occurring in the course of locomotor ataxia, from the symptoms of which he was suffering.

The frequency with which spontaneous fracture of bones occur in cases of locomotor ataxia has not, it seems, been calculated, but the relative frequency of such fractures in different bones of the body is given by Durand⁵ as follows. Of 42 instances:

17	occurred in	the femur.
10	"	" tibia and fibula.
6	"	" radius and ulna.
3	"	" clavicle.
2	"	" humerus.

Accordingly the femur is, of all the bones, the most liable to have trophic changes taking place in it, and to become spontaneously fractured in locomotor ataxia. I may here observe that the bones of the lower extremities are affected very nearly three times as often as those of the upper; and, although the fracture takes place in consequence of some diseased change in the bones, yet union, and that often with much callus, seems to occur readily, as indeed it does in osteomalacia, in fragilitas ossium, and even in secondary cancer of bone. The prognosis in such cases, so far as the fractured bone is concerned, is favourable.

With regard to the causes of spontaneous fractures in locomotor ataxia, all are agreed that they arise from localised changes in the bones—"trophic changes"—and that such changes are dependent upon disease of the nervous system. The changes in the bone which precede spontaneous fracture are in the main (1) rarefying osteitis, (2) fatty transformation of the connective tissue cells, and, lastly, great diminution in the earthy salts, especially of the phosphates of the part. These changes are found to occur in patches, and are distributed irregularly, just as are the patches of partial or complete anæsthesia in the skin—a condition, it will be remembered, that formed a special feature of the case under consideration. All I can say with regard to the bone changes in this case is that the tibia seemed harder and more brittle than natural; the minute changes in it I had not an opportunity of examining. Although all writers are pretty well agreed as to the changes that occasionally occur in the bones in locomotor ataxia, and that these are dependent upon disease of the nervous system yet there is a difference of opinion with regard to the seat of the lesion in the nervous system. It will be remembered that in locomotor ataxia the chief nerve lesion is in the spinal cord—a sclerosis of the postero-external columns. Charcot and Joffroy,⁶ in their investigations into the structure of the spinal cord, in a case in which the joints were affected, found that the grey matter in the anterior horn was, in addition to the postero-external columns, affected by sclerosis. In consequence they arrived at the conclusion that the trophic lesions in the bones, as well as in the joints, are due to structural changes in the grey matter of spinal cord. Buzzard,⁷ however, regards it as not improbable that trophic changes, because they occur often in the preataxic stage of the disease, and because they are often associated with visceral lesions, are due to some structural changes in the medulla oblongata. During recent years, however, Pitres and Vaillard⁸ have discovered that changes in the peripheral nerves—peripheral neuritis—are of not uncommon occurrence in some forms of tabes, and they have found that neuritis occurs here and there in the small nerves. Consequently they suggest that the patchy anæsthesia in this disease is due to peripheral neuritis, and maintain that the trophic changes in the bones and in the joints are due to a similar cause. Accordingly, we may say that the most recent researches into the causes of trophic changes in the bones and in the joints in tabes dorsalis point to the conclusion that the peripheral nerves play a very, if not an all-important part in their production. Until further information is obtained regarding the dominating seat of trophic influence no definite explanation of the nervous mechanism of trophic functions can be given.

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FILARIASIS; LYMPH SCROTUM AND VARICOSE GROIN GLANDS:

POST-MORTEM EXAMINATION.

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I AM indebted to Dr. Manson, to Dr. Abercrombie, and to Mr. Johnson Smith for their permission to publish these notes. A report of the case during the patient's stay in the Seamen's Hospital, Greenwich, will be found in the *Transactions of the Pathological Society* for 1896.

A. W., aged 21 years, was admitted into Charing Cross Hospital on September 8th, 1896, suffering from lymph scrotum with a superadded attack of lymphangitis of the right groin.

