of strychnine and sparteïne, phenol and phosphate of iron. I have obtained numerous definitive cures, many dating from five, seven and nine years, demonstrated by the reparation of hippocratism of the nails, the cicatrization of cavities, and by the absolute destruction of tubercle bacilli, and I can produce medical and microscopical reports which are indisputable.

Hypodermic therapeutics suffices to-day for all. This method, addressed to the central circulation, without leaving the remedies to the chance of digestion, is all-powerful in simple dyscrasias of the blood, and for infectious dyscrasias of internal or external origin. It prevents or aborts them often, it cures more quickly and better than any other, and prevents their degenerative consequences. Preventive antiseptic injection is useful in all morbid conditions, and is never hurtful. In no case does this method of medication, when applied by an expert, have hurtful consequences, near or far.

Conclusion.—Direct therapeusis by the central circulation, transfusion, injection, infusion by means of definite substances, powderable, assimilable and aseptic, will soon be the only method worthy of *savants* and of the practice of physicians who endeavour, before all, to cure and prevent without hurting.

ELEVENTH INTERNATIONAL MEDICAL CONGRESS IN ROME.

SECTION OF OTOLOGY.

(Continued.)

CONCLUSIONS derived from One Hundred and Twenty Cases of MASTOIDITIS observed and treated at the CLINICAL HOSPITAL OF NAPLES from 1883 up to the month of February, 1894.

By Prof. VINCENZO COZZOLINO.

1. The total number of cases of mastoiditis observed from 1883 to the month of February, 1894, was one hundred and twenty.

2. The author's triple classification: first class—endo-mastoiditis treated by perforation of the mastoid, or by the enlargement of osteo-cutaneous fistulæ; second class—the same treated by Wilde's incision and antisepsis of the auricular cavities; third class—the same treated by antisepsis of the auditory meatus, the tympanic, the mastoid antrum, &c.

3. Relation of mastoiditis to suppuration of the tympanum. Cases of suppuration observed from 1883 to 1894, two thousand and ten; mastoiditis during the same period, one hundred and twenty—showing six per cent.

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

Relation of mastoiditis to the age and the class:

	1st Class.	2nd Class.	3rd Class.
From 5 months to 10 years	49 (61·8 %)	6 (20 %)	——
„ 10 years to 20 years.....	10 (12·5 %)	2 (6·6 %)	——
„ 20 „ 30 „	6 (7·5 %)	6 (20 %)	3 (30 %)
„ 30 „ 40 „	8 (10 %)	9 (30 %)	6 (60 %)
„ 40 „ 50 „	3 (3·7 %)	5 (16·6 %)	1 (10 %)
„ 50 „ 60 „	2 (2·5 %)	1 (3·3 %)	——
„ 60 „ 70 „	2 (2·5 %)	——	——
„ 70 „ 80 „	——	1 (3·3 %)	——
	80	30	10

5. Relation to sex:

	1st Category.	2nd Category.	3rd Category.
	Relation.	Relation.	Relation.
Men	60 { 33 women	20 { 50 women	7 { 47 women
Women ...	20 { about 100 men	10 { about 100 men	— { about 100 men

6. Relation between the right and the left ear. In general, up to the age of ten years there is no remarkable difference between the right and the left ear in regard to the greater or less tendency to be affected with suppuration in the tympanum, or with mastoiditis in its various forms. On the other hand, the tendency becomes greater, as age advances, for the left ear to be affected rather than the right. This statistical point ought, without doubt, to be considered in relation to the observation which has lately been made in rhinology that the left cavity is more frequently affected than the right, and that, in case of bilateral lesions, it is nearly always more severely affected, on account of the diminution of calibre, owing to sclerosis of the septum being so easily produced on the left side, as well as the greater frequency of anomalies on the left side of the septum—crests and spurs (hyperostosis, hyperchondrosis).

	1st Category.	2nd Category.	3rd Category.
7. Mastoiditis after suppuration	70	29	7
„ „ influenza ...	6	—	1
„ „ tuberculosis	2	—	—
„ „ scarlatina ...	2	1	—
„ „ furuncles ...	—	—	2
	80	30	10

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8. Results as regards life in cases of mastoiditis. First category eighty cases: nine deaths, 11·2 per cent. Second category thirty cases. Third category ten cases.

9. Clinical observation has afforded assurance that in order for the pyogenic phlagosis to extend from the atrium to the attic, or from the one or the other to the mastoid antrum, it is necessary that there should be a certain condition favourable to the blocking of the pus, leaving out of account the rare cases of endo-mastoiditis, of pyogenic phlagosis of the attic, or of the antrum of primary origin. I have constantly verified this fact since the first publication that I made upon mastoiditis. (*Re* "Pharma Medica," 85.) At present I can reaffirm, and with still greater authority, the existence of this blocking as the essential predisposing cause which brings about secondary mastoiditis in suppurations of the middle ear, and of the auditory meatus. The case may be a simple inflammatory engorgement of the cutaneous and osseous layers of the meatus in the sub-acute form of pyogenic otitis, and of simple or polypoid granulations, or of multiple polypi or of necrosis in the chronic forms. Without any doubt, over and above the local or anatomical predisposition of this blockage to produce extension into the mastoid antrum we must recognize within fair limits the predisposition due to the nature of the soil, in order that the microbes may more easily invade superficially and deeply, as takes place, for instance, in the scrofulous, tuberculous, &c.

10. As results of mastoiditis there have been observed, in addition to necrosis and caries, hyper-osteitis or condensing osteitis of the external portion and rarefying osteitis of the walls. These results of mastoiditis were found in the eighty cases of the first category in the following relations :—

Caries of the external wall	71
" " anterior wall	2
" " anterior cranial surface (Bezold's)	4
" " anterior cranial wall corresponding to the sigmoid groove for the lateral sinus	3
	80
Hyperostoses	0
Rarefying osteitis or atrophy of the walls (criticized in the case of cholesteatoma of the mastoid antrum, and in accumulations of pus dating from several years)	0
Cholesteatoma	0
Disease of the petrous bone	0
Caries of the osseous cushion of the Fallopian canal	0
Partial extrusion of the cochlea	0
Caries of the carotid canal	0

11. Effects produced upon the lymphatic glands of the lateral region of the neck found in suppuration, especially in cases of little children, while in adults we find superficial or deep phlegmons, caused specially by caries of the internal portion of the mastoid process described by Bezold.

