SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY

Friday, May 20th, 1921.

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

Discussion on Dr J. S. Fraser's Paper on the Pathological and Clinical Aspects of Deaf-Mutism. (See Jan.-March Nos.).

The PRESIDENT said the internal ear was the great subject for the future, and the profession was, as yet, only on the brink of knowledge in regard to it.

Mr ARTHUR CHEATLE remarked that the first case was interesting from many points of view. There was the question of islands of hearing, which all recognised as occurring in congenital deaf-mutism. Mr Cheatle asked whether Dr Fraser saw any reason for these islands existing. What was the malformation of the cochlear canal? Certainly the vestibular reaction was delayed, but it was present. Recently, when examining a deaf-mute, he found, on cold syringing, a well-marked vestibular reaction on both sides in thirty seconds. Dr Hurst had shown a case from which he was inclined to think that if there was vestibular reaction the deafness was likely to be a neurosis, but Dr Fraser's case showed that the cochlear canal may be malformed and the vestibular mechanism intact. With regard to the site of malformation, Mr Jenkins had told him (the speaker) that structures which were formed late in the evolutionary era were more liable to malformation than were those formed at an earlier epoch, and the case of Dr Fraser bore that out.

Dr ALBERT A. GRAY agreed with the exhibitor that the first case seemed to be one of mal-development; there seemed no sign of inflammatory activity. His belief was strengthened by the development of the stria vascularis. In 1919, in the *Journal of Laryngology*, he described two cases in which there was a peculiar development of the stria vascularis; it was hanging down as a pedunculated structure, reaching almost to the organ of Corti. It was covered with cubical epithelium. In Dr Fraser's case it was adherent to the tectorial membrane. The tegmentum vasculosum in the bird and the reptile was similar to the stria vascularis as it was seen in this case. In the second case, of acquired deaf-mutism, there was no sign of this peculiar development of the stria vascularis.

A feature Dr Fraser did not refer to—but he was sure the sections were thin enough to show it—was the condition of the tensor tympani muscle. One would have expected that muscle to have undergone some degeneration or malformation in deaf-mutism; but in the three cases he had himself examined, the muscle was as well developed as in the normal person. He

expected to find it very ill developed, owing to the lack of stimulus of sound. He did not examine the stapedius. Most deaf-mutes heard some sound, if it were loud enough, and it might be that this occasional stimulus sufficed to keep the tensor tympani a healthily active muscle.

Another important matter—which he did not think could be determined by microscopical examination—was in regard to the size of the labyrinth. In deaf-mutes one would expect to find the labyrinth smaller than normal, *i.e.*, about the size of that of a child at or before birth. He prepared his sections with paraffin and celloidin before decalcification so as to guard against contraction of the specimen, and found that the labyrinths of deaf-mutes were distinctly larger than normal.

Dr DAN M'KENZIE said that it was of great interest to note the proportion of cases in which deaf-mutism was acquired. In making a classification it was important to keep certain points in mind, distinguishing cases due to intra-uterine disease from those caused by hereditary defect. It was still a question as to exactly what that defect consisted of. Of the acquired cases in Dr Fraser's series, he noted that one followed fracture of the cranial base. He could recall a similar case, though when such a cause was attributed by the patient's friends one was inclined to think it was a case of *post hoc ergo propter hoc;* still, in one's zeal for knowledge there might be danger of missing the truth.

With regard to meningitis, at Dr Fraser's last demonstration before the Section, he showed a series of slides illustrating cerebro-spinal meningitis and its effects on the labyrinth. There was some discussion as to whether the pus in the middle ear was due to the meningeal and labyrinthine infection passing out, or to an accidental infection of the middle ear from a septic organism. He (the speaker) had been wondering whether the meningeal infection could take place from without inwards, *i.e.*, whether it was possible that the route of infection of the middle ear by the meningococcus might be from the naso-pharynx, in which that organism is said to reside. He believed it was the rule that the deafness in cerebro-spinal meningitis came on very early in the disease. That was rather a striking point in this connection.

Mr SYDNEY SCOTT drew attention to the congenital case, in which the scala media was distended in one cochlea and stenosed in the opposite cochlea. These differences should throw some light on discussions concerning the origin of the endolymph and perilymph. Some might regard the appearances seen to be artefacts, but Dr Fraser's specimens showed conclusively that the abnormalities were pathological.

Dr J. S. FRASER (in reply). In regard to the congenital deaf-mute patients being capable of some hearing, he took it that Corti's organ was so badly formed that the child could not hear normally, but might still be able to appreciate a loud sound close to the ear. This was analogous to a very defective eye being able to appreciate light or even to count fingers at a short distance. He agreed with Mr Cheatle as to the nature of the case recently published by Hurst; he (the speaker) thought it was probably a case of congenital deaf-mutism with certain remains of hearing; he did not think it was one of hysterical deafness.

