

not to commence this until the surface-heat is normal; for undoubtedly, when any tendency to inflammation exists in the tendon-sheath, pressure aggravates it, and I have known it to lead to untoward results.

It is of course impossible, within the limits of this paper, to describe the special adaptation of this method to each joint; but I will take as an illustration the ankle. If a wire be passed round the joint so as to impinge on the two malleoli and the tendo Achillis, it will define three or four well-marked hollows: one on each side of the tendo Achillis behind each malleolus, one in front of the fibula, with a fourth shallower one in front of the tibia. When the ankle is severely sprained these fossæ become obliterated, and are filled up with effusion, overstretched ligaments, and displaced tendons.

Observation has led me to believe that there are very few sprained ankles in which muscular displacement to some degree does not take place. It most commonly occurs in front of the outer malleolus, involving the outer part of the annular ligament, the extensor longus digitorum, and the anterior fasciculus of the external lateral ligament; next, perhaps, the posterior peroneotarsal ligament and structures behind the external malleolus. Cases of similar overstretching and displacement on the inner side of the ankle are happily rare; but in gravity they bear much the same relation to the former as a Pott's dislocation does to a simple fractured fibula. I will assume an ankle-joint has sustained a severe sprain all round, and has arrived at the chronic stage: modifications of the treatment of such a case will meet all that are likely to occur. To carry out the first principles of treatment by direct, equal, and continuous pressure, it is clear the fossæ mentioned above must be filled, or rather their sites covered by pads so as to cause the retaining plasters, bandages, and splints to exercise equal pressure everywhere. By making pressure with the thumb from below upwards in the line of the fossæ, a good deal of the œdema may be squeezed away and the displaced tendons in some degree restored. I make, as a rule, five pads (of tow and lint or leather): two about four inches long by one inch wide (one a little shorter than the other, so as to be better adapted to the curve extending upwards from the dorsum of the foot to the crest of the tibia); another shorter, broader, and thinner, to place over the tibialis anticus and extensor proprius pollicis; and two, three or four inches long and bolster-shaped, to fill in the posterior fossæ on each side of the tendo Achillis. It is often advisable, in old-standing cases, to supplement the pads by strips of plaster to ensure firmer pressure. Both pads and strips of plaster should be made exactly to fit, as, if too large, they are useless, from the pressure being too diffused; and, if too small, they exercise too little pressure. A moment's consideration will render this obvious. If too large a pad, for instance, be placed over the outer postmalleolar fossa, its edges rest on the tendo Achillis and outer malleolus like the piers of an arch, leaving the fossa itself untouched. To keep these pads in their place, I use a long extended half-moon-shaped piece of plaster (emplastrum saponis spread on leather), long enough for the ends to overlap in front when the heel is placed in the centre, and a narrow oblong piece above this, placed round the lower part of the leg, to cover the upper part of the pads. The handiest way to apply the pads is to place an India-rubber band above the ankle, to slip the pads under it, and then, planting the heel in the centre of the curved plaster, to bring the two ends across the front of the joint so as to overlap. The pads having been secured in position, the elastic ring is to be cut, and the oblong piece of plaster put on so as to encircle their upper ends; lastly, the whole ankle is to be firmly bandaged. Amongst the working classes, or in the case of an uncontrollable patient, it is advisable to apply two thin splints over the anterior pads, keeping them in position by a long strip of adhesive plaster. Where there is much superficial ecchymosis, where there are bullæ, or where there is unhealthy-looking skin, instead of using soap-plaster, the pads may be kept in position and pressure maintained by a piece of lint on which ointment has been spread. Calamine ointment made stiffly is clean, and not uncomfortably greasy. If, as occasionally happens, even this should cause irritation, warm wet lint covered by oiled silk may be advantageously used over the pads, and secured by a firm bandage; but neither of these applications can compare in efficiency with the soap-plaster spread on leather.

It is, as I have said, impossible in the limits of this paper to describe the method of adaptation of the pads to all the different joints; but a very little consideration will suggest the shape, size, and thickness necessary to be employed in each case.