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Effects produced by mastoiditis upon the intra-cranial organs. These correspond precisely to the nine cases of death which occurred among the eighty cases of endo-mastoiditis. In two of the nine cases the diagnosis was made of death from septic thrombo-phlebitis. In two from abscess of the inter-cerebral lobe, in which cases were observed verbal aphasia (in general it is the temporo-sphenoidal lobe which is affected); in another resulting from thrombo-phlebitis of the ophthalmic vein by diffusion of the thrombo-phlebitis to the cavernous sinus, with this peculiarity, that the thrombus of the ophthalmic vein existed on the side opposite to the affected ear, a peculiarity which has been explained by the oculist De Vincenzi as a consequence of the anomaly of the ophthalmic vein, which occasionally opens into the cavernous sinus of the opposite side.

Embolic Extra-Cranial Results of Mastoiditis.—Operations had to be practised in two cases of pyæmic arthritis, which recovered, and one other case of embolic pulmonary pyæmia.

General pyogenic infection in accumulations of pus in the mastoid cavity, and septo-pyæmic infection in mastoiditis, with thrombo-phlebitis.

By means of bacteriological researches in the primary endo-mastoiditis caused by influenza there were found, in addition to the staphylococcus, the pneumococcus. In the chronic forms the staphylococcus and streptococcus were the only important microbes.

12. The remedy which has given excellent results as an antiseptic and antipyogenic is microcidine, five or six per cent., but chloride of iodine has produced also good results as an antiseptic in chronic forms with granulations. In osteitis, with its results, especially to destroy hypertrophied mucous tissue with granulations.

13. The precise indication for incising the external wall, the anterior wall of the mastoid, as well as that for the suppression of its threatening, is given for each particular case.

14. Lastly, in these eighty cases perforation or trepaning of the mastoid through an intact external osseous wall was practised twenty times, with two deaths. The two patients suffering from intra-mastoid cholesteatoma were both cured, the one by the method of Kuster, and the other by the old method of perforation of the mastoid antrum.

15. Ages of the patients who underwent the operation of perforation of the petrous, antrum and of the mastoid through an intact osseous wall :—

From 1 to 10 years	6
„ 10 „ 20 „	5
„ 20 „ 30 „	4
„ 30 „ 40 „	4
„ 40 „ 50 „	2
„ 50 „ 60 „	1

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

CONCLUSIONS upon OTO-NEURASTHENIA, whether Primary or Secondary and Associated, and on NEURASTHENIA due to Diseases of the EAR and to Diseases of the RHINO-PHARYNX.

By Prof. COZZOLINO.

First: There is a clinical form *sui generis* of essential oto-neurasthenia pure, and also ear disease accompanied by neurasthenic symptoms, the associated form. The first belongs exclusively to the labyrinthine expansion of the auditory nerve, and perhaps of its trunk and cerebral origins. Both are of a vaso-motor nature, which gives rise to labyrinthine excitation.

Second: The neurasthenic syndroma of the essential form, which bears solely upon the internal and intra-cranial sphere, is often bilateral; in the associated form it is unilateral—that is to say, it does not wander away from the ear affected by the troubles, or of the most affected in the equilibrium of the tension of the auricular spheres, hypertonos. The collection of symptoms varies more or less according to the general conditions, especially in the essential form. In the associated form it is chiefly contingent on the increase of the tension which the middle sphere exercises upon the internal one.

Third: In the collection of symptoms in essential oto-neurasthenia, instead of diminution of the auditory power, we find more often hyperacusis, which increases the electric excitability of the acoustic nerve, comparable to nervous asthenopia, with which it may either coexist or alternate. The subjective entotic symptoms—various noises and vertigo in its different forms, with variable intensity, from the vertiginous aura up to vertigo simulating an apoplectic attack—are paramount in this form.

Fourth: These symptoms have for their characteristic that they do not improve under any local treatment in the essential form; that they improve very little in the associated form, whereas they yield, although in a somewhat transient way, to the general treatment that one prescribes to neurasthenic subjects. Thus it appears that these symptoms are never isolated, but always accompanied by other local neurasthenic phenomena, or by stigmata on the other organs, such as hyperasthesia of the scalp, cerebro-spinal irritability, painful sensations *en casque*. The neurasthenic symptoms are aggravated by any excess of brain or psychic disturbance.

Fifth: The auricular neurasthenic symptoms attain the greatest development in the cranial form of cerebro-cardiac neurasthenia.

Sixth: In general when in any individual the hearing power is normal or nearly so, but he complains of considerable entotic disturbance, it is necessary to examine the state of the cerebro-spinal system to make out the part that this plays in causing want of muscular and vascular tone in the inter-auricular structures. I say also muscular tone, because I think that the tensor tympani and the stapædes, as well as all the other muscles in cerebral neurasthenia, lose their tenacity and their proper contractility, and, consequently, that the subjective labyrinthine

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

troubles can also be referred from the pathogenetic point of view to the cavity of the tympanum in essential oto-neurasthenia.

Seventh: Auricular vertigos pure or mechanical are those of which the symptoms indicate the compression of the fenestra ovalis or of the fenestra rotunda, but these vertigos can further be reproduced experimentally in a severe form, and most complex, because of their consequences on the respiration, etc.; fortunately they are very rare. These are the vertigos from decompression.

Eighth: Auricular vertigo may often be confounded with vertigo proper to neurasthenia (which sometimes manifests itself all of a sudden), because even in this last phenomenon one may remark the entotic subjective symptoms. They are often aggravated by the fact that the vertigo *ab aure læsa*, like every other reflex auricular symptom which has reference to the cerebro-spinal or the sympathetic symptoms, ordinarily only presents itself in individuals who are neurasthenic or nearly neurasthenic, whose state is called by others nervosism or emotivity. I do not accept without restriction (demanded by clinical experience) the opinion that vertigo is exclusively a psychical stigma, to add to the list of those who characterize mental degeneration, agorophobia, mountain sickness, claustrophobia, which are met with in neurasthenic persons.

Ninth: It is precisely these varieties of forms and of intensity which prevent one from confounding neurasthenic vertigo with auricular vertigo which passes from simple confusion to severe vertigo with oscillation of the ground and sensation of falling. In neurasthenic vertigo the patient, it is true, thinks he is falling, but he does not fall as happens in auricular vertigo [Ménière's symptom autology]. In this latter the patient experiences the horrible sensation which would be caused by the earth opening under his feet and swallowing him up like a trap on the stage of a theatre.

