slight squeeling and a mucous gurgling in the middle ear. The external meatus was dry, devoid of cerumen, and somewhat redder than natural. The throat, however, was normal. It was evidently a case of subacute inflammation of the membrana

(*a*) This is a very popular remedy in Ireland, and is frequently prescribed by medical practitioners. In cases of deafness, unaccompanied by inflammation, and solely the result of a deficiency of cerumen (very rare cases, by the way) it is innocuous, and may be effectual, but in no other case that I am aware of is it at all applicable.

(*b*) Laudanum dropped into the ear is one of the most popular remedies for ear-ache, and in many instances it certainly affords relief. We do not object to its application as a means of lessening pain, but we do as a remedial agent, while the *cause* of the pain is uninvestigated, and not treated according to the established rules for lessening inflammation, &c.

tympani, of the mucous membrane lining the cavity of the drum, and the Eustachian tube: with mucous engorgement of the middle ear. Upon the right side the membrana tympani was found thickened and opaque, and two or three large, red vessels spread over its surface, but on this side the air passed up with facility. Six leeches were immediately applied to the left ear, three round the meatus and three in front of the tragus, and warm stupes and fomentations prescribed. Upon the 29th his symptoms remained unabated and the appearances unaltered, so I immediately put him on the use of mercury, at the same time that a repetition of the leeches round the meatus, and the application of blisters over the mastoid process, was had recourse to. As soon as the mouth became slightly affected I observed that the vascularity of the right ear,—the one originally affected,—was very much lessened, and I then recommended the application of leeches and blisters to that also, and had the satisfaction to find that the hearing began to improve gradually on this as well as the left side.

As Mr. S. improved daily the mercury was omitted, and he commenced the use of bark and hydriodate of potash. Towards the end of December he was so much improved that I discontinued my attendance, and I lost sight of him for a short time. In the beginning of January, however, he again applied to me: worse than ever. The weather had been remarkably damp and unfavourable; he was much exposed to its influence, and had caught cold, which, to use his own expression, had “pitched in his ears.” He was then so deaf that he could with great difficulty understand what was said to him, although addressed in a distinct and loud voice. The vascularity had returned in the left, and partially in the right ear, and the mucous engorgement of the tympanal cavities was more manifest. The same course had to be pursued as on the former occasion; he was confined to the house for a month, and kept under the gentle influence of mercury for the last three weeks of that time. I desired him to try occasionally to press the air into the drums,

particularly when blowing the nose ; and as the inflammatory condition subsided he was enabled to do this with greater facility. Each time the air passed his hearing was improved. At the end of a month the mercury was discontinued and the leeching given up. Small blisters were kept open behind the ears, and the use of bark and hydriodate of potash was persisted in for some weeks longer. I examined this gentleman in November last, and found that all trace of disease had been removed from the left ear, and that the tympanal membrane of the right was much thinner, and much less vascular and opaque, than when I first saw him in 1845. His hearing is perfect upon the left side, and very much improved on the right, the hearing distance being increased on that side from three to fourteen inches.

In the foregoing case we have a good example in the right ear (which, when I first saw it, was in the condition of chronic inflammation, to be described in the next section) of the effects of neglect, and also of the efficacy of the antiphlogistic treatment, not only in the removal of recent disease, but in the improvement of an affection of several years' standing.

I could enumerate several other well-marked cases of this disease, were it necessary, all presenting the same appearances, and cured by the same means, but in very few has treatment been attended with the same happy results in the ear previously affected as in this case. Generally only one ear is affected at a time, but sooner or later the other usually becomes engaged. I feel convinced that many cases of incurable deafness have arisen from this disease.

III. CHRONIC MYRINGITIS, WITH OR WITHOUT INFLAMMATION OF THE TYMPANUM.

By referring to the table of aural diseases published in the former part of this Essay (vol. iv. page 392), it will be seen that this is a very frequent cause of deafness, eighty-two cases having been recorded out of 709, or nearly one in nine of the whole. Indeed, I am inclined to think that it is even of more frequent occurrence ; as although many cases present them-

