PRELIMINARY NOTE UPON A LEUCOCYTOZOAN OF THE DOG.

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THE increasing interest displayed in comparative parasitology since the recent advances in the study of tropical disease induces me to record the discovery of what I have reason to think is a new and hitherto undescribed parasite of the leucocytes of the dog.

During February, 1904, I had occasion to examine the blood of a number of dogs from the Tezpur District of Assam. While thus engaged I came across the parasite to which this note refers.

The dogs harbouring the parasite were of English breed, born in Assam. One was a year and the others two and three years old respectively. They did not present any marked symptoms beyond a slight anaemia and some little febrile disturbance. Their temperature appeared to vary between 98° and 101° F. Examination of the blood showed the presence of nucleated red blood cells in small numbers.

Fig. 1.—Blood film showing parasites (P) lying in protoplasm of large mononuclear and polymorphonuclear leucocytes; N, nucleated red blood cell.

On examining dried blood films from these dogs stained by Leishman's modifications of Romanowski's stain, many of the polymorphonuclear and transitional leucocytes were seen to be harbouring one or more oval nucleated bodies. These bodies presented a clear outline and a more refractile contents than the protoplasm of the leucocytes in which they lay. They almost gave the impression of being contained in a capsule in the interior of which could be distinguished a more or less vague nucleated mass. In some cases this mass appeared to suggest a vermicule-like body coiled upon itself. Careful examination failed to show anything like signs of degeneration in these bodies, and appeared to negative the idea that they might be undergoing endoleucocytic digestion. This, together with marked changes in contour and position of the nucleus, exhibited by many of the leucocytes harbouring them, seemed to indicate the probability of the bodies being parasitic in nature.

Once or twice free parasites were noticed, but it is possible that they may have been derived from leucocytes destroyed during the spreading of the blood film. Many of the apparently unaffected leucocytes showed a small circular deeply-stained mass lying near the nucleus, to which it appeared to be attached by a faintly-staining tail-like process. This body, the nature of which is not apparent, may perhaps prove to be some earlier stage of the parasitic invasion.

The examination of fresh films exhibited the parasite as a rod-like refractile body lying in the protoplasm of the leucocyte, sometimes upon and at other times to one side of the nucleus.

On a later occasion—in May, 1904—fresh films were again examined by Captain S. P. James, I.M.S. (to whom I had demonstrated the parasite), and myself, and a vermicule which the former had managed to free from its enclosing capsule was watched for some time while it exhibited a side-to-side movement of one extremity, upon which appeared a markedly-refractile spot.

The body stains well by methylene blue, thionin blue, and haematoxylin, and preparations may be improved by counter-staining with eosin. Leishman's stain, however, gives the best results. Measurements in dried films show the parasite to be from 8 to 10 microns long by 4 or 5 broad, with a nucleus of from 2 to 3 microns in diameter. The nucleus is sometimes central and at other times placed near one extremity.

It is difficult at present to suggest the class to which this probable parasite belongs. Up to the present I have been unable to trace any description of a similar parasite being found in the leucocytes of warm-blooded animals. A high authority upon the protozoa to whom I showed my specimens has suggested to me the possibility, judging from its morphological affinities, of this parasite proving to belong to the haemogregarines. Should this idea prove to be correct, it

Fig. 2.—Drawing showing parasite lying in protoplasm of polymorphonuclear leucocyte (greatly enlarged); P, parasite; N, nucleus of parasite; L, nucleus of polymorphonuclear leucocyte, partly covered by parasite.

follows that the discovery will bear a double significance, being the first haemogregarine reported as occurring in the blood of mammalian host, and the first haemogregarine to be found as a parasite of the leucocytes, in contradistinction to those already known to occur as parasites of the erythrocytes of cold-blooded animals.

ACUTE POISONING BY A SINGLE CASTOR-OIL SEED.

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THOUGH the castor-oil seed is known to contain a poisonous albuminoid substance located in the embryo, I am sure that many do not realize the virulence which it possesses. I think, therefore, the following case, in which most acute and dangerous symptoms arose after the ingestion of a single seed, may be instructive.

History.—On March 13th, 1905, a farm labourer, in robust health, aged 28, who was on a visit to Liverpool, was watching some bags of castor-oil seeds being loaded on one of the Atlantic liners; one of the bags burst, and he picked up a seed and ate it. He noticed that it "burnt his mouth and throat a little, and made his eyes water," and then almost immediately he felt weak and collapsed, his knees giving way, and he staggered to a policeman at the dock entrance, who gave him an emetic of salt and water, which had effect. He complained of "feeling choked, and as if he could not breathe," and he was unable to stand. The policeman therefore rang up the horse ambulance, and he was brought with

all speed to the Stanley Hospital. He arrived there within one hour of taking the seed, and as I happened to be in the hospital I saw him at once.

State on Admission, 4 p.m.—The man was then in a condition of great collapse; his face was swollen and blue, his pupils a little dilated, the surface of his body cold, and his hands and feet cold and cyanosed. His respirations were very shallow, and his temperature could not be registered in the axilla or mouth. His pulse was imperceptible at the wrist; there was no cardiac impulse, and the heart sounds were very feeble and distant. He would reply sensibly when roused, but otherwise remained in a semi-conscious condition.

