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(Abstracted by Sir JAMES DUNDAS-GRANT, K.B.E.)

(*Continued from page* 344.)

Chronic Tonsillitis: The Localisation and Diagnosis of Chronic Inflammatory Foci in Chronic Tonsillitis—RUF (Freiburg in Bresgau).—A number of cases of recurrent tonsillitis are classified as (1) having many or a moderate number of leucocytes in a smear from the tonsil; (2) having few or none; (3) having been preceded by peri-, retro-, or intra-tonsillar suppuration; (4) being followed by serious general infections such as endocarditis, arthritis or nephritis.

The site of predilection depends on the anatomical structure of the tonsil cavities in the individual case (tonsillar fossa, upper pole, pre-tonsillar, supra-, and infra-tonsillar recesses).

An abundance of leucocytes in the smear obtained after thorough investigation of all the accessible crypts indicates a focus of disease in the tonsil. Paucity of leucocytes does not rule this out, as in many cases there are diseased foci which are not accessible to exploration.

Agranulocytotic Angina—KARL BRÜGGEMANN (Bochum).—The absence of granular corpuscles, eosinophiles and basophiles with normal amount of red corpuscles, is the diagnostic feature in some rapidly fatal cases of pharyngeal ulceration. It is a special form of sepsis and is so uncommon that it is desirable that every case should be published.

Points in the Physiology of the Tonsils—LÜSCHER (Berne).—Lüscher studied the oxygen-consumption and the lactic acid production (from sugar) effected by tonsil tissue in health and disease. Oxygen-consumption per milligram hour is for normal tonsils about 3.5 cmm. that for hypertrophied tonsils is about 7.6. They occupy a middle position in this respect as compared with other tissues. In regard to glycolysis the tonsils take almost the highest position as compared with other tissues, the lymphocytes which wander out of the tonsils taking an important share in the process.

Tonsillectomy in Singers—STERN (Vienna).—The author has had his vocalist-patients operated on by others when he considered the enucleation called for, and he considers himself able to form his conclusions from a detached point of view. He holds that in singers

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it is of special importance to avoid injury or even dragging of the soft palate and the faucial pillars. About fourteen or eighteen days after the operation vocal exercises should be practised, and for these he gives some musical details to prevent the development of cicatricial contractions or thickening. In singers of a highly nervous temperament, or who have acquired a faulty mode of voice-production, it is better, in the absence of vital indications, to abstain from tonsillectomy. Experience has shown that with the proper precautions there are no evil results, and in many cases the voice troubles engendered by chronic inflammation of the tonsils have been diminished or even removed and the voice has often improved both in quantity and quality.

ZANGE referred to the difficulties in the complete examination of the tonsils, especially for the detection of a buried purulent focus, even by Killian's method and the use of Meyer's tonsil-hook, and he recommends a form of palpation (Mandeltaster) of his own device.

MANN complimented Stern on his wisdom in laying the responsibility of the operation on other shoulders. He would look upon all singers as neurasthenics, and before operating would obtain from the singer an indemnification against any subsequent claim for damage.

MARSCHIK considered the early resumption of swallowing and speaking more important than any details in operating.

FLATAU endorsed Mann's cautious attitude, having seen long-standing voice troubles following the operation which he could not attribute to the neurotic factor alone.

HALLE insisted on the preservation of the parietal layer of the capsule. The quick resumption of speaking and swallowing was of the greatest importance, and to favour this there should be means adopted to counteract pain. Suture of the pillars is in general contra-indicated.

STERN (in reply) reiterated his statement that with the precautions laid down by him tonsillectomy not only did not injure the voice but in most cases improved it both in strength and quality in the most gratifying way.

The Significance of the Germ-substance in the Development of Ozæna—ALBRECHT (Tübingen).—The investigation of the family-trees of a number of ozæna patients revealed unmistakable family tendency. Coincident ozænas were always in blood-relations, not husband and wife or unrelated intimate neighbours. Certain factors contribute to the development of ozæna, namely a tendency, in general, in the mucous membrane to chronic catarrh, an inherited tendency for the mucous membrane when irritated to react in the form of the development of connective tissue and atrophy, possibly, also, peculiarities in the shape and width of the nose.

