ABSTRACTS

EAR

Further Labyrinthine Studies. S. H. MYGIND. *Acta Otolaryngologica. Supplementum* lxviii, 1948.

I. AFFECTIONS OF THE HUMORAL SYSTEM OF THE LABYRINTH

This is a study of deafness caused by disease and is based on clinical experiments and histological examination of the internal ear.

As a result the author divides diseases of the ear into three groups, (1) The aerotympanic system. (2) The humoral system. (3) The nervous system. He gives an account of the characteristic symptoms of these three groups. He also gives a detailed anatomical and physiological description of the humoral system.

II. ON THE LABYRINTHINE TRANSFORMATION OF THE ACOUSTIC VIBRATIONS TO PITCH-DIFFERENTIATED NERVOUS IMPULSES

The author gives reasons for discarding the theory that pitch discrimination depends on elective vibrations of the basilar membrane and advances the theory that the decisive role is played by vibrations of the tectorial membrane pressing on the hair cells of the organ of Corti. This is consistent with the method of stimulation of the ampullae and otolith organs. The localization of the individual tones is due to the circumstance that each pitch makes the tectorial membrane subdivide into a number of secondary wave lengths, increasing from the apex to the base and being directly proportional to the frequencies concerned so that the same wave length is produced only in one place according to the pitch of the tone. The optimal wave length is that at which a hair cell and the appertaining Deiter's phalanx each are struck by opposite phases.

The article is closely argued with references to the literature and whether the reader agrees with the author's theory or not he cannot fail to be instructed by a study of this paper.

G. H. BATEMAN.

Aero-Otitis Media and Aero-sinusitis. G. K. ASCHAN. *Acta Otolaryngologica. Supplementum* lxix, 1948.

Dr. Aschan has approached this subject in a manner not previously recorded. All previous writers have apparently accepted the physical theories of the causation of the barotraumas in man and have elaborated the details of this theory. Dr. Aschan used experimental animals and approached the problem with an open and receptive mind. Furthermore all his observations are based on histological and not clinical examination of his test material. He reports in considerable detail a most conscientious and careful series of well-controlled experiments and shows a large number of microphotographs to confirm the text of his experiments.

Firstly he found that rats were not suitable for these experiments because of the prevalence of histological upper respiratory and ear infections. Furthermore in these animals the eustachian tube is permanently and physiologically patent. His rabbits, with suitable precautions which he describes, were not subject to these infections and the eustachian tube is of the flutter valve type as in the human tube.

He finds in his rabbit experiments that he can produce mucosal changes in the ears and sinuses, similar to those caused by barotrauma described in humans, by oxygen deficiency or oxygen excess. He therefore argues that the oxygen state of the middle ear must be considered as a factor in the causation of the changes described by other authors as otitic barotrauma or aerosinusitis.

He argues his case very well and convincingly but there are some factors which he fails to mention. It is probable that he has disclosed a hitherto unrecognized factor in the production of the barotraumas but the reviewer thinks that it is a comparatively unimportant factor, at any rate, in otitic barotrauma. Some cases of sinus barotrauma have been impossible to explain on the reduced pressure basis and his explanation would cover many of these. Also delayed otitic barotrauma (McGibbon and Dickson) oxyotitis (Behnke, 1945) are not satisfactorily explained by the pressure differential theory, whereas Dr. Aschan's oxygen poisoning theory will explain them satisfactorily.

This is a fascinating monograph which should be, and will be, read by all those interested in aviation otology. It is a pity that there have not been other papers on this subject based on experimental, as opposed to clinical, evidence. This paper is written in English and is illustrated with forty-four microphotographs as well as sketches and diagrams.

G. H. BATEMAN.

The Detailed Audiogram. H. A. E. VAN DISHOEK, M.D., and J. VAN GOOL, Amsterdam, Netherlands. *Archives of Otolaryngology*, 1948, 47. ii, 149-154.

The usual audiogram with fixed frequency recording of the octaves of C is not satisfactory. A detailed audiogram, showing all dips and defects of hearing in the tonal range in a quick and easy manner, can be obtained by using a sweep frequency audiometer in the following way :

The intensity knob is fixed on the zero decibel level, viz., the minimum audible at 1,000 cycles per second, or 10-16 watt per square centimetre. Now the frequency knob is turned from low to high. The tonal range in which the howling tone is heard is recorded by means of a simple writing mechanism mounted on the frequency knob. Afterward the intensity is increased each time by 5 or 10 decibels till the howling tone is heard over the whole tonal range.

