

ABSTRACTS

EAR

The Functions of the Round Window. E. G. WEVER and MERLE LAWRENCE, Princeton, N.J. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 588.

The function of the round window was studied by immobilizing it in various ways while recording the electrical potentials of the cochlea. The effects vary both with the method of immobilizing and with the condition of the ear. When the ear is intact, and the sound stimulus is directed at the ear drum in the usual way, a partial immobilization of the round window membrane by applying a prod to its surface had no measureable effect. Under the same conditions, applying a tube over the window, exerting a heavy air pressure on it, and plugging the niche with wax all had nearly the same effect, which was progressive reduction of the response to high tones, amounting at the most to about 10 db. When the middle ear was removed and the sounds were introduced through a tube sealed over the oval window, the same procedures had little or no effect on the responses to high tones, but in some ears reduced the responses to low tones. Possibilities are considered for the explanation of these results. Check experiments seem to exclude a disturbance of the sound field as a result of the manipulations. Also ruled out is the possibility that the results can be accounted for as a modification of a secondary path of sound transmission by way of the tympanic space and the round window. Such transmission can have only negligible effects. We are left with the conclusion that the blocking affects the mechanical impedance of the ear.

A surprising result is that all our forms of blocking, whether partial or complete, cause only minor alterations of the sensitivity. The changes occur mostly at one end or the other of the frequency scale, and are usually of the order of 5 db., rarely exceeding 10 db. These changes are deleterious. It plainly follows that there is no warrant for the use of an immobilizing procedure in clinical practice, as Hughson proposed. The introduction of grafts into the round window, according to these observations, can be of no benefit to hearing. (Author's Summary.)

The Effects of Negative Air Pressure in the Middle Ear. E. G. WEVER, MERLE LAWRENCE and KENDON R. SMITH, Princeton, N.J. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 419.

A decrease in the air pressure of the middle-ear cavity causes, usually, a reduction in the electrical responses of the cochlea. The only exception to this rule is found for certain tones in the region of highest sensitivity, which are slightly improved by the smaller pressure changes; but these tones too suffer impairment when the pressure changes are large. In general, the low tones are affected more than the high tones. The effects of negative pressures follow closely those already disclosed for positive pressures. The sensitivity is

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reduced, but the form of the intensity function over the greater part of its course is essentially unaltered. Effects occur both for air-conducted and bone-conducted sounds, but their amounts differ greatly. The evidence indicates that the pressure operates mainly upon the transmission mechanism, especially the eardrum, and its action is to increase both the stiffness and the damping of these parts. Some effect also is referred to the inner ear. (Author's Summary.)

Low Incidence of Mastoiditis in a Series of Cases Treated without Sulphonamides.

HARRY BUTLER, Bangor, Maine. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 992.

The similarity in results obtained both by conventional therapy and by sulphonamide therapy observed by the author in cases of ear infections prior to World War II inspired the studies reported. A consideration of the *modus operandi* of sulphonamide drugs, and the anatomy of the area involved, gave further indication that perhaps there had been over-emphasis upon the value of sulphonamide therapy in otitis media and associated conditions. The series of cases reported were taken from an army clinic where men were not treated ideally, but as dictated by the exigencies of the situation; due consideration, however, was given to their progress and unnecessary risks were studiously avoided. In a series of 610 cases of myringitis, exudative otitis media and purulent otitis media, there were two mastoidectomies, with two additional, from sources outside the study. If only the 461 cases of purulent otitis media are considered in relation to the two mastoidectomies, it would seem that the morbidity of ear infections in recent years has paralleled the known decrease in morbidity of such conditions as measles and scarlet fever, and that this, rather than the advent of the sulphonamides, accounts for the very happy outcome of the average ear infection. (Author's Summary.)

An Experimental Study of the Toxic Effects of Streptomycin on the Vestibular Apparatus of the Cat. JULIUS WINSTON, F. H. LEWEY, ANDRE PARENTEAU, PHILIP A. MARDEN and FAITH B. CRAMER. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 738.

. Because the prolonged administration of streptomycin frequently causes a disturbance of the vestibular mechanism in man and in certain laboratory animals, we have attempted to locate the site of the injury to the vestibular apparatus by three totally different methods of investigation, using the cat as the experimental animal. Evidence of damage to the central portion of the vestibular apparatus was observed in some of the animals by each method of investigation. By the vital staining technique, the trypan blue dye was visible grossly in the cerebellum and brain stem in all five animals which had received streptomycin. In three of the five specimens, trypan blue granules were observed microscopically in the nuclei of some of the brain cells in the following locations: (1) the Purkinje cells of the cerebellar cortex, most marked in the flocculus; (2) the dentate and fastigial nuclei; (3) the medial and lateral vestibular nuclei. In addition, occasional cells containing nuclear trypan blue granules were found in the ventral cochlear nuclei, the tuberculum acusticum, the nuclei of the trapezoid body, and the reticular substance. In the