The Practical Clinical Results of Four Years of Operative Treatment of Ozæna by means of Implantation of Macerated Spongy Animal-bone — ECKERT-MÖBIUS (Halle).—The operation is, as a rule, confined to one side and the results are in general excellent.

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In a fair proportion there is complete cure, in others nothing beyond occasional douching is required. In a few, a supplementary paraffin injection into the turbinated body may be practised.

MÜHLENKAMP abstained from employing Eckert-Möbius' method because it did not permit of examination of the sinuses which were very often affected in ozæna.

HANS CLAUS adhered to Eckert-Möbius' method but found it essential to make the incision far forward at the junction of skin and mucous membrane.

MAX MEYER preferred to introduce the bone through the mouth.

C. HIRSCH'S researches in Stüttgart confirmed the conclusions arrived at by Albrecht in Tübingen as to the hereditary influence in the development of ozæna.

ZANGE preferred autogenous bone derived from the patient's own iliac crest, and expressed his belief that it was not alone the narrowing of the passage that produced the beneficial effect, but some stimulating action on the circulation in the parts.

FLEISCHMANN associated ozæna with congenital deficiency in the development of sweat-glands, both being family peculiarities.

HINSBERG had cured ozæna in 75 per cent. of his cases by his "lateral-wall" operation, failure only taking place when sufficient narrowing was not produced.

Contribution to the Theory of Caloric Nystagmus—LEISSE (Kiel).—By protecting alternately the tympanic membrane and the postero-superior wall of the meatus, Leisse found that nystagmus induced by the "cold" test occurred more quickly by application through the posterior wall than through the membrane. The former being constructed of a better conducting material than the latter, the result follows physical laws, and confirms Bárány's view that the disturbance in the labyrinth is physical rather than physiological.

On the Mechanism of the Pressure Symptom—CHAROUSEK (Prague).—Charousek considers the fundamental basis of the pressure symptom a very complex process. When exercised from the external meatus it has to pass through three systems, namely, the contents of the middle ear, the perilymph and endolymph of the inner ear, and lastly the blood in the labyrinthine vessels; also through three resistances, namely, the membrana tympani, the fibrous apparatus of the two fenestræ and the walls of the blood vessels. Theoretically the conditions in the intact organ of hearing are the same as regards the occurrence of pressure symptom as in the diseased one, only the pressure has to be enormously greater.

Radial Rotation in Pigeons has its Origin in the Otoliths of the Sacculi—BENJAMINS and HUIZINGA (Groningen).—The authors studied the counter-rolling of the eyes in pigeons and found

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that, with unilateral extirpation of the labyrinth, it persisted in both eyes but much diminished on the sound side and much reduced in that of the operated side. It is, therefore, obvious that each labyrinth acts upon both eyes, but especially upon the homolateral one. After successful extirpation of the superior portion of the labyrinth (semicircular canals and utricle) the extent of the eye-rolling remained unchanged; when the whole of the inferior portion (saccules, cochlea and lagena) on both sides was removed the rolling entirely disappeared. It remained to decide which part of the pars inferior was the influential one. The cochlea was disregarded and, therefore, only the lagenæ and the sacculi were considered. In two out of many experiments the authors succeeded in removing both lagenæ with complete continuance of the rotation. The conclusion was inevitable that the place of origin of the rolling was the sacculus, at all events in animals with laterally placed eyes.

KOBRAK held that in addition to the other factors in caloric nystagmus there should be considered thermo-sensory and reflex vasomotor stimuli.

The Blood Picture in relation to Complications following Middle-Ear Suppuration, with a Contribution to the Clinical Value of the Blood Picture—HESSE (Berlin).—The quantitative leucocyte count is not alone of clinical importance. Pronounced hyperleucocytosis with "left-shifting" points to a serious complication. These are found most marked in septic general infections and thromboses, less so in extradural suppuration, cerebral abscesses and cases of meningitis, in which there may be only a high leucocyte figure. These blood pictures must not be depended on by themselves, but in combination with other symptoms.