Tenth: The illusions or hallucinations of the sense of hearing produced by the subjective noises are only possible in neurasthenic individuals, and especially in the subjects of psychical degeneration, as well as all the psychical troubles having reference to the sense of hearing which are caused by sudden and unexpected noises.

Eleventh: The complex of auricular neurasthenic syndroma may be found conjoined with that of auricular hysteria, and may thus present the phenomenon of oto-hystero-neurasthenia, in the same way as oto-traumo-neurasthenia, which it is necessary to bear in mind in medico-legal investigations. The most striking character of these associated forms is their tenacity and their gravity, which is due to their persistence.

Twelfth: We have, in addition to hemi-neurasthenia described by Beard, oto-hemi-neurasthenia, in which auricular and other noises may be limited exclusively to one ear without the existence of any material lesion of the auditory apparatus.

Thirteenth: The gravity and the greatest trouble caused by secondary oto-neurasthenia are in direct relation to the clinical form of neurasthenia, with which it is associated, especially in cerebral and cardiac pyschical affections. In the first, the oto-neurasthenic symptoms accompany head-

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aches known under the name of pain *en casque*, a stigma which is absent as a rule in the spinal or gastro-intestinal and genital forms.

Fourteenth: It is important to distinguish carefully oto-neurasthenia in its different forms from the point of view of treatment, and especially of prognosis and diagnosis, above all in the general interest of the patients, and this in order to prevent them from lapsing into the period of intellectual and psychical aberration.

Fifteenth: Finally, it is necessary to admit clinically certain forms of general neurasthenia, with secondary cerebral characteristics, due properly to diseases of the ear and chronic diseases of the rhino-pharynx; also forms of rhino-pharyngopathy associated with general neurasthenia, which are characterized by this—that the complaints and the pains described by the patients have no relation to the local disease. These neurasthenic indications are manifested by the perversion of common sensibility, of sensibility to pain, and of mobility, specially in the region of the pharynx and the soft palate.

Dr. FICANO wished to know from Dr. Cozzolino if there was any diminution of hearing in neurasthenic vertigo.

ON SOME EXPERIMENTS IN MYRINGOGRAPHY.

By Prof. DE ROSSI.

Experiments on myringography carried out with a particular form of apparatus tended to demonstrate the following points:—

First: That it is possible to transmit at the same time without sensible loss of energy the movement of a vibrating tuning-fork to two natural membranes of equal size with the membrana tympani of the human being by making use of a column of liquid.

Second: That these movements of the membranes can be inscribed on a registering cylinder.

Third: That the amplitude of the movements of one membrane is in direct relation to the mobility of the analogous membrane. That it is possible to make use of myringography to ascertain the movements of the membrana tympani and of the ossicles, as well in the normal as in the pathological condition.

Prof. POLITZER thought he expressed the feelings of the section in offering thanks to Prof. de Rossi for his interesting communication. He was of opinion that the ingenious apparatus designed by the professor would be the foundation of new investigations as much for the physiology as for the pathology of the ear, and he hoped that for practical purposes the apparatus would later be somewhat simplified.

Dr. GELLÉ complimented Prof. de Rossi upon these delicate and interesting experiments. Like him he had observed in his studies on the labyrinth that any pressure added to one of the two membranes of the apparatus had its echo on the other one. The result of this was that the control required from the witnessing membrane, if the expression may be used, is not absolutely exact, but the tracings that Prof. de Rossi has

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shown us permit of the best promise that in future the employment c this method of exploration as regards the state of vibratility of th membrana tympani will be of the greatest use.

Prof. GRAZZI asked Prof. de Rossi what means he adopted to insulat his apparatus in such a way that the delicate levers which ought t reproduce the sonorous vibrations were not disturbed by other vibration which might be communicated to the apparatus from the surrounding air and from the solids on which the apparatus itself was placed.

Dr. GELLÉ said that one of the difficulties in the construction of this apparatus would certainly be to prevent the formation of nodes and inter nodes in correspondence with the pitch of the tuning-fork employed, and which could be such as to alter materially the transmission and the results of the experiments.

ON THE EXTRACTION OF THE AUDITORY OSSICLES.

By Dr. LUDEWIG (Hamburg).

The diagnosis of caries of the hammer and anvil is in many cases uncertain. Even granulations which break through the membrana flaccida in front of or behind the processus brevis are no certain sign of caries of the hammer or of the incus. A more certain sign of caries of the incus is the destruction of the drum in the upper posterior quadrant. In the operation it is necessary when possible, in the first place, to allow to remain the union of the end of the handle of the malleus with the margin of the bone until the tendon of the tensor is cut through, and the joint between the incus and stapes is severed, as otherwise the free swinging handle of the malleus is easily moved out of place, and its snaring is rendered difficult. With a view to stopping the hæmorrhage, styptics such as alum solution are to be avoided, because they make a mess of the field of operation. On the other hand, it is recommended before the beginning of the operation to practise a subcutaneous injection of secale cornutum in front of the tragus and behind the auricle. Ludewig thinks that hypodermic medication will find a place for itself in otology, and that it will show itself capable of influencing processes in the middle ear. Furuncles and diffuse inflammatory swellings in the meatus are in all cases influenced or even cut short by the subcutaneous injection of a three per cent. solution of carbolic acid. In extracting the incus it is necessary to direct attention to a process of bone, "promontorium," which is found over the entrance to the antrum. Here the incus hook is apt to catch when it is too long.

In his recent fifty cases, carried out in Hamburg, Ludewig found in none any fatality or injurious complication; no fever, no facial paralysis, no vertigo worth mentioning, and no damage to the hearing.

The incus was found carious in eighty-five per cent, The indication for extraction of the hammer and incus is to be carried further than at present. When a chronic middle-ear suppuration continues, in spite of

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treatment lasting over a month by means of Schwartz's copious syringing through the catheter, and the ordinary treatment through the meatus, the next step is to carry out the extraction of the hammer and incus through the meatus and quite independent of whether caries of these bones has been made out with certainty or not.

