Phaeosphaeria

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Received July 7, 1988

SHOEMAKER, R. A., and BABCOCK, C. E. 1989. *Phaeosphaeria*. Can. J. Bot. **67**: 1500–1599.

Six new subgenera are described within the genus *Phaeosphaeria*, which includes many species parasitic on cereals, grasses, sedges, rushes, and other grasslike plants. In subgenus *Fusispora*, 10 species are treated, including 4 new species: ***P. fetanensis***, ***P. franklinensis***, ***P. gigaspora***, and ***P. moravica***, all on *Juncus*. In subgenus *Ovispora*, 16 species are treated, including 4 new species: ***P. borealis*** on *Luzula*, ***P. canadensis*** on *Carex*, ***P. cookei*** on *Luzula*, and ***P. tricincta*** on *Juncus*. In subgenus *Phaeosphaeria*, 32 species are treated, including 8 new species: ***P. annulata*** on *Elymus*, ***P. calderi*** on *Juncus*, ***P. emilii*** on *Carex*, ***P. exarata*** on *Carex*, ***P. fautreyi*** on *Arundo*, ***P. humerata*** on *Juncus*, ***P. lunata*** on *Carex*, and ***P. minima*** on *Deschampsia*. In subgenus *Sicispora*, 28 species are treated, including 9 new species: ***P. cinnae*** on *Cinna*, ***P. crenata*** on *Carex*, ***P. erikssonii*** on various grasses, ***P. guttulata*** on various grasses, ***P. heptamera*** on *Bromus*, ***P. huronensis*** on *Dactylis*, ***P. ovei*** on *Agropyron*, ***P. parvograminis*** on *Phalaris*, and ***P. pulchra*** on *Calamagrostis*. In subgenus *Spathispora*, 12 species are treated, including 2 new species: ***P. michiganenesis*** on *Scirpus* and ***P. robusta*** on *Arctagrostis*. In subgenus *Vagispora*, 16 species are treated, including 3 new species: ***P. celata*** on *Equisetum*, ***P. gessneri*** on *Spartina*, and ***P. mounceae*** on *Elymus*. Detailed descriptions are given for 64 allied but excluded species including 2 new species: ***Leptosphaeria lassenensis*** on *Allium* and ***Massariosphaeria adrianii*** on *Scirpus*. A new genus, ***Sulcispora***, based on *S. pleurospora*, is described.

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Les auteurs décrivent six nouveaux sous-genres dans le genre *Phaeosphaeria* qui inclut plusieurs espèces parasites des céréales, des herbes, des joncs et d'autres espèces herbacées. Dans le sous-genre *Fusispora*, 10 espèces sont considérées incluant 4 nouvelles espèces : ***P. fetanensis***, ***P. franklinensis***, ***P. gigaspora***, et ***P. moravica***, toutes sur *Juncus*. Dans le sous-genre *Ovispora*, 16 espèces sont considérées incluant 4 nouvelles espèces : ***P. borealis*** sur *Luzula*, ***P. canadensis*** sur *Carex*, ***P. cookei*** sur *Luzula*, et ***P. tricincta*** sur *Juncus*. Dans le sous-genre *Phaeosphaeria*, 32 espèces sont considérées incluant 8 nouvelles espèces : ***P. annulata*** sur *Elymus*, ***P. calderi*** sur *Juncus*, ***P. emilii*** sur *Carex*, ***P. exarata*** sur *Carex*, ***P. fautreyi*** sur *Arundo*, ***P. humerata*** sur *Juncus*, ***P. lunata*** sur *Carex*, et ***P. minima*** sur *Deschampsia*. Dans le sous-genre *Sicispora*, 28 espèces sont considérées incluant 9 nouvelles espèces : ***P. cinnae*** sur *Cinna*, ***P. crenata*** sur *Carex*, ***P. erikssonii*** sur diverses herbacées, ***P. guttulata*** sur diverses herbacées, ***P. heptamera*** sur *Bromus*, ***P. huronensis*** sur *Dactylis*, ***P. ovei*** sur *Agropyron*, ***P. parvograminis*** sur *Phalaris*, et ***P. pulchra*** sur *Calamagrostis*. Dans le sous-genre *Spathispora*, 12 espèces sont considérées incluant 2 nouvelles espèces : ***P. michiganenesis*** sur *Scirpus* et ***P. robusta*** sur *Arctagrostis*. Dans le sous-genre *Vagispora*, 16 espèces sont considérées incluant 3 nouvelles espèces : ***P. celata*** sur *Equisetum*, ***P. gessneri*** sur *Spartina*, et ***P. mounceae*** sur *Elymus*. Les auteurs présentent des descriptions détaillées pour 64 espèces apparentées mais exclues, y compris 2 nouvelles espèces : ***Leptosphaeria lassenensis*** sur *Allium* et ***Massariosphaeria adrianii*** sur *Scirpus*. Ils décrivent le nouveau genre ***Sulcispora*** basé sur le *S. pleurospora*.

