AUSTRIAN OTOLOGICAL SOCIETY.

October 25, 1909; *Monats. f. Ohren., year* 43, *No.* 11.

PROFESSOR V. URBANTSCHITSCH *in the Chair.*

Abstract of the Proceedings.

TESTS RELATING TO APPARENT OBSTRUCTION TO SOUND-CONDUCTION IN ONE-SIDED LESIONS OF THE INNER EAR.

BY R. BÁRÁNY.

If one couples up both one's own ears with those of a person in whom the hearing is normal and then applies a tuning-fork to the mastoid process on one side of the person under examination, it will be found that the sound is conveyed to either ear of the observer—usually in equal measure. There are, however, instances in which the note is heard better from the side on which the fork is applied, and others in which it appears louder from the contra-lateral side. Care must be taken that the end-pieces are inserted with equal firmness. This experiment shows that the note is conducted from the mastoid process of one side in equal measure to both ears, and also that the vibrations from the bone affect the cartilage on each side alike. In the case of people with normal hearing the observations of the examiner and the report of the person under investigation coincide, but if one examines a patient with one-sided deafness the result is different. If, now, an otoscope is inserted into the deaf ear and a fork applied to the mastoid process on this side, the patient will not hear the sound so long as the observer—that is, there is a shortening of the bone-conduction. Now, as we have seen in the above experiment, the note of a fork applied to one mastoid process is heard equally well by the ear on the opposite side. What, then, is the explanation in this instance that the patient, in spite of this fact, does not hear the note so long as the observer? As Bárány's investigations have already shown, the observer hears the note of a fork applied to the mastoid of a normal person just as long as the person under observation. The fact that the meatus is occluded with the otoscope produces a condition of maximal bone-conduction on the side in question, and will account for the apparent lack of appreciation by the patient's healthy ear.

Now if one takes a case of complete one-sided deafness and carries

https://doi.org/10.1017/S1755146300184513 Published online by Cambridge University Press

out this test the note will be heard by the observer equally from both sides, but the patient of course will only hear it with the sound ear, and he does not hear it so long as the observer, since this ear is not occluded; if, however, the patient occludes the sound ear, then he will hear the note just as long as the observer. Thus it follows that if the meatus on the sound side be occluded, shortening of bone-conduction in cases of one-sided deafness cannot be recognised.

Middle-ear disease will produce the same reaction in this test as a healthy ear the meatus of which is occluded. In these cases a lesion of the inner ear limited to one side will be completely overlooked in testing the bone-conduction by the ordinary method. Now, as in cases of one-sided deafness the air-conduction is *nil* and the faculty of bone-conduction to the opposite ear affords an apparent sense of hearing, these cases will simulate a condition of impairment to sound-conduction. To a still greater extent than in cases of complete one-sided deafness do instances of marked depreciation of hearing limited to one side lead to errors in diagnosis. In these cases the shortening of bone-conduction cannot be determined by means of the otoscope, since the sound will be heard by the healthy open ear. Here, again, in addition to the internal ear disease an impairment of sound-conduction will be simulated. This error may be avoided by testing the hearing with the high and low tuning-forks, and also by noting if the sound of a fork applied to the diseased side is raised in intensity or diminished when the meatus is occluded. If the inner ear alone is involved the tone will be found to be raised under these circumstances, whilst if the middle ear be also affected no alteration will be detected. Further, the following test will help to decide whether we are only dealing with a purely apparent impairment to sound-conduction, the real cause of the disability being a lesion of the inner ear: The shortening of the bone-conduction is first determined on the diseased side by means of an otoscope. It amounts, say, to twelve seconds. Then the fork is again applied to the same spot on the mastoid process, but the ear is not connected by an otoscope; directly the sound is lost the meatus on the healthy side is occluded, and the time noted when once more the note can no longer be heard. Should this period amount, in this particular instance, to more than twelve seconds, then we are dealing with a combination of middle and internal ear disease, if the result of testing the bone and cartilage-conduction also corresponds with this reaction. Should it only amount to twelve seconds, then it is most probable that the case is one of a pure internal ear lesion on the diseased

https://doi.org/10.1017/S1755146300184513 Published online by Cambridge University Press

side. From a practical point of view the following observations may also be added: (1) If we have a case of total one-sided deafness to air-conduction under consideration we are unable to draw any conclusion as to the presence of an impairment of sound-conduction from the appreciation of the note of a tuning-fork applied to the bone.

(2) If we are investigating a case in which the reaction to the tests for bone- and cartilage-conduction indicate an impairment of sound-conduction and shortening of bone-conduction on one side, then an impairment of sound-conduction may indeed be present, or only be simulated owing to the perception of the note by the healthy ear. The differential diagnosis must then be further determined by means of the various methods above described.

[This report of the description of Bárány's observations is rather obscure. It should be read in conjunction with the abstract of his other communications, which appeared in this JOURNAL for November, 1909, p. 608, *et. seq.*

The following example is offered as a correct interpretation of his conclusions, and may help to illustrate the clinical significance of his deductions more clearly:

Hypothesis—Left-sided deafness; shortened bone-conduction by 12 seconds; lesion of the internal ear.

The bone-conduction of the patient is first determined by means of Bárány's method with an otoscope. The otoscope is then laid aside and the following data ascertained from the patient's report:

(*a*) If, when the right meatus is occluded, the note from the tuning-fork applied to the left mastoid (which previous to such occlusion could no longer be heard) then reappears for more than 12 seconds, then the bone-conduction of the patient is greater than that of the observer, and to account for this lengthened bone-conduction there must be an element of middle-ear disease accompanying the lesion of the internal ear on the left side.

