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Contributors

Stewart Thomas Grainger, Sir, 1837-1900.
Royal College of Physicians of Edinburgh

Publication/Creation

Edinburgh : Bell & Bradfute, 1884.

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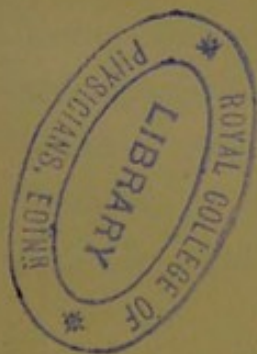
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CLINICAL LECTURES
ON
IMPORTANT SYMPTOMS.

BY

THOMAS GRAINGER STEWART, M.D.,
F.R.C.P.E., F.R.S.E.,

PHYSICIAN IN ORDINARY TO HER MAJESTY THE QUEEN, FOR SCOTLAND ;
PROFESSOR OF THE PRACTICE OF PHYSIC AND OF CLINICAL
MEDICINE IN THE UNIVERSITY OF EDINBURGH.



ON GIDDINESS.

EDINBURGH :
BELL & BRADFUTE, 12 BANK STREET.

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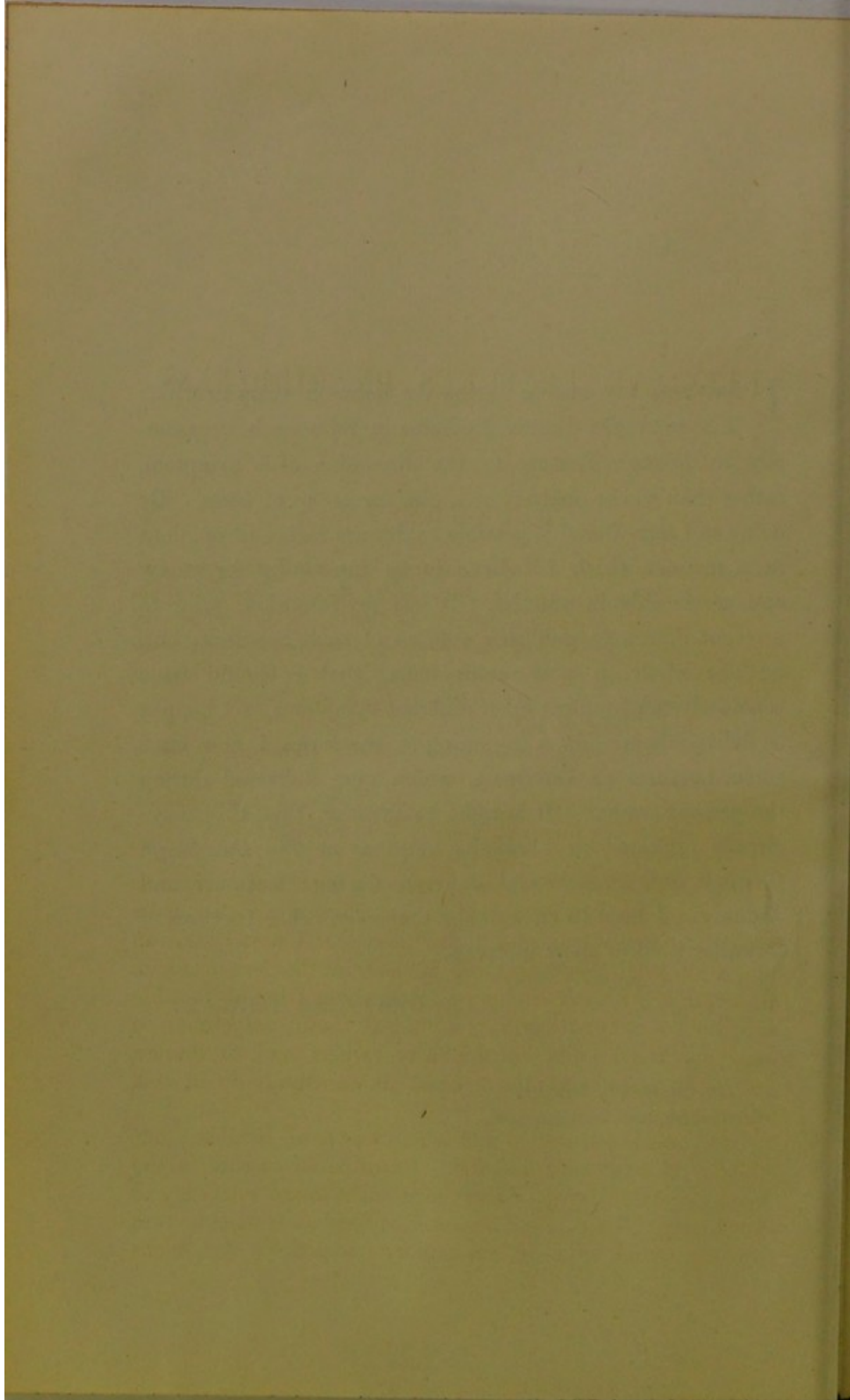
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IT has been my custom during the fourteen years in which I have taught Clinical Medicine in Edinburgh, occasionally to devote a Lecture to the discussion of a symptom, rather than to the analysis of a case, or group of cases. By doing so I have found it possible to discuss facts and opinions in a manner which I believe to be interesting for study, and serviceable in practice. It was my intention, prior to a recent illness, to publish a volume of such Lectures; but, on the whole, it now seems better that I should issue separately the Lectures upon different symptoms as I happen to deliver them. As a beginning of the series I now issue three Lectures on Giddiness, which were delivered during the present session. It is right to mention that they have already appeared in successive numbers of *The Edinburgh Clinical and Pathological Journal* during December and January. I hope to offer to the profession other Lectures of a similar kind at short intervals.

T. GRAINGER STEWART.

19 CHARLOTTE SQUARE,
EDINBURGH, 30th January, 1884.



CLINICAL LECTURES ON GIDDINESS.

LECTURE I.

Introduction.—Description of Giddiness.—Associated with other Disorders of Sensation, and with Disorders of Motion.—Equilibration an Acquired Power.—Subserved by Tactile, Ocular, Muscular, Articular, Visceral, and Labyrinthine Impressions.—Anatomy and Physiology of the Semicircular Canals.—Observations of Flourens, Goltz, Cyon, Crum-Brown, Mach, and Breuer.

Giddiness due to External Conditions.—Tower of Pisa.—Cliff or Tower Giddiness.—Agoraphobia.—Waltz Giddiness.—Swing Giddiness.—Giddiness in Sea-sickness.

Giddiness from Abnormalities of Sensory Structures.—In Miners' Nystagmus.—In Recent Paralysis of Ocular Muscles.

GENTLEMEN,—We have frequently met with giddiness as a prominent symptom in cases which we have studied in the wards, and I promised that I would take an opportunity of discussing the subject in the lecture-room, illustrating my observations by cases which I might be able to show you or to describe. I find it useful, sometimes, to take up a symptom in this way rather than to discuss individual cases or groups of cases, as we usually do in this lecture-room.

Giddiness is a sensation with which we are all familiar ; but which it is difficult to describe. Its essential feature is the feeling of uncertainty of our position in space relatively to surrounding objects. Sometimes one feels as if objects were whirling round more or less rapidly ; sometimes one seems

to be moving in the midst of them ; and that apparent movement may be round a vertical or a horizontal axis, to one side or other, forwards or backwards ; or there may be a sensation of sinking downwards ; or the movement may appear confused or irregular. It may also be slow or rapid.

Giddiness is often associated with other disorders of sensation, such as nausea, deafness, tinnitus aurium, or other subjective sounds, dimness or other changes of vision, faintness, palpitation, hallucinations, and is sometimes followed by loss of consciousness. But it is constantly associated with impairment of equilibration. This is readily explained when we consider that it is the result of derangement of a function essentially related to equilibration,—disturbance of equilibration being, so to speak, the motor aspect of the sensation of giddiness. For equilibration we require the co-ordinated action of many groups of muscles. This co-ordination is, like others, guided by sensory impressions, and these impressions are derived from different sources.

Neither the power of equilibration, nor the power of appreciating the impressions by which it is guided, is inborn in man. Each is gradually developed by processes of education. The senses which are trained to subserve it, are touch, sight, the muscular sense, probably an articular sense, and a visceral sense, along with the great organ of special sense for equilibration—the semi-circular canals. Of some of the impressions we are conscious, of others not. Of sight and touch impressions we habitually take cognisance, or at least we may do so ; of the other kinds of impressions we make use without any act of intellectual perception. It is at once apparent how sight subserves the purposes of equilibration, and it becomes especially noticeable when the other sources of sensory impressions are impaired. You have often seen this in cases of locomotor ataxia. You have noticed how helpless the patient becomes when his eyes are closed. The importance of touch, and particularly plantar touch, is equally familiar to you, being often illustrated in the same class of cases. The impairment of the muscular sense, I have sometimes shown you, is at least as important as those already mentioned. The articular and the visceral are less obvious,

but I think are real. I shall not dwell upon them, but the special sense for equilibration, which has its seat in the semi-circular canals, requires fuller notice.

