

Abstracts.

MOUTH AND PHARYNX.

Sibley, W. Knowsley.—**The Relation between the Teeth and certain Diseases of the Skin and Mucous Membrane.** "Proc. Roy. Soc. Med.," May, 1911 (Odontological Section.)

Eruptions on the face, scalp and neck may be due to (1) irritation of one or more branches of the fifth nerve supplying the teeth, or (2) to toxæmia produced by absorption from unhealthy gums. The author states that pain from caries of the upper incisors is referred to the fronto-nasal area, and from the two upper bicuspids to the maxillary or temporal regions. In one case temporary patches of erythema under the eye disappeared after some carious teeth on the same side had been attended to. Local œdema of the face or buccal cavity may be the result of dental trouble, and simple or malignant ulcers of the mouth are frequently due to ragged teeth. The author also mentions leukoplakia buccalis and lichen planus as connected with dental disease.

J. S. Fraser.

Meyer, Arthur (Berlin).—**Intra-nasal Extension of Hypertrophic Pharyngeal Tonsils.** "Zeitsch. f. Laryngol., Rhinol., etc." Bd. iii, Heft 3.

As a rule "adenoids" do not extend quite as far forwards as the choanal openings, and therefore they can be completely removed by means of the curette. Occasionally, however, small prolongations extend forwards and upwards on the under surface of the sphenoid. In these cases after operation small tags, the size of a pea, may be seen on posterior rhinoscopy hanging down from the choanal roof. Meyer says these remains of adenoids may keep up turbinal swelling or purulent catarrh; they only occur in adults or older children and then only in cases of extensive "adenoids," and cannot be recognised before operation. Removal may be accomplished through the mouth with the aid of small currettes, a posterior rhinoscopic mirror and a palate retractor, or, better still, through the nose after the application of adrenalin and cocaine. Meyer records a case in a man, aged thirty-five, who had had adenoids removed; the intra-nasal extension was removed on both sides through the nose, and on microscopical examination showed the typical appearance of the pharyngeal tonsil; the nasal obstruction from which the patient suffered was completely removed.

J. S. Fraser.

Prota, Prof. G. (Naples).—**Occlusion of the Hypo-pharynx by a Syphilitic Cicatricial Glosso-pharyngeal Diaphragm.** "Archiv. Ital. di Laring.," Naples, 1911, p. 12.

The author contributes a valuable paper on this subject. In the case referred to, a youth, aged sixteen, had practically complete disuse of the pharynx, owing to the presence of a mass of cicatricial tissue, to which the anterior pillars adhered. Notwithstanding anti-syphilitic treatment and various attempts at dilatation from March to August last year, the stenosis increased until nothing could be swallowed and the patient had to be given nutrient enemata. Dyspnoea also occurred to such an extent

that in May tracheotomy had to be performed. Prof. Massei suggested gastrotomy, but the author tried incising the cicatrix with a pharyngotome, followed by dilatation with Bajeux's and O'Dwyer's tubes. The result was very satisfactory, and the patient can swallow well through the space gained, although this does not permit a view of the subjacent larynx or the œsophageal aditus. There are copious references to the cases of other writers as well as a useful bibliography.

James Donelan.

Duverger, J., and Bain, A.—A Rare Case of Lingual and Pharyngeal Sporotrichosis threatening Asphyxia. "Rev. Hebdom. de Laryngol., d'Otol., et de Rhinol.," April 15, 1911.

In this case of lingual and pharyngeal sporotrichosis the *Sporothrix Beurmanni* was found on bacteriological examination, and treatment with a peroxide mouth-wash and iodide of potassium internally brought about a rapid cure. The paper concludes with a *résumé* of the characteristic features of "sporothrix stomatitis." The onset is insidious and probably very slow. All parts of the bucco-pharyngeal mucosa and even that of the larynx may be affected. The disease is characterised by the formation of ulcers, which are coated with a foetid material varying in thickness and resembling *papier mâché*. The bases of the ulcers, which may be either discrete or confluent, fungate and bleed readily. There is more or less infiltration of the mucosa, and this may give rise to considerable swelling of the tongue and pharynx. On the palate and pharynx are scattered whitish spots, which probably represent the ulcers in an early stage. The lesions are painless, and may be curetted without anæsthesia. There is not often any glandular enlargement nor rise in temperature. Recovery is usually rapid.