[Traduit par la revue]

Introduction

Species of *Phaeosphaeria* are parasites of cereals, grasses, sedges, rushes, and other grasslike plants. The parasites are often highly specialized to host plant and some cause serious diseases of crops. Some species have a wide host range. A taxonomic revision was undertaken for the species in Canada relative to those known from Europe, where a number of regional studies have been concluded (Holm 1957; Eriksson 1967*b*; Hedjaroude 1968; and Leuchtmann 1984). Certain collections from Canada appeared to be distinct. Comparisons were made with available types. The Wehmeyer collection, now in DAOM, was found to contain a number of new species from western U.S.A. (Wehmeyer 1946, 1952) and from India (Wehmeyer 1963; Wehmeyer and Ahmad 1964). Some recently reported features of spore morphology (Shoemaker 1984*a*, 1984*b*) are incorporated in the revised descriptions of the species studied herein. In the nomenclators, reference is made to the appropriate articles of the *International Code of Botanical Nomenclature* (Voss 1983).

There has been a general concensus on the limits of the genus *Phaeosphaeria* by the authors cited above. The majority of species occur on Poaceae and other grasslike monocots (Cyperaceae, Juncaceae, etc.) as well as *Lycopodium* and *Equisetum*. We have attempted to include the species treated in the European monographs cited above. In addition, information on aquatic and littoral species was taken from Kohlmeyer and Kohlmeyer (1979). Information from Berlese (1894), who provided redescriptions and ample illustrations from original material of a number of species, is mentioned when appropriate. However, the study does not pretend to include all the potential species. This latter course would require study of all *Leptosphaeria* species on monocotyledonous hosts. The study does provide a number of new taxa from North America and the Himalayas and compares and contrasts them with well-known species from Europe. The few species described on dicotyledonous hosts are excluded from the present treatment. One species on a member of the Gentianaceae from the Himalayas is included but may be saprobic.

The methods and terminology were described earlier (Shoemaker 1984*a*, 1984*b*) but a few points are elaborated here. The position of the first-formed septum in the ascospores is indicated by a decimal, i.e., 0.50 for a median position, 0.35 for supramedian, or 0.67 for submedian. The figures do not imply measurement to two places of decimals, but provide a

useful indicator of the position of the first-formed septum. The order of specimen citation is arranged by country with Canada first, followed by the United States of America, the two main sources of material for the present study, followed by other countries arranged alphabetically. Within Canada the names of the provinces are not arranged alphabetically but from east to west, a practice that sometimes reveals distribution patterns. The host records refer to collections examined in the present study. Records from other works are not incorporated. In some instances it was not possible to examine the original material so information was taken from the published descriptions and illustrations. In the line drawings, the stippling indicates the amount of pigmentation. Surface markings are indicated on the contour. The flange that is noted on some roughened spores is shown in Figs. 150 and 153. The dots at the ends of septa are represented in Figs. 171 and 185. The dark band seen on the enlarged cell of some ascospores is shown in Fig. 192. The legends for illustrations at times refer to ascospores from more than one collection. The collection numbers are given for the spores from left to right. If there is any chance of confusion, then the number of spores from the particular collection is indicated as in the legend for Fig. 4, where the first two spores from the left are from 196587 and the spore on the right is from 184977(*b*).

Subgenera are used to recognize allied species within what is still a large and heterogeneous genus. Holm (1957) proposed a number of groups of species without designating any formal rank for the groups. Leuchtmann (1984) proposed series within the genus without formal descriptions. Six new subgenera are recognized.

The work is presented in two main parts. The first part deals with accepted species in subgenera *Fusispora*, *Ovispora*, *Phaeosphaeria*, *Sicispora*, *Spathispora*, and *Vagispora*. The second part treats the excluded species and provides an epithet index and the references for both parts. A detailed generic description that applies to all the accepted species is given at the beginning of the treatment of the accepted species and is followed by a key to subgenera. The subgenera are arranged alphabetically. In the treatment of each subgenus, a key to species is followed by descriptions of species arranged in alphabetical order. In the part dealing with the excluded species the taxa are arranged alphabetically by genus and species.

Generic description

Phaeospheria Miyake, Bot. Mag. Tokyo, 23(266): 93. 1909

TYPE: *Phaeosphaeria oryzae* Miyake, Bot. Mag. Tokyo, 23(266): 93. 1909.

Ascocarps scattered to clustered, immersed to rarely erumpent, subepidermal at least in early stages, globose to depressed to flattened, glabrous to sometimes hairy, rarely setose on beak. Beak central, terete, intraepidermal and flush to erumpent and truncate-conical, composed of brown polygonal cells around an ostiole, usually without hyaline periphyses, without robust brown internal beak setae. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly thick of polygonal to prismatic to rectangular brown pseudoparenchyma cells, rarely thicker and darker around the base of beak, sometimes thinner at ascocarp base. Physes numerous or rarely sparse, with thin septa, usually without guttules, often with a slime coating. Asci bitunicate, from a series of croziers, few to numerous, clustered from a common base or in a broad hymenium, cylindrical to ovoid, short-stalked, with 8 overlapping linearly to obliquely biseriate to tetraseriate to fasciculate ascospores. Ascospores narrowly to broadly fusiform, straight or slightly curved, with 3 or more transverse septa and exceptionally in a few species with some vertical septa, first septum slightly constricted, submedian to supramedian, not or slightly constricted at other septa, cell above first septum enlarged towards base or rarely at middle, yellow to brown, with or without guttules, smooth to echinulate to verrucose to longitudinally ridged, sometimes punctate from small pits in the otherwise smooth wall, with a continuous sheath or with various kinds of partial sheaths, terminal appendages, in some species with a thickened band in the wall of the enlarged cell.

