agreement ceases. In the one case, the further evolution of the brood is towards pus; in the other instance, the progeny become the formed elementary tissues of a cancer, a sarcoma, and the like.

Here seems to me to be the proper place to add a few words on the anatomy of *conical cornea*, since certainly, in its later stages, when the apex of the cone is nebulous, if not before, tissue-changes of an inflammatory or irritative type are present. The affection is commonly met with in young adults, who are generally of feeble constitution; and it usually affects both eyes, although often in unequal degrees. By the kindness of Mr. Bowman, I had, some years ago, an opportunity of submitting to minute examination a beautiful example of it. The conical part of the cornea was thinned. The attenuation increased from the base to the apex of the cone, the thickness of which was only one-third of that of the normally curved circumference of the cornea. The anterior and posterior epithelia and Dmours' membrane were unaltered; but the anterior elastic lamina was thinned, and the immediately underlying lamellated tissue was replaced by a stratum of crowded club-like nuclei. More deeply still, the corneal corpuscles were very numerous, dominating over the interstitial tissue, and actively multiplying. At the base of the cone, there was a gradual transition from the diseased to the healthy lamellated tissue; and the circumference of the cornea was perfectly normal.

[To be concluded.]

ON LOCOMOTOR ATAXY.*

By J. LOCKHART CLARKE, M.D., F.R.S., etc.

THE curious disease known by the name of locomotor ataxy is very imperfectly understood even by those who have had many opportunities of observing it. A great number of practitioners have never seen a case, or at least have not diagnosed it when they have seen one. It is not uncommon to find locomotor ataxy mistaken for some form of cerebral or spinal paralysis, and cerebral or spinal paralysis mistaken for locomotor ataxy. The pathological physiology of this disease is not well understood even by those who are more expert in its diagnosis; while specimens of its morbid anatomy have been seen only by a very few British practitioners, since I believe I am the only person in this country who has made it a subject of investigation.

For these reasons I thought that, while practitioners from all parts of the kingdom are now met together, it would not be uninteresting to select, and illustrate by specimens of morbid anatomy, two cases of locomotor ataxy, one of which presents all the symptoms characteristic of the disease, while the other is wanting in some of those symptoms, and therefore might be, to the inexperienced, a subject of difficult diagnosis. I shall not, however, now dwell on the differential diagnosis of the disease. Those who wish for further information on this point, I may refer to the writings of our distinguished visitor, Dr. Duchenne de Boulogne, whose name is identified with this disease, and to my own article on locomotor ataxy in the first volume of *St. George's Hospital Reports*. But, before I read the cases which I have selected, it may be well to give the briefest possible outline of the symptoms and course of the malady.

In a great number of instances, the first symptoms make their appearance in the form of strabismus, with diplopia, which may disappear for a time and then return; or in the form of amblyopia or weakness of sight, which may go on to complete amaurosis. After a variable period, these symptoms are accompanied by so-called "rheumatic" and lancinating pains, which occur at variable intervals, in different parts of the limbs. In many cases, the ocular disturbances, except perhaps extreme contraction of one or both pupils, never make their appearance; the pains, which may extend over months or even years, accompanied by some weakness, being the first in the train of symptoms. Either at the same time, or subsequently, there is commonly more or less numbness in the feet and legs, in the hands and arms, and sometimes in the face. Sooner or later, the patient begins to find that he cannot properly maintain his balance; that he totters in walking, like a man partially intoxicated, or that he cannot guide the movements of his fingers. He has lost, to a certain extent, the power of controlling the action of some of his voluntary muscles. Still later, the voluntary movements become more or less jerking or spasmodic; and in the course of the disease other symptoms supervene, as incontinence of urine and dysuria, which frequently alternate in the same patient; loss of control over the sphincter ani; generally, though not always, loss of sexual power and desire; occasional hypersthesia over certain

parts of the limbs; and sensations of tightness around the body and limbs. In rare cases, of which I have seen two, the senses of smell and taste are impaired. Usually, the patient's general health is not much affected, and his intellect remains unimpaired. Locomotor ataxy is a disease which occurs more frequently about the middle period of life, and is much more common in men than in women. This very concise outline must of course be considered only as a general introduction to the cases which I intend to relate.

