

## THREE NEW FUNGI FROM NORTH AMERICA

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In the course of a revision of the genus *Gloeosporium* (VON ARX, 1957), the material by which this genus is represented in the mycological collections of the State College of Washington, Department of Plant Pathology, Pullman (Wash.) has been examined. The author is greatly indebted to Ch. Gardner Shaw for the loan of the specimens. Among those designated as "*Gloeosporium spec.*", three different species could be recognized, and these seem to be new to science. They are described in this paper.

### 1. *Monostichella potentillae* v. Arx spec. nov.

Maculae atypicae, 2–7 mm diam., saepe e margine folii ortae, flavo vel griseo-viridulae; acervuli epiphylli, regulariter et dense dispersi vel subgregarii, ambitu orbiculares vel elliptici, 80–140  $\mu$  diam., subcuticulares, superne tantum cuticula infuscata, in maturitate irregulariter in lacinas rumpente tecti, tunc late aperti; strato basili omnino plano, 10–15  $\mu$  crasso, hyalino vel pellucide brunneo, e cellulis rotundato-angulosis, 2–4  $\mu$  metientibus composito; conidiophora atypica, papilliformia; conidia ellipsoidea vel ovoidea-clavata, hyalina, continua, (8-) 14–21  $\times$  5–7  $\mu$ .

Hab. in foliis vivis *Potentillae diversifoliae* Lehm., Wyoming, Lookout Sta., Beartooth Lake, Park Co., 20.7.1947, leg. C. L. Hitchcock (16655).

Spots on living leaves, mostly near tip or margin, pale, not sharply margined, 2–7 mm in diameter; acervuli epiphyllous, visible as dark points, scattered or coalescing, round, subcuticular, 80–140  $\mu$  in diameter; basal layer 10–15  $\mu$  thick, disc-shaped, composed of a pseudo-parenchyma with isodiametric or rounded, rarely elongated, brown cells, reaching 2–3.5  $\mu$  in diameter; conidia borne on the upper conical cells of the basal layer, one per cel, elliptical, cylindrical-clavate or reniform, with rounded ends, continuous, hyaline, (8-) 14–21  $\times$  5–7  $\mu$  (Fig. 1).

On leaves of *Potentilla diversifolia* Lehm., Wyoming, Lookout Sta., Beartooth Lake, Park Co., July 20, 1947, leg. C. L. Hitchcock (16655).

The species belonging to the genus *Monostichella* v. Höhnelt (1916) (Syn.: *Antimanopsis* Petr. 1948) must be considered to be conidial stages of Discomycetes. However the perfect stage of only one species is known. This is *Monostichella salicis* (Westend.) v. Arx (Syn.: *Gloeosporium salicis* Westend.), which is the conidial stage of *Drepanopeziza*

*salicis* (Tul.) v. Höhn. (Syn.: *Pseudopeziza salicis* Kleb., viz. KLEBAHN, 1918; NANNFELDT, 1932). *Monostichella* is characterized by the subcuticular position of the acervuli in the host tissue and by the broad elliptical conidia. These are borne on short sterigmata on the upper cells of the basal layer, which consists of a pseudo-parenchyma of rounded or isodiametric cells. In many species of *Monostichella*, the inside of the cuticle above the acervuli is coloured brown by a gummy, skin-like mass.

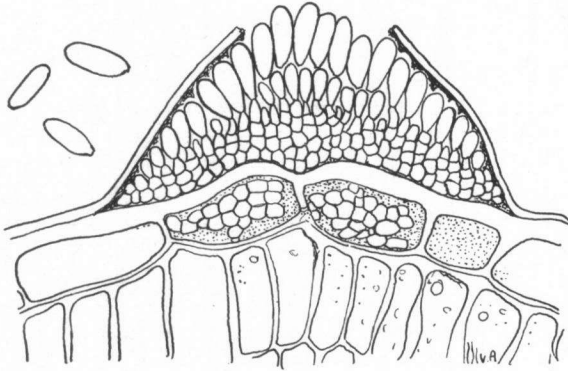


Fig. 1. Vertical section of an acervulus of *Monostichella potentillae*.  $\times 500$ .

## 2. *Gloeosporidiella Shawii* v. Arx spec. nov.

Maculae sat atypicae, laxe dispersae, in epiphyllis brunneae vel viridulae, in hypophyllo tantum visibiles, 1–4 mm diam.; acervuli epiphylli, solitarii vel laxe dispersi, in vel sub epidermide evoluti, 40–140  $\mu$  diam., primo epidermide pustulatim elevata tecti, ea rupta in maturitate late aperti; strato basili plano, hyalino, ubique 10–13  $\mu$  crasso, e cellulis rotundato-angulosis, tenuiter tunicatis, 3–6  $\mu$  diam. metientibus composito; conidiophora strati basilis superficiem obtegentia, papilliformia vel conica, hyalina, 9–15  $\mu$  longa, 3.5–6  $\mu$  crassa; conidia oblongo-fusoidea vel fusoidea-clavata, inaequilatera vel curvula, apice arcuata, postice in papilla attenuata, hyalina, continua, 14–20  $\times$  4–6  $\mu$ .