These fungi usually occur on culms, leaves, or floral parts of Poaceae and other grasslike hosts, Cyperaceae, Juncaceae, etc. The anamorph where known is often a species of *Stagonospora*.

Key to subgenera

1. Ascospores 3-septate 2

2. Ascospores broadly ellipsoidal, L/W under 3.5 ..... *Ovispora* (p. 1509)
2. Ascospores fusoid, L/W over 3.5 3

3. Enlarged cell longer than wide ..... *Fusispora* (p. 1501)
3. Enlarged cell isodiametric or short ..... *Phaeosphaeria* (p. 1520)

1. Ascospores with more than 3 septa 4

4. Upper part of spore long cylindrical, lower part tapered and usually short, first septum mostly submedian ..... *Spathispora* (p. 1557)
4. Both parts of spore tapered 5

5. First septum median or nearly so, spores mostly smooth, with vertical septa in some species ..... *Vagispora* (p. 1565)
5. First septum supramedian or rarely median and spores usually echinulate ..... *Sicispora* (p. 1537)

SUBGENUS *Fusispora*

SUBGENUS ***Fusispora*** n.subg.

=Series *Juncina* Leuchtmann (1984, p. 95), nom. invalid. Art. 36

Ascosporae 3-septatae longifusiformes long./lat. plus quam 5.5, leves vel echinulatae, extremis acutis, septo primo plus minusve medio, cellula ampla elongata, strato muco interupto vel continuo cinctae.

TYPE: *Phaeosphaeria juncina* (Auersw.) L. Holm.

The name of the subgenus is derived from fusus and spora, in reference to the fusiform ascospores.

Ascospores 3-septate, long fusoid, L/W over 5.5, first septum more or less median, enlarged cell longer than wide, ends acute, smooth or echinulate to verrucose, sheath complete or two-parted.

Key to species in subgenus *Fusispora*

1. Ascospores more than 7 μm wide 2
2. Ascospores 50–70 μm long 3
3. Ascospores 50–62 × 8.5–10 μm, L/W 7.2 ..... *P. elymi*
3. Ascospores 55–70 × 7–8 μm, L/W 10.0 ..... *P. gigaspora*
2. Ascospores 38–48 × 6–8 μm with eustoma sheath ..... *P. consobrina*
1. Ascospores less than 7 μm wide 4
4. Ascospore end cells longest 5
5. Ascospores 30–46 × 4–4.5 μm, ridged ..... *P. juncicola*
5. Ascospores 24–30 × 4.5–5.5 μm, smooth ..... *P. fetanensis*
4. Ascospore cell length subequal 6
6. Ascospores over 34 μm long 7
7. Ascospore central cells short ..... *P. juncinella*
7. Ascospore central cells long 8
8. Ascospores 34–50 × 4.5–6 μm ..... *P. petkovicensis*
8. Ascospores 34–38 × 5–6 μm ..... *P. franklinensis*
6. Ascospores shorter 9
9. Ascospores smooth ..... *P. moravica*
9. Ascospores not smooth 10
10. Ascospores finely ridged ..... *P. juncina*
10. Ascospores not ridged, echinulate ..... *P. kukutae*

Phaeosphaeria consobrina (Karsten) O. Eriksson, Ark. Bot. 6: 415. 1967 Figs. 8, 18, 19, 25
≡ *Leptosphaeria consobrina* Karsten, Oefvers. K. Sv. Vet.-Akad. Förh. 2: 102. 1872

Ascocarps scattered, 80–200 μm wide, 80–200 μm high. Beak central, terete, truncate-conical, 15–20 μm long, 25–60 μm wide, composed of 3 or 4 layers of brown polygonal 3–5 × 3–5 μm cells around a 10–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–16 μm thick of 3 or 4 layers of polygonal brown 4–6 × 4–6 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci few, ovoid to ellipsoidal, (55)70–90 × 20–26 μm, short-stalked, with 8 overlapping fasciculate to linearly tetraseriate ascospores. Ascospores broadly fusiform, L/W 5.6, straight or slightly curved, (31)38–48 × (5.5)6–8 μm , 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.48), not constricted at other septa, second cell from apex enlarged towards middle and shortest, reddish brown, with two small guttules per cell, wrinkled or longitudinally ridged on surface, with a sheath 1–4 μm wide, widest at second cell and lacking at upper septum.

HOSTS: (*1*) *Carex davilliana* Sm., (*2*) *Carex saxatilis* L. as *C. pulla* Good.

