by X-rays over a period of two years for the cure of lupus on the right side of the neck. Seven months ago the patient had applied for treatment, complaining of pain in the right side of the neck on swallowing. Examination disclosed a tumour on the posterior wall of the right side of the hypopharynx. The histological report on a portion removed for examination was squamous-celled carcinoma.

As the condition of the patient was so poor, the exhibitor had avoided radical operation and relied on the use of radium, and, at intervals of two weeks to two months, five or six needles were inserted into the growth, on an average for about five hours at a time, amounting in all to a dosage of about 800 mgrm.-hours. After the fourth treatment no sign of the tumour could be seen. A short time after, however, another tumour quite separate from the first appeared in the sinus pyriformis, but this, unfortunately, did not respond to the further introduction of radium needles. Thus, after disappearance of the primary tumour, a metastasis had apparently occurred in a situation which is recognised as being highly susceptible to such affections.

The exhibitor discussed the possible causative relation between the previous X-ray treatment and the development of the neoplasm in the hypopharynx.

ABSTRACTS

EAR.

Function of the Round Window: An Experimental Study. WALTER HUGHSON and S. J. CROWE (Baltimore). (*Journ. Amer. Med. Assoc.*, 13th June 1931, Vol. xcvi., No. 24.)

In these experiments cats were used, because of the ease with which the cerebellum and middle ear are approached. The experiment consisted in placing an electrode on or near the auditory nerve, and grounding the other electrode in the muscles of the neck. Wires from these electrodes were connected with a six-tube amplifier in another part of the building. Spoken words and pure tones from various instruments were used. Seventy-five experiments were made, after which the cats were killed, and in addition a considerable number of animals were operated on and saved for observations on chronic lesions. Puncture of the ear-drum or filling a niche of the round window with wax or plaster had no appreciable effect on the transmission of sound. Fixation of the ossicular chain, division of one of the ossicular joints or interference with the movements of the head of the malleus decreased transmission of sounds, particularly those of low frequencies. Pressure on the round window membrane always resulted in marked improve-

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ment in the transmission of voice and other tones between 512-4096 d.v. This phenomenon occurred equally well in normal or pathological ears, provided the foot-plate of the stapes was intact. The secondary tympanic membrane acts as a safety valve to protect structures of the inner ear, and by its mobility absorbs approximately one half of all sound entering the ear.

The article occupies two columns. ANGUS A. CAMPBELL.

Brachial Monoplegia in the diagnosis of Cerebellar Abscess. ACHILLE PERONI. (*Archivio Italiano di Otologia*, December 1931.)

The author describes three cases of monoplegia of the arm on the same side in the early stages of cerebellar abscess. It is a weakness and not a real paralysis, and is due partly to ataxy and partly to loss of tonus. It must be differentiated from the paralysis of the opposite arm, occurring in later stages, which is due to pressure of the abscess on the pyramids before the decussation.

The author recalls the description by Bárány, of the centres of the cerebellum which regulate the tone of the different movements of the arm and which lie in that part of the cerebellum which is most commonly affected by abscess-formation of otitic origin.

The author considers this weakness a very important early sign of a cerebellar abscess. F. C. ORMEROD.

Degeneration of the Organ of Corti caused by Bone-conducted Sounds. K. WITTMAACK. (*Arch. Ohr., u.s.w., Heilk.*, 1931, Band cxxx., pp. 143-156.)

Certain experiments were made by Wittmaack on guinea-pigs to show that prolonged sound vibrations *conducted by bone* alone were able to produce degenerative lesions in the organ of Corti. The guinea-pigs were kept on metal boards with a hammer attachment which produced a knocking which was repeated at a constant interval. The animals were exposed to this stimulation for twelve hours in the day for ten months. A group of "control" animals were kept on similar boards without the hammer attachment, the "controls" remaining quite near the first group. The sound produced by the hammer knocks was damped down so that only a low note was produced (approx. 57 d.v.). The control animals, therefore, were only exposed to the stimulation of this low note *conducted by air.*

Typical degenerative lesions were produced in the cochleae of the first group, but not in the "controls," and Prof. Wittmaack holds the view that degeneration in Corti's organ can be produced by sounds reaching the cochlea entirely by bone-conduction. This observation has an important bearing on the pathology of occupational deafness.

Barth repeated the above experiments, as he wished to arrive at an independent conclusion. He apparently discovered degenerative lesions

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in the "control" animals, and he therefore questions Wittmaack's hypothesis.

In this article the author shows quite clearly that the "lesions" which Barth assumed to be evidence of degeneration are really variations of Corti's organ which occur within physiological limits, and which Wittmaack has often found in the cochleae of guinea-pigs who had not been exposed to any abnormal sound stimulation (see illustrations in text). Near the tip of the cochlea there is a small area where the organ of Corti is somewhat undifferentiated; the membrana tectoria may be detached, and there are practically no nerve-fibres. This appearance must not be interpreted as the result of an experimental lesion, as Barth apparently interpreted it. There is a zone of transition and only at a slightly lower level does one find the fully-developed organ of Corti.