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three control cats, there was neither macroscopic nor microscopic staining of the brain tissue, although the meninges and the choroid plexus were stained a deep blue throughout. Following unilateral surgical destruction of the vestibular nuclei, the control animal showed the proper nystagmus response to the opposite side. In two cats which had received toxic doses of streptomycin, destruction of the nuclei on one side failed to produce nystagmus. This was interpreted as evidence that streptomycin destroys the function of the vestibular nuclei on both sides of the brain stem. However, these findings do not rule out the possibility that the peripheral end-organ of the vestibular apparatus may be damaged also. Routine histopathological studies of brain sections stained with phosphotungstic acid and cresyl violet were done on six additional cats which had been given large doses of streptomycin. Pyknosis and an increase of glial fibres around the dendrites of the Purkinje cells of the cerebellum were found in four of the six brains. In the remaining two specimens, no pathological changes were found. (Authors' Summary.)

Suggestions on Systematic Vestibular Diagnosis on the Grounds of Apparently Specific Discrepancies in Vestibular Tests. F. KOBRAK. *Monatsschrift für Ohrenheilkunde*, 1948, lxxxii, 548.

The author distinguishes four vertically superimposed vestibular zones:—one sub-cerebral, one deep in the brain stem (vestibular reflex mechanism), a higher brain-stem zone (paravestibular regulation), and a cortical zone. The sub-cerebral zone shows certain definite reactions to strong stimuli. The directional muscular phenomena (nystagmus, and a tendency to deviate or fall) are aroused by the stimulation of the deep reflex zone. The upper brain stem zone tends to dampen or hide up these effects. It is the upper brain-stem area which is most important in the production of directional nystagmus, and not over or under-stimulation of the labyrinth.

D. BROWN KELLY.

NOSE

Psammo-Osteoid-Fibroma of the Nose and Nasal Sinuses. H. GÖGL. *Monatsschrift für Ohrenheilkunde*, 1949, lxxxiii, 1.

Having observed two cases of nasal tumour which, from their peculiarity of structure, gave rise to difficulty in diagnosis, the author searched the literature and found thirteen similar cases. He gives a short resumé of these, and notes that they were recorded under various labels, e.g., psammoma, fibro-osteoma, calcified fibroma, sarcoma psammosum, etc. It is suggested that as all these tumours were similar in their essential characteristics, they should be grouped together under the name of Psammo-Osteoid-Fibroma.

D. BROWN KELLY.

LARYNX

Cancer of the Larynx: First Year End Results in a Series of Patients Treated between 1930 and 1942. CHEVALIER L. JACKSON, M.D., JOHN V. BLADY, M.D., CHARLES M. NORRIS, M.D., and WALTER H. MALONEY, M.D., Philadelphia. *Journal of the American Medical Association*, December 11th, 1948, cxxxviii, 1,080.

Six hundred and twelve patients were treated between 1930 and 1947. 453 partial or total laryngectomies were done and 59 patients were treated

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initially by radiation. The results of treatment are shown in six tables. In Table 2 are shown the five-year results in 206 cases of cancer of the larynx, without palpable nodes. Laryngo-fissure was done in 102 cases, with a five-year survival rate of 81 per cent. In 35 cases in which laryngectomy was done, 66 per cent. were cured. 14 patients with palpable nodes were all treated by radiation, but none survived five years. The writer feels that the three-year cure rates are not entirely valueless and the five-year cure rates are certainly not final. 19 recurrences occurred after laryngo-fissure and of these over half were salvaged. Recurrence after laryngectomy has not been successfully treated, but recurrences after radiation have been salvaged by second courses of radiation and laryngectomy. Continued post-treatment observation for at least five years and preferably for life is advised for all cases.

ANGUS A. CAMPBELL.

Streptomycin in Treatment of Laryngeal Tuberculosis. BEN. T. ULITHES.
Annals Otol., Rhin. and Laryng., 1948, lvii, 769.

