œdematous swelling of the canal obstructing the exit of an offensive watery discharge. On January 11th the swelling anterior to the meatus was punctured. On the 13th sloughing was noticeable about the wound, while the membrana tympani was seen to be intact. From this date sloughing rapidly progressed, and at the time of death (on January 25th) a circular patch of gangrene, five inches in diameter, occupied the left parotid region. *Ernest Waggett.*

Ward, E.—*Laryngectomy.* "Brit. Med. Journ.," May 16.

THE author described the operation of laryngectomy, by means of which the organ was removed from below upwards without preliminary tracheotomy, and the opening into the pharynx subsequently sutured. The tracheal orifice was stitched to the skin flaps, suitably pared, and no tube was necessary. No communication remained between the air and food passages. He had operated on a man of sixty-four with epithelioma, a man of forty-two with dyspnœa and dysphagia, and a child with laryngeal papillomata. The author claimed that the operation as thus performed would reduce the mortality, shorten convalescence, add to the comfort of the patient, and would justify attempts at radical cure in some cases which were at present considered inadmissible. *Ernest Waggett.*

EAR.

Clark, Gaylord P.—*The Equilibrium Function of the Ear.* Trans. Medical Society of the State of New York, 1896.

MUCH evidence has been accumulated from experimental operations upon animals and pathological conditions in man that the ear is concerned in the maintenance of body equilibrium. Although operations and pathological conditions alike have injured the structure of the ear, sometimes extensively and even diffusely, yet the results observed indicate a specialization of function in the different parts of this complex organ. Lee, of Columbia, has recently carried on a series of experiments upon the ear of the dogfish, and his results are of special value in that they define the nature of this specialization. His method has enabled him to throw certain parts of the ear –for example, different semicircular canals—into or out of function without coincident injury to their structure. He has observed that rotation of the body of an uninjured fish is accompanied by certain movements of the eyes and fins, which are characteristic of the direction in which the fish is turned. The eye movements are those which tend to retain the visual impressions of the resting position. The fin movements are those which tend to resist the turning. He has exposed and stimulated by pressure the uninjured ampullæ of the different semicircular canals, and called out eye and fin movements similar to those accompanying rotation of the uninjured fish, and which are just as characteristic of the ampulla stimulated as in turning they are of the direction of the turning. He has divided the ampullar nerves just before their entrance into the ampullæ and thrown the semicircular canals out of function; then the above-mentioned effects of physiological and artificial stimulation could no longer be obtained. His experiments show that each semicircular canal functions not only in movements in its own plane, but also in planes at angles with it, but less so as the angle increases up to a right angle. He has found that the anterior and posterior vertical semicircular canals of one ear function together in lateral rotation in planes between them and towards that side; and that the same is true of the two anterior vertical semi-

circular canals, one in each ear, in forward rotation, or of the two posterior vertical semicircular canals in backward rotation. The evidence seems to be perfectly conclusive that the semicircular canals of both ears of the dogfish constitute a compound sense organ, which is stimulated by head and body movements of rotation, and which functions by its parts, or by combinations of its parts, in every plane in which turning may occur.

The semicircular canals of the human ear are similar in structure and arrangement to those of the dogfish. Careful study of cases of aural vertigo, in the light of such definite physiological knowledge of the relation of the ear to equilibrium phenomena in certain animals as we now have, is to be desired.

Much clinical evidence has been recorded that vertigo may be produced by stimulation of the inner ear, and that certain characteristic movements have been obtained by stimulation of certain parts of the inner ear. In many cases, however, the mere fact of vertigo has alone been noted without observation as to its nature. If the pathological picture in aural vertigo is to be compared with the physiological picture in experiment on animals, certain conditions which may modify the former should be taken into consideration. The effects of disease may be much less definitely localized than those of operation. The sensations of dizziness are to be distinguished from the reflex movements due to disturbance of the co-ordinating mechanism. Clinically the subjective sensations predominate. In experiment on animals the objective reflex movements can alone be studied. When sensations and reflex movements of vertigo are both present in clinical cases the sensation appears to be that of rotation towards the affected side; the reflex movements are in the opposite direction. Birds and fish, upon which so much operative work has been done, when suspended—as they so much of the time are—in a gaseous or liquid medium lack all surface-contact impressions, and then manifest greater disturbance of equilibrium from ear lesions than they do when such impressions are supplied.

Lesions of the human ear may be accompanied by less pronounced disturbance of equilibrium on account of the surface-contact impressions which under all ordinary circumstances constantly arise. The study of a large variety of forms among the lower animals shows that the otolithic structures as well as the semicircular canals are concerned in the equilibrium function. *Gaylord P. Clark.*

Compaired.—*Two Cases of Acute Infantile Labyrinthitis.* "Rev. de Laryng.," May 16, 1896.