Barth's views on degenerative lesions produced by low notes which are air-conducted would also conflict with Yoshii's classical experiments. These experiments established that pure tones of medium pitch, acting over a long period, produced very circumscribed lesions at the same level in all the animals. When tones of a higher pitch were used the lesions became displaced towards the base of the cochlea. But when Yoshii used tones of a lower pitch, he found that the inner ear lesions were much less definite. No lesions at all occurred with notes of a very low pitch, as for instance the low air-conducted notes in Wittmaack's and Barth's experiments with metal boards and the hammer attachment.

It appears impossible to damage the end-organ in the cochlea with low tones (air-conducted). This observation is further confirmed by an experiment of von Eicken, who exposed guinea-pigs to the tones of a C organ-pipe for thirteen weeks and could find no changes in the cochleae.

In the experiments under discussion in this article the sounds reach the cochlea by way of body vibration and bone-conduction. The degenerative lesions which result are of a definite type and they fall within the zone where the organ of Corti is fully differentiated; only the sensory hair-cells are affected, while in the lesions produced by air-conducted sounds it is found that the cells which constitute the supporting frame-work of the organ of Corti are also damaged.

J. A. KEEN.

Secondary Sclerosis of the Mastoid Process studied by X-ray Photographs. W. MEYER. (*Arch. Ohr., u.s.w., Heilk.*, February 1932, Band cxxx., pp. 292-301.)

This paper is another of the numerous studies bearing on Wittmaack's teaching that sclerosis of the mastoid process is due entirely to infantile otitis and the arrest of pneumatisation at an early

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stage. The author selected 28 cases of severe otitis and clinical mastoiditis which had not been submitted to operation for one or other reason; only cases showing well-developed pneumatic cells on the X-ray plates were chosen. The mastoid processes were X-rayed at the time of the illness and again four to five months after the otitis had spontaneously healed.

In 24 of these cases the pneumatic cell pattern had remained exactly the same after the specified time. In four cases the X-ray appearances suggested a very partial and limited obliteration of pneumatic cells by new bone formation. In no single case was there anything approaching a complete ossification.

Lange and Krainz had demonstrated previously in operation cases that localised areas of ossification and obliteration of pneumatic cells can occur as a result of mastoiditis. For this reason they have attacked Wittmaack's theory and have suggested that a slow osteosclerosis of the mastoid process in adult life is quite conceivable, although this process has never been shown to occur. The Wittmaack school do not deny the occurrence of a partial obliteration of pneumatic cells as a result of mastoiditis. But the many examples of completely sclerosed mastoid processes, in which no history of otitis and mastoiditis is obtainable, remain quite unexplained unless we accept Wittmaack's theory.

The author agrees with Prof. Wittmaack that it is impossible to conceive a perfectly symptomless mastoiditis which would cause a complete sclerosis, as he finds that even after severe clinical mastoiditis the pneumatic cell system remains intact in the great majority of cases. There are several illustrations in the text. J. A. KEEN.

Results of the Examination of Deaf-mutes with the Otoaudion. K. GRAHE. (*Arch. Ohr., u.s.w., Heilk.*, 1932, Band cxxx., pp. 302-317.)

The author describes his results of testing 41 deaf-mutes by the Otoaudion (Krafft), an audiometer with a special arrangement for intensifying the sounds. Since Bezold's time it has been known that "islands of hearing" can be demonstrated in the majority of deaf-mute children. With the greater intensity of sounds obtainable by the Otoaudion the gaps in the sound perception tend to disappear and definite audiometer curves can be obtained in many of these children.

Grahe again stresses the importance of using the remnants of hearing in the teaching of deaf-mutes. He describes a simple apparatus with rubber tubes, ear attachments and two funnels which enables the pupils to hear their own and the teacher's voice, without interfering with the watching of the lip movements. This tends to produce a much better pronunciation of words than pure lip-reading instruction.

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Bezold's original thesis stated that tone-perception in the limits b^1 to g^2 is essential for hearing speech. The present research with the Otoaudion shows that Bezold's thesis can no longer be upheld.

J. A. KEEN.

The Influence of the Cervical Sympathetic on Vestibular Excitability. G. CANTELE and K. GRAHE. (*Arch. Ohr., u.s.w., Heilk.*, Feb. 1932, Band cxxx., pp. 281-291.)