Past Personal History.—The patient was born in Kingstown, Jamaica, in 1876, both father and mother being English. The first eleven years of his life were spent in different parts of the West Indies. He then became a sailor, and journeyed between the West Indies, United States of America, and China. He stated that he was perfectly well until the beginning of 1890. In that year he first noticed a rounded swelling in the epigastric and hypochondriac regions, extending from the xiphi-sternum to the umbilicus, and laterally for about 3 inches on either side of the mid-line; this appears not to have been tender and to have had no inflammatory signs. This swelling appeared during the night, and diminished very rapidly when he assumed the erect posture; accompanying it was considerable pain of an aching character in the right side of the abdomen, and extending round into the back. The pain, however, did not prevent him from following his occupation. This condition lasted for some three weeks.

Eight months later, after a hard day's work, acute pain suddenly developed in the right groin, with much swelling in that region and in the right side of the scrotum; it compelled him to remain in bed for a fortnight. The acute symptoms of the lymphangitis then subsided, but the local swelling continued to increase, and from thence onwards recurrent attacks of inflammation in those parts were of frequent occurrence. About a year later the left groin was affected in an exactly similar manner.

During one more than usually severe attack, a dilated lymphatic in the right inguinal region burst, and left a fistulous opening, which discharged for some time a thin, creamy, yellowish-white matter.

A remarkable fact with regard to the occurrence of lymphangitis was the periodicity with which the attacks came on. The patient affirmed that they appeared, with more or less regularity, every three months from the first onset of symptoms until his admission, six years later.

In May, 1896, he was taken into the Seamen's Hospital, Greenwich. The accompanying photograph, for which I am

indebted to Mr. Johnson Smith, well shows his condition at that time. The large pendulous scrotum, and the painful tension in the distended groin glands, caused so much discomfort that they quite unfitted him for work. An operation was therefore deemed advisable. In May Mr. Johnson Smith removed the whole of the scrotal tissues and the lymphatic glands in the right groin, and in the following month he performed a like operation on the left side.

After the first operation I was told by the patient that he passed on one occasion a large quantity of milky urine, and, as an attack of chyluria is, I believe, not uncommon after

the removal of the scrotum in these patients, this may very possibly have been the case. He was discharged from the Seamen's Hospital, the operation having relieved him to a great extent.

On September 8th, 1896, he was admitted into Charing Cross Hospital, under the charge of Dr. Abercrombie, and from that time onward was under my constant observation. He was again suffering from one of his seizures of lymphangitis.

Condition on Admission.—He was a slightly made but muscularly built man, and well nourished. The scrotum was swollen to the size of two clenched fists, the skin tightly stretched, and the rugæ obliterated; the scars of the old incisions were plainly visible. It gave a peculiarly elastic resistance to the touch, and both testicles appeared to be enlarged. The size of the scrotum was always greater when he had been on his feet for some time, and less after a prolonged stay in the recumbent position. The spermatic cords were both thickened, and the vasa deferentia hard to discover. The thickening of the cords was general, the mass gave a distinct impulse on coughing, and might easily have been mistaken for a hernial protrusion. It had none of the feeling as of a bag of worms, so characteristic of varicocele. In both inguinal regions an elongated tumour could be seen, and one or two glands were felt to be enlarged and doughy to the touch. At one point in the left groin a chylous fluid escaped from a sinus. The inner aspect of the right thigh in the upper part was swollen, tender, and brawny, with little nodular excrescences resembling the rind of a lemon.

On the radial side of the right forearm at the bend of the elbow was felt a cord-like body, about an inch in length, and of the thickness of a lead pencil, lying in the long axis of the limb. It was non-inflammatory, freely movable under the skin and evidently in the subcutaneous tissues. Dr. Manson suggested that this was, in all probability, a parent worm blocking a lymphatic. A month later this swelling disappeared, not to return. Examination of the blood showed the presence of the *filaria sanguinis hominis* in great numbers. Specimens taken systematically during all hours demonstrated their absence in the day time and their constant presence at night; 5.30 P.M. was the earliest time on any occasion in which one of these filariæ could be seen in blood taken from the finger. From that hour they gradually appeared in increasing number until 11 P.M., and then they as surely diminished until 8 A.M. next morning, when their nightly invasion apparently terminated.

