

## ABSTRACTS

### EAR

*Clinical and Pathological Observations on Thrombosis of the Jugular Bulb.* S. KREPUSKA. (*Acta Oto-laryngologica*, xxii., 4.)

Between the years 1911 and 1932 in the University Ear Clinic at Budapest were treated seventy-three cases of bulbar thrombosis out of a total of 112,649 patients attending the clinic, a frequency of 0.065 per cent. They represented 0.89 per cent. of 8,238 ear operations and 20.8 per cent. of the 351 operations for sinus thrombosis. Although in only three cases was the bulbar thrombosis primary and uncomplicated and in all others serious complications were present, as many as thirty-nine (53.42 per cent.) recovered.

The writer describes the methods of Piffel, Kramm and Grünert of direct exposure of the bulb, and also the Voss method of indirect exposure which, with slight modifications, he employs in all cases, including even those rare cases in which it is possible to diagnose with certainty a primary and uncomplicated thrombosis of the bulb. He believes that the percentage of recoveries can be improved, not by more extensive and radical operations, such as Grünert's, but by the Voss indirect operation, adapted in each case to the conditions actually present and carried out at the right time. The exposure and removal of infected parts in this way fulfil all the surgical requirements and, in the absence of irreparable complications (meningitis, lung abscess), are in general successful.

THOMAS GUTHRIE.

*The Topography of the Sigmoid Sinus.* H. NIEDERMAIR and G. SAUSER. (*Wiener Klin. Wochenschrift.*, 34, Jahr. 48.)

The author's deductions were made from the examination of 383 macerated skulls.

The results of the investigation show that there is a definite co-relation between the position of the sinus and the angle formed by the mastoid plane and the meatal wall.

Up to an angle of 120° it can be assumed that the sinus is at least 9 mm. removed from the meatal wall and that this minimal distance is attained only in a very small percentage of cases which increases proportionately as the angle approaches 120°. With an angle of 120° and over, the minimal distance may be as low as 4 mm. even though occasionally an appreciably longer distance may exist. If the angle exceeds 130° one has with tolerable certainty to deal with a protuberant sinus, though a distance of 10 mm. may yet

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exist. This co-relation also applies to children and it is quite independent of the type of skull.

The authors are able to confirm previous statements *re* the relative protuberance of the right sinus. In the material examined there was relative protuberance of the right sinus in 56·40 per cent. of the left in 13·39 per cent. of the skulls whilst the values were approximately equal in 12·27 per cent.

As the accompanying graphs show, the distance between the sinus and the posterior meatal wall varies inversely with the size of the angle which the mastoid plane subtends with the posterior wall of the meatus.

J. B. HORGAN.

*An affection of the Labyrinth associated with Ménière's Syndrome.*

HEMMING VIDEBECH (Viborg). (*Acta Oto-Laryngologica*, xxii.)

The case is described of a patient who was admitted to the mental department of the Communal Hospital with a psycho-pathological condition of the emotional type and, nine months later, was re-admitted but on this occasion, having developed syncopal attacks, remained under observation for *petit mal*.

The man had been an amateur boxer at one time and X-ray examination of the skull gave some evidence of old fracture. The neurological investigation included a thorough otological and vestibular examination which revealed some defect to the tuning fork and labyrinth tests on the right side. The administration of amyl nitrite awakened a latent spontaneous nystagmus. A diagnosis of catalepsy due to encephalitis, probably of traumatic origin, was made and an operation decided upon, the cranium being opened behind the right ear and the dura mater found adherent to the brain. The patient did not survive the operation and, after autopsy, the temporal bones were sent to Professor Wittmaack of Hamburg for special examination. A degeneration of the right cochlea and labyrinth was discovered, but it was found difficult to decide whether this was a primary affection or one secondary to chronic meningo-encephalitis. There was no evidence that the degeneration had been secondary to tympanic disease and it was thought that the condition found in the labyrinth might be comparable to that described by Mygind and Dederding ("Labyrinth de Stase") and found in cases of encephalitis and disseminated sclerosis but not a secondary result of actual nuclear lesions.

H. V. FORSTER.

*Some neglected factors which influence the duration of post-rotational nystagmus.* O. H. MOWRER (Princeton). (*Acta Oto-Laryngologica*, xxii., 1-2.)

Since birds show nystagmus of the head rather than of the eyes as a result of rotation, it is comparatively simple to take records

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of these movements. Pigeons were used in the experiments and the following is the author's summary of his conclusions.

“ In animals which show a head nystagmus (notably birds and reptiles), three distinct factors tend to prevent the occurrence of post-rotational vestibular nystagmus when vision is permitted both during and after rotation : (a) the tendency on the part of the subject to try to fix some feature of the visual environment after the end of rotation ; (b) the tendency for the head movements involved in the visually induced rotational nystagmus to stimulate the vestibular receptors in such a way as to render the retardation of the subject relatively ineffective as a vestibular stimulus ; and (c) the tendency for the visually induced rotational nystagmus to persist after the end of the rotation. In animals (including man) which display a nystagmus of the eyes alone, only factors (a) and (c) are operative, which probably accounts for the fact that in these animals post-rotational vestibular nystagmus is usually less completely inhibited, other things being equal, than in animals which manifest a head nystagmus.