Hab. in foliis vivis *Anaphalis margaritaceae* (L.) Benth. et Hook., Alaska, Red Mountain, Glacier Bay, 12.8.1952, leg. R. Sprague (620).

Spots on living leaves, scattered, round or nearly so, brown to olivegreen, 1–4 mm in diameter; acervuli epiphyllous, intra- or subepidermal, colourless, round or irregular, 40–150  $\mu$  in diameter; basal layer 10–13  $\mu$  thick, discoid, composed of a pseudo-parenchyma with isodiametric or rounded, hyaline cells that are 3–6  $\mu$  in diameter; conidiophores densely crowded, short cylindrical or conical, hyaline, 9–16  $\times$  3.5–6  $\mu$ , with acrogenous conidia; conidia elliptical, clavate or broadly fusiform, slightly curved, apically arcuate or beaked, continuous, hyaline, 14–20  $\times$  4–6  $\mu$  (Fig. 2a).

On leaves of *Anaphalis margaritacea* (L.) Benth. et Hook., Alaska, Red Mountain, Glacier Bay, August 12, 1952, leg. R. Sprague (620).

The type species of the genus *Gloeosporidiella* Petr. is *Gloeosporium ribis* (Lib.) Mont. et Desm. = *Gloeosporidiella ribis* (Lib.) Petr. This fungus is the conidial stage of *Drepanopeziza ribis* (Lib.) v. Höhn. (KLEBAHN, 1918). According to the description of PETRAK (1921),

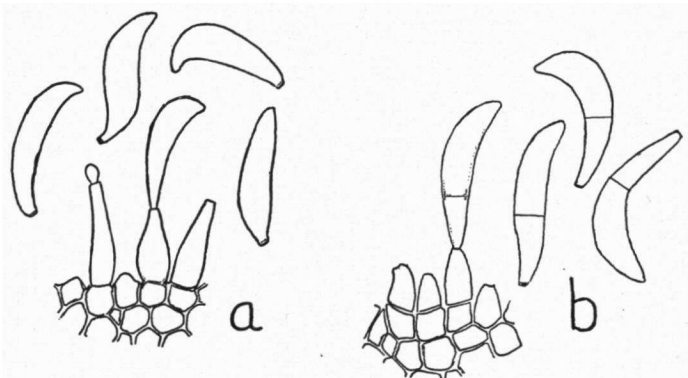


Fig. 2. Conidiophores and conidia of a. *Gloeosporidiella Shawii*, b. *Marssonina saxifragae*.  $\times 500$ .

the conidia are produced directly on the cells of the basal layer. Examination of a number of specimens showed that the conidia may indeed be borne on the short conical upper cells of the basal layer. Often, however, these conidiophorous cells are longer and more or less cylindrical like true conidiophores.

Characteristic of the members of the genus *Gloeosporidiella* are the acervuli, which are seated in or beneath the epidermis of the host plant and are light-coloured or colourless. The conidia of all the species are elliptical clavate, broadest in the upper third part, curved, especially near the apex and beaked. This genus is closely related to *Marssonina* Magn. The only difference is that the conidia of the latter genus are septate. *Gloeosporidiella* is also related to *Cryptocline* Petr. (Syn.: *Gloeotrochila* Petr.). In this genus, the conidia are round, oval or elliptical and not beaked, and they are produced acrogenously on cylindrical or thread-like conidiophores.

### 3. *Marssonina saxifragae* v. Arx spec. nov.

Maculae irregulariter laxe vel dense dispersae, plerumque accuratae, 1–3 mm diam.; acervuli semper epiphylli, solitarii, in vel sub epidermide evoluti, primo epidermide tecti, ea rupta in maturitate, plus minusve late aperti; strato basili ubique 7–15  $\mu$  crasso, plano vel parum concavo, hyalino, e cellulis rotundato-angulosis, 3–4  $\mu$  diam. metientibus composito; conidiophora strati basilis superficiem obtegentia, papilliformia, conoidea vel lagenaria, hyalina, 5–12  $\mu$  longa, 3–4  $\mu$  crassa; conidia oblongo-fusoidea vel fusoidea-clavata,

curvula, infra media obscure septata, apice arcuata, postice in papillam attenuata,  $17-26 \times 5-7 \mu$ .

Hab. in foliis vivis *Saxifragae mertensianae* Bong., Washington, Wahkiakum, Cathlamet, 4.1907, leg. A. S. Doster.