Operation.—On September 18th Mr. Waterhouse operated on the scrotum with the old view of relieving the man of the encumbrance. An incision was made completely encircling the scrotum as high up in front as the peno-scrotal junction, and to the margin of the perineum behind, half an inch only of scrotal tissue being left on each side. All the diseased tissues were dissected off the testicles down to the tunica vaginalis, and the healthy flaps stitched together. Nineteen days later the parts had completely united, a scar resembling an inverted Y remaining. The testicles were now drawn tightly up in the perineum.

Soon afterwards he was allowed to get about and do light work in a chemist's shop. The freedom from the old trouble was, however, but short. The scrotum soon began to increase in size, and both it and the inguinal regions rapidly assumed their old appearance, accompanied by the same heavy, aching pain. Six weeks after the operation the scrotum was as large as it had ever been.

The results, therefore, of this and of the former operations tend to show the inadvisability of such surgical interference. The relief is only temporary, and relief which is only experienced for a few weeks cannot be looked upon as a sufficient set-off to the considerable risk entailed from possible septic trouble in so extensive a lymphatic varix.

On December 8th he again came into the hospital. He was now complaining of general *malaise*, shivering, intense frontal headache, severe aching pain in the back, and a temperature of 103° F. He was quite unable to work. The lower half of the right forearm was much swollen, tense, hot, red, and painful, with red lines running upwards along the inner side of the limb. With a few days' absolute rest in bed these symptoms subsided, and the arm assumed a more normal

aspect. At one point, however, on the posterior surface, one-third of the distance from the wrist to the elbow, a hard nodular mass remained, slightly bluish in colour, not tender, freely movable on the deep tissues, but attached to the skin. Dr. Manson thought it probable that it might be one or more adult filariæ *Bancrofti*, setting up the lymphangitis which had afterwards imprisoned the parasites in this situation. I therefore excised this lump— $1\frac{1}{4}$ inch in length and $\frac{3}{4}$ inch in breadth—and dissected it carefully in normal saline solution. The mass was made up almost wholly of lymphatic vessels, with walls much thickened, and cavities enormously distended with lymph. At one point in one of these vessels was a local bulging about the size of a large pea filled with a thicker and more opaque fluid. After some hours' search I noticed lying across my forefinger a long white thread about the thickness of a horse-hair. This I placed in a watch-glass containing saline solution, and immediately the strand began to exhibit very vigorous movements, coiling and uncoiling itself in sinuous folds. In this medium the worm lived for two hours—eight hours after being excised from the arm. It measured $3\frac{1}{2}$ inches in length.

Examined under the microscope it proved to be a female parent filaria; the two horns of the bifid uterus filled with ova and outstretched embryos. Careful examination of the blood was now made with a view to discovering whether the removal of this parent worm would have any effect in diminishing the number of embryos in the circulation. Since the embryo can be kept alive on an ordinary cover glass (if the blood be prevented from drying) for upwards of twenty-one days, the investigation had necessarily to extend well beyond that period. No diminution, however, could be noticed, and therefore we were confirmed in the opinion that there must be many more parent worms in the deeper lymphatics.

Soon after the excision of this tumour peculiar fugitive swellings made their appearance on the flexor surface of the left forearm, at the bend of the elbow, and along the inner side of the biceps in the upper arm. These were much softer than that on the right limb, and were easily dispersed by pressure and rubbing. They were noticed more particularly in the morning before the patient rose from bed, and became much smaller during the day. In the hope that these might prove of similar origin to the first, two pieces were cut out on separate occasions. They were made up largely of the same dilated lymph vessels, but no parent filariæ were found. The tumours were most likely the result of a block higher up in the vessels.

The patient was kept under constant observation. Latterly the filariæ in the blood had increased considerably in numbers. For some time he had suffered from fits of depression, in which he had expressed his determination to kill himself. On February 19th, at 8.30 A.M., he committed suicide by swallowing a large quantity of prussic acid.

