On certain new or peculiar North American Hyphomycetes. II.

Helicocephalum, Gonatorrhodiella, Desmidiospora nov. genera and Everhartia lignatilis n. sp.

ROLAND THAXTER.

(WITH PLATES XIX AND XX.)

Helicocephalum nov. gen.—Sterile hyphae of small diameter, asceptate or rarely septate, creeping over the substratum and giving rise to highly differentiated, erect, simple, asceptate sporiferous hyphae furnished with rhizoid like attachments at the base and spirally coiled at the apex: the spiral portion becoming septate and constricted at intervals, its segments separating at maturity in the form of large, dark colored, thick walled spores.

Helicocephalum sarcophilum n. sp.—Plate XIX, figs. 1–5.

Sterile hyphae hyaline, creeping, branched, 2 μ in diameter. Fertile hyphae hyaline, 1 mm. or more in height, 20–25μ in diameter near the base and 8–10μ near the apex: tapering gradually upwards from a slightly swollen base: two or three times abruptly spirally coiled at the distal end, the spiral portion of large diameter and converted at maturity into a chain of seldom more than twenty-one spores, by the formation of successive septa. Spores brown, thick walled, with finely granular contents, asymmetrical, usually obliquely truncate, or not evenly rounded, at either end; at first hyaline then brown, 55×30μ (maximum 65×35μ), separating and ultimately cohering in a viscous, rounded mass.


This remarkable form made its appearance on a laboratory culture in company with Cwaniella spiralis Eidam. It is not gregarious, appearing here and there on the substratum, and closely resembles a large Mortierella or Syncephalis; the spiral portion holding a drop of somewhat viscous fluid, which gives it the appearance of a large spherical head (fig. 1). The spores mature simultaneously, falling apart and cohering as shown in fig. 4. They are very thick walled and all attempts to germinate them in nutrient media proved fruitless.

The relations of this plant are quite uncertain, no fungus which appears even remotely connected with it being known to the writer. It is placed here among the Hyphomycetes
from lack of evidence which would refer it elsewhere. In its mode of growth it recalls Mortierella and similar forms: but its type of spore formation, as well as the character of its spores, is quite distinct from that which occurs in any of the genera of Mucoraceae; among which, however, it is not impossible that it may eventually find a place.

**Gonatorrhodiella** nov. gen. — Sterile hyphae hyaline, creeping, septate and branched. Fertile hyphae erect, sparingly septate, swelling into a spherical terminal sporiferous head, which after maturity may become once or twice proliferous, the proliferations also forming similar proliferating heads, the resulting hypha presenting ultimately the appearance of a successively inflated filament. Spores formed directly from short processes covering the fertile head, in chains of a definite number, by successive apical budding.

**Gonatorrhodiella parasitica** n. sp. — Plate XIX, figs. 7–10. Fertile hyphae gregarious, simple or rarely dichotomously branched, sparingly septate, hyaline becoming pale lawn colored, seldom more than five times successively proliferous, 8–12μ in diameter, sometimes more than 1 mm. in height. Sporiferous head nearly spherical to oval, rarely producing more than a single proliferation, 25–35μ in diameter, maximum 43 × 36μ. Spores in chains of three, hyaline, then lawn colored, oval to elliptical, caducous, 8.5 × 6–12 × 7μ the basal ones the largest.

On Hypocrea and Hypomyces. Connecticut. This species has been met with in several localities about New Haven always growing directly upon, or running a short distance from certain species of Hypocrea and Hypomyces on which it appears to be parasitic. The genus is distinguished from *Gonatorrhodium* Corda, to which it bears a superficial resemblance, by the absence of the large, septate, subverticillate "ramuli" which give rise to the spores in the last named genus; as well as by its definite spore formation, the indefinite and often branched spore-chains of *Gonatorrhodium* being replaced by short simple chains composed of a small and invariable number of spores. Whether the successive apical formation of the spores in the present genus does not constitute another essential difference, cannot be determined from Corda's description; but from his figure as well as from analogy with other genera, like Aspergillus, Verticillium, etc. to which he compares it, a successive basal spore formation
PLATE XX.

THaxter on HYPHOMYCETES.
may be inferred in Gonatorrhodon from the large basidia or "ramuli," as well as from the spore of the primary chain from which a secondary chain occasionally springs. The present genus is purely Mucidinous; while, as Saccardo remarks, Gonatorrhodon seems rather to belong among the Dematiae.

Desmidiospora nov. gen.—Spores of two kinds, on the same mycelium of hyaline septate hypha: microconidia, small, hyaline, subfusiform, produced at the apex of subulate lateral basidia; macroconidia very large, terminal, brown, flat, multilocular, several times successively, more or less irregularly, dichotomously lobed.

Desmidiospora myrmecophila n. sp.—Plate XX, figs. 1-9.

Hyphae much branched and septate covering the host in a white flocculent mass. Microconidia subfusiform, slightly asymmetrical 12×2-2.5μ, produced sideways at the apex of subulate basally inflated basidia. Macroconidia terminal, short stalked, three to five or even six times successively dichotomously lobed, irregularly multilocular, very thick walled, reddish brown or fawn colored, 80×68μ, maximum 100×90μ. 12-14μ in thickness.

On a large ant. Connecticut.