COLLECTIONS EXAMINED: NORWAY: 196138, on *2*, Spitzbergen, Nordfjorden, Th.M. Fries, 10.VIII.1868, ex UPS, TYPE, with *Leptosphaeria caricinella* Karsten Type. SWITZERLAND: GRAUBÜNDEN: 123603, on *1*, Lü, E. Müller, 5 July 1949, ex ZT, ex Herb. Wehmeyer as *Leptosphaeria sowerbyi* (Fckl.) Sacc.

This species on *Carex* is remarkable in several aspects. The small fruitbodies are delicate, thin-walled and despite their small size, bear a few (2–6) large ovoid asci with large ascospores. The spore surface is marked with fine, longitudinal ridges. The spores have a conspicuous sheath of the *eustoma* type (Fig. 110), broadest around the enlarged cell, enlarged at the base, and represented on the apical cells by discrete polar subglobose appendages. The sheath is visible in India ink but otherwise might be missed. This is the largest spore we have encountered with the *eustoma* type sheath. Müller (1950, pp. 227–228) referred this collection to *Leptosphaeria sowerbyi* (Fuckel) Sacc. but we have not been able to locate this fungus on the part of the collection now in DAOM. Most of the collections Müller referred to *Leptosphaeria sowerbyi* were on the usual host, *Scirpus lacustris* L.

It is close to *Phaeosphaeria exarata* Shoem. & Babc. but distinct.

We saw only two slides made by O. Eriksson from the type. The description given above is based on the features evident in the slides plus the ascoma dimensions given by Berlese who examined and illustrated the type (Berlese 1894, Pl. 56, Fig. 1) under the name *Leptosphaeria caricinella* Karst. (see Eriksson 1967*b*, pp. 414–415). Berlese gave the ascomata as 140–200 μm , asci 70–90 × 16–20 μm, and ascospores 38–42 × 5–6 μm. Leuchtmann (1984, pp. 149–150) referred *Phaeosphaeria consobrina* to *Phaeosphaeria juncina* (Auersw.) L. Holm after studies of the types of both but we disagree because *Phaeosphaeria juncina* has much smaller

ascospores in substantially smaller ascomata. Nor is it the same as *Phaeosphaeria petkovicensis* (Bubák & Ranoj.) Shoem. & Babc., which has longer, narrower, and paler ascospores.

Phaeosphaeria elymi (Wehmeyer) n.comb. Figs. 10, 22

≡*Leptosphaeria petkovicensis* Bubák & Ranoj. var. *elymi* Wehmeyer, Mycologia, 55: 322. 1963

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–170 μm wide, 100–170 μm high. Beak central, terete, truncate-conical, 25–35 μm long, 40–50 μm wide, of 3 or 4 layers of brown polygonal 3–5 × 3–5 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 14–20 μm thick, of 3 to 5 layers of rectangular brown 4–7 × 3–5 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 3–4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, (70)80–90(100) × 26–30 μm, short-stalked, with 8 fascicled ascospores. Ascospores narrowly fusiform, L/W 7.2, straight or slightly curved, 50–62 × 8.5–10 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards middle, yellowish brown, without guttules, very finely echinulate, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Blysmus compressus* (L.) Panzer ex Link (Cyperaceae).

COLLECTION EXAMINED: INDIA: PUNJAB: 123930, Jispa, Lahul, 11 000 ft, W. Koelz 1029, 12 Aug. 1930, ex Herb. Wehmeyer, as *Leptosphaeria petkovicensis* Bubák & Ranoj. var. *elymi* var. nov.

This collection differs from *Phaeosphaeria gigaspora* Shoem. & Babc. in having a well defined beak on the ascocarps, a uniformly brown ascocarp wall, and a central inflation in the enlarged cell of the ascospores. By contrast, *Phaeosphaeria gigaspora* has a barely perceptible beak, the ascocarp wall is darkened in the upper part, and the enlarged cell of the ascospores is widest just above the first-formed septum.

The epithet *elymi* is very misleading. The host is *Blysmus compressus*, but the typed label had some indistinct letters that may have misled Wehmeyer into assuming it was *Elymus*.

Phaeosphaeria fetanensis n.sp. Figs. 3, 12

Ascomata dispersa, immersa, globosa, glabra, 100–220 μm lat., 100–220 μm alt. Rostrum inclusum, teres, 10–15 μm long., 25–35 μm lat., cellulis brunneis polygoniis, 3–5 × 3–5 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 10–12 μm lat., cellulis brunneis polygoniis vel prismaticis, tenuitunicatis, 6–8 × 3–5 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 54–70 × 12–14 μm, 8-spori. Ascosporae biseriatae, fusiformes, 24–30 × 4.5–5.5 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.45), constricto, brunneae, granulatae, eguttulatae, leves, strato muco 2 μm omnino circumdato.

Hab. in culmis *Junci compressi*, "SWITZERLAND: GRAUBÜNDEN: 123576, Fetan, E. Müller, 15.7.1949, TYPE, ex ZT, ex Herb. Wehmeyer, as *Leptosphaeria juncina* Auersw."