John M. Darling.

NOSE.

Sieur and Rouvillois.—Anatomical Research on Puncture of the Frontal Sinus. "Rev. Hebdom. de Laryngol., d'Otol., et de Rhinol.," March 4, 1911.

Intra-nasal puncture of the frontal sinus has been recently advocated and systematically employed by M. Vacher. Encouraged by his work MM. Sieur and Rouvillois have revised the subject from the anatomical point of view. They approve of Vacher's instrument—a steel instrument with the double curve of the frontal sinus probe, point and convexity blunt, and with a saw edge on the terminal part of the concavity—and they recommend the following technique: The parts are anæsthetised with pledgets of wool soaked in 5 per cent. cocaine. The middle turbinal and meatus are carefully cleansed. The patient's head is held in the horizontal position by an assistant. The thumb of the operator's left hand gently raises the tip of the nose, the remaining four fingers being steadied on the forehead. The rasp is introduced, and the extremity carried along the angle made by the nasal bones and the septum until an obstacle is met with. The handle of the instrument is now lowered and the point directed outwards towards the upper and inner angle of the orbit. A continued moderate pressure will now carry the point into the sinus.

This procedure was carried out with success on the cadaver by the authors in twenty-four cases. They hold that it is possible to perform intra-nasal puncture of the frontal sinus, and they consider that clinically it would at least be a useful adjuvant to removal of the middle turbinal and opening of the anterior ethmoidal cells in order to avoid acute retention while awaiting a convenient occasion to employ external methods.

John M. Darling.

Frankenberger, O. (Prague).—Ocular Disturbances in Diseases of the Nasal Accessory Sinuses. "Zeitschr. f. Laryngol., Rhinol., etc.," Bd. iii, Heft 3.

The author first refers to affections of the lacrymal apparatus caused by intra-nasal disease, and then goes on to discuss cases of orbital abscess due to rupture of an empyema of the sphenoidal, ethmoidal or frontal sinus. Case 1: Male, aged thirty-seven, had diminution of vision and diplopia for five months, left eyeball displaced outwards. Left ethmoidal bulla enlarged, left nasal cavity contained pus. Bulla opened with Hajek's hook, anterior ethmoidal cells opened up. The orbital displacement soon recovered. Case 2: Male, aged sixteen, suffered from swelling of eyelids on right side of four days' duration. Right middle turbinal swollen. Sondermann's suction apparatus removed a good deal of pus. The orbital abscess was at first incised and later the ethmoidal labyrinth was opened up and curetted. Case 3: Female, aged twenty-three, suffered from attack of coryza. Some days later sudden swelling of right eye; globe displaced forwards. Right middle turbinal polypoid with pus in middle meatus. Patient refused external operation and orbital abscess burst spontaneously. The middle turbinal was later resected and the ethmoidal region curetted. Both the ocular and nasal conditions returned to normal.

Passing to affections of the uveal tract the author notes that Ziem believes in a direct connection between sinusitis and iritis. Kuhn, on the other hand, believes that sinusitis is only a predisposing cause; he has, however, seen opacity of the vitreous clear up after treatment of an antral empyema. Finally, in connection with affections of the retina and optic nerve the author gives a short account of Onodi's work, and states that if the wall of the optic canal be thin or dehiscant, suppuration in the posterior sinus may lead to perineuritis or to retrobulbar neuritis with limitation of the field of vision, amblyopia, central scotoma and amaurosis. As Hajek has shown, there may be pressure on the inner wall of the optic canal or on the veins from the sphenoidal sinus which have a collateral connection to those of the optic nerve. The author then gives a brief account of the cases recorded by ten writers. It is interesting to note that in several cases suppuration and even necrosis existed in the ethmoidal and sphenoidal cavities with little or no sign of it in the nose. Frankenberger records the case of a patient, aged twenty-eight, who had had nasal polypi frequently removed, and had suffered from severe headache since the last operation. Four days after there was sudden loss of vision in the left eye and the fundus was seen to be hyperæmic. The frontal sinuses and antra were normal, but there was pus and polypoid tissue in the left ethmoidal region. A radiograph showed a shadow in the left sphenoidal region. The middle turbinal was removed and the ethmoidal and sphenoidal sinuses freely opened up and

