ABSTRACTS

EAR

The Effect of Flight on the Middle Ear. H. G. ARMSTRONG and J. W. HEIM. (*Jour. A.M.A.*, August, 1937, cix, 6.)

Aeroplane pilots suffer more frequently from disturbances of the middle ear than from all other occupational diseases combined. The authors carried out laboratory investigations of this problem on five healthy men, covering pressure variation weights of from 5·4 to 27 mm. of mercury through pressure ranges of from 760 to 141 mm. of mercury (0 to 40,000 feet).

In the course of these studies, swallowing and other voluntary efforts to open the Eustachian tubes were suppressed.

Beginning at sea level pressure and decreasing the pressure at a constant rate, a pressure change of from 3 to 5 mm. of mercury was required before any effect was perceptible. At this point there appeared a slight sensation of fullness in the middle ears and examination showed the tympanic membranes to be bulging. This bulging and the sensation of fullness increased with the decreasing of pressure and at 15 mm. of mercury there was a sudden annoying " click " heard and felt in the middle ears, the drum snapped back to normal position and the sensation of fullness disappeared. The Eustachian tubes had been forced open by the excess pressure in the tympanic cavity and the ear pressure relieved by a sudden rush of air from the ear to the nasopharynx.

During the remainder of the pressure decrease this cycle was repeated except that all succeeding " clicks " occurred at 11·4 mm. of mercury. This indicated that it requires 15 mm. of mercury excess pressure in the middle ears at sea level conditions to force the Eustachian tubes open and that they remained open until the pressure was reduced to about 3·6 mm. of mercury. It had been assumed that, since the pressure altitude curve is not a straight line, the Eustachian tubes would open at equal intervals of pressure but at increasing intervals of altitude during ascent. Actually the reverse was found to be true. The tubes opening at 425 feet intervals (except the first), which amounted to 11·4 mm. of mercury pressure at sea level but only 3·5 mm. at 40,000 feet. The explanation of this phenomenon is probably based on the fact that air of the higher altitudes being less dense, passes more readily through the Eustachian tubes.

Nose

There was considerable variation between individuals and in the same individual but the averages were remarkably constant.

When the atmospheric pressure was increased instead of decreased, a totally different effect was obtained. The Eustachian tubes acting like a flutter valve, remained closed under all degrees of pressure and the tympanic membrane finally ruptured.

The writers suggest aero-otitis media as a suitable descriptive term for this new clinical entity. The clinical findings are very similar to those caused by infection and the audiometer tests show variable diminution in hearing. With both positive and negative pressures, opening of the Eustachian tubes voluntarily or by the Politzer bag will usually relieve the acute symptoms. Dry or wet heat is very helpful. Those suffering from either temporary or permanent stenosis of the Eustachian tubes should fly under control conditions through a maximum range not exceeding 2,000 feet.

ANGUS A. CAMPBELL.

NOSE

Congenital Occlusion of the Choana. CARL M. ANDERSON (Rochester, Minn.). (*Jour. A.M.A.*, November, 1937, cix, 22.)

The writer reports six cases of this rather rare condition, two of these were bilateral and four unilateral, both sides being equally affected. None had ear symptoms.

The symptoms of choanal occlusion may be confused with those resulting from an enlarged thymus and may even be a cause of infant mortality.

In cases in which there is nasal obstruction in one or both nostrils and in which there is a considerable amount of thick mucus present, occlusion of the choana should be suspected. The obstruction can be permanently relieved by operation, but the type of operation should be determined by the particular case under consideration.

ANGUS A. CAMPBELL.

TONSIL

Transitory Bacterial Inundation of the Blood-stream after Tonsillectomy. J. FISCHER and F. GOTTDENKER. (*Wien. Klin. Wochenschrift*, vi, 49.)

In sixteen out of fifty-one cases in which the blood was examined after tonsillectomy it was possible to demonstrate the presence of bacteria in the blood-stream. Staphylococci, streptococci and pneumococci were recognized. The high point of the bacteræmia was reached two hours after operation. From twelve to twenty-four hours after operation the blood became once more free of bacteria.

J. B. HORGAN.

Abstracts

LARYNX

On the Treatment of Laryngeal Cancer. Dr. Justo M. Alonso (Montevideo). (*Revista Oto-Laringologica de S. Paulo*, November-December, 1936.)

The author gives a review of his experience of cancer of the larynx based on 270 cases observed since 1918. One patient treated by laryngectomy in that year still lives, another so treated in 1919 died of some other malady in 1929; and in 1920 and 1921 no case was submitted to operation. Since 1930 the number of operations has varied annually between fifteen and twenty. Of the total of 270 cases, two-thirds have been treated by surgery, usually alone but sometimes followed by applications of radium or roentgentherapy and the remainder were treated by radium or roentgentherapy. Dr. Alonso does not discuss the ætiology beyond remarking upon the enormous percentage of chronic alcoholics amongst the patients and the rarity of syphilis, in contrast to the incidence of this disease in cancer of the tongue.