Appearance of the Tympanic Membrane and Pneumatisation of the Mastoid Process: a Röntgenological Study—BROCK (Erlangen).—By means of a comparative study of the tympanic appearances and the Röntgen examinations, Brock is convinced that with a typical normal membrane, normal pneumatisation of the mastoid cells is always present. In chronic suppurative otitis media there is always diminished pneumatisation, more especially if cholesteatoma is present. With unilateral cholesteatoma even the contralateral mastoid shows diminished pneumatisation. An examination of cases of indrawing of the membrane showed in the more pronounced cases a reduction in the number of cells in the mastoid region, especially when the membrane of Shrapnell was involved, the adenoid physiognomy generally prevailing. In the less marked cases of indrawing there was less deficiency in cell spaces. Brock concludes that in cholesteatoma the compactness of the mastoid is not the result of the chronic suppuration, but of some other causative influences, such as an irritation or stimulus supplied by the entrance of air in the first

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efforts at respiration on the part of the new-born infant. Pneumatisation fails to occur if such stimulus is absent, as in closure of the Eustachian tubes, or when the stimulability of the epithelial lining is diminished by disease or when some unsurmountable obstacle stands in the way of pressure on the epithelium. Pneumatisation will, therefore, not take place in latent otitis of the new-born with persistence of embryonal tissue, in fibrous changes in the mucous membrane resulting from acute exudative otitis (Wittmaack); also when, according to Krainz, osteoblastic changes take place around the epithelial sac owing to severe acute inflammation.

The Inflammatory Processes in the Course of Mastoiditis—Josef Beck (Munich).—In mastoiditis we see ossifying and rarefying processes in the bone, therefore, an osteitis; also inflammatory changes in the periosteum and the endosteum and finally participation on the part of the medullary spaces with conversion of fatty marrow into fibrous marrow. It is an osteo-endo-periostitis with osteomyelitis fibrosa.

Anatomical Studies on the Structure of the Middle-Ear Mucosa and its Relation to Cell Formation in the Mastoid Process—Steurer (Tübingen).—By comparing the condition of the middle-ear mucosa with the degree of mastoid pneumatisation, Steurer found Wittmaack's views confirmed in 91 per cent. of specimens. In 7 per cent. there was a slight and in 2 per cent. a pronounced disproportion between the changes in the mucous membrane and the degree of pneumatisation of the mastoid. Care was taken to exclude from these comparisons cases in which there was a history of inflammation of the middle ear in later life, so that the question as to whether cellular formation can be caused by acute otitis media in later life is not here considered.

Krainz said that a secondary sclerosing process of the mastoid could certainly arise from late endostotic disease.

Voss found that in sound and diseased ears taken together there was defective pneumatisation in 30 per cent. and in diseased ones alone in 59 per cent.

Steurer (in reply) urged for more general use of the Röntgen apparatus which might be so small as to take little more room than a pantostat, such as the small high-frequency Röntgen apparatus supplied by the firm of C. Erbe of Tübingen.

Indications and Technique of the Early Operation in Acute Mastoiditis—Neumann (Vienna).—Neumann considers the histological evidence of the condition of the mastoid as affording the most reliable criterion obtained theoretically by the exploratory excision of a portion of the tissue. This is, of course, quite impracticable. The difference between an "early" and a "late" operation is that by

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the latter we remove new-formed bone which we do not do by the early one. The really diseased bone is hard, but it is difficult to identify it by the naked eye in either operation. Röntgenography is not yet able to show us whether or not changes are present which are irreparable, but it can sometimes reveal the presence of cells and groups of cells in situations in which we should not otherwise look for them. In his clinic Neumann carries out the early operation completely, first opening the antrum, then the root of the zygoma and all cellular bone till only a wall of hard compact bone is left, not hesitating to lay bare the lateral sinus and the dura mater, especially if the bone covering them is at all suspicious. Among other cells the retrofacial, the apical, and those in the petrosal angle are carefully cleared out. Since this thorough method has been in practice, secondary operations and complications have disappeared. Neumann concludes that there is no more danger in an "early" than a "late" operation.

Mastoidism and Mastoiditis—FISCHER (Vienna).—Mastoidism is the term applied to the symptoms present in the first week, when even with considerable lowering of hearing power and bulging of the membrane there is no sinking of the postero-superior wall or projection of the auricle, but associated tenderness of the mastoid region and possibly a high temperature. Such symptoms which correspond to a diffuse hyperæmia of the mucous lining of the cells may subside without operation.

KRAINZ, WAGENER and GRAHE said mastoidismus was really a mild form or early stage of mastoiditis.