Since vestibular nystagmus, whether of the eyes alone or of the entire head, is adaptable only during rotation, it would seem that those animals which show a head nystagmus—and consequently less post-rotational nystagmus—are endowed with a more adequate reflex mechanism than are animals which show eye nystagmus. However, in animals which possess heavy fore-brains and therefore relatively large heads, the motility of the head is seriously hampered. This presumably explains, at least in part, why head nystagmus—despite the advantage referred to—was abandoned in favour of eye nystagmus at a fairly low evolutionary level. (The shift from monocular to binocular vision may also have been involved in bringing out the transition from head to eye nystagmus.)

The fact that visually sustained rotational nystagmus exerts an inhibitory influence upon the post-rotational vestibular nystagmus has numerous practical as well as biological implications which are not generally recognized. These, however, will have to be considered in a later publication, at which time an attempt will also be made to describe the neural mechanism which is responsible for this effect.”

[Author's Summary.]

H. V. FORSTER.

*On the sound reaction of Tullio.* EELCO HUIZINGA (Groningen).  
(*Acta Oto-Laryngologica*, xxii., 3.)

The author remarks that one of the few things in physiology of the labyrinth which is universally agreed upon is the conception that if, for example, a pigeon be rotated to the right then the post rotatory reaction, namely the stretching of the beak to the right

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with head nystagmus to the left, is due to stimulation of the left horizontal crista and he proceeds to show how this reaction may be modified by stimulation of the opposite crista by sound, a whistle being used. The head nystagmus may be modified by the sound according to its intensity, even to the extent of twisting the head to the opposite side. The effect is independent of cochlea stimulation as will be noted in the following summary by the author.

“ In a great number of experiments on pigeons Tullio found that sound evoked characteristic movements of the head when apertures had been made in the bony labyrinth. These experiments could be completely confirmed. It appears to be true that a direct excitation of the concomitant crista takes place when an opening has been made into the canal. There is a conformity with the rotation reaction of the horizontal canals, the reactions can be made to co-operate or to oppose one another. In conformity with Tullio it was found that these reactions remain after extirpation of the cochlea and disappear after shutting off the external meatus. Tullio is of opinion that the reflex excitability of the crista in question is increased by the making of an aperture. A few objections may be raised to this theory. It seems more probable that the phenomena are caused only by the presence of this opening, which, like the second window of the cochlea, gives the sound wave the opportunity to escape. An influence of the direction of sound could not be determined, and therefore the name “ Schallorientierungsreflex ” may prove to be wrong. The fact that sound effects an excitation of the vestibular part of the labyrinth is certainly of importance in itself and also because it helps towards a better understanding of vestibular reactions in general.”

H. V. FORSTER.

*On the Structure and Function of the Cupula.* K. WITTMACK.  
(*Acta Oto-Laryngologica*, xxii., 4.)

In studying the cupula it is essential to bear in mind that its size varies greatly according to the method used in preparing the specimen.

In 1918 the Author showed that, after the vascular system had been washed through from the heart with a hypotonic fluid (distilled water), the cupula in the subsequently prepared specimen was of unusually large size, while, on the other hand, if hypertonic fluid (sugar solution) was employed, the cupula showed extreme contraction.

The shrinking of the cupula which takes place during the ordinary process of preparation of the temporal bone for microscopic examination depends on the removal by osmosis of the fluid contents of the cupula. This occurs, not while the specimen

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is in the fixation fluid, but during decalcification, and is due to calcium salts from the bone diffusing into the tissue of the crista, so that it becomes saturated with a hypertonic solution.

After disease of the labyrinth such as gives rise to spontaneous nystagmus towards the opposite side, this osmotic contraction during decalcification does not occur. In such a case the ordinary method of preparation shows the cupula in the completely unfolded condition, probably owing to the presence of a defect in its wall caused by the disease, osmosis being thus rendered ineffective.

Soon after death fluid exudes from the cupula and immediately below the sensory epithelium a thin layer of fluid is formed, whose depth varies much with the degree of turgescence of the cupula at the time of death.

The natural size of the cupula and its relation to the lumen of the ampulla must correspond more or less closely to that of the unfolded cupula seen in certain preparations, and such a cupula, voluminous, rigid and firmly fixed, cannot be displaced by the endolymph currents. On the contrary, the current must exhaust itself in a "pressure-suction effect" on the cupula.

THOMAS GUTHRIE.

*Concerning the Trophic Nerve Supply of the Membrana Tympani and Middle Ear derived from the Trigeminal Nerve (Gasserian Ganglion).* ERNST URBANTSCHITSCH. (*Wien. Med. Wochenschrift*, 14, Jahr. 48.)

The author details a case in which he clearly observed the trophic disturbances which occurred in an ear, which he had previously observed to be quite normal, immediately after the alcoholic injection of the Gasserian ganglion by the method of Härth.

Two days after the injection there were signs of incipient otitis with hæmatotympanum. Whisper  $\frac{1}{4}$  m. Next day the membrane was bulging, whisper at the auricle. After one week the membrane was pale, but intense tinnitus persisted. Ten days later spontaneous perforation from the ear occurred, followed by discharge and vertigo. One week later the membrane was quite destroyed, the malleus protruding freely, there was moderate suppuration and mild inflammation of the tympanic mucosa. Rinne was negative and Weber lateralized to the healthy side. Bone conduction was diminished. The ear was now quite dry. Turning reaction was present on both sides, but diminished. Caloric reaction was positive. There was no spontaneous nystagmus. Three months later the condition found was as follows: The membrane was quite absent. There was a small granulation in the region of the processus brevis. The tympanic mucosa was somewhat thickened, the handle of the malleus was

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absent. There was slight suppuration. Rinne was negative, Weber was lateralized to the bad ear. Bone conduction was diminished; conversation was heard at the auricle. The patient actually complained suddenly of deafness, retching and illness while the injection was being carried out and of severe pain in the ear for the following two weeks. The author believes that the history and clinical manifestations of this case clearly demonstrate the origin of the trophic nerve supply of the ear and the results which follow its destruction.