The epithet refers to the collection site of the type specimen.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–220 μm wide, 100–220 μm high. Beak central, terete, flush, intraepidermal, 10–15 μm long, 25–35 μm wide, of 2–4 layers of brown polygonal 3–5 × 3–5 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 2 or 3 layers of polygonal to rectangular brown 6–8 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 54–70 × 12–14 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.6, straight or slightly curved, 24–30 × 4.5–5.5 μm, 3-septate in sequence 2:1:2, first septum constricted, supramedian (0.45), slightly constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards centre and short, yellowish brown, granular, without guttules, smooth, with a uniform 2 μm sheath.

HOSTS: (*1*) *Juncus biglumis* L., (*2*) *Juncus compressus* Jacq.

COLLECTIONS EXAMINED: NORWAY: 184951, on *1*, Bodo, J. W. Hamner, 15.VIII.1894, Herb. Lars Romell 17333, ex S, as *Leptosphaeria junciseda* Karst., sehr spärlich det. F. Petrak 1951. SWITZERLAND: GRAUBÜNDEN: 123576, on *2*, Fetan, E. Müller, 15.7.1949, TYPE, ex ZT, ex Herb. Wehmeyer, as *Leptosphaeria juncina* Auersw.

This species is distinguished by ascospores that are long and slender, with the first septum obviously supramedian, and the second cell relatively short and widened towards the base. The sheath is not conspicuous, rather thin but uniform in width. No surface markings were observed. It seems similar to other members of the subgenus *Fusispora*, but distinct from those recognized herein.

There are two species present on the slide DAOM 184951 made at S. The one included above has slender spores and is *Phaeosphaeria fetanensis*. The other with broader spores may be an undescribed species.

Phaeosphaeria franklinensis n.sp. Figs. 7, 20

Ascomata dispersa, immersa, globosa, glabra, 80–155 μm lat., 80–155 μm alt. Rostrum inclusum, teres, 10–15 μm long., 30–35 μm lat., cellulis brunneis polygoniis, 3–6 × 3–6 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 10–12 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 4–6 × 4–6 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, ovati, 45–70 × 10–12 μm, 8-spori. Ascosporae tetraseriatae vel fasciculatae, fusiformes, 34–38 × 5–6 μm, 3-septatae, in ordinem 2:1:2, septo primo submedio, (0.53), constricto, brunneae, guttulatae, echinulatae, strato muco 1–2 μm omnino circumdato.

Hab. in culmis *Junci biglumis*, "CANADA: NORTHWEST TERRITORIES: District of Franklin: 83301, 2.5 mi WNW of Isachsen, 78°48′N 103°39′W, Ellef Ringnes Island, D.B.O. Savile 4371A, 4 Aug. 1960, as *Leptosphaeria juncina* (Auersw.) Sacc."

The species is named for the District of Franklin.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–155 μm wide, 80–155 μm high. Beak central, intraepidermal, terete, 10–15 μm long, 30–35 μm wide, of 2 or 3 layers of brown polygonal 3–6 × 3–6 μm cells around a 10–15 μm diameter ostiole, without periphyses, filled with physes tips. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 2

or 3 layers of polygonal brown 4−6 × 4−6 μm pseudoparenchyma cells, slightly thickened and dark around beak but ostiole is pale yellow. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 45−70 × 10−12 μm, short-stalked, with 8 obliquely tetraseriate to fasciculate ascospores. Ascospores narrowly fusiform, L/W 6.2, straight or slightly curved, 34−38 × 5−6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), not constricted at other septa, second cell from apex enlarged towards middle, yellowish brown, with guttules, very finely echinulate, with a sheath, 1−2 μm wide.

HOST: *Juncus biglumis* L.

COLLECTION EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 83301, 2.5 mi WNW of Isachsen, 78°48′N 103°39′W, Ellef Ringnes Island, D.B.O. Savile 4371A, 4 Aug. 1960, TYPE, as *Leptosphaeria juncina* (Auersw.) Sacc.

This collection consists of many young ascocarps and a few slightly larger ones containing a few asci and spores. The fruitbodies are much darker brown above and around the small beak but the wall is uniform in width and constant in number of layers. The asci bear 8 fasciculate to tetraseriate spores. The spores are not a match for *Phaeosphaeria juncina* (Auersw.) L. Holm in that the central and end cells are subequal. The enlarged cell is widest near the middle and lacks a thickened or darker band characteristic of *Phaeosphaeria juncina*. The spore surface is not entirely smooth but the echinulations are so fine that they are not easily resolved by light microscopy. The roughenings seem to be uniformly distributed. The sheath is thin and uniform in width.

Phaeosphaeria gigaspora n.sp. Figs. 11, 23, 31

Ascomata dispersa, immersa, globosa, glabra, 110−170 μm lat., 110−170 μm alt. Rostrum inclusum, teres, 5−10 μm long., 25−35 μm lat., cellulis brunneis polygoniis, 3−4 × 3−4 μm compositum; ostiolum 10−15 μm diam., sine periphysibus. Paries ascomatis 20−25 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 6−9 × 4−6 μm compositus. Physes 2−3 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, ovati, 80−110 × 26−30 μm, 8-spori. Ascosporae fasciculatae, fusiformes, 55−70 × 7−8 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), constricto, brunneae, guttulatae, echinulatae, strato muco 1−2 μm omnino circumdato.