Dr Gray had spoken of the mal-development of the cochlea. He (the

speaker) did not know whether members would recall the compressed pith flowers which used to be put into finger-bowls. When dropped in, these flowers were very tiny, but they gradually expanded to something resembling a rose or a pansy. That, it seemed to him, was a useful analogy to understand the development of the otic vesicle. Some of the pith balls expanded perfectly, and gave a good representation of a flower, others did not. A part remained unexpanded or became over-expanded. In the case of the ear, that part of the otic vesicle which formed the utricle and canals, expanded all right, but that part which should form the saccule and the cochlea did not develop properly. In this way the stria vascularis, the spiral crest, Corti's organ, and the other structures which were developments of the original uniform epithelium lining the otic vesicle never became properly formed. He agreed with Dr Kerr Love in regarding congenital or developmental deafness as a malformation handed down from one generation to another on Mendelian lines—the deafness being recessive like dwarfism in sweet peas. He did not believe that congenital malformation of the cochlear canal and saccule was the result of intra-uterine meningitis.

As far as he could make out, in the congenital case the tensor tympani was well developed, and the labyrinth seemed to be of about the normal dimensions.

What no member had mentioned was the part the brain might play in regard to this question. French observers—Castex especially—contended that deaf-mutism was not so much a question of mal-development of the inner ear as of the hearing centres in the brain. In the congenital deaf-mute case the brain was being examined by Dr James Dawson, but it was a long process. He would report the result later.

In answer to Dr M'Kenzie, German observers found a larger proportion of acquired cases than he (the speaker) had found. In Switzerland, however, where there were so many cases of endemic cretinism and deaf-mutism, some 75 per cent. of the cases of deaf-mutism were "congenital." He did not agree with Dr M'Kenzie as to the route of infection in cerebro-spinal meningitis. He would like Dr M'Kenzie to see his specimens again. The Eustachian tube and tympanic membrane were healthy; all that was wrong was a congestion of the mucosa and a little exudation in the region of the round and oval windows, where the middle ear came into close relation with the labyrinth, which contained purulent exudate. The middle ear was not filled with pus which was invading the labyrinth. It was a commencing spread of inflammation from the inner to the middle ears.

In regard to the distension of the ductus cochleæ on the right side and its collapse on the left, there was here a possible fallacy. The patient had meningitis, and he (the speaker) opened the dura of the posterior fossa on the right side, but not on the other. It was possible that, on the side on which tension in the subarachnoid space had been relieved, the cochlear duct had expanded. He thought, however, that from an early period of development there had existed a collapse of the cochlear duct on the left side (unoperated ear), and an abnormal dilatation on the right side. A similar condition had been observed by other workers.

Societies' Proceedings

SECTION OF LARYNGOLOGY

December 2nd, 1921.

President—Sir WILLIAM MILLIGAN.

Epidiascopic Demonstration illustrating Repair of Nasal Deformity caused by Syphilis—Dr DOUGLAS GUTHRIE.—Female, aged 18, with inherited syphilis which had destroyed the cartilaginous septum and columna and had caused an extreme degree of saddle-nose deformity. Anti-syphilitic treatment was carried out for three months. The nasal bridge was then reconstructed with costal cartilage graft and a columna made from an upper flap from the skin of the vestibule and two lower flaps from the upper lip. Dr Guthrie had operated on seven cases of nasal deformity with good results.

THE PRESIDENT said he used a graft from the fibula and included the perichondrium.

Mr WOODMAN emphasised Dr Guthrie's point as to the necessity of carrying the submucous incision as far as the tip of the nose.

Mr J. F. O'MALLEY, in cases in which deformity was not so great, had grafted from the opposite direction, making the incision into the tip of the nose immediately below the most prominent point.

Mr F. H. DIGGLE had experience of only one case, which appeared satisfactory at first, but three months later, the graft had slipped.

Dr KELSON and Mr A. A. SMALLEY commented upon the good results at first, and the tendency to shrinkage later: the latter had found that a horse-hair strand passed through the nose and tied over the graft gave good anchorage.

Major GILLIES and Mr T. P. KILNER emphasised the necessity of skin grafting the inner aspect of the nose before inserting the cartilage graft. It was necessary to replace the destroyed mucous membrane as well as the lost bone or cartilage, otherwise the graft did not hold satisfactorily.

Dr GUTHRIE (in reply) said his case had preserved the original good improvement obtained at the operation in June. He had not required to anchor the graft. The pocket to contain the graft must be accurately made so that the latter was tightly gripped. The advantage of cartilage over paraffin or other foreign bodies lay in the fact that it was natural tissue and that it could be trimmed to the exact size and shape required.

Intrinsic Epithelioma of Larynx—Sir ST CLAIR THOMSON.—Schoolmaster, aged 53, with progressive hoarseness for one and a half years. The left vocal cord, with the exception of a trifling area posteriorly, was replaced by an infiltrating, knobby, irregular neoplasm, which had a characteristic rough, white, slightly cauliflower appearance. In the anterior third, there was a greyish, retracted area, doubtless similar to the nipple retraction in mammary carcinoma. The left vocal cord moved freely, with slight mechanical impairment anteriorly. The diagnosis was based entirely on the clinical appearances.