Prof. POLITZER recommended, instead of Dr. Ludewig's expression "promontorium," the term "spina tegminis." Regarding the indications for the operation, he remarked that the extraction of the hammer and incus is only practised by him if the greater portion of the drumhead is destroyed, and the hammer, therefore, is of no value for the function of hearing, and also when there is cholesteatoma in the attic. In perforation of the membrane of Shrapnell, on the other hand, when the suppuration is limited to the attic and the hearing power is nearly normal, the hearing becomes diminished by extraction of the ossicles, and in such cases operative interference ought to be limited to opening the outer attic, and only after this treatment has proved ineffectual should extraction of the ossicles be practised.

Prof. AVOLEDO asked Dr. Ludewig how many times in the extraction of the incus he had injured the chorda tympani, and what were the anatomical and pathological conditions of the drum and of the ossicles which led him to give up the idea of extraction through the meatus and to carry out the operation of Stacke.

Dr. LUDEWIG replied to Prof. Politzer that in his fifty cases in Hamburg he had not once seen any diminution of the hearing power produced by the operation of extraction of the malleus and incus. Often distinct improvement in hearing had occurred, such that before the operation the patient could only hear whispered numbers close to his ear, and afterwards heard them at six mètres. In answer to Prof. Avoledo, he had not taken any notice of the chorda tympani in his operations, as he thought it was impossible to guard against injuring it. In most cases the patients did not notice any symptoms due to lesion of the chorda.

Prof. POLITZER remarked that, in cases where extreme deafness was present, there was observed an improvement in hearing after extraction of the ossicles, but that, on the other hand, when hearing was nearly normal, the operation diminished it very much.

Dr. REINHARDT (Duisburg) said that the frequency of the occurrence of cholesteatoma of the antrum, or at least of the attic in caries of the ossicles (perforation of the membrane of Shrapnell), is so great that cure of the middle-ear suppuration by simple extraction of the two outer ossicles becomes impossible, and the opening of the antrum according to Stacke's method is necessary. In thirty-two cases of malleus and incus extraction, about which he had given a report in 1891 at Halle, at the meeting of the German Naturalists, he saw recovery in fifty per cent. In these there was simply caries, but the other cases were complicated with a small —sometimes only a lentil-sized—cholesteatoma in the antrum. He asked the speaker in how many cases of his fifty extractions he had found a complication with steatoma.

Dr. LUDEWIG replied to Dr. Reinhardt that he had only spoken of

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cases in which caries of the ossicles has been either diagnosed or assumed. In none of these was there a cholesteatoma.

Dr. REINHARDT replied that it was often very difficult to diagnose before the operation whether or not there was a cholesteatoma in the antrum or attic.

ON TWO CURED CASES OF TOTAL DEAFNESS.

By Dr. SIGISMUND SZENES (Budapest).

Gentlemen,—I take the liberty of giving you a short account of two cured cases in order to demonstrate to you, on the one hand, a somewhat unusual course, and, on the other hand, to bring forward some reflections of my own.

The first case is that of a girl of eight years of age, who came under my treatment on the 9th of June, 1893. This child had, two weeks previously, pains in both ears, accompanied with a rise of temperature to 99°. Soon afterwards there came on bilateral suppuration, and under the special treatment of a colleague both the fever and the pain were overcome, but the hearing power got worse from day to day. Under these circumstances the parents of the child consulted me in order to have the benefit of a second opinion. On examination with the mirror I found both ear drums soft, and here and there slightly hyperæmic. The manubrium and short process were scarcely to be distinguished, and there was no trace of light cone. I found no trace of perforation of the drum-head in spite of the most careful search. Investigation of the hearing power showed that it was very considerably lowered on both sides, so that the child could only hear the watch in contact with the ear, and loud speaking only close to it. On the next visit the child, who was quite intelligent, was unable to localize the sound of the tuning-fork in either of her ears. Using the air douche produced almost normal hearing, but the appearance of the drum-head remained unchanged. The mother remarked to me that this same form of inflation had been daily practised by my colleague, and had always had the same effect in producing an improvement of the hearing, but that this improvement only lasted for four hours, and it always came back to the same condition in which it was before the first investigation. As the results of inflation seemed to promise a favourable issue, I determined to carry out expectant treatment, and got the child to come daily to me to have inflation. In this way I went on for sixteen days, but the condition always got worse daily, as the improvement lasted every day a shorter and shorter time, and at the last the hearing after the inflation scarcely remained good for two minutes, so that the child would answer two questions quite well, but a third question could only be communicated by means of writing.

The investigation of the hearing power gave the following result: Watch on the ear = 0; even by bone conduction it was not heard. Neither high nor low tuning-forks were perceived by either air conduction or bone conduction.

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I placed the tuning-fork in the last case always on the skull at the root of the nose, on the upper jaw, and lastly on the mastoid process, but in none of these places was the tone perceived. The intelligent child thought that when I placed the low tuning-fork on the bones she felt something, but did not hear anything.

I attempted now, by means of hearing tubes, to speak into her ear, whereupon the child heard, and I also on this account considered the case not quite hopeless. Lastly, I may only add that the child complained of a continuous dull humming noise in both ears. At this stage I determined to adopt the pilocarpin method of treatment, especially as the general condition of the child did not contra-indicate it. I performed the first injection myself; the remaining ones were carried out by the family doctor. One centigramme was subcutaneously injected each morning upon an empty stomach. Thereupon there came on a profuse secretion of saliva and of sweat, and the child remained from an hour and a half to two hours afterwards still lying in bed, but later got up to breakfast, and then in the afternoon came to my consulting rooms and had the air douche. On the 25th, 26th, 27th, and 28th the child underwent this treatment, and on the 29th had simply the air douche, because the family doctor omitted the injection. On the 30th she got the fifth injection, and on this day the hearing power returned. It is interesting that the child had had an anosmia. On the 1st and 2nd of July the pilocarpin injections were omitted, and the child had only the air douche. On the 3rd a pilocarpin injection, and in the afternoon an air douche. At this date the hearing power had already improved so much that the child could hear words spoken loudly in the ear without the hearing trumpet. Lastly, on the 4th, she received the seventh and final injection, after which she felt a cracking in both ears, and stated that the hearing power had returned. Since then the child was only seen from time to time, and in spite of the most careful observation I could find no defect in the hearing.