NEUMANN (in reply) declared himself a facultative and not an obligate "early" operator, but was in favour of operating earlier rather than later.

Sinus Thrombosis, Cerebellar Abscess and Meningitis. Recovery after opening the Cisterna Pontis—BLAU (Goerlitz). —The writer considers that the opening of the cisterna in a case which he describes in detail was the step which led to recovery.

On the Pathology of Otitic Subdural Suppuration—LIEBERMANN and PETZAL (Breslau).—This includes the cases generally described as circumscribed meningitis, the pus lying between the dura mater and the pia mater. The factors conducive to its development are chronicity of the middle-ear suppuration and such a process as erosion of the bone by a cholesteatoma producing enlargement of the extradural space. This may exist for a long time without pressure symptoms. The exact diagnosis can scarcely be arrived at before operation. Lumbar puncture helps in differentiating it from purulent leptomeningitis, when it gives a liquor which is either transparent or, if at first turbid, becomes clear without recession of the clinical symptoms. In a case narrated there was right-sided adiadokokinesis and hypotonia of the right extremities without actual paralysis. A subdural abscess lay over the posterior surface of the right cerebellar hemisphere which was compressed to about half its size.

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A Rare Disturbance after Lumbar Puncture—FLEISCHMANN (Frankfort).—The fluid was sanguinolent, and thirty-six hours later there ensued a paralysis of the bowel. This is explicable on the hypothesis of an irritation of the splanchnic nerve through the rami communicantes. Fleischmann quotes a case of Aeschoff's in which the lumbar puncture fluid was only slightly blood-stained and in which on post-mortem examination, three weeks later, blood was found in the spinal membrane and round the medulla oblongata and cortex, as also in all the ventricles. There seemed to be no explanation other than a puncture of a vessel by the needle.

VOSS reminded Blau that permeability of the choroid plexus had been produced by intralumbar injection of horse serum and recommended tentative injection of trypaflavin.

The Bone Conduction Problem: Theoretical Propositions—H. HERZOG (Innsbruck).—By experiment on a glass model and by taking the excursions of the "round window membrane" as the measure of the force of the vibrations engendered by the tuning-fork, Herzog found that the firmer the fixation of the stapes, the stronger was this action. He argues, therefore, in favour of a direct action through the bone of the skull.

The Problem of Bone Conduction: Experimental Results—W. KRAINZ (Innsbruck).—In a fresh temporal bone the roof of the tegmen tympani and the labyrinth were removed and small mirrors were fixed to the head of the malleus or to the inner surface of the footplate of the stapes. Another was attached to the petrous portion or to the adjacent portion of the vice in which the temporal bone was fixed. Both were so arranged that beams of light directed on to them were reflected on to a moving plate on which the vibration tracings were photographed. A vibrating contra A. tuning-fork was applied to the temporal bone. When left free the amplitude of vibration of the ossicular chain was 1.7 to 1 of the temporal bone and the difference in phase $\frac{1}{18}$. When the chain was tightened up the phase difference became much less and the phase much nearer to that of the bone; wherefore, the amplitude of the ossicular impact on the labyrinthine fluid increased and with it presumably bone conduction. The various conditions were effected by such means as compressing the air in the external meatus or filling it with water or mercury. While not accepting Bezold's view that all transmission of osseous vibration from the cranium to the sensory cells in the labyrinth is through the ossicular chain, Krainz holds that the mode of vibration of the chain is of integral importance for the auditory effect of bone conduction. The greater the difference in amplitude the louder the sound and the greater the difference in phase, the less loud. The human ear is manifestly best for air-conduction of sound.

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TONNDORF and HERZOG dwelt on the approximation to the standpoint of the revered Bezold.

Muscle-plastic in Tracheostomata.—SEIFFERT (Berlin).—By detaching and approximating two strips of sternomastoid muscle a kind of sphincter may be constructed which is under voluntary control. Voluntary opening may be made possible by the adaptation of another muscle such as the omohyoid.