The suggestion that the sympathetic nervous system has an influence on the activity of the labyrinth is not a new one. Numerous non-medullated fibres have been demonstrated in the vascular network of the labyrinth and in the immediate neighbourhood of the ganglion cells (Bovero). All the previous experimental work bearing on this question is fully reviewed. In these experiments the cervical sympathetic was cut by stripping or tying the internal carotid or vertebral arteries, or the superior cervical ganglion was removed; the vestibular reactions were then tested. The results have been contradictory, some authors finding much alteration in the vestibular excitability, others being unable to discover any difference.

The authors of the present article, therefore, undertook a new series of experiments, using young rabbits. The methods of testing the vestibular reactions are first described, both rotatory and caloric tests being employed. After determining the normal reactions, the cervical sympathetic was exposed on one side and divided. Then the vestibular reactions were tested again.

The best positive results were obtained with the cold caloric test. The numbers of nystagmus jerks were very definitely fewer on the side where the sympathetic had been cut and the absolute duration of the nystagmus was also diminished. There appears to be no doubt that the alteration in the excitability of the labyrinth is due to the interference with the sympathetic nerves.

Some otologists have explained the stimulation of the labyrinth by the hot and cold irrigation as an action through the sympathetic vasomotor system. But the above experiments seem to prove that caloric stimulation is best explained as a *direct action* on the labyrinthine fluids, as the majority of otologists believe, and that the sympathetic influence is an accessory factor. J. A. KEEN.

Otitis of Sucklings and its Complications. M. KRASSNIG. (*Arch. Ohr. u.s.w., Heilk.*, 1932, Band cxxx., pp. 335-344.)

The author gives an extremely interesting paper on suppurative otitis in early infancy. He has repeatedly examined the tympanic membranes in 920 infants who had been admitted to hospital for various medical conditions (non-otological), mostly disturbances of

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digestion and nutrition. Of those patients 52 died, and the otological findings could be checked by an examination of the temporal bones.

It has been found previously that in 80 per cent. of all post-mortems in infants a purulent exudate is present in the tympanic cavities, and this condition has been called *latent otitis*. Alexander has defined it as a symptomless otitis which can be discovered only post-mortem, as the drum membranes are generally normal in appearance. Krassnig, however, insists that latent otitis is a definite *clinical* condition which can usually be diagnosed by slight changes in the tympanic membranes (loss of light reflex, etc.). But he has also observed cases in which twenty-four hours before death the membranes were quite normal in appearance, and yet post-mortem a mucopurulent exudate was found in the middle-ear cavities.

When the ears are examined as a routine in these infants suffering from chronic illnesses (malnutrition, sickness and diarrhœa) the tympanic membranes at first are quite normal. If the illness lasts weeks or months, the tympanic membranes often begin to show slight changes. If paracentesis be done in such a case a slight exudate, which quickly ceases, appears. If this operation be repeated the same thing happens, but the general condition of the infant and the course of the illness are not influenced in any way. All the signs suggest that this form of otitis is non-virulent and quite unimportant from the point of view of the general condition. If the digestive disturbances subside and the infant recovers, the otitis also heals.

Among the 52 fatal cases there were five cases of meningitis and three cases of sinus thrombosis. As 80 per cent. of infants on the post-mortem table show a purulent exudate in the middle ear, it is more often than not impossible to determine whether the meningitis or sinus thrombosis, which may have been found, are of otitic origin, or whether they are simply secondary to pneumonic foci or a result of general sepsis.

It is best to look upon this special form of otitis in sucklings as a consequence of the generally lowered resistance due to the digestive or other disturbances. The condition is comparatively unimportant clinically, and the treatment remains a problem of general medicine.

J. A. KEEN.

Technique of Examination of the Vertical Canals. M. AUBRY and R. CAUSSÉ. (*Les Annales d'Oto-Laryngologie*, December 1931.)

Examination of the vertical canals is of particular importance in lesions of the central neurone, since their reactions can be considered as the most constant and characteristic. The methods of examining the vertical canals by the caloric, the rotary and the galvanic test are fully described and illustrated by plates, and it is shown how the

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successive employment of these three tests reinforce one another and give to the labyrinthine observations an exactness that a single test could not alone furnish. For instance, one can only affirm the absence of a rotary nystagmus if this fact is ascertained by means of the three tests. Generally speaking, the three tests confirm one another; whenever there is a disagreement it is always the caloric test which is the first to show the absence of rotary nystagmus, whilst the galvanic and rotary tests still show its persistence.

From a long experience of these tests the writers are of opinion that the disturbance which affects the reflectivity of the vertical canals concerns exclusively the rotary nystagmus, the vertical nystagmus remaining perfectly normal. From this it follows that the expression "paralysis of the vertical canals" is a defective one. It is a very particular expression of reaction of the vertical canals that is alone abolished. Is it brought about by the alteration of the corresponding fibres to a single group of canals, anterior or posterior? Is it not more often the evidence of a lesion affecting a centre of association, vestibulo-oculo-motor? Clinical and experimental researches will doubtless make this clear. L. GRAHAM BROWN.