Twelve cases of tuberculous laryngitis in patients with advanced pulmonary disease were treated with streptomycin. An audiogram, KobraK caloric test, and Romberg test were carried out at the beginning and the end of treatment. A daily dosage of 0.8 to 2.0 gm., administered every four hours for 90 to 120 days, has been advocated. The authors used 1 gm. per day, divided into two doses given at twelve-hourly intervals for 90 days. Whereas results from aerosol treatment alone have been discouraging, this method combined with intramuscular administration has proved successful. In addition, reports in the literature indicate promising results with intramuscular use only; the latter technique was employed in the authors' cases. Occurrence of tuberculous laryngitis makes the prognosis in a case of pulmonary tuberculosis more grave, but there is no doubt that treatment with streptomycin has resulted in cures of the larynx. In the authors' group all patients improved, and ten of the twelve were cured of laryngeal tuberculosis; thiamine hydrochloride given simultaneously by the mouth in six cases did not accelerate healing. Toxic efforts generally described include: positive Romberg test with ataxia, low-pitched tinnitus, prolonged caloric response, vertigo, nausea, vomiting and hearing loss. In the authors' cases no patient had a change in the audiogram, KobraK caloric test, or Romberg test. Two patients had slight transitory dizziness about the eighth week, lasting a few days, but not severe enough to interfere with meals.

E. G. GILROY GLASS.

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The Use of Streptomycin in Tuberculous Tracheo-bronchitis. JOHN J. O'KEEFE,
Philadelphia. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 784.

A clinical study of the use of streptomycin in tuberculous tracheo-bronchitis shows it to be a drug of significant importance. Healing of mucosal ulcerations and resolution of obstructive phenomena have been effected in a large percentage of instances. The concomitant parenteral-aerosol method of administration of streptomycin appears to be the method of choice. (Author's Summary.)

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Rupture of Left Lower-Lobe Bronchus, with Recovery. A. W. FAWCETT, Sheffield. *British Medical Journal*, March 19th, 1949, i, 483.

Traumatic rupture of the bronchus is a rare condition, and is seldom diagnosed; many of the cases are fatal, as they are associated with severe crushing injuries of the chest. Fawcett reports the case of a patient who met with a motor-cycle accident, sustaining concussion, multiple abrasions and a fracture of the right humerus; there was no fracture of the ribs, though presumably the chest must have been compressed, possibly by the motor-cycle falling on it. After the accident he was admitted to hospital, but made a fairly quick recovery; three months later he was re-admitted to hospital with left lower-lobe pneumonia, and recovered on sulphonamide therapy; one year later he again became ill and was again sent to hospital as a case of pneumonia, but X-ray revealed a collapse of the left lower lobe. After bronchoscopy and bronchography Fawcett diagnosed a probable rupture of the left lower-lobe bronchus, and lobectomy was carried out. At operation it was found that the left lower-lobe bronchus had been torn partly across and had fibrous tissue only on one wall; there was no passage between the lower lobe and the main bronchus. The patient made an uninterrupted recovery.

R. SCOTT STEVENSON.

Prostatic Carcinoma: Metastasis in the Temporal Bone. O. NOVOTNY. *Monatsschrift für Ohrenheilkunde*, 1949, lxxxiii, 30.

Tumour metastasis in the temporal bone is seldom observed. The author records the case of a 68 year old man who developed a swelling in the right temporal region accompanied by deafness and foetid aural discharge. X-rays showed a destructive process in the temporal bone and, on opening the mastoid, an extensive tumour was discovered. Shortly after operation, symptoms of right-sided cavernous sinus thrombosis appeared, and the patient died. The primary growth was found to be a scirrhous carcinoma of the prostate. The secondary deposit in the temporal bone had invaded the middle fossa of the skull, with an extension between the dura and the eustachian tube. There was involvement of the cavernous sinus and small prolongations into the sphenoidal sinuses.

D. BROWN KELLY.

Inhalation of Penicillin Dust. LOUIS KRASNO, M.D., MARY KARP, M.D., and PAUL S. RHOADS, M.D., Chicago. *Journal of the American Medical Association*, October 2nd, 1948, cxxxviii, 344.

The authors treated 357 patients by the inhalation of 100,000 units of penicillin dust, one to three times a day. Throat, nose and sputum cultures showed a decided diminution of Gram-positive bacteria. Penicillin blood-level curves showed maximum levels one hour after inhalation. Therapeutic levels remained for a period of five hours. This method lends itself particularly to the treatment of bronchiectasis. The incidence of allergic reaction was from 3 to 6 per cent. Emphasis is placed on the fact that penicillin cannot be relied on for the total treatment of these infections to the exclusion of intramuscular or intravenous injections. Sinus or bronchiectatic cavities must be drained as well. The article has six figures and four tables.

ANGUS A. CAMPBELL.

Miscellaneous

On the Question of Inflammation of the Subdural Space. R. SINGER. *Monatschrift für Ohrenheilkunde*, 1949, lxxxiii, 49.

Inflammation of the subdural space is not a rare disease, but hitherto has been seldom diagnosed. It is simply an early stage in a progressive endocranial infection, the termination of which depends on the immuno-biological reaction. The walls of the subdural space have a strong resistance to infection, so that complete healing usually takes place, leaving few after effects. The condition is neglected in the literature, partly because there is no method of direct inspection of the space, and partly because the pathological alterations of its walls do not proceed parallel with the stages of severity of the disease.