It is reported that Professor Krafft-Ebing has resigned his office as director of the asylum at Gratz, the reason assigned being that he has been deprived of the material for clinical instruction by a resolution of the public authorities no longer to admit patients in easy circumstances, in order to increase the accommodation for those of the poor class.

## THE FORMS, CAUSES, AND TREATMENT OF TINNITUS AURIUM.\*

By W. DOUGLAS HEMMING, F.R.C.S.Ed., etc., Bournemouth.

THE subject of tinnitus aurium being one of those selected for special consideration in the Subsection of Otology, I thought it might be as well, partly as an introduction to the discussion, to give a slight sketch, necessarily of course brief and incomplete, of the various forms of the affection, its most common causes, and the methods of treatment found generally valuable. Into pathological considerations I do not propose to enter, confining myself entirely to purely practical points.

Tinnitus is one of the commonest symptoms coming under the aural surgeon's notice, and it is decidedly one of the most intractable. It has been, by some authors, treated of almost as a distinct disease; this, however, it cannot be considered, as, though cases may, and do, occasionally occur in which no morbid condition is discoverable in any part of the organ of hearing, yet, even in these instances, there is, if not any local lesion, some deranged condition of the system interfering with the circulation or innervation of the auditory apparatus, and thus originating the symptom.

Of the various forms and kinds of noises, the descriptions given by patients are often perplexing, and not seldom ludicrous. The account varies with the occupation of the patients and the sounds most familiar to them. Careful consideration and examination of the various descriptions given in large numbers of cases show that noises in the ears may be divided into about six classes, which for convenience I will here arrange in tabular form, with the causes producing them in corresponding column, upon the lines first laid down by Dr. Woakes.

### KIND OF NOISE.

1. Tidal "to-and-fro" noises, like the sound produced when a shell is held to the ear.
2. Humming or buzzing noises, like the sound of a humming-top or the buzzing of a bee.
3. Gurgling or bubbling noises, as of air bubbling through fluid.
4. Rustling or crackling noises.
5. Constant, rushing noises, like the falling of water in a cataract.
6. Pulsating noises, often said to be like the beating of a drum; frequently synchronous with the pulse.

### CAUSES.

- Tobacco; chronic catarrh of the middle ear, ending in undue contraction of intrinsic muscles.
- Impacted cerumen, eczema, foreign bodies or parasites in the external meatus.
- Fluid in either (a) the tympanum, or (b) the Eustachian tube; the result of catarrh.
- Deficiency of cerumen; (hairs in the meatus or on the membrane give sounds like an Æolian harp); acute catarrh in its later stages.
- Venous congestion of the labyrinth.
- (a) Extra-aural causes, anæmia, aneurism, etc.; (b) Arterial congestion of the labyrinth.

The above are the principal forms in which we find the symptom showing itself. In considering a little more in detail the causes of them, it will be convenient to divide them into two great classes, extra-aural and intra-aural, and to subdivide the latter class again, in accordance with the three divisions of the organ of hearing.

The extra-aural causes of tinnitus may depend upon a derangement of some part of the body in the immediate vicinity of the ear, or may be due to a morbid state of the system generally. Causes situated in the immediate vicinity of the auditory apparatus are such as narrowing of a vessel, for example, a branch of the temporal, of the posterior auricular, or of the carotid artery. The position of this last-named vessel renders any abnormality in the circulation of blood through it especially likely to produce aural symptoms. The cause in other cases will be more remote, and may be found in an aneurism of a branch of the aorta or of that vessel itself.

Of general constitutional causes, anæmia is a very common one, the well known *bruit de diable* propagated from the vessels of the neck causing sounds which in this case, as well as in aneurism, are of a pulsating character. Other general causes are numerous; bathing, mental excitement, overwork of the brain, depression of spirits, hysteria, hypochondriasis, gout, dyspepsia, obstructed portal circulation, exposure to blasts of cold air, the effect of explosions or of artillery practice, have all been mentioned by authors as causes of the symptom. The effect of quinine in producing tinnitus is also well known.