Deep Osteitis of the Petrous Bone. J. RAMADIER. (*Les Annales d'Oto-Laryngologie*, December 1931.)

The author confines himself to the study only of those forms of suppurative inflammation which invade the petrous bone from the deep surface of the tympanum and antrum by direct extension along one or other of the several perilabyrinthine cellular paths which occur only in the pneumatised type of petrous bone (about 35 per cent. of cases). These tracks, six in number, are fully described and will be seen to conform to two main groups: a supra-labyrinthine group lying above a plane almost horizontal and extending from the aqueduct of Fallopius in front to the aqueduct of the vestibule behind, and a sublabyrinthine group below this plane.

From his observations on these cases, which are fully described, the author is able to set down a precise symptomatology of the lesion, and to indicate the rational lines of surgical treatment.

Many good plates and diagrams accompany this most interesting and instructive article, and especially those that make clear the technique of the operation for gaining access to the floor of the Gasserian ganglion and the apex of the pyramid. L. GRAHAM BROWN.

The Results of the Radical Operation on the Middle Ear. JES. JESSEN (Copenhagen). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

In the otological service of the Kommune Hospital at Copenhagen an investigation was undertaken on 198 patients operated upon between

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1923 and 1926 inclusive. The results were classified from three points of view.

1. Subjective—the presence of pain, discharge, vertigo, headaches, etc.
2. Surgical.
3. Functional (acuity of hearing).

1. Subjective Results.

Of chronic cases 75 patients were operated upon, giving 69 per cent. good results, 21 per cent. fair results and 10 per cent. poor.

In the acute stage 130 patients were operated upon, with 65 per cent. good, 24 per cent. fair and 11 per cent. poor results.

For several reasons, of which details are given, the series is rich in acute cases accompanied by grave complications (during the four years' period there were 26 cases of labyrinthitis and 14 of brain abscess).

The number of children is very considerable, in spite of the fact that operations upon them were done only when indications were pressing. Children did not account for less than 48 per cent. of the total of poor results.

A large table shows the various symptoms which were evident before and after operation among patients submitting to the radical procedure.

After investigating the operated cases, the ear was found to be dry in 102 cases and more or less moist in 103 cases. Among the latter 68 had only a slight and intermittent discharge.

2. Surgical Results.

A good surgical result was considered to have been achieved only when the cavity was epithelialised and quite dry. The ordinary radical operation was carried out in 134 cases, with 32 per cent. of good results, 55 per cent. fairly good and 13 per cent. poor.

Bárány's operation was done and controlled in 71 cases, with 58 per cent. good results, 39 per cent. fairly good and 3 per cent. bad.

Without wishing to minimise the merits of Bárány's operation it should be mentioned that the more favourable cases were operated upon in this way.

Bárány's operation was carried out on 96 patients (but all did not respond to the call for survey). Of the number, eight had recurrence and were operated on again, two had a cholesteatoma at the second operation, but not at the first. Of the 198 patients of the series, 45 per cent. showed complete epidermisation and 19 per cent. epidermisation except for a deficiency in the tubal area.

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3. **Functional Results.**

After having reviewed the medical literature and discussed methods of procedure in the hearing tests the author gives the following results:—

Hearing absent in 8 per cent.
Feeble in 46 per cent.
The same as before in 13 per cent.
Improved in 33 per cent. of cases.

These results comprise the radical and Bárány's operations. Considering the latter alone, the results were as follows:—Improved hearing, 48 per cent.; unchanged, 26 per cent.; worse, 26 per cent.

In conclusion, the author lays stress on the great prognostic importance shown by the results as regards the general condition of patients who have undergone the radical operation.

H. V. FORSTER.

Is it necessary to regard as an independent malady the "Occlusion of the Eustachian Tube"? N. RH. BLEGVAD (Copenhagen). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

In speaking of Eustachian obstruction in this article the writer refers to the acute or chronic condition associated with deafness, a feeling of fullness, sometimes with head noises and little or no pain, and which is revealed objectively by the inability to drive air either at all or sufficiently into the tympanum. Moreover, there is retraction of the drumhead, with an exudate in the tympanum and also the association of an acute or chronic catarrh of the rhinopharynx (he excludes, however, cases caused by malignant growth, syphilis or trauma).

After outlining the views of the early writers, he explains in detail his own views on the subject. He does not think that the condition should be looked upon as a disease of isolated Eustachian obstruction but as one of the rhinopharynx extending by continuation along the Eustachian tube to the mucous membrane of the tympanum, and it is only when the latter is attacked that symptoms of deafness, head noises, fullness, etc. manifest themselves. In fact, such a condition has been shown by Froschener to invade the mastoid cells.

If we contend that this disease is one of Eustachian obstruction we commit the same error as did writers of the last century in referring to myringitis instead of to the more important condition of middle-ear inflammation.

