the day, and subsequently examining its tissues, I should be able to ascertain the place of their retreat.

At an examination of the patient's blood on October 22nd, 1903, the embryo filariae seemed to be fewer in number than formerly (thirty-nine to the slide at 9 p.m.). Three days subsequently he had a severe attack of lymphangitis, but by November 18th had recovered his usual health, and the transfusion agreed upon was arranged for, Sir Victor Horsley having kindly consented to operate. Before commencing, I thought it prudent to examine the patient's blood so as to get some idea of the number of embryos present in the blood we proposed to transfuse. I was astonished to find that the worms had practically disappeared, only one or two in a slide being met with. Of course the operation was not carried out, as it would have been hopeless to expect results with so small an infection.

Subsequently, from time to time until July 16th, 1894, examinations of this patient's blood were made at night. Up till that date filarial embryos could still always be found in small numbers—from one to eight at 10 p.m. On July 16th he came to me suffering from a feverish attack apparently associated with lymphangitis. I examined the blood, and found four filariae per drop; next day I found six at 10 p.m. I did not see him again till November, when I found no filaria. I examined his blood many times subsequently, and although the glands in the groin were still varicose there were no nematodes in his blood.

The disappearance of embryos was manifestly a sequel of the attacks of lymphangitis. This is not the only case in which I have seen permanent disappearance of embryos follow an attack of lymphangitis, but I have never before or since had a chance of watching a case so closely and completely. There can be little doubt that the death of the parental filaria produces lymphangitis or vice versa; the circumstances are associated.

I therefore consider that in Dr. Primrose's case, although some diminution in the stock of embryos doubtless resulted from the removal with the scrotal tissues of one or two females, the great bulk of the infection was got rid of at the time of the subsequent lymphangitis.

In discussing the subject of filarial infection, Dr. Primrose refers to Drs. Dutton, Annett, and Elliot's opinion as regards the specific identity or the reverse of *filaria nocturna* and *filaria diurna*. These gentlemen submit that the weight of evidence is on the side of identity of these two forms, and I see their views frequently quoted. I recommend the student to be careful in committing himself to such an opinion. The precise evidence I was at one time able to collect under very favourable circumstances leads me to the opposite conclusion. Recently I had an opportunity of examining the blood of one of the cases of sleeping sickness now in Paris. The examination was made about midday, and the blood was full of embryo filariae. Of course the circumstance that filariae were present in such great abundance during the day may be explained by the sleeping habit of the patient, but I was struck with certain features of the parasite in dry films which forcibly reminded me of observations on *filaria diurna* many years ago. These features were (1) the awkward position, so to speak, assumed by the parasite, the body flexures being more in angles than curves, as is generally the case in dry specimens of *filaria nocturna*; (2) the tenuity of the extreme end of the tail; (3) the acute flexion of the tip of the tail on the body in a majority of the embryos. It is a dangerous thing to attempt to diagnose species from embryos, but there are slight differences which, taken together with the marked difference in periodicity, justify in my mind the conclusion that *nocturna* and *diurna* are specifically distinct, and that in this Paris case we were dealing with *filaria diurna*.

I notice in Drs. Stephens's and Christopher's newly-issued admirable work on *Malaria and other Blood Parasites* that they quote Dr. Christy and Professor Firket as holding that there are several species to which the name of *filaria perstans* has been applied. I do not know what Dr. Christy's evidence may be on this point, but I have had an opportunity of seeing Professor Firket's preparations, and from these it is evident how he comes to the conclusion that the name *filaria perstans* covers at least two pieces of small, non-sheathed, blunt-tailed blood worms. In any slide of blood unevenly spread and containing filarial embryos it is always possible to find marked differences in the size of the filariae. This depends on the thickness or thinness of the film of blood and the rate at which the different areas of blood film dried. Moreover, *filaria perstans* possesses in a remarkable degree the power of extension and

contraction; an embryo which died when fully extended would present very different measurements and appearances from one which died when contracted.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, 1903, II, p. 1262.

THE LIFE-SPAN OF THE GUINEA-WORM.

By ARTHUR POWELL, B.A., M.Ch.,

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A PAPER on this subject, by Sir Patrick Manson, appeared in the BRITISH MEDICAL JOURNAL of July 4th, 1903, p. 10. In Sir Patrick Manson's cases the time of possible infection extended from February to June. In the cases under consideration the period of exposure in the endemic area was only two days. I am indebted for the particulars to Messrs. M. Cursetjee and Fazalbhoy Chinoy. A party of sixteen gentlemen, with five servants, all residents of Bombay—a city with a good artificial water supply, where guinea-worm is only seen in patients from the country, chiefly from the Deccan—left Bombay, and reached Mahad on April 20th, 1902. They all stopped there for two days, drinking unfiltered the water of a well. They returned to Bombay on April 22nd, 1902.

On April 2nd or 3rd, 1903, the first worm made its appearance in the leg of one of these gentlemen. Up to the first week in July worms to the number of nine continued to be discharged from his body. Doubtless owing to injection with mercury perchloride the exit of some of these worms was delayed, as they were killed and came away piecemeal, causing a good deal of suppurative cellulitis.

The next patient was delivered of a worm on May 1st, 1903, five other patients between that date and May 20th, 1903. Seven patients in all were attacked, six of the party of sixteen and one of the five servants. Nineteen worms in all were extracted. None have come out since the first week in July up to the present date, October 3rd, 1903. The shortest period in these cases was 345 days, the longest 435. The great majority of worms appeared a year and two or three weeks after the date of infection.

The estimation of the life-span of this worm in its human host is a matter of importance in prognosis in the case of persons exposed to infection. Thus I had no hesitation in informing the ten gentlemen who have not yet been infected that they have little reason to fear the appearance of worms, a matter of considerable concern to some of them.

Inquiries were made among the inhabitants of Mahad as to the prevalence of the worm in the district. The replies indicate that about half the population suffered from guinea-worm this year.

There is frequently considerable fever a few days before the worm becomes palpable. Two of these cases suffered from fever, with swelling of the face and hands. The sensation of swelling and tension to the patient is greater than the appearance to the surgeon seems to warrant. This swelling of the face and hands seems independent of the situation of the parasite, and I have frequently observed it when the worm was in the lower extremities.

The origin of this fever may be suspected from the absence of malarial parasites and an increase in the proportion of the eosinophile corpuscles in the blood. In a paper¹ recently read before the Bombay Medical and Physical Society I described six cases of guinea-worm infection in which examination of the blood showed 4.75, 5.5, 7.5, 7.5, 8, and 12.25 per cent. of eosinophile corpuscles respectively. The pus from one sinus contained 19 per cent. eosinophiles.

REFERENCE.

¹ Examination of the Blood in 3,400 Cases of Fever, *Transactions of the Bombay Medical and Physical Society*, September, 1903.

BEQUESTS AND DONATIONS.—The Duke of Northumberland has given £1,000 for the building fund of the proposed new infirmary at Alnwick, and has offered the choice of two sites in the neighbourhood of the town.—Under the will of the late Mrs. Eliza Darling, of Phillimore Gardens, Kensington, £1,500 has been bequeathed to the Broadstairs Convalescent Home of the Victoria Hospital for Children at Chelsea; £2,000 to the Victoria Home for Invalid Children at Margate; £1,000 to the National Society for the Employment of Epileptics; and £500 each to the London Fever Hospital, the Brompton Hospital for Diseases of the Chest, King's College Hospital, and St. Thomas's Hospital.