curetted. They contained pus and polypi. Colour vision gradually returned, but a central scotoma for red and green remained on the left side. The case is not reported as "cured" because polypi and pus are still present in the nose.

J. S. Fraser.

Fabri, Dr. Elio (Florence).—On the Action of Iodo-thiocinnamine on Exuberant Cicatrices of the Nasal Cavity. "Bolletino delle Mal. d'Orecchio, etc.," Florence, 1911, p. 80.

The author describes a very interesting case in which as the result of a severe accident extensive synechiæ with almost complete occlusion had formed in both nasal cavities. Having cut with scissors the most prominent bands the surfaces were dressed daily with pledgets of gauze in iodo-thiocinnamine for twenty-four consecutive days. Cocaine was applied before each dressing. One c.c. iodo-thiocinnamine was given on alternate days by deep gluteal injection on forty occasions. An excellent result is reported. The author leaves it an open question how much of the success obtained was due to the local treatment apart from the injections.

James Donelan.

Arrowsmith, H.—A Case of True Papilloma of the Nasal Septum. "Laryngoscope," February, 1911, p. 85.

The patient, a girl, aged twelve, had had left-sided nasal obstruction with some bleeding and soreness for a year. A small growth $\frac{3}{16}$ in. in diameter was found on the left side of the septum just behind the columnar cartilage. The growth was removed and on section found to be a papilloma. This is the thirty-fifth case that the author has been able to find recorded.

John Wright.

Freer, O. T.—Sarcoma of the Nasal Wall of the Maxillary Antrum. "Laryngoscope," February, 1911, p. 98.

The patient, a woman, aged forty, was first seen in December, 1908, with a history of left nasal obstruction with bleeding and fœtor for five months. A pink, lobulated growth was found filling the left side of the nose and naso-pharynx. This growth was removed intra-nasally without any great loss of blood with the author's per-nasal forceps. The turbinal bones and ethmoidal cells on that side were found to have been completely eroded by the growth. Six recurrences were removed intra-nasally from the naso-antral wall, and the patient when last seen had been free from recurrence for eight months. Histologically the growth was a mixed-celled sarcoma with extensive necrotic areas.

John Wright.

Metzenbaum, M.—Submucous Resection, with a Description of the Author's Special Instruments. "Laryngoscope," February, 1911, p. 86.

The author advocates the administration of $\frac{1}{100}$ gr. of hyosein hydrobromide half an hour before operation, and has found that by this means satisfactory anæsthesia can be obtained by the use of as weak a cocaine solution as 2 per cent. applied locally. The special instruments consist of a chisel on the pattern of Ballenger's knife but with a fixed blade, and a pair of cutting pliers, the author being able to remove cartilage and bone in one piece by means of these instruments.

John Wright.

Carter, W. W.—**Transplantation of Bone for the Correction of Depressed Deformities of the Nose.** "Laryngoscope," February, 1911, p. 94.

The author has treated successfully three cases of depressed nasal deformity with loss of bone by autoplasmic transference of bone. A piece of the ninth rib free from periosteum and about 2 in. in length is removed from the patient and a suitable piece of the outer compact layer split off and shaped. Through a transverse incision over the naso-frontal suture the skin and subcutaneous tissues are elevated with a thin curved two-edged knife and the graft inserted. The inserted fragments can be shown by the X rays to persist.

