SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF LARYNGOLOGY

June 25, 1920.

Mr MARK HOVELL (*Vice-President*) in the Chair.

Supraglottic Tumour of Larynx—Dr A. L. MACLEOD.—Man, aged 57, complained of difficulty of swallowing for two months. Very ill on admission to hospital. Right side of larynx hidden by a supraglottic swelling. W.R. positive. Sudden death. P.M. revealed general syphilis, two aneurisms of aorta and a carcinoma, slightly pedunculated, attached to right aryepiglottic fold.

Tumour of External Nose: Adenoma of Lachrymal Duct—Mr H. L. WHALE.—A smooth, elastic tumour, the size of a duck's egg, which grew from nasal bridge. Enucleated in capsule and proved to be adenoma undergoing mucoid degeneration.

Hoarseness in a Man, aged 36—Dr W. H. KELSON.—Duration two years. Cords congested but move well. Inter-arytenoid thickening. No T.B. in sputum.

Dr WATSON WILLIAMS and Mr TILLEY suggested that the nasal sinuses should be explored.

Nasal Deformities treated by Transplantation of Costal Cartilage—Dr DOUGLAS GUTHRIE.—Photographs of three cases were shown, the deformity in each being caused by injury.

Dr LE MAITRE preferred bone to cartilage, and operated under local anæsthesia.

Dr DAN M'KENZIE emphasised the importance of early treatment in fractures of the nose.

Congenital Deformity of the Œsophagus—Mr W. APPLEYARD.—Post-mortem specimen from an infant 16 days old. Only a pinhole orifice between upper and lower ends of œsophagus. Also fistulous communication with trachea.

Intranasal Dacryocystotomy as a Help in Atrophic Rhinitis—Mr H. A. KISCH.—The object of the procedure is to utilise the lachrymal secretion to moisten the nasal mucosa.

Sarcoma of the Nares (originating from Left Inferior Turbinal)—Mr TILLEY.—Male, aged 56. A reddish, nodulated mass, bleeding freely when probed. The tumour was removed fourteen years ago. No recurrence.

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Royal Society of Medicine

Cavernous Angioma of Larynx—Mr NORMAN PATTERSON and Mr PIKE (see *Journal of Laryngology and Otology*, February 1921).

Intrinsic Cancer of Larynx after Laryngo-fissure (Five Cases)—Sir ST CLAIR THOMSON.—No recurrence of the disease had taken place in these cases, 7, 5½, 3, 3, and 2 years respectively after operation.

Extrinsic Cancer of Larynx, Male, aged 61, Six Years after External Operation through Side of Neck—Mr WILFRED TROTTER and Sir ST CLAIR THOMSON.—Disease limited to left ary-epiglottic fold; the cervical glands (left) were removed at a preliminary operation. Left ala of thyroid cartilage removed.

Pemphigus of Mouth, Fauces, and Epiglottis in an Elderly Man—Sir J. DUNDAS-GRANT.—The formation of bullæ was observed taking from three to five days and subsiding in seven to ten days.

SECTION OF LARYNGOLOGY

SECOND ANNUAL SUMMER CONGRESS.

June 24 and 25, 1920.

Mr MARK HOVELL (*Vice-President*) in the Chair.

Total Laryngectomy — Sir CHARTERS SYMONDS (published *Journal of Laryngology*, 1920, p. 257).

Sir CHARTERS SYMONDS thought it better to avoid tracheotomy.

Sir ROBERT WOODS related his experiences of twenty-five laryngectomies. He made a practice of stitching the wound, avoiding packs, and draining the pharynx by a tube alongside the feeding-tube. Preliminary use of atropine was essential. Fixation of the cord was an indication for laryngectomy, in preference to thyrotomy.

Sir WILLIAM MILLIGAN had removed the larynx in eleven cases. The operation was comparatively simple, but the details of after-treatment were very important. In all cases the patient should be examined with the œsophagoscope before operation. The complication to be feared was not septic pneumonia, but acute œdema of the lungs.

Dr LE MAITRE favoured preliminary tracheotomy, two or three weeks beforehand, and preferred local to general anæsthesia.

Sir JAMES DUNDAS-GRANT said that before performing thyrotomy for cancer, one should obtain the permission of the patient to carry out complete laryngectomy if necessary.

Lateral Pharyngotomy for Large Epilaryngeal Growths—Mr WILFRED TROTTER (published *Journal of Laryngology*, 1920, p. 289).—In reply to several members, Mr Trotter stated that the

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introduction of radium immediately after operation favoured sepsis and sloughing. A small communication between trachea and pharynx should be maintained, and should be high up under the tongue; thus, a voice may become possible and yet food will not enter the trachea. For growths of the pyriform sinus, lower lateral pharyngotomy is adequate.

Carcinoma of the Post-Cricoid Region and Upper End of Œsophagus — Dr A. LOGAN TURNER (published in *Journal of Laryngology*, 1920, p. 34).—Various facts regarding the sex and age incidence, the duration of the symptoms, and the suitability for operation, were illustrated by drawings and statistical tables. The existence of a pre-cancerous stage of the disease and the importance of early diagnosis was emphasised by several speakers.

Impaired Mobility of the Cord in Cancer of the Larynx—Sir ST CLAIR THOMSON (published in *The Lancet*, cxcix., p. 183).

Sir ST CLAIR THOMSON pointed out that this sign was present only in a proportion of cases (27 out of 44). When present it was a valuable indication of malignancy, and prognosis was in such cases unfavourable.

Œsophageal Obstruction due to Hypertrophy of the Cardiac Sphincter and Narrowing of the Epicardia—Dr A. BROWN KELLY (published in *Proceedings of the Royal Society of Medicine*, 1920, vol. xiii., p. 206).

In reply to inquiries by several members, Dr KELLY stated that he recommended early gastrostomy. This might throw light on the gastric condition causing the spasm. The cause of the condition would not be clear until we knew more about the physiology of the œsophagus.

