SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY.

March 3, 1928.

President—Dr J. S. FRASER.

Reflections on Vertigo—Dr ISIDORE MÜLLER.

The paper is published in the *Journal of Laryngology and Otology*, Vol. xliii., p. 478, July 1928.

DISCUSSION.

Dr J. S. FRASER (President) said that the Section was indebted to Dr Müller for his lecture. Probably many members were "unitarians" with regard to the ear. It had always seemed to him hard to believe that the two functions of the ear—hearing and balancing—were so completely separated as appeared from the books.

Mr SYDNEY SCOTT said that Dr Müller had alluded to "visual vertigo," and he (the speaker) would like to refer to the forced movements due to visual influences during flying. Some aviators experienced vertigo which was not vestibular in origin, for instance, when looking towards the tip of the upper wing when banking. On shutting the eyes the feeling of vertigo vanished. Also, when in a spin, some pilots were affected by definite forced movements, if they looked over and saw the earth apparently whirling round; such forced movements ceased on closing the eyes or fixing the eyes on a relatively stable point, otherwise the pilot might be unable to rectify the machine. Dr Müller had stressed the frequent correlation of vertigo with post-nasal catarrh, and he (Mr Scott) appreciated the importance of attention to the Eustachian tubes. No doubt many patients visited Carlsbad before the cause of their vertigo had been diagnosed. When Dr Müller saw them he found the condition due to Eustachian inefficiency which upset the balance of the labyrinths.

Reference had also been made to the stimulus of the cochlear and vestibular nerves, by means of tuning forks. It was in our experience that certain people would exclaim, "That makes me giddy," when the tuning-fork was placed on the mastoid. He (Mr Scott) assumed that the vibrations of the fork stimulated the vestibular neuro-epithelium. Some deaf-mutes retained their vestibular functions. He recalled the case of a boy, who exhibited stigmata of congenital syphilis, and was deaf in one ear. He found that the vestibule on the deaf side reacted normally, and on the other side, where the cochlea was normal, the tests showed that all vestibular functions had disappeared. He assumed that in that case the congenital syphilis had picked out the cochlear nerve on one side and the vestibular nerve on the other. In other deaf-mutes the vestibular as well as the cochlear nerves were defunct, hence the different results experienced with tests in deaf-mutes. Dr Müller had said that disease of the cerebellum could cause vertigo, but he believed it had been shown that there could be cerebellar disease without vertigo, so long as the vestibular nerves were

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unaffected. Many patients who had vertigo were wrongly told that it was due to liver trouble or to some other organic disturbances.

Ophthalmic surgeons admitted that eye-troubles seldom caused true vertigo, though investigation might reveal abnormal conditions as astigmatism, etc. In many cases of recurrent vertigo there were two factors, disturbances in the ear being the essential one, and the other factor variable and often remote.

Dr Müller had mentioned colitis, sorrow, fatigue, worry, etc., as factors. It was right that patients should be thoroughly examined, and all the possible contributory influences investigated. Even normal patients varied in their degree of sensitiveness to stimulation; some could be rotated in a chair and yet walk straight, because of their great powers of control, whereas others have been sent into convulsions. It was necessary to bear in mind that some patients who complained of vertigo were very susceptible to the power of suggestion.

Dr DAN MCKENZIE said he had enjoyed an interesting paper on an interesting subject, which, though it had been discussed for many years, was not yet exhausted.

He agreed with the statement that vertigo concerned a great deal more of the nervous system than that directly concerned with the ear; it was one of those sensations which commanded the attention of the whole organism, like toothache or other overwhelming pain; and the mental concentration on it added to the agony. Vertigo could therefore be looked upon as the pain of the vestibular nerve.