Spots on living leaves, necrotic, pale or greyish, round or nearly so, 1-3 mm in diameter; acervuli epiphyllous, one in the central area of the lesion, subepidermal, discoid or saucer-shaped, rupturing the covering epidermal cells; basal layer hyaline,  $7-15 \mu$  thick, composed of an incomplete pseudo-parenchyma with isodiametric, rounded or elongated cells, about  $3-4 \mu$  in diameter, with thin and hyaline walls; conidiophorous cells conical, blunt,  $5-12 \mu$  long and  $3-4 \mu$  broad, acrogenously producing conidia; conidia fusiform, lunate, curved, especially in the upper third part, pointed or beaked, with an indistinct septation in the lower third part, hyaline,  $17-26 \times 5-7 \mu$  (Fig. 2b).

On leaves of *Saxifraga mertensiana* Bong., Washington, Wahkiakum, Cathlamet, along wet rocky bluffs, April 1907, leg. A. S. Doster.

*M. populi* (Lib.) Magn., the type species of the genus *Marssonina* Magnus (1906) is identical with *Gloeosporium castagnei* Desm. et Mont., which is the type species of the genus *Gloeosporium* Desm. et Mont. (1949) (VON HÖHNEL, 1916). Therefore the name *Marssonina* is a typonym of *Gloeosporium*, but as it would not be advisable to reintroduce that name, *Marssonina* is proposed for conservation.

Several *Marssonina* species are known to be the conidial stage of Discomycetes, especially of *Drepanopeziza* and *Diplocarpon* species (NANNFELDT, 1932). The genera *Monostichella*, *Gloeosporidiella*, *Marssonina*, *Cryptocline*, *Fusamen* Karst. (Syn.: *Calogloeum* Syd., *Platycarpium* Karst.), *Cryptosporiopsis* Bub. et Kab. (Syn.: *Myxosporium* auct. non Link, *Discosporium* v. Höhn. and others), *Phlyctaena* Mont. et Desm. (Syn.: *Allantozythia* v. Höhn.) and *Cryptomycella* v. Höhn. are related, and they too must be regarded as conidial stages of Discomycetes.

It is known that other genera of the Melanconiales are conidial stages of Pyrenomycetes, especially of Diaporthaceae (including Gnomoniaceae). These genera are built up according to the Phomopsis type. The conidia are more or less fusiform, guttulate and are borne apically on linear or subulate, pointed and densely crowded conidiophores. Typical members of this group are such genera as *Discula* Sacc. (Syn.: *Gloeosporidium* v. Höhn.), *Marssoniella* v. Höhn. or *Discella* Berk. et Br. (Syn.: *Septomyxa* Sacc.).

Some species described in *Marssonina* are to be excluded, and should be placed in the Phomopsidae, especially in the genus *Discella*. Typical members of the latter genus are for example *Marssonina Tulasnei* (Sacc.) Died. on *Acer*, *M. quercina* (Wint.) Lentz or *M. ochroleuca* (Berk. et Curt.) Lentz on *Castanea* (LENTZ, 1950). The fructifications of these species may be either melanconoid or pseudopycnidial. *Marssonina juglandis* (Lib.) Magn. = *Marssoniella juglandis* (Lib.) v. Höhn. is the type species of the genus *Marssoniella*. This species is characterized by the subcuticular position of the acervuli.

## SUMMARY

Among the *Gloeosporium* material received from the herbarium of the State College of Washington, Pullman, three specimens were found which proved to represent undescribed species. They are here described under the names *Monostichella potentillae*, *Gloeosporidiella Shawii* and *Marssonina saxifragae*. Further the taxonomy and the nomenclature of some genera belonging to the Melanconiales are briefly discussed.

## REFERENCES

- VON ARX, J. A. 1957. Revision der zu *Gloeosporium* gestellten Pilze. Verh. Kon. Nederl. Akad. van Wetensch., afd. Natuurk., 2de reeks, 51: 3: 1-153.
- VON HÖHNEL, F. 1916. Fragmente zur Mykologie XVIII. Sitzber. K. Akad. Wiss. Wien, math.-nat. Kl., I. Abt., 125: 27-138.
- KLEBAHN, H. 1918. Haupt- und Nebenfruchtformen der Ascomyceten. Bornträger, Berlin, 395 pp.
- LENTZ, P. L. 1950. The genus *Marssonina* on *Quercus* and *Castanea*. Mycologia 42: 259-264.
- NANNFELDT, J. A. 1932. Studien über die Morphologie und Systematik der nicht-lichenisierten inoperculaten Discomyceten. Nova Acta reg. soc. scient. Upsaliensis, ser. 4, 8: 2: 1-368.
- MAGNUS, P. 1906. Notwendige Umänderung des Namens der Pilzgattung *Marssonia* Fischer. Hedwigia 45: 88-91.
- PETRAK, F. 1921. Mykologische Beiträge I. Hedwigia 62: 282-319.