Some Practical Points in the Removal of Foreign Bodies from the Food and Air Passages (Fifty-one Cases)—Sir WM. MILLIGAN (Paper and Discussion *in extenso* in the *Proceedings of the Royal Society of Medicine*, Vol. xii., No. 9, July 1920).

The paper was discussed by Mr TILLEY, Dr PATERSON, Dr MOORE, and others, while Sir ST CLAIR THOMSON gave an account of a recent visit to the clinic of Chevalier Jackson.

The following papers were also read:—

Latent Sinusitis in Children—Dr P. Watson Williams.

Per Nasal Dacryocystotomy—Mr Lawson Whale (*British Medical Journal*, 6th November 1920).

Angioma of the Larynx—Dr Irwin Moore (*Journal of Laryngology*, January and February 1921).

Tonsillectomy for Rheumatoid Arthritis—Mr W. M. Mollison (*Journal of Laryngology*, April 1921).

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SECTION OF OTOLOGY.

May 21, 1920.

President—Mr HERBERT TILLEY.

ABRIDGED REPORT.

Acute Mastoiditis from Chronic Maxillary Antral Empyema; Immediate Closure of Wound after Application of B.I.P.—THE PRESIDENT.—Female, aged 42. "Bad cold in the nose for a long time." Right antrum full of foul pus. First molar removed by dentist and pus issued from the socket; in spite of irrigation the discharge continued. Onset of acute suppuration in the right ear. Operation.—Antrum and cells infiltrated with pus. Dura exposed, also lateral sinus. Parts thoroughly cleansed, smeared with B.I.P. and the skin wound sutured. Immediate union. Right maxillary antrum opened by the intranasal method.

This is the old blood-clot method, plus a certain type of antiseptic (B.I.P.). It is a great saving of time and expense when patients can be discharged from the Home in a fortnight.

Tumours of the Eighth Nerve.—Mr J. S. FRASER.

Etiology.—Tumours of the eighth nerve are of developmental origin and are probably a mild form of neurofibromatosis. They may be hereditary. There is little evidence that they are associated with otitis media, but Nager believes that they may result from intra-uterine meningitis and consequent neuro-labyrinthitis.

Pathology.—Though tumours of the cerebello-pontine angle may arise from the petrous bone, the dura mater, the choroid plexus, the pia-arachnoid, or the flocculus, there is a well-marked group which originates in the eighth nerve. Some observers hold that the latter begin in the distal portion of the vestibular nerve, but it is more probable that they originate at the junction of the two (central or non-medullated and peripheral or medullated) parts of the eighth nerve, just within the internal auditory meatus. They gradually destroy the cochlear and vestibular divisions by pressure. The surface is nodular and the colour greyish pink. The tumours vary greatly in size (hazel-nut to small apple), show denser and looser parts, and may contain cysts and blood spaces. Opinions as to their histology vary greatly. The staining reactions and general appearance of the growths are not those of a fibrous or mesoblastic connective tissue tumour, but correspond more closely to those of gliomata. They are probably "false neuromata" or gliomata arising from the nerve sheath. Verocay believes that they spring from undifferentiated peripheral neurocytes belonging to the crest of nerve tissue lying between the ectoderm and

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the dorsal surface of the neural tube from which the seventh-tenth nerves arise. The eighth nerve (portio mollis) is loose in structure and therefore prone to include this tissue. As the tumour grows the fifth and seventh nerves are pushed upwards and forwards, while the vagus group is pressed down and backwards.

Changes in Labyrinth.—Here the first stage appears to be fibrinous exudation in the perilymph spaces (choked labyrinth), with more or less atrophy of the cochlear ganglion cells of Corti's organ and stria vascularis, especially in the basal coil. Later on the fibrinous exudate becomes organised into delicate myxomatous tissue. New bone formation may be seen in this. As a rule the vestibular maculæ are well preserved in spite of the pressure destruction of the vestibular ganglion, but in advanced cases the cristae of the canals show atrophy.

Symptoms.—As a rule symptoms of acousticus tumour do not appear below the age of twenty—thirty to fifty years is the usual period. The clinical history may be divided into three stages:—(1) Initial or "otological," commencing with tinnitus, deafness, and giddiness, loss of balancing and nystagmus, and ending with headache which is worst at night. Vestibular disorders may precede the cochlear symptoms. In the earliest phase deafness is not complete, and the vestibular reaction may be present, though diminished. (2) Intermediate or "neurological" with headache (occipital and later frontal), tendency to fall to side of lesion, loss of tone in limbs on homolateral side with dysdiadokokinesia, involvement of neighbouring nerves producing loss of conjunctival reflex, diminution of cutaneous and buccal sensibility (5th), diplopia (6th), facial weakness or paralysis (7th). Later on there is dimness or loss of vision (choked disc), paresis of palate, dysphagia, thickness of speech, loss of taste, anosmia, tachycardia. Homolateral paresis of the tongue may be present. The so-called "cerebellar seizures," or vagal attacks, are a distressing feature. They may be preceded by giddiness, headache, dimness of vision or congestion of face. At first the patient is conscious during the attacks, but later unconscious. The pupils are dilated during attacks, with stertorous breathing and rapid irregular pulse. There are jerkings of the head and extremities, followed by general rigidity and opisthotonus. The attacks may be accompanied by vomiting and followed by sweating. Cushing attributes them to excessive tension in the lateral lymph cistern in which the tumour lies. (3) Terminal stage with disturbance of memory, loss of weight, weakness of sphincter control, periods of excitement resembling those of delirium tremens, dementia, Cheyne-Stokes respiration and coma.

