ABSTRACTS

EAR

Bone Conduction through the Auditory Ossicle Chain. PHILIP G. MACDONALD, New York. *Archives of Otolaryngology*, 1950, li, 641.

A method for checking bone conduction is offered which can be done in any consulting-room and which will help to find marginal cases when fenestration is being considered. Many cases in which diagnosis formerly had been nerve deafness may now be reclassified and may be found to be cases in which bone conduction has been interfered with by absorption in the mastoid air cells to an extent greater than expected. The described test should rule out this interference with the test for bone conduction and, in sclerotic mastoids as well as in pneumatic mastoids, should give the examining otologist a clue to what is happening to bone conduction in the mastoid air cells. As it is a time-consuming test it has not to date been done with any patients other than those selected for fenestration. The results to date, however, warrant a thorough investigation of this test for all patients with deafness.

R. B. LUMSDEN.

Threshold of Feeling in the Fenestrated Ear. MAURICE SALTZMAN and MATTHEW S. ERSNER, Philadelphia. *Archives of Otolaryngology*, 1950, li, 667.

In fenestration physiology, no provision has been made to safeguard the cochlea against acoustic trauma. The threshold of feeling is lowered in the fenestrated ear, and the lowering of the threshold is more pronounced in the frequency zone of 2,048 to 4,096. Acoustic trauma may well account for the deterioration of acuity for high tones in the fenestrated ear seen months or years after the operation.

A point of practical importance concerns the person with otosclerosis who has undergone the fenestration operation and who is employed in a noisy occupation. He is to be advised to wear an " ear warden " or other suitable ear protector when exposed to loud sounds.

R. B. LUMSDEN.

Radium Therapy in Partial Hearing Loss. NORTON CANFIELD and DAVID SUDARSKY, New Haven. *Annals of Otol., Rhin. and Laryng.*, 1949, lviii, 957.

This paper is based on 50 cases of partial hearing loss treated by post-nasal irradiation with radium at the New Haven Hospital, during the years 1946-8, all the patients being under 15 years of age. The standard application was a 50 mgm. radium capsule with Monel filter, the applicator being kept in place for a 12-minute period, and three doses administered at 14-day intervals (1,800 mgm.-min.). This is a rather longer dosage than was formerly advocated by Crowe, whose total was 1,275 mgm.-min.

Abstracts

Improvement by audiometric examination was confirmed in 56 per cent. The percentage of improvement was greater in those patients who received the largest dosage of treatment and in whom the hearing loss was of the shortest duration. There have been no complications of radium therapy reported.

E. J. GILROY GLASS.

Further Experimental Studies of the Toxic Effects of Streptomycin on the Central Vestibular Apparatus of the Cat. JULIUS WINSTON, F. H. LEWEY, ANDRE PARENTEAU, PHILIP A. MARDEN and FAITH B. CRAMER, Philadelphia. *Annals of Otol., Rhin. and Laryng.*, 1949, lviii, 988.

Further evidence is presented on the site of the damage to the vestibular apparatus of the cat by the parenteral administration of streptomycin. Three separate methods of investigation were employed: vital staining, routine histopathologic staining, and unilateral surgical destruction of the vestibular nuclei in the brain stem.

By the vital staining technique, pathological changes were found in the cerebellum and medulla in 50 per cent. of those animals which were given streptomycin in three divided daily doses. In those cats which received streptomycin in one daily injection, no pathological changes were detected by this method.

Using routine histopathological stains, evidence of pathology was found in 59·2 per cent. of the animals. In these studies, no significant statistical difference in pathology could be found between the group which had received one daily dose of streptomycin and the group which had been given three daily injections of the antibiotic. In only one control animal (4 per cent.) were pathological changes found in the brain or spinal cord. (Authors' summary.)

Streptomycin Treatment in Tuberculous Otitis Media. U. SIIRALA and E. A. LAHIKAINEN. *Acta Oto-laryngologica*, 1949, xxxvii, 528.

The authors base their report on 5 cases (4 children and one adult) the diagnosis being made on microscopical examination of tissue, and in 2 cases on finding tubercle bacilli. All cases had a primary tuberculous lesion elsewhere, either in hilar or cervical lymph nodes or in the lung proper. All cases were given streptomycin, and in addition a cortical mastoidectomy was performed on 3 children and a radical mastoid on the adult. The 3 cases subjected to mastoidectomy resulted in a dry ear and healing of the wound; the ear subjected to radical operation healed normally. These patients have been followed for a short time only, but it is probable that without operation streptomycin would have been less efficient.

