DESCRIPTION OF PLATES.

PLATE 10.

Smear preparation of salivary glands of *Glossina palpalis*, Experiment 866, stained Giemsa, showing irregularly shaped trypanosomes, with unstained protoplasm, reddish-coloured nuclei, and deeply stained chromatin granules. Note the chromatin granules scattered singly about the field, each surrounded by a pale area, fig. 1. × 2000.

Normal *Trypanosoma gambiense* from monkey, Experiment 568, on which the flies were fed at the beginning of the experiment, figs. 2, 3, 4, and 5. × 2000.

Trypanosomes from the mid-gut of infected fly, Experiment 866, figs. 6—16. × 2000.

PLATE 11.

Rosette form from the mid-gut, fig. 1. × 2000.

Trypanosoma gambiense from the blood of monkey, Experiment 868, into which a tiny drop of the contents of the mid-gut of Fly 866 had been injected, figs. 2—5. × 2000.

Trypanosomes from the fore-gut of Fly 866, stained Giemsa, figs. 6—13. × 2000.

A Note on the Occurrence of a Trypanosome in the African Elephant.

By Colonel Sir DAVID BRUCE, C.B., F.R.S., Army Medical Service; Captains A. E. HAMERTON, D.S.O., and H. R. BATEMAN, Royal Army Medical Corps; and Captain F. P. MACKIE, Indian Medical Service. (Sleeping Sickness Commission of the Royal Society, 1908.)

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[PLATE 12.]

As trypanosomes have never been reported as having been observed in the blood of the African Elephant, the Commission thought it would be of interest to note this observation.

In Laveran and Mesnil's book on trypanosomes, translated by Nabarro, on p. 261 it is stated that "the occurrence of Surra (*Trypanosoma evansi*) in elephants in India and Burmah is practically proved. In this connection we have only the statement of G. H. Evans that, in 1893, 14 out of 32 elephants died of the disease in Burmah." The year 1893 is almost prehistoric for trypanosomes. At that time observers had even failed to distinguish between the common rat trypanosome—*Trypanosoma lewisi*—and that of Surra. It may well be, then, that Evans was mistaken in his diagnosis of the species causing this large mortality in elephants.

The African elephant, in whose blood this trypanosome was found, was

shot by Mr. L. C. Lea-Wilson, of the Uganda Company, Limited, at a spot two miles from the eastern shore of Lake Albert, near Ngogole, about 31° 10′ E. lat. and 1° 30′ N. long. It is to be regretted that none of the blood was injected into a dog, donkey, or ox, in order that a fuller study of this trypanosome might have been made. As it is, all the material available are a couple of smears made by Mr. Lea-Wilson and sent to the Commission.

Morphology of the Trypanosome of the Elephant.

Method of Fixing and Staining.—The two slides received from Mr. Lea-Wilson were fixed in osmic acid vapour and alcohol, stained in Giemsa, and decolorised in orange tannin.*

Length.—For method of measurement see the same paper, p. 16. As will be seen from the coloured plate, which was drawn by Sergeant Gibbons, R.A.M.C., this trypanosome is of medium size. The average length of 18 individuals is 18·5 microns: maximum 21, minimum 15.

Breadth.—On an average the breadth at the thickest part is 3 microns.

Shape.—This trypanosome is of the *Trypanosoma brucei* type, inasmuch as it has a well-developed undulatory membrane and free flagellum. As will be seen from the drawing (Plate 12), one noteworthy feature it has is the uniformity in size and shape of the different individuals. The posterior end is blunt, or conical, reminding one somewhat of the head of a seal, with the bulging micronucleus for an eye. The body thickens as far as the middle, when it gradually tapers away to the anterior end.

Contents of Cell.—The protoplasm is clear and particularly free from granules.

Nucleus.—The nucleus is compact and sharply defined from the neighbouring protoplasm. In shape it is round, or oval, and often lies nearer the anterior extremity than the posterior. Its length averages 2 microns.

Micronucleus.—The micronucleus is small, round and distinct. It is situated close to the posterior extremity, and often appears to bulge above the surface.

Undulating Membrane.—The undulating membrane is well developed and thrown into well-marked folds.

Flagellum.—The flagellum stains deeply. It runs from the micronucleus along the edge of the undulating membrane, beyond which it projects as a free flagellum for some 5 or 6 microns.

* *Vide* 'Roy. Soc. Proc.,' Series B, vol. 81, p. 16.

Conclusions.

In our present state of knowledge it seems impossible to name trypanosomes from their form alone. We were, however, much surprised, a short time ago, by Sir John McFadyean separating with ease *Trypanosoma brucei* from *Trypanosoma evansi*. If this can be done for such closely related species, surely it should be possible to do it for all. To assist to this end it would be well if observers would adopt one method of fixing, staining, and measuring. In the 'Third Report of the Wellcome Research Laboratories,' Khartoum, facing p. 30, there is a coloured plate of trypanosomes, stated to have a magnification of 1000. On measuring one of them it is found to have a magnification of between 2000 and 3000. Then, again, many of the trypanosomes depicted are dividing forms, which is misleading.

The method of measuring must also make a difference. For example, in Laveran and Mesnil's book the length of *Trypanosoma brucei* in the rat is given as 26 to 27 microns, whereas by our method of measuring the average length of 20 individuals is 22·8 microns: maximum 25, minimum 20.

The trypanosome of the elephant has an average length of 18·5 microns: maximum 21, minimum 15, a well-developed undulatory membrane and free flagellum. The trypanosomes with free flagella are *Trypanosoma brucei, cazalboui, evansi, gambiense, pecaudi,* and *soudanense*. It probably is neither *Trypanosoma cazalboui* nor *pecaudi,* on account of its well-developed undulating membrane and uniform size. Under the circumstances it is impossible to decide as to its identity with *Trypanosoma brucei, gambiense,* or *soudanense,* but if a guess were hazarded then it would be *Trypanosoma soudanense.*

Until the nature of this species is better known we propose to name it *Trypanosoma elephantis.*

Sergt Gibbons, R.A.M.C., del.

West, Newman chr.