selves as such in the beginning of the deafness, the appearances of chronic inflammation of the drum are to be found as the sequelæ of nearly all the other forms of inflammation, in the same way that we find chronic ophthalmia so frequent a consequence of the various acute forms of inflammation of the eye. This disease presents under two forms ; the first, a perfectly painless deafness ; the other attended by paroxysms of violent pain, coming on at intervals, between which the patient is perfectly free from all uneasiness. The latter is much more common among females from 15 to 30, and is at times accompanied by irregularities of the uterine functions. The appearance of the membrana tympani is too peculiar to be mistaken. It presents a general thickening and opacity, particularly of its lower portion, besides which there is almost invariably a number of spots, about the size of pin-heads, of greater density than the rest, and of a pearly lustre, studded over the surface of the membrane. In many cases it presents the appearance of crumpled parchment. During the quiescent periods, we only remark a few straggling vessels, carrying red blood, spreading over the surface of the membrane, and, for the most part, coursing from above downwards, parallel with the handle of the hammer. Upon any provocation, however, such as cold, or other exciting causes, the membrane will, in a few hours, and often without any increase of pain, become of an uniform dark red colour, precisely like *pannus* of the cornea, a disease of which it is the manifest analogue. The greater the amount of thickening and opacity, the less will be the quantity of vascularity and redness which the membrane is capable of assuming, as we perceive in cases of dense opacity of the cornea, owing, no doubt, to the greater quantity of deposit obstructing the flow of red blood, by diminishing, and, perhaps, also obliterating the caliber of the vessels.

Cases of this kind are often of many years' standing, and many have, I am convinced, been treated as instances of "nervous deafness." The following is no imaginary case, but one of constant occurrence.

A lady, aged between 30 and 40, consults a practitioner in aural surgery. She is very deaf, speaks in a loud, inharmonious voice, and has suffered from noise in her ears, of all descriptions, for several years. She usually prefaces the detail of her symptoms (which is generally very long and verbose) by stating that she does not think much can be done for her, for that she is labouring under *nervous deafness*, and is, therefore, incurable. She has a great objection either to be questioned or to have her ears examined until she has made a full statement of her case ; and as she has had a great variety of opinions, and has used all manner of remedies, she is tediously accurate in her account. She states that she has been deaf from a very early period ; that at first her deafness was attributed to inattention, and endeavoured to be remedied by the means thought most advisable by her guardians and governesses ; that, her deafness increasing, she was brought, when about ten or twelve years of age, to an eminent practitioner, who, after a few casual inquiries, told her friends not to mind it, for that she would certainly grow out of it as she grew up, and that probably all her deafness would disappear about the period of puberty ; but that she might rub *eau de Cologne* on the jaw occasionally ! With the exception of sea-bathing, and means calculated to improve the state of her general health, no other remedies were tried, and no other advice sought for two or three years ; when, not finding the hearing improved, but gradually becoming worse, and the tinnitus increasing as she grew up, a special aurist was consulted, who stated the disease to be entirely local, and curable by local remedies alone. During the next few years various means were had recourse to ; catheterism of the Eustachian tube was employed for several months, the tympanum constantly washed out, and various liquids and gases injected into it, but without effect. Counter-irritation was next employed, with issues in the arm and setons in the neck, and a long and fair trial given to their powers. It was next proposed to remove the tonsils,—and in several such cases

they *have been* removed, or, at least, portions of them. Still the disease progressed. Drops, oils, and liniments, some of the most caustic nature, were without mercy, and without discrimination, poured into the external meatus, by those who

“ Stole

With juice of cursed hebenon in a vial,
And in the porches of *her* ears did pour
The leperous distilment.”

Broken down in health, wearied by the variety of opinions and the multiplicity of applications, an eminent physician was then consulted, who, having heard the history of the case, advised the cessation of all local remedies, and recommended tonics and antispasmodics, together with shower-baths, change of air, and sea-bathing: stating at the same time that the disease was entirely constitutional, and of a *nervous* character. And certainly by this time, from hope deferred (for many specious promises of cure had been made), from the increase of the tinnitus, and from the effects of the long and severe treatment, the patient had become remarkably nervous and irritable, brooding over her malady, and rendered unhappy and discontented by being unable to take part in any general conversation.

Some years now passed without her doing anything; she had not become much worse, but she certainly had not improved. Owing to some new theory being started, at the solicitation of friends who had been relieved of some curable form of deafness, or from the celebrity of some particular practitioner, she was again induced to seek relief; and having arrived at the metropolis, she took the round of the doctors and aurists. Some proposed perforation of the drum, others recommended travel; the honest prescribed nothing; the quack professed his panacea, or offered to sell his peculiar acoustic instrument, and backed the recommendation of its merits by the sign manual of some of the judges of the land(*a*). The homœo-

(*a*) In a window in the Strand, not far from Somerset House, may be seen, framed and glazed, a certificate from one of the Chief Justices of Eng-

pathists and hydropathists were each consulted, and the merits of their systems tested; the spas of England and the Badens of Germany were visited, and their efficacies tried. Electricity, galvanism, and electro-magnetism, were also had recourse to, but in vain. The opinions of those whom she had consulted were as various as the remedies they employed: but the greater number believed it to be a constitutional or nervous affection. Latterly she had been content to look out for "cures" among the newspaper advertisements, and of these she possessed a large number in her portfolio.