J. B. HORGAN.

*The Operative Treatment of Protruding Ears.* R. DEMEL. (*Wiener Klin. Wochenschrift*, 39, Jahr. 48.)

An oval piece of skin is removed from the posterior surface of the auricle and the mastoid process. A quadrilateral flap of cartilage is dissected from the back of the auricle. Its length corresponds to the total auricular attachment to which it remains hinged. Two vertical incisions are now made through the soft tissues of the mastoid region, including the periosteum, and a bridge of the intervening tissues is elevated. The cartilaginous flap is now retroverted and drawn beneath the mastoid bridge, its free edge being anchored to the more posterior periosteal incision. The lateral cut edge of the auricular cartilage (which resulted from the formation of the cartilaginous flap) is likewise fastened by silk sutures to the mastoid periosteum, so as to ensure the prevention of a relapse. The sub-cuticular region is drained for twenty-four hours. General anæsthesia is advised.

Thirty patients have been operated upon. The operation can be done on adults and children.

Two diagrams and two photogravures are shown.

J. B. HORGAN.

*An X-ray and histological study of petrositis.* L. KRAUS. (*Z. Laryng.*, 1935, xxvi., 209-36.)

In three fatal cases of mucosus otitis the link between otitis and meningitis was a petrositis and the author had an opportunity of correlating and comparing the X-ray appearances, conditions found at operation, and the histological structure of the petrous bones removed after death. On the clinical side the cases illustrate the symptom-complex of petrositis, viz. severe unilateral headache due to involvement of the Gasserian ganglion, later diminished corneal reflex, and sometimes VIth nerve paralysis; only one of the three showed abducens paralysis.

The diagnosis of petrositis with an intact labyrinth is very difficult. Persistent headaches even with VIth nerve paralysis, do not necessarily justify an extensive and dangerous exploration,

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as cases have recovered without operation. However, such symptoms would demand a very careful X-ray examination. If one can judge by the illustrations in the article, the Stenvers-technique is undoubtedly the best.

Case III was especially interesting: double otitis media with early paracentesis. In the seventh week of the illness mastoidectomy was done on the right side and a perisinus abscess was found. The wound healed normally. Yet, five weeks later, there was a sudden development of meningitis due to a focus in the tip of the petrous bone. The author recommends operations which do not destroy the labyrinth, penetrating into the petrous bone either above or below the labyrinth according to the X-ray findings.

J. A. KEEN.

*A new method of measuring the resistance of the Eustachian tubes to air-pressure.* F. ZÖLLNER.

*Catarrhal affections of the Eustachian tubes.* M. KRASSNIG. (*Arch. Ohr-, u.s.w. Heilk.*, 1935, cxl., 137-78.)

These two articles may be abstracted together, as they both attack the classical explanation of tubal catarrh and of the pathology of middle-ear changes on a basis of air absorption. We owe the "ex-vacuo" theory to Toynbee, Politzer, Zaufal and Bezold, and it is still upheld by Scheibe in Denker and Kahler's text-book.

Dr. Zöllner's apparatus consists of an oxygen cylinder and a tube with an olive which can be fitted into one nostril, while the other nostril is occluded. In the air circuit are included a mercury manometer which measures the pressure, also a second glass tube which is dipped into a deep bowl of water or of mercury if high pressures are used; the latter acts as a safety valve, because the oxygen will escape by that route as soon as the pressure is high enough to overcome the weight of the column of water. The highest pressures used were 100-50 mm. Hg.

The oxygen is allowed to flow through the nose and out of the mouth. At a given moment the patient swallows, the pressure rising very suddenly as the soft palate shuts off the naso-pharynx. During the experiment the tympanic membranes are examined through a special oto-microscope which allows one to observe small excursions due to distension and also to study the effects of air penetration when fluid is present in the middle ear. Among 200 normal persons, mostly young men who underwent an examination prior to entering the flying services, 84 per cent. had Eustachian tubes which opened with very slight pressures not exceeding 4 mm. Hg. In the remaining 16 per cent., although none of them had ear symptoms, one or other tube was resistant and did not yield until the figures reached 10, 20 or even 60 mm. Hg.



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On the other hand, one often finds in patients with obvious catarrhal effusions in the tympanic cavities that the Eustachian tubes yield easily to slight pressure. The author concludes that we cannot explain these effusions satisfactorily as being caused by occlusion of the Eustachian tubes and subsequent air absorption.

Such a view will naturally influence one's methods of treatment. In the Clinic at Jena where the author's researches were undertaken, treatment by politzerization has been practically abandoned. Much more reliance is placed on measures for promoting the absorption of exudates, such as light baths to the head, packs to encourage sweating and treatment of the nasal and naso-pharyngeal catarrh.

Dr. Krassnig argues largely on clinical grounds. On the one hand, he finds that it is not rare to watch tympanic membranes which gradually, in the course of years, assume the typical appearance of retraction, although the Eustachian tubes are always easily inflated and are obviously functioning normally. On the other hand, he often finds quite unexpected difficulties when attempting to catheterize and to pass bougies along the Eustachian tubes of persons with normal ears.