The question arises as to what was the nature of the process. The commemorative circumstances made one decide that it was acute bilateral suppurative median otitis, the suppuration having lasted two days, and as I saw the child two weeks later, that idea remains only a supposition. The whole course of the affection gave me the idea that I had to deal with an influenzal affection, an idea which was fully confirmed by the existence of the anosmia, as I frequently found changes in the olfactory regions during the influenza epidemic of the years 1889 and 1890. In the nose and naso-pharynx, however, I could find no morbid change. The appearance of the membrana tympani on both sides on the first inspection was such as would remain after a previous inflammation of the drum, but as I found no trace of perforation it was difficult to decide upon the purulent otitis with certainty. There were only uncertain conclusions to be drawn as to the site of the process from the changes in the hearing function. A lowering of the auditory power presents itself in the most varying shades in suppuration in the middle ear, but as the hearing power became worse and worse from day to day before my eyes, and as ultimately the bone conduction disappeared, it is scarcely possible to

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think otherwise than that along with the tympanum the labyrinth was also affected. This is particularly the reason why I did not speak of a special form of disease, and only committed myself to the descriptive symptomatic diagnosis deafness.

It is quite otherwise with regard to the therapeutics. Here I looked upon the *post hoc ergo propter hoc* as incontrovertible—that is to say, as regards the pilocarpin—because, if we had had to deal with a deafness which tended to get well without anything further than the air douche treatment, the duration of over four weeks would have been a very long one for which to use nothing but treatment by the air douche. This, however, was not the case, and the hearing got from day to day worse and worse, until the adoption of the pilocarpin treatment led to the recovery of the normal hearing power. I explained the action of pilocarpin in the same way as has been done by Schubert—that is to say, as an active resolvent which brought about a retrocession of an accompanying hyperæmia, or exudation in the labyrinth, which had come on along with the tympanic affection. Whatever it may be, I thought that the case, in its whole course, was so interesting that it was worth while to give it publicity.

As a contrast to this, I now place before you the second case, in which there was a return of the hearing power, but without any practical therapeutical measures, and I bring it forward only on this ground—because it is very easy, in any eventual course of treatment, to arrive at erroneous conclusions with regard to the benefits derived from the thereapeutical agents.

The case was one of a gentleman, aged sixty years, who, as part of his business, had received a musical training, and I was called to him on the 9th December, 1892. The patient had, twenty years previously, suffered from deafness for a few weeks, for which he was treated by means of the catheter with good result, but he always heard with the right ear rather worse than with the left, but not to such an extent as to interfere with his business as a singer, so that he had never been treated for it. At present, however, the case was different. The physician in attendance stated that he suffered from atheroma with emphysema of the lung, as the result of which there was a slight hypertrophy of the right ventricle of the heart. The patient had, on account of his emphysematous condition, bronchial catarrh of a few days' duration, for which he remained in the house, and he observed on waking at four o'clock in the morning that he had become suddenly deaf in the left ear, having heard with it perfectly well the night before. He therefore sent for his family doctor, who called me into consultation.

I found the following condition: The patient, who in spite of his sudden deafness was very excited, lay quiet in bed, as on the slightest movement of the head he became affected with vertigo, which got very much worse when he sat up. We got him out of bed and had to lead him very carefully, because he reeled about and complained of confusion in the head and a tendency to sickness. There was a negative result given by the inspection of the drum, as with the exception of a small semi-lunar calcareous deposit on the posterior half of the left membrane, and

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

a yellow thickening near the centre of the right one, there was nothing further to be seen that could suggest an acute or a subacute morbid process. So far as the testing of the hearing could be carried out under the circumstances there was found on the left side a very high degree of deafness, as he could only hear words spoken very loudly in the ear. For the A tuning-fork ear conduction was = 0, and the bone conduction from the upper jaw and mastoid process was preserved, but not from the skull.

On account of his advanced age I attributed no very great importance to the imperfection of bone conduction, and I did not pay much attention to the right ear, in which there were the remains of a chronic middle-ear sclerosis. On catheterization the air entered both tubes, but produced no change as regards the hearing power. As iodide of potassium caused the patient severe coryza, and pilocarpin was contra-indicated on account of the pathological changes in the heart, we ordered the patient absolute rest, cold applications to the head every half-hour, and lemonade to check the nausea. In the course of the day I saw the patient, whose condition remained absolutely unchanged, but the next afternoon, that is, scarcely thirty-six hours after this apoplectiform attack, the hearing power returned, but the patient did not lose the vertigo and the other subjective manifestations till ten days later.

After six months the patient came to see me, and I found the hearing power weakened on both sides, and in the right ear to a very considerable extent, as he scarcely heard the watch at one centimètre, while on the left side he heard it at one hundred and twenty centimètres. In addition on the right side he could not hear a deep-toned tuning-fork by air conduction, and by means of Weber's test the fork was localized in the left ear, and Rinne was positive on the left side only. As the patient, however, was not prevented from taking part in his professional and social duties by his deafness, he underwent no treatment.

The question now arises how we are to explain the sudden occurrence of deafness on the left side, and its disappearance after thirty-six hours. The most plausible account would be an embolism or thrombus, and this all the more because there was every opportunity for that, owing to the atheromatous changes. It might be equally well explained by the occurrence of a hæmorrhage which, after thirty-six hours, became so much better that the hearing power returned, but complete recovery, with disappearance of vertigo and nausea, only after several days. In whatever way the process is explained, this, however, is certain, that in such a case as this the adoption of pilocarpin treatment would not have prevented a return of hearing power, and might very likely have led to the erroneous idea that the recovery was due to the *post hoc ergo propter hoc*. There would have been attributed to the pilocarpin treatment the property of having produced recovery of hearing after the performance of two injections.

I bring these two cases forward in order to show how easily the eventual operation of a remedy without very precise indications can come into discredit.

Prof. GRADENIGO asked Dr. Szenes if the first case was not one of infantile hysteria and the second one of acquired syphilis?

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

Prof. AVOLEDO thinks the injections of pilocarpin are more usefu in the changes following chronic purulent median otitis than in the slow forms of catarrh of the tympanum and in the hyperplastic forms.