He agreed that the two parts of the internal ear might be regarded as physiologically connected. The psychological allusions to space and time were suggestive. One important point concerned rhythm; the influence of that on the economy was a very interesting one; it certainly dominated more of the vital processes than was often imagined. The effect of rhythm in dancing, even in these days of syncopation, and in marching, was very marked, and it was well known that fatigued soldiers marched better under the stimulus of rhythmic music. One would expect, as Dr Müller had indicated in his paper, and as Mr Sydney Scott had said some time ago, that the two end-organs of the labyrinth would be simultaneously affected, and that vertigo as a symptom of labyrinth irritation might accompany almost any disease of the ear. The juxtaposition of the two organs anatomically was not a mere accident, but was necessary for the functions which were carried out together.

Sir WILLIAM MILLIGAN said that when confronted with a case of vertigo he first thought of possible local causes, then of possible general causes, and, finally, of possible central causes. A large number of cases of vertigo were due to a local cause, it might be in the tympanum, in the Eustachian tube, in the posterior end of the middle ear cleft, or as a result of inflammatory lesions in the middle ear. Many cases were treated successfully by opening up the Eustachian tube, though sometimes that was very difficult. Catheterisation and politerisation sometimes failed, and in obstinate cases he had sometimes made an incision in the membrane and passed a fine silver bougie from above downwards, instead of in the usual direction, from below upwards. That only applied to cases in which it was impossible to get the equilibrium restored between the outside air and the tympanum. The mechanism of the internal ear was so delicate

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that the slightest alteration of poise determined whether or not vertigo would occur. It was always best to try to eliminate simple causes first; only passing to more obscure ones if simple causes could not be found.

As to general causes, he thought many cases were due to auto-intoxication. Sometimes by altering the splanchnic tension, or a congestive condition of liver, or an intestinal condition, the vertigo could be made to disappear at once. By the simple measure of giving a little calomel at night and salts in the morning the vertigo was frequently stopped.

The central causes presented a more difficult problem, as he always had in mind the possibility of psychic and subconscious effects, and sufficient was not known about the circulation in the brain to enable confident analysis of those cases to be made. In many cases, however, the condition was transitory and due to a temporary emotional disturbance, states resulting either in a stagnation of the cerebral circulation or in anæmia of the brain. Frequently when a patient blushed vigorously she at the same time felt dizzy. If a man were given alcohol he flushed and felt sensations in his ear and experienced some measure of dizziness; he might even show a tendency to fall, showing how easily the equilibration could be disturbed. The same was true of shock and fright. On receiving a sudden fright the mental attitude was tense and there was a momentary halt in the circulation, with its result on the internal ear.

He did not dissociate the cochlear from the vestibular organ, though the latter was of the greater antiquity, which might have something to do with the difference in their response to sensations.

There was a type of vertigo in which it was very important to consider the blood pressure and that of the cerebrospinal fluid and their effects on the ear. Sometimes cases with very low blood pressure had extreme vertigo; also some cases with very high blood pressure had it. Such people should have general treatment. There was a type in which the end-organ was so damaged as a result of a pathological condition that, for practical purposes, it had become useless, yet it did not cease to act.

When ordinary local and general treatments failed to give relief, there was need for something to be done to the vestibular portion of the labyrinth. After operations on the semicircular system it was remarkable how extirpation of the disease found cleared up the vertigo, thus showing that it was a peripheral, not a central lesion. Still, in some cases there was probably a central end-effect, though he did not know how a diagnosis of this was to be made.

In dealing with this subject it was very important to eliminate auto-suggestion, though how far relief of that was likely to relieve the vertigo he was not prepared to say. Each case required a good deal of sifting, but many were amenable to ordinary methods of treatment.

Sir JAMES DUNDAS-GRANT said he agreed that in any given case of vertigo the local causes in the middle and the internal ear should first be investigated. The condition of the Eustachian tube would often give the key to the situation. He had shown at a meeting of this Section a man who, as soon as he pressed his tragus, fell down; he had fixation of the ossicles (malleus and incus). As those ossicles were of no use to the patient he (the speaker) had removed them, and the symptom disappeared. He thought the stapes was fixed by the other ossicles, that the pressure was communicated to the membrane of the fenestra rotunda, and that

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there was no "safety-valve" action on the part of the stapes. He had described many cases of vertigo due to cholesteatoma in the attic, in which removal of the ossicles had allowed an exit and so cured the vertigo.