John Wright.

LARYNX.

Citelli, Prof. (Catania).—**Intubation and Tracheotomy in Acute Laryngeal Stenosis in Children.** "Zeitschr. f. Laryngol., Rhinol., etc.," Bd. iii, Heft 3.

This is a contribution to the old question, intubation *versus* tracheotomy. The author thinks that those who uphold one method only go too far, and that the operations are not really opposed—they are complementary; in fact, Citelli believes in the combination of both methods in many cases. In urgent cases of diphtheria the author believes in intubation, but says that in many cases this proceeding must be followed later by tracheotomy on account of stenosis of the larynx remaining after the disease has passed off. Tracheotomy is also indicated in cases of repeated spontaneous extubation. The most common cause of stenosis is swelling of the subglottic region with or without ulceration; if the tube be removed in these cases the dyspnoea recurs as a rule in a few hours, but it may not come on for five or eight days. In cases of chronic stenosis laryngotomy may be indicated, but Citelli advocates his own method—tracheotomy combined with the introduction of a small laryngeal tube through the tracheotomy wound. Citelli again calls attention to the fact that after tracheotomy stenosis is usually due to the incision having been made through the cricoid cartilage; this leads to subglottic oedema or to granulation-tissue formation. He narrates a diphtheria case in which tracheotomy was performed by another surgeon; after eight days the tube was removed, but had to be replaced. The tube was again removed, but the child soon began to have dyspnoea. On laryngeal examination Citelli saw a cicatricial ring below the cords at the lower border of the cricoid which had been cut at the operation; he treated the case by introducing an intubation tube, and only removed it fourteen days later; complete recovery.

In cases of stenosis following diphtheria, measles or typhoid, Citelli recommends intubation. The tube should be left in position for twenty-four hours. If symptoms recur the tube should be again introduced, and then tracheotomy slowly and carefully performed, the incision passing through the second and third tracheal rings; by this method the intubation tube can be introduced through the tracheal wound if necessary. In other cases in which the intubation tube is spontaneously coughed out on several occasions, it is advisable to perform tracheotomy at once. Finally, if the surgeon cannot remain near the case, both intubation and tracheotomy are indicated. By these methods laryngostomy with its troublesome after-treatment may often be avoided.

J. S. Fraser.

Blumenfeld, Felix (Wiesbaden).—The Pathological Anatomy of the Vocal Cords "Zeit. f. Laryngol., Rhinol., etc.," Bd. iii, Heft 3.

The author first describes a rare *post-mortem* specimen of carcinoma of the vocal cord. The tumour had extended in the antero-posterior direction, following the edge of the cord. Blumenfeld points out that epithelial tumours follow the lymphatics and that this accounts for the peculiar method of spread in cases of cancer of the true cord such as the one he records. The free border of the vocal cord consists of a tough elastic network covered with squamous epithelium. There are no glands and very little submucous connective tissue. Below the cords, however, and also in the region of the ventricle these structures are freely present. The lymphatic spaces of the vocal cords themselves are bounded above and below by the superior and inferior arcuate lines of Reinke, along which the fascia of the thyro-arytænoid muscle is attached to the cord. In the case recorded by Blumenfeld the boundaries of the tumour corresponded to these arcuate lines. Logan Turner has shown that the upper surface of the vocal cord can be injected, and that, if the pressure be increased, the subglottic part of the cord also becomes swollen, the same thing happens in the reverse order if the injection be made into the lower surface of the true cord. Most states that the lymphatics of the cord are very scanty and that they seem parallel to one another along the cord. The free edge of the cord cannot be injected. Blumenfeld states that rare cases are met with in which cancer of the vocal cord rapidly extends beyond the limits of Reinke's lines (which also correspond to the junction of squamous with cylindrical epithelium). As a rule, however, the growth extends round the anterior or posterior commissure to the other side, thus giving us the "ring" form of cancer. A similar ring-like spread of cancer is seen in the œsophagus and intestine, but it is never so circumscribed as in the case of the vocal cords. It is well known that cancer affecting the ary-epiglottic folds, the inter-arytænoid region, or the pharyngeal surface of the larynx is of bad prognosis because of the rich lymphatic system in these parts. Blumenfeld goes beyond Krishaber and divides cases of intrinsic carcinoma into (1) those affecting the vocal cords, and (2) those affecting the other intrinsic parts of the larynx. The latter are much less favourable, not only on account of the freer lymphatic circulation but also because the type of growth is different. B. Fränkel and others have operated successfully by intra-laryngeal methods on cases of cancer of the vocal cord. Blumenfeld believes that a case such as he has recorded would be suitable for this method. He also states that pedunculated adeno-carcinomata and cases in which only the free border of the epiglottis is affected are also suitable for endo-laryngeal removal. Finally, the author notes that the anatomical conditions to which he calls attention may be of importance in cases of laryngeal tuberculosis. The paper is well illustrated. *J. S. Fraser.*