F. BOYES KORKIS.

Studies of Hearing Loss of Railway Engine Employees in Finland. J. S. LUMIO. *Acta Oto-laryngologica*, 1949, xxxvii, 539.

The material in this paper consists of 203 men of engine crews, over half of them engine drivers from 20 to 60 years of age. The purpose of the investigations was to discover whether work on an engine is provocative of ear disease, and whether any hearing impairment was observed in these men which might be regarded as occupational and due to noise. The post-history revealed

that 17·7 per cent. of those examined had had suppurative ear disease before working on the engines but only 10·8 per cent. during such employment. It thus appears that working on engines does not promote suppurative disease of the ears. However, audiometric studies showed changes from the normal in 78·8 per cent., and were usually comparatively slight but directly related to age and years of service. The type of audiogram was one showing a fairly precipitate high tone loss between 1,000 and 4,000 D.V.'s per second. The audiograms reproduced show testing up to a frequency of 8,000 cycles but there is no evidence of recovering at the higher frequency as is often found in early traumatic deafness. The author states that work on engines causes a hearing loss of occupational type not of sufficient degree to endanger traffic safety—or to cause a disability.

Protective measures recommended are: removal of the whistle farther away from the driver's cabin, the discarding of oil driven engines, and the lowering of the high tone frequency of the signal.

F. Boyes Korkis.

NOSE

Further Observations of the Effects of Thyroid Insufficiency on the Nasal Mucosa. Arthur W. Proetz, St. Louis. *Laryngoscope*, 1950, ix, 627.

In 1948, the author read a paper on "The Thyroid and the Nose". This original study was based on an experience with 80 cases of hypothyroidism. It was then suggested: (1) That changes in the nasal mucosa resulting from a deficiency of the thyroid hormone might be either of two types (*a*) red, dry, irritated and desquamative or "chapped"—this type might conceivably be due to impaired regeneration of the normally-shed epithelial cells, or (*b*) pale, wet and boggy—which latter type might result from reduced peripheral circulation, lack of tone, and increased permeability of the intercellular cement substance. Either of these reactions could arise from hypothyroidism. (2) That headaches and nasal obstruction were prominent symptoms; and (3) That the basal metabolic rate was helpful, but not infallible, in distinguishing cases suitable for treatment with thyroid extract.

At the time of reading of the second paper, a total of 130 cases had been studied. The majority occurred in females between 20 and 50; "rhinitis" was a symptom in all; headache was present, and of sufficient severity to be complained of without prompting, in half the cases; almost a half of them were improved by specific therapy. "Probably most characteristic," says Dr. Proetz, "is the utter failure of both nose and patient to respond to the usual measures. Colds are not severe but interminable." The evidence put forward by the author for the association between states of thyroid deficiency and abnormal conditions of the nasal mucosa is that (1) in 87 per cent. of cases suspected of thyroid insufficiency on the basis of nasal findings alone, a subnormal basal metabolic rate was actually present; (2) a high percentage of cases showed a definite response to specific therapy; and (3) in selected cases, pronounced improvement followed treatment with thyroid alone, after other methods had failed, relapses occurring when the hormone was withdrawn. He concludes that "A low basal (metabolic) rate is presumptive evidence; a therapeutic test conclusive".

J. Chalmers Ballantyne.

Abstracts

PHARYNX

Poliomyelitis-Tonsillectomy Survey : Year 1949. DANIEL S. CUNNING, New York. *Laryngoscope,* 1950, lx, 615.

The author, in reviewing this subject for the year 1949, produces further interesting figures in support of his previous contention that he fails " to see any causal relationship existing between poliomyelitis and tonsillectomy ". He shows, for example, that the case fatality rate increases with a rise in the age group ; that of 3,152 cases of the bulbar type recorded in 1949, only 21 (or 0·7 per cent.) followed the tonsil operation, twice as many followed other operations, and the overwhelming majority (97·9 per cent.) followed no operation at all ; and that of 61,340 tonsillectomies performed in 38 separate geographical localities ranging alphabetically from Arizona to Wisconsin, a total of 2 cases of bulbar poliomyelitis developed after the operation.