Of such cases, scarcely differing in a shade, I possess the notes of several. In many of these the following may be gleaned upon a careful examination. The *membrana tympani* will be found thickened, opaque, and slightly vascular, and sometimes very much collapsed or drawn inward towards the inner wall of the tympanum, so that the handle of the hammer forms a manifest projection. The membrane has also lost its polish and become of a dull pearl colour. On questioning the patient closely, it is acknowledged that constant attacks of *ear-ache* were suffered several years previously, particularly in winter, and that such attacks were often preceded or accompanied by stuffing in the nose, and symptoms of catarrh, and were generally induced by cold, to avoid which the head was usually kept warmly muffled during such seasons.

In such a case our art at present does not offer much hope. The whole train of symptoms are evidently the result of slow chronic inflammation, affecting, in all probability, the lining of the cavity, as well as the membrane of the drum. The only means which can with safety be recommended at this period is the application of a solution of lunar caustic, applied with a camel's hair brush, every third or fourth day, upon the surface of the opaque membrane, while it is fully exposed to view, and should there be much vascularity present, the application

land, lauding, and recommending to all whom it may concern, a particular form of ear trumpet!

of a few leeches as far in as possible round the meatus, at least twice a week. In a few cases the Arnica will assist to remove the tinnitus; but it is not so efficacious in this as in more recent forms of the affection.

In the cases of periodic pain, with a higher degree and more generally diffused vascularity, the application of leeches, applied every second or third day, will be found most efficacious; at the same time that the patient should be brought under the gentle influence of mercury, and kept so for at least a month. Under such treatment, if the case is not of too long standing, the hearing will often be restored, and all the symptoms of pain and tinnitus may be removed. As the symptoms improve, the membrane will clear generally, but in most cases spots of opacity remain indelible. In applying the solution of nitrate of silver with a fine brush, considerable caution and dexterity is required, as the membrane will sometimes present a small perforation the next day if it has been rubbed too hard; and although I have always seen such perforations heal readily, it is an accident which should be avoided. By this application scales of membrane peel off the surface of the part, and leave it thinner and more transparent than before.

There is a form of deafness with which I have been long familiar, which may be the result of some form of inflammation in the membrane of the drum. In such cases, upon bringing the external membrane into view, we do not observe any general thickening or opacity of it, or any apparent alteration of its texture, but a crescent-shaped opacity, about a line broad and three lines long, of a yellow colour, occupies the lower and usually the back portion of the membrane, with a tolerably defined edge, and rather rough upon its surface, closely resembling the atheromatous deposits which occur in the coats of arteries. It is quite gritty, and generally more insensible than the rest of the membrane. It differs from the ordinary opacity, the effect of inflammation, in the surrounding membrane being apparently free from disease, in its almost invariable seat, its

yellowish colour and well defined edge, and in its having a portion of unaffected membrane between it and the bony attachment of the membrana tympani; whereas, as I have already remarked, the opacity which results from the ordinary form of inflammation, generally increases in density around its osseocartilaginous attachment. By a very slow and gradual process this disease spreads over the greater portion of the membrane, and produces permanent deafness. I am not aware of any remedy for it.

In some instances I have observed a manifest granular state of the membrane, not unlike the surface of a half ripe raspberry, the intervening portions between the reddish elevations being thickened and opaque, but unattended by discharge. In these cases I have procured an uniform thinning and clearing of the membrane, by the occasional application of a fine point of nitrate of silver; but this requires very great care, and should be persevered in for a great length of time, at least two months; it should, if possible, be applied so lightly as not to induce a discharge. Many of those cases are the result of long continued otorrhœa, but which, having healed, has left the membrane in this condition. It must be borne in mind that I am not now describing that form of chronic inflammation which is the ordinary attendant on otorrhœa, and which is the affection to which writers have given the name of "chronic inflammation of the membrana tympani." This disease, which I have been describing, may be the result of any form of inflammation, specific or otherwise.

