in the refraction of the eye. Moreover, ophthalmometric mensuration has proved that, in the majority of cases, the dioptric system does not present a very marked variation in the different instances of ametropia.

I believe I am able to draw another conclusion from these observations: namely, that hypermetropia ought more often to be considered as an arrest of development of the eye—since, in cases of anisometropia, with asymmetry of the cranium, hypermetropia is always found on the least developed side of the face. In thus accounting for it, I believe I have also found the explanation of the inferiority of visual acuteness, which generally accompanies high degrees of hypermetropia; whilst I attribute the low visual acuteness of the high degrees of myopia to the choroiditis, which is the cause of the lengthening of the globe.

Explanation of the Diagrams.—The upper part is the forehead, the lower part the occiput; the vertical line corresponds to the middle line of the apparatus. The signification of the letters is as follows. "E." = Emmetropia; H. = Hypermetropia; M. = Myopia; as. = astigmatism; *ast. h.* = hypermetropic astigmatism; *as. m.* = myopic astigmatism. The figures give the refraction in dioptries.

SUMMARY.—In asymmetry of the cranium, characterised especially by flatness of one half of the forehead, and of the corresponding zygomatic arch, and lateral curvature of the median line of the face, together with inequality of the two halves of the chin, there is generally anisometropia. The eye of the side which is less developed presents the lower refraction.

TABES DORSALIS WITHOUT LOCOMOTOR ATAXY.

By DAVID DRUMMOND, M.A., M.D.,

Physician to the Infirmary and to the Children's Hospital, Newcastle-on-Tyne.

THE following cases, which seem to bear out the title of this paper, may not be without interest.

CASE I.—L. S., aged 39, a blacksmith, was admitted into the Newcastle-on-Tyne Infirmary on July 24th, 1879. His symptoms dated twelve months back, previously to which time he had been in good health. At first a tightness in the right side, from the epigastrium round to the spine, three inches below the nipple, was complained of. Subsequently, pain took the place of the tightness, which, being accompanied by nausea and vomiting, led to the belief on the part of the patient, and the statement by his medical attendant, that he was suffering from liver-disease. Giddiness and headache were very early symptoms, as also were shooting (lightning-like) pains down the legs and arms. Five months before admission his sight became dim, and he had at times double vision. He noticed also his left arm to be weak, with a general feeling of numbness in his left side. On admission he walked into the "out-patient's room" without any peculiarity of gait, except that he advanced rather slowly, with the eyes partially closed, as is the habit of myopic individuals.

The most striking feature in the case was soon recognised to be *impaired sensibility*, at first most marked on the left side, especially the left arm; but subsequently the whole surface of the skin became equally affected, from the crown of the head to the soles of the feet, with the exception of the limited area, included within the zone of "girdle pain"; this being at first confined to the right side, as already indicated, but afterwards encircled the whole body.

The phenomenon of impaired sensation will be best described as *analgesia*; pricking with a pin or burning failed to elicit any complaint of pain. The former was simply described as a touch-sensation. However, the impairment in tactile sensibility was much too gross to permit the *æsthesiometer* to be of any service in testing it. The skin to be last affected was that of the head and face, or that supplied by the fifth nerve.

Of the special senses, smell, taste, and sight were certainly impaired; hearing was normal. The inability to smell was not confined to pungent substances (fifth nerve), but the perfume of the most odoriferous roses was not appreciated. Taste and sight, though distinctly affected, were not accurately tested. The right pupil was slightly dilated and fixed; the only ocular deviation was slight left internal squint. Tickling of the soles of the feet produced jerking of the legs (increased cutaneous reflex), whilst there was complete absence of the patellar tendon-reflex.

Muscular sensibility, especially of the upper extremities, was markedly impaired. He was unable to touch his nose with his forefinger when his eyes were shut; weights were with difficulty distinguished. The lower extremities were similarly, though to a less extent, affected. He at once became giddy and unsteady, when, whilst standing, he raised his eyes from the ground, and the "ataxic position" was to him an exceedingly difficult one to assume, whilst, when lying in bed, the position of his limbs was to a great extent unknown to him. He was not in the slightest degree ataxic; never, during the five months of his stay in hospital had he any difficulty in the co-ordination of the most complex movements. The shooting pains continued from time to time, and the girdle-pain was often loudly complained of. Occasional attacks of headache, usually accompanied by vomiting, were noted. Hyperæmia of the fundus oculi, with indistinctness of the margin of the discs, was observed with the ophthalmoscope.