Examination of the Ears.—All observers admit that the ideal we have to aim at is the recognition of the lesion at the "otological" stage. For this reason a thorough examination of the cochlear and vestibular

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function is essential. At first the signs of nerve deafness may not be absolute. Further, vestibular response may be obtained, so that diagnosis at this period appears almost impossible. Concentric narrowing of the range of hearing is characteristic. Weber's test is lateralised to the good ear; Schwabach shortened on the affected mastoid: absolutely negative Rinne on affected side; later on, total deafness on the affected side, as tested with the noise box in the sound ear. Vestibular examination shows spontaneous rotatory nystagmus, which is usually more marked to the affected side. Spontaneous nystagmus on looking up has been frequently observed. The nystagmus may change from time to time, as in cerebellar abscess. There is also loss of vestibular response to the caloric and galvanic tests. The pointing reaction is usually normal. The rotation test is not so satisfactory as the caloric, which on the healthy side gives a normal or even an excessive reaction—"lasting nystagmus"—with the usual pointing error. On the other hand, there is no caloric reaction from the affected ear and no pointing error. The galvanic reaction is reduced or absent on the affected side.

Differential Diagnosis.—If solitary tumours of the eighth nerve are to be diagnosed at the early stage it is of the utmost importance that otologists should thoroughly examine all cases of unilateral nerve deafness. Eighth nerve neuroma must be diagnosed from:—(1) Acquired syphilitic neurolabyrinthitis by the history and the Wassermann reaction of the blood and cerebro-spinal fluid. (2) Neuritis of the cochlear or vestibular (or both) divisions due to (*a*) exposure to cold wind; (*b*) toxæmia; (*c*) quinine, salicylate, arsenical poisoning. One does not find complete deafness and certainly not total loss of the vestibular reaction in the above conditions. (3) Hæmorrhage into the labyrinth, by blood examination. (4) Senile or arterio-sclerotic deafness is bilateral; the vestibular reactions are retained. (5) Unilateral congenital deafness is rare; the vestibular reaction is usually present. (6) Circumscribed labyrinthitis is associated with otitis media. (7) Latent labyrinthitis can be diagnosed by the history and the galvanic test. (8) Otosclerosis by functional examination. (9) Serous meningitis in the lateral cistern (Bárány's symptom complex) is associated with a history of otitis media and a well-marked pointing error. Lumbar puncture results in improvement and a return of normal caloric reaction.

Cushing gives the following list of errors in diagnosis: (*a*) The symptoms of tumour of the acoustic nerve are ascribed to another lesion—Bell's palsy, trigeminal neuralgia, multiple sclerosis, multiple neuritis of cerebral nerves, torticollis, bulbar paralysis, locomotor ataxia, tuberculous or syphilitic basal meningitis. (*b*) A tumour is diagnosed but incorrectly localised—*e.g.*, tumours of the corpora quadrigemina, of

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the third ventricle, of the temporal lobe, of the cortical facial area, or of the frontal lobe. Pontine tumours are characterised by paralysis of the eye muscles (Hezel). (*c*) A tumour is correctly localised in the cerebello-pontine angle, but the relation of the growth to the eighth nerve is not appreciated. There may be difficulty in diagnosing the side of the tumour. The best method is to judge by the deafness and the results of vestibular examination. Oppenheim states that ocular paresis, unilateral loss of the corneal reflex and of the function of one eighth nerve make up the characteristic triad of symptoms of tumour of the acoustic nerve. Henschen points out that the portion of the tumour in the internal meatus dilates the meatus, and that this can be seen in a good radiogram.

Prognosis.—Toynbee and Henschen have recorded cases with deafness 16 to 20 years before death. Henschen gives the average duration of illness as three and a half years. Cases in young subjects are more rapid in their progress. Only solitary unilateral tumours are suitable for operation. Bilateral cases are associated with general neurofibromatosis.

Treatment.—There are two routes by which the tumour may be reached: (1) Occipital—either (*a*) unilateral (Krause), or (*b*) bilateral (Cushing): (2) translabyrinthine (Panse and Quix). (These two routes may be combined.) The mortality by the Krause method was 80 per cent. Cushing's mortality was only 20 per cent. In 1904, Panse proposed that tumours of the acoustic nerve should be removed through the middle and inner ear, and in 1911, Quix of Utrecht was the first to operate by this route. The only objection is the risk to the facial nerve, but this has already been destroyed by the tumour in many cases. It is necessary to perform a free radical mastoid operation, and thereafter to obtain space reaching in front to the carotid canal, below to the jugular bulb, behind to the sigmoid sinus, and above to the dura of the temporo-sphenoidal lobe. The danger of injuring the carotid is small. The inferior petrosal sinus and jugular bulb are much more likely to be injured and to give rise to troublesome hæmorrhage. After removal of the petrous pyramid, one raises the temporo-sphenoidal lobe and splits the dura beneath the superior petrosal sinus as well as that lining the internal meatus, and thus completely exposes and removes the tumour. The wound cavity is packed with iodoform gauze and a plastic operation performed on the membranous meatus. Four cases have been operated on by the translabyrinthine route, and as yet there have been no deaths (Schmiegelow). If a tumour cannot be removed by the translabyrinthine it cannot be removed entire by the paracerebellar route.