In cases of permanent thickening and opacity of the membrana tympani, which have resisted all efforts at absorption and thinning, are we justified in performing perforation? I believe in very few cases indeed will it be found efficacious, because the opacity which we *do* see is but a portion of the general thickening and disorganization of the investing membrane of the middle ear, perhaps that of the labyrinth also, which we *do not* see. It may, however, be tried without injury in some

cases, but it requires very great caution and dexterity indeed in its performance ; and, as irreparable mischief has at times proceeded from its being done in a rough or clumsy manner, I beg to offer a few observations on the safest method of performing the operation of perforation. I wholly discard all the instruments in the shape of punches, trocars, and complicated apparatuses for the removal of a portion of the membrane, of which several are described as those of Fabrizi, Himly, and others, and figured in works on aural surgery. First, because they all occupy so much space within the speculum that it is not possible, when they are introduced, to see accurately the point of the membrane which they are pressing upon, nor how much of it they are cutting ; secondly, by our not seeing accurately the surface on which we are working, it is scarcely possible to avoid injuring the malleus or the chorda tympani, or wounding the inner wall of the tympanum ; and, thirdly, because those with corkscrew points, which fix the membrane while the revolving punch cuts out the piece, are not only exceedingly painful, but dangerous, inasmuch as the slightest motion of the head during the operation would produce a degree of violence which might be at once destructive to this delicate membrane.

Having brought the membrane fairly within view, under bright, direct sun-light, I introduce this small, sickle-shaped

knife, with a double-cutting edge, and here figured of the natural size in the blade, but with the shaft and handle about two inches longer ; and having made the patient inflate the tympanum, so as to make the membrane tense, and pressed outward, I gently introduce the point of the knife into its lower, thin, vibrating portion, and, drawing it downwards and forwards, make a simple incision of the membrane, about a line and a half in length. So simple is this, and so little pain does it give, that the patient has often been unconscious of its performance until made aware of its completion by the air rushing out through the aperture. In about a minute a slight oozing of blood takes

place from the edges of the aperture, like that which follows a wound of the sclerotic with an ordinary broad cataract needle, and if left in this condition it would soon heal up ; therefore, a very fine probe, fixed in a handle, and slightly pointed with nitrate of silver by being immersed in the caustic when heated to fluidity, should be immediately passed down into the perforation, the edges of which are thereby cauterized and prevented adhering ; and this latter process should be repeated from time to time, as often as the wound shews an inclination to heal, and until we establish a sufficiently large elliptical opening(*a*).

IV. STRUMOUS INFLAMMATION.

This is a frequent affection in young persons, and, I believe, a very constant cause of deafness in after life. Its subjects are always from three or four years of age to 15 or 16. It

(*a*) In the month of March, 1846, Dr. Butcher, of this city, read a paper before the Surgical Society of Ireland, on the subject of Perforation of the *Membrana Tympani*, with a view of shewing the ill consequences resulting from the performance of that operation. He related the cases of two young persons, a man and a woman, in both of whom it would appear that death ensued from puncturing the *membrana tympani*. Where fatal consequences are said to result from an operation which heretofore has proved, to say the least of it, innoxious, it is of very great importance that we should inquire into all the circumstances attending these cases, and the mode of performing the operation. The first instance was that of a young woman, deaf in both ears for four years, the only history of whose case is, that prior to this period she got a severe cold, with a swelling of the glands of the neck ; but what was the cause of her deafness, how it arose, what was the condition of the *membrana tympani*, why the operation was performed, in what manner, by whom, or with what instrument, we are not informed ; all we know is (I quote from Ranking's Abstract), that "catheterism of the Eustachian tube was performed and said to fail ; hence it was agreed upon that the membrane of the tympanum should be pierced, a small piece being drilled out of the membrane of the right side ;" but we are not told any other circumstances attending the operation, nor who witnessed it. Pain and other evidences of inflammation in the ear ensued, and profuse discharge took place, but what the condition of the ear was we know not. At the end of four months she died, with symptoms of diseased brain ; and upon examination it was found that the *dura mater* covering the petrous portion of the temporal bone was roughened

chiefly attacks the light-haired, fair-skinned, blue-eyed, and those who exhibit well marked evidences of a scrofulous constitution. Its first symptom is that of deafness, generally attributed to inattention: scarcely a fortnight passes that I do not see a boy or a girl, from ten to fifteen years of age, from some of the public schools, who, having been deaf for the two or three months previous, had been constantly reprimanded for inattention.

Upon examination, however, the tympanal membrane will be found of an uniform pinkish hue, but without either thickening or opacity, at least in the early stages; the auditory passage is dry, but seldom red. There is generally mucous engorgement of the cavity of the tympanum, with thickening

and softened in its texture, particularly near the internal auditory foramen. The *membrana tympani* was *entirely destroyed* and the lining membrane of the tympanum thickened and villous. Now, while we are totally in the dark as to what the condition of this case was originally, it is manifest that some great violence must have been done to the drum of the ear in the performance of the operation.