The condition within the middle ear may be called, as elsewhere and for want of a better term, "catarrh," but the author does not attempt to decide on the cause. S. H. Mygind considers the condition one of capillary stasis, but the secretion is often too viscous to be the result of transudation from an œdematous mucosa.

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Other authors believe it to be due to an inflammatory condition. Froschener, for example, believes that it could result from inflammation even though the exudate be sterile.

It should be added that the writer, in performing paracentesis for the condition on a number of occasions, has not confirmed the view of Politzer that negative pressure in the tympanum can be demonstrated during the operation. In other words, he does not recognise in the mechanical sense the hydrops-e-vacuo of Bezold.

H. V. FORSTER.

Treatment of Otogenic Sepsis and Sinus Thrombosis. S. H. MYGIND (Copenhagen). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

For practical purposes otogenic sepsis and sinus thrombosis are inseparable.

Some otologists are more, some less, radical in their treatment. The most conservative is that of S. Voss, with systematic ligature of the jugular vein and cleavage of the sinus, leaving the thrombus untouched. There is, however, a tendency to be more radical.

Comparing statistics, Heymann's are the most favourable by 83 per cent. The least favourable are those of Giessivein from Berlin.

As proofs of the value of the different operative methods, these remarkable divergences should be noted with reservation. The operator who punctures and systematically deals with the sinus obtains high figures, particularly in slight cases. Those who get more advanced cases and cases of cerebral abscess and meningitis show a poor percentage of cures.

At the Kommune Hospital at Copenhagen between 1915 and 1922 in 98 cases the percentage of recovery was 55 per cent. During this period puncture of the sinus was systematically performed on suspicion of thrombosis; thrombectomy and excision of the sinus wall were also performed more or less radically.

Ligature of the jugular vein was performed at first systematically but later on less and less frequently, and at last only exceptionally, and apparently without influencing the percentage of recovery. This step in a conservative direction, already initiated by Holger Mygind, has been continued.

In later material during the period 1923-1930 any operation beyond the osseus resection has been discarded; neither the jugular vein nor the sinus are dealt with.

The percentage of recoveries has risen from 55 to 71. Cases that were cured even have shown a considerable percentage with metastases. Great stress is laid on a thorough operation on the primary focus. The area of osteitis must be radically cleared out, for it is the osteitis that maintains the phlebitis and causes the thrombosis. When the area of

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osteitis is removed the thrombosis, if it has not reached a critical point, shows a decided tendency to spontaneous cure.

Even if the author would not perform an operation on the jugular bulb, he would never hesitate to follow up a deep-going osteitis, even to the bulb and the base of the skull should it have penetrated so far.

In future he will perform an exploratory sinus puncture with extreme reluctance for fear of lighting up a possibly innocuous sinus thrombosis.

H. V. FORSTER.

NOSE AND ACCESSORY SINUSES.

About the Result of Bárány's External Operation on the Frontal Sinuses. F. SODERBERG (Upsala). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

In the spring of 1924 Bárány described an external operation on the frontal sinuses in which, by means of an extensive plastic operation on the mucous membrane, a permanent communication can be effected between the frontal sinus and the nose.

Local anæsthesia is used and an ordinary curved incision made. The nasal bone and the bone in the floor of the frontal sinus are chiselled away without destroying the lateral nasal mucous membrane, and that of the sinus and the surrounding bony margins are removed sufficiently to allow of an adequate communication with the nasal cavity.

The sinus mucous membrane is then divided and the medial flap turned over the processus frontalis; then the mucous membrane of the lateral nasal wall is separated, and, continuing medially beneath the nasal bridge and down on to the septum, it is divided over the septum and the flap turned outwards towards the orbit. The mucous membrane within the sinus is preserved unless found to be hopelessly beyond a return to the normal.

A rubber finger-stall containing a rubber tube is passed *per nasam* into the frontal sinus to hold the flaps in position.

The results in 41 cases are given. H. V. FORSTER.

The Treatment of Inflammation in the Nasal Sinuses. FRITHIOF LEEGAARD (Oslo). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

Acute Inflammation.

It has long been generally conceded that acute inflammation of the sinuses tends to heal spontaneously and that the treatment should, with few exceptions, be conservative. More radical procedures when necessary are discussed in the chapter on chronic sinusitis.

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Nose and Accessory Sinuses

Chronic Inflammation.

There appears to be fair agreement that establishment of drainage and good ventilation are the main requirements in effecting a cure.

Physiological conditions should be established to the greatest possible extent. How this is to be done in the various sinuses is discussed under separate headings.

Chronic Inflammation of the Maxillary Sinus.

1. **Entirely Conservative Treatment.**—Chronic empyemas rarely heal by flushing alone, but there are still some patients who would prefer to be spared an operation (such patients are comparatively common in the medical profession). The writer no longer attempts to find the natural ostium for this purpose.