Hab. in culmis *Junci biglumis*, "CANADA: NORTHWEST TERRITORIES: District of Franklin: 83302, Christopher Peninsula, 78°59′N 101°35′W, Ellef Ringnes I., D.B.O. Savile 4198B, 7−8 July 1960, TYPE, as *Leptosphaeria juncina*."

The species epithet alludes to the relatively large ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 110−170 μm wide, 110−170 μm high. Beak central, intraepidermal, terete, truncate-conical, 5−10 μm long, 25−35 μm wide, of 4−6 layers of brown polygonal 3−4 × 3−4 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20−25 μm thick, of 5 or 6 layers of polygonal to rectangular brown 6−9 × 4−6 μm pseudoparenchyma cells, slightly thinner at base, darker around beak. Physes numerous, 2−3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 80−110 × 26−30 μm, short-stalked, with 8 fasciculate ascospores. Ascospores narrowly fusiform, L/W 10.0, straight or slightly curved, 55−70 × 7−8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, central cells no longer than end cells, yellowish brown, with faint guttules, uniformly finely echinulate, with a conspicuous sharply delimited sheath, 1−2 μm wide.

HOST: *Juncus biglumis* L.

COLLECTION EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 83302, Christopher Peninsula, 78°59′N 101°35′W, Ellef Ringnes, I., D.B.O. Savile 4198B, 7−8 July 1960, TYPE, as *Leptosphaeria juncina*.

This species with large ascospores is mixed with the small-spored *Phaeosphaeria franklinensis* Shoem. & Babc. The notes by Savile accurately described the large-spored species. The two are not readily separated on the material despite a tendency for the ascomata of the large-spored species to be somewhat larger because this tendency is counteracted by the general immaturity of the large-spored species.

Phaeosphaeria juncicola (Rehm) L. Holm, Symb. Bot. Upsal. 14(3): 129. 1957 Figs. 4, 13, 27, 28

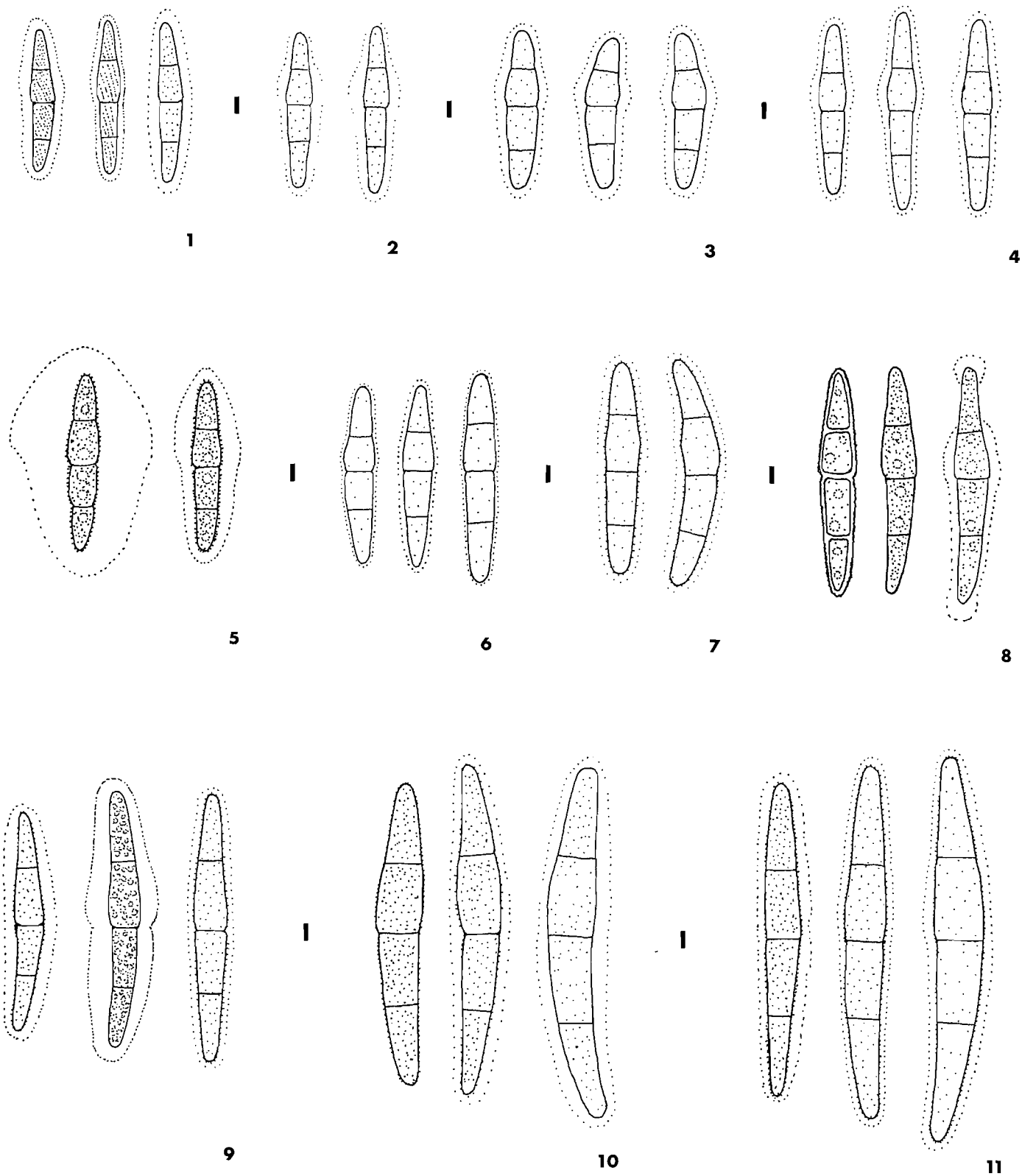
≡ *Leptosphaeria juncicola* Rehm in Winter, Hedwigia, 19: 167. 1880

