

## ABSTRACTS

### EAR

*The Physiology of the Middle Ear.* Prof. Dott. ANGELO DELLA CIOPPA.  
(*Bollettino delle Malattie dell'Orecchio, della Gola e del Naso*,  
June, 1936.)

Professor della Cioppa recalls that Scarpa, in 1797, formulated the theory that sound waves crossed the air of the tympanum, entered the internal ear by way of the round window, and passed by the scala tympani to the basilar membrane and the organ of Corti. Helmholtz published his theory some seventy years later.

The author says that the problem is of the greatest importance, considering the modern developments in the telephone, wireless and aviation. The solution of the problem is very necessary in view of the extreme degrees of deafness so commonly met with in middle-ear catarrh.

Physiologists and otologists have always been very prone to accept Helmholtz's theory, but the author is of opinion that the course of the sound waves as suggested is unnecessarily long and complicated and he is in favour of adopting the simpler theory of Scarpa.

To accept Helmholtz's theory it is necessary to admit:—

1. That the tympanic membrane acts passively like the membrane of a Marey's tambour and is set in motion by the alternate condensation and rarefaction of the air.

2. That a chain of ossicles is moved by a membrane (a unique phenomenon in physiology, particularly when it is remembered that the chain of ossicles has two muscles attached to it).

3. That the muscles attached to the ossicles must act as elastic ligaments, though we know that during listening they must also remain in a state of antagonistic contraction.

4. That the membrane of the round window must act as a safety valve whilst in the vicinity is another efficient safety valve, the aqueduct of the cochlea.

5. That where there is a perforation of the membrane or a break in the ossicular chain the sound waves must reach the cochlea *viâ* the oval window with the footpiece of the stapes, and the annular ligament, structures which are singularly ill-adapted for the purpose.

6. That linear excursions of the ossicles must be accepted and all other possible excursions of the ossicles must be ignored.

7. That in ankylosis of the ossicles the absence of even linear excursions must be accepted.

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The author considers that the Helmholtz theory carries the sound waves by the longest and most complicated route, when there is a shorter and more obvious short cut.

He feels that it is necessary that research should be done to decide this very fundamental question.

F. C. ORMEROD.

*Retrolabyrinthitis Acuta (on the question of Post-operative Labyrinthitis Serosa).* E. URBANTSCHITSCH. (*Monatsschrift für Ohrenheilkunde*, 1937, lxxi, 1273.)

Following a description of nine cases personally observed and ten from the literature, the author discusses the findings, and reaches the undernoted conclusions.

The name labyrinthitis serosa as applied to the signs of acute labyrinthitis after a radical mastoid operation, is really a misnomer as the origin of the inflammatory process is not in the labyrinth itself. The condition is really a serous meningitis or oedematous process along the course of the auditory nerve, involving especially the structures at the internal auditory meatus. Extension of this process involves the inner ear, and can also by affecting the adjacent cranial nerves, cause facial palsy, double vision, and disturbances of taste. Gradenigo's syndrome fits in with this conception.

The author maintains that the appellation "retrolabyrinthitis serosa" should be applied to the condition, as it is the structures behind the labyrinth which are chiefly affected.

DEREK BROWN KELLY.

*The Pneumophone: an apparatus for determining the Air Pressure in the Middle Ear.* H. A. E. VAN DISHOECK. (*Arch. Ohr-, u.s.w., Heilk.*, 1937, cxliv, 53-8.)

Optimum hearing depends on equal pressure of the air on both sides of the tympanic membranes. The pneumophone enables one to raise or lower the pressure on the outside of the drum membrane by means of a compressible rubber bulb and an olive which makes an air-tight fitting in the meatus. A water manometer is included in the air circuit. The source of sound is an electrically produced pure tone of a constant intensity which is conducted to the ear through any convenient part of the rubber tubing (see illustration).

When the pressure in the meatus is raised or lowered the sound becomes louder or fainter, according to the air pressure in the tympanic cavity at the time of the test. The pressure at which the sound is perceived with the maximum loudness is presumably the pressure in the middle ear at that moment. In most normal people the figure varied between +2 and -2 cm. on the water manometer. When the sound was conducted to the ear by bone conduction the results were the same. Directly after autoinflation

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the pressure may be as high as +14. In a typical instance of a patient with right-sided tubal stenosis the figure for the right ear was -14; after Valsalva's manœuvre and swallowing it became the normal -2, after a lapse of one hour the pressure became -10 and after two hours it was again -14. The pneumophone is therefore a delicate apparatus for detecting slight degrees of Eustachian obstruction.

In cases with dry perforations or ankylosis of the stapes it is not possible to make any pressure observations with the pneumophone for obvious reasons. But in the diagnosis of ankylosis of the stapes the pneumophone gives more accurate results than the Gellé test.

J. A. KEEN.

### NOSE

*The Origin of Deformities of the Nasal Septum.* A. ŠERCER. (*Arch. Ohr-, u.s.w., Heilk.*, 1937, cxliv, 77-99.)