THE POST-MORTEM EXAMINATION.

This was made at 2 P.M. of the same day, five hours after death. The chief organs were apparently free from any gross lesion; the stomach was empty.

The inguinal regions were carefully dissected up. On both sides the cords were surrounded and infiltrated by a large mass of distended, tortuous, irregularly-bulging lymphatics. Where the cord passed into the abdomen, these had dilated the internal abdominal ring sufficiently to admit three fingers easily. The femoral glands and the superficial inguinal glands—both oblique and vertical—were enlarged, some of them to the size of a small chestnut, and several were varicose.

Lying on the front and sides of the lumbar vertebræ was a huge mass of the same lymphatic tissue, quite a foot in length, 9 inches across and 3 inches in thickness. The varicose lymphatics were of a peculiar purplish colour, and resembled somewhat the appearance of rabbits' intestines. Some of the individual vessels were as large as the abdominal aorta, their thin transparent walls showing the slightly brownish turbid lymph or chyle inside. The kidneys were quite covered and concealed by the lymphatic varix lying in front of them. From the pelvis ascended another group, running from the sides and back of the bladder and front of the rectum, to augment those from the scrotum and form the main retroperitoneal mass. The receptaculum chyli was not distinguished.

It was noticed as a peculiar feature that the lacteals did not present any sign of over-distension. Possibly this may be explained by the comparative emptiness of the stomach and intestines.

In the thorax the dilated thoracic duct could be seen lying on the vertebræ to the left of the mid-line, meandering in a very tortuous course upwards to the junction of the left internal jugular and the left subclavian veins. Here and there in its course it was as large as a man's forefinger, at other places little bigger than the normal. The left subclavian vein was opened and an attempt made to introduce a probe into the duct. The valves at the orifice were, however, in good apposition, and prevented this.

The thoracic duct was then opened about an inch and a-half from its upper end, and a No. 3 urethral catheter was passed upwards without much difficulty. Its point could be seen protruding between the valves, but appeared to be covered with a thin, transparent membrane. The valves in the duct allowed the same catheter to pass downwards for a distance of an inch only. It is decidedly unfortunate that the terminal end of the thoracic duct was not split up; this not having been done, it is quite impossible to state the exact reason of the varicosity below.

During the course of the *post-mortem* examination one or two snicks were unavoidably made in the varix, and from these apertures the opaque chylous lymph rapidly drained away into the abdominal cavity. From a cut thus made in a lymphatic of the right groin a small bundle was seen to emerge, looking like a tiny coil of very thin catgut. This was unravelled in normal saline solution, and proved to consist of the heads and part of the bodies of three female *filariæ* Bancrofti, similar to the one excised from the arm during life.

As much of the varix as possible was next removed *en masse* with the kidneys attached. A careful dissection was made of the lymphatics in both spermatic cords. Each individual vessel was opened up, the inner wall presenting a very rugose appearance when thus flaccid. On the right side six more female parent worms were found, all, however, damaged in the dissection. They were either coiled up in a local bulging, or situated below one of the valves. On the left side seven worms were taken out, and one of these, much smaller (an inch and a half in length) and thinner than the others, was shown on microscopical examination to be a male. By this time, however, the worms had become so brittle, that in manipulating this one it unfortunately broke into four pieces, and the tail was lost. It was found impossible from the state of the parts to examine the main retroperitoneal mass so thoroughly, and no adult *filariæ* were found there. Thus seventeen parent worms in all have been found, and there can be no doubt that a still greater number have been left undiscovered in various parts of the body. The occurrence of the one in the right arm suggests the probability of their general distribution throughout the lymphatic system.

In concluding this report, I may mention that this case has thrown a very important light on the intermittent distribution of the embryo *filariæ* in the cutaneous blood. Death occurring as it did between 8 and 9 A.M., a time at which no *filariæ* nocturnæ were found in blood taken from this man's finger, happened very opportunely for the investigation of their place of retreat during the day. The result of this further examination will be given at a later date by Dr. Manson.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

SEVERE CLIMACTERIC FLUSHINGS SUCCESSFULLY TREATED BY OVARIAN EXTRACT.