CASE II.—J. H., aged 43, an engine-fitter, was for a considerable time an out-patient, but subsequently became an in-patient, of the Newcastle Infirmary. The attack for which he was admitted commenced eight years before; the initial symptoms being pains down the legs, which were described as of a "shooting" character. Very early in his illness, he was seized with headache and vomiting, and, in consequence, was confined to bed for a fortnight, during which period he had what his wife described as a fit (the patient's own account was not to be relied on, his memory being considerably impaired), the result of which was loss of power in the right arm and leg—the latter he trailed for some time afterwards. From this attack, he apparently recovered completely. He returned to work, and followed his employment for some months; but soon the "shooting" pains commenced again, this time in the right leg and right side of the head more especially. These pains have continued to the present time. When walking, it was always observed that he was "shaky" (a term, on close questioning, found not to mean "ataxia", but rather the unsteady gait of semi-intoxication). During

the past two years, he occasionally suffered from attacks of "jerking" (*i.e.*, tremor) of the legs, "so that the whole bed shook". For twelve months before admission, an external squint of the right eye was observed; he was deaf for some months. For the past five years, he has complained of difficulty in passing urine, and constipation; also of dimness in vision, with, at times, diplopia, numbness of the legs, and the sensation of a cord tied round his waist. This patient was found, like the last, to be markedly anæsthetic, especially as regards painful impressions, and that all over the body, with the exception of the portion of the abdomen corresponding to the "girdle-sensation" round the waist. This was about an inch wide, and passed round the body an inch below the umbilicus. In this area alone was injury to the skin complained of as painful. The impairment of tactile sensibility was not at all so noticeable. Muscular sense, when tested in the usual way, was found very much impaired, both in the upper and the lower extremities; it was utterly impossible for him to stand with his eyes shut and his feet together without falling. His gait was not ataxic; indeed, when walking cautiously, it was difficult to detect anything unusual; but when he was off his guard, it suggested rather the cerebellar gait. He got in and out of bed quietly without any jerking; whilst with his hands he could perform complicated actions with ease, nor was there any "volitional tremor". The muscular power of the arms and legs was good. The pupils were contracted—"pin-holes"; and the discs presented the usual appearance of grey degeneration of the optic nerves, as seen in cases of *tabes dorsalis*. There was no ocular paralysis. Smell and taste were considerably impaired. There was *complete absence of the patellar tendon-reflex*, whilst the cutaneous reflex (soles of the feet) was certainly increased. Shooting lancinating pains were often complained of.

The third and fourth of the cases can shortly be disposed of; the subjects of them are both women.

CASE III.—M. H., aged 57, married, with five children, had complained of pains shooting down her legs and between her shoulders for the past five years. For two years, her legs had been numb, and they had felt as if "they were bound". She felt a "cord" tied round the waist; had frequently had difficulty in passing urine. Her friends had noticed that she staggered when she walked. This patient was utterly unable to stand in the "ataxic position"; nor was she able to tell the position of her legs when lying down with her eyes shut. The muscular sense of the upper extremities was perfect. The legs were both insensitive to painful impressions; pins could be inserted without any complaint. Tactile sensibility was also impaired. Special senses were normal. The ophthalmoscope revealed nothing abnormal. Her gait also suggested cerebellar disease—*i.e.*, she walked as though she were slightly intoxicated. The patellar tendon-reflex was found to be completely absent. There was no ataxy; she co-ordinated perfectly.

CASE IV.—I. S., aged 44, married, no family, was admitted into the Newcastle Infirmary on May 13th, 1880. She was almost carried in, being unable to walk without considerable assistance. Her illness dated nine years back, and manifested itself at first by pains shooting down the legs; afterwards she observed a tightness round the waist, more especially in the left side. This sensation was never painful, but more of a "numbness", "as if something was tucking her in". For the past eight years she was unable to walk by herself. Very early in her illness, she noticed that she could not stand whilst washing her face. In the last three years, she had become much weaker and thinner. Formerly, she was unable to tell the position of her legs in bed; but the muscular sense had recently improved, so that at present she could place her legs in any position with her eyes shut, describing accurately their position. The legs were wasted and analgesic; a prick with a pin being called a touch. The impairment of sensation extended up to the umbilicus. The gait was that of a prostrated old person; the left leg was slowly placed in advance, and the right made to follow it as gently. She could stand by herself with her feet widely apart, but not with the eyes shut. There was nothing ataxic about her movements; and, though the legs were wasted, yet she still retained a considerable amount of muscular power. Her arms were normal. There was a complete absence of the patellar tendon-reflex; whilst the superficial (plantar) reflex was slightly increased. In this case, there was no evidence of grey degeneration of any of the cranial nerves. The lancinating pains in the legs were sorely complained of. Whilst she was awake, the bladder was normal; but at times, during sleep, the urine passed away.

