

THE PHYLLACTIDIUM PULCHELLUM.

BY E. D. HARROP, F.R.M.S.

Phyllactidium Pulchellum ... Kutzing. Gray.
 Coleochæte Scutata Brébison. Hassall.

It may be well to place on record the fact that this beautiful microscopic plant has been noticed in Tasmania; and as so little is known of it even amongst microscopists, I will, at the same time, with the permission of the Fellows of the Society, describe it, and give a few lines on its history.

The first occasion on which it was observed here was last year by Mr. Sale, of Launceston, by whom it was found adhering to the glass sides of his aquarium, and since then I have discovered it in its natural habitat, namely, the leaves and stems of water plants. I send prepared specimens for examination by the Fellows.

Although this plant was discovered in England in 1844 by Mr. Ralfs, who published a paper describing it in the "Annals of Natural History" in 1845; yet so seldom had it been noticed by Algologists, that Dr. Gray, F.R.S., described it in "Seeman's Journal of Botany," in 1866, as new to Great Britain. Kutzing appears to have been its first discoverer in 1838, when he met with it growing in an aquarium. Brébison also observed it in 1844 at Falaise, growing on the leaves and stems of inundated and in part decomposed water plants, principally on the *Sparganium natans* and *Potamogeton natans*. He named it the *Coleochæte Scutata*, and from the setigerous sheaths, growing sometimes numerous from the upper portion of the cells, considered that it should be placed in the *Chætophoroidæ*, and near the *Bulbochæte*. The generic and specific names of *Phyllactidium pulchellum* first given it by Kutzing, and confirmed by Gray, are those by which it is now known.

From the fact that this plant has generally been found associated with, or rather in water in which the *Volvox Globator* has been abundant, it was presumed by some observers that there was some connection between the plants; but its affinities are with quite another family of the *Confervoideæ*, namely, the *Chætophoraceæ*.

From most, if not all, of these plants there grows on the back of some of the cells a sheath having a bulbous base, and

from out of which apparently issues a delicate setaceous filament of considerable length. These setæ are not always met with, and I should say are rarely seen in mounted specimens, as they are extremely caducous. It is these setaceous filaments which place this remarkable plant in the family Chætophoraceæ of the Confervoid Algæ, and at the same time would appear to ally it to the Bulbochæte, with which genus Hassall considers it has close affinities.

On the specimens on Slide No. 2, which were taken from the stem of a water plant, there will be noticed on the back of the cells nearer the margin than the centre, several masses of Eudochrome. These are the Sporangia. The reproduction of the plant is said to be effected by zoospores as well as spores, the zoospores being produced singly from the cell contents and bearing two cilia. With plants so minute, observation in respect of the reproduction by zoospores is extremely difficult, and it is but rarely, indeed, that such points can be noted, and only when one is so fortunate as to have a specimen under examination in which the zoospores are on the point of escaping from the cells. This is quite possible when the plant grows in an aquarium, through the sides of which it may be observed with a glass from day to day.

Dr. Gray describes the organism as follows:—"The form is discoidal, circular, slightly concave on one side, formed of very minute, nearly equal sized square cells, placed on forked lines regularly spreading from a central cell to the circumference; the frond is thin, membranaceous, and the upper and under surfaces are similar. The fructification consists of from twelve to sixteen square thickened patches, forming a circle (sometimes two) rather nearer the margin than the centre of the disc, the square patches being often placed in pairs. The fructification was first observed by Suringar in his thesis entitled "Observationes Physiologicæ," delivered in Leyden, 3rd March, 1857."

This description fails to include the setigerous sheaths, which is an important omission, being that part of its organisation above others which has enabled botanists to give the genus its natural position.

The sheath and filament are well shown on a specimen in preparation No. 2, where the delicate filament will be seen to issue from the setigerous sheath for a length almost equal to the diameter of the frond; and in both of the preparations (Nos. 2 and 3) of the plant taken from the natural habitat there can be seen, with a little management of the light, numerous sheaths. Specimen No. 1 grew on the glass side of an aquarium, and it will be noticed how much finer the frond is than in those taken from the stems of water plants, so much

so that one might be led to consider it a variety. I think it is a perfectly mature frond as regards size, as the plants disappeared from the aquarium shortly after it was collected. The plant may, moreover, develop better on the smooth glass than on the rougher stems of water plants; in fact, it is just one of those conditions that might fairly be supposed to give rise to a variety.