All these operations gave rise to severe hæmorrhage. The enormous growth shown in the drawing seemed to have originated mainly from the palatal portion of the gums, the labial surface being comparatively sound. Mr. MacGillivray removed the hypertrophied gums and alveoli with perfect success.

A condition of outgrowth from the gum, due to the irritation of tartar or of artificial teeth, somewhat resembling hypertrophy of the gums but much less vascular, is known as polypus of the gums; and it happens that I had a remarkable instance of this last week. You will remember an old blind woman who was sent to me with a large fleshy mass projecting from the upper alveolus, which I removed at once by tearing it from its attachment with the finger, the resulting hæmorrhage being slight. We found that it had sprung from the upper alveolus, in which the teeth were broken and encrusted with tartar, and it is evident that this fleshy mass was nothing more than a local hypertrophy of the gum, the result of irritation. This must not be confounded with the true fibrous epulis which springs from the periosteum of the alveolus, nor again with the vascular myeloid growth which springs from the interior of the alveolus, and forms a maroon-coloured tumour—badly called a myeloid epulis—of which we have recently had an example in a young girl aged 17.

GIDDINESS AND STAGGERING IN EAR DISEASE.

II.¹

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MIDDLE-EAR GIDDINESS.

THIS form of giddiness is produced by pressure primarily applied to the walls of the middle ear. The pressure of inflammatory products is most common, but the pressure of air, water, or medicated solutions may also give rise to giddiness. While it is probable that sudden labyrinthine pressure invariably excites giddiness, it is not so in the case of the middle ear, as many persons have augmented middle-ear pressure without giddiness. While primarily applied to the walls of the middle ear, the pressure is in many cases transmitted to the labyrinthine fluid, the tension of which it increases with irritating effects upon the vestibular and ampullary nerve endings. Such transmission of pressure frequently takes place through the fenestral openings into the labyrinth, especially if there be an abnormally shallow condition of the recesses of the fenestræ. While, if there be carious erosion on the inner tympanic wall, pressure may then act directly on the contents of the cochlea, vestibule, or external semicircular canal. Thus, Dr. Macewen informs me of a case in which granulation tissue was found protruding from a carious opening at that part of the external semicircular canal where it comes close to the inner wall of the tympanum, giving rise to great disturbance of the equilibrium, taking the form of backward and forward oscillations of the head and body. On the other hand, I removed from a boy's ear a sequestrum which included the whole labyrinth, and yet no disturbance of equilibrium had been observed. It is very probable, however, that many cases of giddiness from middle-ear pressure are due, not to this direct effect upon the fluid of the labyrinth, but to reflex action excited by irritation of the nerves distributed in the mucous membrane of the middle ear. There is not only a close relationship between certain branches of the auditory nerve and the centre of equilibrium in the cerebellum, but there seems also to be a reflex connection between the nerves of the middle ear and this centre, so that when the former are irritated the latter is apt to become disturbed. It may be that the reflex efforts are produced indirectly through the medium of connecting branches of the auditory nerve. No doubt, as we shall find afterwards, there are persons specially predisposed by certain natural peculiarities of the nervous system, or by some disturbance of the health, to these reflex in-

fluences, and thus, as we have seen, many persons may have augmented middle-ear pressure without giddiness, while others in the same circumstances may be violently affected.

MIDDLE-EAR GIDDINESS CONTRASTED WITH LABYRINTHINE.

The whole of the symptoms of a true Ménière's attack may be produced by middle-ear pressure, but in some the sickness and vomiting are absent. The vertigo may be extreme, or it may amount to no more than a staggering backwards when the head is suddenly turned round, especially to the affected side, with a tendency to fall forwards when the head is moved again to the front. Some patients complain of a staggering tendency in the dark, while others say they tend to fall if they turn quickly or stoop. An important distinction between this form of vertigo and the labyrinthine variety is that here the whole of the symptoms frequently disappear, the accessibility and nature of the region affected enabling us to remove, by operative or other treatment, the pathological cause. We found also in the class of cases due to primary labyrinthine mischief that while the vertigo, sickness, and vomiting usually passed off, the noises and deafness generally remained permanent.

