fluttering in the air-stream. These remains were partly removed by operation and partly coughed up.

Microscopic examination showed layers of squamous epithelium, with a small quantity of soft, gelatinous connective tissue, consisting of a stroma, insoluble in acetic acid, and cells, groups of red corpuscles, leucocytes, and cells with large nuclei. The authors conclude that the tumours had undergone mucous degeneration.

William Lamb.

EAR.

Alderton, H. A. (Brooklyn, N.Y.)—*Some Unusual Aural Cases.* "Ann. Otol., Rhinol., and Laryngol.," No. 1, 1898.

I. *Case of Diplacusis Binauricularis Echoica.*

Mr. Leslie M., aged twenty-seven years, an athlete rather over-trained, came to my office, November 23rd, 1897, complaining of deafness and tinnitus in the left ear, the deafness being noticed accidentally. On examination, he heard the watch twelve inches; whisper, forty-five feet; speech, forty-five feet; external ear normal; Mt. somewhat dull and thickened; Eustachian tube easily penetrated by catheterization, with no improvement to hearing. The Galton whistle was heard at the mark $1\frac{6}{10}$; Weber heard on vortex, forehead, and teeth, in the middle line, all better in the right ear.

Tuning-forks:

RINNÉ.		ac	ac	ac	ac	ac	ac
Schwabach	ac	20	16	15	50	62	40
	bc	11	3	4	6	13	27
T. F.		C-1	C	C1	C2	C3	C4

With the C3 fork by BC, when placed on the mastoid process of the left ear, two notes were heard (with the finger in the right ear to shut out AC), one a little later than the other; at the end of thirteen seconds the note heard by the left ear ceased, while that heard by the right ear continued to be heard for seventeen seconds more. The test was repeated a number of times, always with the same result. The C3 fork was the only one that gave such a reaction. Unfortunately, the patient, though unusually intelligent, because of a lack of musical ability was not able to tell whether the interval between the notes was harmonic or otherwise. The explanation seems to be warranted that the right ear heard the note as elicited, and, because of its superior functional ability, heard it across the head, even while the left ear was perceiving it; the pathological changes in the left ear were of a nature to alter the musical character of the note and to limit its duration, while at the same time delaying its transmission so that the effect of an echo was produced. Bone conduction throughout, except for the C4 fork, was reduced. We must, therefore, believe that we had to do with a change in the transmitting apparatus as well as of the perceiving apparatus, even though Rinné does not lend countenance to this stand.

II. *Two Cases of Peculiarly Shaped Exostoses of the External Auditory Canal.*

Case 1.—Bertha W., aged eighteen years, came to me January 13, 1898, giving the following history:—For six and a half months has had an occasional shrill whistling noise in both ears; hearing good; for two or three weeks some swelling and tenderness of the inferior maxillary articu ion; itching in the canal. No

history of rheumatism in the family, but she herself has had rheumatic pains in the knees, etc. Examination A. D. :—Canal dry ; Mt. pale and the manubrium is very long, curved, and spatulate at its lower extremity. A. S., same. The point of particular interest was the existence of a sharply defined pyramidal exostosis on the superior portion of the posterior canal wall, about three millimètres in height and the same distance from the Mt., the apex pointing directly toward the short process of the malleus. It was a true cone, the base being vascular, the apex white as ivory ; the whole hard to the touch of the probe. There was no other abnormality about the canal, and there had never been any suppurative trouble. Evidently growth was still taking place at the pinkish, vascular base, whereas the apex was simply being pushed outward and had become ivory-like in look and consistency.

Case 2.—James P. O., aged forty years, referred to me by Dr. William Simmons, January 30th, 1898. Hardness of hearing in both ears for six years, with constant aggravated tinnitus in the left, following sea-water bathing. Gives rheumatic history ; never has had syphilis. Examination of A. S. :—Auricle normal, Mt. thickened, without showing any evidences of cicatrization ; watch heard $1\frac{1}{2}$ inches ; BC better than AC for the two lower forks ; duration of BC fair ; Galton $1\frac{n}{10}$; Weber equal. Description of right ear not pertinent. About two millimètres external to the bony edge of the pars epitympanica, and, anteriorly, is such another exostosis as in the previous case. The apex is white and hard, and directed a little inferiorly to horizontally backward, pointing toward the short process of the malleus ; the base is pinkish. The growth is also truly cone-shaped and about two to two and a half millimètres in height. The manubrium is not spatulate.