Ascocarps scattered, immersed, subepidermal, globose with a flattened top and base, glabrous, 120−160 μm wide, 80−100 μm high. Beak intraepidermal at first, central, terete, truncate-conical, 0−15 μm long, 20−30 μm wide, of 3−5 layers of brown compressed-polygonal 3−5 × 2−3 μm cells around a 10−15 μm diameter ostiole, not lined with periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 14−25 μm thick, of 2−4 layers of polygonal brown 8−12 × 7−10 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 1−3 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci moderately numerous, clumped in a short basal hymenium, ellipsoidal, 45−60(70) × 12−16 μm, short-stalked, with 8 overlapping obliquely tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.4, straight or slightly curved, 30−35 × 4.5−5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base and with a thickened darker band near upper end of cell, central cells shorter than end cells, yellowish brown, without guttules, with granules at septa, finely longitudinally ridged, with a thin sheath, 1 μm wide.

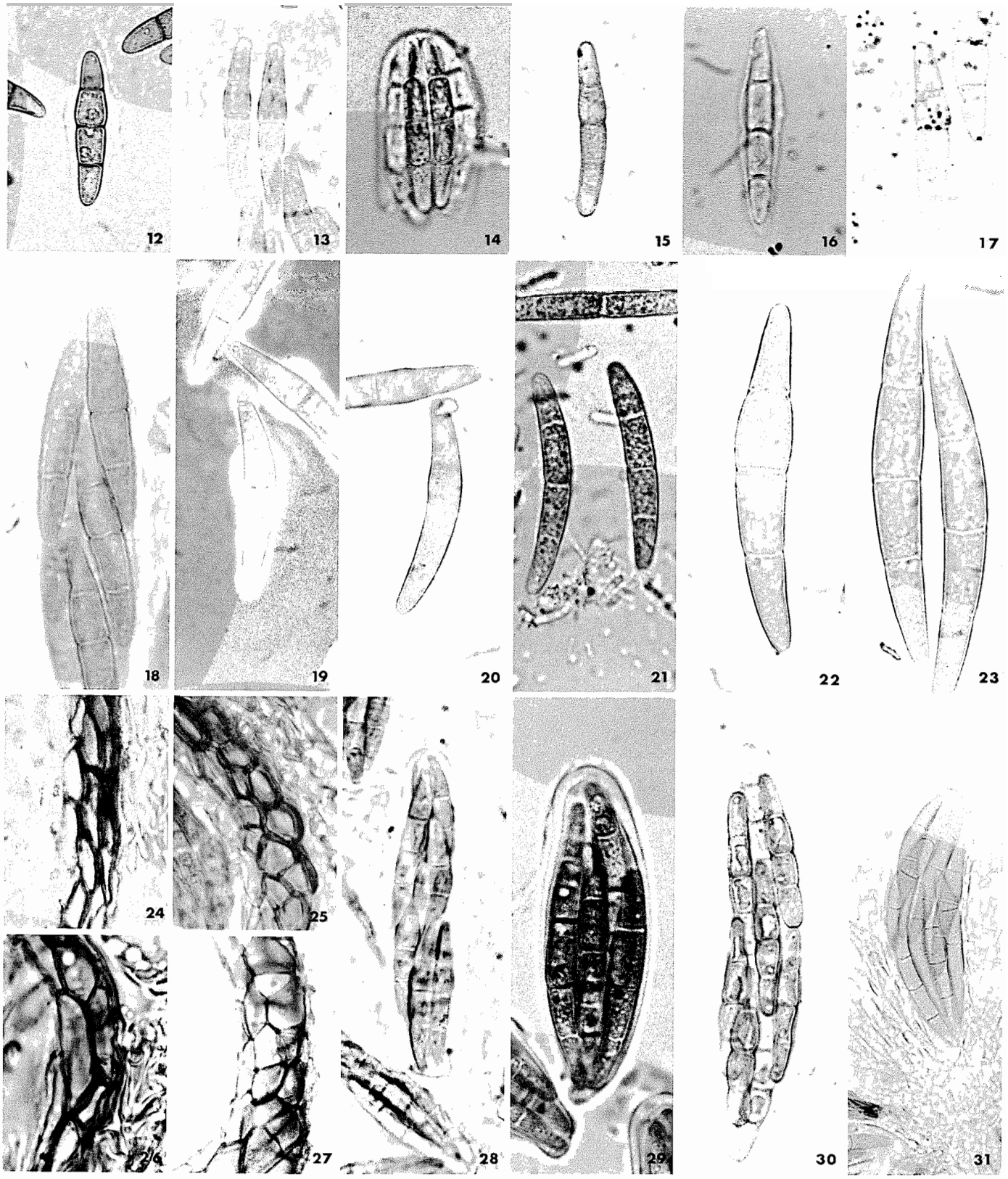
HOSTS: (*1*) *Juncus trifidus* L., (*2*) *Juncus trifidus* L. ssp. *hostii* as *Juncus hostii* (Tausch) Hartm., (*3*) *Luzula nemorosa* E. Meyer.