Dr. SZENES: To Prof. Gradenigo's question I can only answer "No." I thought of puerile hysteria in the first instance, but I have had enough opportunity to determine that the pilocarpin had really therapeutical and not a "suggestive" action. In the second case, I thought at once of syphilis, as the whole picture was only of Ménière's process, in which, in the first instance, we ought always to think of syphilis, but in this case it was quite excluded. In reply to Dr. Avoledo, I must state that I have used pilocarpin in a fair number of cases without any result. In middle-ear sclerosis I found at the very most a slight diminution of the subjective noises, but that I considered only suggested. Founding upon the new indication given by Schubert, I have taken to pilocarpin only as an *ultimum refugium*, and my firm opinion is that only upon the grounds given by him can any favourable result be ascribed to pilocarpin.

ON THE INFLUENCE OF MALARIA ON DISEASES OF THE EAR.

By Dr. GARZIA.

During the last two years I have had the opportunity of observing and treating twenty-four patients affected with various forms of diseases of the ear after having suffered from malarial fever. Of these nine cases occurred in railway servants, sent to me by the courtesy of Dr. De Ameo, of Naples, and nearly all belonging to the travelling branch of the service; and in all the disease was present on both sides. In the cases of acute affection the febrile attacks came on with pain in the ear, which ceased with the lowering of the fever, leaving the patient deaf during the period of apyrexia, as I have had the opportunity of confirming more than once. After having administered quinine the fever ceased and along with the fever the pain and the anasthenia of the acoustic nerve. In cases of external and median otitis arising from malaria, in addition to the usual local remedies, I made use of quinine, having always obtained results from it: but I do not give it in large doses. The laity have the idea that quinine is the cause of many diseases of the ear, and hence they feel a repugnance to taking this drug. That is true up to a certain point. It is known that the salts of quinine taken in large doses produce noises in the ear and deafness for a certain time, but this only lasts for a short period, and the deafness and the noises diminish little by little until at length they disappear completely. I have never had to reproach myself for having administered at any time large doses of quinine, as I have not exceeded the quantity of two grammes. Many others who have discussed this question think, and I agree with them, that it is not the quinine given in large doses which is the cause of the deafness and of the noises, but that these are the result of the influence of the malaria. The action of quinine is always transitory, and when, after having administered such a

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

remedy, there remains any permanent deafness one ought to think rather of the local action of the malaria upon the apparatus of the acoustic nerve, and in confirmation of this we see the advantages arising from the use of quinine in certain inflammatory diseases of the labyrinth and in auricular vertigo. In my observations I have been able to convince myself that malaria produces congestion and inflammation in the ear, which penetrate as far as the nervous apparatus if the patient remains for a long time in a malarious district. I am sure that this disease is curable by means of the specific remedies given internally and with disinfectants locally applied, when the treatment is given promptly so as to exorcise the lesions already produced.

THE USE OF THE CURETTE IN OPERATIONS ON THE MASTOID.

By Dr. CLARENCE J. BLAKE.

In cases of chronic suppurative disease of the middle ear where mastoid disease has supervened as an acute complication, or where there is acute mastoiditis with evidence of suppuration, and especially where there is probability of disease of the inner mastoid wall, the curette, after the opening of the mastoid cells by removal of the cortex by means of the drill and chisel, or the chisel alone, is a valuable instrument. The course which I have usually pursued in this class of mastoid operations has been to make a small opening in the mastoid with the drill, then to enlarge this with the chisel and immediately to use curettes of different sizes, until all of the diseased tissue is removed, and the interior surface of the mastoid cavity is quite smooth, and a free opening has been made into the antrum mastoideum; the operative cavity is then allowed to fill with blood, and after the formation of the clot the wound is douched with hot sterilized water, and the wound closed without sutures, and dry baked dressings are applied. The operation on the mastoid is always preceded by a large incision of the membrana tympani and paring of any intra-tympanic bands which may be likely to interfere with drainage from the middle ear. The best result obtained in this class of cases has been a complete healing in five days as the outcome of the substitution of a sterile clot fitting the excavated mastoid cavity in place of the diseased tissue removed. The curettes are made with a long tip and a rounded bowl, and can be safely used for removal of the inner wall of the mastoid, as the rounded bowl pushes the dura away and the work of the cutting is always outward. The handles of the curettes are marked on the side corresponding to the cutting edge of the curette.

Prof. POLITZER asked Dr. Blake if he had occasionally found a communication between the mastoid abscess and the mastoid antrum. He himself had only found it very rarely.

Dr. BLAKE confirmed Prof. Politzer's observation.

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

REMARKS on EXTRACTION of the STAPES in CHRONIC NON-SUPPURATIVE DISEASE of the MIDDLE EAR.

By Dr. CLARENCE J. BLAKE.

(*Résumé of Conclusions.*)

DR. BLAKE has already communicated twenty-two striking cases. Out of all these he was able in only one single instance to effect an improvement in the hearing power, and in this case the fixation of the stapes was not complete. In the remaining twenty-one cases there was no definite improvement, and some of them, on the contrary, underwent decided deterioration as regards both hearing power and tinnitus. In five cases vertigo came on as the result of the operation, and in two of these it still persists.

The author, therefore, finds himself unable to recommend removal of the stapes in cases of chronic non-suppurative inflammation of the middle ear, and on this account all the more because it involves a risk of danger to the labyrinth.

Prof. COZZOLINO: I say to-day what I have said before at the National Congress of Pavia, 1887, that is to say, that the surgery of the middle ear is from a point of view of hearing power very uncertain and transient in its results in primary adhesive or hyperplastic processes in the tympanum, but the results are certain and lasting in sclerosis secondary to purulent inflammation of the tympanum. Therefore, in the former case, the question of operating or not operating is only of diagnostic value, but in the latter it is proper always to operate with a view to cure, that is to say, as far as function is concerned, as the hearing is improved markedly and lastingly, as also the subjective disturbances, noises, vertigo, etc.

Prof. DE ROSSI asked Dr. Blake what he understood by mobilization of the stapes, and in what way he performed the operation.

Dr. COLLADON: Dr. Blake's communication has all the greater importance that it seems to settle in a definitive manner the question of the extraction of the stapes in chronic non-suppurative affections of the middle ear; in fact, in the immense majority (sixteen) of the twenty-two cases cited by him, not only were the symptoms in no respect improved, but, on the contrary, they were aggravated, and became complicated with vertigo. The first indication is to do no harm. The operative procedure with which we have been concerned ought to be confined to suppurative affections of the middle ear.

EXPLORATORY TYMPANOTOMY.