The rarity in these two cases consists in the peculiarly sharp cone shape, as occurring in the external canal ; those exostoses usually occurring in this region being much broader and mostly without the marked vascularity at the base, while those occurring on the pars epitympanica are, in the writer's experience, more or less pedunculated, or else similar to those in the other regions. No member of the New York Otological Society present at the meeting remembers to have seen a similar case. The other peculiarity is the absence of all cause for the growths, except that such might be attributed to the gouty or rheumatic diathesis, or possibly to sea bathing in the second case.

III. *Case of Marked Vertigo following Stimulation of the Nerve Endings of the Middle Ear, without any Change in Labyrinthine Tension.*

Female, aged thirty years, with an otitis media purulenta chronica of twenty-two years' duration. The carious ossicles were removed by the writer, and the stapes was in sight. Syringing or pressure on the stapes produced vertigo ; but, at times, so does an applicator armed with cotton, when applied under illumination to regions of the middle-ear cavity so far removed from the labyrinthine fenestra that it would be impossible to accept any disturbances of labyrinthine tension. There were no caries of the inner tympanic wall. This case is one evidently supporting Barr's theory.

This patient, on irritation, loses her balance and staggers, and would fall but for support ; the pupils dilate, and she has the feeling as though the eyeballs were turning round, though no such motion is perceptible to the observer ; there is a feeling of oppression in breathing, with sighing respiration ; the heart's action seems to be oppressive ; the pulse is not accelerated, but very much weakened ; a general feeling of great weakness follows ; the head cannot be kept still, but moves to and fro ; vision is, for the time being, greatly obscured. There is no twitching of the muscles.

One might think of hysteria or of epileptoid seizure in this case ; but the writer

thinks he is right in excluding these conditions here, after having very carefully observed the manifestations and causation many times. *R. Lake.*

Alt, Ferdinand (Vienna).—*On the Influence of Increased Intracranial Pressure upon the Sound-Perceiving Apparatus.* "Monatschrift für Ohrenheilkunde," March, 1898.

Post-mortem.—(1) The membrane of Reissner has been found depressed, and the ductus cochlearis reduced to a mere slit. (2) Infiltration—lymphatic or inflammatory—of the facial and auditory nerves has been found.

Clinically.—(1) Diminished hearing power for the higher musical notes has been observed, and (2) increased electrical excitability of the auditory nerve.

After stating Steinbrügge's and Asher's theories of the mode of production of the increased labyrinthine pressure, Alt points out that—

(1) In hydrocephalus it is not so much great increase of pressure that occurs as great variations in pressure.

(2) From the extremely varying development of the endolymphatic sac it is obvious that a sudden increase of intracranial pressure will be communicated much more quickly through the a quæductus cochleæ to the perilymph than it will through an ill-developed endolymphatic sac to the endolymph, so that in such a case the pressure of the perilymph will for a time considerably exceed that of the endolymph, and this condition may readily cause depression of Reissner's membrane. This is demonstrable in cases in which death occurs quickly after sudden and extreme œdema of the brain.

Frequent attacks or recurrences of high pressure, with the associated stasis, will injure the vascular walls, the delicate structures of the stria vascularis, and the membranous labyrinth, damaging the peripheral terminations of the auditory nerve. Too much stress must not be laid upon depression of Reissner's membrane; the essential thing is the mechanical injury of the organ of Corti and the inflammatory changes in the membranous labyrinth, and in the terminal nervous apparatus in the cochlea.

Increased intracranial pressure thus acts in analogous fashion upon the auditory and optic nerves, producing in the former case lymphatic infiltration and the changes just described, and in the latter case the condition of "choked disc."

Alt examined clinically many cases of brain tumour. Often there was no change in the perception of high and deep notes. With diminished perception of the upper limit of the scale there was always associated considerable shortening of bone conduction.

In other cases there was diminished perception of the lower notes. Sometimes the middle notes were best heard.

Electrical examination showed great variations in health; still greater in disease; but, upon the whole, increased excitability, with increased intracranial pressure.