(*b*) If, when the right meatus is occluded, the note is *not* heard for more than 12 seconds, then the bone-conduction of the patient is not greater than that of the observer, and there is no indication of any middle-ear element in the deafness on the left side, which is most probably entirely due to a lesion of the inner ear.—A. R. T.]

A METHOD FOR DETERMINING THE INDICATION FOR OPERATIONS ON THE NOSE IN PATIENTS WITH "NASAL" SPEECH.

BY EMIL FRÖSCHELS.

One may divide nasal speech into three main types: The open

https://doi.org/10.1017/S1755146300184513 Published online by Cambridge University Press

(rhinolalia aperta), the closed (rhinolalia clausa), and the mixed (rhinolalia mixta). During normal speaking the mouth is shut off from the nose by means of the soft palate, except in the pronunciation of *m*, *i*, *u*, *ng*,[1] which sounds are formed in the nose, as is easily recognised by the sense of vibration in the alæ nasi when they are uttered. If the soft palate hangs lax then the air passes into the nose during the pronunciation of other sounds as well, and the open type of nasal speech results. If by reason of adenoids or some other cause the nasal passages are either partially or wholly occluded, then no air can pass into the nose during the utterance of those sounds, which are normally formed in the nose, and the closed type of nasal speech occurs, as, indeed, obtains in the course of the "common cold." In the production of rhinolalia clausa a total occlusion is not necessary; it is sufficient if only a partial obstruction is present. Rhinolalia mixta takes place when the air passes into the nose pathologically owing to some weakness of the soft palate, whilst at the same time there is some contraction of the nasal passages as well. There is yet another cause for the closed type of nasal speech, which is due to a continuous spasm of the soft palate and occlusion of the nose during the formation of all sounds. A diagnosis of this latter condition could formerly only be made by a process of exclusion, that is, if the disability was found to persist after any obstruction in the post-nasal space had been removed without effect, or if examination revealed no growth in this situation. Fröschels suggests the term "rhinolalia palatina" as a convenient name for this type of nasal speech, and offers the following experiment as a ready means of establishing the diagnosis of this condition: Supposing one has to deal with a case of rhinolalia clausa and wishes to be certain that there is no element in it due to a spasm of the soft palate, a curved sound or Eustachian catheter is passed through the nostril, and the soft palate held forwards whilst the patient utters some sound which should normally be produced in the nose, such as "money" or "king." If the pronunciation of these words is now clear it is reasonable to suppose that some spasm of the soft palate is a factor at any rate in the production of the nasal speech, whilst if no alteration in the voice-resonance is effected by this means, then one may assume that the case is one in which the occlusion of the nose is dependent on some form of physical obstruction, *e. g.* adenoids, deflected septum, or enlarged turbinals. Spasm of the soft palate should be

[1] *I. e.* as in German.

https://doi.org/10.1017/S1755146300184513 Published online by Cambridge University Press

treated by appropriate voice exercise, and other defects by suitabl operative interference.

FREY asked if Fröschels did not think that this spasm might b dependent on extreme deafness and consequent affection of the innerva tion of the palate.

FRÖSCHELS replied that this was possible, but that deafness wa usually associated wlth the open type of nasal speech.

ALEX. R. TWEEDIE (*trans.*).

Abstracts.

PHARYNX AND NASO-PHARYNX.

Smith, L.—*A Little-Recognised Consequence of Adenoid Growths.* "Th Practitioner," January, 1910.

The author draws attention to the liberal secretion of thick and acri mucus in adenoid cases, and insists upon its importance in causing gastri derangement and troublesome cough, which results may occur separatel or together. Removal of the adenoids is advised, but the author point out that further treatment is usually necessary to finally overcome th troubles of which they have been the cause. *Macleod Yearsley.*

Griffiths, J. Howell (London), and **Riddell, D. F.** (London).—*Two Case of Rupture of the Vessels of the Neck into the Pharynx in Scarle Fever.* "Glasgow Medical Journal," January, 1910.

CASE 1.—A boy, aged nine and a half, was suffering from a mil attack of scarlet fever, which ran a normal course for twenty-three days On the twenty-fourth day the patient complained of pain on the right side of the neck, with considerable swelling and a rise of temperature Each day these symptoms increased, and on the fourth day the right tonsil was seen to be pushed forward by a large swelling behind it, an the right side of the palate was also inflamed. An incision was made in the protruding tissue, but no pus was found. Next day there was still no pus present, but on digital examination the swelling was found to b quite soft, and the tip of the finger entered a cavity behind the tonsil. On the withdrawal of the finger profuse venous hæmorrhage took place. which, proving uncontrollable, death ensued instantaneously.

Post mortem.—No ulceration of the fauces or tonsil was detected, but behind the right tonsil was an irregular-shaped cavity, the inner wall of which was broken down, the outer wall being connected with the internal jugular vein. There was considerable enlargement of the glands of the neck.

CASE 2.—A boy, aged three and a half, suffering from a mild form of scarlet fever. On the seventeenth day from the date of the eruption the temperature suddenly rose. An enlargement of the glands took place externally, and a slight deposit on both tonsils became evident. Five days later the child was practically well, except for the glandular enlarge- ment, which still persisted, although the temperature was normal and only slight ulceration was visible. While sitting up in bed taking some

https://doi.org/10.1017/S1755146300184513 Published online by Cambridge University Press