By Dr. CLARENCE J. BLAKE.

This form of operation without general anæsthesia takes advantage of the insensitive parts of the membrana tympani, which are found to be progressively sensitive from below upward, and in the incision made opposite the round window causes in the majority of cases but little pain,

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

and permits the application of a sterilized solution of cocaine to the cut edges, and a usually painless continuance of the incision, which, as described in previous communications, forms a flap which falls outward and exposes the insensitive region of the incus and stapes.

Through this opening, tenotomy of the tensor tympani or stapedius and division of adhesions may be done painlessly, so long as the instrument is not allowed to touch the edges of the cut in the membrana tympani.

After the operation, the application of a paper dressing, moistened in sterilized water, serves to close the opening effectually, and the healing is so complete that the operation may be repeated at intervals, if it seems desirable for repetition of mobilization of the stapes or for other operations.

Prof. DE ROSSI: I wish to draw attention to the fact that it is now some years ago, namely in 1871, that I operated upon two patients with extreme deafness, and subsequent suppuration of the middle ear. It was before Kessel that I obtained very good results by mobilizing the stapes by means of disarticulation of the long process of the incus from the stapes. The following is my method of operation: I make a puncture in the centre of the membrane near the handle of the malleus. I lay aside the lancet-shaped needle and I introduce a blunt-pointed knife, with which I continue my incision the whole length of the handle, and I make a hinged flap which I draw outwards towards the meatus. I thus lay bare the articulation of the stapes with the long arm of the incus, and cut through the joint, dislocating afterwards the long branch of the incus. I cut through the adhesions round the incus if there are any, and return the flap to its place, and keep it in position with cotton wool dipped in boro-glycerine. Adhesion takes place very rapidly in two or three days.

Dr. GELLÉ was much struck with what resulted from the practice of the different speakers who had dealt with the question of mobilization of the stapes, *àpropos* of the communication made by Dr. Blake. He showed that improvements had only been found in cases where the immobility of the stapes was consecutive to suppurative otitis, while all indicated the complete failure of this operation in cases of dry otitis, namely of sclerosis of the tympanic cavity.

THREE CASES OF EXTRACTION OF THE STAPES.

By Dr. PAUL GARNAULT, Paris.

Now that it is known, thanks above all to the experiments of Kessel and Botey, and contrary to the opinions formerly held, that the extraction of the stapes, when carried out with reasonable precautions, is an operation devoid of danger, it has been performed tentatively of late years by various operators.

The operation can be performed, first: In chronic hypertrophic otitis, with adhesions and contracted bands binding the branches of the stapes to the walls of the pelvis ovalis. Independently of these bands there ordinarily exists at the same time a modification of the annular ligament

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

of the stapes, which brings about a more or less marked compression of the labyrinth.

Secondly: In chronic purulent otitis, or rather in the cases where there exist disturbances of hearing consecutive to old chronic purulent otitis. In spite of the favourable results obtained by various authorities, including Jack and Blake, I continue to believe that it is only after cure of the suppuration that the stapes should be removed; generally the fenestra ovalis is covered by a mass of granulations, which renders it very difficult to distinguish when the incus is no longer articulated with the stapes, or when the head of that bone is no longer visible.

Thirdly: In sclerosis of the chain of bones accompanied by diminution of hearing and by tinnitus. The preservation of cranial perception (bone conduction) promises, or at least theoretically would lead us to hope for, a good result from the operation from the point of view of hearing. The subjective symptoms which seemed to indicate stapedectomy are notable diminution of hearing and tinnitus.

When these groups have not been influenced by ordinary conservative treatment, which ought to be carried out in the first two groups, although in the third one can say that every plan of treatment is illusory. In the first two groups one may try before extraction mobilization, or rather, perisynechotomy of the stapes, which may give good results, but in the too frequent cases where the peristapedial ligament has undergone profound modifications, when it exists with adhesions (osseous union) between the branches or the foot-plate of the stapes at the walls of the pelvis ovalis, and in all the cases of the third group, stapedectomy is clearly indicated. The mode of intervention consists in practising by means of pressure on the branches of the stapes movements intended to increase the elasticity of the annular ligament, and to diminish the labyrinthine compression. This seems to me absolutely illusory, and it is to this proceeding, in any case, that one ought to confine the term mobilization of the stapes. The three cases that I shall report briefly were operated on under chloroform; they present the three groups in which, according to my opinion, the operation can be tried.

First case: M. X., aged forty-three, operated on November 17th, 1893. Chronic hypertrophic median otitis, with adhesions of the membrane to the tympanum. The angle of the malleus was drawn up to an extreme degree and treated for a considerable time by intubation and insufflation of air. The right ear was by far the most affected.

Rinne's test was clearly negative, and bone conduction well preserved. The sound of the watch was hardly heard on contact. Whispered speech was heard at twenty-five centimètres. After the operation (the opening into the tympanum was made by means of the galvano-cautery) there came on vertigo and sickness, which disappeared completely at the end of four days. The hearing power, which disappeared altogether during the first few days after the operation, gradually improved. It remained stationary for two months. The watch was heard at seven centimètres, and whispered speech at seven centimètres, but the tinnitus disappeared completely and definitely from the eighth day onward.

Mr. L., aged seventeen. A case of old chronic purulent otitis of the

https://doi.org/10.1017/S1755146300154885 Published online by Cambridge University Press

right ear, accompanied by diminution of hearing power and tinnitus, which had been treated for several years without success. The cure of the suppuration had been effected very rapidly after extraction of the malleus and incus, the last-named bone being extremely carious. At the moment of the operation of stapedectomy the watch was heard on contact, and the cranial perception for the tuning-fork was good. The stapes, of which the head was quite visible, was extracted by means of a forceps. At the moment of extraction there was lowering of the pulse and a little vertigo; on recovering from the anæsthetic there was no sickness, but complete deafness. The hearing power improved subsequently, but never became better than it was at the moment of the operation; on the other hand, tinnitus has disappeared completely.

Third case: Mr. M., aged fifty-four, old typical sclerosis. Audition for the watch by ear conduction *nil*, as also for whispered speech. Rinne's test slightly negative, and the duration of cranial perception notably diminished. The tinnitus was very intense. The two ears presented somewhat similar conditions, but the tinnitus was much more pronounced in the right one. I determined to operate rather upon this. After the operation, performed on the 3rd of December, 1893, there were vertigo, nausea and intense tinnitus, but the tinnitus diminished gradually as if it meant to disappear entirely. The deafness was not improved to any extent.