Two cases of acute hydrocephalus are cited in which frequent transitory attacks of deafness and blindness were found (*post mortem*) to be due, not to changes in the auditory nerves, but to acute transitory œdema of the auditory and optic centres.

Hydrocephalus may also cause pressure atrophy of the auditory nuclei in the floor of the fourth ventricle, and flattening and wasting of the trunk of the auditory nerve. *William Lamb.*

Bell, J.—*A Case of Abscess of the Temporo-Sphenoidal Lobe Presenting Unusual Features—Operations—Recovery.* "Ann. Otol., Rhin., and Laryng.," No. 1, 1898.

A MAN, aged twenty-eight, was admitted to hospital August 30, 1895, to Dr. Buller's ward, Royal Victoria Hospital.

History.—Six years ago patient's ear first troubled him. It suppurated and left a permanent perforation of the membrana tympani. Since that time his ear discharged occasionally. Present trouble dates from July 1, 1895, with symptoms of pain, raised body temperature, headache; the mastoid was tender.

Sept. 1—Mastoid opened—no pus found. Sept. 2—Intense headache. High fever, 104°. Vomiting and beginning delirium. Sept. 4—Delirious in a quiet way. Vomited six times. Retraction of head. Neck quite rigid. Sept. 5—Photophobia, stupor and subsultus tendinium. Sept. 6—Same, with short shrill cry every few minutes. Sept. 7—Less crying. Less headache. Disposition entirely changed from that of a particularly quiet, modest man to that of an extreme boaster. Sept. 8—Pulse becomes slow (60). Temp. down, 99½. Dull mental condition. About this time paralysis of left side of face noticed. Retraction of neck still marked.

Transferred to Dr. Bell's Care.—Sept. 9—A man, of wiry build, with a condition of intelligence improved from what it had been for a few days, but still noisy and talkative at times, wanting to get up, etc., but can answer questions quite rationally. Severe headache on right side. Fundi normal. Movements of face weak on left side; retraction of neck prevented flexion of head. Noticed for first time, on morning of 9th, that the power of the left arm was almost gone—extensor paralysis at wrist with very weak flexion; at elbow very poor flexion with fair extension. Sensation impaired all over left arm. Power in left leg unimpaired. Pulse 50 to 60. Respiration normal. Over right mastoid region is the wound of first operation. Syringing through auditory canal causes flow of fluid from mastoid wound. There is subsidence of the inflammatory condition which had existed in neck below tip of mastoid, but with slight tenderness still remaining.

Operation.—Sept. 9—Mastoid incision continued upward to parietal eminence, and an incision at right angles to it, passing forward from its centre. Small piece trephined away one inch above zygomatic ridge, and opening enlarged by rongeur forceps. On opening through dura mater a flow of pus occurred (over ʒ i). Rubber drainage tube inserted, and was brought through skin in front of ear. Trephine tore away a branch of middle meningeal artery, from which hæmorrhage was found difficult to control; forceps were left applied. A few sutures with iodoform gauze drain from behind. Sept. 10—Slept well. No pain. Can raise forearm and partially flex fingers. Face improved. Sept. 11—Rested well. Paralysis of extensors of wrist almost gone. Can flex elbow and extend it; can raise arm from shoulder. Sept. 12—Paralysis almost gone. Slightly restless. Dressing. Tube aspirated showed brain matter. Some pus drained out along forceps. Sept. 16—For past three to four days patient has been drowsy most of the time, though at times is cranky, difficult to manage, wanting to get out of bed, etc. Answers questions rationally, but takes a long time to do so. Restless at night lately. Second dressing; forceps removed and tube shortened. Sept. 19—Patient has been restless at night, and drowsy in morning; objects to being disturbed. Headache continuous; bowels much constipated. Quite rational, except on matter of getting up. Muscular power in arm and face quite restored. Sept. 21—Excessive headache past two days. Slow cerebration. Difficult to rouse now. Sept. 23—During past night delirious. Tore off dressing. Headache. Prominence noted at dressing. Sept. 28—Optic neuritis advancing in both eyes. Severe frontal headache past two days in mornings. Quite rational. With all this, no rise in temperature. Sept. 29—Afternoon, again delirious. Sept. 30—Dull and stupid. Pulse 48. Respiration 11.