Treatment.—His stomach having been washed out with a warm saline solution, he was then given a dose containing a drachm each of the spirits of ether, chloroform, and aromatic ammonia (previously, while in the ambulance, the house-surgeon had injected $\frac{1}{10}$ gr. of strychnine). He was put to bed in hot blankets, hot bottles applied, 1 oz. of brandy given every two hours, and a hypodermic solution of $\frac{1}{100}$ gr. of strychnine and $\frac{1}{100}$ gr. of atropine was injected at 5 p.m., 8 p.m., and 11 p.m.

This stimulating treatment had a marked effect, his temperature steadily rose (see chart), reaching 97° F. at 5 p.m. and 6 p.m., and his pulse (which could be counted at 6 p.m., when it was 100) steadily improved in strength and volume, and the blueness and coldness of his face and extremities gradually disappeared. He slept 7½ hours during the night. The following day—March 14th—the volume and tension of his pulse was good, and his temperature, which had risen to between 99° and 100° F. during the night, was normal. His eyelids were a little puffy, and his tongue and lips rather swollen, the former being coated. As the bowels had not acted since admission, he was ordered a mixture containing gr. x of magnesium carbonate and gr. xxx of magnesium sulphate thrice daily, which acted the following day, the motions being well formed and of normal colour. He continued to improve, and left the hospital perfectly well in every respect on March 18th.

Remarks.—This case demonstrates the potency of the poison, as one bean only had been eaten. It is also interesting to note the rapid onset of the symptoms, and the entire absence of vomiting and purging which are usually present in persons poisoned by these seeds.

BEQUESTS TO MEDICAL CHARITIES.—Under the will of the late Rev. Edmund Lord, of Beaumont Street, Portland Place, and New Steine, Brighton, who died on March 4th, the London Hospital and the Sussex County Hospital each receive a sum of £100.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

CEREBRO-SPINAL MENINGITIS.

THE following are brief notes of the early stages in the case of cerebro-spinal meningitis, due to the diplococcus intracellularis, which came under my observation recently in Richmond.

The patient, W. H. A., is a coachman, aged 35, married, and with three young children. He lives over stables. As there had been two severe cases of septic tonsillitis in his family during the last year, the drainage of the house and stables had recently been thoroughly tested and made efficient. I have known the patient for some years as a healthy, temperate man.

I was called to see him on the evening of March 20th. He complained of feeling very ill and of severe headache. He stated that he had been quite well until four days previously, when he had felt very cold, shivered, had severe headache, vomited repeatedly, and had kept nothing down; was obliged to give up work on account of the severe pain in his head. His temperature on the evening of March 20th was 103°, pulse 110, tongue deeply furred, with anorexia and constipation. The pain in the head, which was undoubtedly most severe, was referred to the vertex—the base of the occiput and both sides of the neck immediately beneath the ears. There was no swelling or tenderness. He also complained of pain in the lumbar region. He ceased to vomit upon being put to bed. There was nothing wrong with his nose, throat, eyes, or ears. No discharge and no tenderness in connexion with them. His teeth, however, are very defective. All other organs normal. Urine scanty, but free from albumen.

During the ten days that I had him under observation his condition became steadily worse. The pains in the head were paroxysmal—chiefly at night, and at the onset of each severe period of pain the temperature rose from normal to 103.4°. The pain was unrelieved by ordinary drugs. Morphine alone gave him ease. The stiffness of the neck—a marked feature in the case—increased. He was perfectly rational during the day, but his wife stated that at night he was rambling. The blood gave no Widal reaction. There was never at any time any eruption, nor were there any spots, haemorrhagic or otherwise, upon his skin.

It became clear that the case was either one of cerebral abscess or meningitis. There were no localizing symptoms, and as the case seemed to present unusual features, and to be one of possibly an infective type, I took him up to King's College Hospital where he was admitted and where the diplococcus intracellularis was found to exist in the meningeal fluid.

Richmond.

J. R. JOHNSON.

* The later history of this case was published in an annotation in our issue for April 22nd, at p. 899.

THE following is a report of three cases which occurred in my practice in the country near Banbridge, co. Down, twelve months ago, and which I regarded at the time as cerebro-spinal meningitis:

1. The first patient was a girl, aged 9 years. She had been ill for five days with headache and pains in the back, but she had not been in bed before I saw her. She cried frequently, was dull and listless, slow to answer questions, and had marked photophobia. Temperature 102°, pulse 100. Examination of the chest and abdomen revealed nothing abnormal except a slight petechial rash over the skin; the spots were small, distinctly haemorrhagic, and unlike any of the ordinary exanthemata. The tongue was slightly coated, the throat inflamed; no diarrhoea existed. She was placed in bed in a darkened room, with ice applied to her head. Four hours later I got a telegram saying she was dying, which proved to be true. She had had a series of very severe convulsions, her temperature ran up to 106.4°, and she died half an hour after I arrived. I was painfully surprised at this abrupt termination, but I did not suspect then that the case was anything but a meningitis of one of the usual types.

2. Nine days later in the same house I saw a boy, aged 14, a brother of the first patient. He had been ill for two days, and his symptoms were almost identical with those of his sister when I first saw her. Continuous pain, mental torpor, photophobia, and petechial rash were all present. He also