These contradictory observations raised many questions which the author has attempted to answer with some success by a *post mortem* investigation. The permeability of the Eustachian tubes was tested in a series of cadavers, the subjects being selected among those with normal tympanic membranes and with no evidence of naso-pharyngeal catarrh. Bougies with a diameter varying between 0.3 and 2 mm. were used on the intact Eustachian tubes and again after the tubes had been slit open from the pharyngeal opening to near the isthmus. In carrying out these experiments the author often found conditions which one would have diagnosed as stenosis during life. These obstacles were not true "stenoses" but simply specially rigid cartilages which resist dilatation for the passage of bougies; they were often held up at a spot just before reaching the bony canal.

As regards air absorption, Dr. Krassnig remarks that the deafness in occlusion of the Eustachian tubes occurs suddenly, not gradually as one would expect if it were caused by a slow disappearance of the air and a gradual pushing-in of the tympanic membranes by the atmospheric pressure. With a Siegle's speculum enclosing a manometer one can measure the negative pressure required to cause movements in an apparently "retracted" membrane. Very small pressures are necessary, a few mm. Hg., much the same as in a normal ear. This observation also is an argument against "air-absorption" as a pathological factor. When a paracentesis is done in a case of acute middle-ear catarrh,



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one does not observe the entrance of air through the perforation with an immediate relaxation of the tympanic membrane, as should happen if the older explanations were correct.

It has always been postulated that air must be absorbed in an enclosed space, but this has never been proved, except in cavities and tissues which do not habitually contain air (pneumothorax, traumatic emphysema).

On the constructive side Krassnig contributes a satisfying explanation of the signs and symptoms of so-called tubal and middle-ear catarrh. The disturbances are said to be due entirely to a *faulty functioning of the tympanic muscles*, especially tensor tympani and possibly also of the muscles acting on the soft palate (tensor and levator palati). The inflammatory changes in the Eustachian tube spread into the substance of the tensor tympani, causing spasms and shortening; the shortening may be temporary or more or less persistent, hence displacement of the malleus ("retraction").

The good effects of catheterization are easily explained as an action on the tensor tympani and are not due to a ventilation of the middle-ear cavity. The same improvement in hearing can be obtained by mobilizing the drum with a Siegle's speculum through the meatus without passing by way of the nose.

Under ordinary conditions the tensor tympani and stapedius are functioning all the time in order to keep the ossicle chain and drum membrane "balanced" and fully receptive to slight sounds. This activity is a reflex one and the sensory path of the reflex begins in the cochlea. Catarrhal inflammations in the tympanic cavity may also disturb the reflex action by interfering with the sensory path and the reflex is bilateral. It is therefore easy to understand why the good ear is so often affected in unilateral middle-ear catarrh, although the tympanic membrane is normal and the Eustachian tube quite open. In patients with a perforation it has been shown that a sound acting on the normal ear can cause a contraction of the tensor tympani on the perforated side.

J. A. KEEN.

*Surgical Treatment of Facial Nerve Paralysis.* ARTHUR B. DUEL (New York). (*Acta Oto-Laryngologica*, xxii.)

Duel refers to the experimental work carried out in collaboration with Sir Charles Ballance and describes how they were able to demonstrate finally that the function of the facial nerve might be restored by introducing grafts of any length, either of motor or sensory nerves. The anterior femoral cutaneous nerve is now used for this purpose and, in the discussion which followed the reading of the paper, advice was offered as to how to make the search for the nerve easier.

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After dividing a branch of the nerve a heavy black silk suture is applied to the cut end and led up to the skin opening. Further, a piece of heavy dental gold foil is used to surround the cut end. This method achieves the same object as the piece of rubber tubing which Sydney Scott recommends to enclose the nerve and allow of easy identification at the end of the period of Wallerian degeneration, two to three weeks.

Duel is of the opinion, however, when the time factor is important, that fresh grafts may be more successfully employed than was thought to be the case if homoplastic grafts are used, namely in patients of the same blood group.

With regard to permanent disfigurement following an attack of Bell's palsy some success has followed the removal of the outer wall of the bony canal and the slitting of the fibrous nerve sheath, and the author ventures to predict that this operation will be the method of choice at an early stage in severe cases in which complete Wallerian degeneration may take place and the Faradic response of the facial muscles be lost in from forty-eight to seventy-two hours.

Some photographs of successful cases are shown.

H. V. FORSTER.

### *Neuroma of the Descending Portion of the Facial Nerve.*

FRANZ ALTMANN. (*M Schr. Ohrenheilk.*, September, 1935.)

Since, according to the Author, no collective report of these lesions has yet appeared, he considered the time was now appropriate to offer an account of these rare conditions, as no less than four such cases have recently occurred in Professor Neumann's Clinic to which he is attached.

The growths may be solitary or multiple, after the manner of the neuro-fibromata of Recklinghausen's disease, and may arise from either the cerebral nerves (with the exception of the first and second) or from the spinal nerves. In conformity with the fact that they are more often associated with the posterior roots of the spinal nerves, in the case of the cerebral nerves it is again the sensory representatives which are most often affected, and of these, most often the acoustic nerve, much less often the Vth nerve; and here again its sensory, and not its motor portion.

This account is prefaced by the report of two other cases; the first by Schmid and the second by Schröder. A very complete account of all these six cases is then given, followed by a helpful summary. All the cases (four female and one male) occurred between the ages of 16 and 26 with the exception of one woman who was aged 53.

