The CHAIRMAN remarked that the difficulty in these cases was to induce the patient to use the artificial voice. Most of them soon learned to phonate by means of the pharynx.

Dr. DELAVAN congratulated Dr. Woods in having devised a most ingenious and perfect instrument. It had the great advantage over other instruments made for the same purpose in not irritating the tissues.

Mr. SCANES-SPICER asked if anyone had tried the plan of making a fistulous opening through the cheek.

A paper on "The Surgical Anatomy of the Tonsils," by Mr. J. HARDIE NEIL (New Zealand) was read by the SECRETARY, in which the author contended, as a result of his anatomical investigations, that the "supra-tonsillar fossa" lay within the capsule of the tonsil, in opposition to Drs. Patterson and Watson Williams, who hold that the fossa lies in the alcove outside the capsule.

AUSTRIAN OTOLOGICAL SOCIETY.

January 25, 1909; *Monats. f. Ohren. und Laryngo-Rhinol., year* 43, *vol.* 5.

PROFESSOR URBANSCHITSCH *in the Chair.*

Abstract of the Proceedings.

TWO NEW TUNING-FORK TESTS.

BY DR. BÁRÁNY.

THE first was in respect to the diagnosis of impaired sound-conduction.

(a) *Condition in Normal Ears.*—If one gently applies a strongly vibrating tuning-fork to the inferior portion of the mastoid process the note will only be heard quite faintly. (Any tuning-fork will do except that in the case of the high notes, C4 for instance, the handle must be long enough so that the note is not heard by air conduction.) If the handle of the fork is now firmly pressed against the posterior surface of the pinna the note sounds much stronger. This reaction he describes as "positive." In addition the sound becomes intensified if the meatus is closed—as indeed occurs when the fork is applied to the mastoid process in the ordinary way under similar circumstances.

(b) *Condition in a Case of Middle-ear Disease.*—The result to this test now is "negative," that is, the note will be heard much

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more loudly when the fork is only gently applied to the mastoid process than when it is even firmly pressed against the pinna. With only a slight impairment to sound-conduction the result to the high and middle tones may be "positive" or the note may be heard equally in both positions, but with the deeper tones the reaction is "negative," and if the meatus be closed the reaction to tuning-forks of all tones is "positive," whilst if a medium depreciation of sound-conduction exists the result will be "negative" for all tones with the ear open and "positive" with the meatus closed. Lastly, in the case of a marked impairment to sound-conduction the result becomes "negative" for all tones whether the meatus be closed or open. The reason of this varying response is due to the fact that in cases of obstruction to sound-conduction the note almost always is heard more loudly if the fork is pressed against the pinna with the meatus closed, whilst if the fork is applied to the mastoid process closure of the meatus results in an increase of the note only in those cases in which the impairment is trifling. When there is a strong obstacle to sound-conduction the note will be unaltered by closure of the meatus. The test is impracticable in cases where a severe lesion of the inner ear co-exists with middle-ear disease, as, of course, the function of hearing itself is affected, but under these circumstances the following additional test with the otoscope forms a valuable assistance:

The ear of the observer and that of the patient are connected by means of an otoscope in the ordinary manner. In cases where no impediment to sound-conduction exists the report of the patient as to the intensity of the note accurately corresponds with the observer's findings, that is, for each the sound varies directly in accordance with the pressure and position of the handle of the tuning-fork, and if this correspondence to the test takes place with all tuning-forks the existence of even a very slight impairment of sound-conduction may be thus excluded. If, however, the sound-conduction be affected, then the observer will hear the note better when the fork is applied to the pinna, whilst the patient will hear it more strongly when the fork is applied to the mastoid process, and the greater the affection of the sound-conduction the more pronounced will be this discrepancy. In instances of quite trifling impairment of sound-conduction, which are not appreciated if the meatus be open, the patient may hear the note from the mastoid more strongly, whilst the examiner can detect no difference between the note from the mastoid and that from the pinna; and when a marked obstruction to sound-conduction exists the patient hears

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the note from the mastoid alone, whereas the observer hears the note from the pinna and can hardly detect that from the mastoid.

Bárány lays down the following precautions which should be adopted in applying this test:

The handle of the fork must be set on the lower half of the mastoid process always, as the position of the antrum is not constant, and if it be abnormally low the result may be "negative" in normal cases.