MORBID ANATOMY.—The morbid anatomy of locomotor ataxy consists chiefly of a certain grey degeneration and disintegration of the posterior columns of the spinal cord, of the posterior roots of the spinal nerves, of the posterior grey substance or cornua, and sometimes of the cerebral nerves. A variable number, and frequently, in the latter stages of the disease, nearly all the nerve-fibres of the posterior columns and posterior roots fall into a state of granular disintegration, and ultimately disappear. Usually, the posterior columns retain their normal size and shape in consequence of hypertrophy of connective tissue, which replaces the lost fibres. In this tissue, at wide but variable intervals, lie imbedded the remaining nerve-fibres, with the debris of their neighbours, in different stages of disintegration. In some places they are severed into short portions, or into rows of globular masses, formed out of their medullary sheaths, or white substance, which has been stripped from their axis-cylinders. In other places they have fallen into smaller fragments and granules, which either lie aggregated in the line of the original fibres, or are scattered at irregular distances. Corpora amylacea are usually abundant, and oil-globules of different sizes are frequently interspersed among them, and collected into groups of variable shape and size around blood-vessels of the part. I am inclined to believe, from my own investigations, that, in the course of the disease, the posterior cornua of grey substance are *always* more or less affected, as I have elsewhere pointed out; and it appears to me to be a question whether they are not the first parts, or at least amongst the first parts, that are morbidly changed. I have also shown, and will show you to-day, that in some cases the deeper central parts of the grey substance are more or less injured by areas of disintegration. These latter lesions, however, are not essential to the production of locomotor ataxy, the peculiar symptoms of which depend solely on lesions of the posterior columns, of the posterior nerve-roots, and probably of the posterior cornua. The cases in which they occur may be considered as mixed cases, partaking of the nature of locomotor ataxy and common spinal paralysis, like the second of those which I shall describe.*

[To be continued.]

ADDITIONAL NOTES ON UNUSUALLY RAPID ACTION OF THE HEART.

By RICHARD PAYNE COTTON, M.D.,

Senior Physician to the Hospital for Consumption, Brompton.

In the *BRITISH MEDICAL JOURNAL* of June 1st, 1867, I related a case, illustrated by sphygmographic drawings by Dr. Sanderson, in which the pulse reached 232 per minute. It was the first of the kind which had been published. In the *JOURNAL* of June 22nd of the same year is a letter addressed to me by Sir Thomas Watson, Bart., in which he describes a very similar case which had fallen under his notice several years previously, and where the pulse reached 216 in the minute. Dr. James Edmunds also described a like case (*JOURNAL*, June 15th, 1867). A short time afterwards, four other cases were recorded—one by Dr. J. D. Brown (*JOURNAL*, July 20th, 1867); two by Dr. R. L. Bowles (*JOURNAL*, July 20th, 1867); and one under the care of Dr. Broadbent at St. Mary's Hospital (*JOURNAL*, Aug. 3rd, 1867).

As this closes the number of cases hitherto placed on record, and the condition is, as Sir Thomas Watson justly remarked, "a very rare form of disorder," I have thought it might be worth while to add the following case, which has lately fallen under my observation.

A few months ago, I was requested by Mr. Langhorne, of 227, Brompton Road, to meet him in consultation upon a case of excessive palpitation of the heart. We found the patient—a gentleman aged about 35, and leading ordinarily a very active and anxious life—suffering with severe dyspnoea and general depression, accompanied by marked symptoms of gastric derangement and slight muscular rheumatism. It was impossible to count the pulse, the beats being far too quick, feeble, and apparently irregular; but, on placing the stethoscope upon the heart, we

* Read before the Medical Section at the Annual Meeting of the British Medical Association in Oxford, August 1866.