The initial symptom is facial paresis, sometimes sudden, sometimes of gradual onset and sometimes associated with a disturbance

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of taste. On examination of the ears, the meatus may be found partly or completely occupied with a polypoid tumour, originating from the posterior wall, the surface of which is at first smooth, but later becomes eczematous. The tympanic membrane, so far as it can be seen, is intact and may remain so for some time. At first too, the hearing is normal, but as the tumour increases, a deafness of the middle-ear type develops. When destruction of the membrane takes place, a secondary infection of the middle-ear also occurs. For the establishment of the diagnosis a biopsy is essential, and if a negative report is at first received, it should be repeated, since the tumour itself may become involved with granulation tissue as the result of a chronic suppurative middle-ear lesion. The tumour is purely expansive and may have long periods of quiescence. The chief danger lies in its effect on neighbouring structures such as the labyrinth, middle ear or cranial cavity.

The ultimate results of this condition cannot be described, as fortunately all the patients are still living. In the meantime it can also be stated that it is accompanied by a remarkable absence of pain.

The precise point of development of the tumour is again impossible to determine, but since taste does not always appear to be affected, it would seem that the origin must be distal to the point where the chorda-tympani arises from the main trunk.

As regards therapy; radium, X-rays, Coutard's treatment, or a combination of these, have not proved of any help and the question of surgical interference must be dependent on the urgency of symptoms arising from the involvement of neighbouring parts. Meanwhile, it can also be stated that prognosis as regards recovery of function is unfavourable. Differential diagnosis must of course be made between the condition of the chronic middle-ear suppuration causing polypus or granulations, the possibility of tuberculous infection, or even a malignant neoplasm.

In conclusion the Author urges that as four such cases in only a short while have occurred in the Clinic to which he is attached, quite possibly this condition is of less rarity than reports would suggest, and that therefore a more careful investigation of cases meriting a critical differential diagnosis, to which he has already drawn attention, is indicated.

ALEX. R. TWEEDIE.

### NOSE AND ACCESSORY SINUSES

*On the architecture of the nasal cartilages and bones in relation to function.* ALWINE ILBERG. (*Z. Laryng.*, 1935, xxvi., 239-57.)

The arrangement of the cells in the deeper layers of the perichondrium of the nasal septum and of the cartilages forming the

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alae of the nose follow certain definite lines. The same applies to the periosteum covering the nasal bones. These lines have a functional significance and correspond to the direction of stress to which the cartilaginous and bony skeleton of the nose is subjected. They have to do with the forces which tend to keep the nostrils open for free respiration, also lines of stress in an upward direction due to mastication. The latter forces are transmitted to the maxilla and upwards to the cranium along three main columns. The pressure lines from the incisor teeth travel along the nasal bones to the nasal processes of the frontal bones; from the premolars and first molars through the zygomatic bone, and from the last two molars along the palate bones and pterygoid processes.

The author's research on the nasal bony and cartilaginous skeleton tends to confirm this previous work on the skull which established the lines of pressure from the teeth. Dr. Ilberg also refers a good deal to a study by Bühler on the arrangement of the pressure lines in the perichondrium of the larynx and their bearing on the mechanics of fractures of the larynx. Full references are given. In the text there are many illustrations, partly diagrammatic and partly photographs of actual specimens of perichondrium in which the lines of cells have been rendered visible by a special method of staining.

J. A. KEEN.

*A Unique Case of Congenital Deformity of the Outer Nose: Vertical re-duplication associated with Hypertelorismus.*  
D. G. W. VAN VOORTHUYSEN. (*Acta Oto-Laryngologica*, xxii., 4.)

A Javanese girl, six years of age, was referred to the Author's Clinic at Surabaya on account of a peculiar swelling of the eyelids and suspected nasofrontal encephalocele.

The root of the nose was broad and flat, and could be felt to consist of hard smooth bone without any trace of a fissure. The eyes were wide apart and the lower lids were very oedematous, the upper slightly so. The outer nose was flat and elongated, and its profile showed, at the junction of the lower third with the upper two-thirds, a kink, due to the presence of a structure exactly resembling a second nose with well-formed lower margin, tip and alae, but without narial openings. On raising the overhanging tip of the very broad lower, or true, nose, two rather small nostrils could be seen. The nasal cavities themselves were normal, but the roof of the olfactory cleft was abnormally low in relation to the eyes. Skiagrams showed that the under surface of both medial frontal convolutions was at a much lower level than normal, and a depression existed in the mid-line between the orbits. There was no trace of frontal sinuses, and the ethmoid cells were poorly

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developed and their roof unusually low. The floor of the nasal cavities was also low, so that the bony framework of the face was elongated in the vertical direction. Apart from rather marked debilitas mentis, the child was otherwise normal.

Vertical reduplication of the external nose does not appear to have been previously described. THOMAS GUTHRIE.

*Adenoma of the Nose and Accessory Sinuses.* L. NATANSON.  
(*Acta Oto-Laryngologica*, xxii., 1.)

Adenomata of the nose and its accessory cavities are rare tumours: only forty-two have hitherto been recorded. Of 174 malignant growths of these cavities observed during a period of fifteen years in Sverschevsky's clinic, to which the Author is attached, only one was an adenoma.