This remarkable plant has been met with only once growing luxuriantly on a large black ant which was found fastened to the underside of a rotting log. The hyphae emerged especially from between the abdominal segments, enveloping the insect more or less completely and extending a short distance over the substratum. It is not impossible that this may be an imperfect form of some Cordyceps, perhaps C. unilaterealis Tul., which is the only species of the genus that the writer has observed on ants in this vicinity. No analogous form, bearing the same relation to Cordyceps that Mycogone or Sepedonum, for instance, are supposed to bear to other Hypocreaceous genera, has been observed, as far as known to the writer. The microconidia in the present instance are, however, certainly very similar in appearance and mode of formation to conidia known to be associated with certain species of Cordyceps; yet the connection cannot be assumed and the use of a new generic name seems unavoidable. It is not unlikely, moreover, that the fungus under consideration may be mycoctilious and like certain species of Gymnoascus, Thielavia, Melanospora, etc., which so often interfere with artificial cultures, be parasitic on an immature Isaria or Cordyceps previously developed within the insect.
Everhartia lignatilis n. sp.—Plate XX, figs. 10-12.
Scattered, superficial, stipitate or substipitate, yellowish becoming blackish towards the base, subcylindrical or expanding upwards, 250–400 × 100–150 μ. Spores hyaline, terminal, 3-septate, cylindrical or slightly flattened, 4 μ in diameter, the rounded base and snout-like apex approaching one another in a single convolution 12–13 × 8–9 μ; extruded in a yellow viscous rounded mass. Sporiferous hyphae septate, sub dichotomously branched, mingled with longer usually simple sterile hyphae.


This species occurs not uncommonly about New Haven on very rotten wet logs. It differs from E. hymenuloides Sacc. & Ell. in being stipitate as well as in its very distinct and smaller spores. The latter are produced in enormous quantities adhering to the apex in a yellowish viscous drop. The spores germinate readily in water, producing single hyphae from the convexity of each segment.

E. hymenuloides Sacc. & Ellis.—Plate XX, figs. 13-14.—Figures of the spores of this species are given for comparison drawn from material distributed in Ellis N. A. F. No. 969 on dead leaves of Sorghum nutans. In this species the sporodochia are sessile and indistinct, the spores being produced terminally on short simple hyphae (fig. 14). The spores are formed in a helix of several convolutions, 16 × 20 μ, and are about 3.5–4 μ in diameter, extruded in a viscous mass and surrounded by a coarsely granular greenish mucus.

Explanation of Plates.

Plate XIX.—Helicostomula succelliolum, n. sp.—Fig. 1. Nearly mature plant showing general habit, with rhizoidal attachment at base and drop of viscous fluid held by the spiral, ×138. Fig. 2. Spiral portion enlarged, ×222. Fig. 3. Young spiral before division has commenced, ×200. Fig. 4. Spiral after maturity, the spores separated and cohering in a viscous mass, ×222. Fig. 5. Two mature spores, ×696. Fig. 6. A spore in optical section, ×696.

Plate XIX.—Conterrhodella parvispica, n. sp.—Fig. 7. Fertile hypha, showing single and double proliferation, the left hand head mature, the right beginning the fifth proliferation, ×222. Fig. 8. Portions of two fertile hyphae, one simple and showing mature spore chains in situ, the other fuscous and immature, ×348. Fig. 9. Mature spore chain, ×696. Fig. 10. Spore chain showing budding of apical spore, ×696.

Plate XX.—Damiidospora suumecophilum, n. sp.—Fig. 1. Portion of hypha showing microconidia on subulate basidia, ×348. Figs. 2–6. Showing successive stages in the development of the macroconidia, ×348. Fig. 7. Macroconidium in which the transverse walls are partly formed, ×348. Fig. 8. Two mature macroconidia, ×348. Fig. 10. Macroconidium viewed horizontally, ×348.
Dicranum palustre Lapf.—This species has not been noted as particularly variable as is the case with its congener, D. scoparium Hedw. The examination of a large series of specimens, collected in various parts of the northwestern United States by Dr. Julius Röll in 1888, has shown me that it is almost as polymorphous as D. scoparium, and that it intergrades so closely with that species that it is quite impossible to limit it except in a wholly arbitrary way. The var. paludosum of D. scoparium imitates somewhat the typical D. palustre in the rugulose and shorter pointed leaves. But this is a character by no means constant in the latter species. Indeed it is often absent than present. There is also no reliable distinction to be drawn from the section of the costa. We have therefore simply to say that those forms with slender pointed often falcate leaves, having the cells somewhat elongated in the upper part, shall be grouped with D. scoparium. I have not thought it worth while to characterize separately any of those forms of D. palustre (among which the Californian variety Brewerianum of Lesqulereux may well be placed) which connect with the palustral modifications of D. scoparium. If one should begin, the list might rival that of some of the Sphagna! On the other hand D. palustre shows numerous variations toward forms with broad leaves, entire or coarsely serrated and usually not wrinkled. Three of these I have separated as well-marked varieties, which fall more or less closely into company with the European vars. juniperiforme and polycladon of the Bry. Eu. Had the intermediate forms been lacking from the collection I should have hesitatingly established these, or at least the var. Röllii, as species.

Having already examined a considerable number of the species of Dicranum in determining the Weisiaceae of Röll's

1 Botanisches Centralblatt xlv. 360 (1890).