The total number of bulbar cases following 96,379 operations for tonsillectomy in the four-year period 1946-1949 inclusive was 7—an incidence of 0·000073 per cent. Dr. Cunning concludes that " we see no reason why tonsillectomy should be indefinitely postponed simply because the summer months are the months wherein poliomyelitis is prevalent ; however, we do not advise any elective surgery being done during any epidemic, regardless of its nature ".

J. CHALMERS BALLANTYNE.

LARYNX

Cancer of the Larynx Classified in Three Dimensions : An Aid in Management. SAMUEL KAPLAN, Van Nuys, Calif. *Archives of Otolaryngology,* 1950, li, 696.

Classification of Cancer of the Larynx. Intrinsic Superficial :—The neoplasm so classified lies within the rim of the larynx and originates from epithelium with a basement membrane. It is considered clinically superficial because the musculature is not infiltrated, that is, the cords are not fixed. *Intrinsic Penetrating :*—The neoplasm in this classification has invaded the muscular tissue, and the vocal cord is either partly or entirely fixed. *Extrinsic Superficial :*—Such a neoplasm, like the intrinsic, originates in the larynx but has overgrown or spilled over the rim. The " mother " tumour originated in mucosa with basement membrane. It has not invaded the musculature, as evidenced by the mobility of the vocal cords. *Extrinsic Penetrating :*—The neoplasm so classified is similar in every way to the extrinsic superficial type, but the cells have invaded the muscle and there is partial or total fixation of the vocal cords. *Extrinsic Hypopharyngeal :*—The neoplasm in this classification originates in epithelium with no basement membrane. It is really a hypopharyngeal tumour. It is found on the epiglottis, ary-epiglottic folds, arytenoid cartilages, post-cricoid region and pyriform sinuses.

With this classification in mind, the choice between surgical treatment and irradiation can be evaluated more intelligently.

(1) Intrinsic superficial lesions can be treated equally well by surgical removal or irradiation.

(2) Intrinsic penetrating lesions do not respond well to irradiation. A cord may appear fixed as a result of mechanical or inflammatory conditions. In

cases in which the mobility of a cord is doubtful, trial irradiation can be instituted to reduce the bulk, and then the condition can be re-evaluated.

(3) Extrinsic superficial tumours are best treated by irradiation, with the exception of tumours that are the result of metastasis to the lymph nodes. Such tumours do not respond well to irradiation, but better results are achieved in dissections of the neck.

(4) Extrinsic penetrating lesions should be treated surgically, with dissection of the neck if lymph nodes are present.

(5) For extrinsic hypopharyngeal tumours poor results are achieved with any form of treatment. Irradiation in such cases can be repeated, and the salvage is somewhat higher than that by operation.

R. B. LUMSDEN.

The Co-existence of Cancer and Tuberculosis of the Larynx: A Case History. G. N. THRIFT and R. A. BAGBY. *Virginia Medical Monthly*, 1950, lxxvii, 166.

The author briefly reviews some previously reported cases, the results of treatment of this combination of diseases being poor in all seven cases reported in the pre-streptomycin period, no patient surviving six months. A detailed case history is recorded of a 59-year-old negro who showed on laryngoscopy an ulcerated mass on the entire left cord which was fixed. There was a questionable lesion of the chest. A biopsy taken from the cord showed a typical appearance of tuberculosis, and with thickening and downgrowth of the epithelium into the stroma. A Ziehl-Neelsen stain revealed acid-fast bacilli. The patient was given a pre-operative course of streptomycin (0·5 gm. daily) and 8 days later a total laryngectomy was performed and post-operatively streptomycin and penicillin were exhibited. The post-operative course was uneventful, the wound healing by first intention. One year later there was no evidence of metastasis or recurrence of the tuberculosis.

This is an interesting report of a somewhat rare combination of lesions, and although the period of observation is only one year, no previously reported case has survived as long as six months. It is to be hoped that the authors will furnish further reports of this case after the lapse of a longer period of time.

F. BOYES KORKIS.

Laryngeal Tuberculosis associated with Pulmonary Tuberculosis. V. C. CORNWALL, Liverpool. *Medical Press*, 1950, ccxxiii, 361.