In the present class of cases, on the contrary, not only are the vertigo, sickness, and vomiting amenable to treatment, but the noises in the ear are usually got rid of, while the hearing is in most cases much improved, if not entirely restored. In the present class of cases, also, the giddiness is frequently preceded by other symptoms of ear disease (unless in cases due to sudden air or water pressure), such as pain in the ear, defective hearing, subjective sounds, discharge from the ear, etc., in this way contrasting with the labyrinthine class of cases, in which we found that the giddiness is usually sudden, and the first symptom complained of, although quickly followed by the other symptoms. In middle-ear giddiness, also, the subjective sounds are rarely so distressing, nor is the defective hearing so extreme, as in the former class of cases; while bone conduction of sound, as indicated by the various tests, is in the great majority of cases in excess of air conduction. This is, as we have already indicated, contrary to what is usually found in labyrinthine giddiness.

GIDDINESS FROM EXCESSIVE AIR PRESSURE.

Many examples of giddiness due to excessive, and especially to sudden, air pressure upon the walls of the middle ear have come under my notice. The act of blowing the nose, by forcing a current of air into the middle ear, sometimes excites giddiness. A medical friend, subject to ear giddiness, informs me that he has to blow his nose with the greatest care, otherwise giddiness and loss of balance are excited. The effects are still more striking where violent blowing of the nose is indulged in during the existence of nasal catarrh with obstructed nasal passages, such as the following:

Giddiness from Blowing the Nose.—A gentleman, 25 years of age, had been suffering for two or three weeks from catarrhal obstruction in the nose, with a hammering sound in the left ear. Whilst walking in a Glasgow street he became so giddy, immediately after blowing his nose, that for five minutes he was only able to avoid falling to the ground by laying hold of a lamp-post, and was strongly impelled to wheel round to his right side. The giddiness was followed by temporary nausea, but not by vomiting. A few days after the attack I found on examination that the hearing distance was reduced to $\frac{1}{2}$ in the left ear, in which ear the membrane was of a bluish colour, and partially injected. Ultimately all the symptoms disappeared under treatment.

The pressing of air into the tympanic cavity by forced expiration while the nose and lips are closed (Valsalva's experiment) is a more fruitful source of giddiness. A gentleman informed me that, while seated in Kelvin Grove Park, he fell to the ground from intense giddiness excited by this procedure, which he had been advised to practise for the relief of deafness. This as a method of treatment is, it may be remarked in passing, often injudicious, and much too frequently employed by persons with defective hearing, sometimes at the suggestion of medical men. The method is so very easy that it is practised by some persons as a preliminary to every interview which requires hearing, and in this way deaf people may resort to it twenty or more times daily. By so doing, a slight transient improvement of hearing may be gained, but at the expense of permanent aggravation, through serious impairment of the normal tension of the membrane. No doubt the giddiness may, in the case of Valsalva's experiment, be partially due to the stasis in the

¹ The previous communication by Dr. Barr was published in the BRITISH MEDICAL JOURNAL of December 28th, 1895, p. 1668.

brain vessels excited by the strong expiratory efforts with the nose closed, such stasis being fraught with grave possibilities if the person is aged or his brain vessels the seat of atheromatous degeneration. It is likewise well known to aural practitioners that, in some persons, temporary giddiness is excited by inflating the middle ear either by Politzer's method or with the catheter. In a paper entitled *A Particular Form of Aural Giddiness*, Loewenberg argues that in cases where increase of air pressure in the tympanic cavity excites giddiness, there has existed for some time previously a state of catarrh of the middle ear, with obstruction of the Eustachian tube and consequent rarefaction of the tympanic air; that as a result there has been brought about bulging towards the cavity of the tympanum of the membrane of the fenestra rotunda and the annular ligament of the stapes. He alleges that, by the suddenly-augmented air pressure in the tympanic cavity, these fenestral membranes are pushed inwards, increasing thereby the tension of the perilymph and endolymph of the labyrinth. In this way injurious pressure is exerted upon the nerve terminations in the labyrinth, by which the giddiness is excited. This may be, and probably is, the mode of the production of the giddiness in some cases, but I believe that, as has been already mentioned, through the nerves of the middle ear an irritation may be transmitted to the cerebellum by which giddiness may be induced.

GIDDINESS DUE TO SYRINGING THE EAR.