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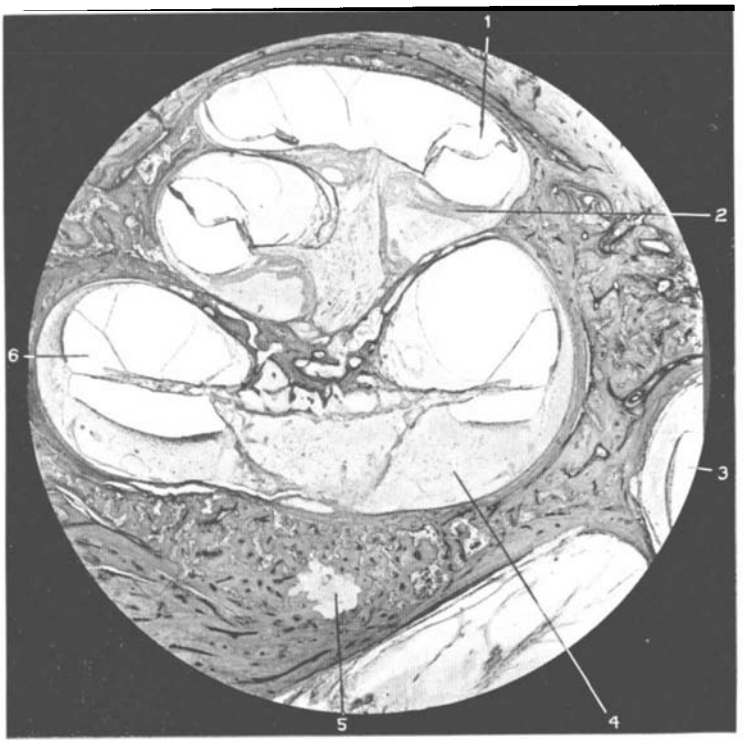


FIG. 1.

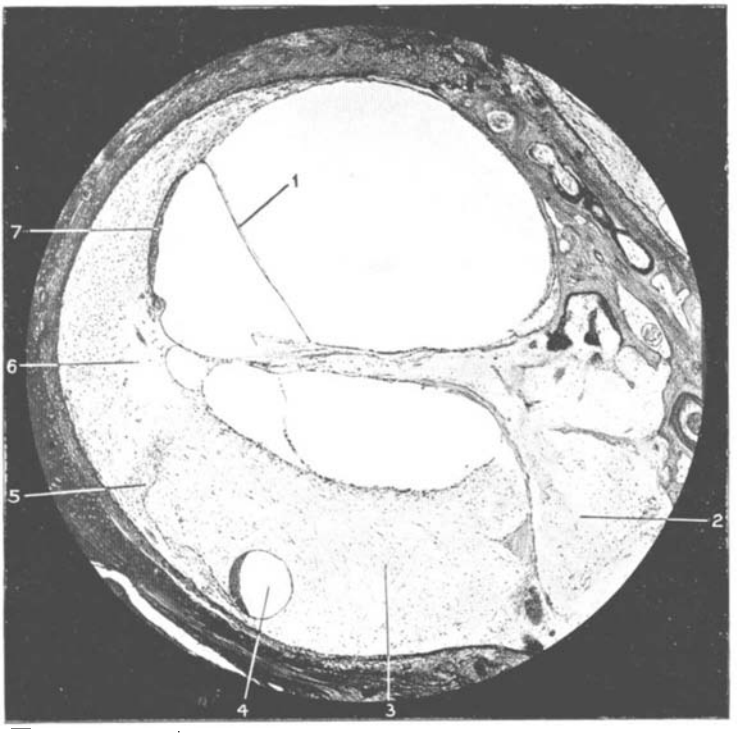


FIG. 2.

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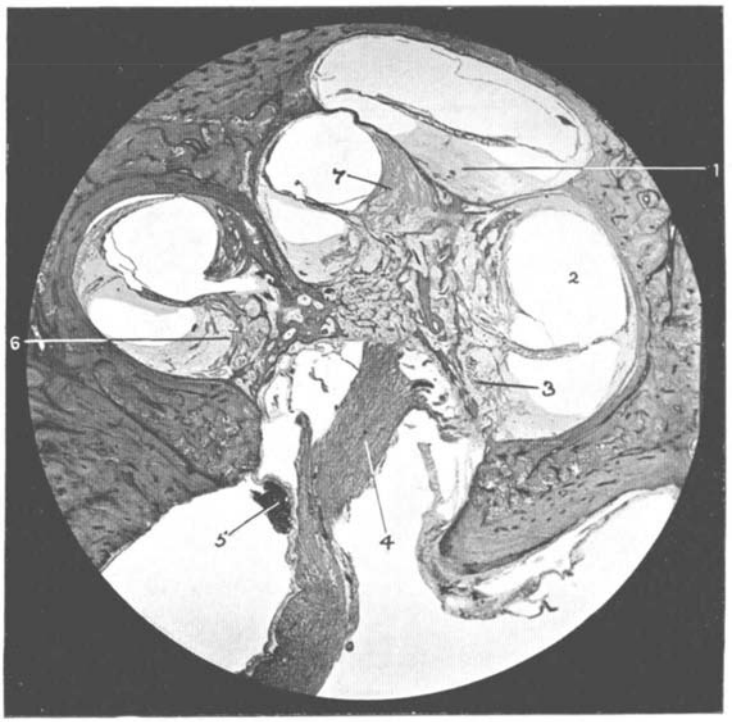


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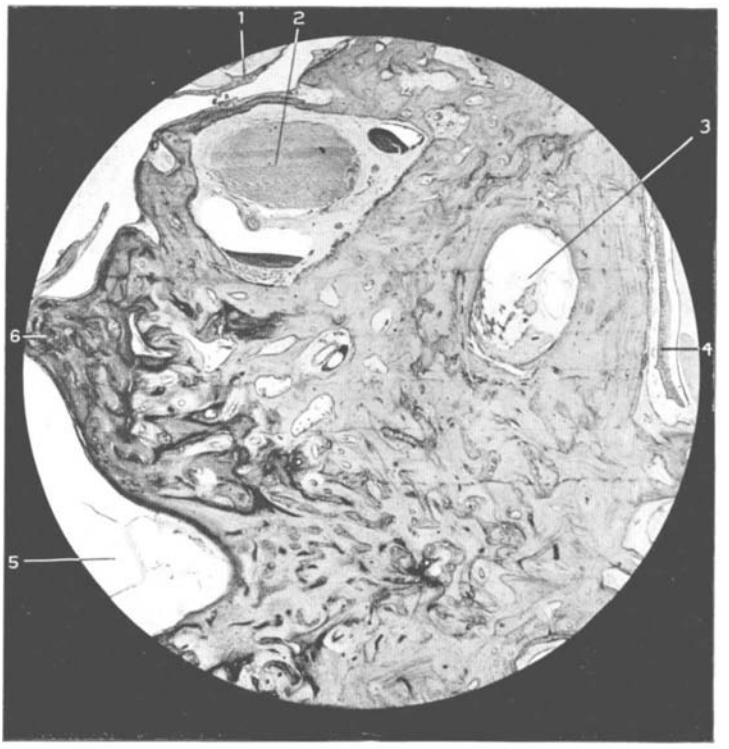