Let me remind you of some anatomical facts and physiological explanations. The canals are situated in the petrous portion of the temporal bone. They are three in number, and communicate by means of five openings with the vestibule. Each canal has a dilated or ampullary end, and each by its ampullary end opens into the vestibule, while two of them have their non-ampullary ends united, and communicate with the vestibule by a common opening. These canals occupy different planes, and are known as superior, posterior, and horizontal, according to their position. Within the bony labyrinth there is a membranous labyrinth, the membranes being much smaller than the canal, except at the ampullary ends. Between the bony canal and the membranes is the perilymph, with connective tissue, blood-vessels, and nerves. Within the membranous canal is the endolymph. A branch of the *portio mollis* of the seventh nerve is distributed to a crescent-shaped ridge near the middle of each ampulla. The terminal nerve-structures are hair-like cells, which project into the endolymph, and which must obviously be affected by changes in it. Through the chain of bones the labyrinth is connected with the tympanum. The handle of the malleus is fixed into the tympanum, while its head articulates with the incus. The latter, again, is connected with the stapes as well as with the posterior wall of the tympanum. The stapes is fixed into the fenestra ovalis, and by its movements produces alterations in the state of the fluids in the whole labyrinth.

In 1828, Flourens discovered that the semi-circular canals have something to do with the maintenance of the equilibrium of the body. He found by experiment that section of a membranous canal was always followed by movements of the head, or even of the body, rotating about an axis at right-angles to the plane of the divided canal. On section of the horizontal canals, the animal moved its head rapidly from side to side, and tended to spin round on a vertical axis. When the posterior canals were cut, rapid movements back-

wards and forwards took place, and the animal showed a proclivity to turn somersaults, from before backwards. When the superior vertical canals were cut, similar movements occurred; but the tendency now was to turn somersaults from behind forwards. Section of all the canals induced peculiar irregular movements. The movements always became worse if the animal was excited or disturbed. If one side only was cut, the abnormalities gradually subsided; if the canals of both sides were injured, the derangement of motion was permanent. These were clearly not the mere results of irritation, seeing that the symptoms continued long after the external wounds had been healed.

A great advance was made by Goltz when he suggested, in 1870, that pressure of the endolymph gives rise to sensory impressions, and that, according to the position of the body, the pressure varies by gravitation in different portions of the series of canals. He showed that the sensory impressions bear an important relation to equilibration, and that by altering these impressions he could produce results similar to those which follow section of the canals. He fixed the heads of pigeons in peculiar positions, tying, for example, the head down upon the breast, and found that equilibration was thereby impaired.

The next advance was made by Cyon in 1872, who repeated and confirmed the former observations, and formulated the theory that from the semi-circular canals we derive impressions as to the position of our heads in space, each canal being definitely related to one of the dimensions of space, that these impressions guide us in equilibration, and that failure of equilibration may be due to disorder of their functions.

In 1875, Professor Crum-Brown published an interesting account of some experiments which he had made upon the subject. He pointed out that if the body be passively rotated, one can, with the eyes bandaged, determine pretty accurately the amount of movement made; that if such passive movements be continued beyond a certain time, the feeling is lost, but that if the rotation be suddenly arrested, the sensation of rotation continues. He suggested the theory

that the sensations are due to alterations of pressure in the endolymph, not from mere gravitation, as had been supposed, but from the formation of currents in the endolymph, that fluid being conceived to lag behind in the rotational movement of the head. He pointed out how well such a theory suffices to explain the facts discovered by himself, as well as those previously known. Moreover, he remarked, that as each canal has but one ampulla, and as the same organ of sense can produce sensations differing in quantity only, and not in quality, it is probable that one canal will respond only to the rotation round one axis, and in one direction, because the sensation of rotation in the opposite direction is qualitatively different. Hence he concluded that the semi-circular canals are paired organs, and that each canal corresponds only to rotation in a single direction. The same theory was promulgated independently, and at about the same time, by Professors Mach of Prague, and Breuer of Vienna.

Some later experiments of Cyon throw doubt upon this kinetic theory, but cannot be held, in my opinion, to have disproved it.

You perceive, then, that we have abundant proof that the semi-circular canals are sensory organs subserving equilibration, and that we are gradually acquiring definite ideas as to how their functions are performed. Besides these peripheral structures which guide us in our equilibration, there are, of course, conducting fibres and nerve centres which subserve the functions. Changes in any part of these structures may suffice to produce the sensory and the motor abnormality. We shall first consider the peripheral causes of giddiness, and then those due to changes in the conducting fibres and nerve centres.

In normal equilibration we guide ourselves by information derived from all the peripheral sources to which I have referred—and in normal conditions they all harmonise—the information derived from sight, from touch, from the muscular sense, from the labyrinth, all correspond. When they do not, giddiness results. Observe, then, that peripheral giddiness is usually due to *contradictoriness of sensory impressions*.

Sometimes the contradictoriness is due to external conditions. This is especially true regarding sight. If you visit the famous Leaning Tower of Pisa, you will most likely experience, as you ascend and descend its stair, a peculiar, uneasy feeling of slight giddiness. On experiencing this sensation, it occurred to me that it was probably due to contradictoriness of impressions derived from sight and from the other sources of impression guiding equilibration; and I found that it was so, for, by slightly altering my attitude, the feeling at once disappeared. In the tower there were three others along with me, all of whom felt the same uneasiness, and all were freed from it by altering their posture very slightly. I am satisfied from what I saw when there, and from what I have heard since, that that peculiar giddiness is felt by very many people. Some of you may have visited, and many of you will hereafter visit, the famous tower. When you do so, you will be able to verify what I have told you.

But you have all had opportunity of observing another variety of the feeling—what we may term cliff or tower giddiness. A large proportion of people suffer more or less from an uneasy feeling of giddiness whenever they stand upon a tower or a cliff, or even a steep stair or a hillside. It is due, I take it, to contradictoriness of impressions. They have been accustomed, under ordinary conditions, to receive simultaneously impressions from the plantar surfaces, from the muscular, articular, visceral, and labyrinthine structures, with visual impressions of solid ground before them; but when standing on a tower or cliff they find the visual impressions contradicting the others, and so the peculiar feeling arises. The liability to this kind of giddiness varies in different individuals, and is determined by the sensitiveness of the nervous system, on the one hand, and by the degree in which the individual has been accustomed to trust to visual impressions for equilibration, on the other. You will find the feeling aggravated if you look downwards to where, according to experience, the solid ground should be, and absent or diminished if you look in other directions. Some people are so sensitive in this respect that they cannot with comfort sit in

a gallery of a church or theatre ; some of you may feel that you cannot with comfort occupy the front gallery seat in the new Practice of Physic lecture-room in the University.

A very curious condition, manifestly allied to this, was described a few years ago by two eminent authorities, and is coming to be known to the profession as "Agoraphobia." Benedikt described it in 1870 ; Westphal in 1872. Its essential feature is, that while the subjects of it can walk quite well in a narrow lane, or even in an ordinary street, they become uneasy, and experience either giddiness or a peculiar feeling allied to it, when they attempt to traverse a wide market-place or square, such as narrow lanes often open into in continental towns.

Let me describe by way of illustration one of Westphal's cases. The patient was a commercial traveller, aged thirty-two, of middle height, slender, healthy-looking and mobile, and complained that he suffered greatly when he tried to walk across open squares ; when he attempted to do so, a peculiar uneasiness, situated mostly in the head, but attended by violent action of the heart, was induced. On attempting to cross a square he felt as if it were miles wide, and often he trembled all over ; the more he approached to the houses at the side the less was his uneasiness ; a stick was no help to him, but walking arm in arm in lively conversation helped him considerably. If absorbed in thought, he could sometimes accomplish the feat ; if he kept close to a carriage crossing the square he could manage pretty well ; he had to deny himself the pleasures of the Thiergarten, and could not by any effort make his way to Charlottenburg (a public garden and favourite promenade in the neighbourhood of Berlin). The same uneasiness was felt in some measure if he had to walk beside a blank wall or when the shops were shut ; he usually supped in an eating-house, and had to help himself home by ingenious devices ; he waited till he saw people going in his direction, and followed them up, or he followed closely behind a conveyance. When asked what he would do if left without any of these external guides, he said that the very thought appalled him, but that he would probably throw himself on the ground and hold on by the grass. In his

frequent journeys he had constantly to avail himself of stratagems of war, so as to be prepared under any circumstances to get assistance. On entering theatres and churches a similar uneasiness occurred at one time; but that difficulty disappeared. He could sail without much discomfort in a large vessel; not in a small boat; and could only walk at the sea-side in places where the houses come close to the shore. He lived in constant dread of these uneasy feelings. He described them as differing from giddiness and from the feeling experienced when looking from a tower. He benefited by moderate use of alcoholic stimulants. The disease began in his twenty-seventh year. The nervous system was not otherwise abnormal; but there was a slight want of symmetry of the two halves of the body. There was no marked history of nervous disease in his family.