Childbearing and lactation are frequently accompanied by troublesome tinnitus, which is also common about the menopause. It is probable that, in these cases, the actual cause is found in the anæmic

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condition of the vascular system in the former cases, and the generally disturbed state of the nervous system in the last.

Tobacco, whether smoked, chewed, or snuffed, is a more frequent excitant of tinnitus than is supposed. The sound produced is of a "sea-shell" character; and, according to Dr. Ladreit de Lacharrière, it is the result of changes in the Eustachian tube, being more intense according as the obstruction of the tube is more complete. It is accompanied by deafness.

Tinnitus may or may not accompany the deafness frequently produced by the diseases of infantile life, mumps, whooping-cough, and the exanthemata, especially scarlatina.

Cerebral disease frequently accompanies, if it do not cause, tinnitus; but in the case of insane patients it is necessary to differentiate from tinnitus the hallucinations of hearing of which they are so often the victims.

Intra-aural causes, as I have said, may be subdivided according to the three divisions of the organ of hearing.

1. *External Ear*.—The conditions of this part causing tinnitus are: (a) Inflammation of the external meatus; (b) Impacted cerumen; (c) Deficiency of cerumen; (d) Hairs in the meatus or lying on the membrane; (e) Dried pus pressing on the membrane; (f) Aspergillus in the meatus; (g) Any other foreign body in the canal which presses on the membrane. Detailed consideration of these conditions is unnecessary, as they are all discernible by means of the aural speculum.

2. *Middle Ear*.—The following conditions of the middle ear cause tinnitus: (a) Adhesive mucus on the inner surface of the membrane, in the tympanic cavity, or at or near the orifice of the Eustachian tube, due to middle ear or postnasal catarrh; the tinnitus is of a bubbling gurgling character; (b) A foreign body in the Eustachian tube; (c) Acute catarrh, or inflammation of the middle ear; (d) Chronic catarrh having as its result contraction of the tensor tympani and intrinsic muscles, which causes incursion of the stapes into the fenestra ovalis, and consequently increased intralabyrinthal pressure. Tidal noises result.

3. *Internal Ear*.—Our knowledge with respect to the abnormal conditions of this region is still limited, in spite of the many laborious investigations which have been carried on, principally by our German and American confrères. The most common and obvious cause of tinnitus in this part is congestion of the labyrinthine circulation. According as this is either (a) venous, or (b) arterial, the tinnitus will be rushing or pulsating. In the pulsating arterial tinnitus, the beats will often be found to be synchronous with the pulse of the patient.

In many cases, two or more causes will be found co-existing. Thus an extra-aural cause, such as an overwrought brain, may be found in combination with a chronic catarrh of the middle ear, or a disturbed state the digestive functions may be coincident with the presence of impacted cerumen in the meatus. When different kinds of noises are present together, the differentiation of the classes of sound will often facilitate the discovery of the cause, but it is frequently most difficult to trace the tinnitus to its origin in these complicated cases.

The limited time accorded to papers forbids my entering into more detail with respect to etiology, and I must hasten to say a few words in reference to the most effective methods of treatment.

With respect to the treatment of cases due to extra-aural causes, little need be said, as it resolves itself into the treatment of the constitutional local condition originating the symptom. Anæmia will require tonics; excited action of the heart may be combated by digitalis; aneurism must be treated on the recognised principles; where there is suspicion of syphilis as the origin of cerebral or nervous disorder, iodide of potassium must be tried; disturbance of the portal circulation must be met with the familiar weapons, and the *primæ viæ* should always be regulated.

On the treatment of cases due to intra-aural causes I will endeavour to speak a little more fully.