2. **Comparatively Conservative Treatment.**—The writer has not used Cowper's method through a tooth socket for 15 to 20 years, and even in dental empyema other methods are favoured. Flushing through a small opening in the canine fossa is only of historical interest.

Miculicz's method, using a thick curved trocar within the nose, furnishes only the foundation for the more general method now used.

3. **Transitional Methods.** — (a) *Broad Opening.* — Whenever possible the writer prefers the broad opening through the inferior meatus of the nose to the more radical procedures of Denker and Caldwell-Luc, and the latter he used to perform more often than he does now. He discusses his reasons for the change and describes in detail how the intra-nasal antrostomy is performed to his own liking. He favours the preliminary anterior inferior turbinotomy, and uses local anæsthesia. Sometimes a part of the outer boundary of the pyriform opening is removed by the submucous method. When the operation is completed a hæmostatic tampon is inserted and allowed to remain *in situ* for five days or even longer.

(b) *Sturmann's Operation.*—The writer occasionally performs this when considered advisable and, as Sturmann advises, a part of the inferior turbinate is not removed.

4. **Radical Methods** — (a) *Desault-Küster's Operation.* — This operation through a broad opening in the canine fossa, needing a prosthesis to cover it afterwards and with no intranasal opening, is only of historical value.

(b) *Caldwell-Luc's Operation.*—This is performed according to the description in Hajek's well-known book, local anæsthesia, neural and by infiltration, being employed. A tampon lies within the maxillary sinus for five days.

(c) *Denker's Operation.* — The difference between this and the operation of Caldwell-Luc is not very great and the author prefers Denker's.

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Abstracts

Chronic Inflammation of the Frontal Sinus.

The main question is that of the treatment of uncomplicated empyema—so-called cold sinusitis. The first question to arise is whether a satisfactory result can be obtained by endonasal treatment or whether an external incision is to be made and of what kind. The tendency is from more radical to more conservative treatment.

Endonasal Treatment.—Resection of the anterior end of the middle turbinate with removal of any polypi and some ethmoidal cells. He employs tamponnage for five to six days afterwards and uses 5 per cent. silver nitrate solution two to three times a week until the area is healed and secretion moderate in quantity. He sometimes flushes out the frontal sinus, but generally not. He has been content with this procedure even if cure is not perfect, opening outside only under special circumstances.

Opening from Outside.—1. Operations involving the removal of the anterior and inferior walls of the frontal sinus:—

Riedel's—complete obliteration. It is disfiguring.

Killian's—has lost ground and has been entirely abandoned by many.

2. Operations involving the removal of the anterior wall of the frontal sinus:—

Kuhnt removes the whole anterior wall but neglects the anterior ethmoidal cells. Post-operative treatment consists in flushing through a small opening in the medial angle of the wound.

A modification (Luc) is to deal with these anterior ethmoidal cells, and a further modification is to resect the frontal process of the superior maxilla.

Viggo Schmidt enters through a small opening in the anterior wall and makes a broad opening into the nose, using Halle's scoop. After-treatment with Ritter's probe is needed. This takes a long time.

3. Operations involving removal of the inferior wall of the frontal sinus:—

A good cosmetic result with easy access to the ethmoid are the advantages. Jansen was the first to open per orbita.

Ritter modified it somewhat and hopes for an ingrowth of epithelium from the nose.

Uffenorde holds the same view but with the addition of a plastic for the nose.

Bárány has urged the orbital method with a plastic, one lamella being brought down from the frontal sinus, the other brought up from the nose.

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This method has been followed at the Riks Hospital ear, nose and throat clinic, under local anæsthesia as a rule.

The incision, unless the sinus is very large, involves the median third of the eyebrow and down over the side of the nose to the pyriform aperture. The floor of the sinus is opened, injuring the mucous membrane as little as possible, the anterior end of the middle turbinate is removed and a flap is twisted up from the septum, a tampon being inserted for five days.

Twenty-nine cases have been treated and these are described and illustrated to show the cosmetic result. At the author's clinic they have received a favourable impression of the results, but it is too soon yet to be definite.

Endonasal or External Operation.—Encouraged by the above results in cold sinusitis, he is more inclined to use the external method than formerly.

The making of flaps is important, for if one gets an entrance lined with epithelium the battle is won. Seiffert has transplanted skin for the purpose. Removal of the frontal process to the pyriform aperture is practised and also part of the adjacent nasal bone. He does not attempt to remove all the mucous membrane from the frontal sinus.

Halle's Endonasal Operation.

The author has not had a great experience of this, but it is not encouraging. H. V. FORSTER.

LARYNX.

Physiological Principles of Speech as part of the treatment of certain Laryngeal Pareses. B. BORG (Stockholm). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

In treating cases of paresis of the musculus internus or transversus of the larynx the writer, though continuing the use of such methods as faradisation, has added the use of phonetic exercises.