Deformities of the nasal septum do not occur in the mammalian series, except in man. The author believes that this is connected with the assumption of the upright position and the resulting bending of the axis of the head and brain in order to allow the eyes to look in a forward direction. The base of the skull bends in the region of the basisphenoid and the forward angle has been termed the "angulus sphenoidalis" by Virchow. The angle becomes more acute from birth onwards, 141° at birth, 134° in adult life. Another important measurement to consider is Huxley's "angle of the maxilla" which is the angle formed by a line drawn from the middle of the foramen magnum to the point of junction between the sphenoid and pre-sphenoid, and a line from that point to the lower border of the maxilla in the anterior median plane. In most mammals this angle is nearly 180°, in man it is approximately a right angle.

When the nasal septum is examined closely it will be found that there are two lines along which the bone is specially thickened, corresponding to lines of pressure and stress. One is a bar of bone between the sphenoid and the anterior nasal spine which supports the forward projecting maxilla. The other bony thickening extends upwards towards the nasal bones and supports the anterior part of the base of the skull as it bends forwards. The deformities which can be seen in most macerated skulls occur along either one or other of these lines of pressure, and are easily explained as resulting from a diminution of both sphenoid and maxillary "angles".

In the text are found illustrations of sagittal sections of skulls where the angles are shown by rods placed in position, also of models which demonstrate where the pressure and bending occurs

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when the angles are made more acute. In skulls with "angles" of  $139^\circ$  and  $93^\circ$  respectively the nasal septa are straight, in those with angles averaging  $131^\circ$  and  $88^\circ$  the septa were deformed.

J. A. KEEN.

### PHARYNX

*Experiences with X-ray (Grenzstrahlen) Therapy in Chronic Pharyngitis Sicca.* H. HOHLBRUGGER. (*Monatsschrift für Ohrenheilkunde*, 1937, lxxi, 1408.)

Since 1932, twenty-five cases of typical pharyngitis sicca have been treated at the Innsbruck clinic by X-ray therapy. Very soft rays were used, the average dosage being 400 r. No unforeseen complications were observed. In five of the ten cases which could be followed up, the pharyngeal crusting vanished, the mucosa becoming moist and normally vascular. In one case which returned a year later for tonsillectomy, the improvement was striking. One patient who had undergone operative treatment for chronic pansinusitis without any improvement in his pharyngitis, was cured by X-ray therapy and remained symptom free for four years. Another with latent syphilis had relief of his throat condition before antisyphilitic measures were carried out.

A number of patients did not return after treatment, and their further progress, therefore, cannot be recorded.

Three cases reported great improvement after failure of all other treatment, such as throat paints, etc.

This form of therapy is indicated in all cases of pharyngitis sicca in which removal of infective foci has failed to cure the condition, or where operations on the nose and throat are contra-indicated.

DEREK BROWN KELLY.

### LARYNX

*X-ray Diagnosis of Diseases of the Larynx.* R. WALDAPFEL. (*Arch. Ohr-, u.s.w., Heilk.*, 1937, cxliv, 148-55.)

The larynx may be X-rayed in several ways. The *profile view* where the X-ray plate is placed against the side of the larynx gives the most useful results. The epiglottis and the three subdivisions of the larynx are clearly seen. The deep shadow between the column of air of the larynx and the vertebrae represents the posterior wall of the larynx and the pharynx. An increase in the width of this shadow is of great significance. Irregular shadows are often due to commencing ossification of the thyroid cartilage.

If the profile view is not sufficient, one can use Réthi's *antero-posterior* technique. A small film in a water-tight cover is placed in the hypopharynx after cocainisation. The X-rays are applied

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from the front, and this view eliminates the shadow of the vertebral column. A third method is to use a strong blunt-pointed probe (Eicken-Haken) which is introduced through the glottis. The larynx is forcibly pushed forwards and the profile view is taken in this position. The manœuvre with the probe has opened up the hypopharynx, and tumours on the posterior wall can be seen. The author describes illustrative cases and many interesting X-rays are reproduced in the text.

J. A. KEEN.

### MISCELLANEOUS

*The Heart in Diphtheria.* H. MASON LEETE. (*Lancet*, 1938, i, 136.)

The author deals in an interesting paper with the toxic myocardium and suggests that diphtheria cases are over-treated as regards rest. Severe cases need from seven to twelve weeks in bed, but mild ones may safely be sent home at the end of four weeks. Absolute rest is all-important in the cardio-toxic cases. Whether any drug influences the condition is doubtful. The writer has discontinued entirely the use of adrenalin, and he considers that, judging by the electrocardiogram, the use of the digitalis group seems contraindicated. Camphor, coramine, Eucortone and vitamin C do not appreciably alter the clinical picture. Conservation rather than stimulation should be the aim. Control of vomiting in toxic cases by glucose and insulin and the careful use of morphine to secure rest are indirect methods which mean more to the patient than cardiac drugs.

Some of the clinical phenomena discussed are obscure and require further observation and consideration. This investigation is being pursued.

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