

## Abstracts

by most. For general conversation, for a theatre, lecture, or church, one of the valve aids gives by far the best results. Sometimes the patient needs the aid to listen to one particular person, and it is then important to take into consideration the pitch of that person's voice when prescribing the aid.

I think that we can look forward to a future of great possibilities, when the increased efficiency of hearing aids will result in their more general use, and the present high prices will be brought down to suit the pockets of poorer patients. It may even be that a hearing-aid department will be an essential part of every well-equipped otological clinic.

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## ABSTRACTS

### EAR

*Labyrinth Balancing Reactions in Men and Animals following Rapid Tilting round a Longitudinal Axis.* A. DE KLEYN and C. VERSTEEGH. (*Acta Oto-laryngologica*, xxiv., 1.)

The experimental and clinical researches on this subject, which the authors have carried out for some years, have been published previously only in Dutch.

Guinea-pigs and rabbits were used for the animal experiments. The board or mattress was so arranged that the animal or person (resting on hands and knees) under investigation could be tilted round, either a longitudinal or a bitemporal axis. In order to obtain pure labyrinth reactions the tilting must be rapid.

The following results were obtained: (1) the reactions that normally follow tilting round a longitudinal axis no longer occur

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in animals after bilateral labyrinthectomy, and in man they are absent in nearly all those cases in which the ordinary vestibular reactions cannot be obtained. (2) After unilateral labyrinthectomy in animals or unilateral loss of labyrinth function in man the tilting reactions are absent immediately after the loss of labyrinth function. Later there follows a period in which reactions are present on one side only, and finally they again become normal on both sides. (3) The Authors agree with Rademaker that the tilting reactions originate from the semi-circular canals because: (a) they continue unchanged when the tonic labyrinth reflexes have been abolished by centrifugalization; (b) they remain present in rabbits immediately after destruction of the maculae sacculi or of the utricular nerve; and (c) they remained permanently absent in a guinea-pig in which the labyrinth had been removed on one side, and on the other the posterior vertical canal was functionless. (4) There are, however, still various difficulties which prevent a complete explanation of the tilting reactions, especially in man. (5) In relation to the other vestibular reflexes, the tilting reactions must be placed in a separate category because: (a) Rademaker and Garcin showed that in certain patients, while the tilting reaction was completely absent, the other vestibular reflexes were not apparently abnormal; (b) in one patient in whom all other vestibular reflexes were absent, the tilting reactions were still normal. This probably cannot be explained as due to development of compensation, as no compensation is acquired even years after experimental bilateral labyrinthectomy or clinical bilateral loss of function.

THOMAS GUTHRIE.

*The Hearing of Fish and the Cristae Acusticae.* B. FARKAS. (*Acta Oto-laryngologica*, xxiv., 1.)

*Lebistes reticulatus* (Peters) possesses a well-developed sense of hearing. In these non-ostariophyse fish, the sound vibrations cannot be conveyed to the labyrinth by means of the Weberian apparatus, since this is absent. The otolith in the sacculus, again, cannot be looked upon as being the end-apparatus of the auditory organ, as it forms a massive, voluminous and inflexible structure. It is inflexible in the *Phoxinus laevis* as well (ostariophyse).

An immediate connection between the environment and the labyrinth is constituted by some of the small ossicles of the rudimentary fifth gill-arch and by some of the ossicles of the hyomandibular system. This connection of the horizontal canal with the environment by means of these ossicles, is remarkable.

All the *cristae acusticae* display completely homologous features in their development, and the external in its architecture, to the *papilla acustica basilaris* of birds, and thus a link with the organs of Corti of the higher animals is established.

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The cupula of *Lebistes* cannot be looked upon as being formed by the so-called hair cells of the sensory region of the crista, but in its structure and origin it is rather an independent part of the ampullar apparatus, in fact, a membrane. In its earliest stage it is formed by fibrils entering the ampullar space over the crista from the walls of the ampulla, and later on the layers are formed by the secretory processes of the semilunar planum. The membrane of the cupula is entered by the nerve fibrils.