In this patient it will be observed that there was abundant evidence of the peculiarity of the nervous organisation, but the point to which I wish to draw your attention is the inability to walk across an open square, and the peculiar sensation experienced by the patient. Benedikt speaks of the sensation as giddiness, and although Westphal has drawn a distinction, as this patient did, between ordinary giddiness and this special uneasiness, I think we are warranted in believing that the feelings are closely allied.

Various explanations of the condition have been attempted, but none of them seems to be quite satisfactory. A reasonable explanation of one element of the trouble lies, I think, in the supposition that these patients, with the nervous system morbidly sensitive, have from some peculiarity, acquired the habit of guiding themselves in their equilibration by reference to near vertical lines; and that, when these vertical lines are wanting, they feel as others do when standing on the edge of a cliff. Notice the fact about the methods they devise for getting across squares. If they can get behind some vehicle, they can walk well enough; the vertical line of the vehicle suffices to guide them.

I have met with one case of another condition allied to these. I know a lady who experiences great discomfort if she sits in a building with a lofty ceiling. She always

requires to sit under a gallery in church ; and the explanation is, that to her it is essential that she should have the impression of a plane not far off above her head. In these forms of giddiness you observe that, on the one hand, we have certain nervous susceptibilities more or less pronounced, combining with certain external conditions to induce this sensation. I shall now refer to some causes of giddiness with which you are probably all more or less familiar, as they occur in a large proportion of people when placed under certain conditions.

There is, first, the giddiness resulting from rapid rotation,—the waltz giddiness. This appears to be due, not so much to the contradictoriness of impressions, as to powerful impressions made upon the special centre for equilibration, the rotation producing changes in the semi-circular canals, well explained, as we have seen, by the kinetic theory of their function. Every one naturally becomes giddy with rapid rotation, and with this, under ordinary conditions, equilibration fails. But one may be trained to equilibrate, notwithstanding the labyrinthine impression. All physical education consists in learning to co-ordinate muscular movements. In learning to waltz, the child has not only to learn to co-ordinate certain groups of muscles, but has to learn to do so while he is receiving misleading impressions from sensory organs on which he is accustomed to rely. He has to guide his movements by the plantar, muscular, articular, and other impressions, and to time them by the music, disregarding his labyrinthine impressions altogether.

Swing-giddiness is not unfrequently experienced by children when they are enjoying that exhilarating amusement. The giddiness you will find, if you analyse it, is due to a variety of causes. There is obviously the constant changing of the visual impressions. But this is not all. The feeling is most marked when the swinger is descending. Now, during the descent, a very peculiar visceral sensation is experienced. It appears as if the body, as a whole, descended at a greater rate than the abdominal viscera, and as if they followed ; and as they followed, a certain friction took place between the peritoneal surfaces—the visceral sensation being

attended by a quite peculiar uneasiness. It is probable that, in the cranium and in the semi-circular canals a similar action may take place; but these we cannot so readily determine as the visual and the visceral impressions.

In sea-sickness, with its attendant giddiness, we find many elements contributing to the result. There are visual impressions—some very susceptible persons becoming affected even when they look at the sea; but every one who suffers from it feels his discomfort increased if he watches the varying elevations of the bulwarks of the vessel and the surrounding waves, and feels the better of looking another way, or of closing his eyes. But in this condition also the visceral impressions are most important. As the vessel sinks into the trough of the wave the body seems to descend as in the swing, the viscera appearing to sink downwards at a slower rate than the body generally. And here, as on the swing, this is attended by a terrible uneasiness. I suppose that one of the great advantages of the sea-sick invalid laying himself down at full length is that he thereby diminishes the visceral movement. With the labyrinthine impressions also the nerve centres must be sorely puzzled, for from moment to moment the impression varies as the vessel rises or sinks, or rolls from side to side. The muscular sense, also, is brought into most unusual conditions, as is also the articular sense. But one other source of sensory impressions is also at fault, for the plantar pressure varies from moment to moment. At one moment, as the vessel sinks into the wave hollow, it seems as if the vessel were falling from beneath the feet, and there is almost no plantar impression; and then, again, as the vessel rises, the pressure becomes greater. In such conditions it is clear that the sensorium receives a great variety of ever-varying and contradictory impressions.

But giddiness may be due to abnormalities of the sensory structures themselves. Notice, first, some ocular causes. In illustration of this I shall recount to you a typical case seen by some of your predecessors. When I first took charge of the clinical wards as professor, I found a patient who was unable to walk or even to stand on account of fits of giddiness,

with which he was frequently seized. On examining him I found no evidence of central nervous disease, but observed that when he took his giddy turns there was always a rapid oscillating movement of his eyes. It occurred to me that this oscillation or nystagmus might cause the giddiness, and I held his eyes fixed by slight pressure. This cured the giddiness in a moment, and while it was kept up the giddiness never recurred. On further inquiry I found that the patient was a miner, and that his case was a typical one of what has been described as miner's nystagmus. The patient continued under observation for some time, but no good was done except by the mechanical treatment.

The giddiness in that case was manifestly not due to any central disease, but was simply a result of the contradictory impressions resulting from the movement of the eyes. The disease is now pretty well known. It is due to spasm from long continued muscular strain—is indeed a form of trade spasm. The miner while at work lies on his side, and opens up the coal-seam above and beyond his head. He works also in a dim light. He has, therefore, to strain his eyes greatly, and to keep them in an unnatural position, and this nystagmus, with its attendant giddiness, occasionally follows.

You may ask me whether nystagmus always induces giddiness. Certainly it does not. It sometimes is merely associated with giddiness, the two depending upon a common cause, as in cerebellar disease. Sometimes, again, it results from cerebral disease, sometimes from disease of the retina, sometimes from disease of the cornea, occurring in childhood. In such cases, giddiness does not result, because the sight is so much impaired that the patient learns not to be dependent on the visual impressions for guidance. This is especially the case when the cause comes into operation in early life.

Paralysis of the external rectus, when of recent origin, frequently leads to giddiness from double vision; and even if the one eye be closed, a sensation of vertigo is experienced, because the muscular sense contradicts other impressions. You will often see this fact illustrated in the eye wards, but I may mention an example of it which occurred in the case of a patient whose illness I shall describe to you

later on in connection with intra-cranial lesions. The patient, a young man of nineteen, naturally of robust constitution and a rather eminent university athlete, had sustained an injury to the head, and soon afterwards observed that he saw double, and had a constant feeling of giddiness. He soon discovered that if he closed one eye, his giddiness disappeared. It was manifest, then, that the giddiness resulted from the contradictory ocular impression due to squint, which again in its turn was due to paralysis of one of the ocular nerves. The test which I should advise you to apply in such a case is the simple one of getting the patient to close one eye; if this cures the giddiness you may be quite sure that it is of the nature we are now considering. Paralysis of other muscles of the eye may, of course, lead to the same results.

I must defer till next lecture an account of the most important of all the peripheral forms of giddiness, that due to alterations in the semi-circular canals—Menière's Disease.

LECTURE II.

Giddiness from Abnormalities of Sensory Structures continued.—Labyrinthine Vertigo, or Menière's Disease, Forms of.—From Lesions in External Meatus of Middle Ear.—From Lesions of the Internal Ear.—Prognosis.—Treatment.

Giddiness from Lesions of the Cord.—In Locomotor Ataxia.—In Multiple Sclerosis of Brain and Cord.

Giddiness from Intra-cranial Causes.—Cerebellum, Cases of.—Relation to Reeling.—Experimental Results of Ferrier and Schiff.—Giddiness from Diseases of Crura Cerebelli.

GENTLEMEN,—Our last clinical lecture was devoted to the subject of giddiness, and after describing to you the nature of the sensation, I discussed certain of its causes,—viz., those due to altered conditions outside the body, and those which result from abnormal peripheral impressions. At the end of the hour I was about to explain the relationship of giddiness to diseases of the semi-circular canals.