Carter, W. W.—An Unusual Case of Papilloma of the Larynx. "Laryngoscope," February, 1911, p. 102.

The patient, a male, aged forty-seven, had suffered from "croup" on several occasions as an infant, and also had warts on his hands. From the age of five his voice had been reduced to a whisper, and he suffered from dyspnoea on taking any active exercise. At intervals he coughed up small pieces of tissue "like cauliflower." His condition was looked upon as asthma until he reached the age of forty-five, when his larynx was examined and found to be almost filled with papillomatous masses, the

largest acting as a ball-valve. No treatment was employed until he came under the care of the author two years later with an acute attack of dyspnœa, which was relieved by steam and adrenalin inhalations. The growths, which grew from all parts of the larynx, including the commissures, were removed with a snare by the indirect method and the bases cauterised. When the case was shown the voice had not returned, and it was too soon to say if there would be a recurrence, but the author emphasised the length of time which the condition had persisted, and also the ease and safety with which the growths were removed with the snare.

John Wright.

Dencker, H. (Frankfurt-a-Main).—A Foreign Body in the Right Pyriform Sinus simulating Tuberculosis or Tumour. "Zeitschr. f. Laryngol.," Bd. iii, Heft 3.

The patient was a man, aged fifty-one, who complained of pain on swallowing and hoarseness of six weeks' duration; cough and expectoration were also present, but the dyspnœa was slight. The cause of the trouble was unknown. Laryngoscopy showed marked œdema of the posterior wall of the larynx and of the right arytaenoid region; the false cords were also swollen and the lumen of the larynx narrowed, so that the vocal cords could not be seen. Auscultation revealed only slight bronchitis. Dencker thought that tumour-formation or tuberculosis underlay the condition, and therefore removed pieces from the swollen arytaenoid region for microscopical examination; the report, however, only stated "chronic subepithelial inflammation." Direct examination showed only swollen ventricular bands. One month later the patient returned complaining of a marked tendency to cough, and on laryngoscopic examination a yellowish-brown body was seen in the larynx lying in the sagittal direction. On removal this turned out to be a wooden peg used in preparing rolled herring. The patient then remembered that he had celebrated the Kaiser's birthday six weeks before his first visit, and had, along with a considerable quantity of alcohol, partaken of rolled herring. Dencker thinks the peg must have been in the pyriform sinus; if it had been in the ventricle the patient would have had more cough.

J. S. Fraser.

Evans, Arthur.—A Subsequent Report on a Case of Excision of the Larynx, Lower Part of the Pharynx, and Upper End of the Œsophagus for Malignant Disease (Squamous celled Carcinoma) of these Structures. "Proc. Roy. Soc. Med.," April, 1911 (Clinical Section).