The parietal part of the cupula is formed largely by the processes of the sensory cells, which latter are grouped in a cluster on the parietal part of the crista.

Beneath the cupula is the subcupular network, which is an independent structure and is formed mainly of the processes of the sensory region of the crista, with which the cupula enters into intimate contact in the course of its development.

The body of the cupula is attached to the edge of the planum by means of membranes and fibres, and has thus an organic connection and cannot be set into motion. Three zones might be distinguished in the morphological structure of the cupula: (1) the exterior or dorsal-parietal zone; (2) the middle zone; (3) the internal or ventral-parietal zone.

The ampullar apparatus consists of the following clearly defined parts: (1) the epithelium of the crista; (2) the subcupular network; (3) the cupula; (4) the semilunar planum; (5) the secretory tegument on the wall of the ampulla and, laterally, from the crista. This secretory tegument might be looked upon as being a vascular one on account of the comparatively large number of blood vessels present in it.

Protracted sounds from an electric horn—transmitted through the air—produce noticeable changes over the entire labyrinth, those affecting the lateral ampulla being as follows: a more intensive colouration of the excited fibrils of the cupula than occurs normally; the nicely organized and uniformly striated character of the normal cupula is disturbed, and the nerve fibrils become tangled; the differentiation between the parietal and the middle zone becomes more pronounced, since the fibrils of the parietal zone react to sounds in a different manner, i.e. these fibrils curve and become rolled up away from the semilunar planum, whereas the fibrils of the middle zone show a very fine spirillization and are directed towards the planum itself. The disturbance in the secretory processes of the semilunar planum is very pronounced, and the space for secretion is also considerably enlarged.

In the sphænoticum an organ is present which shows striking similarities to the paratympanal organ of birds, and which reacts to sound vibrations by morphological changes also.

[Author's Abstract.]

## Ear

*Neuralgias and Ear Symptoms associated with Disturbed Function of the Temporomandibular Joint.* JAMES B. COSTEN. (St. Louis). (*Jour. A.M.A.*, cviii., 4, July 25th, 1936.)

A review of a large group of cases (one hundred and twenty-five) shows that headaches and ear symptoms may be partially or altogether due to disturbed function of the mandibular joint. Ear symptoms predominate in patients with edentulous mouths whose symptoms develop slowly as a pressure effect on the Eustachian tubes, and pain symptoms predominate in cases of natural malocclusion or malocclusion from loss of molar support on one side only. The ear symptoms complained of were impaired hearing, stuffiness (marked at mealtimes), tinnitus, noises while chewing, dull pain within the ears, and dizziness. More than half the patients complained of either frontal, vertical, or occipital headache. The distribution of the pain was often typical of posterior sinus disease. Disturbances of taste, burning of the tongue, and disturbances about the lateral pharyngeal wall were occasionally complained of.

For X-ray study, plates of the joints were taken with the mouth closed and open. Erosion of the head of the condyle on its anterior face and, to a lesser extent, on the articular eminence, was a common finding. Evidence was noticed of fibrosis of the capsular structures and of wide excursion of the condyle forwards when the joint was greatly loosened.

Treatment by reposition of the jaws was generally satisfactory except in a few cases of malocclusion of natural teeth. The cases showing the best results were corrected in several stages, slowly increasing the vertical dimension of the jaw.

ANGUS A. CAMPBELL.

*The Static Function of the Macula Utriculi and its Otoliths.* C. F. WERNER. (*Oto-Laryngologica*, xxiv., 2.)

For the last ten years it has been generally held that the macula utriculi and the macula sacculi have a similar function and that both are concerned with postural labyrinth reflexes. To-day this view is no longer tenable, for in numerous observations on fishes, amphibians, and mammals, the macula sacculi could not be shown to possess a static function. On the other hand, destruction of the macula utriculi has been shown in frogs and rabbits to give almost the same results as loss of the whole labyrinth.