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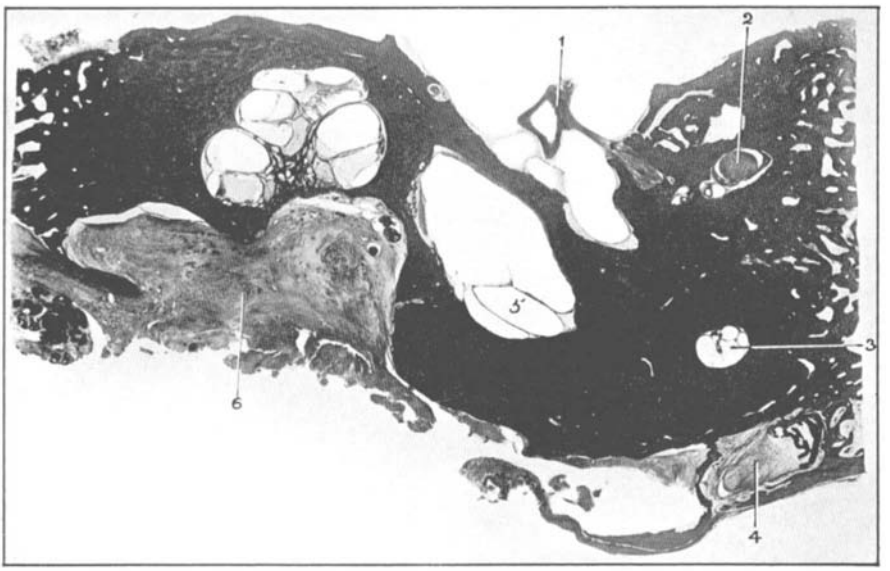


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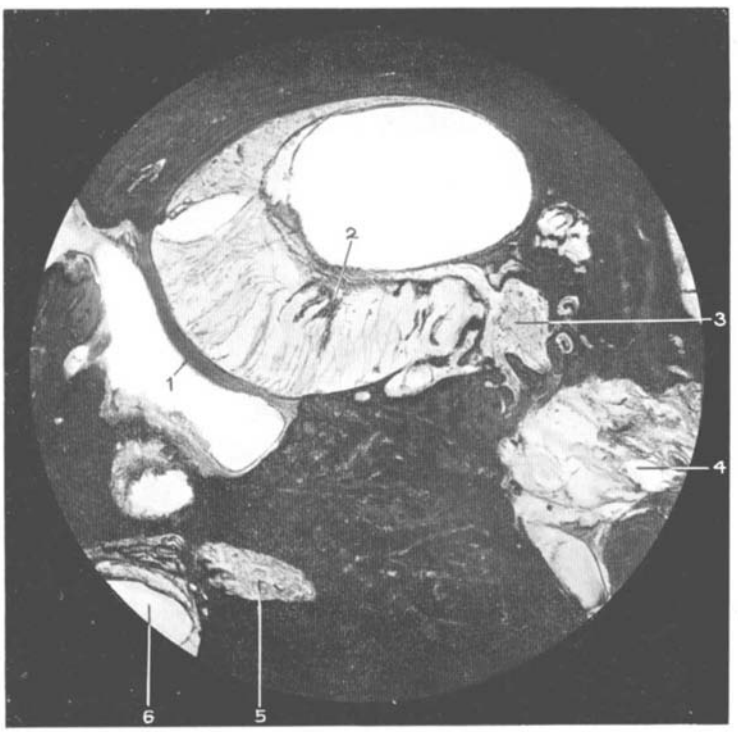


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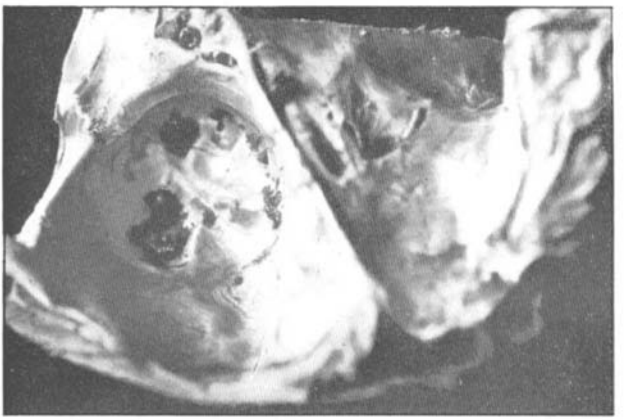