OWING to the sudden development of symptoms this condition is often mistaken for acute meningitis, typhoid fever, acute hydrocephalus, etc. It is seen much more frequently in children than adults. It is not rare after parotiditis. Large doses of quinine and salicylates given for a long time have caused many deafnesses in children and adults, mistaken for labyrinthitis. It is often the result of propagation of a cerebro-spinal meningitis. In typhoid, when deafness is present it occurs late, in labyrinthitis it occurs very early; vertigo is absent in typhoid but present in labyrinthitis. The diagnosis from meningitis is more difficult. There are no paralytic symptoms in labyrinthitis, and the latter is readily curable, whereas the former is rapidly fatal. Labyrinthitis supervening at the period of development of speech, if the deafness is not discovered in time, leads to deaf-mutism. *R. Norris Wolfenden.*

Marsh, F.—*Cholesteatoma of Mastoid.* "Brit. Med. Journ.," Apr. 25, 1896.

AT a meeting of the Midland Medical Society the author showed a man of twenty who had suffered with mastoid abscesses, accompanied with but slight pain. On exploring a discharging sinus situated above the external auditory meatus, a cavity

fully two inches in diameter was found, containing fœtid putty-like *débris*. The walls were of bone, except posteriorly, where the cerebellum could be felt pulsating. No meningeal or cerebral complications had occurred.

Ernest Waggett.

Moure, E. J., and **Bordier.**—*An Electro-Telephonic Acoumeter.* "Revue Inter. d'Électro.," Feb. and Mar., 1896, p. 253.

THIS apparatus is composed of (1) a Leclanché pile, (2) a milliampèremeter and rheostat, (3) an interrupter for breaking or making the current from the pile, (4) a telephone receiver. The following is the principle of this new acoumeter: the sound which is to be employed in testing the hearing maintains a constant height and timbre; the intensity alone varies, and this is measured by the electrical intensity expressed in the milliampères.

When the acoumeter is used the patient is placed at a distance of two mètres from the apparatus; the rheostat being at the maximum resistance, the telephonic clicking is not perceived even by the normal ear. As the handle of the rheostat is turned, however, the sound, increasing in intensity, comes to be heard; the indication of the milliampèremeter is then noted. If, in spite of the removal of the entire resistance the patient does not hear the clicking, he is brought nearer the receiver until the sound is perceived; besides the number of milliampères, the distance of the patient from the apparatus is then noted.

Examinations carried out in this way will allow of comparisons being made between all cases, and at different dates in the same case. *A. B. Kelly.*

Poulsen, Kr. (Copenhagen).—*A Case of Purulent Sinus Thrombosis after Chronic Otitis Media.* "Hospitals-Tidende," 1895, No. 38.

A BOY, aged fifteen, had from his earliest childhood suffered from left otorrhœa. In January, 1895, pains in the left ear appeared, and on the 15th of February resection of the left mastoid process was performed; the temperature did not, however, fall, and rigors occurred. Two days later swelling and tenderness were noted along the left internal jugular vein. The pulse was 120, the sensory system was not involved, and the fundus of the eye was normal. On the 19th of February the temperature was normal in the morning, and 40·5° C. (104·8° F.) at noon, and the general condition became worse. The left transverse sinus was then laid open and found to be surrounded by pus; the vein was opened, a large puriform thrombus removed, and the wound was dressed without ligature of the internal jugular vein. Until the 9th of March the patient had constant high fever, alternating with normal temperature, and several minor metastases appeared; these were caused by retention of pus in the wound by the firm pressure of the iodoform gauze, necessitated on account of recurring hæmorrhage from the sinus as soon as the plug was removed or was left loose in the wound. The patient, however, ultimately recovered, the external wound healed, but the discharge from the ear still continued. *Holger Mygind.*

Poulsen, Kr. (Copenhagen). — *Otitic Temporal Abscess: Resection of the Cranium; Recovery.* "Hospitals-Tidende," 1896, No. 10.

DR. POULSEN reports the following case:—The patient, a man, aged fifty-two, had for many years had a discharge from the right ear. In August, 1895, intense pains in the right side of the head, and tenderness behind the external ear. A fortnight previous to the operation a slight paresis of the right facial nerve appeared—which paresis, by the first examination of the patient, proved to be of peripheral origin—the pains became severer, accompanied by giddiness, and in the morning of the day of the operation the patient vomited. No rigors or other fever symptoms.