Cases with disorders of mutation are almost on a par with those of slight internal and transverse laryngeal paresis.

As well as a raised tone of the voice, patients with speech troubles present a series of peculiarities in their mechanism of phonation, and the same has been found in the cases of laryngeal paresis under review.

The larynx is highly placed, the thyroid cartilage being approximated to the hyoid by contraction of the thyrohyoid muscle. The genio-hyoid and mylo-hyoid muscles are also abnormally contracted.

The epiglottis is strongly folded backwards and downwards, the tubercle of the epiglottis closely approximating the anterior commissure.

An inspection of the buccal cavity during phonation shows the

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muscles of the fauces to be abnormally contracted, and the tongue during phonation describes movements rather like those of glutition, being drawn backwards and downwards.

The result is a strangulation of the sound emitted by the larynx and an absence of resonance; in fact, in these disorders there is a tendency for the structures above the larynx to usurp the functions of the glottis. Such is the tendency in internal and transverse laryngeal pareses, in which patients exhibit a kind of impotence of the larynx and fail to produce enough sonority.

Two diagrams are given, so that the normal can be compared with the abnormal under these conditions.

Exercises of intonation and articulation serve to encourage re-education to a normal state of affairs. H. V. FORSTER.

The Ventricle of Morgagni and Laryngitis. K. GRAHE. (*Arch. Ohr., u.s.w., Heilk.*, Feb. 1932, Band cxxx., pp. 274-280.)

This is a histological study of the recess between the false and the true vocal cords, and of its anterior and upward extension known as the *appendix ventriculi* (*sacculus* in English terminology). The most striking histological feature in the ventricle of Morgagni and the sacculus is a collection of lymphoid follicles directly under the mucosa, a feature which is so constant that the name "laryngeal tonsil" has been applied to this region.

In all forms of laryngitis the ventricle of Morgagni and the sacculus take an active part. One of the microphotographs reproduced in the text shows a so-called "prolapse of the ventricle of Morgagni." One can see clearly that this is a protrusion of a small area of inflamed and swollen mucosa, and there is no question of a true eversion of the sacculus.

The author advocates topical applications to the ventricle of Morgagni in chronic laryngitis, and uses for this purpose a 2 per cent. solution of trypaflavin. The special probes which he employs are described and illustrated. J. A. KEEN.

PHARYNX AND TONSIL.

Treatment of Malignant Tumours of the Tonsil. E. G. E. BERVEN (Stockholm). (*Acta Oto-Laryngologica*, Vol. xvi., fasc. 2-3.)

This communication deals briefly with the principles given in a larger work published in supplement XI. of the *Acta Radiologica* of 1931. (D. A. Norstedt & Ses Fils, Stockholm.)

Cancers of the tonsil are first treated by radium emanations from a distance of 6 cm., using the Radium Institute apparatus which

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contains 3 grams of radium element. This is given first on one side, then the other, next from behind, then from the front.

When the tumour is considerably reduced, local treatment by radium to its surface, or by the inclusion of radium needles is begun, and finally diathermy is used to deal with the remainder.

Sarcoma of the tonsil is treated by Röntgen rays from each side of the neck in fractional doses daily, and then when local treatment is practicable, tubes of radium are applied to the surface of the tonsil with a special applicator of the writer's design.

For inoperable mixed tumours the radium distance treatment is used, the tumour becoming operable in some cases. If originally operable excision by diathermy is advised.

For gland metastases radium from a distance and X-rays, which may be sufficient, are advocated. If not sufficient, then surgical removal, if possible associated with radium needle implants, are made at the same time. Lympho-endotheliomas are treated in the same manner as lympho-sarcomas. H. V. FORSTER.

Absorption of Foreign Substances by the Tonsils: Experiments with Salvarsan. G. KELEMEN and A. HASSKÓ. (*Arch. Ohr. u.s.w., Heilk.*, 1932, Band cxxx., pp. 318-334.)

Salvarsan is used in the form of intravenous injections or powder applications in the ulcerations of secondary syphilis and of Vincent's infection. The author has made an attempt to determine whether any of the drug is absorbed more directly by the tonsils. A special staining process is described (Jancsó) which enables one to detect the black-brown particles of arsenobenzol in the tissues.

Patients who were waiting for tonsillectomy were given salvarsan and the enucleated tonsils were then examined histologically. In one series of experiments an intravenous injection of salvarsan was given 24 hours before operation. This treatment has the support of Moure, who advised it as a useful prophylactic measure for disinfecting the mouth and pharynx. In the second series of experiments an emulsion of salvarsan was rubbed on to one tonsil, the other being left as a control; this was done as a preliminary to enucleation, the time which was allowed to elapse varying from 3 minutes to 1¾ hours.