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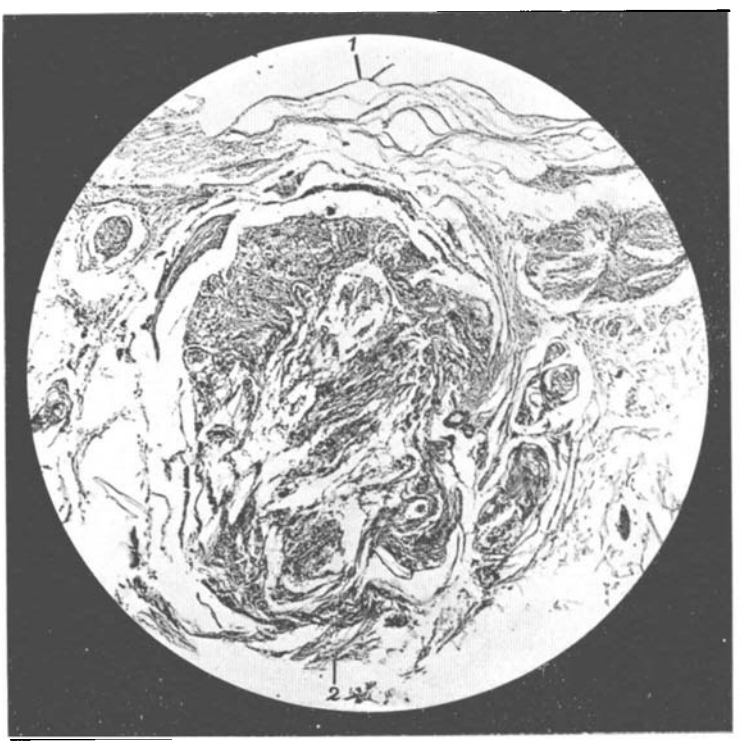


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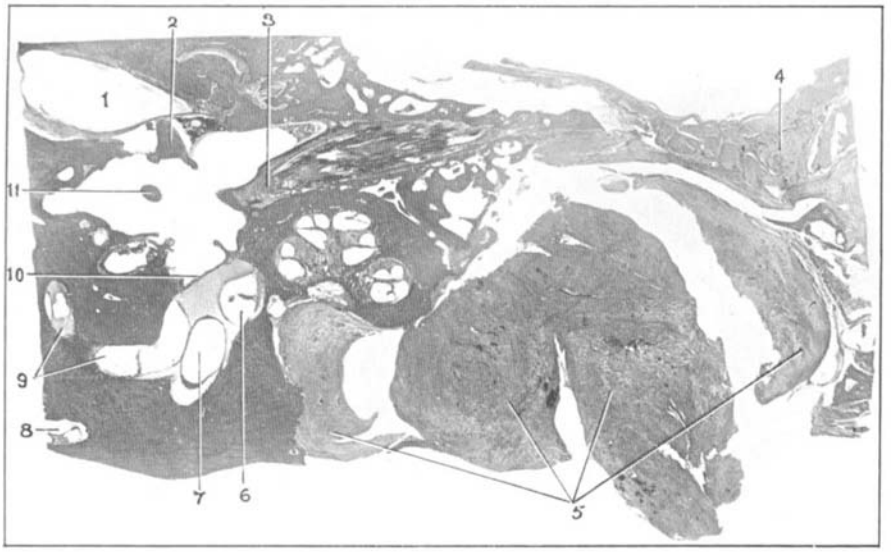


Fig. 9.

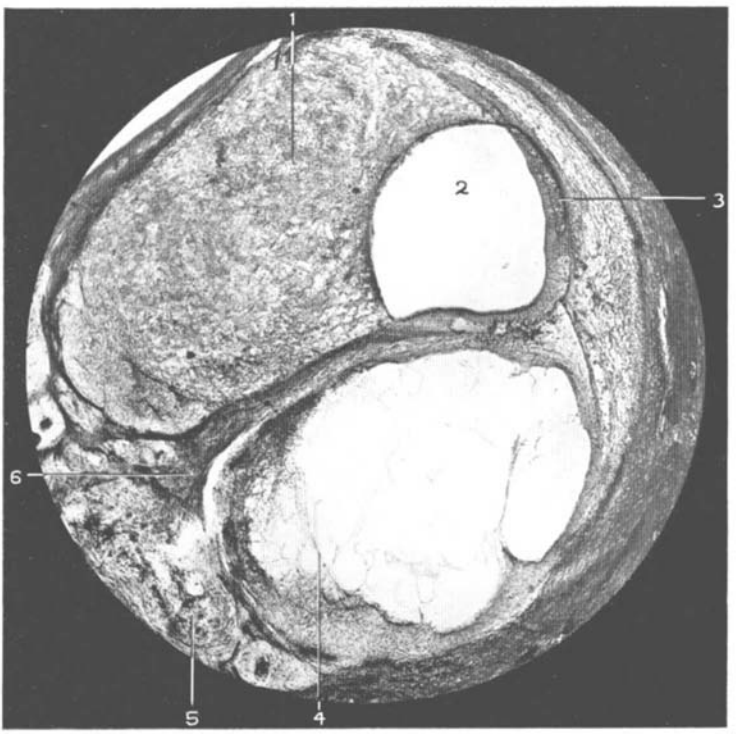


Fig. 10.

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DESCRIPTION OF PLATES.

FIG. 1 (Case I.).—M. McQ., female, aged 75. Tumour of right nervus acusticus. Horizontal section of right ear, No. 170, ×17 diam. Axial section through cochlea and internal meatus. 1, Scala media of upper part of middle coil, showing Corti's organ; 2, new bone formation in scala tympani; 3, saccule; 4, new connective or tumour tissue in scala tympani of basal coil; 5, erosion of cartilage capsule of cochlea by tumour tissue; 6, cochlear canal of lower part of basal coil, showing absence of Corti's organ and degeneration of spiral ligament.

FIG. 2 (Case I.).—Horizontal section through basal coil of cochlea (right ear), No. 205, ×48 diam. 1, Reissner's membrane; 2, spiral canal with marked atrophy of ganglion cells; infiltration by delicate connective tissue; 3, delicate connective or tumour tissue in scala tympani; 4, large vein; 5, new-formed bone; 6, myxomatous or dropsical degeneration of spiral ligament; 7, stria vascularis: note absence of Corti's organ.