On the 13th of September, 1895, Dr. Poulsen made an incision over the mastoid process. After the opening of a small sub-periosteal abscess, admittance to the antrum was tried by means of a chisel. There was, however, no antrum to be found in the normal place, the bone being sclerotic, but the superior cells of the process were found to contain pus. At last two tablespoonfuls of pus without any odour were seen to stream from the middle cranial cavity, proceeding from a cavity between the tegmen tympani and the dura mater. A piece of bone the size of a shilling was now removed from the cranium, and iodoform gauze was introduced. The first days after the operation the general condition of the patient improved and the pains disappeared, the temperature being subnormal. Later on, however, the state of the patient presented the following principal features:—Temperature always subnormal; pulse, 76 and 48; pains in the head; now and then a single vomit, but frequently a feeling of sickness; drowsiness often present, but now and then it disappeared entirely. On the 5th of October swelling of the right optic was diagnosed, and a fortnight later also on the left side, with hæmorrhage in the retina. On the 20th of October the wound is reopened; the dura mater opened through an incision, and the brain seen tense and without pulsation. Piercing the brain substance with a stiletto gave no result, but a knife introduced in different directions at last released five tablespoonfuls of odourless pus when the knife was introduced two centimètres upwards and backwards in the temporal lobe, and pulsation of the brain reappeared. A drainage tube was introduced into the cerebral cavity. The following days the general conditions were very much improved; but three days later the temperature began to rise, drowsiness and vomiting reappeared, and the flow of pus through the tube ceased. The tube was removed and found blocked by cerebral tissue, and it was reintroduced with the aid of an anæsthetic, and two teaspoonfuls of pus escaped. The same process was repeated three days later on account of the occlusion of the tube with a coagulum, but this time a considerable venous bleeding necessitated the introduction of iodoform gauze into the abscess cavity. After this the healing of the wound, however, proceeds normally. On the 7th of November the left papilla is normal and the right one improving very much, and on the 1st of December the patient leaves his bed. On the 11th of January, 1896, the right papilla is normal, and the patient leaves the hospital with a trivial discharge from the ear, the paresis of the left facial nerve having disappeared entirely. On the 4th of February the patient is reported to be perfectly well. *Holger Mygind.*

Rueda.—*Necrosis of the Labyrinth.* "Rev. de Laryng.," March 15, 1896.

A CHILD, three and a half years of age, after measles had suppurative median otitis of the right side. Four months afterwards there was right facial paralysis and abundant sanguinolent suppuration from the meatus, a narrowed ulcerated meatus, red and bleeding fungous growths, which were removed, and an osseous mass at the bottom, which was removed by forceps. The child was for a month without treatment, returning then with great pain and hæmorrhage, due to the same condition. A sequestrum so large that it had to be broken was this time removed. This was the inferior part of the vestibule, the posterior half of the external semicircular canal, the inferior orifice of the posterior semicircular canal, and the commencement of the first turn of the cochlea, the promontory, fenestra rotunda, and inferior edge of the fenestra ovalis being clearly distinguished. After removal of this sequestrum cure was rapid, and cicatricial tissue was formed at the bottom of the meatus. The course of these symptoms occupied a year, without being accompanied with the least sign of meningitic or cerebral symptoms. Only sixty-eight cases of necrosis of the labyrinth have been recorded.

Some weeks after the appearance of facial paralysis, and before discovering any sequestrum, the child was observed to fall towards the right side when walking. This lasted fifteen days, unaccompanied with any meningo-encephalic symptom. The author believes this to be a clinical demonstration of the function of the semicircular canals, and makes the opinion of Baginsky doubtful (basing it upon the negative clinical signs in a case of complete destruction of the labyrinth) that affections of equilibrium are due to a meningo-encephalic lesion. The author believes that sight, touch, or the muscular sense in his case have disappeared entirely, either spontaneously or by the action of the semicircular canal of the opposite side. The functional substitution of a semicircular canal would be analogous to what occurs in certain localized lesions of the nervous centres. As in Goldstein's case (JOURNAL OF LARYNGOLOGY, 1895), a certain degree of audition was preserved in this child. He repeated words and numbers spoken at a distance of four mètres on the affected side. *R. Norris Wolfenden.*

REVIEWS.

Pritchard.—*Diseases of the Ear.* Third Edition. Lewis' Practical Series. 275 pages, price 6s.

IT is rarely that one feels so thoroughly pleased and satisfied with a book as one does with the one in question. This book professes to be practical, and it is thoroughly so: the illustrations are not too numerous, but they are useful in most instances, though there are one or two which would be better in the instrument catalogue. Of the others, most noteworthy is the particularly clever diagrammatic sketch of the auditory apparatus as given on page 6. The first seven-and-twenty pages are devoted to the anatomy of the organ, which is dealt with in an extremely able way—short but clear, a style which characterises the book throughout, and adds much to its value. The author devotes about thirty pages to methods of examination, and whilst speaking of the sounds heard by the diagnostic tube, says (page 42) that besides the sound of inflation, of perforation, or of fluid in the tympanum, though there are others they are of not much moment. The author describes the method of Valsalva, and we gather that he still employs it, although its use is a moot point with aurists. In measurement of the hearing power the directions are very clear and most practical. In speaking of the precautions to be taken by artillerymen and others, we are told to direct that the tympanic cavities be well inflated; this is, however, hardly necessary, as keeping the mouth open is quite sufficient. Like most English aurists, Dr. Pritchard does not countenance removal of the stapes; nor, when speaking of the removal of adenoid vegetations, does he advise any nasal injection for at least two days after the operation (page 137). Further on (page 142) Dr. Pritchard throws the great weight of his valuable experience into the balance against so-called turbinotomy.

There are also numerous useful hints, not only in the recognition of disease, but also in avoiding errors in diagnosis, such as the origin and appearance of false membrana tympani (page 69), etc.