Two varieties of adenoma occur in the nose: (1) the true and benign adenoma, and (2) the malignant destructive type. The first of these is met with as a comparatively small, circumscribed tumour with smooth or uneven surface, of bright red colour, attached by a broad base, usually in the region of the tuberculum septi, or in one of the other areas of mucous membrane rich in glands, such as the thickened patch at the hind end of the vomer, and the front end of the middle turbinate. Inflammatory processes play a part in its origin.

The malignant variety occurs as a rather rapidly growing, greyish-red tumour, which bleeds easily and usually fills the whole nasal cavity, and invades the accessory sinuses and, finally, the cranial cavity.

A detailed description is given of a case of the malignant variety in a woman, 23 years of age when first seen who remained under the Author's observation until her death ten years later. The growth was always both clinically and histologically of a malignant type, but illustrated the fact that malignant adenomata of the nose differ from carcinomata in possessing a connective tissue capsule, in showing almost no tendency to infiltrate or produce metastases, and in their comparatively slow course. They readily recur, however, after removal, destroy the bone, and cause death. Operation for their removal must be complete and should be followed by X-ray and radium treatment. THOMAS GUTHRIE.

## LARYNX AND TRACHEA

*The Mechanism of Phonation.* V. E. NEGUS. (*Acta Oto-Laryngologica*, xxii., 1-2.)

In man, the respiratory system is so well adapted for the production of sound as a means of communication that few, if any,

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modifications are necessary. In the use of the lungs as bellows the increase in the pressure of air increases the loudness of sound but raises the pitch very little.

In the primates and in man the thyro-arytenoid fold is divided into an upper and lower part by the ventricle of the larynx. In men with deep voices the lower parts of the vocal cords are thick, in women the edges are sharp and with high tones—the margins alone come into contact one with another. Available evidence refutes the prevalent idea that during phonation the vocal cords are stretched and that rise of vibration rate is associated with increased stretching. Observation shows that during phonation the glottis is shorter than during respiration.

With regard to the upper part of the thyro-arytenoid folds, namely the ventricular bands, their closure during phonation leads to disorder of the mechanism of phonation, but in the act of swallowing they meet before the ary-epiglottic folds or upper part of the sphincteric girdle come into contact.

The thyro-arytenoideus muscle and the crico-arytenoideus posticus are opposed to each other during phonation and the crico-thyroid prevents the glottis from being unduly shortened but does not produce stretching of the vocal cords as a means of phonation. For efficient sound production the margins of the glottis must be membranous. This is not so in reptiles and birds and so in tree birds, in whom communication by means of sound is so important, a true vocal organ, the syrinx, has been evolved and is situated at the bifurcation of the trachea. In fast-running animals, such as the deer, in whom rapid respiratory exchange is necessary, the arytenoids are long, whereas in man, who has not this need, they are short, leaving a longer membranous part of the glottis for phonation. In man, during phonation, the arytenoids are in contact and stationary. If they are not approximated waste in phonation results. The margins of the glottis influence the character of the voice. Their length in the lion accounts for the deep tone of the voice and in the ox, where they are massive and rounded, coming into contact over a wide area, the voice is mellow. In the bat, whose note is shrill, the vocal folds are extremely short. On these general principles the type of voice is explained in basses, tenors, sopranos, and in boys before and after puberty.

The quality of the voice depends on the nature of the various resonators which amplify certain tones and diminish others. It is interesting to note in this connection that the œsophageal voice after laryngectomy may have a quality approaching the normal for the individual concerned.

The resonators are not confined to the area above the glottis. The lungs may act as resonators, as is proved by their influence on sounds produced during inspiration. In man, because of the

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recession of the snout, the large tongue occupies a smaller space and the glottis is pushed downwards leaving a wide pharynx as a resonator. The epiglottis is separated from the soft palate by a considerable interval in association with degeneration of the sense of smell, and so air is allowed to pass out of the mouth or nose, or both.

The buccal cavity is of the greatest importance in phonation and especially for speech, and yet it is remarkable in this connection the wonderful powers of speech displayed by parrots. They have no mobile cheeks, no lips and no pharyngeal resonator, there is no efficient naso-pharynx or nasal cavity available for use in altering the quality of sounds produced at the syrinx. The only organ of real utility at the disposal of the parrot is in fact its large and mobile tongue, used in association with its complicated syrinx.

H. V. FORSTER.

*Laryngeal Changes during Pregnancy.* BRUNO KETCH and MARIANNE SCHON. (*Wiener Klin. Wochenschrift*, 13, Jahr. 48.)

Three cases are described of more or less marked changes occurring in the larynx in multiparae during or immediately after pregnancy. As a result of the analysis of these cases it is suggested that the changes should be regarded not as laryngitis but as a laryngopathia gravidarum and may be differentiated into a *L. nervosa*, a *L. œdematosa* or a *L. sicca* which vary in their clinical manifestations, their differential diagnosis and to some extent in their prognosis. Special weight is laid upon the demarcation between the œdematous form and tubercular laryngeal affections.

J. B. HORGAN.

*Sarcoma of the trachea in a child.* L. ABBATE. (*Arch. Ohr-, u.s.w. Heilk.*, 1935, cxi., 179-86.)

The author describes an extremely rare case of sarcoma of the trachea which was successfully treated by operative removal followed by radium. The literature is fully discussed.

Girl, aged 10, with history of dyspnoea of three weeks' duration. Bronchoscopy revealed a round tumour just above bifurcation of trachea. A few days later a low tracheotomy was done and the tumour was removed through a tracheal tube. The tumour is described as being the size of a cherry and it was attached to the posterior wall of the trachea on the left side. The histological examination showed a pure round-celled sarcoma. A special interest attaches to the apparatus which had to be constructed in order to hold the radium in place over the tumour area (see illustration in text).