It follows from these researches that it is mainly in the macula utriculi that the static function of the labyrinth is localized. The macula utriculi certainly possesses the morphological characteristics necessary for the release of static reflexes in all spatial planes. The lateral and anterior parts of the margin (*semicirculus rampalis*) are of the most importance in regard to static function.

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It is not clear whether the cause of static stimulation lies in a displacement of the otoliths depending on the elasticity of the otolith membrane.

The hitherto accepted hypotheses of the stimulation of the sensory epithelium and nerve endings by osmotic, electrical, or mechanical means are not compatible with experimental and anatomical facts.

The author's work on the otoliths of the bony fishes has convinced him that the otoliths stimulate the macula through hydrostatic pressure changes in the endolymph, which pressure changes can still cause stimulation to some degree even after removal of the otoliths by centrifugalization.

THOMAS GUTHRIE.

*The Surgery of Otosclerosis.* G. HOLMGREN. (*Acta Oto-Laryngologica*, xxiv., 2.)

All those who have reported on the surgical treatment of otosclerosis by the establishment of a fistula of the labyrinth agree as to the immediate and remarkable improvement which follows opening the labyrinth at no matter what part of its wall.

The principle common to all operations of this nature is the decompression of the perilymph and endolymph by the formation of a permanent opening in the bony labyrinth wall covered by soft, yielding tissue.

The author, operating under local anaesthesia, first exposes the antero-lateral wall of the saccus endolymphaticus. The result of this is an immediate and large increase of hearing. Fistulae 4 to 5 mm. long and as wide as possible are then made in the horizontal and posterior vertical semicircular canals and sometimes also in the anterior vertical canals. Immediately a fistula is made in one of the canals the hearing improves greatly so that almost all the patients then hear conversation at at least 10 metres. The fistulae are covered with various materials, such as thin rubber bags (filled with air, physiological salt solution or fat), a piece of gutta-percha or, more recently, fat. In order to prevent the fat adhering to the membranous canal, the deep wall of the antrum has, in a number of cases, been lined with gold leaf before insertion of the fat.

Since February 1935 Dr. Holmgren has operated on thirty-four patients by this technique, variously modified, and he gives details in a number of cases of the effect of the operation, immediate and remote, on the hearing. There were no deaths and no serious complications. Vertigo following the operation was usually moderate, in a few it was severe for about a week; in none did it last for more than a month. Tinnitus disappeared completely, or almost completely, as soon as the fistula was made, but reappeared

## Nose and Accessory Sinuses

with return of the deafness in those cases in which the early improvement in the hearing was lost.

The remarkable increase of the hearing, which occurred at the moment that the opening was made, was never fully maintained. During the period of healing the hearing deteriorated, so as to become in some cases the same as it was before the operation. In two cases it was even worse. In most, however, there was a greater or lesser degree of improvement, while in some it even tended gradually to increase.

The author believes his method to be simple and free from risk, and to give in most cases some, and in many, considerable, improvement of the hearing, which has hitherto lasted for at least  $1\frac{1}{2}$  years. He is still, however, endeavouring to decide, both by clinical observation and by experiments on apes, where best to make the fistulae, and how to conduct the after-treatment so as to obtain the most lasting results.

THOMAS GUTHRIE.

### NOSE AND ACCESSORY SINUSES

*Contribution to the Clinical Study of Cutaneous Cancer of the Nose.*

M. I. GARCHINE (Odessa). (*Acta Oto-Laryngologica*, xxiv. 3 and 4 (1936).)

Amongst cutaneous cancers those attacking the skin of the nose take first place. Meller found eighty-two of these out of one hundred and seventy cases of skin cancer. Cutaneous cancer presents the following varieties.

1. Basal celled cancer.
2. Spinocelled cancer.
3. The mixed variety. Basospinocelled cancer.

The first form, the basalioma or rodent ulcer, follows a benign course, a long period of development and an absence of metastases. The spinocelled cancer attacks chiefly the part of transition between skin and mucous membranes, and rarely attacks the skin alone. It infiltrates rapidly and with metastases.