The maximum incidence of cancer of the larynx was between the ages of 60 and 65. Before 35 and after 75 years there are very few cases, but these are very grave. The youngest patients were aged 26, 29 and 30 years. In these the tumour grew rapidly and invaded the lymphatic glands early. After 70 the tumour grows slowly but the patients are often alcoholic and bronchial and have a poor cardio-vascular system. If the condition of the patient renders operation dangerous, roentgentherapy should be employed instead, not because it is less dangerous in the high doses required, but because operation is performed in a single act, whilst roentgentherapy can be graduated and even broken off if not well tolerated. Dr. Alonso divides his cases into three classes: 1. Epithelioma of the glottis confined to one side, or with but slight invasion of the anterior commissure, and free of the posterior part and entrance of the larynx, is treated by laryngofissure, median or if required lateral, taking care not to encroach much on the thyro-hyoid membrane. This precaution avoids stretching of the superior laryngeal nerves and consequent difficulty in swallowing; 2. Tumours of the epiglottis and aryepiglottic folds are treated by transverse subhyoid pharyngotomy, taking care to avoid the superior laryngeal nerves. For the last ten years this has been combined with Soerensen's laryngeal drainage for two to five days after the operation to avoid the risk of saliva and other secretions reaching the trachea during swallowing; 3. In glottic or subglottic cancer, too extensive for a conservative operation, or in cancer of the epiglottis invading the larynx, total laryngectomy is performed in two stages. A transverse tracheotomy is first performed, and at the second stage a U-shaped flap is turned up and the larynx

excised along with any enlarged glands that may be present, with resection of the jugular vein and sterno-mastoid if necessary.

The operative mortality has been 3·5 per cent. and the survival rate after three years over 50 per cent.

Using radium there has been only one permanently good result in twenty-five or thirty cases.

With deep roentgentherapy there are three points to consider:

1. In some patients upon whom operation has been undertaken without the security of a total extirpation, there has been no recurrence.

2. Some local recurrences have been completely cured.

3. About 20 per cent. of the cases treated by roentgentherapy alone have been cured.

The mortality of roentgentherapy is really greater than the operative mortality, but instead of occurring during the first ten days, it usually occurs about one to four months after the treatment.

Thus the percentage of cures is less than by surgery, but on the other hand the cures are obtained without mutilation.

L. COLLEDGE.

Contribution to the study of Subglottic Cancer. Docteur GEORGES COLLET. (*Thèse de Lyon*, Lyons, 1937.)

In a thesis based on the observation of ten cases of laryngeal cancer from the practice of Professor Collet, Dr. Georges Collet gives an account of laryngeal cancer with special reference to the subglottic variety, with graceful acknowledgment of the contribution of Sir StClair Thomson towards extension of our knowledge concerning this insidious malady. The writer has analysed his material thoroughly, and the histories of the case show the difficulties of diagnosis and accordingly the poor results of treatment, although in two of the ten cases reported a satisfactory result was obtained. There is no attempt to make a complete study of laryngeal cancer, but within the limits of his material and his title Dr. Collet has produced a readable and well documented thesis.

L. COLLEDGE.

ŒSOPHAGUS

On the Treatment of the so-called Idiopathic Dilatation of the Œsophagus and Œsophago-Gastrostomy. H. HEYROVSKY. (*Wiener Klin. Wochenschrift*, xv, 49.)

This is a review of the results of œsophago-gastrostomy which was first successfully carried out per the abdominal line of approach by the author on two cases twenty-five years ago. He has collected a total of forty-five cases and compares this method with the same operation carried out by the transpleural line of approach in sixteen cases. Heyrovsky favours the abdominal route, preceded by a

gastrostomy to allow of the restoration of the patient and to permit of suitable local therapy and of rest for the dilated œsophagus. In cases of disturbed innervation of the cardia it can in general be stated that a cure can result only from an over-stretching of the cardia or from a surgical intervention. Of the latter, stretching as advocated by von Mikulicz and cardiotomy as recommended by Heller have proved to be most successful, whilst the best treatment for the difficult cases is œsophago-gastrostomy.

J. B. HORGAN.

MISCELLANEOUS

Exophthalmos as a Complication of Irradiation. LEROY A. SCHALL (Boston). (*Jour. A.M.A.*, November, 1937, cix, 19.)

This paper is based on five cases in which exophthalmos developed as a result of the treatment of malignant disease of the nasal sinuses. In three of these cases the condition occurred after operation and irradiation, while in two it followed irradiation alone.

Exophthalmos may occur within twenty-four hours or it may come on weeks after treatment. As the protrusion of the eyes develops there is conjunctival chemosis and excessive lacrymation followed by exposure and drying of the cornea. Orbital pain is constant and severe. When degenerative changes take place such as loss of vision, limitation of ocular movement and corneal ulceration, orbital exenteration is necessary.

The pathological changes due to irradiation are essentially those of degeneration and vessel thrombosis.

ANGUS A. CAMPBELL.

Prophylactic Vaccination against Intracranial Complications. JOSEPH L. GOLDMAN and CECELE HERSCHBERGER (New York). (*Jour. A.M.A.*, October, 1937, cviii, 12.)