J. A. KEEN.



# Tonsil and Pharynx

## TONSIL AND PHARYNX

*The Lingual Tonsil.* GEORGES CAMBRELIN (Brussels). (*Les Annales d'Oto-Laryngologie*, August, 1935.)

The histological study of the lingual tonsil is based on the study of sections taken from the cadaver. There is an almost complete analogy of structure with that of the palatine tonsil. The histological details are briefly described and the slight differences are noted. The best way to ascertain the degree of enlargement of the lingual tonsil is by the sense of touch. The author has, by this method, reached some interesting conclusions which are embodied in this short article. He found that an hypertrophy of the lingual tonsil was present in only one per cent. of cases in which the faucial tonsils were pathologically enlarged. On the other hand, it was not an unusual experience to find that there was a considerable hypertrophy of the lingual tonsil in older people, of whom 70 per cent. had had their tonsils enucleated during childhood. It is pertinent to inquire if this is not a local expression on the part of "lymphatic" individuals to reproduce lymphatic tissue necessary to the organism and that this increase in lymphatic tissue is probably widespread throughout the intestinal and respiratory tracts. It is questionable whether it would not be better to subdue one's enthusiasm for the indiscriminate removal of hypertrophied tonsils and treat these simple faucial tonsil hypertrophies by palliative measures. The measures suggested are seaside resorts, iodine, arsenic and ultra-violet radiations. The advantage of deep ray therapy is that the tonsillar function is not brutally suppressed and the excess of lymphocytes are gradually eliminated and destroyed.

M. VLASTO.

*Malignant growths of the Tonsil.* (An attempt to classify these histopathologically.) G. ARDOIN. (*Les Annales d'Oto-Laryngologie*, July, 1935.)

The histopathological classification of malignant tumours of the tonsil presents many difficulties. This particularly applies to those of the reticulo-endothelium, whereas those of purely epithelial origin are much better understood. This article, which contains many photomicrographs and a full bibliography, is an attempt to bring up to date a classification which it is hoped will prove useful but which lays no claim to finality. After a brief reference to the embryology of the tonsil, the author proceeds to describe the histological details of the epitheliomata, sarcomata and, more particularly, of the reticulo-endotheliomata. These latter tumours are relatively rare (8 cases in 114 cases of tonsil tumours). Their clinical history is atypical. The onset is very insidious; sometimes the patient consults us for a slight dysphagia,

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and a very close examination reveals either a small nodule on the tonsil or more often a slight general enlargement of the tonsil. There may be a few enlarged glands. From this point the morbid condition progresses rapidly and invades the pillars and the soft palate, extending on to the lateral pharyngeal wall. The overlying mucous membrane is red and oedematous and ulceration takes place early. These tumours are particularly radio-sensitive but their treatment requires very expert handling inasmuch as an improper technique may accelerate rather than retard the growth of the tumour.

M. VLASTO.

*Peri-Laryngo-Pharyngeal Suppurations.* P. TRUFFERT and A. VIÉLA. (*Les Annales d'Oto-Laryngologie*, August, 1935.)

Although the commonest form of suppuration in this region, the retro-pharyngeal abscess, receives most of the attention in this article, considerable space is given to the consideration of suppuration of the anterior wall. We are first given a detailed account of the anatomical region under discussion and, with the help of some useful diagrams, our attention is particularly focussed on the triangular pre-epiglottic space which is bounded above by the hyo-epiglottic membrane in front by the thyro-hyoid ligament and behind by the epiglottis. This space contains some fatty lobules and lymphatics and may be the seat of suppuration. The author discusses the symptomatology, physical signs and treatment of suppuration in this area. In the majority of cases, he advises evacuation of the pus through an infra-hyoid incision; although in some of the advanced cases in which the suppuration has lifted the roof of the hyo-thyro-epiglottic space, it is better to incise above the hyoid bone. Suppuration of the epiglottis and of the arytenoid cartilages are also considered. The many types of retro-pharyngeal abscess are described and a number of clinical records accompany the text. Considerable space is devoted to a discussion of the operative treatment of retro-pharyngeal abscesses. In the majority of cases it will be found that the best method of approach and drainage is through an external incision.

M. VLASTO.

*The functions of the pharyngeal lymphatic ring.* G. EIGLER. (*Arch. Ohr-, u.s.w. Heilk.*, 1935, cxl., 1-62.)

This is a very lengthy article, the references of which alone occupy three pages. Anatomically, the tonsils differ from other lymph nodes in that they do not possess any afferent lymphatics. The author's special researches concern the appearances of the tonsils in relation to the taking of food and mastication. The parts which undergo changes are the epithelium of the crypts and the

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lymph follicles. After taking food the epithelium becomes considerably thickened (5-10 times) ; it is seen to be broken up and full of lymphocytes on the point of passing through to the surface. The crypts themselves are empty of lymphocytes and the emptying of the crypts is produced by the squeezing of the tonsils by the muscles of the soft palate in the act of swallowing. These changes are physiological and were determined by a study of the tonsils in dogs, but also by sectioning human tonsils after enucleation. Some patients took no food before operation (4-16 hours before), others were given one or two slices of bread without any liquid twenty minutes before enucleating the tonsils under local anæsthesia.