The Treatment of Laryngeal Stenosis due (1) to Posticus Paralysis and (2) to Cicatricial Contraction.—RÉTHI (Budapest). —For stenosis due to posticus paralysis Réthi opens the larynx by laryngofissure and through an incision in the interior detaches and removes as much as possible of the lateral and transverse muscles, leaving the posticus. In cicatricial stenosis he first tries dilatation with india-rubber and metal tubes. In rather worse cases he removes the thick scar tissue as much as possible by submucous methods. Laryngostomy is reserved for the severest cases, closing the opening afterwards in three stages at long intervals.

THOST (Hamburg) said that caoutchouc dilatation was indicated in "granulation stenosis," as it induced an ulcerative process by chemical action; in cicatricial stenosis he preferred metal dilators. The closure should be postponed in children until growth was complete.

HAJEK (Vienna) urged for great prudence in dealing with children in view of the lifelong disastrous effects of any failure in the operation.

STUPKA insisted on minute examination of the larynx and on electrical testing before operation. In one of his cases of posticus paralysis following thyroidectomy it was found at the end of a year that one of the postici was not completely paralysed.

Scientific Foundation for the Correction of Hearing Errors.—BRÜNINGS (Greifswald).—By means of a "loud-speaker" with screens which shut off any desired group of tones, the effect on the appreciation of musical and spoken sounds could be demonstrated. Thus, shutting off the high tones say from C4 upwards reproduces the effect of labyrinth-deafness, and shutting off those from about 100 to 300 downwards, that of middle-ear deafness. The effect on hearing for conversation depends on the pitch of the overtones (Formants) characteristic of the various vowels and consonants. These being in general of a high pitch are inaudible to the sufferer from labyrinth deafness, and he has with much effort to re-educate himself in interpreting the distorted sounds. The subject of middle-ear deafness hears them fairly well, but loses the fundamental tone on which the loudness of the whole sound depends. He can, however, hear fairly well the whispered voice in which the overtones resonating in the upper chambers are of a high pitch. The characteristic overtones of the vowels and consonants are, therefore, perceived by him and he

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can "hear" whispered words too well as compared with his hearing-power as a whole. This has to be kept in view when testing with the whisper. An apparatus is under construction in which selective screens can be introduced to damp down the best heard tones, while the totality of sound can be intensified.

Exact Hearing Test with the Oto-audion.—GRIESSMANN (Nüremberg).—This instrument gives pure tones ranging from 80 to 2800 double vibrations. The intensity is regulated by a potentiometer. The hearing for the tones characteristic of the vowels and consonants is taken as the criterion of the hearing for these themselves.

A New Electrical Apparatus for Exact Hearing Testing.—W. ANTHON and K. FIEK (Berlin).—The authors found that instead of a kathodal ray tube an apparatus founded on a Glimm bridge could be utilised, namely, a kind of Geissler tube which works with a tension as low as from 120 to 200 volts (and giving a feeble light). By means of a condenser, alternate charges and discharges give the periodical vibrations which are taken up by a telephone which is adapted either for air- or bone-conduction. There is a scale on which the amplitude and frequency of the vibrations can be read off.

A New Hearing Apparatus for the Very Deaf.—FLATAU (Berlin).—Kathodal ray tubes are employed in this apparatus of such small size as to be quite portable.

The Dependence of the Appreciation of Pitch on Intensity of the Stimulus: Remarks on Resonance Theory of Hearing.—LANGENBECK (Siemensstadt).—Langenbeck starts with a discussion of the observations that if a sound is intensified it appears to become lower in pitch. He suggests that the more violent wave in the cochlear scalæ stimulates a longer fibre further up in the duct corresponding to a tone of lower pitch.

ALEXANDER insisted on the need that hearing apparatuses should not alone intensify all the tones but should be adapted to intensify selected ones.

SELLE was of the opinion that an intensification of all the tones together could produce a subjective improvement in the quality. He had found the working of the electrical hearing instruments not always satisfactory. The instruments shown for testing the hearing were unsuitable, those with Glimm lamps giving a current whose curve was not sinusoidal but nearly rectangular; a complicated filter was required to render it sinusoidal.

BRÜNINGS (in reply) stated that the only instrument for producing constant tones with measurable variations suitable for testing bone conduction was a tuning-fork between whose limbs an electro-magnet in proper tune was placed opposite the nodal point.

GRIESSMANN (in reply) warned us that in testing with the whisper we estimate solely the capacity of the ear for registering the formants (characteristic overtones) of the vowels and consonants.

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