The case was at first considered inoperable, but later Mr. Evans prevailed upon to attempt the removal of the growth. Details of the first operation were given in the "Proc. Roy. Soc. Med." (Clinical Section) 1910, pp. 44-47. At the time of the second operation the patient had in the lower part of the neck a fistula, which showed a tendency to leak and caused discomfort. Mr. Evans closed this fistula and made a new one immediately below the hyoid, lining the walls of the new sinus by means of four skin-flaps. The new opening worked well, and seven months later the patient got married. She can now take a meal in a crowded dining-room without attracting observation, and can make herself understood in a forced whisper.

J. S. Fraser.

EAR.

Bárány, Robert.—Temporary Depression of the Function of the Cerebellar Cortex after the Method of Trendelenburg, evidenced by the Pointing Test; Localisation in the Cerebellar Cortex. (Preliminary communication.) "Monats. f. Ohrenh.," Year 45, No. 3.

At the Physiological Congress in Vienna, 1910, Trendelenburg had demonstrated his method of non-injurious inhibition of the cerebral cortex by the agency of cold, normal saline solution at -7° being used. By this means the temperature of the dura was reduced to $+12^{\circ}$, the solution being allowed to flow through a rubber bag applied over the desired area. Dr. Kollmer had suggested that this method should be adopted in experimental research on the cerebellum of animals. It had thus occurred to Bárány that, as it was impossible to carry out his pointing tests on animals, and as the temperature of the dura could be lowered to $+12^{\circ}$ with impunity, this method might be used on man without danger, especially if the temperature were not reduced so low but were applied longer, and he had carried out investigations on these lines on patients in whom a large area of the cerebellar dura had been exposed, as often occurred after labyrinth and sinus operations. As regards the result of these tests on cases which had been subjected to the labyrinth operation, he could state theoretically what would be the direction of the pointing, if, indeed, any response at all occurred. The patient with a healed, right-sided cerebellar abscess whom he had shown at the Austrian Otological Society, whilst in the acute stages of the disease, had pointed to the right with the right arm; later on a deviation to the left with the same arm was observed. Also the other patients, in whom severe degrees of deafness existed in combination with symptoms of cerebellar disease, had all shown spontaneous deviation outwards when their pointing reaction was stimulated, whilst after rotation or syringing the deviation to the left was absent. From this Bárány had concluded that the centre for the inward movement must lie in the surface of the cerebellum immediately behind the labyrinth, and thus if one were able to inhibit this centre by cold-water irrigation then deviation outwards must be the result. Repeated investigations carried out by him on two cases, in which the labyrinth operation had been performed, resulted in the deviation of the arm and leg outwards on the operated side if the meatus on the same side were irrigated, whilst no effect took place on the opposite side. In addition the sound ear was next irrigated with cold water, which gave rise to a nystagnus directed towards the operated side and deviation of both upper extremities towards the sound side. Afterwards the ear on which the labyrinth operation had been performed was similarly treated, when, as he had expected, the arm of the sound side and of the opposite side deviated outwards. Although these tests confirmed his theoretical expectations yet he could not unreservedly accept their accuracy. The deviation did not follow with the mechanical promptness one saw in the labyrinth tests and the degree of the deviation was only slight, so that further investigations must be carried out in order to establish their true value. He had attempted to adduce further corroborative evidence by endeavouring to produce other deviation effects through action on other areas of the cerebellum. To this end he had applied water at 10° to two patients in whom, after operations on the lateral sinus, the posterior fossa had been exposed and in whom already healthy skin had covered the underlying dura. No constant results, however, were obtained. Deviation inwards

of the arm and leg on the operated side was, indeed, repeatedly noted—that is, in an opposite direction to that which was observed during the earlier tests on those patients in whom the labyrinth operation had been performed—but the reaction was not constant and was only of a slight degree. This may have been due to the intervention of the comparatively thick scar-tissue. The object of the test was to determine the localisation of the various centres in the cerebellar cortex for the various directions of deviation by means of localised application of cold. It would be most important to investigate on these lines those cases in which a growth was to be removed, and thereby to test the function of the area thus exposed when the bone had been resected just before the second portion of the operation on the cerebellum itself.