At operation, the combination of an extensive sinus thrombosis with a circumscribed subdural abscess lying far from the primary focus is frequently encountered. By careful assessment of symptoms and of the clinical picture, such abscesses may be diagnosed before operation. Opening the internal auditory meatus during exenteration of the labyrinth causes infection of the subdural space. In these cases drainage tubes should not be inserted through the opened dura, or an unfavourable result may ensue. Infection of the walls of the subdural space can give rise to meningeal symptoms. Twenty-three cases are described, and there are four photographs.

D. BROWN KELLY.

Specific Therapy of Bacterial Infections of Central Nervous System.

HARRY F. DOWLING, M.D., LEWIS K. SWEET, M.D., HAROLD L. HIRST, M.D., and MARK H. LEPPER, M.D., Washington, D.C. *Journal of the American Medical Association*, March 19th, 1949, cxxxix, 755.

Proper treatment depends on prompt diagnosis of the disease, prompt determination of the ætiological agent and selection of the appropriate drug or antibiotic. Meningitis caused by Gram-negative cocci is best treated with sulphonamide compounds, penicillin being used as an adjuvant in severe cases. When gramme-positive cocci occur, penicillin should be given in massive doses systemically. In meningitis caused by Gram-negative bacilli, sulphonamide compounds should be given in combination with streptomycin. Comatose patients may receive one intrathecal dose at the start. Surgical drainage with local installation of the antibiotic should be employed when advisable. The article has two tables and a bibliography.

ANGUS A. CAMPBELL.

Hoarseness and Voice Change in Male Adolescents. E. THAYER CURRY, Chicago. *Journal of Speech and Hearing Disorders*, March, 1949, xiv, 23.

Curry reviews the question of "hoarseness" as a manifestation accompanying change of voice in the male adolescent, summarizing the very divergent views that have been reported in the literature. The author examined the voices of 80 boys, 40 of them aged 10 and 40 aged 14. In the considered judgment of three trained speech correctionists 55 per cent. of the 10 year old boys and 80 per cent. of the 14 year old boys would be diagnosed as "hoarse-husky" in voice quality. All the others were diagnosed as having normal voice quality. The observations previously reported present a contradictory

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and incomplete picture of hoarseness in male adolescents, and the problem offers a field for further investigation.

R. SCOTT STEVENSON.

Neuron Arcs of Clinical Significance in Laryngology. A. C. FURSTENBERGER, and ELIZABETH CROSBY, Ann Arbor, Michigan. *Annals Otol., Rhin. and Laryng.*, 1948, lvii, 298.

As the title indicates, an effort has been made to give due consideration to the peripheral and central pathways over which the impulses of respiration are transmitted. Special emphasis is given the central tracts in describing certain common respiratory variations. The absence of pathological changes about the brain stem in individuals who had died of meningitis gave rise to doubt that direct stimulation of the vagus nerves and later paralysis of them were responsible for the respective slowing and acceleration of respiration. The enquiry into a more rational explanation for these changes arose particularly from autopsy findings in meningitis secondary to nasal accessory sinus disease where the exudate was largely confined to the surfaces of the brain. Laboratory experimentation on monkeys demonstrates well-established areas in the cerebral cortex which when stimulated either slow or accelerate respiration. Autopsy material from patients who died of the type of meningitis above described demonstrated inflammatory involvement of these regions.

While the text probes only superficially into the emotional factors responsible for respiratory variations such as hiccough, sneezing and coughing, it treats specifically of the central nervous apparatus along which emotional impulses are carried. A knowledge of these pathways and a better understanding of parent-child relationships may widen our knowledge of the psychology of cough and asthma. In discussing the reflex arc of sneezing, an effort is made to offer an explanation on an organic basis for the occasional complaint of nasal obstruction after a submucous resection of the septum in a patient who has wide open nasal cavities. Although the picture is complicated a disturbance of the pathways of the reflex arc is described which may properly explain this phenomenon.

Finally, this initial enquiry into the nervous mechanism of respiration and its common variations leads one to the conviction that much more work needs to be done if we are to achieve a thorough survey of this subject. The one generalization that may be derived from this discussion is that the whole mechanism of respiration is a complicated one governed by a reflex arc and an equally important central nervous system component susceptible to emotional stimulation. In looking for the cause of respiratory changes we must remember not to confine our efforts to an investigation of organs supplied by the peripheral nerves. A knowledge of the central nervous system mechanism and its connections with the peripheral nerve distributions may perhaps help us as laryngologists to think rather than feel our way toward a better understanding of respiratory abnormalities. (Author's Summary.)