The pinna must not be pressed too far forwards so that the meatus becomes occluded.

One must avoid touching the pinna either with the fork or with the hand supporting it when it is applied to the mastoid, otherwise sound-conduction may occur by cartilage and bone simultaneously.

Patients with a high degree of deafness may confuse the "feel" of the vibrations with the note of the vibrating fork. In these cases the note will not be appreciated by air-conduction, and Bárány states that in his experience cartilage-conduction of sound is always less than air-conduction, so that he considers this fact will also serve to decide as to whether the patient is really hearing the note or confounding the sense of hearing with that of touch.

It is also important not to touch the otoscope with the arm holding the fork, and the instrument must accurately fit both the ears of the patient and the examiner.

Bárány claims that his test is more valuable than Rinne's, since it will detect affections of sound-conduction which are unrecognisable by Rinne's test, that it is more easily carried out in a crowded and perhaps noisy clinic, and that in the case of children one is not dependent on a possibly inaccurate report. Great help also is afforded as regards treatment and prognosis; for instance, if one is dealing with a case of secretorial catarrh and the response to the test is "negative" when the ear is either closed or open, whilst after politzerisation the result becomes "positive," one is able to give a favourable prognosis without the trouble which testing the range for hearing entails in a large clinic, although, of course, he would not wish to advise the omission of the latter test. Also, in cases of chronic deafness, one is able by this means to corroborate the opinion formed as the result of catheterisation; for example, if, before catheterisation, the response to Bárány's test is "negative" either with the ear open or closed, whilst after the inflation it is "positive," at any rate when the ear is occluded, one can say that treatment will probably effect some improvement.

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Bárány also demonstrated a NEW METHOD OF TESTING THE DURATION OF BONE-CONDUCTION.

As he had already pointed out in describing his previous test, both the exact point of application and also the pressure with which the fork is applied is of considerable importance, and these become of even greater moment when one wishes to obtain a true comparison between the conduction capability of the patient and that of the observer. To avoid the possibility of error in this respect the ears of the patient and observer are connected in the ordinary way, and a vibrating fork is then applied to the mastoid process of the patient (the exact point of application and the pressure is now unimportant). In normal cases the patient and examiner will each hear the note equally, or in isolated instances the person under examination will hear it longer than the observer. In cases of middle-ear disease the patient will hear the note longer than, or just as long as, the observer in nearly every instance, and thus an affection of the auditory nerve can be absolutely excluded in these instances.

Other cases, however, of middle-ear disease which had shown a lengthening of bone-conduction to the ordinary inaccurate test, by his method were now found to have a shortened bone-conduction. Now it sometimes happens that, in carrying out the test for the duration of bone-conduction in cases of middle-ear disease, the patient will hear the note more faintly when the meatus is closed; in testing these cases Bárány removed the otoscope from the patient's ear directly the note was no longer heard, and in a few instances the sound was then heard some seconds longer; then, when the note was again lost, the otoscope was once more inserted but the patient was now unable to recognise it. In these cases, therefore, no internal ear disease existed. If, on the contrary, when the otoscope was re-inserted the patient heard the note again, some complicating affection of the internal ear undoubtedly was present, although the bone-conduction according to the old method was lengthened. The accuracy of these observations is supported by the result of the investigations of Dr. Kiproff on the vestibular apparatus in cases of chronic purulent disease of the middle ear, which showed that the caloric nystagmus was shortened in such cases. This shortening is only to be explained by the simultaneous involvement of the vestibular apparatus, and this new method of testing the duration of bone-conduction also pointed to the fact that in both acute and chronic purulent disease of the middle ear the function of the cochlea also was more or less affected. When an undoubted lesion of the inner

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ear existed the patient always heard the note for a less period than the examiner by this test. One-sided deafness of course could not be diagnosed by this test, since the sound ear can not be excluded as regards bone-conduction, but in these cases one always obtained the report from the patient that the bone-conduction was shortened on the diseased side.

Bárány would not commit himself to any theory as to how the sound-waves were conducted from the cartilage to the inner ear, and suggested that an expression of opinion on this point should be reserved till other observers had had the opportunity of employing the test.

February 22, 1909; *Monats. f. Ohren. und Laryngo-Rhinol., year* 43, *vol.* 6.

PROFESSOR URBANSCHITSCH *in the Chair.*

Abstract of the Proceedings.