The second case is equally defective as to the cause of deafness or the appearance of the ear, although the *post mortem* examination was most interesting; all my friend, Dr. Butcher, states, is, that the man was deaf for twelve months previously, and that he then applied to a surgeon, and had his tympanum pierced, but why, or whether with a gimlet or a punch, a trochar or a probe, we are not informed. At first the hearing was improved, but then relapsed; after some time head symptoms set in, and the man died in the course of six weeks. Upon dissection, evident traces of inflammation of the brain and its membranes were discovered; the *dura mater* in particular, covering the auditory portion of the temporal bone, was rough and thickened, and a small abscess was discovered in the anterior globe of the brain, upon the same side on which the perforation was said to be performed. In this case, however, the original cause of the deafness, namely, a small tumour about the size of a bean, lying on the auditory portion of the seventh pair of nerves, was discovered. This was evidently a case in which the operation never should have been resorted to. Dr. Butcher deserves much credit for making those cases public, but it is much to be regretted that the statement of the surgeon who performed the operation was not obtained, nor the appearances of the ear, both before and after the operation, described.

and increased redness of the faucial mucous membrane,—a condition which, there can be little doubt, extends through the lining of the Eustachian tube into the middle ear. Enlargement of the tonsils is a very frequent accompaniment; and glandular swellings about the neck not an uncommon appearance in such cases. It is, generally speaking, a painless disease, and but seldom accompanied by tinnitus in the first instance; occasional crackling sensations, gurglings, and sometimes loud reports, are felt in the ear by patients themselves. Catarrh, stuffing in the nose, and great liability to cold in the head, are not unusual symptoms, or rather are attendants; there is no pain on pressure in or about the ear, the throat, the mouth, or the Eustachian tube. Strumous affections of the eyes are not an unfrequent complication, and these, particularly corneitis, which it very much resembles, and also strumous ophthalmia, sometimes alternate with the affections of the ear. The amount of deafness varies from a hearing distance of eight or ten inches with a watch, to total inability to hear a watch applied to any part of the head, or held between the teeth, or even to hear what is said in a loud and distinct voice; and, generally speaking, the amount of redness and vascularity presented in the membrane of the drum is in the ratio of the amount of deafness; but the latter is very variable, and would in many instances appear to be influenced by the state of the atmosphere, being greatest in damp, moist weather. In some cases the redness assumes a dark, damask rose colour, and then we may generally rest satisfied that the entire of the middle ear is engaged. Simple mucous discharge occurs occasionally, and otorrhœa succeeds in the more aggravated cases, as the disease advances, but it need not present at any period of the affection. The constitution is generally below the standard of health; the patient is usually pale, languid, and inactive, with, perhaps, slight loss of appetite, and some dryness of the skin.

The treatment in this disease should be chiefly directed to improve the condition of the constitution, and I know nothing

better for effecting this object than the use of bark in its various preparations, conjoined with iodide or bromide of potassium, and, when the inflammation is of a more active character, the chloride of mercury. In the advanced stages, and where there is much constitutional taint evident, with enlargement of the cervical glands, &c., the oleum jecoris will be found most effectual; but whichever of these are employed, it should be persisted in for a considerable length of time. This is a slow and tedious disease, lasting, even in the most favourable cases, for months, and is liable to relapse, and return again and again. Such patients should, therefore, be carefully watched, and their ears examined at least once a week, while any trace of inflammation remains. A dry, pure, country air will always be found beneficial, and perhaps I should add, a residence by the sea-shore in summer; but, as far as my experience extends, I have always found bathing in the open sea injurious. The warm bath occasionally, appears to be of use. As in cases of strumous ophthalmia, so in scrofulous myringitis, a leech or two may be required occasionally, although depletion is not generally indicated.

As the tongue is usually white and clammy, and the dejections often vitiated, small doses of chalk and mercury, combined with rhubarb and columba, given as alteratives every second or third night, will assist our other means. The diet should be light and highly nutritious, while all acid fruits, pickles, and ill-boiled or stale vegetables should be avoided. Constant open air exercise during the fine part of the day is very necessary; and when the weather is at all harsh, cold, or damp, a light covering should be worn over the ears, or small bits of cotton laid in the concha; but in the house, or in warm weather, these precautions are unnecessary; neither do I believe it at all efficacious to keep the head warmer than under ordinary circumstances.

Locally, counter-irritation will be found most effectual, and I find the vesicating liniments more efficacious in producing

the desired effect than the ordinary blistering. As such, the strong tincture of iodine, with acetum lyttæ, or croton oil and acetic acid conjoined with spirit of turpentine, oil of rosemary, and soap liniment, form very useful applications. The liniment should be rubbed over the mastoid process, and lower down, as far as the angle of the jaw, once or twice a day, until a slight vesicular rash is produced, when its use should be discontinued until the redness has disappeared, and then it should be reapplied as before. This counter-irritation should be kept up for a couple of months at least, varying the application as the parts become accustomed to any particular substance. Whatever substance is used, great care should be taken that it does not spread over the back of the auricle, which is very likely to become inflamed and greatly swollen by it; to prevent this a small fold of linen should be applied between the auricle and the mastoid process after each application. Should pain be experienced on pressing the tragus backwards with the finger, a single leech should be applied either on that spot or within the circle of the meatus, but, generally speaking, local depletion, as I have already stated, is less indicated in this than in any of the other inflammations of the drum or its membranes.