With regard to the internal ear there arose the delicate question of otolith disease; on this the profession had been charmed by the descriptions and demonstrations given by the late Professor Magnus and by Dr de Kleijn. Cases of typical otolith disease had been described in which a cerebellar tumour was found. He himself had been misled by concentrating attention on the utricule instead of on the ponto-cerebellar angle. Disease at that spot, if recognised early, could be removed. If mistaken for utricular disease, it might be left until too late. What could be called the "vertigo" centre had been localised by Mills in America; the late Sir Victor Horsley had accepted it. It was located in the posterior part of the two superior temporo-sphenoidal convolutions. Bonnier, on the other hand, placed it in the ascending parietal. A curious confirmation of this view came to notice recently. A colleague who had a typical "Ménière" attack fell down, and for some days thereafter had weakness in the fingers of the opposite side. This suggested that the equilibration sensory centre was near the hand centre.

Vertigo might arise from irritation, and also from destruction of the labyrinth on one side; in which case it might result from overaction of the opposite labyrinth. He (the speaker) had tested the action of quinine in small doses in checking vertigo, and in cases of unilateral elimination of the labyrinth he found, by cold-air tests, that the quinine, which quieted the vertigo, seemed to do so by lowering the sensitiveness on the sound side. Eventually compensation took place.

One element which was liable to be overlooked was the effect of anæmia; in some cases bromides were given when iron and chloride of ammonium were really indicated.

With regard to the influence of pressure in causing vertigo, he had shown a case in which the stapes had dropped out and the membrane of the fenestra ovalis was exposed. On using the "fistula" test very little vertigo was caused by compression but the slightest rarefaction produced such disturbance that the patient almost fell off the chair. Mr Lake thought many cases of vertigo were due to diminished blood pressure, and so he treated them with ernutin. Ammoniated extract of ergot was useful in such cases.

Mr A. R. TWEEDIE said that with regard to the association between the auditory and vestibular nerves, in his original description of the work of Magnus and de Kleijn, he (the speaker) had mentioned that Winkler drew attention to this relation, as evidenced by the effect of music, *e.g.*, on dancing and marching. He asked Dr Müller how long treatment took to bring about a cure.

(Dr Müller said it was difficult to answer that because the cases differed so much; some required no more than a dozen applications; others took six months.)

He (Mr Tweedie) had come to the conclusion that vertigo was a result of a conspiracy of causes. There was usually both an asymmetrical function of hearing and an asymmetrical response to the tests of the peripheral vestibular organ, whilst, in addition, as evidenced by the galvanic tests, there was generally a hyposensitive condition of the vestibular nerves. The other factors were often a local subacute exacerbation in connection

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with some form of nasopharyngitis, altered blood pressure—excess of alcohol or tobacco—some form of dyspepsia and "age." In his experience these cases tended to get well or to become accommodated in some one to five years' time. As regards treatment, this should be directed chiefly towards improvement of the general condition.

Of course it was understood that they were not talking of cases of active suppurative disease.

Dr MÜLLER (in reply) said his purpose had been to create a discussion, as he felt that such a Society as this should influence future experiments on the subject. Research workers must realise that this was a very complex subject, not to be solved by mere animal experimentation. Clinical experience and a careful local examination must enter into it.

With regard to Mr Scott's remarks, prospective aeroplane pilots were now scrupulously examined in this respect, since, if anything was wrong with their ears, they could not be efficient pilots. He (Dr Müller) regarded the labyrinth as the place of control, *i.e.*, the place to which messages were sent. When a man had astigmatism the messages received were false ones, and he fell or had vertigo in consequence. A wrong message meant a wrong directional force. If the controlling organ was very potent it might correct the false message. It was necessary to find what was the ratio between irritability and fatigability. He would again emphasise the importance of a general investigation in all cases; he himself always tested the blood and the condition of the kidneys. A lady was sent to him because of vertigo and deafness. She had been treated by a specialist in Vienna, but without success. He (Dr Müller) found that she was suffering from severe kidney trouble. This was cured by the Carlsbad waters and it was unnecessary to do anything to the ears.