The writer goes on to describe a case of nasal skin cancer with metastases in the salivary glands and lymphatic glands.

The patient, aged fifty-six years, complained of an ulcer the size of a pea above the left ala nasi at the level of the pyriform aperture. The sublingual and submaxillary glands were enlarged. In spite of removal of the glands and a course of X-rays the patient became steadily worse and left the Clinic in a state of cachexia. The history of the case showed there had been an injury to the nose from a severe blow some years before admission to hospital. Unlike other cases of skin cancer, this one was particularly resistant to radio-therapy.

H. V. FORSTER.

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### *Congenital Epidermal Fistulae and Cysts of the Nasal Bridge.*

C. E. BENJAMINS. (*Acta Oto-Laryngologica*, xxiv., 2.)

Several cases of this condition, observed and treated in the last eight years, are described here and illustrated by photographs and by radiograms showing the passages and cysts after injection with lipiodol.

The author has reached certain conclusions as to the probable mode of development of the abnormality. As it arises entirely from epidermal tissues it must certainly be regarded as a dermoid and not as a teratoma, since the latter is composed of more than a single germinal layer. Moreover, the constancy of its situation excludes the likelihood of an origin from aberrant epidermal germs, misplaced at a very early stage of development. It is, in fact, to be regarded as an anomaly arising comparatively late in embryonic life.

When two epidermal ridges separated by a cleft coalesce during the process of development, portions of the epiderm may be enclosed. The nasal bridge, it is true, arises from a single rudiment, but a deep groove, the sulcus supranasalis, separates the area triangularis from the covering of the cerebrum, and adherence of its opposed epidermal surfaces may lead to inclusion of an epidermal pocket, which later becomes a cyst. The fact that the cyst sometimes extends deep to the nasal bones presents no difficulty, because the nasal bones do not begin to develop until later. Nor is it any objection that, as in one of the author's cases, a part of the cyst may lie in contact with the dura mater within the cranial cavity, since at this spot the developing bone is thin and may well be perforated by a growing epidermal sac.

The only effective treatment is complete removal by dissection of the entire fistulous tract and cyst, and this is rendered much less difficult if the lumen is stained by the previous injection of methylene blue.

THOMAS GUTHRIE.

### *Changes in the Mucous Glands and Cavernous Tissue of the Nose due to Age.* L. A. ZARITZKY. (*Monatsschrift für Ohrenheilkunde*, lxx., 1936, 1957.)

1. In sucklings the cavernous tissue layer of the nasal mucosa is thin and evenly distributed over the whole inferior turbinate. In adults it is thick, and chiefly found at the turbinate ends.

2. The connective tissue and bundles of fibres which constitute the cavernous tissue are much more delicate in small children than in adolescents and adults, and stain poorly with van Gieson's stain.

3. The openings of the cavities of the erectile tissue in sucklings are much smaller than in adults.

# Larynx

4. The mucosa of the nasal cavity in small children is very poor in mucous glands. About the fifth year these glands reach full development and in number equal those of adult mucosa. After the age of 30 the function of some of these glands occasionally diminishes; after 40 this is usual.

5. In children the mucous glands, especially those at the anterior end of the inferior turbinate, sometimes have a common opening. This is not seen after the age of 5 years.

6. By staining with Sudan III we saw in children of 1 to 3 years in some of the cells of the mucous glands points of colour around the glands.

DEREK BROWN KELLY.

## LARYNX

*Caseous Empyema of the Laryngeal Sinus.* F. ZOLLNER. (*Arch. Ohr-, u.s.w., Heilk.*, 1936, cxli., 327-33.)

A man, aged 39, complained of a swelling on the right side of the neck of six months' duration, slowly increasing in size. There were no laryngeal symptoms, but the examination showed a slight congestion of the laryngeal mucosa on one side. An X-ray revealed a tuberculous focus in one lung. Puncturing the tumour showed that it contained caseous material and a diagnosis of tuberculous empyema of a laryngeal sinus was made.

