

OCCURRENCE OF *PYTHIUM GRACILE* IN THE UNITED STATES.

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WHILE examining a culture of *Spirogyra crassa* Kütz. in search of fungus parasites, a fungus that was later identified as *Pythium gracile* Schenk, was found infecting certain of the filaments. As far as the writer has been able to ascertain, this fungus has never before been recorded from the United States either on this, the host on which it was originally described by Schenk, or on any other alga. Therefore the following brief note as to this occurrence has been prepared in the hope that it may prove of value to others interested in the group.

The host, *Spirogyra crassa*, was found October 20, 1926, in a small, quiet pond near Belmont, Massachusetts. Upon examination, several filaments, with cells growing vigorously and in active division, were found to have non-septate mycelium spreading freely from cell to cell within them and extending lateral branches outside into the water. One of the infected filaments was transferred to a Van Tieghem culture, where, within the host cells after nine days, numerous oogonia and antheridia were formed. No fecundation, however, was observed and no mature oospores were found. Several days later, non-sexual reproductive structures were developed and by means of these and the earlier sexual stage, the fungus was identified as *Pythium gracile* Schenk. Uninfected filaments of *Spirogyra crassa* healthy and in vigorous condition, when placed in these drop cultures containing the *Pythium*, were rapidly and readily penetrated by the mycelium of the fungus, thus indicating it was not merely a weak parasite able only to attack the alga in a condition of lowered resistance.

Of the other members of the Pythiaceae parasitic upon *Spirogyra*, *Pythium gracile* has been separated from the closely related *Pythium tenue* Gobi, mainly on the absence in the latter fungus of cross walls separating the antheridia and zoosporangia from their vegetative hyphae. In the *Pythium* here reported these septa were, indeed, found but their presence below the antheridia was established with difficulty because they were only faintly discernible while these organs were young and soon disappeared as they matured. The several known species of *Pythium*, parasitic upon green algae, resemble each

other in their vegetative hyphae and in their non-sexual reproduction but differ in their sexual organs. *Pythium gracile* as originally described by Schenk did not form sexual reproductive bodies and consequently the interpretation of his species is somewhat difficult. Butler (1) has summarized admirably the confusion that exists regarding the exact identity of the members of the sub-genus *Aphragmium*, to which *Pythium gracile* belongs, and there is no need of going further into that point here. The identification of the present species as *Pythium gracile*, seems however, thoroughly in accordance with the accepted concept of that species.

Pythium gracile was first reported and described from Germany by Schenk (6) in 1859 on *Spirogyra nitida*, *Spirogyra heeriana* (*crassa*) and *Cladophora* (sp. ?). Ward (5) (1883) found it in *Spirogyra* (sp. ?) in Great Britain. De Wildeman (3) (1895) reported its occurrence, under the generic name *Nematosporangium* proposed by Schröter, in France and Belgium on *Spirogyra* (sp. ?) and *Cladophora* (sp. ?). It was again reported from Germany by De Bary (2) (1860) who found it parasitic upon *Vaucheria* (sp. ?) and *Bangia atropurpurea* and described it at that time as *Pythium reptans* on the basis of its non-sexual stage only. Butler (1) (1907) observed the fungus on *Vaucheria aversa*, collected in Freiburg, Germany and found what was possibly the fungus on *Spirogyra* (sp. ?) in India, but as no sexual stage developed in this latter case he was not certain as to its true identity. The same investigator also found this species in India growing saprophytically in the soil, in old water-cultures on *Abutilon* roots and on decaying *Marchantia* plants. He further described it as occurring in India parasitic upon *Ricinus communis* and upon *Zingiber officinale*, to which it was seriously injurious.

A search through the literature, including Rabenhorst's "Kryptogamen Flora," Engler and Prantl's "Die Naturlichen Pflanzenfamilien," Saccardo's "Sylloge Fungorum," Oudemans' "Enumeratio Systematica Fungorum," Farlow's "A provisional Host Index of the Fungi of the United States" and the proof sheets of the host index in preparation at the Farlow Herbarium, has failed to uncover a single reference to this fungus in the United States. Indeed, only one mention of the occurrence of *Pythium gracile* in the whole of North America was found, published in the list of fungi collected during the Harriman Alaskan Expedition of 1899 (4). It was collected by De Alton Saunders on Popof Island, where it occurred

parasitic in vegetative filaments of *Spirogyra porticalis*. The identification of the fungus was made by Dangeard but no plates or description were given.

The finding of this fungus in Massachusetts, as here reported, probably indicates a more widespread distribution than the few records hitherto published would seem to indicate and in the course of further collection, it is to be expected that it will be encountered elsewhere in the United States.

LITERATURE.

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CRYPTOGAMIC LABORATORY OF HARVARD UNIVERSITY.

A NEW SPECIES OF APHANOCAPSA.

ANSELM MAYNARD KEEFE.

EARLY in August, 1926, Mr. H. K. Svenson of Union College, Schenectady, called my attention to a strange blue-green alga in a fresh water pond between Woods Hole and Falmouth, Massachusetts. The name of this body of water, "Salt Pond," is a misnomer and probably refers to its character at some previous time. At present a roadway and a stretch of sandy beach separate it from the salt water of Vineyard Sound.



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