The entrance of water into the middle ear through an existing perforation of the tympanic membrane often induces giddiness, sometimes of a violent character. Even where the tympanic membrane is intact, syringing the ear, especially if the water be too hot or too cold, or the force too great, excites giddiness in some persons. The danger, however, is much greater when the membrane is perforated by present or past purulent disease of the middle ear. In such cases even nausea and vomiting may be excited as well as giddiness. A lady, aged 46, suffering from purulent disease of the middle ear, for which she syringed the ear regularly at home, informed me by letter that, "while syringing this morning at 8 o'clock, marked giddiness, followed by nausea and retching, then perspiration, afterwards pale for a time, lasted for five or eight minutes." The use of the intratympanic syringe is still more apt to excite giddiness. In this mode of syringing the liquid is directly syringed into the middle ear, generally into the attic of the tympanum, by introducing a tube through a perforation. In a case which recently occurred in my practice, after injecting an antiseptic liquid in this way, giddiness was immediately produced so intense, that the patient had to lie down, becoming very sick, with vomiting, pallor, and cold sweats—the symptoms of a true Ménière's attack. In this patient the malleus had been previously removed so as to get better access to a purulent focus in the attic. The symptoms passed off in the course of ten minutes, and the same process was afterwards frequently carried out with no worse result than slight giddiness.

While in very many persons slight and passing giddiness is experienced during this mode of treatment, it is rarely so severe as in this case. As allied to such consequences, I may mention a case in which apparent loss of power, especially in the lower limbs, was induced by syringing liquid into the attic of the tympanum. For several hours after the injection the patient was quite unable to walk or even to stand; the symptoms, however, ultimately passed off, although they were repeated in similar circumstances on three or four separate occasions. In this case the malleus had also been removed by operation in order to gain access to the attic. Afterwards it was found necessary to open the antrum and attic from behind before bringing to an end a foetid purulent disease of the attic of the tympanum which had existed for fourteen years. As has been already mentioned, it is possible that in those purulent cases where giddiness is excited by syringing the ear an aperture of communication, carious or otherwise, may exist between the middle ear and the labyrinth, through which the fluid may pass into the labyrinthine cavities or even into the interior of the cranium.

FATAL EAR GIDDINESS WHILE BATHING.

If the syringing of the ear is apt, in persons with perforated

tympanic membranes, to induce giddiness, it is highly probable that the rush of water into the ear in such persons, while the head is immersed during bathing, may also excite giddiness. It is therefore surmised, and I think with great probability, that death from drowning during bathing is sometimes connected, in the case of expert swimmers, not with exhaustion or cramp, but with the sudden occurrence of giddiness, due to the rush of water into the canal of the ear and into the tympanic cavity through a perforation which may exist in the membrane. It is to be remembered that large numbers of persons in the community suffer from perforation of the membrane, resulting from a past or present purulent disease of the ear, and are therefore liable to such an accident. It is also to be remembered that the great pressure as well as the coldness of the water in such circumstances, present conditions much more likely to excite giddiness than in the case of syringing. There is therefore a strong likelihood that a number of persons with perforated membranes must, in diving or going under water, be seized with giddiness sufficiently severe to place their lives in peril. Even with closed external auditory canals giddiness may in some persons be excited during immersion of the head, owing to the rush of water through the nose and Eustachian tube, especially in certain morbid conditions of those channels, into the tympanic cavity. As a practical lesson from such considerations we should warn persons in whom there exists perforation of the tympanic membrane only to bathe in the presence of others, and with the affected ear closed by means of a water-tight plug.

GIDDINESS FROM PRESSURE OF INFLAMMATORY PRODUCTS.

The pressure upon the walls of the middle ear of fresh exudation, or secondary inflammatory products, is a more important cause of vertigo than increased air or water pressure. Of the exudative diseases of the middle ear, which may be attended by giddiness, the purulent forms are the most common. I do not here refer to those cases of giddiness associated with acute exudative inflammation of the middle ear, in which the giddiness is really due to a coexisting exudation in the labyrinth. I refer to cases in which the pressure is exerted primarily upon the walls of the middle ear. We have the advantage in this class of cases of being able to demonstrate, by objective examination, the existence of the exudation in the tympanic cavity, and by surgical treatment to remove the cause, and, at the same time, get rid of the giddiness. The following case illustrates the effects of purulent pressure in producing severe giddiness. In this instance, although purulent secretion escaped from a perforation in the membrane, the giddiness and other symptoms were not relieved until the mastoid cells were opened.