Third Operation.—Wounds reopened and two abscess cavities found in temporo-sphenoidal lobe, one very small, the other about the size of a walnut.

Rubber drainage tube inserted and attached to skin. Oct. 3—Has been sleeping every night and is quiet and free from pain. Pulse 88. Temperature up a little. Oct. 10—Has slept from nine to six every night. No pain. Mental condition normal now. Oct. 13—Tube removed. Nov. 4—Discharged, with small sinus still present at lower end of wound. Has steadily improved in mental and general condition.

Bacteriology.—Cultures from abscesses, pure growths of the streptococcus pyogenes.

Re-admitted.—Jan. 17, 1896—Complaining of having had a fit a few days ago, and of a discharging wound in line of old scar.

History.—Since leaving hospital sinus has persisted in front of ear, with slight daily discharge, of late markedly less. Three weeks ago a small fragment of bone came away through small opening in line of scar behind ear; after this it closed up. After going home he was nervous and irritable for three weeks, but improving all the time. Since then he has done light work in the store, but no mental work. On Tuesday, the 14th inst., after a heavy meal, he fell down suddenly in a fainting condition and was unconscious for some time. Vomiting following, and headache. Felt well since. Patient thinks his mental condition fully as good as ever it was, but his mother finds him more hot-headed and self-willed than formerly.

Present Condition.—Small sinus. Probing reveals several small loose fragments of bone. No tenderness.

Operation.—Jan. 28—Sinus enlarged. Finger introduced enters cranial cavity and feels contracted remains of old abscess cavity. Long tube introduced well within cranial cavity. Jan. 29—Felt splendid all morning. Slight nausea at noon and vomiting at 2 p.m. At 2.45 p.m. became suddenly livid without any warning, and went into a short tonic spasm (almost opisthotonus), followed rapidly by clonic convulsive movements of legs, then of arm. Deep cyanosis. Patient turned on left side. Pulse 120, and regular. Slight frothing at mouth. Pupils slightly dilated and equal. Lasted two minutes. For ten minutes after breathing was very stertorous and noisy, and patient in deep coma; tongue protruding; spitting. At 3 p.m. vomited. At 3.30 p.m. conscious, rational, and feeling splendid. During same evening another similar attack. On February 2 another slight one, without loss of consciousness. March 7—Tube removed; discharge now very slight. March 21—Has been feeling well all along. To-day without prodromata, another fit, similar to former, and with conjugate deviation towards right side. April 7—Discharged. Sinus still discharging pus, but presumably from superficial tissues.

N.B.—Dr. Keenan saw patient June 30, 1897. Latter says his memory is a little weak, *e.g.*, can act as floor-walker in store, but not as clerk. Had only had one fit during summer of 1896; none since then.

Berens, T. P.—*A Case of Sigmoid and Lateral Sinus Thrombosis from Acute Suppuration of the Middle Ear. Operation; Relief. Subsequent Abscess in the Temporo-sphenoidal Lobe of the Brain; Operation; Death; Autopsy.** "Ann. Otol., Rhinol., and Laryngol.," No. 1., 1898.

J. B., male, aged twenty. Two weeks before had noticed a slight pain and discharge in his left ear. Two days before his first visit the discharge ceased and the pain became steadily and rapidly worse. On examination: a small perforation in the anterior inferior segment of the drum membrane, which was congested and slightly bulging; mastoid process swollen and tender on pressure, not red; the ear not dis-

* Specimen presented and case reported to the New York Otological Society, Nov., 1897.