He would reserve any further remarks until he had extended his research in this direction.

[It is very unfortunate that some most important data have apparently been omitted, as this is an almost verbatim report of the paper, and the account of continued research in this direction will be awaited with great interest. As regards my own very limited experience of such tests, the main feature of the results of cold irrigation of the meatus, carried out on cases in which the cerebellum was presumably healthy, has been an outward deviation of the upper extremity on the side under observation, that is, in a direction opposite to that of the nystagmus so induced. The normal physiological reaction must be first determined and *post-mortem* evidence obtained before inference of any value can be deduced from the results of these tests in cases where disease is present.]

Alex. R. Tweedie.

v. Stein (Moscow).—Giddiness: Autokinesis Externa et Interna; New Function of the Cochlea.

[The following is chiefly a translation of Goerke's notice of v. Stein's book in the "Zentralbl. f. O.," February, 1911.]

The substance of the book is a *resumé* of v. Stein's numerous and elaborate researches, physiological and clinical, during ten years, into the functions of the labyrinth; in addition it includes an exhaustive bibliography and general review of the literature of the subject. The author begins with a historical account of the various definitions of "giddiness," and divides the various abnormal states of sensation of movement into two classes: (1) The sensation of the movement of external objects about the percipient (autokinesis externa); (2) the sensation of movement of the percipient's body, which is in reality stationary (autokinesis interna).

Both forms need to be analysed as regards their plane and direction of movement, and the nature of the movement, whether vibratory, pendulum, circular, etc., as well as their duration, speed, and relation to alterations of position. For the determination of these points v. Stein has invented a number of special tests (autokinometer, photokinometer, colour experiment), in addition to the application of better-known methods, and especially the investigation of objective disturbances of equilibrium ("Statik" and "Dynamik"). Throughout the book great emphasis is laid on the last method.

In the investigation of disease of the labyrinth it has to be determined whether there is complete destruction of the whole organ, complete destruction of a single part, ampullary crest or macula, partial interference with function in the labyrinth, disease of the eighth nerve and ganglia, or finally of the central nuclei. We have at our disposal, in

addition to the determination of hearing, objective and subjective disturbances of equilibrium. In the former category we have disturbances of co-ordination in single muscles, muscle-groups, and especially in the muscles of the lower extremities, which the author considers to be of fundamental importance. The eye-muscles afford significant evidence in the diagnosis of labyrinth disease by the occurrence of nystagmus. Among the large variety of causes of nystagmus special importance attaches to the rotatory tests, less in the author's opinion to the thermal tests, while electrical stimuli afford no sure grounds for conclusions. In v. Stein's view the muscles of the body at large are almost as intimately influenced by the labyrinth as those of the eyes, each group having its special organ in the labyrinth: the presence or absence of function with regard to the ocular muscles is apparently in his opinion quite inadequate evidence of the functional condition of the vestibular apparatus.

Subjective disturbances of equilibrium (autokinesis) require the application of a force of given magnitude (movement in straight or curved path) to bring about their occurrence in the normal: they include sensations of motion of the subject and of objects about the subject.

The physiology of autokinesis, its causation, and the locality in which the sensations arise is next discussed. All experimental and clinical observation agrees that the labyrinth is the locality of origin, not the brain. Within the labyrinth v. Stein is strongly of opinion that the sensations arise in the cochlea and not in the vestibular section. This opinion seems to be largely based on the absence of known paths of connection between the vestibular nerve and the cerebrum, while those of the cochlear nerve are well known. The reflex muscular movements and inco-ordinations are derived from the vestibular part, the sensory disturbances from the cochlea. He finds a physiology for this by the streaming of endo-lymph during rotation through the canalis reuniens into the ductus cochlearis, producing a bulging of the flexible Reissner's membrane. Centrifugal force at the same time produces a pressure on Corti's membrane and the hair-cells. v. Stein elaborates a theory for the origin of the various labyrinthine sensations by this means, and in this way localises the origin of giddiness in the cochlea.