R. B. LUMSDEN.

Bone-Dust-Free Lempert Fenestra Nov-Ovalis ; A New Evolutionary Development of the Surgical Treatment of Clinical Otosclerosis. JULIUS LEMPERT, M.D., New York. *Archives of Otolaryngology*, 1948, 47, iii, 280-288.

To further enhance the possibility of permanently maintaining the practical serviceable hearing following the Lempert Fenestra Nov-Ovalis operation, (1) a new method of creating a fenestra in the vestibule of the labyrinth without

producing bone dust and bone splinters is described, (2) the clinical and histologic factors influencing the necessity for its development are given and (3) the advantages expected to accrue as a result of the new evolutionary development are stated.

(Those familiar with Simson Hall's work during the last two years will observe a close similarity of technique.)

R. B. LUMSDEN.

Otosclerosis: An Index of the Literature with Abstracts, for 1946. *Archives of Otolaryngology*, 1948, 47, iii, 310-332.

This is the third instalment of volume IV of *Otosclerosis* to be issued by the Central Bureau of Research of the American Otological Society, Inc. Several foreign articles and others heretofore unobtainable are listed or abstracted herein. Research on correlated subjects, especially if encouraged or supported in whole or in part by the Bureau, will also be included.

R. B. LUMSDEN.

A newer Concept of the Management of Otogenic Infection. MERRILL B. HAYES, M.D., Chester Pa. and C. FREMONT HALL, M.D., New York. *Archives of Otolaryngology*, 1948, 47, iii, 289-302.

Dibromosalicylaldehyde proved to be an effective agent in the treatment of ears infected with gram-negative bacteria and fungi.

R. B. LUMSDEN.

Penicillin Treatment of Nerve Deafness due to Syphilis. WALTER E. LOCH, and HAROLD A. TUCKER, Baltimore. *Ann. Otol., Rhin. and Laryng.*, March, 1948, lvii, 167.

The author records the results of treating five patients with deafness, associated with acute syphilitic meningitis, and eight cases with late neurosyphilis and deafness. The group of eight neurosyphilitic patients with normal hearing, and three with conduction deafness due to middle-ear disease, were treated in comparable conditions as a control series.

In the patients with syphilitic meningitis, improvement in hearing was rapid and sustained. Of the cases with late neurosyphilis, four had no change in the hearing, but the remainder had a significant improvement, although this was slow. The increase in hearing acuity commenced with the low tones, followed later by a gradual improvement in the higher frequencies.

E. J. GILROY GLASS.

The Fissula ante Fenestram of the human otic capsule. BARRY J. ANSON, EARL W. CAUDWELL and THEODORE H. BAST. *Ann. Otol., Rhin. and Laryng.*, lvi, 957 (Part I. Development and normal adult structure), and lvii, 103 (Part II. Aberrant form and contents).

The histologic structure of the antefenestral region of the otic capsule, between the vestibular window and the cochlea, is exceptional in that it consistently includes a cleft-like fissula occupied by unmodified connective tissue. This fissula ante fenestram extends vertically from the scala vestibuli to the tympanic cavity near the hamulus for the tensor tympani tendon.

The fissula appears in the 34 mm. stage through invasion of the primordial cartilaginous capsule by the periotic connective tissue of the vestibule; with maturation, the periodic invagination becomes the connective tissue content of the fissular tract.

During the process of ossification of the otic capsule, cartilage persists as the lining of the fissula. At its periphery endochondral bone forms, as early as the mid-term stage, an investing osseous shell.

Peripheral islands of calcified cartilage (Intrachondral bone) occur abundantly about the fissula and throughout the fissular region.

Typically, the fissula is an open S-shape in anterior coronal outline, narrow and cleft like, and occupied by connective tissue. The superior or tympanic part is commonly twisted at a 90 degree angle in relation to the inferior or vestibular portion.

Variation in size and form is common. Occasionally the body of the fissula is capacious; it then had the appearance of pouch rather than cleft.

The widened fissula may be occupied, in whole or in part, by a cartilaginous mass, which can encroach upon the stapedial ligament in the presence of an auxiliary, or fenestral orifice.

The fissular area is one of great histologic instability, a circumstance which renders it vulnerable to pathologic change, the vestibular window subject to invasion and the stapes liable to fixation within its fenestra.