FURTHER TESTS WITH THE TUNING-FORK.

BY Dr. BÁRÁNY.

The first consisted in a modification of Rinne's test, which he claimed was by his method both improved and simplified.

The ears of the patient and observer are connected in the ordinary way by means of an otoscope, and the handle of a vibrating fork is applied to the otoscope and then to the mastoid process of the patient. If, now, the case is one in which the meatus is normal or the internal ear alone is affected, the patient's report as to the note is in complete accord with the observation of the examiner, that is to say, if the examiner hears the note louder when the fork is applied to the mastoid process than when it is applied to the otoscope—or *vice-versâ*—the patient reports the same variation. (Variations in the intensity of the note may be easily produced by setting the fork on different parts of the hand which holds the otoscope.) Thus the appreciation of the note varies as regards bone-and air-conduction as it does in Rinne's test, and the value of Bárány's modification lies in the fact that thereby we are able to satisfy ourselves that, for instance, a "negative" report is due to a pathological lesion and not to an alteration of physical conditions.

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The second test concerns the comparison of the note from the otoscope with that from the pinna under conditions similar to those of the first test.

In normal cases the sensations of both the patient and the observer correspond as to the note, but in instances of impairment of the sound-conducting apparatus it not infrequently occurs that the patient hears the note louder from the pinna, whilst the examiner hears it more loudly when the fork is applied to the otoscope.

The correct inference and importance which should be attached to this test Bárány said was yet to be ascertained ; but, as far as his experience hitherto showed, it appeared that these tests only afforded the same results as those which he had brought forward at the previous meeting, and it was apparently indifferent which were adopted.

Drs. Frey and Neumann subjected Bárány's tests to severe criticism, and submitted that they afforded little if any advantage over those methods usually employed. Both speakers regarded Bárány's communications as most interesting in many respects, but from a practical point of view were not at all disposed to adopt the new tests in preference to those with which they were more familiar.

The report of the proceedings rather gives the impression that the audience were not really prepared to express an opinion on the subject, as the matter was only discussed by these two members, who do not appear to have had the opportunity of basing their remarks on any large series of cases.

Bárány, in reply, very stoutly defended his position, and contended that his methods would be found superior to the tests already known when aural surgeons had had further time to investigate them and note the results obtained in comparison with the data which the older methods afforded.

Melanotic Sarcoma of the Bulb.

By Dr. Neumann.

The specimen had been obtained from a patient who had been operated on five years ago in Schnabel's clinic. It consisted of a melanotic sarcoma of the bulb. For four years after the operation the patient enjoyed good health, but then became deaf in both ears and lost his vestibular excitability. Neumann had had the opportunity of observing this patient from the onset of this aural

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affection right up till his death, the result of suicide. It was especially interesting that this patient never had any nystagmus or giddiness, although his equilibriation was seriously affected. These facts corroborated the view already expressed by the exhibitor to the effect that disturbances of equilibriation, vestibular in origin, may exist without the occurrence of either of these other two phenomena, which are much more often the cause of the unsteadiness rather than its result. As regards the autopsy, no further light was thrown on the cause of the condition, except that a few small metastatic deposits were found on the arachnoid. The facial on both sides was intact. He was obliged to admit that the case did not show any definite reason for supposing its origin to have been either wholly peripheral or central.

ALEX. R. TWEEDIE.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Fifteenth Annual Meeting.

DR. CHRISTIAN HOLMES (*Cincinnati*), *President, in the Chair.*

(*Continued from page* 578.)

LOCAL ANÆSTHESIA IN THE MASTOID OPERATION.

BY DR. EWING W. DAY (Pittsburg, Pa.).

It has been the author's experience that patients who are partially anæsthetised for the mastoid operation give no evidence of pain while the bone-work is in progress, but immediately struggle and moan, or cry out when the soft parts are being operated upon. The problem of local anæsthesia in the mastoid operation, therefore, narrows itself down to anæsthesia of the soft parts, including the periosteum. Upon investigating the literature of the subject he found that Neumann demonstrated upon rabbits that injections of violet-coloured solutions under the periosteum over the frontal sinus of rabbits was followed by penetration of the solution through the bone to the lining mucous membrane, and that he applied the results of his experiments to the mastoid operation.

After employing local anæsthesia in a number of cases where

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