placed; slight vertigo; no chill; temperature 99° F.; pulse 80; bowels constipated. Calomel was administered and the hot douche and hot applications ordered for the mastoid. For three days the patient rapidly improved; thirty-six hours later he returned with severe pain, tenderness, and vertigo. Temperature 103° F.; pulse 100. This was at seven o'clock p.m. At midnight the temperature was 104° F. In the morning there was retraction of the head to the affected side, displacement of the auricle forward, much pain and tenderness on pressure over the mastoid region. Vertigo marked. No pain or tenderness in the region of the jugular vein. Left eye presented an inactive dilated pupil, distension of the retinal vessels, and slight optic neuritis. The mastoid was explored; no necrosis was found, but the parts were decidedly vascular, the wound in the bone bleeding profusely. Carrying the incision backward, the sigmoid sinus was laid bare and was found to contain a firm clot; with the rongeur the sinus was exposed from near the jugular bulb up into the lateral sinus. The vein was opened, but the clot was so firm that a curette was used to dislodge it. The slit vein was then packed with iodoform. The patient rallied well from the operation. The pupil of the eye reacted to light before he was well out of the influence of the ether. The temperature fell rapidly, and at the end of ten days he had made sufficient recovery to be allowed to walk about his ward. On the nineteenth day after the operation he had a rise in temperature, which was ascribed to an indiscretion in diet, and was relieved by a purgative. On the twenty-third day, temperature 103° F., slight occipital pain, nausea and vomiting. All reflexes and cerebration fairly active. Wound perfectly healthy, no pus, no exposed bone. His condition gradually grew worse. It was typically septic.

On the twenty-sixth day chloroform was administered, the wound was reopened, and after careful investigation the parts were found normal. The middle and posterior fossæ of the skull were laid open by trephining immediately above the suprameatal triangle. The dura mater was of healthy appearance and not adherent.

The brain was explored. Nothing abnormal was found until the needle entered the region of the left lateral ventricle, when about two drachms of discoloured serum was withdrawn. This was supposed to have come from the lateral ventricle. The wound was dressed, and the patient rallied considerably for a few hours after the operation. The patient then grew rapidly weaker, and died thirty-eight hours after the operation. Immediately following the operation there was a spasmodic contraction of the right brow, rhythmical with the pulse. This was the only indication of central nervous irritation. The reflexes and cerebration were responsive until a short time before his death.

Post-mortem Examination.—Permission was given to examine the brain only. Excepting the wound in the bone, from the operations, nothing abnormal was found in the bones of the skull. The sigmoid sinus was found to have been opened almost to the jugular bulb below and upward into the beginning of the lateral sinus. The latter contained a firm clot to the torcular, and at this point there seemed to have been a fresh addition to the clot. The superior petrosal vein was occluded for its whole length by a clot. No pus was found. The pia and arachnoid were œdematous, the œdema being most marked posteriorly. There seemed to be a marked increase in quantity of cerebro-spinal fluid. The brain substance was very soft, although the examination was made only a few hours *post mortem*. The left temporo-sphenoidal lobe was red and very soft. In the centre of its apex was a small abscess one half of an inch in diameter. It contained opalescent, thin fluid, tinged with red. The track of one of the exploratory punctures was noted passing at the edge of but not entering the abscess. A few small hæmorrhagic points were noted in the white matter of this lobe. The

ventricles were distended and the velum interpostium was œdematous and its veins congested. The mark of a puncture was found near the floor of the left lateral ventricle. Death seemed to have been caused by sepsis combined with œdema of the brain, softening, and abscess formation of the temporo-sphenoidal lobe.

R. Lake.

Brühl, Gustav.—*A Case of Death after Extraction of a Foreign Body from the Ear.* "Monats. für Ohrenheilk.," Feb., 1898.

A BOY of four and a half years stuck a stone in his left ear. Vigorous attempts at extraction with instruments, on the part of the village barber, caused some bleeding, great pain, and in due course suppuration. As there was much swelling, palliatives were applied (ice, carbolic, lead), till on the 16th day of treatment fœtor was noted, and feverishness. He was admitted for operation.

The auricle was turned forward, and the posterior wall of the membranous meatus was detached from the bone as in the radical operation. The stone was found to be of an elongated form, and to be lying across the end of the bony meatus, with one end jammed into the epi-tympanic recess towards the antrum, and the other end fixed in the hypo-tympanic recess, so that it was quite immovable. Part of the upper and posterior wall of the bony meatus having been chiselled away, the upper end of the stone was released, and the whole thing was easily washed out with a syringe. The malleus and incus were removed. On the sixth day after the operation he had a rigor and vomiting. Temperature 105°. Mastoid tender. No swelling of veins, retraction of head, or eye symptoms.