This is a useful general article, dealing with the incidence, prognosis and treatment of laryngeal tuberculosis, based on a review of 1,145 cases examined between 1947 and 1949 at the Fazakerley Sanatorium, Liverpool. The larynx was found to be involved in 62 cases, all cases being examined by the visiting laryngologist, Mr. John McGibbon. In nearly every case the laryngeal lesion was secondary to a pulmonary tuberculosis, but in a few cases the laryngeal disease was diagnosed before the lung lesion, and there appeared to be a particular type of pulmonary lesion in which this occurred. The author, quoting Davis and Wilson, stated that the X-ray of the chest shows a very fine mottled appearance in these cases. Of the 62 cases of laryngeal involvement, 32 healed, the treatment given being general, local, and specific. Of

the 12 cases treated with streptomycin all healed but 3 subsequently relapsed. With regard to the pulmonary lesion, however, streptomycin was not so beneficial, for in only 5 cases did the pulmonary condition improve, and in only 2 did the sputum become negative on culture.

This article helps to emphasize the clinical impression of other authors that with the use of streptomycin the laryngeal lesion may respond dramatically, but that this is no criterion as to the response of the primary lung condition, which may remain stationary or even deteriorate.

F. BOYES KORKIS.

Treatment of Juvenile Papilloma of the Larynx with Resin of Podophyllum: A Preliminary Report. J. B. HOLLINGSWORTH and H. W. KOHLMOOS, Oakland, Calif., and R. C. MCNAUGHT, San Francisco. *Archives of Otolaryngology*, 1950, lii, 82.

Application of a solution of 15 per cent. of podophyllum resin in 95 per cent. alcohol was made at the time of direct laryngoscopy and bronchoscopy in 5 cases, the solution being painted on with cotton applicators. In 2 cases, additional frequent application was made directly to the lesions presenting from the tracheotomy stoma. None of the patients showed ill effects, either systemically or locally. Normal laryngeal and hypopharyngeal structures showed no evidence of irritation on subsequent examinations, and in the 2 cases in which the podophyllum solution was used in the trachea, there was no irritating reaction.

It was noted that papillomas developed a gray tint immediately after the solution was applied, while normal tissue showed no such change. The ease of subsequent removal of the lesion was remarkable as compared to the great difficulty encountered in the same patients before use of the podophyllum solution. Recurrences apparently were minimized. Repeated application at short intervals seemed to give the best result. The optimum length and frequency of treatment has as yet not been ascertained.

R. B. LUMSDEN.

Experimental Research on the Sensory Innervation of the Larynx. C. CORTESI and F. CIPARRONE. *Bollettino delle Malattie dell'Orecchio, della Gola e del Naso*, 1950, lxviii, 183.

The authors have used a number of guinea pigs and have exposed the two superior and the two inferior or recurrent laryngeal nerves. They have severed the nerves and have estimated the distribution of their sensory branches by taking readings of the arterial pulsations in the carotid arteries while stimulating the mucous membrane in different parts of the larynx.

In the normal animal there is a change in the rhythm of the cardiac contraction on stimulation of the mucosa, but after the nerves have been severed these changes do not occur. The mucosa of the interior of the whole larynx was investigated and it was shown that the superior laryngeal nerves supply the whole of the interior down to the vocal cords with no overlapping below the cords and with no overlapping the middle line. In the same way, the inferior laryngeal nerves supply all the mucosa below the vocal cords and do not overlap either to the opposite side or above the vocal cords.

F. C. ORMEROD.

Trachea and Bronchi

Experimental Research on Nerve Anastomosis in the Treatment of Paralysed Recurrent Laryngeal Nerves. ENRICO DE AMICIS and MODESTO NEGRI. *Archivio Italiano di Otologia*, 1950, lxi, 189.

The authors recall the work done in the past on the divided recurrent nerves and the various types of anastomosis with other nerves of the neck. They also recall the poor functional results achieved by most of the operations. They have carried out a series of experiments on dogs. They have divided the recurrent nerve and after the lapse of periods from 10 days to 12 months they carried out anastomosis with the phrenic nerve in 16 cases, with the vagus in 5 cases, and with the more proximal portion of the same recurrent nerve in 4 cases.

In no one of these experiments was there any demonstrable return of function and histological examination shows that following Wallerian degeneration there is regrowth of fibrils which, however, almost always form a terminal neuroma. These are attempts on the part of the nerve but they tend to be deflected to turn laterally and finally backwards. The regrowth of fibrils into the distal part of the nerve occurs with a certain regularity in the cases of the resuture of the recurrent nerve, less frequently in the vago-recurrent, and rarely in the phrenico-recurrent anastomosis. They were struck by the entire absence of any functional recovery and they feel that there must be some error in operative technique as nerve resuture and anastomosis elsewhere do produce satisfactory recovery. F. C. ORMEROD.