1. *The External Ear*.—(a) Inflammation of the external meatus may be either circumscribed or diffuse. Tinnitus is more commonly a symptom of the latter than of the former. The treatment of diffuse inflammation consists in the application of leeches in front of the tragus in the early stages, followed by irrigation with warm water poured continuously (not syringed) into the meatus. If the pain be very severe, anodynes may be added to the water; laudanum or morphia, for example. Constitutional treatment must be combined with local, as the general health is usually deranged. (b) Impacted cerumen must be treated by removal, the membrane and meatus of the affected side being afterwards restored to a normal condition. For the removal of wax, the syringe and warm water are the only weapons which should be employed. If the cerumen have become very hard, the application for a few hours of a warm solvent solution, as oil, or a solution of bicarbonate of soda (ten grains

to an ounce) will facilitate the process. After the cerumen has been removed, the membrana tympani should be carefully examined; if it be retracted, the tympanum should be inflated by Valsalva's or Politzer's method. The tinnitus will then probably cease; if not, some other cause is present, and must be sought for and treated. (c) If the secretion of cerumen be deficient, it is probable there will be co-existent a torpidity of the digestive canal, which may be advantageously treated by a combination of tonics and aperients. Deficient cerumen is often connected with a gouty or rheumatic diathesis. It may follow cold bathing. Weak astringent solutions, as of nitrate of silver or acetate of lead, may be applied locally. The condition of the throat must also be inquired into and examined, as enlargement of the tonsils or relaxation of the mucous membrane will not unfrequently be found. (d) Tinnitus resembling the sound of an Æolian harp, and apparently due to an abnormal growth of hairs in the meatus, can only be relieved by their removal. They should not be pulled out, but cut off close and removed with the aid of the syringe. A hair lying on the membrane may be dislodged by gentle syringing, or by means of a small brush moistened with equal parts of glycerine and water. (e) Dried pus on the membrane must be removed by the syringe. (f) The aspergillus fungus will have to be removed with the forceps under a good illumination. Syringing with warm water and alcohol will be of use to prevent a recurrence. (g) For the removal of foreign bodies, nothing but the syringe should be employed. There are two or three cardinal rules on this point, which, from the importance of the subject, I make no apology for introducing here. First, it should be remembered that a hard substance may be left in the meatus, even for years, without causing injury. Secondly—and this rule should never be departed from—no attempt should be made for the removal of a foreign body which cannot be seen. Thirdly, force must never be used for the extraction of substances from the ear. To effect removal by the syringe, the body having been seen, the fine nozzle, known as Toynbee's, should be employed; and, the auricle being drawn backwards and upwards so as to straighten the canal as much as possible, the jet of water should be directed along its upper wall. In this manner, the water will get behind the body and force it out. In some cases, removal will be facilitated by turning the patient on his side, with the affected ear downwards, and syringing from below. A small round substance, as a marble, may be removed by means of a brush, dipped in glue or coaguline, which, being placed in contact with it, is allowed to harden, and then brush and body are withdrawn together.

2. *The Middle Ear*.—(a) Collections of adhesive mucus about the pharyngeal orifices of the Eustachian tubes by the position of the head are not uncommon in the postnasal catarrh, which is so frequent a cause of middle-ear catarrh; in these cases, mucus will also probably be found in the tympanum and on the drum-head. In such conditions, benefit will accrue from the use of vapour inhalations, as of benzoin, benzole, and creasote, which should be forced into the tympanum by the Valsalvian method of inflation. The condition of the throat must be attended to, and the secretion in the nasal passages may be best removed, and that region brought into a healthy condition, by means of the posterior nasal syringe, for use with which a tepid solution of carbolic acid (gr. j. to ʒj.) will be found suitable. The Politzer bag must be frequently employed, and the Eustachian catheter, if necessary. Should these measures fail to remove the mucus from the tympanum, the membrane must be incised and the middle ear washed out with a weak solution of sulphocarbonate or bicarbonate of soda. For internal use in purely catarrhal cases, chloride of ammonium is of much value. (b) Foreign bodies in the Eustachian tube are very rare, and their removal presents much difficulty, each case requiring a special mode of treatment to be devised for it. (c) In acute catarrh there will be, besides tinnitus, severe pain, deep-seated in the ear, impairment of hearing, bulging of the membrane, and vascular injection. The warm douche should be employed, and leeches applied in front of the tragus. Poulitices should, if possible, be avoided, or, if used, they should be made small enough to go into the canal. If there be much accumulation of mucus in the tympanum, early paracentesis of the membrane is indicated, and is, as Dr. Cassells has shown, a truly "conservative" measure. On the subsidence of the acute symptoms, inflation of the middle ear must be practised. General constitutional treatment must be coincident with the local measures, and this remark applies to all aural affections. We must be careful, while paying attention to local conditions, not to overlook their connection with, and frequent dependence upon, constitutional derangement. (d) In those cases where, from chronic catarrh, there is contraction or paralysis of the intrinsic muscles, we must endeavour to stretch these muscles, or restore to them their lost contractile power. The former indication is sometimes met by the employment of Siegle's speculum, which draws out the retracted membrane, and with it the