This is one of the diseases in which catheterism of the Eustachian tube is sometimes necessary, but, I believe, not so often as is generally resorted to. When the patient himself can readily pass a stream of air into the drum, by making a forced expiration, and at the same time holding the mouth and nose, whilst we apply our ear, or a stethoscope, to his external ear, so that we can distinctly perceive the full and natural inflation of the membrane, the introduction of a catheter, and the pressure of a stream of cold air, I believe to be not only unnecessary, but injurious. In cases, however, where mucus has collected in the cavity of the tympanum, catheterism should be resorted to occasionally, and even warm water, or some bland fluid, thrown up by means of a syringe, although I have my doubts as to the quantity of any fluid which can be thus driven

into the tympanum, in order to wash out mucus, pus, blood, or other extraneous substances. I am aware that in this opinion I differ from many distinguished authorities, and particularly from my friend, Mr. Pilcher, but it is, nevertheless, the result of considerable experience in the management of such cases. As I do not believe that the enlarged tonsils which often accompany this disease (as they do other strumous affections) are the *cause* of the deafness and the inflammation manifest in the drum and its membranes, I cannot recommend their removal, as has been proposed, and, I believe, acted on by others; but the application of a strong solution of a nitrate of silver to the back of the throat and fauces, and particularly towards the mouth of the Eustachian tube, by means of a piece of lint attached to the end of an aneurism needle, and applied as far up as possible behind the pillars of the soft palate, will be attended with beneficial results; and the use of astringent gargles should be persevered in during the continuance of the throat affection. If otorrhœa ensues, it is to be treated as I have recommended in my former essay upon that subject.

Gout may occasionally attack the tympanal membrane, but I have never seen a case of it myself; instances have been recorded of its exhibiting itself in the auricle. It is stated that gonorrhœa appears sometimes in the external auditory canal, but we still want careful examination and accurate observation to establish these cases.

V. SYPHILITIC INFLAMMATION.

Although practitioners who treat syphilitic diseases upon a large scale appear to be aware of the fact that venereal occasionally causes deafness, I cannot find any authority which has noticed the disease I am about to describe. The deafness which sometimes accompanies the secondary form of syphilis is generally believed to be caused by inflammation and ulceration extending from the throat through the Eustachian trumpet into the middle ear; such may, under certain circumstances, no

doubt, occur, and produce destructive inflammation and suppuration in this cavity, although I have never met with such a case myself, nor have I seen a well authenticated instance of it recorded. The English writers upon aural diseases have completely omitted syphilitic affections of the ear, as have also Kramer, Schmalz, and most of the continental writers, with the exception of Lincke. Martell Frank, the last writer of note, in his *Practische Anleitung*, enumerates two forms of the disease,—the first, external syphilitic otitis, in which secondary syphilitic ulcerations occur in the auditory canal, accompanied by other well-determined symptoms of the disease. These, however, are already known to the surgeon; they resemble the ulcerations which occur on the margins of the tarsal cartilages, and are sometimes the consequences of rupia seated upon the auricle, in the vicinity of the meatus. Under the head of otitis interna, he describes that form which is the result of lues, which, he says, arises either as a reflex of the disease in the ear itself, or is propagated through the Eustachian tube, as an extension of inflammatory action in the throat. He says this disease is accompanied by great pain, and often terminates in suppuration of the middle ear, destruction of the tympanal membrane and the ossicula, caries of the temporal bone, profuse otorrhœa, and exfoliation, &c. It is evident, however, from his description, that the disease of which he speaks is the ordinary suppuration of the cavity of the tympanum, with neglected otorrhœa and caries, and in no wise characterized by any peculiar syphilitic symptom.

Lincke's usual accuracy and observation seem to have deserted him when writing his chapter upon "Otitis Syphilitica;" for, while the affection now under consideration seems totally to have escaped his observation, he has, with most laborious German assiduity, collected together a multiplicity of authorities bearing upon the subject of what are supposed to be syphilitic diseases of the ear, but not one of which he himself has verified. Thus, he enumerates from the works of

Cullerien and Plisson chancres both on the auricle and in the meatus. He also gives a description of chancres, "if they arise near or *on* the membrana tympani!" but, like Frank, his descriptions are chiefly in reference to the syphilitic otorrhœa, the result of inflammation and ulceration extending from the throat or nose, a disease which it yet remains to be proved, by original observers (not system-makers or cyclopædia-compilers), at all exists.