Severe Giddiness and other Symptoms of a true Ménière's Attack: Purulent Collection in Middle Ear: Operative Treatment.—The patient, a domestic servant, 21 years of age, had a pretty severe attack of measles at the beginning of the year 1892, for which she remained in hospital for seven weeks. On returning to the house of her mistress she reported that her left ear had been yielding matter for five weeks. A fortnight afterwards she was seized with sickness and vomiting, accompanied by such intense staggering and giddiness as to compel her to lie in bed. There was neither delirium nor disturbance of intellect, and the sickness and vomiting passed off in four days. When she was admitted to the Ear Hospital on March 13th her chief complaint was inability to stand or walk owing to severe giddiness. If she attempted to walk she staggered like a drunken person, and would have fallen if unsupported. When lying in bed everything seemed to go round from right to left. The pulse and temperature were but little disturbed, the latter never exceeding 100°; there was no marked headache. From the left ear there was a very considerable mucopurulent discharge, and there was a small perforation in the membrane. The hearing power was very defective, and there were distressing subjective sounds. The mastoid area was very tender to touch, although without any swelling of the soft tissues over the bone. After ten days of ordinary treatment, I opened the mastoid antrum, giving exit to a very considerable quantity of purulent secretion. The sense of giddiness then gradually subsided, and on April 30th she felt quite well, and entirely free from giddiness. The discharge from the ear had entirely ceased, the perforation was cicatrised, and the hearing of a watch tick was 20, with bone conduction in excess of the aërial.

The pressure on the walls of the middle ear may be caused in the more chronic stages of a purulent affection of the middle ear by secondary inflammatory products such as cholesteatomous masses, granulation tissue, polypi, or a sequestrum. These may, as in the following case, excite violent giddiness.

Vertigo, Sickness, and Vomiting in an Old-standing Case of Chronic Purulent Disease of Middle Ear with Cholesteatomatous Collections.—A woman aged 36 had suffered from a purulent discharge from the right ear for thirty years. Aërial hearing was almost gone on that side; bone con-

duction was in excess. There was a saccular bulging in the postero-superior wall of the canal, and caseous and cholesteatomatous matter was present in the inner end of canal, projecting from the attic of the tympanum. She came to the Ear Hospital complaining of alarming attacks of giddiness, along with great pain and constant buzzing in the affected ear. For a fortnight the giddiness had been so severe that she could not go out of doors, and she was in constant fear of falling. Even in bed she felt as if "tossing in a boat." When walking she was inclined to stagger to the affected side, and sudden motion of the head brought on these staggerings. One day while lifting a kettle from the fire she was impelled to wheel round, so that she fell on to the fire. Eight weeks previous to her coming to the hospital the giddiness was attended by severe sickness and vomiting, the attack lasting for several days. The caseous and cholesteatomatous matter was removed, and the ear was subjected to careful and prolonged antiseptic treatment, with the result that the painful symptoms passed quickly off, the giddiness subsiding more gradually. In May last she reported herself as having been quite free from the giddiness for a long time. The hearing was still very defective, and there was still slight discharge necessitating the occasional use of the syringe.

The simple exudative catarrhs of the middle ear without perforation of the tympanic membrane do not so frequently excite giddiness as the more acute purulent forms. Occasionally, however, we find striking exceptions, such as in the following case:

Giddiness and Sickness due to Simple Exudative Catarrh of Middle Ear.—Recently I had under my care a waiter from Perth, a man 40 years of age, who after a nasal catarrh became very deaf in both ears, with the development of subjective sounds in the ear, compared to that of blowing off steam. When these symptoms had continued for two weeks or thereabouts he began to have severe attacks of giddiness. On the way to consult me at the Glasgow Ear Hospital he had an alarming seizure in the street. He then became suddenly so giddy as to stagger and fall, followed immediately by sickness and vomiting; he had to be assisted into a place of shelter. I found on examination symptoms of exudative catarrh in both middle ears, which were occupied by a considerable amount of secretion, but without perforation. The deafness was extreme in both ears, while distressing subjective sounds were constantly present. I incised both tympanic membranes, giving exit to a large quantity of mucous secretion, with the result of effecting an instantaneous and marked improvement in the hearing. The giddiness also almost immediately disappeared and did not return. The use of Politzer's method of inflation for a few weeks restored entirely the hearing power. This patient informed me that he was "subject to biliousness and had a bad liver."

GIDDINESS FROM EXTENSION OF THE EAR DISEASE TO THE CRANIAL CONTENTS.