The disturbances which follow injury or destruction of the labyrinth are ingeniously ascribed by the author to the withdrawal of those constant effects on the labyrinthine nerve-endings which are due to gravity and the centrifugal force of the earth's motion, to which the organism is adjusted, the reflex effects originating in the vestibular parts, the sensory in the cochlea. He regards the majority of the "traumatic neuroses" as the expression of a traumatic damage or concussion of the labyrinth.

Besides the function of hearing, v. Stein thus ascribes to the cochlea a long and varied list of sensory functions, which include, of course, those usually accepted as labyrinthine, and also such varied activities as the recognition of barometric changes, influence on cutaneous sensibility, influence on a number of spatial sensations, influence on nutrition and colour-fields in the eyes, etc.

At first sight much in these conclusions has the appearance of being the product of a fanciful imagination. The whole matter is, however, worked out with method and on an experimental basis, and whatever conclusion is arrived at, the author's views demand serious and attentive consideration. The main object of the work is stated by the author to be to protest against the disuse of those general investigations of the muscular system which he has always advocated in the past as essential in disease of the labyrinth, and to warn the younger generation that the

hasty diagnosis of affections of the labyrinth is often rendered impossible by the complexity of the labyrinthine functions. *C. E. West.*

Clayton, M. Brown (Vienna).—The Influence of the Radical Mastoid Operation upon the Functional Activity of the Labyrinth and the Acuteness of Hearing. "Arch. f. Ohrenheilk.," B1. lxxx, Heft 1 and 2, p. 106.

Twenty-nine cases were examined according to the accepted methods before and after operation. The following are some of the results obtained:

(1) Of the cases in which before operation the hearing (? for whisper) was from 0 to 5 metres, 30 per cent. showed improvement after healing of the wound; 10 per cent. remained as before, and 60 per cent. became worse.

(2) Of the cases in which the hearing before operation was from 6 to 9 metres, 50 per cent. improved and 50 per cent. became worse.

(3) Of the cases in which the hearing before operation was 10 metres or more, 14 per cent. improved, 14 per cent. remained unaltered, and 72 per cent. became worse.

These results bear out the opinion, generally held, that post-operative improvement occurs more often when the hearing is considerably reduced than when it is only slightly reduced. It should be noted, however, as the results here reported show, that if we take the cases as a whole the hearing oftener becomes worse after operation than it was before.

With regard to the question as to whether it is possible to foretell from the hearing and vestibular tests what the prospects are likely to be after operation, the following results were obtained:

(1) Cases in which the *hearing remained unchanged* after operation: In all there were few or no signs of intra-labyrinthine impairment or degeneration, cochlear or vestibular, prior to the operation.

(2) Cases in which the *hearing improved after operation*: The results of testing suggest that improvement may be anticipated if the upper tone limit is little or not all lowered; if the vestibular reactions are normal or nearly so; if the aerial conduction of tuning-fork *a* is normal or only slightly reduced.

(3) Cases in which the *hearing became worse after operation*. Deterioration is to be looked for when, before operation, the hearing for tuning-fork *a* is moderately lessened; when there is some lowering of the upper tone limit; when concomitant disease of the semicircular canals exists.

(4) Cases in which *severe deafness followed operation*: Severe deafness after operation is most likely to occur when the hearing for the lower tones is seriously affected and when before operation the hearing for higher tones is degraded; when the perception of tuning-fork *a* is much impaired; when the vestibular symptoms and reactions betoken grave interference with this part of the labyrinth. Curiously enough it was found that in these cases the severity of the cochlear affection after operation was not accompanied by a corresponding loss of the already impaired vestibular excitability, a finding which seemed to show that the vestibular nerve is more resistant to post-operative degenerations than the cochlear nerve.

The reliance to be placed upon these conclusions is shaken when we learn that it was found that the amount of deterioration of hearing after operation may be quite independent of the state of the function before operation. *Dan McKenzie.*