Drs JOBSON HORNE, SEWELL, and SMURTHWAITE questioned the statement that the cord moved freely: Dr Jobson Horne considered that there was a myopathic impairment of movement. Sir St Clair Thomson accepted the criticism regarding the mobility of the vocal cord.

(*Postscript.*—The tumour was removed the following day by laryngofissure, and microscopically a squamous epithelioma was found reaching down to the small muscles: removal was complete.)

Sarcoma of Cheek and Superior Maxilla with Diffuse Secondary Growths—Mr E. D. D. DAVIS.—Male, aged 39, seen September, 1920, with soft tumour of two months' duration involving the right incisor fossa, and another occupying the alveolus in the position of the right upper wisdom tooth. Examination showed that the antrum was involved. The right maxilla was excised. Secondary growths, without local recurrence, developed and involved the cervical glands on both sides, the left brachial plexus, left ribs and penis. The microscope demonstrated their sarcomatous character. Treatment by radium had caused disappearance of the growths.

Tuberculoma of the Left Malar Recess and Floor of Orbit—Mr E. D. D. DAVIS.—Woman, aged 39, complained of swelling below the outer corner of the left eye of nine months' duration. The eyeball was displaced upwards and forwards: there was no pain or glandular involvement. Exposure of the swelling revealed a soft, vascular, carcinomatous-like growth, occupying the floor and outer angle of the orbit and eroding the malar bone. Sections demonstrated chronic inflammatory tissue with giant cells and was labelled "Tuberculosis."

Piece of Wire removed from Right Arytenoid Cartilage by the Indirect Method—Dr ANDREW WYLIE.—Female, aged 57, while eating beans, "swallowed a needle." When examined two days later, a small dark object was seen protruding from the right arytenoid towards its inner surface. A wire, 1 inch long, was removed with Mackenzie's forceps.

Case of ? Arrest of Development of the Trachea—Mr C. A. SCOTT RIDOUT.—Boy, aged 16, seen September 1921, with extreme dyspnœa and general enlargement of the thyroid gland, especially of the right lobe. Difficult breathing on exertion was first noticed after typhoid fever eleven years before: he developed at that time a "lame right hip." Voice remained unaffected. He had pneumonia twelve months ago with aggravation of respiratory distress. Thyroid swelling noticed two weeks before admission.

Low tracheotomy was difficult; the trachea, cord-like and collapsed, was flattened laterally and pushed to left. Later, a fresh incision was made over the cricoid cartilage, which was normal in size, though the

trachea up to this point was atrophied. Larynx, except for somewhat infantile epiglottis, was not unduly small. The thyroid gland became normal under thyroid treatment.

THE PRESIDENT did not think that typhoid could cause such uniform stenosis and suggested that the whole bronchial tree might be found in a similar condition : the symptoms were aggravated by the typhoid. Cases of congenital malformation of the trachea and bronchial tree were recorded.

Dr WILLIAM HILL remarked that the normal state of the cricoid was not consistent with the condition being congenital. The vestibule of the larynx was not infantile. The lumen of the trachea was of normal shape, unlike that of a compressed trachea. The growth of the trachea appeared to have stopped when the typhoid occurred.

Sir J. DUNDAS-GRANT said the history did not favour a congenital origin : some atrophy of cartilage may have resulted from the typhoid and caused apparent persistence even after removal of the thyroid gland pressure.

Mr J. F. O'MALLEY thought that while the thyroid enlargement caused the recent dyspnœa, the typhoid had some connection with the arrest in development. The size of the trachea was that of a child of 5 years.

Dr P. WATSON-WILLIAMS attributed the condition to typhoid. It was possible that ulceration had involved the trachea in subsequent cicatrisation.

Dr JOBSON HORNE considered that with such an obvious cause as pressure from an enlarged thyroid gland, it was unnecessary to attribute the condition to typhoid.

Dr DONELAN enquired whether the atrophy of the thigh muscles also dated from the typhoid fever.

Mr RIDOUT (in reply) said that the atrophy of the thigh muscles followed the typhoid. The condition of the tracheal cartilage produced the impression of a collapsed rubber tube. He believed the whole trachea was in a similar condition and he would examine the bronchial tree by bronchoscopy. The head and neck of the right femur were smaller than on the left side.

Case of Laryngeal Web—Dr W. H. KELSON.—Male, aged 56, had operation of laryngo-fissure in July 1921, for carcinoma of the left vocal cord, involving the anterior commissure. The web which had formed prevented adduction of the cord and had recurred after removal.

THE PRESIDENT suggested the use of an apparatus which he had devised for keeping the raw surfaces from reuniting after division.