Of all the forms of giddiness from peripheral causes, the most interesting and important is that group due to causes situated in the semi-circular canals, which are commonly known as Menière's Disease, or Labyrinthine Vertigo. Dr. Menière is superintendent of the Institution for Deaf and Dumb in Paris, and by the light of the discoveries of Flourens in regard to the semi-circular canals, he concluded that many attacks which had been considered cerebral, were in reality due to disease of these organs. In 1861, he brought his observations before the Academy of Medicine in Paris. As a type of this condition, I shall cite to you one of his most striking cases. A young woman travelled on a winter night on the outside of a stage-coach, and was exposed to great cold. She was at the

time menstruating. She suddenly became completely deaf. When received into the hospital wards, the principal symptoms were constant vertigo and vomiting induced by the slightest effort to move. She died on the fifth day. At the autopsy it was found that the brain, cerebellum, and cord were free from morbid change. As the patient had all at once become deaf, although she had her hearing perfect up to the time of the attack, Menière removed the temporal bones, so that he might be able to ascertain the cause of the deafness. The semi-circular canals were the only part of the labyrinth that presented any change; they contained a reddish-coloured plastic lymph instead of the fluid of Cotunnus. From such observations Dr. Menière drew his first description of the disease.

That it is not always fatal the first case which came under my care may serve to show. An apprentice boy was brought into my wards suffering from most of the symptoms of Menière's disease, such as vertigo, faintness, vomiting, and reeling gait, and roaring or humming noises in the ears, with deafness of one side. On inquiry, I found that the illness had come on suddenly and been caused by a violent blow on the side of the head which the boy had received when at work. In a few days improvement set in, and in a short time the patient was well. I supposed that, in consequence of the blow, some slight hæmorrhage had taken place into the semi-circular canals, and that the blood so effused was speedily absorbed. Whether this view of the case be correct or not, you will remember that a very speedy subsidence of the symptoms may occur. In some cases, while life is not endangered, the patient continues to suffer for long periods — even for many years — and life is made almost intolerable by the discomfort it occasions.

Some recent writers on the subject, such as Dr. M'Bride, recognise several varieties of Menière's disease. And among these I mention, first, the forms due to *changes in the external ear*. Some people experience all the symptoms of Menière's disease if they have their ears syringed, and often accumulations of wax, or of eczematous secretions, produce

the same result, if they be so situated as to press with force on the drumhead.

I show you to-day a patient who has several times consulted me of late. She is fifty-six years of age, and has come complaining of giddiness, pain in the head, with dulness of hearing, a feeling of oppression within the cranium, and a singing or buzzing sound in the ears. Her hereditary and social history are unimportant; but she has lately passed through very severe trials, to which she ascribes her illness. She has two sets of abnormal sensations, one constant, the other occasional or paroxysmal. The constant feeling consists in noise in the ears, uneasiness in the head, deafness, and general discomfort. The paroxysmal consists in severe fits of giddiness, with palpitation, faintness, and coldness. The giddiness is peculiar, in respect that she feels an inclination to fall backwards; and a friend who accompanied her to the infirmary says that this is not a mere sensation, but that she actually tends to fall back. If she is able to sit down and press the back of her head against anything, the giddiness is at once relieved. Her ears were carefully examined by Dr. Graham Brown, who found that the Eustachian tubes were not readily permeable, while there was a large mass of wax in the right meatus. On this being removed, the buzzing at once ceased; and during the week that has elapsed now since this treatment was adopted, she has felt almost well, and has certainly had none of her paroxysmal attacks. Here, then, is an example of a group of formidable symptoms depending mainly upon a cause situated in the external meatus.

The second group is that *due to disease of the middle ear*, which is generally considered to be the commonest cause of the symptoms. As an illustration, I shall cite the case of a patient who was under my care in the Infirmary some years ago, and in which I had the benefit of Dr. M'Bride's advice and assistance. The following account is in the words of that gentleman:—

“W. H., *æt.* fifty-eight, complained of giddiness and staggering. He is a blacksmith by trade, and exposed to sudden changes of temperature; and to this he attributes, in

a great measure, his illness. For five years his hearing has been getting gradually worse. Before the patient applied for advice, he had two very severe paroxysms of vertigo, with an interval of two days between them. What occurred on these two occasions seems to have been that the patient felt intensely giddy, heard noises in his head, and lost consciousness. This happened for the first time on a public thoroughfare, and when he recovered his senses he found himself seated and being attended to by bystanders. He then felt sick, and everything round him seemed to turn (direction not observed). He staggered home, and when he got there vomited and fell asleep. On awaking he felt better, and next day went to work, feeling well. On the day following, however, he had a repetition of the attack. Since then the patient has been troubled with constant giddiness and staggering towards the left. A mixture of iodide and bromide of potassium seemed to have little or no effect on the symptoms. Except for the giddiness and staggering, the patient seemed in good health.

“The examination of the ears gave the following results:—Watch (normally heard at thirty inches) not heard in contact with either auricle. Conversation is, however, fairly well heard, and the tuning-fork is well heard in both ears by bone conduction. Tympanic Membranes.—Right membrane opaque, with vascular injection along the handle of the malleus. Anteriorly and superiorly there is a dark atrophic patch. Left membrane indrawn, with well-marked folds. Politzer's method only succeeded in forcing air into the left tympanum. After this, inspection showed the corresponding membrane flattened out, the folds having disappeared. Air could only be driven into the right middle ear through the Eustachian catheter, and auscultation during the process revealed a distant gurgle, indicating probably an accumulation of mucus in the pharyngeal orifice of the right Eustachian tube.

“On the first attempt to inflate the tympana by Politzer's method, a very extraordinary effect was produced. As stated, air only entered the left middle ear; but whereas, before the operation, the patient had great difficulty in standing and walking, even with assistance, after the inflation he declared

himself greatly relieved, and was able to walk about alone and unsupported. The subsequent treatment consisted in astringent applications to the throat and nasopharynx, which were in a catarrhal state, inflation of iodised steam into the tympana, and occasional use of the air-bag and Eustachian catheter. The result of this treatment was that in a week or two the only symptom of vertigo left was that looking down suddenly produced slight giddiness. The hearing also improved considerably ; that is, he could hear a watch, which was previously altogether inaudible, on the right side in contact with the auricle, and on the left just off the ear. The tinnitus also, from which he suffered, was much relieved."

Commenting upon these facts, Dr. M'Bride says : " Now, this case is perfectly typical of what is often known as Menière's disease in an aggravated form. The vertigo, tinnitus, vomiting, and loss of consciousness were all well marked. The deafness, however, was most distinctly traceable to chronic middle-ear catarrh, pure and simple. There was no organic mischief in the cochlea, as shown by the tuning-fork test, nor in the semi-circular canals, as proved by the success of local treatment directed to the middle ear. Moreover, we could trace the nervous phenomena to deficient ventilation of the left tympanum ; for whenever air entered it there was an immediate and marked improvement. It was on that side, too, that there was most evidence of altered intra-tympanal tension in the appearance of the drumhead ; and we have before seen that changes of tension in the tympanum produce a more or less corresponding alteration in the endolymph. The case is important as one showing the most marked and aggravated characteristics of Menière's disease, depending upon a curable condition of the middle ear—curable, be it observed, not by empirical inunction of iodine and application of blisters, but by rational treatment directed to recognised pathological condition. I have seen a considerable number of cases where staggering and giddiness depend upon middle ear lesions of various kinds, but none so severe as in this case."

In Menière's first case the symptoms were *due to lesions of the internal ear*. The disorder may supervene in various

ways quite suddenly, as in the case of Menière, or in that of the apprentice boy, already cited ; or very gradually occurring in connection with chronic disease. The condition may also be fatal, or it may pass away quickly, or it may last for a long time without endangering life.

With regard to the treatment of Menière's disease, you must seek to determine the particular form of the malady with which you have to deal. If the cause be situated in the external meatus, try to remove it. If it be due to obstruction of the Eustachian tubes, seek to have them opened up. If it be due to changes in the labyrinth itself, much less can be done ; but by means of counter-irritants and absorbents good results may be obtained. Charcot has spoken strongly of the advantage following the use of quinine in this disease, and remarks that it often seems to relieve the patient from the humming or ringing sounds which are so often complained of.

Lesions of the spinal cord are not very often attended by giddiness, but in cases of locomotor ataxia it is sometimes much complained of, and I have found it more prevalent in earlier stages of that disease than in the later. It may arise in various ways. Let me describe to you some cases. A very intelligent schoolmaster, resident in a country district in Cumberland, consulted me on account of spinal symptoms. I found that he had for several years had slight symptoms of locomotor ataxia ; but that in consequence of overwork preparatory to inspection of his school, a degree of actual paralysis had supervened. This paralysis happily passed off in a few weeks under treatment, but the ataxic symptoms persisted. He told me that he very frequently suffered from vertigo, but, on inquiry, it proved to have been present only when he also had double vision or actual squinting. I show you to-day also a patient suffering from locomotor ataxia. You observe that the gait is distinctly characteristic, and that, when his eyes are closed, he tends to fall. He complains much of giddiness, but this giddiness is cured when he closes one eye. It is a result of the double vision. In these cases then the cause is manifestly ocular, and referable to one of the groups already discussed. But that is not the

only cause of giddiness in locomotor ataxia. It seems to result sometimes from changes in the sensory impressions, from other sources, and sometimes perhaps from changes in the brain.