Traumatic Destruction of Labyrinth on the left side with Hysterical Deafness and Chronic Suppurative Otitis Media on the right side—SOMERVILLE HASTINGS, M.S.—Patient, male, aged 34, ten years ago fractured his skull (depression behind left mastoid), with immediate and complete deafness on the left side. Eight weeks ago had mental strain due to death of a brother. Right ear said to have been normal until six weeks ago, when it began to discharge, with slight deafness. Four weeks ago, while being syringed, sudden and almost complete deafness occurred, which has remained. Occasional whistling tinnitus, but no giddiness or other symptoms.

On Examination.—Left ear, drum normal. Right ear, chronic suppurative otitis media, with extensive destruction of drumhead; Eustachian tubes patent on left, obstructed on right side.

X-ray examination of skull reveals nothing of importance. Wassermann reaction negative.

Cochleæ.—Left; no response to any sound. Right; patient's answers always suggest great loss of hearing, but replies are very variable. Rinné is consistently negative, yet Bing is positive. Answers not altogether reliable. Lombard's test is negative. Loss of bone conduction almost equals loss of air conduction.

Voice of patient is not raised.

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Stato-kinetic Labyrinth.—Cold caloric test (results complicated by presence of varying spontaneous bilateral nystagmus, probably optical). Left; no response. Right; normal responses of vertical and horizontal canals.

Patient otherwise well. No stigmata of nervous degeneration.

The case is shown because: (1) a diagnosis of hysteria is never completely satisfying; (2) it is hoped that suggestions for treatment will be made. Amateur suggestion has been used without effect.

Mr A. R. TWEEDIE said he was only able to make a brief examination of the case, but noted that there was definite objective evidence of advanced middle-ear disease on the right side, and so far as he could judge the patient *did* hear a question. What were the responses to the galvanic and caloric tests?

Mr PETERS said he thought that the right cochlea and posterior labyrinth had been damaged in the original concussion but that the posterior labyrinth had recovered. Then had come the attack of suppuration, which had considerably reduced the hearing. In a rather short examination he had found that a tuning-fork 128 gave four seconds bone-conduction with several tests.

Mr SYDNEY SCOTT said the case gave him the opportunity of demonstrating the value of the "minimal-stimulus test" in rotation. When this patient was rotated slowly through a small angle (10 degrees) to his right, he instantly felt that he was going to his right, while if rotated through the same angle to his left he did not appreciate the movement. The patient was so consistent that he (Mr Scott) concluded that the left vestibular nerve was defunct.

Mr SOMERVILLE HASTINGS (in reply) said he was sorry more time could not be given to this case. The galvanic stimuli had not been worked out. The right ear was normal to the caloric tests. He brought the case because he felt that the deafness on the right side, which came on suddenly after nervous shock, was of functional origin. The man was sent to a neurologist, and every effort made to get back the hearing, but without success.

SECTIONS OF LARYNGOLOGY, MEDICINE AND ODONTOLOGY.

Chairman—Mr HAROLD S. BARWELL.

January 11, 1928.

The Influence of Naso-Oral Sepsis on the Lungs and Gastro-Intestinal Tract. Opening Papers by Mr E. D. D. DAVIS and Dr R. A. YOUNG are published in the *Journal of Laryngology and Otology*, vol. xliii., p. 465, July 1928.

DISCUSSION.

Mr C. A. S. RIDOUT referred to children, sent from the Municipal Tuberculosis Clinic, suffering from general debility, bronchial catarrh, night sweating and enlargement of cervical glands, but in whom no tubercle

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