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ON THE ABSENCE OF A VESICANT IN THE ETHER EXTRACT OBTAIN- ABLE FROM MOSQUITOS

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The bites of mosquitos are well known to cause a more or less troublesome degree of irritation of the skin, which commences at the end of a few hours, and lasts from one to three days or more. The skin in the immediate neighbourhood of the bite becomes reddened, itchy and slightly swollen. If rubbed a wheal is generally readily produced. The degree of irritation varies with different individuals. Those who have lived long in mosquito-infested districts not unfrequently describe themselves as having become quite or nearly immune to mosquito bites.

The cause of this irritative effect of the bite of the mosquito is presumably to be found in the fluid injected by it into the skin when sucking blood.* The nature of the effective constituent of this fluid has not yet been determined and, owing to the small size of the mosquito, investigation is attended with difficulty.

The experiments which form the subject of this paper were made with a view of ascertaining if any substance possessing irritating properties when applied externally to human skin was present in the extract obtainable from mosquitos with the aid of ether. It is well known that in the Spanish Fly (*Lytta vesicatoria*) a strong vesicant, cantharidin, is present in amount, equal, it may be, to as much as 2 per cent. of the dried insect. Although the present investigation failed to reveal the existence of any irritant in mosquitos, similar to that present in *Lytta vesicatoria*, it

* F. Schaudinn (Generations und Wirtswechsel bei Trypanosoma und Spirochaete. Arb. aus dem Kais. Gesundheitsamte, 1904. Bd. 20, S. 419), finds that the contents of the oesophagus of the mosquito are effective in causing irritation of the skin probably by the agency of the fungi they contain. The salivary glands are not irritant.

may be of interest to any who contemplate working on similar lines to give the method employed.

The procedure followed was similar to that adopted in the extract of cantharidin from Spanish Fly. About 500 mosquitos, consisting of various species of Culicines and Anophelines (chiefly the former) were collected in Nyasaland (Upper Shire River). The weight of these, after drying at 110°C ., was 0.478 gr. The dried mass thus obtained was ground in an agate mortar, and mixed with one-third of its weight of magnesia. Water was then added, and the mixture evaporated to dryness in a porcelain capsule on a water bath. Dilute sulphuric acid was then added until an alkaline reaction was no longer obtainable, after which the water present was again driven off on a water bath. The dried mass thus obtained was next extracted with ether in a Soxhlet apparatus. From the extract thus obtained ether was removed by distillation, and the residue kept at 100°C . until all water was driven off. The residue was then again dissolved in a small amount of ether, and applied drop by drop to an area of human skin (flexor surface of the wrist) about 15 mm. in diameter. A small amount of solid material, not taken up by ether, was further extracted with chloroform, which was then allowed to evaporate on the same area of skin.

No irritant effect was, however, produced, the skin remaining free from redness or itching. The area to which the ether extract had been applied was kept undisturbed for fourteen hours without any change manifesting itself.

It would appear, therefore, that the irritant action of mosquito bites cannot be attributed to the existence in these insects of any substance possessing a vesicant action.