Patients suffering from multiple sclerosis of the brain and cord often complain of giddiness. It may possibly result from the nystagmus, but certainly cannot be referred in all cases to this cause, for it may occur without nystagmus, and be wanting when nystagmus is present. It is apt to occur in short isolated attacks, and apart from any circumstance which seems obviously fitted to explain it.

Giddiness arises from a great variety of intra-cranial conditions, conditions varying both in respect of seat and of lesion. It occurs from lesions of the cerebellum, the crura cerebelli, the pons, the cerebral peduncles, the corpora quadrigemina, and other parts of the cerebrum, and it arises from anemia, congestion, hæmorrhages, softenings, and new formations. At the same time it must be admitted that cases may be found on record of lesion in any one of the above-named intra-cranial structures in which no giddiness occurred, and it is equally true that each of the lesions may be unattended by the symptom.

Sometimes the giddiness appears to be a direct symptom ; sometimes it merely results from paralysis, especially paralysis of some of the ocular muscles, attended by double vision. It is certainly most constantly associated with cerebellar disease. The peculiar swaying or staggering gait, like that of slight intoxication, has long been recognised as a feature of cerebellar maladies, and although the staggering is not always, it is very often accompanied by a feeling of giddiness. It is said to be generally increased when the patient opens his eyes, and relieved when he lays hold of anything. It may be present only occasionally, or when the patient is in the upright posture, but sometimes it is present even while he is lying down. As a good typical case of cerebellar disease, I select one which is recorded by Professor Nothnagel as having been observed by himself. W. P., a servant girl, thirty-six years of age, had complained since the beginning of August, 1876, of a frequently recurring feeling of giddiness. It used to come on suddenly, especially when she was walking, or when she rose

from her chair, and usually disappeared in a few seconds or minutes. At the same time she used to sway to both sides, but never fell to the ground. From the beginning of September, she had severe pain in the back of the head; from the middle of September she had frequently malaise and vomiting. Later on, she had frequently humming in both ears, and she observed an unpleasant saline taste in mouth and increased thirst. In the beginning of October, Nothnagel examined her, and found that intelligence was normal, that there was almost constant occipital pain, that she always lay on her back, because when she sat up she had giddiness and vomiting. The movements of arms and hands were free and strong. The finer movements were easily performed, even when the eyes were closed. There was no abnormality of the muscles of the face, or the tongue. All movements of the limbs were rapid and precise, even with the eyes closed, and the patient knew the position of her limbs, and could point to them. She could walk if she got the slightest hold of anything; but if she were left alone, marked swaying occurred (in no particular direction), with giddiness, choking, vomiting, and the patient tumbled down if not held up. It made no difference whether the eyes were closed or open; without help she could not walk, and even with support she walked unsteadily. When giddy, the patient felt as if objects moved round her. The special senses were normal; the ophthalmoscope showed in the right eye slight venous congestion; in the left, a normal fundus. During October and November her condition remained unchanged; from the end of December she frequently had epileptiform convulsions and double vision. She died 18th January, 1877, within six months of the commencement of the illness. On the post-mortem examination, the cerebrum was found to be normal. The cerebellum was found to contain several tumours, involving both sides and also the central part. The crura cerebelli and the corpora quadragemina were unaffected. In this case, you observe that giddiness was very pronounced, and that it preceded the occurrence of the other symptoms, was not due to squinting, and most likely resulted from the cerebellar disease.

As an instance of cerebellar apoplexy, I shall mention one observed by Dr. Brodribb of Hastings, and briefly recorded in Dr. Wilks' work on the "Diseases of the Nervous System." A lady, aged fifty-three, had travelled from London to visit a sick relative, and being depressed in spirits, had recourse, more than once, to her brandy bottle. After her arrival at the house, she went out for a drive, and on her return she could scarcely walk or stand. She expressed a fear that she was intoxicated, having partaken too largely of brandy, and her friends were at first willing to coincide in this opinion. After a few hours, however, she fell into a state of coma, and died. The post-mortem examination showed a clot of blood of the size of a pigeon's egg in the right lobe of the cerebellum. Dr. Brodribb, on further inquiry, could not learn that there had been any special loss of motion, or any disturbance of the senses, but merely a want of regulating movement, such as is seen in an intoxicated person.

With regard to the cerebellar reeling, you must observe that it is not always associated with giddiness. I lately had the opportunity of studying closely a case which I believe to be certainly cerebellar. A student, nineteen years of age, and who had been remarkably strong, and, as I was told, a leading athlete in his university, sustained an injury to his head about four years ago. At first this injury was followed by no symptoms, but soon there occurred squinting, with double vision and giddiness. This giddiness, he found, as I have already told you, that he could cure by closing one eye, and it disappeared permanently as the squint passed away, in the course of three or four months. From this time he remained free from any unhealthy symptoms, able to pursue his studies and his athletics until about six months before he came under my notice. He then observed that in walking he occasionally reeled to one side; and people remarked upon the peculiar gait, ascribing it to intoxication. But, while he thus staggered, he felt no giddiness. He noticed that the staggering was more toward the right side, and that his head tended to go in that direction, and forwards; and he felt just as if he were making the extraordinary movement in order to maintain his equilibrium. He became unable to

ride because of the tendency of his head to fall forward, a tendency which he could better overcome when on foot than when on horseback. Four months before I saw him, although other people constantly remarked upon his peculiar gait, he was able to go about pretty well; indeed, he walked a distance of six miles in deep snow, and appeared to be little the worse of it, so that his muscular vigour was evidently then little impaired. But for a marked tendency to constipation, I found all his organs and functions healthy, except the nervous system. He complained of a feeling of numbness in the limbs after exertion, but sensibility was unimpaired; his sight was good, and the fundus of the eyes normal. But he said that after walking or other fatigue his sight became indistinct. Hearing, taste, and smell were natural. With regard to his muscular sense it was difficult to speak; there was no definite proof of it being impaired, unless it be a proof that he staggered more when his eyes were closed. His skin reflexes were natural, the patellar tendon reflex slightly exaggerated; the organic, not interfered with. His voluntary movements were imperfect in consequence of a tendency to lurch to the right side and his head to pitch forward. He grasped firmly with the hand, but performed finer movements very imperfectly; in particular, could not write well, especially when tired, or when he had been attempting to study. I think that it can scarcely be doubted that in this patient cerebellar disease has occurred, probably as a consequence of the injury sustained four years ago. The gait is quite characteristic, and differs markedly from that of locomotor ataxia. I satisfied myself that he felt no giddiness even when the staggering was pronounced.

Two very interesting cases are recorded by Dr. Fraser, of Paisley, in both of which apparently an arrest of development of the cerebellum had taken place. In one, which proved fatal, the brain and cord were carefully examined, and it was found that the cortical grey substance of the cerebellum was little more than half its normal thickness, and that there were gaps at the surface, probably caused by collections of fluid in the membranes; that the white substance was less reduced in bulk, indeed appeared

excessive in proportion to the grey; and that the cells of Purkinjé in the cortex were greatly shrunken and contracted, their processes being indefinite and altered in direction.

The patient had been a healthy child till his second or third year, after which the disease had gradually developed. The first symptom was an occasional slight reel or stagger in his gait. About the age of six or seven this reeling became more marked, and almost constant. He was first seen by Dr. Fraser when about twenty years of age. At that time he was employed delivering newspapers. He walked with the gait of a very drunken man, reeling greatly, his body inclined forward, his head thrown back, apparently in constant danger of falling on his face. He was obliged to give up his occupation when about twenty-seven years of age, and was afterwards often seen running forward, then catching hold of a lamp-post, and then again going on. Although he constantly swayed about, there is no mention of giddiness in this case.

In the sister of this patient similar symptoms existed. She was unable to write in consequence of the want of power to make the necessary movements. She could not walk for fear of falling forward. Her disease had slowly advanced as the brother's did. She also was not usually affected with giddiness, indeed it was seldom a prominent symptom, except when she lay down. She then became giddy, or her sight grew indistinct. If she turned her head the feeling became exaggerated, and often she had visceral sensations, such as a feeling of nausea, but she did not vomit. It is certainly reasonable to conclude that in the female patient the lesion was the same as existed in the brother's case.

Here, then, under certain conditions, severe vertigo occurred, while usually it was not present, and apparently it was not the cause of her reeling.

