THE EPIGAMIC BEHAVIOUR OF THE TERMITE *MICROTERMES SUDANENSIS* SJST. OBSERVED AT KAGELU, YEI, EQUATORIAL PROV., ANGLO-EGYPTIAN SUDAN. ECONOMIC IMPORTANCE OF TERMITES TO THE NATIVE AZANDE.

By Dr. J. G. Myers, D.Sc.

[The following interesting notes were sent by my friend Dr. Myers, together with tubes of specimens bearing the locality and the number 6401. All were kindly named by Mr. F. G. M. Westropp in the Brit. Mus. (Nat. Hist.), where they were compared with a co-type of *Microtermes sudanensis*.—E. B. Poulton.]

Kagelu, Yei, Equatorial Province, Sudan.
25 *June*, 1937.

I send under separate cover some termites illustrating the habit of biting the female during courtship. I never saw anything like it in Invertebrates before. It is mentioned in a recent note in our *Proceedings*. It is real " cave man " stuff.

The following is transcribed from my journal :—

" Kagelu : 30 March, 1937.—Winged termites at light between 7 and 8 p.m. At least half chasing each other or holding on, with mandibles, to the tip or side—mostly tip—of the females' abdomens, like bulldogs : several males often on one female, each interlocked group being preserved in a separate tube. Some of the males are still maintaining their hold in the alcohol after being killed with cyanide. Even when completely suspended and entangled in spiders' webs males were still fighting for a place at a female's side or still hanging on. Sometimes the males were winged and the females de-alated, or *vice versa*. In one instance two males were pursuing one female, trying hard to get a grip, but she always fought violently, even turning complete somersaults. When I disturbed them by removing the female, they turned on each other and attacked furiously, each trying to take hold on or near the *mandibles* of the other, thus proving that each was not mistaking the other for a female. Their mandibles clashed like stags' horns, and one could almost fancy that the sound was audible. I have made no microscopic examination, but assumed the sexes from the behaviour. All can be checked, as fighting and mating sets are all kept separate. There is also included a tubeful collected at random for identification."

[The sets of termites received from Dr. Myers were in five tubes and have been sexed by Dr. B. M. Hobby. Each tube contained 1 ♀, the numbers of males being, 1, 2, 2, 3, 3, respectively. The random collection contained 7 ♂♂, 5 ♀♀, one male being mutilated so that its sex was difficult to determine. No tube contained only males.

In these very interesting records Dr. Myers confirms and extends the observations recorded by Prof. G. D. Hale Carpenter in 1936, *Proc. R. ent. Soc. Lond.* (A) **11** : 93–94 : viz. those of Burtt on an unnamed termite in Tanganyika Territory; Kofoid; and Fuller on four S. African species. All the observations, including those of Dr. Myers, appear to concern the methods of courtship alone, and not to include copulation which may perhaps take place underground. —E. B. P.]

Incidentally termites of many kinds are immensely important in the economy of the Azande, among whom I have just been working. One of the

greatest problems the administration faces with the Azande is diet-deficiency, especially in animal proteins. For sleeping-sickness control they have *all* been concentrated on the roads; so that hunting covers a much smaller area, and tsetse debars them keeping livestock while the Government prevents them from eating each other. In these circumstances termites form their chief animal food and they know far more about the swarming habits, which seem to be very specific, than any entomologist. They collect them in incredible quantities. I have tasted them roasted with a little salt, and they are excellent —much better than shrimps—entirely free from the cockroachy odour and taste I somehow expected. In addition to eating the termites themselves they press out an excellent, odourless yellow oil, which at least in some considerable sections is the chief cooking fat throughout the year, used far more extensively than sesame. I am getting some of it analysed officially. Who knows what potent vitamins it may contain!

In addition to the use of termites as food, the natives consult them as oracles. They take two small sticks of two different kinds of wood and thrust them, with the appropriate spells, into an opened gallery of a large termitarium, but only one built by certain species. According as one or other stick is gnawed (or both) in the morning the answer to the question put is negative or affirmative, or qualified. This is described in minute detail by Evans-Pritchard in his absorbing and magnificent work, *Witchcraft, Oracles and Magic Among the Azande* (Oxford, 1937).

I have collected about 15 species, with Azande names and lore, and sent them for identification direct to Dr. Snyder, of Washington.

I have some other very interesting pinned insects, including a huge Drilid I am now in the middle of studying, which tackles large snails, 3 inches long and more, with no subtilty but a direct attack.