* All the morbid appearances above described were shown to members of the Association at Oxford, in preparations made by the author from spinal cords, etc., of cases of locomotor ataxy.

could distinctly count 200 pulsations in the minute—each pulsation being regular and uniform, and consisting of but one sound, and that quite free from murmur. The patient stated that his palpitation and distress had come on simultaneously two days before; and that he had had several previous attacks, but of a milder character.

Remembering the treatment of my former case, I suggested the free use of stimulants, with ammonia, potassa, and digitalis; and, in the course of two days, the heart returned *suddenly* to its normal action, and at the same moment the patient to his ordinary condition—whether as a sequel or a consequence of the treatment, a *post* or a *propter*, I cannot say.

I have very recently seen the same gentleman in perfect health, his heart beating quite naturally, and not exceeding 80 in the minute. He told me, however, that, since the attack which I have described, he has had several others similar in kind, but less severe; and that on each occasion the heart returned *suddenly* to its proper action.

Of the seven cases now recorded, in four instances the excessive action of the heart terminated *abruptly* and *suddenly*, the patients having been able to tell the exact moment of its occurrence. In the remaining three cases, the same may or may not have obtained; the circumstance either having escaped observation, or not having been stated. This forms an interesting feature in the disorder, and is well worthy of notice in any similar cases which may occur.

I feel much hesitation even in suggesting an explanation of the strange phenomena exhibited in the cases I have related. In my former paper, I ventured upon the supposition that they were due either to an obscure and abnormal irritating state of the blood, or to an extreme and inexplicable sensitiveness of the heart itself, or possibly to a combination of both such conditions, but having the common effect of causing the heart to contract upon its contents long before its cavities have had time to become filled to their normal extent. It remains, however, to reconcile with this, or, indeed, any other view of the matter, the *sudden* return of the heart to its healthy action. I confess that I am unable to understand this; but

"There are more things in heaven and earth
Than are dreamt of in our philosophy."

CASES OF JAUNDICE FOLLOWING HÆMORRHAGE, WITH SOME REMARKS ON THEIR CAUSE.

By WILLIAM SMITH, Esq., Clifton,
Fellow of the Royal Medical and Chirurgical Society of London, etc.

THE cases of jaundice which I am about to bring before your notice, followed in both instances a profuse loss of blood from accidental causes. I have purposely used the expression "following hæmorrhage," and not "consequent on," or "caused by it." I doubt whether I should be altogether justified in using the latter expressions; but I at the same time think there was a connection in the phenomena more intimate than mere antecedence and sequence—in fact, that the one was, to a great extent, the cause of the other.

D. V., a strong and healthy collier, aged 24, in killing a duck, thrust the knife into the wrist, in the direction of the radial artery. From the profuse and dangerous bleeding which ensued, and other circumstances, the artery was probably wounded. The hæmorrhage was excessive, and the means used for its arrest rather tended to encourage it. A number of cloths and linen rags were wrapped round the wrist, with no attempt at effectual pressure. The arm was placed over a tub; and, as the man became faint, brandy was administered *ad libitum*. I afterwards saw the tub with the coagula in it, and I was astonished that death had not occurred at once.

It was about an hour after the accident that I arrived at his residence. All hæmorrhage had then ceased, and he was in a profound condition of syncope. I dressed the wound with simple adhesive plaster, a compress, and bandage, and had him carried to a warm bed. The heart's action was barely perceptible, the skin cold, and covered with sweat, the pupils dilated, the sphincter ani relaxed, the breathing slow, with, at intervals, a deep sigh. I could with difficulty get him to swallow, but succeeded at last in administering some stimulants and warm tea. Vomiting occurred, and in a few hours he rallied from the dangerous state of collapse. The wound did well, and healed without difficulty. But, about a week after the accident, the pulse assumed a febrile rapidity, the skin became hot, and there were alternate chills and flushing, with nausea and anorexia. Erysipelas or pyæmia might be impending; but the severe and prolonged prostration afforded another explanation, in the reac-

tion of an irritative character, which attends such cases. The next day, my patient was jaundiced, and continued so for about three weeks. The skin and conjunctiva were of a deep yellow hue, the stools light, and the urine tinted with bile-pigment. The bowels were constipated; but, after the feverishness subsided, his general health improved. I gave no active medicines, avoided mercurials, and trusted to effluents, the mineral acids, and an occasional dose of castor-oil. The patient did extremely well.