(Part II.) The range of histologic change within the fissular region has been determined throughout the normal course of fœtal development, through the phase of rapid rebuilding during early post-natal years, and through that of slower structural modification in adulthood. Additionally aberrant types of fissulae have been considered, especially in relation to the presence of chrondromatous masses. Observations suggest that the presence of newly-formed cartilage is causally linked with the occurrence of exceptionally capacious fissular channels, and the formation of abnormal bone to the antecedent appearance of the cartilaginous nodules.

For further study of the latter step in what appears to be a histologic succession, additional material is required and is currently being assembled in the otological collections at Wisconsin and North-western. Only when the genesis of each participant tissue is further clarified and the degree of their interdependence better established, can more definite conclusions be reached. (Author's summary.)

Note.—The papers summarized above which are too exhaustive to abstract are fully illustrated and worthy of study by those interested in the histopathology of the ear.

E. J. GILROY GLASS.

Special techniques for the Diagnosis and treatment of Psychogenic Deafness. WILLIAM G. HARDY, Baltimore. *Annals of Otology,* March, 1948, lvii.

Some of the problems in the diagnosis and treatment of psychogenic deafness are discussed and emphasis is given to the fact that the most common finding is a psychogenic overlay on organic disease. Because this is true, a special diagnostic requirement is the ability to measure accurately the relative amounts of organic and psychogenic involvement. The burden rests directly upon the

otologist, for he is the specialist most capable of interpreting hearing tests and of evaluating the otic pathology. The use of several special tests in the clinical work-up is discussed, and suggestion hypnosis is recommended as a simple means of measuring the organic and functional components.

Twelve cases, two of which are controls, are presented to illustrate the use of these techniques. Of special importance is the ease with which pure-tone and speech audiometry can be used with suggestion hypnosis for diagnostic purposes. The findings with deep suggestion are authenticated by follow-up tests. The key to the therapy, once the proportion of organic involvement is known, is the ability of the patient to gain insight into the relations between the causal factors and the symptoms. Under many circumstances this phase of the treatment can often be more readily accomplished by the otologist than by the psychiatrist. (Author's Summary.)

Note.—The paper, which is illustrated by twelve cases, is interesting, but the majority of otologists would probably feel that suggestion hypnosis was beyond their normal scope.

Observations on Bone Conduction in Fenestration cases—Physiological Considerations. ARTHUR L. JEURS (Chicago). *Ann. Otol., Rhin. and Laryng.*, 1948, lvii, 28.

The purpose of the paper is to record observations on the bone conduction of patients who have undergone the fenestration operation.

The Weber Test. The Weber test offers the simplest method of detecting an early significant post-operative drop in cochlear function, and therefore early recognition of serous labyrinthitis during the stage when this condition is most amenable to treatment. The general observation was that there was less initial gain in hearing in those patients in whom the Weber shifted to the unoperated ear four or five days following the operation after having initially lateralized to the operated ear. Such cases were treated by giving 200 c.c. of 50 per cent. sucrose intravenously at each of three treatments over a period of thirty-six hours. In a significant number of cases this shifted the Weber back to the operated ear. In a more recent series 50 c.c. Sorbital was substituted for Sucrose and thought more effective.

Study of the late post-operative bone conduction as compared with the pre-operative level and as compared with the unoperated ear in a series of twenty-eight cases, shows a tendency to improve on the operated side and also an apparent improvement on the unoperated side but the amount ranging from one to thirteen decibels would not appear to be of any great significance. Probably of greater significance is the observation that the increase is greater in the higher frequencies than the lower.

The exact physiology of sound conduction to the organ of Corti in the fenestrated ear has yet to be determined. In a certain number of cases a mild fistular symptom can be produced by pressure of the membrana tensa, the ocular phase being the opposite of that produced by pressure on the fenestra. Thus it would appear that a reversal of perilymph phase in hearing is at least a possibility, experimental evidence, however, is against such a conclusion.

An intact membrane is essential in obtaining maximum hearing improvement in the fenestrated ear. The most probable reason for this is the damping

effect of that part of the sound wave which is transmitted through the tympanic cavity to the round window. A perforation would decrease the pressure differential between the fenestra and the round window and consequently reduce the amplitude of the perilymph movement. Sound conducted through a small tube to within a few millimetres of the fenestra sounds much louder to the patient than when directed to the membrane, indicating that the drumhead is not the principal receptor of sound in the fenestrated ear.