Ferrier states that division of the cerebellum down the middle line, and lesions which are symmetrical on both sides, do not cause more than slight disturbance of equilibration. Professor Schiff once showed me in Geneva two dogs on which he had performed cerebellar section. In the one, the gait was very staggering; in the other, the staggering was

slight; and he told me that in the former he had injured one lateral lobe, in the latter the two lobes equally.

Ferrier has shown that where the anterior part of the middle lobe is injured, the animal tends to fall forward on his face. When the posterior part of the median lobe is injured, the head is drawn backwards, and there is a constant tendency to fall in that direction. Ferrier satisfied himself on these points by experiments on a monkey, and clinical observations have confirmed his experimental results.

In lesions of the crura cerebelli giddiness often occurs, and the patient shows a tendency to fall towards one particular side. In illustration of this, I may cite a case recorded by Friedberg about twenty years ago, and quoted by Nothnagel in his admirable work on the Localisation of Brain Disease. A patient of six-and-twenty was, on 5th October, 1855, struck on the forehead, fell backwards upon the pavement, but was able to walk home. Fracture, with depression of the right parietal bone was found. On 15th October, symptoms of meningitis set in; the skull was trephined four weeks afterwards; the patient began to go out, and was quite well and able to work until August, 1856. Then he began to have occasional headaches, and they gradually became more severe. In October, attacks of giddiness, often attended by vomiting, came on. On the morning of the 24th of that month when he got up and was attempting to walk to the washhand-stand, violent giddiness occurred, and he was turned irresistibly to the left side, so that he could only make his way to the stand moving tumultuously, and in a half circle concave to the right. Next night he was again seized with intolerable giddiness, and suddenly began to turn round in bed on his long axis, from left to right. This was repeated five times. In the course of the same day three similar attacks occurred; first the head was turned to the right, then the thorax, then the under part of the body. When the body had reached the right side, the rotation went steadily on, the extremities sometimes followed voluntarily, sometimes seemed to strive against the movement. The eyes wandered anxiously here and there, seeking help. A complete attack lasted only a couple of minutes, as it then subsided.

The patient continued to have frequent attacks of giddiness, and the feeling as if he were about to fall to the right, and as if it were necessary to support himself. On 21st November, he took a feverish turn, and his right leg and arm became paralysed. On 30th November, he died. The autopsy showed the cerebrum natural, the left half of the tentorium cerebelli prominent. Under the left lobe of the cerebellum there was a rather fresh bloodclot of about fifteen grammes. There was fracture of the right part of the occipital bone. There was exudative meningitis round the left lobe of the cerebellum, with red softening of its cortical substance; the inflammation of the pia mater extended along the left cerebellar peduncle to the pons, close down to that structure. The tissue of the peduncle was in a state of red softening, with small extravasations to a depth of from one and a-half to two lines; the other parts of the cerebellum, pons, and medulla oblongata were natural. In this case it is reasonable to assume that the giddiness resulted partly from the cerebellar, but probably also from the peduncular disease; the peculiar movements were characteristic of the lesion in the peduncles.

I shall cite another case which has been quoted by many writers, and was originally recorded by Belhomme. A lady of sixty had long suffered from giddiness and weakness of the legs, but was seized one day with an attack which lasted half-an-hour, in the course of which she was constantly constrained to turn round. A fresh attack followed upon great mental excitement. This time the tendency was to turn to the right. The attacks became more frequent, till at last they occurred four or five times in a day. The condition became gradually worse; the attacks assumed a pretty definite character: the patient suddenly lost consciousness, and drew herself together spasmodically; she turned herself with astonishing rapidity, usually to the right, but sometimes to the left. She died of bronchitis nearly ten years after the commencement of the illness. On examination, it was found that the middle cerebellar peduncles both showed a depression, the left more marked than the right, due to growth connected with the bone. On section through the pons, there appeared between the middle and posterior

thirds a varicose injection of crescentic shape, the pons itself was one-third smaller than natural ; the walls of the fourth ventricle softened and disorganised. In this case you observe that the symptom of giddiness had existed for more than ten years, and considering the character of the changes met with after death, it is reasonable to suppose that it was due to the pressure upon the cerebellar peduncles, although it may be maintained that they were referable to the cerebellum itself.

Giddiness is also observed in some cases of disease of the Pons Varolii, but I must defer illustrating this fact until the next lecture.

LECTURE III.

Giddiness from Intra-cranial Causes continued.—Case of Cerebellar Disease.—Disease of Pons—of Cerebral Peduncles—of the Corpora Quadrigemina.—General Intra-cranial Conditions.—Cerebral Tumor.—Cerebral Congestion.—Cerebral Anæmia.—Nervous Exhaustion.—Following upon Injuries of the Head.—Giddiness in Epilepsy—in Megrin.—Attending upon degenerative changes in Arteries.—Artificially produced by Galvanism.—Dyspeptic Giddiness ; Diagnosis and Treatment.—Toxic Giddiness—from Alcohol, Tobacco, &c.—Giddiness in Gouty Cases.—Giddiness in connection with Acute Specific Diseases.—Fevers.—Influenza.—Giddiness from Coughing and Sneezing.—Giddiness from Peripheral Irritation, as by Worms.—Giddiness from Mental Causes.—Conclusion.

GENTLEMEN,—At the end of last lecture I was about to speak of giddiness as a symptom in cases of disease of the Pons Varolii. But before doing so I wish to show you a typical case of cerebellar disease, which I am able to show you by the kindness of Professor Fraser.

You observe that, even as he stands, this patient sways about in an irregular manner. Now, when he attempts to walk he staggers like a person in a state of intoxication, and even when I make him sit down, you perceive that he seems inclined to fall in one direction or another, and then to catch himself by a sudden effort. He tells me that he constantly feels giddy, but I find that his giddiness is increased by his movements. If the back of his head is pressed against the wall, or if it is held firmly, so that the jerking is prevented, his giddiness almost, but not altogether, disappears. It is thus, then, in some degree, a consequence of the movements, but it is not entirely dependent upon them. It is due in part to some sensory change.

And now, to return to the Pons Varolii,—I shall cite in illustration one or two cases. Guéniot describes the case of a woman forty-seven years of age, who was suddenly seized with giddiness, with loss of power of speech, and paralysis of the left arm and leg. These conditions persisted. The tongue was paralysed, but there was no difficulty in swallowing, intelligence was good, and there was no affection of the facial muscles or those of the eye. Sensibility was retained in the paralysed parts—apparently rather increased; death followed in four days. On examination, it was found that the brain was natural, but the pons broken up by clot. On closer examination of the specimen it was found that while the right pyramidal bundle was completely destroyed, the left was scarcely affected. The point of interest for us in this case is the giddiness. It was manifestly a prominent feature, and it was not the result of paralysis of any of the muscles of the eye. No cause was found excepting the lesion of the pons, and to it the well-marked vertigo must manifestly be ascribed.

Another case may be cited, which was observed and recorded by Professor Nothnagel. A syphilitic man of forty-six was seized with headache and giddiness, with tendency to fall to the left side, and loss of consciousness. After two or three attacks of that kind, he was admitted to hospital, a permanent condition having become established; there was no paralysis of face, eye, or tongue, and speech was normal; but there was complete motor paralysis of left arm, and paralysis of left leg. Sensibility was unaffected. The reflexes could not be produced in the left arm. For two months there was no change, and in particular no tendency to muscular contracture. Death resulted from pneumonia; and on examination, it was found that a mass of softening, of the size of a hazel nut, was situated on the upper half of the right side of the pons, near the cerebral peduncle. In this case, also, you observe that giddiness was a prominent symptom, and that softening was the only change found on examination.

It being clear, then, that lesions of the pons itself are capable of producing giddiness, even when double vision is absent, it is scarcely necessary to adduce proof of it resulting

in cases where squinting occurs. But such cases have also been observed.

In lesions of the cerebral peduncles giddiness is sometimes seen, but usually it results from squinting due to paralysis of some of the muscles of the eye. Such a case as that which I am about to state, suggests that other influences operate here. It is recorded by Rosenthal and quoted by Nothnagel. A woman of thirty-nine had suffered for two years from headache, giddiness, and dimness of sight, with paralysis of the right side. The giddiness was so great that the patient preferred the recumbent position. Severe giddiness set in if, even when recumbent, she turned on her left side. She had paralysis of the third left cranial nerve with paralysis of the lower branches of the facial and of the limbs; on the right, distinct anæsthesia. After death, it was found that a tumour of the size of a pea lay between the crura cerebri. The innermost part of the right cerebral peduncle was softened. In the interior of the left crus cerebri there was a cyst of the size of a pea, which destroyed the left third nerve, and another tumour of the size of a bean involved the right oculo motor.

I think you will agree with me in believing that although the squinting may have been a factor in the production of giddiness, there certainly was a further influence in operation, seeing that the symptom was so severe.