The pathological explanation given by the author is that of a tuberculous deposit from the blood stream occurred in the appendix of the right laryngeal sinus. This enlarged, broke through the thyro-hyoid membrane, and slowly increased in size, extending in a downward direction. At the time of operation the tumour had increased to nearly fist-size (see illustration). The communication between the sac and interior of the larynx was found.

J. A. KEEN.

*Actualities in the Pathology and Treatment of Laryngeal Tuberculosis.* JEAN SAFRANEK (Budapest). (*Acta Oto-Laryngologica*, xxiii., 2).

### THE GENESIS OF LARYNGEAL TUBERCULOSIS.

Ranke's conception of the development of tuberculosis covers three stages:—

- I. The first stage, the disease being usually localized in the lung and regional lymph glands.
- II. The second stage or stages of spread by blood or lymph channels.
- III. The third stage of reaction and an attempt to localize infection, as a rule in the lungs.



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Laryngeal tuberculosis is a secondary manifestation and a definitely primary infection of the larynx must be a rare occurrence. Extra pulmonary tuberculosis is rare and has its beginning in the great majority of cases in the lungs (97·59 per cent. of cases. Ghon and Winternitz).

Laryngeal tuberculosis either begins during the stage of generalization, by means of blood or lymph streams, or during the third stage, by canalicular spread from the pulmonary lesion, in other words by sputum infection.

During the stage of generalization the author believes that lymphatic spread occurs from the blood stream indirectly by way of the thoracic duct and veins.

Acute infection of the larynx is characterized by œdematous reaction but when there is greater resistance or when virulence is not so high a picture of proliferation results. In contrast to such a picture is one of exudate and necrosis.

### CLASSIFICATION OF THE FORMS OF LARYNGEAL TUBERCULOSIS AND ITS QUALITATIVE DIAGNOSIS.

Rickmann divides the forms into exudative and productive according to the predominance of exudate or proliferation. This distinction is needed for a qualitative diagnosis. Thus the productive type is associated with fibrous tissue formation, the exudative with necrosis and hence there is a bearing on prognosis. If the reaction is favourable the exudative picture may change to one of proliferation instead of one of necrosis.

To gauge the capacity for defence use is made of the cutaneous tuberculin test of Mendel-Mantoux and exploratory galvano-cauterization may give an idea of the reactionary capacity of the tissues.

### PRINCIPLES DIRECTING TREATMENT.

The quality or quantity of the irritant applied by any therapeutic measure should be adapted to the state of reaction of the organism. Bloody operations in the larynx have given place to galvano-cautery and diathermy as irritant measures but galvano-cautery will be disappointing in unfavourable cases and lead to necrosis.

### THE TREATMENT OF LARYNGEAL TUBERCULOSIS BY X-RAYS.

X-rays excite fibrous tissue proliferation but on the contrary may increase exudation and necrosis so that proper dosage must suit the case and the reaction be carefully observed. The galvano-cautery may also be called for to encourage healing and treatment for dysphagia may be needed. Gold therapy may also be advisable as well as general light baths from the arc lamp as used by Strandberg

## Tonsil and Pharynx

and Blegvad. The author describes the method of X-ray treatment and the dosage is given. He has treated in all 300 cases and in infiltrative or "productive" cases obtained a cure in 70 per cent.

X-rays are not used in advanced cases of the exudative type, but they have been found helpful in relieving dysphagia. He finds that X-rays have proved to be of great service in the treatment of laryngeal tuberculosis.

H. V. FORSTER.

### TONSIL AND PHARYNX

*In Favour of Abscess-Tonsillectomy.* A. LINCK. (*Arch. Ohr-, u.s.w., Heilk.*, 1936, cxli., 255-74.)