As medication by various glands is still on its trial, except perhaps that of the thyroid in myxœdema, individual experiences, if recorded, will help in estimating rightly its value, and in indicating the class of cases in which treatment may

be used with benefit. It is with this object I record the following case.

Miss C., aged 52, for more than three years suffered from severe menorrhagia, and during part of that time from metrorrhagia also. The latter was relieved by the removal of a pedunculated polypus growing from the cervix. The menorrhagia, however, continued, the periods occurring about every three weeks, and lasting a fortnight or even three weeks. The bleeding was very severe, and not influenced much by drugs, though ergot (both by mouth and hypodermically), hydrastis, liquor ferri perchloridi, potassium bromide, hazeline, arsenic, and thyroid gland were tried. During the last two periods, however, calcium chloride, in 5j doses, three times a day, seemed to have a good effect, but this might have been due to the natural close of menstruation. Frequent plugging of the vagina, sometimes twice a day, was the only means of controlling the hæmorrhage, with iced injections on removal of the plugs. Hot douches were not so effectual as the cold.

When at last the periods ceased, the patient was much troubled with frequent and violent flushings, which at night in winter would wake her up, the face being in a burning heat, while the hands and body were icy cold.

For these flushings I ordered 5-grain palatinoids of ovarian gland three times a day. For the first day or two there appeared to be no effect, then the flushings rapidly became less frequent and intense, and were nearly cured by the time three dozen palatinoids were taken. The patient now tells me she is free of them, but gets a "threatening" if she omits the capsules for some days. One palatinoid occasionally keeps her free.

Bournemouth. W. HUBERT S. FOSBERY, M.A., M.D.Camb.

CASE OF CYANIDE OF POTASSIUM POISONING: RECOVERY.

B. F., aged 25, a native miner, at 4.30 P.M. on February 21st, 1897, was seen by a child to drink something from a bottle, throw the bottle away, and then fall down. The child ran to fetch his mother, who was about 20 yards away; she came immediately, and found the man lying on the ground in convulsions, and foaming at the mouth.

A short time previously he had threatened to commit suicide, but as he was very drunk his friends paid no attention to him.

I saw him not less than 15 minutes after drinking the fluid. He was lying insensible on his back on the floor (where he had been placed). His face was greyish-blue in colour, the mouth covered with foam, and the jaws tightly clenched, so much so that I broke one of his teeth in forcing open his mouth to insert the stomach tube. The eyes were intensely injected and fixed, and the pupils largely dilated, but the conjunctival reflexes were not entirely absent. The breathing was pectoral, the inspirations were jerky and sounded similar to a faint hicough. The pulse was small and rapid. The arms were slightly flexed at the elbow, the fingers tightly contracted, and the thumbs pressed firmly into the palms; the abdominal muscles were rigid. There was no escape of urine or fæces.

I examined the bottle, which contained a very small quantity of fluid, smelling strongly of potassium cyanide.

As soon as I was able to separate his teeth sufficiently, I introduced the stomach tube, and washed out his stomach with clean water, and then injected a mixture of sulphate of iron, carbonate of potash, and pure ether, which was retained for about five minutes, when he vomited, the vomit being distinctly stained blue. I then poured a stream of cold water over the back of the neck and spine, and over the region of the heart. His pulse and breathing rapidly improved, but the muscular contractions remained until 6.30 P.M., nor did he regain full consciousness until 8.15 P.M., when he spoke and answered questions quite rationally, although he denied all recollection of taking the poison, and as to where he obtained it. (I have every reason, however, to believe that he was not speaking the truth.) I then left him, giving him a mixture of sulphate of iron and carbonate of ammonium to take every hour.

At 5.30 A.M. on February 22nd he went out to look for work, when he was arrested by the police, who kept him in prison all day. I visited him during the day, when he appeared perfectly well and only complained of his teeth feeling tender.