It is very important to remember that in the course of chronic purulent disease of the middle ear, and also, but much more rarely, in acute purulent disease of the middle ear, the giddiness may be due to the extension of the disease to the brain or other parts of the intracranial cavity. In such a case, however, the giddiness is associated with other grave symptoms, which point to involvement of structures more central than the organ of hearing. In this way meningitis, septic thrombosis of the sigmoid sinus, cerebral and especially cerebellar abscess may be associated with more or less disturbance of the equilibrium. It is also to be remembered, however, that grave disease of the cerebellum, such as a tumour, sometimes exists in a person who may be at the same time afflicted with an ear disease, although no connection may exist between the two. In this way there may be great disturbance of equilibrium, which at first sight is regarded as of aural origin, but subsequent events show that the disease causing the disturbance of equilibrium is entirely in the cerebellum, having possibly no connection with the ear. It is important, however, to remember that, as we have seen, marked giddiness, sickness, and vomiting may exist in connection with purulent disease of the ear, which has not extended beyond the cavities of the middle ear themselves. There is no doubt that practitioners sometimes take an unnecessarily gloomy view of the prospects of such cases, concluding, owing to these symptoms, that extension has taken place to the interior of the cranium.

THE Bishop of Bloemfontein, says the *Daily Chronicle*, is one of four Anglican prelates who were medical men. Dr. Hicks probably beats the record. He is a graduate of the University of London, as well as of Cambridge. Besides taking honours in science at Cambridge he took them at the University of London in chemistry, animal physiology, vegetable physiology, structural botany, biology, geology, and palaeontology. He took a first-class and obtained a gold medal in obstetric medicine, a third-class in forensic medicine, is a Fellow of the Royal College of Physicians, and was demonstrator of chemistry in the University of Cambridge.

THE LUMLEIAN LECTURES

ON

SOME PROBLEMS IN CONNECTION WITH APHASIA AND OTHER SPEECH DEFECTS.

*Delivered before the Royal College of Physicians,
April 8th, 1897,*

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[ABSTRACT.]

LECTURE III.

(Concluded from page 1034.)

DEFECTS RESULTING FROM ABNORMAL CONDITIONS OF THE LEFT VISUAL WORD CENTRE.

There is not the same variety in the defects of speech caused by disease of the visual word centre that is to be met with as a result of disabilities in the auditory word centre. This is apparently due to the fact that in the great majority of persons, voluntary revival of words occurs primarily in the auditory word centre, while the visual word centre is called into activity mainly by stronger stimuli—either by those coming to it through associational fibres, or by still stronger incitations that come directly from without. It is only in comparatively rare cases, as we have seen, that the visual word centre takes the place occupied in the great majority of individuals by the auditory word centre, as the seat in which words are primarily revived in silent or in spoken thought. Consequently the speech defect known as "amnesia verbalis" occurs almost only as a result of a lowered functional activity in the auditory word centre, and only in extremely rare cases (where the individual is a very strong "visual") as a result of mere lowered activity in the visual word centre.

For the reasons given we know next to nothing about the effects of mere functional degradation in the visual word centre, that is, of slight disabilities such as when occurring in the auditory word centre are productive of the various degrees of amnesia verbalis already described. All that can be said is that when such functional degradation of the visual word centre is present, it would (a) in the rare case of the patient being an extremely strong "visual" of itself tend to produce amnesia verbalis, as was seen in a patient under the care of Charcot, whose case is referred to by Ballet,⁴⁵ or (b) even in an "auditive" tend greatly to aggravate any disability that may have been caused by a coexisting defect in the auditory word centre, and also to hinder recovery therefrom; further (c) that where the functional defect involves both word centres, the amnesia ought to be more than usually bad, and probably associated with more or less paraphasia.

Effects Produced by the Destruction of the Left Visual Word Centre.—One important difference between the effects of lesions of the visual word centre as compared with those following upon lesions of the auditory is that speech is very little, if at all, interfered with. There is no well-marked aphasia or paraphasia, only a very slight amount of paraphasia in some of the cases.⁴⁶ That there should at times be such slight disturbance of speech is not to be wondered at if we bear in mind the close functional relationships of the visual and the auditory word centres, and how easily therefore the functions of the latter may be disturbed by a lesion in the former.

It is often found that word blindness is associated with right-sided homonymous hemianopsia—that is, on the same side as paresis of the limbs—for there is often no complete hemiplegia in these cases. The hemianopsia is generally due to destruction of the optic radiations of Gratiolet; but where the lesion is quite limited to the cortex these fibres will not be involved, so that hemianopsia is not a necessary accompaniment of word blindness.

Agraphia also is a symptom sometimes present and sometimes absent in cases of word blindness. The presence or absence of this symptom is, however, of much more fundamental importance than the presence or absence of hemianopsia. It is best, in fact, to divide cases of word blindness