While Lincke's work, *Handbuch der Theoretischen und Praktischen Ohrenheilkunde*, must ever remain a most valuable book of reference, it is high time for those who wish to advance the science of aural surgery to cast off the incubus of authority, and by patient investigation and originality of observation establish facts. Kramer deserves much more credit for omitting all notice of an affection which it is evident he had never himself observed, than those writers who, with equal want of knowledge, have endeavoured, by collecting out of a variety of obscure writers some ill-recorded cases, to establish an untenable theory.

The disease which I am about to describe is an inflammation of a specific character, occurring in the membranes of the tympanal cavity, but chiefly exhibited in the external membrane of the drum. All the cases I have seen of this affection occurred in young men, and generally those of fair complexions and blue eyes, who had had primary sores upon the genitals from six to twelve months previously, which sores were rather of a deceptive character, so that mercury was seldom given in the first instance, at least in a legitimate form. These sores were usually tedious in healing, and followed by papular eruptions and sore throats, for which mercury was, in most of the cases, taken irregularly. Buboës were not a common attendant, nor had iritis ensued in any of the instances of well-marked venereal myringitis which fell under my notice; but copper-coloured blotches, fissures, and ulcers of the tongue, with loss of strength and slight nocturnal pains,

generally speaking, existed previous to the aural affection, which should, I think, be ranked as a tertiary symptom. In four cases out of five of this disease which I witnessed last year, the disease appeared suddenly, as an eruption was fading off; in the fifth it came on at a later period, and was accompanied by loss of hair; in all it appeared in the upper or middle ranks of life. In some cases there is at first a sensation of fulness in the head, and often vertigo upon stooping or rising up suddenly, and the patients have usually a feeling of fulness within the ear; but in no instance have I seen it accompanied by acute pain, in which circumstances it resembles the subacute form of inflammation already described at page 83, but upon inspection the amount of redness and vascularity will be found very much greater than the latter; and in this consists one of the chief characteristics of this disease, that while it is unaccompanied by local pain, as in the subacute inflammation, the membrana tympani will be found to present an amount of redness equal to, and sometimes exceeding, that seen in acute myringitis. The redness has generally, however, a brownish hue in the syphilitic form, which is not observable in that just alluded to. There is not, at first, much loss of polish, but in a short time the membrane assumes a fuzzy appearance. The auricle and meatus I have not seen affected more than in the subacute form; both ears are usually affected at the same time. The amount of deafness is usually very great, and is the symptom that first attracts the patient's attention, and it seldom varies. Tinnitus is not usually present, but in two cases which I possess the notes of the deafness was ushered in by a very loud noise, which passed away after a few days. This inflammation does not end in mucous or muco-purulent discharge from the surface of the membrane, or the sides of the auditory canal; nor have I seen lymph effused upon the external surface of the membrane, as in the more violent and painful forms of otitis; but from the *brownish-red* colour of the membrane in the early

stage, from a yellow-speckled opacity, which is generally observable in it on the subsidence of the redness, and from the intense degree of thickening and opacity which were present in some cases, which were evidently the result of syphilitic myringitis, I am inclined to think that lymph is largely effused between the laminæ, or upon the inner surface of the membrana tympani. Two of the worst cases of deafness (not congenital) I ever saw, appeared to have been the result of syphilitic inflammation, and in both there was great thickening, opacity, and insensibility of the membrane. I am also inclined to think that syphilis has played a more extensive part in the production of deafness than the profession is at all aware of.

CASE VI.—*Syphilitic Inflammation of both Tympanal Membranes; Mercurial Treatment; rapid Recovery.*

Mr. A. B. had a doubtful-looking sore upon the penis, twelve months previous to my seeing him in October last. Considerable doubt was expressed as to the genuine syphilitic character of the sore. It healed under local treatment. Some months subsequently he had a bubo in the right groin, and a small abscess also formed on the under side of the urethra, he then rubbed in mercury, and was confined to the recumbent posture until the swelling in the groin had completely subsided. After this he experienced great weakness and lassitude, and suffered for several weeks from sore throat. These symptoms were relieved by removal to the country; but on his return to town, an eruption appeared extensively on the genitals, thighs, and abdomen, and he had also some slight deafness. These symptoms were relieved by the use of the hydriodate of potash. The eruption, however, came and went, both on its original seat and on the chest and extremities, during the next few weeks. I first saw him, with Mr. Evans, in the middle of October last; he had then no sore throat, but a fresh crop of eruption, in the form of brownish spots, interspersed with small pimples, had ap-