In 15 cases of intravenous injection the salvarsan particles could be demonstrated in the tonsils only in one instance. In 10 cases of local application salvarsan could be demonstrated histologically eight times.

There are many excellent microphotographs in the text. The salvarsan particles are found more particularly in the flat *pavement epithelium* cells of the surface, both in the cell substance and inside

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the nuclei. In the deeper parts of the tonsil the brown particles are distributed over the *fibrous reticular network*, but not inside the follicles. J. A. KEEN.

ŒSOPHAGUS AND BRONCHOSCOPY.

Is Bronchoscopy indicated in Tuberculosis? LOUIS H. CLERF, Philadelphia. (*Journ. Amer. Med. Assoc.*, 11th July 1931. Vol. xcvii., No. 2.)

Bronchoscopy is rarely indicated in uncomplicated pulmonary tuberculosis, but it has some value in the diagnosis of cases in which tuberculosis may be suspected but cannot be proved. Absolute contra-indications are few, and in a large group of tuberculous patients who have been examined bronchoscopically no ill effects were noted from the bronchoscopy itself. Seven illustrative cases are reported showing its value in pulmonary abscess, bronchial foreign body, suspected asthma and hæmoptysis. Hæmoptysis is not uncommon in cancer and bronchiectasis, and is not a contra-indication unless the bleeding is severe and continuous. Absolute contra-indications are pneumothorax, marked hæmoptysis, extensive pulmonary involvement and laryngeal tuberculosis.

The article occupies six columns, is illustrated, and has a bibliography. ANGUS A. CAMPBELL.

MISCELLANEOUS.

Stammering as an impediment of Thought. C. S. BLUEMEL, Denver. (*Journ. Amer. Med. Assoc.*, 30th May 1931, Vol. xcvi., No. 22.)

In the past, stammering has been investigated from three main standpoints embracing anatomy, physiology and psychology. Anatomy and physiology are not considered to be of much importance, although operations on the tongue, throat and nose are performed even at the present time. The author feels that stammering is an impediment in thought and not primarily a speech disorder. The disability manifests itself in speech because speech is patterned on thought. The stammerer cannot speak without the verbal thought. There is a vast difference between "speech-block" and the contortion with which the stammerer reacts when "thought-block" confronts him. The process is complicated by fear.

Therapy is a matter of thought-training with the attention directed to mental speech and not to the physical production of vowels and consonants. Much of the training consists of rigorous drill in classes. The class reads aloud in unison and later the pupils read singly. Phantom or silent speech is found useful. The stammerer is taught

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to relinquish his struggle when "thought-block" occurs and to focus his attention on mental speech.

His confidence is built up by taking him gradually from easy to more difficult situations, and aiding him when stammering appears.

The article occupies five columns. ANGUS A. CAMPBELL.

Perennial Pollen Desensitisation. WARREN T. VAUGHAN, Richmond, Va. (*Journ. Amer. Med. Assoc.*, 11th July 1931, Vol. xcvii., No. 2.)

The perennial desensitisation was first used by the author four years ago. Since that time he has treated twenty-one patients by this method; twenty of these have had practically no symptoms since treatment and the other one got marked relief. The patient's resistance is gradually built up through twenty or more small doses given frequently until the skin tests are negative. Treatment is then continued throughout the season at intervals of two weeks. The advantages claimed are:—avoidance of intensive pre-seasonal treatment, improvement of the patient's general health throughout the year as far as allergy is concerned, fewer unfavourable reactions, the starting of treatment at any time of the year, more time to accomplish complete desensitisation and, if continued long enough, a permanent cure may be effected.

The article occupies four columns and has a bibliography.

ANGUS A. CAMPBELL.

Systemic Reactions from Pollen Injections: Their Causes and Prevention. GEORGE L. WALDBOTT, Detroit. (*Journ. Amer. Med. Assoc.*, 30th May 1931, Vol. xcvi., No. 22.)

Severe systemic reactions occur in about 1 per cent. of cases. Two fatal cases have been reported in the literature. The general reaction appears within two hours. The sooner the appearance of the local reaction the more marked the general reaction will be. The symptoms are described in considerable detail and are considered to be identical with the reactions from horse serum, and manifest themselves as a shock almost identical with the anaphylactic shock in the experiment with guinea-pigs. The too rapid absorption of pollen in excess of the patient's tolerance may be caused by accidentally entering a vein, by increasing the dosage too rapidly, by too frequent injections, by changing from an old to a fresh extract, by multiple sensitisation, by co-seasonal treatments or by the presence of allergic manifestations. Reactions may be guarded against by avoiding intravenous injections, mixing the pollen extract with epinephrine, ephedrine and saline solution, and the use of a tourniquet above the site of injection.

The article occupies seven columns, has two tables and a bibliography. ANGUS A. CAMPBELL.

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