Considering that there was probably retention of pus in the antrum and thrombosis of the sigmoid sinus, the antrum was opened in the suprameatal triangle, the posterior and upper wall of the bony meatus was removed, and also sufficient of the mastoid process posteriorly to expose the descending part of the sigmoid sinus. As the sinus wall looked normal, more bone was removed; superiorly as far as the turn into the transverse sinus, and inferiorly almost to the tip of the mastoid process. Above part of the tegmen tympani was exposed: the dura mater was normal. Three days later the child died. *Post-mortem:* Thrombo-phlebitis of left transverse sinus, pleurisy, and pulmonary abscesses.

One half centimètre below the lower edge of the wound in the bone the sinus was thrombosed; also a small vein running through the suture between the mastoid process and the occipital bone.

The middle ear was full of pus and granulations, and it seemed probable that there had been an old otorrhœa. The promontory and jugular fossa were uninjured. Masses of micrococci were found in the pus.

The stone blocked the exit for pus, and from this pent up pus particles were carried through the veins of the bone to the sinus, where they set up an infective thrombosis.

The case emphasises the necessity of prompt operation in cases of pent up discharge.

William Lamb.

D'Hoore.—*A Case of Mastoiditis resulting from Acute Middle-Ear Inflammation.* "La Belgique Médicale," Jan. 20, 1898.

ENERGETIC treatment to ensure free drainage of the pus that forms is advocated. The differential diagnosis between the acute median otitis and the osteitis that may accompany it is given.

B. J. Baron.

Eulenstein, H. (Frankfurt-a.-M.).—*Contributions to the Knowledge of Pyæmia.* "Arch. of Otol.," April, 1898.

EULENSTEIN calls attention to Leutert's observations on parietal thrombosis in sinuses as the beginning of otitic pyæmia. He quotes two cases, one of which

died with symptoms of pyæmia. On *post-mortem* examination the outer wall of the right sigmoid sinus was found to be unevenly thickened and covered with tough granulations, and in a corresponding position in the inside there was an elongated thrombus with a broad base one and a half centimètres long, which projected into the lumen of the sinus, and in its central portion was necrotic and purulent. In the second case the patient recovered. In the course of the operation the sinus was freely exposed, and its wall was found to be thickened and covered with granulations for one and a half centimètres in length. Fever of pyæmic type persisted for several days after the operation, but there was no evidence of total sinus thrombosis or its consequences. The author considered three conditions possible: osteo-phlebitic pyæmia, thrombosis of another sinus, or a parietal thrombus of the sigmoid sinus. In view of the abnormal appearance of the wall of the sigmoid sinus, he considered the last-named condition the most probable, in the light of the *post-mortem* appearances in the former case.

Dundas Grant.

Hennebert.—*Some Complications of Suppurative Otitis.* Cercle Méd. de Brux., April 1, 1898; "Journ. Méd. de Brux.," April 14, 1898.

THE first case was that of a man aged twenty-one years, the attack supervening on the eruption of a wisdom tooth. There was perforation of the membrana tympani with severe general symptoms, and œdema of the eyelids and exophthalmos. A hard cord formed by the jugular vein was felt in the neck behind the carotid, and there were flying pains in the joints. Large doses of quinine were of much value.

The second case was that of a child eight years old, where scarlatinal otitis was complicated with double parotitis, and œdema of the mastoid and periostitis of the external meatus, with narrowing of the canal.

The third case was a mastoid abscess complicating the middle ear mischief. The first case is attributable to phlebitis of the jugular vein, and of the lateral sinus with pyohæmia.

B. J. Baron.

REVIEWS.

Williams, Watson P.—*Diseases of the Upper Respiratory Tract: the Nose, Pharynx, and Larynx.* Third edition. (Bristol: John Wright & Co.)

IT has been often remarked, and with great truth, that there is no better proof of the merits of, as well as the demand for, a book, than the rapid reappearance of subsequent editions.

Dr. Williams has brought out a third edition within four years. It is not to be wondered at, for the book is eminently practical and clear, and well and interestingly written, with the needs of the readers kept carefully in view.

This is the chief essential in any work which professes to be one to which the busy practitioner can turn, and find, without undue loss of time, a description of a disease and hints as to its treatment. There is nothing, perhaps, which is of greater service than a moderate number of recipes. Dr. Williams appends a useful list, and alludes to them by numbers in the text.