FIG. 3 (Case I.).—Horizontal section of left ear (*i.e.* side opposite to the tumour), No. 80, ×17 diam. 1, New connective tissue in scala tympani of apical coil; 2, greatly dilated cochlear canal of upper part of middle coil; note new connective tissue and bone in scala vestibuli; 3, spiral ganglion cells still present; 4, cochlear nerve; 5, hemorrhage between dura mater and bone; 6, scala tympani of lower part of basal coil with new connective tissue and bone formation; 7, scala vestibuli of middle coil filled with new bone formation.

FIG. 4 (Case I.). — Horizontal section through left ear, No. 185, ×17 diam. 1, Thickened fold of tympanic mucosa; 2, facial nerve; 3, convexity of lateral canal, showing new connective tissue and bone formation; 4, thickened mucosa of antrum with exudate; 5, utricle; 6, posterior margin of oval window.

FIG. 5 (Case II.). — A. T., female, aged 25. Tumour of right eighth nerve. Horizontal section of right ear, No. 90, ×6 diam. 1, Head of stapes with stapedius; 2, facial nerve; 3, posterior canal with hemorrhage in perilymph space; 4, tumour; 5, lower part of utricle; 6, dilated internal meatus with tumour.

FIG. 6 (Case II.).—Horizontal section of right ear, No. 120, ×20 diam. 1, Thickened membrane of round window; 2, new bone formation in connective or tumour tissue in scala tympani; 3, spiral canal infiltrated, and ganglion cells absent; 4, remains of cochlear nerve in fundus of internal meatus; 5, canal for nerve to crista of posterior canal infiltrated as above; 6, endolymph space of posterior canal.

FIG. 7 (Case II.).—Shows middle fossa of skull after removal of dura, with deep pits in the bone.

FIG. 8 (Case II.).—Shows tumour of the pia-arachnoid, which occupied one of the small bony erosions: the section shows a fibrous, cellular growth, apparently composed of neuroglial tissue. The neuroglial fibres appear to run in bundles in various directions. Cushing holds that these swellings are hypertrophied Pacchionian bodies, while Key believes that they are gliomatous metastases in the arachnoid. They certainly appear to be of a gliomatous nature.

FIG. 9 (Case III.). — W. H., male, aged 43. Tumour of right eighth nerve. Horizontal section of right ear, No. 147, ×4 diam. 1, External meatus; 2, malleus; 3, tensor tympani; 4, Gasserian ganglion; 5, tumour; 6, dilated saccule with granular contents; 7, utricle; 8, smooth end of posterior canal; 9, lateral canal; 10, footplate of stapes; 11, long process of incus.

FIG. 10 (Case III.).—Axial section through right cochlea, No. 147, ×50 diam. 1, Fibrinous and granular exudate in scala vestibuli; 2, dilated cochlear canal; 3, stria vascularis; 4, fibrin threads in scala tympani; 5, spiral canal; some ganglion cells are still to be seen; 6, nerve entering bony spiral lamina.

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Atresia of External Meatus.—H. BEDFORD RUSSELL.—Male, aged 24. Left ear has never discharged. Hearing—C.V. at 6 ft. The atresia was probably the result of a pathological change.

Vertigo.—W. M. MOLLISON.—Male, aged 32, has had from two to five attacks of vertigo per week since 1918. Objects appear to move; vomiting; deafness in left ear; tinnitus. Wassermann negative. Caloric test produced slight reaction with past pointing. Lumbar puncture; fluid clear but under increased pressure. No abnormality of nervous system found. The patient was free from attacks for six weeks after lumbar puncture.

Destruction of the Tympanic Membrane by Hot Fluid—LIONEL COLLEDGE.—The patient upset a cup of hot tea over her right ear four months ago. Great discharge from, and swelling of, the meatus. Perforation of almost the whole of the membrana tensa. Tinnitus in right ear since the accident.

November 19, 1920.

President—Sir CHARLES BALLANCE, K.C.M.G.

The President in his introductory remarks referred to the progress of otology in this country. He looked forward to the foundation of a great Central Institute of Otology in London for the purpose of co-ordinating and strengthening the work of teaching and research. He hoped that, in the future, individual clinics might be run on the unit system with Government grants for whole time men: thus teaching and research would be endowed and strengthened. We were only on the threshold of knowledge of diseases of the ear. The Council of the Section have decided to memorialise the two Royal Colleges to grant a diploma in Otology.

Chronic Catarrhal Otitis Media—Sir WILLIAM MILLIGAN.—There has been no really substantial progress in the treatment of this disease during the past twenty years. The essential pathological changes may be classified as follows:—(1) Surface epithelial changes; (2) connective tissue changes, hypertrophic and sclerotic; (3) atrophic changes. All of these may occur separately or collectively. The principal cause is repeated attacks of exudative catarrh of the tubo-tympanic mucosa. The neglected catarrh of early life is *facile princeps* the main cause of chronic adhesive changes in after life.

The treatment of exudative catarrh in young children is too often inefficient. We forget, or have not the opportunity of following up, the case. The immediate benefit resulting from removal of adenoids and the return of practically normal hearing within a few days either