In lesions of the corpora quadrigemina giddiness sometimes occurs, at all events staggering gait has been observed in some cases. In illustration of giddiness from this lesion, I select a case recorded by my friend Dr. Duffin, of King's College, London. The patient was a steady and powerful man, and the earliest symptom—a sense of dragging at the back of the neck—occurred about four months before his death. The walk early became unsteady, and there were repeated attacks of vertigo which diminished when the eyes were closed. Headache and contraction of the muscles of the neck and spine were prominent symptoms. Sight soon became impaired, and blindness speedily followed with well-marked double optic neuritis. The intelligence became obscured only about a fortnight before death. He died

comatose. The autopsy showed the corpora quadrigemina and the pineal body replaced by a glioma. The right optic thalamus had atrophied from pressure, and the right superior peduncle of the cerebellum was also involved. It is possible that the giddiness was connected with change in the peduncle, but considering that the tumor involved primarily the corpora quadrigemina, and the pineal gland, and that the giddiness was an early symptom, it is more reasonable to refer the giddiness to the altered condition of the corpora quadrigemina themselves.

Besides these distinctly localised intra-cranial causes of giddiness, there are others which seem to act upon the cranial contents generally,—for example, cerebral tumour in any part of the brain may be found to produce occasional fits of giddiness, and alterations of the cerebral circulation induce a like result.

Congestion, whether of active or passive origin, induces giddiness, sometimes to such an extent as to prevent the patient from walking, and often sufficing to render quick turning round a matter of difficulty. In treating such a condition, one must first advert to the cause. If it be passive congestion, seek to remove the obstruction; if it be the result of plethora, diminish the volume of the blood; if it be from overwork, or other undue excitement of the brain, or from a tendency to inflammation, use such remedies as cold to the head, ergotin, the bromides, and perhaps derivatives.

Vertigo is a common symptom in Cerebral Anæmia. It is apt to be induced when the patient suddenly changes his attitude, either by lying down or getting up. Sometimes it is merely what the patients describe as swimming in the head, at others it is well-defined vertigo. It is often associated with neuralgic and other forms of headache. You will meet with it very frequently in cases of chlorosis. Indeed it is sometimes one of the most troublesome symptoms of that disease. It is also occasionally met with in cases of anæmia due to loss of blood, slight and long continued, as in bleeding hæmorrhoids, or more formidable as in mennorrhagia or other uterine complaints. Sometimes, also, it is seen in the later stages of aortic valvular disease, when the cerebral anæmia becomes pronounced; and sometimes in cases of unexplained

anæmia whether referable to the pernicious variety or not, it also occurs. In these cases you will find that the patient suffers less (except when special peculiarities come into play) after food has been taken, or after a little alcohol, and that he is sometimes markedly relieved, for a time at least, by the use of nitrite of amyl. The treatment of the giddiness in such cases is, of course, the treatment proper to the variety of anæmia which may be causing it, and usually consists in checking any drain of blood which may exist, and improving the condition of the blood itself. Let me remark in regard to one of these causes—viz., the bleeding from hæmorrhoids,—that you will often have to deal as physicians with this complaint, and that I know of no plan of treatment more successful than that which I learned from Professor Oppoltzer, of Vienna—viz., the regular use of aloes and sulphate of iron. If you will direct your patient to take morning and evening, or three times a-day if it be necessary, a pill containing one grain of aqueous extract of aloes, one-third of a grain of sulphate of iron, and two grains of extract of taraxacum, you will find that free soft motions are produced, while the bleeding as a rule rapidly disappears. In this way your patients may often be relieved without having recourse to surgical treatment. I say nothing of the treatment of the uterine or other hæmorrhages; but should like to accentuate the fact that in the effort to improve the condition of the blood, when our chief remedy, iron, fails, arsenic often stands us in good stead.

Vertigo is sometimes due to mere exhaustion of the nervous system, as from overwork, sexual excesses, and such like; this occurs quite apart from anæmia, is manifestly a result of changes in the nerve centres themselves, and is to be treated by means of rest, good diet, and nervine tonics—chalybeates often proving unsuitable.

Giddiness sometimes results from and persists for long after injuries to the head. The patient is thrown from horseback or from a bicycle, and, falling on the head, is for a time stunned; on recovering, he is at first much troubled with giddiness or with headache, and he finds that for months, or for life, he is much more easily made giddy,

becoming so under conditions in which previously no giddiness would have occurred. The nervous system has acquired a new mobility of this and of other kinds. You will find that patients who have suffered from sunstroke, even to a slight extent, often exhibit the same peculiarity.

A very distressing form of vertigo is that which is associated with epilepsy. One often meets with such cases in practice. Take as illustration a case regarding which I was recently consulted. A lady, aged forty, sustained an injury to the head about seven years ago. From that time she became subject to attacks, usually merely of giddiness, but occasionally of complete unconsciousness. On examination, nothing was found in the state of the ear or of the alimentary tract to account for the condition, and the only satisfactory explanation was that which referred the process to the category of epilepsy. Such a diagnosis as this can scarcely, of course, be established in the absence of more typical epileptic attacks. The treatment in such a case must consist of careful regulation of diet, the administration of bromides and belladonna, and, in rare cases, operative interference at the seat of injury in the skull. You must also note that the epileptic may have giddiness as a warning at the onset of his attack, sometimes as an aura, sometimes merely as one of the early phenomena of the attack.

In other nervous affections, such as migraine, giddiness occurs. It is not in my experience a frequent symptom, but is met with occasionally towards the end of the first stage, when the ocular or other sensory troubles are nearly passed, and the headache is about to commence. Sometimes it occurs later, when the headache is fairly developed, and the nausea or vomiting has come on. The diagnosis of the cause of the form of vertigo is easy to any one who is acquainted with the features of migraine. The treatment in such a case is of course that applicable to migraine generally; and that again is guided by a study of the cause, whether it be connected with gastric and hepatic derangements, with constipation, or with nervous exhaustion. The mention of each of these causes will suggest to our minds the appropriate remedies; but, in addition, you will find that, in many

cases, the attacks may be warded off by the regular use of the bromides, or of guarana, or chloride of ammonium, or of an alcoholic stimulant, or hyoscyamus, or spirit of chloroform, or even a cup of tea or coffee.

Giddiness is often complained of by old people, particularly those affected with degenerative changes in the arteries, and in such cases is a cause of much alarm, being popularly and justly associated with the idea of a tendency to apoplexy. Whatever may be the precise pathology of this variety, I would have you bear in mind that one very able physician, Dr. Handfield Jones, has found the bichloride of mercury, in small doses, of very great service in such cases.

There is a form of intra-cranial giddiness which you can easily produce experimentally for yourselves,—viz., that described by the late Professor Purkinjé of Prague, as being produced when a constant current of sufficient strength is transmitted through the head from ear to ear. If you place the electrodes in the mastoid fossæ, and allow a current of medium strength, say ten or twelve cells, to pass, you will find immediately that giddiness results, external objects appearing to rotate in the direction of the current, while you incline to turn in the opposite direction. It requires a much stronger current to bring out movements of the eyeballs, such as Hitzig has described. It may turn out that these changes are due to an influence exerted on the semi-circular canals; but this seems improbable, both from the locality in which the electrodes have to be placed, and from the occurrence of the nystagmus when stronger currents are employed.

With regard to the diagnosis in cases of giddiness from intra-cranial disease, I should advise you to satisfy yourselves first as to whether there is paralysis of any of the eye muscles or not, and not to conclude that giddiness is due to brain lesion unless other and more characteristic symptoms of intra-cranial disease be present.

The treatment of giddiness from intra-cranial causes, other than those already referred to, is not very promising at present. There are some cases in which the lesion being syphilitic, iodide of potassium, or mercury, or a combination of the two, are of great service; there are probably some in which

the bichloride of mercury is useful, even when the disease is not due to syphilis ; but on the whole, medicine is of little service. Now and then a surgical operation does good by removing some irritating fragment of bone, or by diminishing intra-cranial tension.

