

waterbuck. *T. brucei vel rhodesiense* was found in only one animal out of the sixteen, *T. simiæ* in none, and *T. capræ* in three.

CONCLUSIONS.

1. The trypanosomes found in the wild *G. morsitans* and wild game of the Upper Shiré "fly-area" are identical with those found 100 miles farther north in the Proclaimed Area.

2. The trypanosome causing disease in man in Nyasaland—*T. brucei vel rhodesiense*—is frequently met with, so that it is probable cases of this form of sleeping sickness will be found among the natives of this district.

The Food of Glossina morsitans.

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Five hundred flies, freshly caught in the Proclaimed Area, were killed by chloroform and the gut of each was roughly dissected out, smeared on a slide, fixed by osmic vapour and alcohol, and subsequently stained by Giemsa. The flies were all caught in the bush, away from the paths, the fly-boys proceeding in single file and catching the flies with gauze nets as they circled round, or settled on the boys or the grass.

The proportion of male flies to females caught was roughly two to one. But only 30 females were used in the present experiment, the majority being sent to the breeding-station at Chunzi.

Of the 500 flies examined, 288, or 57·6 per cent., were found to contain mammalian blood in a recognisable state. No measurements were made of corpuscles, which in most cases were much altered by the digestive processes, but the small type of cell appeared to predominate, such as occurs in the hartebeeste, waterbuck, and other antelope.

In only three cases were nucleated red corpuscles found, and in two of these there was only a small proportion of nucleated blood mixed with a large amount of mammalian. In the third case the blood was all nucleated. Thus, of those flies which contained recognisable blood, only 1·0 per cent.

contained nucleated blood. From measurements, it seems highly probable that in all three cases the blood was avian, not reptilian. The average length of corpuscles and nuclei of blood from several different reptiles was measured and found to be—corpuscles 15 microns, nucleus 5·9 microns; while the blood of several different birds gave as the average—corpuscles 11·8 microns, nucleus 4·6 microns. In the three cases under consideration the average of the corpuscles was 10·5, 10·0, and 10·0 microns respectively, and that of the nuclei 4·7, 4·8, and 4·4 microns. Probably the size of the nucleus is the better guide than that of the whole corpuscle, as being less altered by digestion.

In no case was vegetable matter noted in the intestinal contents.

Trypanosomes were found in 14 flies—2·8 per cent.—but many of the smears were so thick and so much obscured by the fat-body and other structures of the fly, that probably trypanosomes were present in other cases.

Of the 30 female flies examined, 13, or 43·3 per cent., contained mammalian blood, and there was nothing to suggest that they differed in their feeding habits from the males.

From experiments with flies in the laboratory, it was found that blood is recognisable in stained specimens for two to three days after a feed, but not beyond the third day. Hence it may be inferred that, roughly, half the flies examined had fed within, at most, three days of their capture, and that therefore the flies feed naturally at least once every six days.

Conclusions.

1. The food of *Glossina morsitans* consists mainly of mammalian blood (99 per cent.), chiefly from species of antelope, and what appeared to be avian blood (1 per cent.).
 2. There is no difference in the feeding habits of males and females.
 3. Probably the flies feed once in five or six days.
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