Since 1931 the writers have attempted to determine the efficacy of active immunization against intracranial infections in cases of mastoiditis due to type III pneumococcus. Fifty-six patients received a full course of autogenous vaccine. The vaccination was begun as soon as the bacteriological diagnosis was made from culture material taken from the infected mastoid. The mortality rate in this group was 4 per cent.

During the ten-year period previous to 1931, among forty patients who had mastoiditis due to type III pneumococcus and were not vaccinated, the mortality rate was 32·5 per cent. The authors are aware that this is too small a group from which to draw definite conclusions, but feel a further trial of this therapy is warranted.

ANGUS A. CAMPBELL.

Miscellaneous

Observations on the mode of action of Sulphanilamide. ELEANOR A. BLISS and PERRIN H. LONG. (*Jour. A.M.A.*, November, 1937, cix, 19.)

From experiments conducted on mice using beta hæmolytic streptococci and Welsh bacillus, the authors feel there is little evidence that sulphanilamide is bactericidal *in vitro*. No evidence was obtained that the death rate of the bacteria suspended in Tyrode's solution was hastened by the addition of sulphanilamide. The only interpretation that could be placed on the observed facts was that sulphanilamide inhibited the growth of bacteria *in vivo*. In this type of infection the effect of sulphanilamide therapy cuts down the rate of multiplication of streptococci to a point where they no longer produce enough "leucocidin" and other toxic products to inhibit rapid phagocytosis. This effect permits the phagocytes to clear exudates and organisms from the tissues, thus allowing recovery to take place. That the leucocytes are required in this process is evidenced by the observation that mice, in which the polymorphonuclear leucocytes have been depressed by the injection of benzine below 500 cells per cubic mm. of blood, succumb to streptococcal types of infection despite adequate treatment of sulphanilamide. ANGUS A. CAMPBELL.

Experiences with Evipan Sodium as an anæsthetic for the removal of Tonsils and Adenoids in Children. J. HOFER and K. EBERLE. (*Wiener Med. Wochenschrift*, xxx, 50.)

The writers have used evipan anæsthesia in 130 cases. They have found the optimum doses to be as follows :—

In children from 1½ to 2 years,	1 to 2 c.cm.
In children from 2½ to 3 years,	2 to 2½ c.cm.
In children of 4 years,	2 to 3 c.cm.
In children from 5 to 8 years,	2½ to 3 c.cm.
In children from 9 to 11 years,	3 c.cm.
In children from 12 to 14 years,	3 to 4 c.cm.

Pre-medication is not employed.

The advantages claimed are :—

1. In the greater number of cases there was no motor unrest during operation and the children behaved quietly afterwards.
2. Both the objective and subjective disadvantages of ether before, during and after operation were eliminated.
3. Evipan sodium is more quickly removed from the body than ether.
4. Strict preliminary fasting is not requisite.

Summarizing their conclusions, the authors state :—

1. Evipan sodium is a satisfactory anæsthetic for the removal of tonsils and adenoids in children owing to the facility with which the dose can be regulated.

2. The dose must be an individual one in all cases and must not exceed the dose necessary to induce sleep (Einschlafdosis). In children under six years who exhibit motor unrest, an extra ½ c.cm. may be administered. Similarly, in children over six years an extra 1 c.cm. may be given. More than 5 c.cm., even in older children, should not be given.

3. The injection must be given slowly and uniformly at the rate of 1 c.cm. per minute from start to finish.

4. The amount of anæsthetic administered bears only a rough relationship to the body weight and the latter must never be taken as a deciding factor for the dose in any one case.

J. B. HORGAN.

On Rigidity of the Neck. T. B. LAYTON. (*Guy's Hospital Reps.*, October, 1937, lxxxvii, 4.)

The author stresses the importance of early recognition of rigidity of the neck as a sign of meningitis; and compares it in importance to the rigidity of the abdominal muscles in cases of early underlying peritonitis.

He describes three physical signs of the neck rigidity :—

1. The patient's chin cannot touch the chest.

2. The splenius capitis stands out under the trapezius as an elongated pyramid with the base upwards.

3. Stretching the muscles by bending the head gives a sensation of resistance comparable to that felt in examination of the abdominal muscles in the right iliac fossa.

He states that the perception of this resistance is a proprio-receptive one in the muscles of the forearm of the examiner, and describes in detail the method by which the examination should be made.

Essentially he emphasizes the vital importance of rigidity of the neck as the earliest sign of meningitis in cases of primary acute inflammation of the middle-ear tract; and that it is the direct indication for immediate operation on the mastoid process to drain the focus of infection.

Even lumbar puncture is not necessary for diagnosis, since the only change in the fluid may be raised pressure in the early stages.

In cases of chronic suppurative otitis media changes in the cerebrospinal fluid often precede the presence of rigidity and the same rules as to treatment do not apply.

The whole article is full of shrewd observations based on a wide experience and embodies much that is of value to the physician as well as the aural surgeon, and not a little sound advice on the handling of sick children by doctors and nurses.

W. M. MOLLISON.