The author brings forward very strong arguments for the treatment of paratonsillar infections by tonsil enucleation in the acute stage. Dr. Linck quite rightly says that it is not a question of deciding whether simple incision or enucleation is the right treatment, but whether incision, followed several weeks later by a second operation, is better than enucleation at once (*einzeitig*?). Even the opponents of abscess-tonsillectomy are now ready to admit that the risks of the operation in the acute stage have been exaggerated in the past. In the ordinary quinsy, whether treated by incision or abscess-tonsillectomy, the prognosis is good. In many cases the incisions have to be repeated several times and the opening must be enlarged daily by sinus forceps. According to the author, patients infinitely prefer the one operation which gets rid of their trouble permanently.

The cases which Linck has in mind more particularly are those with small collections of pus hidden away in the depths of the paratonsillar tissues. Such conditions may lead to thrombophlebitis of the large neck veins, an invasion of the blood stream and, often, a fatal ending. The local signs in the throat are few and may be overlooked. "Abscess-tonsillectomy" is the only certain way of opening and draining these dangerous hidden abscesses.

The opponents of abscess-tonsillectomy say that it is a surgical principle not to operate in the presence of acute inflammation, a standpoint which is obviously absurd when we think of the daily operations in acute appendicitis, carbuncles, acute sinusitis, mastoid abscess. In paratonsillar abscess, *primary abscess-tonsillectomy* should be the operation of choice. When an incision has already been made, as happens in many cases admitted to Professor Linck's Clinic in Greifswald, the operation is rendered much more difficult. The incision wound is a septic area which one finds it difficult to avoid when injecting the local anæsthetic solution. One also has greater difficulty in defining the proper planes, as tonsil tissue is apt to protrude through the previous incision.

J. A. KEEN.

## Abstracts

### ŒSOPHAGUS AND ENDOSCOPY

*Subdiaphragmatic Perforation of the Œsophagus.* R. B. ENGLESTAD and R. THRANE (Drammen). (*Acta Oto-Laryngologica*, xxiii., 3 and 4 (1936).)

In their introduction to this description of their case the authors state that perforation of the œsophagus during œsophagoscopy occurs quite frequently, but that the literature at their disposal does not contain any reference to a case similar to the following. The patient, a male 52 years old, swallowed an imperfectly chewed piece of beef steak after which both solid and liquid food came back. X-ray examination suggested a foreign body in the lower part of the œsophagus and a piece of meat was removed piecemeal by œsophagoscopy, leaving an uneven bleeding area of mucous membrane suggestive of cancer. A sound could not be passed into the stomach. No evidence of malignancy was shown in the specimen taken for biopsy.

A later X-ray picture showed that the opaque meal passed into the stomach but a dark shadow, apparently in the omental bursa, was also noted and was found later to have disappeared at another X-ray examination without an opaque meal. The shadow did not return on swallowing barium. The patient made a good recovery but a subdiaphragmatic perforation of the gullet is believed to have taken place.

H. V. FORSTER.

### TRACHEA

*Primary Malignant Disease of the Tracheobronchial Tree.*

PORTER P. VINSON (Rochester, Minn.). (*Jour. A.M.A.*, cvii., 4, July 25th, 1936.)

From a study of one hundred and forty cases during the past ten years the writer feels that this disease is not only increasing in frequency but is exhibiting increasingly malignant characteristics.

X-ray examination revealed the presence of a lesion in one hundred and thirty-six cases, but the chief factor in the correct *ante mortem* diagnosis of malignant growths in the air passages has been the more general employment of bronchoscopy and the removal of tissue for microscopic examination.

The usual symptoms of dyspnoea, cough, pain, loss of weight, and loss of strength are described, but the most significant physical sign was the evidence of bronchial obstruction as revealed by distant breath sounds.

Better results have been obtained from treating patients with adenocarcinoma than the squamous celled type of growth. Radical operation should be restricted to the latter group, since equally good or better results can be obtained by a combination of radiotherapy and surgical diathermy in the treatment of the adenocarcinomatous type.

ANGUS A. CAMPBELL.