ossicles and attached muscles. More powerful forms of tractor have been devised and recommended; but I cannot but think that their use is attended with some danger. For restoring the lost muscular tone, the application of electricity is of value. The magneto-electric and galvanic current has often proved efficacious in the treatment of this form of tinnitus. Lastly, the tendon of the tensor tympani may be divided. In some cases, simple incision of the membrane, without division of the tendon, has afforded relief.

3. *The Internal Ear.*—In the cases due to congestion of the labyrinthine blood-vessels, more is to be hoped from internal than from local measures. Hydrobromic acid has had claimed for it by Dr. Woakes the position of "a specific remedy for congestive labyrinthine conditions, providing always that the auditory apparatus be first relieved of any well-marked process which by its presence might tend to keep up excessive vascular action". I have obtained good results from this remedy in many cases. The dose is from fifteen drops upwards.

The flight of time warns me that I must conclude this brief and imperfect sketch. There are many points on which I would gladly have enlarged had time permitted; but I must content myself with a hope that my paper will be indulgently received, and may form the basis for a discussion which will throw more light on this interesting subject.

## CLINICAL MEMORANDA.

### FLACCIDITY OF THE IRIS IN REAL DEATH.

THE question of real or apparent death having recently come before me in a few cases, in which it would have been difficult for anyone but a medical jurist to give a scientific or confident answer, it occurred to me that a sign of death which is so very simple in its application, and as far as I am aware not generally known, or at any rate rarely put to the test, would not be unacceptable to some of one's professional brethren, as one worth committing to memory.

I refer to a condition of complete flaccidity of the iris in real death. It can easily be shown by synchronous compression of the globe of the eye in two opposite directions, when the pupil will readily assume an oval or irregular shape, whereas in cases of apparent death no ordinary amount of compression in this manner will have the least effect in altering the usual circular form of the pupil. I have recently made several observations in cases of suspended animation, of coma, and of impending death from various causes; also shortly after death; and in every case with success, as regards confirming the test. This sign of death was first pointed out to me by Sir William Jenner; and as I had never seen it in print I thought it was an original observation, but on looking up the literature of the subject, I find the fact mentioned first by M. Ripault.

However, in every case in which I have tested the sign it has turned out so uniformly reliable, that I venture to think it a valuable help in determining the question of real and apparent death, especially as it is one which can be attested before the cooling of the body, and before the supervention of rigor mortis, and considering that life is not incompatible with a temporary suspension of the important functions of respiration and circulation. BOYD B. JOLL, M.B.Lond.

St. Ives, Cornwall, July 31, 1880.

### SEA-SICKNESS.

MODERN physicians are not likely to agree in their treatment of sea-sickness while so-called scientific theories to explain the disease continue to be vaguely enunciated and too credulously received. Sea-sickness has hitherto been regarded by the world as a disease outside of science; but, if there is one complaint more than another which deserves to be treated on straightforward principles of medicine, that complaint is the disease in question. In defence of this statement, I submit the following points for the consideration of your readers.

