

NOTE ON A PETALONEMA FROM NORTH INDIA

AN interesting blue-green alga closely resembling *Petalonema alatum* Berkley was collected in 1940 from near the Chakrata-Dehra Dun Road, at an altitude of 4,000-5,000 feet. This beautiful alga was found growing on small irrorated rocks. The alga occurred in the form of small expanded cushions of about $\frac{1}{2}$ - $\frac{3}{4}$ of an inch thick and heavily impregnated with calcium carbonate. Inside the cushion, which in vertical sections shows zonations of growth (probably seasonal) the filaments are arranged more or less radially upwards. They vary in thickness, generally 40-90 μ broad, broader at the top and narrower towards the base. The cells are broader than long (8 μ long and 4 μ broad) in the younger parts and very much longer than broad in the older parts (10 μ long and 2 μ broad). Heterocysts are variable in form. False branches are generally single, but occasionally double. The branches bend upward and run parallel

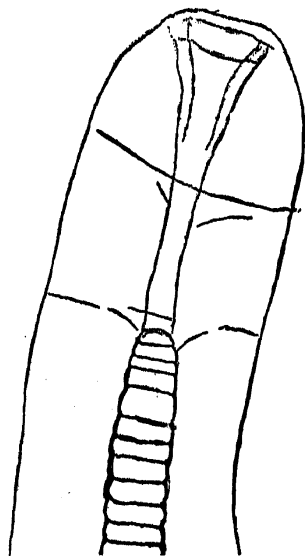


FIG. 1



FIG. 2

to the parent filament. The tip of the branch unlike in the type species is trumpet-shaped. Cells are constricted at the joints.

The trumpet-shaped tip of the filament (Figs. 1 and 2), the calcareous impregnation of the thallus and the radial arrangement of the filaments are among the chief features that distinguish the alga from the type species *P. alatum*. These points and the occurrence of the alga so far away from the type shows that it is probably a new variety of *P. alatum* for which the name *P. alatum* Berk. var. *indicum* var. nov. is suggested. As far as the writer is aware, the occurrence of either the type species or of this variety has not been reported from India previously. A fuller account of this alga is under preparation.

DIAGNOSIS

Petalonema alatum Berk. var. *indicum* var. nov.

Thallus, expanded cushions $\frac{1}{2}$ - $\frac{3}{4}$ inch thick, impregnated with lime and showing zonations of growth (probably seasonal). Filaments arranged more or less radially upwards, varying in thickness (40-90 μ broad) broader at the top and narrower at the base, cells broader than long (8 μ \times 4 μ) near the tip of the branch and gradually decreasing in breadth and increasing in length (10 μ \times 2 μ) lower down, constricted at the joints. Branching false, single or double; branches running parallel to parent filament; branch tip trumpet-shaped; heterocysts present and variable in form.

Habitat: On irrorated rocks (calcareous).

Locality: Near Chakrata-Dehra Dun Road.

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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.

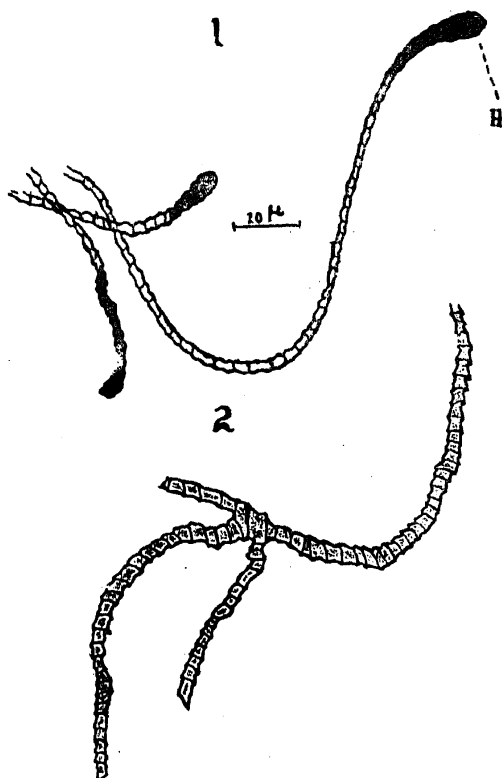
The insects are dissected under the binocular microscope and the fatty tissue of the abdomen, freed of the chitinous plates, is smeared on a well cleaned slide. While still wet, the slide is flooded with Bouin's fluid. After treatment for forty minutes with the fixative, the slide is washed successively 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 Diphyllbothrid. 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.

Hyderabad (Dn.),
October 5, 1944.

M. K. SUBRAMANIAM.
MOHAN BABU NAIDU.

1. Meggit, F. J., *The Cestodes of Mammals*, London, 1924. 2. Ijima I., *J. Coll. Sci., Imp. Univ., Tokyo*, 1905, 20, 1-7. 3. Yoshida, S., *Parasitol.*, 1914, 7, 219-225.

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† This sand-fly commonly occurs in marshy places in Hyderabad and belongs to the family Psychodidæ. 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.

SOME OBSERVATIONS ON *MYCOBACTERIUM LEPRAE*

Is the degree of granularity of *Mycobacterium lepræ* constant in the various nodules? Does it rise and wane? Does it attain a peak in the oldest nodules? These are questions for which we have as yet no definite answer. In the light of Hoffmann¹ and Manalang's² suggestion that under treatment the rod-like bacilli become granular the above questions assume an added significance. Hansen's³ original description itself contains records of rods and granules and many who claim to have cultured these bacilli (Lowenstein,⁴ Salle,⁵ Ota and Sato⁶) describe rods, "seed rows" or "string of pearls" and granules. Hoffmann considers that Hansen's bacillus produces "in its evolutionary cycle great numbers of granular forms which are found both within the bacilli and as free lying bodies". In the case of the tubercle bacillus Kahn and Nonidez⁷ conclude that granule formation "is a type of segmentation rather than direct fission in which the rate of segmentation surpasses the ability of the elements to elongate". Marchoux⁸ states that like Hansen's bacillus "the Stefansky bacillus may break up into granules". If the suggestion that the formation of granules is an essential phase in the life-cycle is accepted, then, how are we to distinguish these from