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with or without Politzerisation are results so remarkable that the tendency is to consider all is well; but is it so always? How many cases return in a few years with evidence of adhesive changes, and why? I believe the main reason is because we do not completely drain the middle ears of all secretion at the proper time. I maintain that the indication to incise the membrana tympani and drain the middle ear is almost as necessary in exudative catarrh as in suppurative catarrh. Viscid exudate in the hypo-tympanum, or organised connective tissue around the tympanic orifice of the tube, is the cause of the ultimate leucocytic activity in the subepithelial layers of the muco-periosteum. Dense sclerotic white fibrous tissue is formed either locally or diffusely in the middle ear, a tissue which gradually contracts and leads to rigidity or ankylosis of the ossicular chain, or to occlusion of the fossula rotunda with still further impairment of hearing. In the long run atrophic changes ensue with a gradual opening up of the Eustachian tube, but the damage is done and the middle ear has practically ceased to function. If we desire to combat progressive changes and to obtain benefit from intratympanic injections it should be in the nature of a lavage—in other words we should provide a vent, we should incise the membrana tympani and wash out the middle ear with the aid of the catheter and air douche. Patients frequently say that after a course of intratympanic injections their hearing capacity has been made worse. We are dealing with what may be shown one day to be a microbic disease affecting the deeper layers of the muco-periosteum—a condition of a diffuse fibrosis somewhat akin to "keloid." There is a prevalent conception that ankylosis of the ossicular chain—more especially synostosis of the stapedio-vestibular articulation—is a common sign of adhesive middle-ear catarrh. Clinical and pathological experience and observations made during operative interference compel me to think that it is not so common as is generally supposed. I believe that the tendency is to over-estimate the importance of the stapedio-vestibular articulation and under-estimate the importance of changes in the "membrana secundaria." How often in past years, when operations for the relief of chronic catarrhal deafness were the fashion, we have found the stapes freely mobile when we expected to find it ankylosed? As the fibrosis starts from the region of the Eustachian orifice, it reaches the region of the fossula rotunda at a relatively earlier period of time than the region of the fenestra ovalis. Hence the many cases in which although there is well-marked middle-ear deafness there is no paracusis.

The potential vacuum in the middle ear, resulting from tubal obstruction, still further accentuates the difficulties. Can we do anything to maintain an equable pressure upon the two sides of the membrana tympani during the time we direct our energies to relieve

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the existing tubal obstruction and arrest the advancing sclerosis? I consider that we underestimate the advantages to be attained from artificial perforation of the membrana tympani with a fine galvano-cautery point. It is, however, no use doing so if the patient has already lost more than 75 per cent. of normal hearing, as by this time sclerotic changes are so advanced as to preclude any hope of benefit following. An open perforation maintains an equal pressure upon both sides of the membrana tympani, relieves tension, arrests exudation, and affords a direct channel through which medicaments may reach the inner wall of the middle ear. To maintain an open perforation we should imitate what nature does in old suppurative cases—we should endeavour to epithelialise its edges by the implantation of epithelial cells, an extremely delicate and difficult piece of work, but possible of execution with care and patience.

Future progress in the treatment of chronic adhesive catarrh appears to lie in the employment of radio-active substances whose rays have the power of softening and rendering pliable dense sclerotic tissue. The β and γ rays of radium, or its emanation, if properly filtered, have the power, probably in virtue of their action upon connective tissue cells, of transforming hard and dense mesoblastic tissue into something approaching embryonic tissue—soft and pliable. Everything depends upon dosage, duration of exposure, and effective filtration, and it is to these problems I am devoting my thoughts.

Streptococcal Leptomeningitis in a Child due to Chronic Suppurative Otitis Media; Rapid Development of Coma; Radical Mastoid Operation with Translabyrinthine and Lumbar Thecal Drainage, with Complete Recovery — Mr SYDNEY SCOTT.—Girl, aged 10, admitted 23rd July 1920, in a state of unconsciousness, with purulent discharge from the left ear: temperature 104° F., pulse 130, respirations 30; head retracted; extensor-rigidity of the hamstrings; reflex cry on attempting to flex the head; marked rotatory nystagmus to right. Mr Scott considered that otitis media had led to involvement of the labyrinth and that this would account for a meningeal effusion. *Operation*—Antrum and cells contained pus, granulations, and cholesteatoma. A carious patch of bone led back to a parasinus extradural abscess containing nearly a drachm of pus. The external semicircular canal was not eroded, and though no channel of infection to the labyrinth was identified, an opening into the vestibule was made below the facial nerve; the cochlea was extirpated in order to open up the fundus of the internal auditory meatus, and establish translabyrinthine drainage. Lumbar puncture yielded about 10 c.c. of turbid cerebro-spinal fluid containing streptococci. Lumbar puncture was repeated at intervals of twelve hours during the next few days. On the fourth day it was reported

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to be "straw-coloured, clear and sterile." On the third day the flow of cerebro-spinal fluid from the labyrinth ceased. There was temporary facial paralysis. Recovery uninterrupted.

Two Cases of Gunshot Wound of the Temporal Bone—THE PRESIDENT and Sir JAMES DUNDAS-GRANT.—In both there was extensive caries of bone. The radical mastoid operation, followed by grafting, gave excellent results.

ABSTRACTS

EAR

Invasion of the Internal Ear by Tympanic Suppuration. I. FRIESNER. (New York, *American Journal of Surgery*, May 1920.)

The infection is much more frequently chronic than acute. The most frequent of the acute infections is that associated with scarlatina. In this, by reason of the virulence of the organism, there is a rapid sloughing of the tissues of the middle ear, and often a caries of the outer labyrinthine wall, and invasion, and more or less complete destruction, of the labyrinth. Even in such fulminating processes, however, the pathway of the labyrinthine invasion strongly influences not only the extent of the destruction within the labyrinth but the type of intracranial complication should this occur. When infection occurs through the solid walls of the labyrinth, the invasion is less rapid and less frequently fatal than when by the windows. It is for this reason that, while clinical observations show more fistulæ in the semi-circular canal, post-mortem findings show fistulæ in the windows as the most common pathway. Inflammation of the bony wall of the labyrinth, with fistula formation, usually at the point of maximum exposure of the external semicircular canal, generally follows chronic middle ear suppuration, either with cholesteatoma or tuberculosis. A fistula may, however, occur with an acute or subacute mastoiditis. Even before the formation of an actual fistula there is an internal reaction, a thickening of the endosteum and trabeculæ supporting the membrane, and it is this protective reaction against invasion which probably accounts for the labyrinthine symptoms which precede the formation of a definite fistula. It has long been noticed that the "fistula reaction" varies considerably in the type and direction of the resulting nystagmus, especially in tuberculous cases. The post-mortem examination of one such case which gave a reaction against the rule, showed the fistula in the external semicircular canal to be both tortuous and

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