The result of the observation of these cases is to show the harmlessness of the operation. It caused neither fever nor reaction; the patient was able to get up on the third day without any inconvenience, and when vertigo or nausea was produced these phenomena did not present anything like the intensity described by Bezold in the cases that he has reported. In the second place the tinnitus diminished notably in the three cases without, however, disappearing in the third one. The hearing power, after having diminished to an extreme degree, improved again in two of the cases. It would be premature to deduce definite indications for this operation from the small number of cases as yet published, or to judge of the results which it would give, and which assuredly will turn out to be very variable. It would be, I am sure, a hopeless illusion to suppose that the extraction of the ossicles of hearing, and in particular of the stapes in cases where these parts had become absolute obstructions to the transmission of sound to the labyrinth, can give results comparable to the operation for cataract, to which, however, it may be compared. The extreme enthusiasm of Jack has been compensated for by the reserve of Blake and Bezold, but the cases cited by Schwartz and myself are rather encouraging, even with regard to the hearing power, because, as far as concerns the tinnitus, the results that I have obtained seem to me sufficiently remarkable for me to recommend without hesitation the operation of stapedectomy when the tinnitus has attained a certain degree. In all cases the harmlessness of the operation permits of recommending a much more frequent recourse to it, which will enable us to arrive soon at a definite opinion as to its value. We have been hindered several times by the impossibility of seeing and reaching the fenestra ovalis, and are somewhat surprised that several others who have

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frequently mobilized the bone made no allusion to this difficulty. It can, however, be easily overcome by a separation of the meatus, and a removal of that portion of the tympanic frame which conceals from view the fenestra ovalis and the stapes.

Prof. GRADENIGO observed that four months after the operation was not long enough time to form a judgment as to the results ; in fact, after irritating intra-tympanic injections through the catheter he was accustomed to notice an improvement of the acuteness of hearing due to the swelling of the mucous membrane, and to a partial relaxation of the anchylosis. Now this same irritating effect is present in a greater degree after a cutting operation in the tympanum. This can simulate up to a certain point the slight improvement in audition which is observed in the first few days afterwards. It is to be noted, further, that in the cases described by Dr. Garnault it resulted that the auditory improvement was especially to be obtained by means of mobilization of the stapes in cases due to purulent otitis, and not in those of primary median sclerosis.

Dr. GARNAULT : I have observed these patients the whole time for several months, and as their state has varied very little, I think I am able to conclude that the results will be definitive. I do not think the amelioration obtained in the two cases is due to the excitation or to the irritation produced by the operation in the tympanum, because the immediate results have been bad, and it is only progressively and later on that the ear has returned to its definitive state.

Dr. COZZOLINO said that it was easy to interpret whether the improvement in audition was due to the irritation produced by the surgical interference, by irritating remedies introduced into the tympanum, or was the effect of the surgical operation in causing mobilization of the stapes. In the first and second case the improvement was slow in coming on, was transitory, and not very encouraging ; in the third case the improvement in audition, when the clinical conditions permitted of it, was immediate, and was much more lasting, for months at least.

Dr. GELLÉ remarked how strongly the facts brought forward by Dr. Garnault supported the reflections that he had made after Dr. Blake's communication—namely, that the amelioration was observed equally in cases of *fixation* of the stapes consecutive to suppurative otitis, while in the cases of sclerotic otitis there was total failure. *À propos* of this communication, he thought it right to mention, in addition to the irritation of the mucous membrane referred to by Prof. Gradenigo, the deeper action upon the nerve centres, and a dynamogenic action, such as takes place upon the untouched ear, which is often more benefited than the one which has been operated on.

Prof. DE ROSSI observed to Dr. Garnault that in translating mentally from Italian into French he might have made a mistake—his observations dated from 1871.

Dr. CORRADO CORRADI observed that for some time past it has been admitted that intra-tympanic surgical treatment, especially for mobilization of the stapes, was more successful in those forms consequent upon suppuration than in those which were sclerotic from the commencement. In this latter the speaker in various mobilizations performed saw no

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benefit, but rather the opposite. With regard to the belief that the improvement when it does occur from intra-tympanic operations can be attributed to an irritation, and not to the operative act itself directly, the speaker remarked that improvement in hearing was observed in consequence of irritation, as had been shown by Urbantschitsch, by passing bougies into the Eustachian tube; but such improvement by simple irritation quickly disappeared, while, on the contrary, the improvement consequent upon surgical treatment did not pass away as quickly, but sometimes later—that is, when the operative trauma was over, and then lasted sometimes for years.

Prof. POLITZER remarked that the duration of the period of observation in the cases of Dr. Garnault, which did not extend beyond four months, was too short for him to speak of a lasting result; it was necessary for him to have at least two years of observation in order to describe it as a favourable result.

Dr. MASINI said that in cases of sclerosis of the tympanum he had practised the mobilization of the stapes on many occasions, and was enthusiastic about it, but now after many observations he thought that the results were not lasting. He was convinced that it was very difficult to displace the stapes out of the fenestra ovalis without breaking the limbs.

Prof. DE ROSSI: Dr. Masini has done well to distinguish between the results obtained in mobilization of the stapes in cases of otitis media hyperplastica from those which are obtained in the sequelæ of otitis media purulenta. In this last the results obtained in my *clinique* are absolutely brilliant—I can also add lasting—because one of the first operated on by me has been seen again after about ten years, preserving the very considerable improvement in the hearing which was obtained after the operation.

THE BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

The Seventeenth General Meeting was held on April 13th, 1894, at 11, Chandos Street.

The President, Dr. J. MACINTYRE, *was in the Chair.*

Nineteen Fellows and Ten Visitors attended.

The following gentlemen were balloted for and elected Fellows:—

ARTHUR HUTCHINSON, M.B.
GEORGE HERSCHELL, M.D.
HARRY CAMPBELL, M.D.

Mr. GEO. STOKER gave notice that he would introduce the following motion at the next General Meeting: "That the word 'Otological' be added to the title of the Association."

The PRESIDENT also gave notice of the following motion: "That in addition to the Ordinary Meetings, special evenings be chosen for holding clinical meetings."

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