

ON A NEW PLEROCERCOID FROM A SAND-FLY

THE accidental discovery of plerocercoids in the fatty tissue of a sand-fly*† during routine examination of insect smears for bacteria is so interesting and unusual as to be worth recording. The first bunch of plerocercoids observed by us was in a slide stained according to a method perfected by Dr. S. Mahdihassan for the demonstration of bacteria in insect tumours. Since the very minute size of the spargana precluded any study in the living condition, the same procedure was adopted to locate these forms in other smears also prior to re-staining with Heidenhain's iron alum hæmatoxylin.

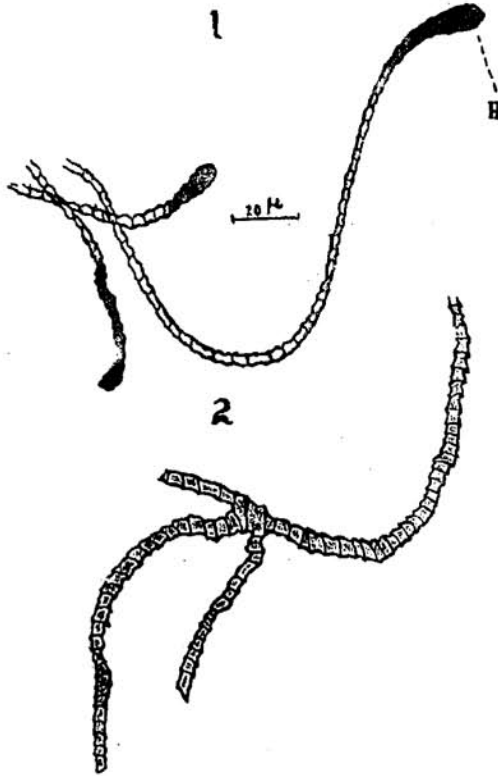
The insects are dissected under the binocular microscope and the fatty tissue of the abdomen, freed of the chitinous plates, is smeared on a well cleaned slide. While still wet, the slide is flooded with Bouin's fluid. After treatment for forty minutes with the fixative, the slide is washed successively with 50 and 70 per cent. alcohols and later rinsed well with tap water. It is then treated with a phosphate buffer of pH 7 for a few minutes and stained with a Giemsa solution prepared by adding 1 c.c. of the stock stain to every 25 c.c. of the buffer. The slide flooded with the stain is kept on a staining rack for an hour and after washing it well with tap water is treated for a few minutes with the buffer and then dried.

The dried stained smear presents a beautiful polychrome effect. The nuclei and the bacteria are of varying shades of pink, the ground cytoplasm blue and the cytoplasmic inclusions of mixed hues. The plerocercoids are lightly tinted pink. Those smears showing the spargana were later stained with iron hæmatoxylin and mounted under a coverslip.

Two different stages of development were observed in the preparations. The first which appears to be an earlier stage occurs as a skein of threads. They are so thin that when lying close together in a row, ten of them

occupy less than 1.5μ in width. No segmentation or a differentiated scolex could be observed in these tangled masses. However, they appear to branch, the branches and the main stems getting lost in the meshes of the skein.

The second stage shows distinct segmentation and we have a preparation of a clump of these plerocercoids in a mass of tissue showing not only branching but also a few scolices. The club-shaped scolex measures 10 to 20μ



in length and this with the neck region following immediately appear deep blue, while the other regions are stained in varying shades of blue. The maximum width of the scolex (Fig. 1 H) varies from 4 to 7μ while that of the neck varies from 1 to 2μ . No bothridial grooves were observed in any of the specimens examined. In Fig. 2 is shown the mode of branching. The main stem as well as the buds show segmentation, but the segments themselves are of variable size, ranging from 3 to 5μ in length and 3 to 6μ in width. In Giemsa stained slides the central core of parenchyma is stained more deeply than that of the cortical region.

The presence of distinct segmentation raises the question whether the specimens described above could be considered larval stages at all? The absence of any indication of developing reproductive organs and the occurrence of the specimen itself in the fatty tissue of a sand-fly leads us to believe that it is only a peculiar larval stage of some Diphylobothrid. Presence of segmentation in larvæ does not appear to be very peculiar for, Meggit¹ mentions that larvæ of *Schistocephalus* and *Urocystidium* show segmentation.

This is perhaps, the first record of a *Sparaganum* from insects. The previous records are

all from fishes and other higher vertebrates and the only form showing branching is *Sparaganum proliferum* (Ijima, 1905) reported from the subcutaneous cysts of man (Ijima,² Yoshida³). The form described by us though apparently resembling *S. proliferum* differs from it (1) in its occurrence in the fatty tissue of a sand-fly and (2) by its possession of distinct segmentation. Precedent would probably justify the creation of a new genus to receive the above form, but we refrain from doing so because helminthological literature is already cluttered up with ill-defined species, which make identification a matter of considerable difficulty.

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† This sand-fly commonly occurs in marshy places in Hyderabad and belongs to the family Psychodidae. A permanent mount of a bunch of these plerocercoids together with a few specimens of the sand-fly will shortly be deposited in the Indian Museum.