The cases I have briefly recounted present many other points of clinical interest; but I think sufficient has been stated to serve my purpose. It would be absurd to describe them as examples of "locomotor ataxy"; for the simple reason that the one symptom which furnishes the disease with a name is absent—*viz.*, inco-ordination in locomotive movements; whilst nearly every symptom which goes to make

up the symptom-picture of "*tabes dorsalis*", excepting the ataxy, is present in a marked degree.

In a further communication, I hope to refer to the early association of changes in the band and in the spinal cord in cases of *tabes dorsalis*; so I shall not allude at present to this feature existing in at least two of the cases cited above. In two other cases, at present under my care, of undoubted posterior sclerosis, the gait approaches, to a very slight degree only, the characteristic ataxic manner of walking; whilst, when the patients are lying in bed, movements of the legs can be performed quietly so long as the eyes are observing the limbs. Such cases, whilst easily recognised by an experienced observer, must puzzle sadly even senior students, inasmuch as the characteristic gait, on which the teaching of the schools has laid great emphasis, is not present. Undoubtedly the gait in posterior sclerosis varies within very wide limits; consequently, I apprehend, caution should be exercised in the degree of importance attached to it. For the lesion may easily be recognised by the striking gait of some patients, as, for example, in the case of the patient who was being investigated by a student undergoing his clinical examination. After the physical examination of the lungs and heart had been carefully made, without yielding any important information, the patient remarked, "Hadn't I better get up and walk, sir?" the result being an immediate diagnosis. Yet, in many cases, the information gained from the gait is meagre indeed. It has appeared to me that the degree of anæsthesia—using the term in its fullest sense—bears no direct proportion to the amount of inco-ordination; in fact, rather the reverse. The cases to which I have alluded may be compared with one very marked case of locomotor ataxy at present under observation, in which the gait is truly characteristic; in the latter, the prick of a pin invariably excites the sense of pain, though in a modified manner; whilst, as already stated, analgesia was complete in the cases recorded. Considering that little is known concerning the co-ordination of movements in the spinal cord, it would be futile to speculate, in the absence of *post mortem* investigation, as to the why and wherefore of the want of ataxy. It is difficult to accept, in the light of these cases, the theory advanced by Dr. Gowers, in his truly excellent work, *Diseases of the Spinal Cord*, *viz.*, ataxy may depend solely upon the impairment of the so-called "deep reflexes"; *i.e.*, patellar tendon-reflex, etc. On the other hand, by adopting the view of Lockhart Clarke, as elaborated by Debove and Boudet, *tabes dorsalis* without locomotor ataxy may be accounted for by supposing that the loss of muscular tone is diffused and general. I notice that Dr. Buzzard recognises the existence of "locomotor ataxy" without any ataxy (BRITISH MEDICAL JOURNAL, March 5th, 1881, p. 331).

CASE OF TETANUS AFTER OVARIOTOMY.

By E. MALINS, M.D.,

Obstetric Officer to the General Hospital, Birmingham.

I PUT the following case on record: firstly, on account of its rarity as a sequence of the operation of ovariectomy; and secondly, because there have been, to my knowledge, three other instances of the same kind after a similar operation in this locality within the past three months; circumstances which seem to point to some occult influences, possibly of an epidemic kind, which act at particular periods in the production of this disease.

Miss B., aged 60, was placed under my care for operation by my friend Mr. Walker. She was of a good constitution, singularly calm temperament, free from any mental anxiety, and hopefully confident of her own recovery. The tumour was a large multilocular one, and had been steadily progressing in size for about eighteen months. The urine was free from albumen, and there was no organic disease of any kind present.

On March 1st, ether being given by Dr. Simon, the operation was commenced under carbolic spray, but, the lamp going out suddenly in the middle of the operation, it was finished without. There were no adhesions; and a broad pedicle was tied in three divisions with fine strong silk and returned. The wound was dressed with carbolic gauze, and covered with salicylic wool and a flannel bandage. The subsequent progress for a time was all that could be desired. On the second and third days, the temperature was 100°, and the pulse 96; but the temperature afterwards fell to 99, and the pulse to 84; while the wound healed kindly and entirely, the stitches being removed on the sixth day.

On the evening of the eighth day, the nurse, in trying to adjust some artificial teeth which the patient had previously worn, noticed that she could not open her mouth. Some hours afterwards, she complained of stiffness in the jaws, pain in moving the head, and inability to protrude the tongue, the jaws being firmly locked. Twenty grains of chloral,