peared generally over the back and the outer sides of the arms. He had also become exceedingly deaf, hearing the watch only when pressed against the auricle, and he complained of a sense of giddiness and fulness in the head, but had no pain whatever in the ears, nor any snuffling in the nose. He stated that his deafness had occurred suddenly, a few hours after rising in the morning, some days before; he had had some noise at the commencement, but it had now nearly vanished. Upon inspection, the auditory canal was found dry, and the membrana tympani of an uniform dark, brown-red colour, so that the situation of the hammer bone was not easily recognizable. There was no ulceration observable, nor any alteration in the plane of the membrane; but the light was not reflected from it in the ordinary manner, thus shewing that it had lost its polish. These appearances were nearly the same upon both sides. He was able to inflate the drums perfectly, and auscultation afforded no evidence either of contraction of the audito-facial passages, or of any accumulation of fluid within the drums.

The treatment consisted in the application of leeches round the meatus every second day, and the use of calomel and opium in small and frequently repeated doses. This mode of administering the mineral disagreeing, having produced diarrhoea and great tenesmus, we were obliged to discontinue it, and substitute inunction in its stead. The deafness and the appearance in the ear remained unaltered until the morning on which salivation was produced, and then hearing was restored almost miraculously, and the next day the redness and vascularity in the ears had almost disappeared. Gentle ptyalism was kept up for some days longer. He has not since had any return either of the deafness or other syphilitic symptoms.

I attended a case with Mr. Cusack two years ago, in which it was found necessary to keep up the mercurial action for above a fortnight, but in this instance the disease had been of a much longer standing. I treated a well-marked case last summer in

consultation with Mr. Mason, in which several relapses occurred, just as we often observe in syphilitic iritis.

VI. FEBRILE SUBACUTE INFLAMMATION ACCOMPANYING THE EXANTHEMATA AND OTHER FEVERS,—GENERALLY PRODUCING OTORRHOEA.

Although, in forming a classification of inflammations of the tympanal membrane, it became necessary to introduce the foregoing heading, it is unnecessary for me to here describe those aural affections which accompany the exanthemata, as being always accompanied by purulent discharges, I have fully detailed their symptoms and treatment in one of my former Contributions to Aural Surgery,—the essay on Otorrhœa. Moreover, I am not at present able to state from personal knowledge what are the peculiarities of the inflammation which precedes the discharge in those cases ; as, although of very common occurrence, the practitioner in aural surgery does not in general see them till long after their first appearance,—seldom, indeed, till the disease becomes chronic, and complicated with polypus ; or often not till long after ulceration has destroyed the membrane, the ossicula have been discharged, and other irreparable mischief has occurred. During the recent epidemic of influenza I have had some opportunities of examining the membrane in the early stage of this affection, and I have found it dark-red, thickened, and very pulpy, like a highly injected portion of the intestinal mucous membrane.

In the foregoing essay I may to some have appeared prolix, but on a subject comparatively so new in English medical literature, so little studied, and, consequently, so little understood, by practitioners in general, it was impossible to explain my meaning without entering into minute descriptions. If aural diseases were as attentively studied in these kingdoms as ophthalmic or obstetric medicine, then would the lengthened description of cases be unnecessary ; but where do we find, throughout the whole circle of our periodical literature, half-a-

dozen well observed and accurately noted cases of diseases of the ear in a twelvemonth? Faithful observation and clinical records of disease are now more required in this than any other branch of medical science.

ART. VII.—On the Mortality of Medical Practitioners in Ireland.

Second Article. By JAMES WILLIAM CUSACK, M. D. President of the Royal College of Surgeons, and WILLIAM STOKES, M. D., Regius Professor of Physic in the University of Dublin.

WE have again to draw the attention of the Government, the profession, and the Public, to the subject of the mortality of medical men in Ireland. Our former researches, printed in the Number of this Journal for August last, did not approach the present time nearer than the beginning of the year 1843, and it is manifest that the returns which they gave, unparalleled and appalling though they were, cannot be received as giving the full amount of mortality.

In the present communication we shall give the results of the investigations which we set on foot during the past year, so as to complete, as far as possible, the statement of the Irish medical mortality up to the present time. In the second series of inquiries the number of subjects of investigation has been increased, and information has been sought for with reference to the following subjects:

1st. The names of medical practitioners who have died since 25th March, 1843, the period up to which our former inquiries extended; 2nd. The ages at which death occurred; 3rd. The diseases which caused death; 4th. How such diseases were contracted; 5th. The qualification of the individuals; 6th. The nature and locality of the official situations held at the time of death; 7th. The names of those who have since held, and who now hold, those situations; and, 8th. A statement of what in-