

Desmidiaceae, Zygnemaceae, Vaucheriaceae, Cladophoraceae, Oedogoniaceae, and other green Algae; and, singularly enough, these two same species of *Closterium*, *C. lanceolatum* and *striolatum*, have both been described as infested by a parasitic *Chytridium*. After a careful comparison with such descriptions and figures as are accessible to me, I am quite unable to identify these structures with the resting-condition of any known parasitic fungus; while their very regular form, their thick coat of cellulose, and their bright green contents, suggest a totally different nature.

The following are the principal memoirs consulted, though this is by no means a complete bibliography of the fungus-parasites of Algae:—

BRAUN, A.: Ueber Chytridium (Monatsber. Berl. Akad., 1856).

REINSCH: Beobachtungen über die Parasiten in Desmidienzellen (Pringsheim's Jahrbücher, Vol. XI. 1876).

SOROKINE: Ueber Olpidiopsis (Arch. Bot. Nord de France, 1883). I know this only by quotation.

FISCH: New Chytridiaceae (Sitzber. Phys.-med. Gesell. Erlangen, Vol. XVI, 1884); und Beiträge zur Kenntniss der Chytridiaceen, 1884.

MAGNUS: New Chytridiaceae (Verhandl. Bot. Vereins Prov. Brandenburg, Vol. XXV, 1884).

ZOPF: Ancylisteae et Chytridiaceae (Verhandl. k. Leop.-Car. Akad. Naturf. Vol. XLVII, 1885); Die Pilzthiere oder Schleimpilze, 1887; Untersuchungen über Parasiten aus der Gruppe der Monadinen, 1887.

DANGEARD: New Chytridium (Bull. Soc. Bot. France, Vol. VIII, 1886); Mém. sur les Chytridinées, 1888.

ROSEN: New Chytridium (Cohn's Beiträge, Vol. IV, 1887).

LAGERHEIM: Olpidiella (Morot's Journ. de Bot., Vol. II, 1888); New Chytridiaceae (Hedwigia, Vol. XXIX, 1890).

DE WILDEMAN: Parasitic Chytridiaceae (Ann. Soc. Belge Microscopie, Vol. XIV, 1890).

DE BRUYNE: Monadines et Chytridiacées, parasites des Algues du Golfe de Naples (Archives de Biologie, Vol. X, 1890).

No. 4; NON-SEXUAL PROPAGATION AND SEPTATION OF VAUCHERIA.—In examining some *Vaucheria* obtained from the Regent's Canal, London, in October 1891, I observed a mode of production of non-sexual spores differing somewhat from anything that I find hitherto described, or that I have myself observed. As the alga was not in fructification, I cannot be quite certain about the species, but have little doubt about its being *V. sessilis* var. *caespitosa*. In several of the filaments the extremity was open, and the green

endochrome was escaping from it by jerks and with considerable force; there was no constriction of the filament, and no formation of septum below the protoplasm which was thus ejected. The bodies thus escaping were not ciliated zoospores, but naked unciliated masses of coarsely granular protoplasm, coloured bright green by chlorophyll, and moved about in the water with a jerking motion. The escape took place in the afternoon, between noon and two P.M.; in one instance several such bodies were ejected in succession from the same filament. After a time they came entirely to rest, rounded themselves off into a perfectly spherical form, and became invested with a very thin cell-wall of cellulose. About two-thirds of the 'spores' or non-sexual propagation cells thus formed were coloured bright green by chlorophyll; the rest consisted of colourless granular protoplasm, in which a Brownian movement of the particles was clearly seen. The phenomenon here described seems to me a very interesting intermediate one between the process of formation of zoospores by expulsion of the protoplasm, and that of 'brood-cells' by the abstriction of the end of a filament. Hanstein (*Einige Züge aus der Biologie des Protoplasmas: in Bot. Abhandl. Vol. IV. 1882*) states that when a filament of *Vaucheria* is injured, the portion between the injury and the apex of the filament forms itself into a cell by the secretion of a cellulose-septum above the injury, dead portions of protoplasm being during the process expelled into the water. He also saw the expulsion of balls of living protoplasm into the water as the result of injury to the filaments; but did not observe that these became clothed with cellulose and assumed the function of spores and gonids. In the instances observed by me (which were rather numerous) there was nothing to show that the process was pathological. I hope, however, to be able to repeat the observations, and to trace the further history of the 'spores.'

The filaments of *Vaucheria* are usually described as unseptated, except when about to form the sexual organs of reproduction, or when in the 'gongrosira' condition; though Bates and Cooke have recorded occasional septation of the ordinary filaments. This observation I am able to confirm in specimens of *V. sessilis* var. *caespitosa* obtained in September 1891, from a mill-pond at Waddon, near Croydon, Surrey. Several of the filaments examined were observed to be divided by septa, either at considerable intervals, or sometimes two or three very near together. These septa were more often

oblique than exactly transverse, and were always thick and gelatinous, sometimes of very great thickness: the wall of the filament was never constricted, but was sometimes widened at the septum. Being towards the end of the season, many of the *Vaucheria*-filaments were more or less in a state of decay; in some instances the walls of the filaments had entirely disappeared, and the septa alone remained suspended in the water as thick discs of gelatinous cellulose.

ALFRED W. BENNETT, London.

TREMATOCARPUS.—Dr. A. Zahlbruckner¹ describes a number of new Lobeliaceae of the Vienna Herbarium, among them an assumed new genus, based upon Hooker and Arnott's *Lobelia macrostachys*, a native of the Sandwich Islands. The type being in the Kew Herbarium, I was induced to investigate the matter, and there is no doubt that Dr. Zahlbruckner has founded his genus upon a misinterpretation of the facts, or he has had a different plant before him. His name, as its composition indicates, was chosen on account of the presence of pores in the capsule, which he supposed to be the mode of dehiscence. He refers to Hooker and Arnott's description and to Hillebrand's Flora of the Hawaiian Islands, and comes to the conclusion that these botanists had not seen ripe fruit of the plant in question; but this is an error, so far as the latter are concerned, because there are excellent specimens bearing ripe fruit in the Kew Herbarium, presented by Hillebrand. Dr. Zahlbruckner, who founds his genus on the presence of pores in the capsule, describes it as follows: 'Capsula infera, lignosa, vertice clausa et umbonata, lateraliter inter costas praesertim versus basim foraminibus ovalibus aut rotundatis dehiscens.'

On examining the specimens in the Kew Herbarium I find that there are pores in a few of the capsules, but, except that they are between the ribs, they are not regularly placed, and in some of the capsules there is only one; and they are evidently, in all cases, the work of some insect. Whether Dr. Zahlbruckner has mistaken such punctures for dehiscing pores I am, of course, not prepared to say; yet I think I may safely assert that the capsules of *Lobelia macrostachys* do not dehisce by lateral pores. The proposed new genus, therefore, seems to fall to the ground.

W. B. HEMSLEY, Kew.

¹ Annalen des K. K. Naturhistorischen Hofmuseums, VI. p. 430.



Bennett, Alfred W. 1892. "Algological notes: no.4; non-sexual propagation and septation of Vattcheria." *Annals of botany* 6, 152–154.

<https://doi.org/10.1093/oxfordjournals.aob.a090664>.

View This Item Online: <https://www.biodiversitylibrary.org/item/234968>

DOI: <https://doi.org/10.1093/oxfordjournals.aob.a090664>

Permalink: <https://www.biodiversitylibrary.org/partpdf/317700>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Not in copyright. The BHL knows of no copyright restrictions on this item.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.