The lymphocytes which reach the alimentary canal in large numbers after eating very likely have a digestive function. Lipase, protease and amylase have been shown to be present in white blood cells and the various experiments in this direction and methods of obtaining tonsil extracts are described.

According to the author, the theory that the collections of lymphatic tissue in the pharynx and naso-pharynx (Waldeyer's ring) have the same functions as lymph glands elsewhere must be abandoned. It is much more likely that their function falls into line with the function of the other collections of lymphoid tissue along the alimentary tract. This function would be a digestive one rather than anti-bacterial. As regards internal secretions it is doubtful whether the tonsils possess any functions. All the researches into their relation to thyroid, adrenals and thymus are inconclusive and often contradictory.

J. A. KEEN.

### ŒSOPHAGUS AND ENDOSCOPY

*Recent Perforations of the Cervical Œsophagus.* J. PIQUET and A. DEBURGE. (*Les Annales d'Oto-Laryngologie*, August, 1935.)

In the event of a foreign body impacted in the œsophagus which has caused a perforation, our line of treatment is clearly external œsophagotomy. There are other and more numerous cases, however, for whom the appropriate line of treatment is not so obvious. These are cases in which perforation has resulted either by the foreign body itself in its passage, aided or unaided, into the stomach, or by endoscopic manœuvre. It is difficult to distinguish between those cases in which the perforation heals spontaneously and those cases in which septic phenomena make their appearance and often lead to the death of the patient. We are first given the statistical experience of recognized authorities which shows that some believe in early interference and others

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in interfering as seldom as possible. Von Eicken for instance quotes eight cases of spontaneous healing and belongs to the latter group. The authors believe, however, that more cases are lost through operating too late than too early. The main purpose of the article is to try to distinguish between those cases which are going to heal spontaneously and those which are not. The main early symptoms of serious prognostic significance are cervical emphysema, swelling of the neck and severe constitutional disturbance. The confirmation of a perforation by a further endoscopy is regarded as a mistake. Some assistance may be derived from a radiological examination, but the interpretation of the X-rays is difficult and these difficulties are explained. The author next gives precise indications as to how we should behave in our treatment of these cases. Finally, we are given the operative technique which is recommended by the authors and which was employed in the case which is reported in the text.

M. VLASTO.

*Distension of Œsophagus with atrophy of walls and dilatation of the Cardia.* A. BROWN KELLY (Glasgow). (*Acta Oto-Laryngologica*, xxii.)

The condition described is associated with great distension of the lower two-thirds of the œsophagus, thinning of the walls and dilatation of the cardia. It was found in three male subjects in the examination of the œsophagi obtained from one hundred consecutive autopsies in infants and young children. The ages of the three subjects were three weeks, nine weeks and four months. This incidence of the atrophy of the œsophagus in the very young, the death of the subjects in infancy and the absence of the abnormality in numerous older children examined *post mortem* suggests that the affection is fatal at a very early age.

Dilatation of the œsophagus or of the cardia or of both is fairly common, but the localized thinning of the œsophageal walls below the bifurcation of the trachea and the atrophy of the musculature in this region are believed to be unique. The affection seems to be essentially a muscular atrophy of the œsophagus and the author asks the question, "Is it analogous to Hirschsprungs' disease?"

H. V. FORSTER.

*Œsophageal Varix.* GERHARD WACHNER. (*Wiener Klin. Wochenschrift*, 45, Jahr. 47.)

Two cases of primary œsophageal varix are described and the differential diagnosis of this condition from that due to hepatic cirrhosis and pericœsophagitis is described. The cases were diagnosed by radiography and two photogravures of the radiograms are shown. It is further demonstrated that, in spite of the

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most careful radiographic technique, a negative radiographic finding does not preclude the possible presence of a varicosity which, though small, may terminate in a fatal hæmorrhage. The advisability is expressed of carrying out a radiographic examination of the œsophagus in all doubtful cases of hæmatemesis.

J. B. HORGAN.

*A Case of Chronic Œsophago-Bronchial Fistula complicating a case of Œsophageal Diverticulum.* RUDOLF PAPE. (*Wiener Klin. Wochenschrift*, 44, Jahr. 47.)

A joiner, aged 60, complained that for two years he suffered after eating from severe pain in the upper right abdominal region. The pain radiated to the right side of the chest. There was frequent retching and at times he vomited small amounts of acid or tasteless material. Attacks of coughing were common after taking food. The patient looked ill and had lost 10 Kg. in weight. There was a history of pleurisy at the age of 24 years. Radiological examination of the œsophagus with barium showed two large and two smaller anterior œsophageal diverticula, the lower of the last two of which was seen to be in fistulous communication with the right lower lobe bronchus which contained some of the barium meal (illustration). There was evidence of pleural adhesions and of healed pulmonary lesions. Œsophagoscopy revealed the presence of œsophageal spasm (also seen by radiogram) and the absence of any new growth. It was found that the more solid the consistency of the food the less it penetrated into the bronchus.

The patient was instructed to avoid as much as possible food of a thin consistency and to take his food whilst lying on his left side. During the time (18 months) that these measures have been adopted the patient has been much more comfortable, he has regained his lost weight (10 Kg.) and control radiograms taken at intervals prove that there is a tendency to obliteration of the fistulous condition.

The opinion is expressed that the relative mildness of the subjective pulmonary symptoms and the avoidance of aspiration pneumonia are due to the very insidious progress of the initial fistula formation.

J. B. HORGAN.