Having thus traced the various nervous causes of vertigo with which we were acquainted, I now proceed to describe a number of others which you will find come frequently into operation. Among those we shall take first dyspeptic giddiness. It is matter of common observation that, along with gastric and hepatic disturbance, headache and giddiness frequently occur. But there is in addition a formidable and alarming kind of giddiness, which has been well described by Trousseau in his clinical lectures, and by Dr. Ramskill in "Reynolds' System of Medicine." It is known by the name of stomachal vertigo, or *vertigo a stomacho læso*. The case generally presents such features as the following: The patient an hour or two after taking food is subjected to some fatigue, excitement, or emotion, and suddenly becomes very giddy. He reels, perhaps falls to the ground, becomes sick, may lose consciousness, or may simply suffer from a peculiar headache. He seems to himself to be turning over in all directions, or to have currents within his head, which are flowing, in a curved direction, from before backwards, or from behind forwards, or in an irregular manner. Surrounding objects seem also changed. The ground feels to his feet like the deck of a ship on a stormy sea, while other things seem to be constantly changing their position, swinging with jerks upwards or downwards, backwards or forwards; and while he knows that these are illusions, he yet cannot steady himself. Perhaps vomiting takes place; perhaps there is a copious discharge of flatus from the stomach or the bowels; perhaps sudden diarrhœa. Then he becomes almost well, the giddiness passing off, and he is free from the illness for the time. Now, it may be that you find—as Dr. Ramskill found in one of his cases—that the patient has had a hearty breakfast, including sausages and Devonshire cream, or some other things equally difficult of digestion, or the diet may have been perfectly simple. One attack seems to render the patient more liable to the recur-

rence, and your patient may give you the history of many seizures of varying severity.

This form of vertigo may be transient, or may be persistent for a time. Some years ago I was consulted by a lady whose home was in a distant part of Scotland. She was little and stout, and came into the room with a curious dazed expression, putting her hand on a chair or a table at every opportunity for support, and still occasionally reeling a little like a person on board ship who has not acquired his sea-legs. She stated that life was made intolerable to her by various uneasy feelings, the billowy rolling of the floor being the most distressing; but that occasionally she had fits of unconsciousness, and sometimes convulsions. Her tongue was furred; her appetite was impaired; and she suffered from constipation. There was no deafness nor noises in the ears, nor any other condition characteristic of Menière's disease. Neither was there any fixed pain in the head, nor eye changes, paralysis, or convulsions, such as might have been indicated by cerebral tumour, and her illness had already lasted for years. I was satisfied from the result of treatment, as well as afterwards from the absence of important symptoms, that this case was to a large extent dyspeptic in its origin, the dyspepsia being implanted upon a very sensitive nervous system. The fits of unconsciousness I regarded as syncopal, the convulsions as probably hysterical. When she was treated by means of stomachics and aperients, with regulation of the diet, she became greatly better, and now enjoys fairly good health.

A patient lately presented himself to me much alarmed about attacks of vertigo. He was somewhat advanced in years, of large frame, and had retired from professional work, which had, he told me, been laborious. As he suffered much from feelings of debility, he took food at short intervals and in considerable quantity; being unfit for active bodily exertion, he tended to grow stout. Gradually he became subject to attacks of giddiness, associated with extreme anxiety, dimness of vision, and nausea, and even vomiting. The vomiting was attended by partial relief, and was followed after an hour or two by complete recovery. In

this case also there was nothing characteristic of labyrinthine or cerebral disease, and I confidently anticipate, that with the establishment of better habits, as to diet, and regimen, and with the regular use of stomachic and aperient remedies, he will quite recover.

In the treatment of dyspeptic vertigo, Trousseau had the utmost confidence in the use of alkalies and bitters; he used to give a dose of quassia every morning and at bedtime, and after meals a powder containing 5 grains of bicarbonate of soda and 5 grains of magnesia with 10 grains of prepared chalk, the powders were occasionally alternated with alkaline mineral waters, but a not unimportant part of the treatment was the insistence on careful dieting and regular bodily exercise.

Remember, then, that as to diagnosis, the hints that I have given you will guide you, and that in the treatment of this form of giddiness you will often effect a cure, and constantly obtain great relief for your patient by very simple means. Regulate the diet as to quality, quantity, and times of eating. Give aperients if they are required, alkalies, and bitters. Give stomachic remedies, such as rhubarb, bismuth, soda, and aromatic powder, followed by nux vomica, quinine, or calumba or chiretta, and the good effects will speedily manifest themselves. When there is much flatus in the stomach, carminatives often do good, and if the ordinary ones fail you will find that from ten to fifteen drops of turpentine may give great relief.

Now, what is the nature of this form of vertigo? Is it reflex? Is it a result of alterations of circulation within the brain? Is it a result of poisoning? It is impossible, in the present state of our knowledge, to answer these questions definitely, but I lean to the opinion that it is of the nature of poisoning, that in connection with the chemical changes of the digestive process under certain conditions, some substance is developed which, like alcohol or tobacco, acts upon the nerve centres so as to induce the peculiar uneasiness.

Among the commonest form of vertigo must be reckoned the toxic, and among them those due to alcohol and tobacco. When the action of alcohol has reached a certain point

giddiness is experienced, and associated with this is the reeling gait. Objects may appear to whirl round the patient, or he may appear to be rotating—the movement may seem to be irregular, or in certain definite directions, as from right to left, or from left to right. You know the case of a well-known legal luminary in bygone days, who was found by a friend standing rather unsteadily in the square in which he resided, making no progress towards his door. When interrogated as to his object, "Don't you see," said he, "that the square is going round and round, and whenever my door passes I'm going to jump in." Or the apparent movement may be a rotation on a horizontal axis, as in the case of the man who was found lying on the ground, and who explained that the earth was turning rapidly round, and he was holding on by the grass to prevent it. We may not be in a position at present to state positively how this giddiness is brought about, whether through alterations of the vascular system, or by direct influence upon nerve centres, but the latter seems to me the more probable explanation. The effect of tobacco on those unaccustomed to its use is similar to that of alcohol in the production of giddiness; and other toxic agents might be mentioned which induce a like result—such as stramonium, belladonna, hydrocyanic acid, lobelia, hyoscyamus, and veratrum viride.

Occupying an intermediate position between the toxic and the dyspeptic, and perhaps also related in some measure to the labyrinthine vertigo, is the variety occasionally met with in gouty patients, sometimes slight, sometimes really severe, and which is apt to occur in the intervals between regular attacks of gout, especially as the attacks draws near, and which is often absent for a considerable time after the typical seizure. This form is, in my opinion, often referable to the stomach, but it may also perhaps be induced by toxic influence upon the nerve centres.

Besides these obviously toxic forms of vertigo, there are others which are reasonably to be referred to the same category—I mean the giddiness occurring in acute specific diseases. In the commencement of fevers, the symptom is not

uncommon—just as we have commonly rigors and headache, and occasionally convulsions, as initial phenomena. It has been remarked that in influenza it is frequently very troublesome;—sometimes as one of the earliest indications of morbid action; sometimes during the height of the disease; and that occasionally it continues for long after the acute stage of the malady has passed. It bears the same relationship to many acute diseases. In some of these cases, it is probable that at first a direct toxic influence is exerted, while at a later stage exhaustion of the nerve centres may be regarded as the most likely cause. In the case of influenza, it may be reasonably assumed that catarrh of the Eustachian tubes accounts for it. In the way of treatment you will do well to keep the patient at rest and in the recumbent position, as free as may be from the exciting causes of giddiness; for you will find that sitting up or attempting to read will often suffice to induce an attack. During the later stages, tonics and nutrients, with moderate doses of alcohol, prove most serviceable.

Vertigo is sometimes produced by violent fits of coughing; sometimes by violent fits of sneezing. I do not know for certain the explanation of the fact; it may be due to changes in the ear, possibly to changes within the sensorium. It is not of very frequent occurrence. I think it is most likely due to the first-mentioned cause operating through the Eustachian tubes. The correctness of this view could be easily tested if one were to meet with a patient subject to the symptom who at the same time had obstruction of these passages.

In some cases giddiness is due to peripheral irritation, and that irritation may be situated in various parts of the body. As a typical example, I select the giddiness which sometimes results from the presence of worms within the alimentary system. You are aware that other nervous symptoms, such as convulsions and cough, arise from this cause, and we may assume that the vertigo is brought about in the same way as these other symptoms. It is most reasonable to refer them, in the present state of our knowledge, to reflex action, and in the case of giddiness, to an influence upon the

cerebral circulation. The treatment in such a case is, of course, obvious. Let the irritating cause be removed from the intestine, and the giddiness will disappear.

Vertigo arises in some individuals from purely mental causes. A patient goes on board a steamer, and although there is no tossing, and no perceptible vibration, the recollection of what he has suffered before, or the sight of the oscillation of the waves, makes his head swim, or renders him actually giddy. In some, giddiness supervenes if a child is seen whirling rapidly round. I have known it even produced by another person walking in a small circle. The very thought of giddiness suffices in some to induce the sensation.

We have thus passed in review the chief causes of this sensation. We have considered giddiness as arising :—

- (a) From external conditions.
- (b) From changes in the sensory structures.
- (c) From changes in the conducting fibres.
- (d) From changes in the central nervous system.
- (e) From dyspepsia.
- (f) From toxic causes.
- (g) From causes of uncertain seat.
- (h) From peripheral irritation.
- (i) From mental causes.

By following out the indications which I have given, you will generally be able to determine with certainty the particular cause in any individual case, and thereby be able to devise a rational treatment.