The next case much resembled the former, except that the hæmorrhage was venous, instead of arterial. A farmer, aged 56, suffered much from varicose veins. He had consulted me, and I had advised an operation, and not wishing this, to keep a bandage or laced stocking on the leg. Neither of these precautions was taken. He went ploughing in a distant field, and was found by his wife, lying on the ground, as she supposed, dead. A varicose vein, over which there had been an ulceration, had given way, and no doubt an immense quantity of blood was lost. The condition of this man was, if possible, worse than that of the one before described, and the history of the case, to a certain period, the same. Well marked febrile reaction, with jaundice, set in about the fifth day. He recovered in the same manner as the former case. He, however, sank the next winter from, I believe, congestion of the lungs. I did not attend him in his last illness, and did not know of his death till a considerable period had elapsed.

The following case was related to me by the friends of a lady, some of whose family I attended. At the age of twenty-three, she one day fell accidentally, striking her nose against a projecting piece of furniture. Alarming epistaxis ensued, lasting the whole day, and leaving her deplorably weak. A few days afterwards, she was attacked with intense jaundice, lasting several months.

The following case has been kindly furnished me by Mr. Edward Martin, of Weston-super-Mare; and, although that gentleman thinks the sequence of the icterus purely accidental, yet, for reasons which I will shortly enter on, it seems to me to admit of a different interpretation.

"On the 15th April 1866, I was summoned to Mrs. D. in the eighth month of her second pregnancy. I found her suffering from a smart attack of hæmorrhage, and learnt that she had had a similar one a week or two before. The placenta was easily found presenting; but, the os uteri not being sufficiently dilatable to interfere, the tampon was applied and ice administered, and the bleeding readily restrained. The patient was watched till the morning of the 25th, when the hæmorrhage returned, accompanied by slight pains of an irregular character. The os still not freely admitting the finger, and the patient keeping up well, I recurred to the plug for a few hours, and again easily arrested the drain. I was sent for urgently in the evening, and before my arrival (a very short period), my patient had lost a large quantity of blood, the flow of which was now unchecked, the tampon having become displaced. She was faint, and, as a matter of course, the os uteri easily dilatable. Some brandy having been given, the turning was quickly and readily accomplished, and the child (a dead one) delivered. There was no subsequent hæmorrhage, and she made a good though slow recovery.

"She was attacked by jaundice on the 25th of May, just one month from the delivery, having suffered the previous day from shivering, headache, and symptoms of approaching fever. The yellowness of skin, white stools, and bilious urine, lasted about a week; the treatment being two grains of calomel and a dose of castor-oil every other morning, with a taraxacum and nitric acid mixture thrice daily."

It is but fair that I should add Mr. Martin's remarks on this case. He says:—"As thirty days had elapsed from the last attack of hæmorrhage, and as the lochial discharge was by no means excessive, I am scarcely inclined to think there was any connection in the way of cause and effect between the loss of blood and the jaundice."

From the anomalous character of the cases which fell under my personal observation, I considered that any collateral peculiarity should be noticed, and especially epidemic or endemic condition of the atmosphere or locality. I could not discover anything which could be fairly said to constitute an efficient cause of the symptoms. Perhaps hepatic congestion and derangement of the *primæ viæ* had been more than usually common during that autumn.

The rarity of one morbid condition following another may make us suspect it to be purely accidental, and these cases *may* hence have been so. But in how small a proportion of wounds do tetanus and pyæmia follow the injury; yet they are undoubtedly connected with it. In a large practice, in which for fifteen years I witnessed accidents almost daily, I find I have notes of only seven cases of traumatic tetanus, and two of pyæmia; besides which the antecedent is rare; excessive hæmorrhage in modern practice is very uncommon.

Closely allied to, and bearing on this subject in its most important relation, is the question of jaundice produced by mental emotion. Frerichs, in his work on *Diseases of the Liver*, published by the New