For an air-borne sound to produce a good displacement of the basilar membrane it must arrive at the two windows in a slightly different phase. Anatomical differences may influence this, and in theory the further the fenestra is lateral to the round window the more favourable it should be. There are probable other factors of reflection of sound waves determined by the shape and angle of the canal and cavity which play a part in the final result, but these remain yet to be determined.

E. J. GILROY GLASS.

The Fenestration Operation. HOWARD P. HOUSE (Los Angeles). *Ann. Otol., Rhin. and Laryng.*, 1948, lvii, 41.

The paper is a review of 500 cases. With slight modifications the Lempert nov-ovalis technic was followed. The cartilage stopple, the gold burr and the more recent lead burr were not used. The mastoid cells are not completely exenterated and only the horizontal bony canal is skeletonized. Only a small cavity is therefore produced for epithelialization. The double blue line technic is followed.

In selection of cases a bone conduction oscillator is used. Ideal cases have less than ten decibel loss in the speech frequencies. Cases with a bone loss of less than twenty decibels in the 512 and 1,024 frequencies and less than thirty decibels at 2,048 are regarded as borderline while cases with a greater loss are regarded as unsuitable.

If a patient gives a history of hearing loss during a previous pregnancy and is again in the early stages of pregnancy operation is indicated to prevent further loss. Six such cases have been done during the third and fourth months of pregnancy. If there is a history of previous pregnancies without deterioration of hearing operation should not be advised till after term.

In the whole series approximately 66 per cent. have maintained practical hearing after one year.

E. J. GILROY GLASS.

BRONCHI

Progress in Bronchology. LOUIS D. CLERF, M.D. (Philadelphia). *Journal of the American Medical Association*, March 13th, 1948, cxxxvi, 11, 733.

Bronchoscopy was formerly employed largely for foreign body accidents, yet now, while these accidents have not diminished in number, less than 2 per cent. of all bronchoscopic procedures are performed for this purpose.

In bronchogenic carcinoma biopsy yields a positive diagnosis in from 60 to 80 per cent. of cases and an additional 20 to 25 per cent. of cases of carcinoma can be diagnosed positively in lesions beyond bronchoscopic vision by cytological studies.

Abstracts

Endobronchial benign tumors have been successfully treated by removal and local diathermy.

In pulmonary abscess the trend has been away from bronchoscopy which now has little place in its medical treatment.

Bronchoscopy has a definite place in bronchiectasis in patients not suitable for operation. In bronchial asthma it is valuable in removing thick tenacious secretions and spectacular results have been secured even in moribund patients.

Bronchoscopy is utilized now only in cases in which post operative atelectasis does not respond to more simple plans of treatment.

Tuberculosis is no longer considered a contra-indication to bronchoscopy and it is employed in many cases as an aid to diagnosis.

Bronchoscopic cauterization preferably employing silver nitrate is often done.

ANGUS A. CAMPBELL.

LARYNX

Laryngeal Œdema in Epidemic Parotitis. JAMES S. WALKER and E. LAMONTE GANN (Baltimore). *Ann. Otol., Rhin. and Laryng.*, March, 1948, lvii, 163.

A clinical record of two cases of laryngeal œdema occurring during epidemic parotitis. Both were in coloured adults and the œdema occurred chiefly in the arytenoid area. The cords were not affected in either case.

E. J. GILROY GLASS.

Influenzal Laryngitis. DAVID W. BREWER and J. H. TOM RAMBO. *Ann. Otol., Rhin. and Laryng.*, 1948, lvii, 96.

While a number of cases of influenzal laryngitis and septicæmia in children have been reported in the literature of recent years, only two cases in adults, the first in 1936, have been recorded. In the series of six cases reported in this paper four were in adults.

The pathology of the condition was well-illustrated in one case an infant of nineteen months which died within ten hours of the onset of symptoms. Throat and blood cultures were positive for Hæmophilus influenzae type B. The primary pathology involved the epiglottis both clinically and at post-mortem. There was intense œdema and infiltration of the epiglottis, decreasing thence downward and with little or no subglottic reaction. This is in marked contrast to the pathological picture in streptococcal, tracheo-bronchitis, where the lesion is largely subglottic.

The remaining five patients aged 5 to 63 years all recovered. The clinical picture in all was sore throat, dysphagia and respiratory distress of short duration, low grade fever, but looking iller than the fever would indicate. Locally there was marked inflammatory œdema of the larynx most marked in the epiglottis. Positive throat cultures for Hæmophilus influenzae type B were obtained in all.