1. The stomach contains (except after urgent vomiting) fluid and gas, with or without a certain amount of semi-solid matter.
2. Physiologically, its contents are slowly moved in a circular manner from left to right along the greater curvature, and from right to left along the lesser curvature, except when the cardiac orifice opens to permit the reception of more food, or the pyloric to permit the expulsion of some into the duodenum.
3. Pathologically, the turbulent action of the sea interrupts the normal slow and circular motion, substituting for it a rapid jumbling up and down of the contents of the stomach.
4. The contents of the stomach thus become neither more nor less

than a foreign body, whose presence readily accounts for all the distressing symptoms that usher in an attack of sea-sickness.

The objections to this theory of the disease are as follow. *a.* If this theory be the correct explanation of the disease, all persons would suffer alike. *b.* Nobody would be able to recover from the disease while remaining at sea. To these objections I submit the following answers. *a.* The natural power possessed by the muscular elements in the coats of the stomach for accommodating their action to the motion of the sea varies considerably in different individuals. *b.* This power, when not natural, can be acquired after a time, according to the law of "demand and supply".

The following rules for treatment I have found to answer best. Adopt recumbent posture, and administer a smart purgative. Let the diet be light and simple; avoid wines and spirits. If medicinal treatment be required, a mild vegetable tonic will be the most suitable to restore the stomach to its natural condition. A fluid drachm of the compound tincture of gentian every four hours in a wineglassful of water is an elegant preparation, which, perhaps, answers the purpose best. If the case be tedious, a little bicarbonate of soda, given in effervescence with tartaric acid, flavoured with a few drops of tincture of ginger, and sweetened with a little sugar, will often complete the cure.

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late Surgeon in the Mercantile Marine.

### RÖTHELN.

GIDEON L., aged 29, married, without syphilitic taint, had measles and scarlatina (?) as a boy. His general health was good; and he was of active habits. He walked a mile to my surgery, and exhibited his chest covered with very bright red points in a most marked elevated eruption, coalescing in small blotches of a distinct horseshoe shape. They came out first on the breast, as he stated; there were none on the face or neck; they were abundant on the feet; he had very little on the legs. There were no constitutional symptoms, with the exception of itching; neither headache, sore-throat, cough, nor swelling of glands. The eruption lasted a week, and then peeling commenced, only on the chest. He has a wife and three children. One child had measles a twelvemonth since. The whole family are now perfectly well, and free from eruption of any kind.

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## SURGICAL MEMORANDA.

### THE IMMEDIATE TREATMENT OF STRICTURE OF THE URETHRA.

ABSENCE from England prevented my attending the meeting of the British Medical Association at Cambridge, or I should have availed myself of the opportunity of taking part in the discussion on Sir Henry Thompson's paper on stricture, and could have given such testimony in favour of the immediate treatment as would have satisfied the most sceptical of the value of the operation, and of its security and success.

I never have replied to Mr. Teevan's criticisms, and I never intend to do so, simply from the fact that, his experience of the operation being limited (as he informed me in a letter some time since) to four cases, I consider he is incompetent to form an opinion as to the value of the operation or its results. Mr. Wood, however, is reported to have stated that he had seen several fatal cases; and I therefore, on my return to London, wrote to that gentleman, asking for the number and the particulars of the cases he alluded to. Mr. Wood, in his reply, informed me that the deaths, two in number, occurred in the practice of his colleagues at King's College Hospital; and, so far as he could remember, they were both operated upon by the late Mr. Partridge. Of one, Mr. Wood could not recollect any particulars; but in the other, he remembers that the patient was the subject of albuminous urine, and correctly adds: "This, of course, was hardly a proper case for any operation of the kind." I therefore venture to affirm that, considering the large number of operations that have been and continue to be performed by surgeons at home and abroad, the fact of only two deaths having occurred, one in a patient who should never have been operated upon, speaks volumes in favour of the immediate plan, and its eminently satisfactory results. In conclusion, I may add that I am as strongly in favour of the operation as I ever was, and that I have this day operated with the most perfect success on an unpromising and difficult case. At the same time, I warn those who are deficient in the manipulative skill required for the passage of the dilator, to refrain from using an instrument with which they are practically unacquainted.

BAKWARD HOLT.