TRACHEA AND BRONCHI

The Treatment of Tuberculous Tracheo-bronchitis with Streptomycin. S. S. COHEN and WEN-YAO YUE. *Diseases of the Chest*, 1949, xvi, 791.

A clinical study of 25 patients with proved tuberculous bronchitis is the basis for this report. Only those patients with demonstrable lesions in the major bronchi, as observed bronchoscopically, are included, the bronchoscopies being performed before the beginning of treatment and two and four weeks after the commencement of treatment, and thereafter as often as indicated. Twenty-five patients were observed for from 3 to 27 months, the average period being 12 months. They received 1 gm. streptomycin daily for from 30 to 90 days, the duration of treatment being controlled by repeated bronchoscopic examinations. This dosage produced healing, or marked improvement in 21 of the patients (84 per cent.), 12 being healed, and 9 improved ; in 3 there was slight improvement, and in 1 the condition was considered unchanged. In 2 of the patients with slight improvement and in 1 with marked improvement fibrous stenosis subsequently developed. However, these figures are uncontrolled, as 16 cases were aided by some type of collapse therapy or surgical resection, in addition to the use of streptomycin. F. BOYES KORKIS.

Resection and Anastomosis of the Trachea : An Experimental Study. JOHN H. GRINDLAY, O. THERON CLAGETT and HERMAN J. MOERSCH, Rochester, Minn. *Annals of Otol., Rhin. and Laryng.*, 1949, lviii, 1225.

Two dogs have been observed for more than two years and five dogs for a year and a half, after resection of a portion of the trachea and anastomosis over special polythene tubes. The dogs are well and bronchoscopic examinations reveal few signs that the tubes which are still in situ in six dogs are

injurious. The only abnormal findings concern two dogs, in one of which the tube was too large and in the other too small in diameter ; in the former there is a short area of partial collapse of the trachea distal to the tube, and in the latter the tube fits loosely. One dog lost its tube about a year after operation, presumably because it was too small in diameter and became loose. This dog is well and the trachea at the site of anastomosis is marked only by slight irregularity. (Authors' summary.)

Perforation of Both Main Stem Bronchi by a Large Broncholith Located in the Subcarinal Region. ARTHUR Q. PENTA, Schenectady, N.Y. *Annals Otol., Rhin. and Laryng.*, 1949, lviii, 1135.

A case is described of a white woman, aged 45, who was admitted to hospital in a moribund state with a history of bronchial asthma of some ten years' duration, with recurring hæmoptysis. Numerous chest films had been negative. About one hour after admission she was bronchoscoped on account of great respiratory distress. Both main stem bronchi close to the carina were almost completely occluded by a granulomatous mass. The condition was at first thought to be neoplastic, but when some of the granulations had been removed, a broncholith was found underlying it. This was removed with some difficulty, but in one piece, and measured 1·17 by 1·5 cm. Following the endoscopic removal, the patient had a stormy time for the following 24 hours, and some clotted blood had to be aspirated from the bronchi. She was, however, discharged from hospital on the fourteenth day in good health. No record is made of the core of the broncholith. E. J. GILROY GLASS.

MISCELLANEOUS

Functions of the Parotid Gland. LOUIS NASH and LEWIS F. MORRISON, San Francisco. *Annals of Otol., Rhin. and Laryng.*, 1949, lviii, 976.

Scattered reports in the medical literature for the past 75 years have been reviewed and consolidated in an attempt to get a cleared picture of the normal functions and forms of the parotid gland. Many reports of functional abnormalities of the parotid gland have also appeared during this period. The similar embryological origin of the parotid gland and other internal organs, and similarity of its function to that of the pancreas have stimulated a great deal of conjecture, animal experimentation and clinical observation to attempt to find a carbohydrate-regulating hormone in the parotid. The opinions of the investigators who performed the best controlled experiments are at variance, but they all agree that there is a hidden, poorly understood factor in the parotid gland, that has an effect on the circulating blood sugar. Whether this factor is a substance antagonistic to insulin or whether it has a pancreas-stimulating function is debatable.

The presence of asymptomatic enlargement of the parotid glands in association with other diseases is unquestionable. The possibility that the enlargement is a functional hypertrophy to compensate for a deficiency of some other organ has been considered. No reported investigations have yet solved this interesting problem.

A plan of procedure for the laboratory investigation of affections of the parotid glands is suggested as an aid in the diagnosis of disturbances in their form and function. (Authors' summary.)