One case was treated with sulphadiazine and penicillin initially. After an initial improvement the condition became static for two weeks. Streptomycin therapy cleared the case up rapidly. Of the remaining cases treated with streptomycin two made an uninterrupted recovery, and two developed an

abscess of the epiglottis which delayed resolution. No evidence of toxicity or sensitivity attributable to the streptomycin was observed.

E. J. GILROY GLASS.

NOSE

Orbital Complications resulting from Lesions of the Sinuses. AUSTIN T. SMITH and JAMES T. SPENCER (Philadelphia). *Ann. Otol., Rhin. and Laryng.*, 1948, lvii, 1, 5.

A group of cases illustrating infections, mucoceles, epidermoid cysts and osteomas of the nasal sinuses responsible for complications of the orbit, has been reviewed. They show that the diagnostic problems involved are often complicated and that a thorough painstaking rhinologic investigation is required to avoid unnecessary delay in making an accurate diagnosis and in carrying out adequate therapeutic measures. The laryngologist should be the first and not the last consultant in these cases, and for him it will frequently be a problem requiring the most careful observation and study. (Author's Summary.)

MISCELLANEOUS

Simultaneous Poliomyelitis in four brothers, two of whom had recently had Tonsillectomies. A. C. HILDING (Duluth, Minn.). *Ann. Otol., Rhin. and Laryng.*, March, 1948, lvii, 217.

A clinical record of simultaneous poliomyelitis in four brothers, two of whom had had tonsillectomy performed two weeks previously.

The two unoperated, and one of the operated children developed bulbar symptoms. The operated patient was very much more ill than the other two and eventually died. However, the second operated child was the only one of the four who showed no degree of bulbar palsy.

It might be thought that a series of this sort would furnish an ideal situation for determining a causal relationship between tonsillectomy and bulbar poliomyelitis, but ignoring the fact that the number is too small to be of statistical significance, the issue remains beclouded.

E. J. GILROY GLASS.

Common Virus Infections of the Respiratory Tract. JOHN H. DINGLE, M.D. (Cleveland). *Journal of the American Medical Association*, April 24th, 1948, cxxxv, 17, 1,084.

Two distinct types of influenza virus have been isolated and characterized.

In this article, the writer considers the present status of the diagnosis and etiology of other common respiratory infections whose differentiation and classification are as yet poorly defined. These infections are thought to be caused by viruses but they can be segregated into a group only by the exclusion of cases of known bacterial or viral origin.

Clinical classification is unsatisfactory.

It now appears that three entities—the common cold, undifferentiated acute respiratory disease and atypical pneumonia—can be separated from the larger group. Each of them can be transmitted to well human beings by the inoculation of bacteria free filtrates of secretions of the respiratory tract.

Abstracts

The possibility of a fourth entity—non-bacterial exudative tonsillitis and pharyngitis—is indicated by clinical studies.

The article has a bibliography.

ANGUS A. CAMPBELL.

Surgical treatment on Intractable Unilateral Cephalalgia. WALTER G. HAYNES, M.D. (Birmingham, Ala.). *Journal of the American Medical Association*, February 21st, 1948, cxxxvi, 8, 538.

In vascular headaches all the available evidence suggests that the autonomic nervous system is implicated in the abnormal pulsation of the external carotid artery.

The writer has attempted to keep the pure migraine headache from this series.

Unilateral cephalalgia has been classified under the following headings:

1a. Temporal vascular headache, due to afferent sympathetic pain fibres accompanying the external carotid artery and its branches, is associated with severe unilateral pain, reddening of the conjunctiva, tearing of the eye and tenderness over the temporal artery.

1b. Occipital temporal vascular headache with radiation of the pain up over the occipital nerve and along the course of the temporal and middle meningeal arteries.

2. Cervical radiculitis, due to mechanical pressure on the great occipital nerve.

3. True intractable migraine.

The surgical treatment consists of exposure of the temporal artery and excision of a portion of this artery between silver clips. The incision is then carried through the temporal muscle, a burr hole is made over the middle meningeal artery and a portion of the artery excised between silver clips.

Seven cases are reported in detail.

Forty-seven patients have had this operation and 87 per cent. have been given lasting relief.

The article is illustrated, has two tables and a bibliography.

ANGUS A. CAMPBELL.