COLLECTIONS EXAMINED: AUSTRIA: TYROL: 196587, on *2*, Taschach-Gletscher, Pizthal, c. 6200′, Dr. Rehm, 8. 1875, Rehm. Ascomyceten 533, ex FH, as *Leptosphaeria juncicola* Rehm, (ISOTYPE). CZECHOSLOVAKIA: MAHR-WEISSKIRCHEN: 184977(*b*), on *3*, Ungersdorf, F. Petrak, 15 Apr. 1914, ex S, Fl. Boh. Mor. exs. 1182, as *Leptosphaeria Petrakii* n.sp. SWEDEN: TORNE LAPPMARK: 188782, Jukkäsjarvi parish, Kerkevagge, reg. alp., L. Holm, 18 July 1952, ex F. suec. 2195 as *Leptosphaeria juncicola* Rehm. SWITZERLAND: GRAUBÜNDEN: 184949, on *1*, Cresta mora, Albula, G. Winter, Aug. 1880, ex Herb. Sydow, ex S, as *Leptosphaeria juncicola*.

The anatomy of the ascomata is distinctive as pointed out by



FIGS. 1–11. Ascospores. ×1000. Fig. 1. *Phaeosphaeria juncina*, 196085(*a*) TYPE, 196117(*a*), 191881(*a*). Fig. 2. *Phaeosphaeria moravica*, 191881(*c*) TYPE. Fig. 3. *Phaeosphaeria fetanensis*, 184951 TYPE. Fig. 4. *Phaeosphaeria juncicola*, 196587 TYPE (two), 184977(*b*). Fig. 5. *Phaeosphaeria kukutae*, 198173 TYPE. Fig. 6. *Phaeosphaeria juncinella*, 192844 TYPE. Fig. 7. *Phaeosphaeria franklinensis*, 83301 TYPE. Fig. 8. *Phaeosphaeria consobrina*, 196138 TYPE (two), 123603. Fig. 9. *Phaeosphaeria petkovicensis*, 121684, 196084 TYPE, 126613. Fig. 10. *Phaeosphaeria elymi*, 123930 TYPE. Fig. 11. *Phaeosphaeria gigaspora*, 83302 TYPE.



FIGS. 12–23. Ascospores. ×1000. FIGS. 24–27. Wall structure. ×1000. FIGS. 28–31. Asci with ascospores. Fig. 12. *Phaeosphaeria fetanensis*, 123576 TYPE. Fig. 13. *Phaeosphaeria juncicola*, 184977(*b*). Fig. 14. *Phaeosphaeria juncina*, 196085(*a*) TYPE. Fig. 15. *Phaeosphaeria kukutae*, 198173 TYPE. Fig. 16. *Phaeosphaeria moravica*, 191881(*c*) TYPE. Fig. 17. *Phaeosphaeria juncinella*, 192844 TYPE. Fig. 18. *Phaeosphaeria consobrina*, 196138 TYPE. Fig. 19. *Phaeosphaeria consobrina*, 123603. Fig. 20. *Phaeosphaeria franklinensis*, 83301 TYPE. Fig. 21. *Phaeosphaeria petkovicensis*, 196084 TYPE. Fig. 22. *Phaeosphaeria elymi*, 123930 TYPE. Fig. 23. *Phaeosphaeria gigaspora*, 83302 TYPE. Fig. 24. *Phaeosphaeria juncinella*, 192844 TYPE. Fig. 25. *Phaeosphaeria consobrina*, 123603. Fig. 26. *Phaeosphaeria petkovicensis*, 196084 TYPE. Fig. 27. *Phaeosphaeria juncicola*, 188782. Fig. 28. *Phaeosphaeria juncicola*, 184977(*b*) (×1000). Fig. 29. *Phaeosphaeria petkovicensis*, 196084 TYPE (×1000). Fig. 30. *Phaeosphaeria kukutae*, 198173 TYPE (×1000). Fig. 31. *Phaeosphaeria gigaspora*, 83302 TYPE (×430).

Holm (1957, p. 130). The upper wall is flat with marginal shoulders that appear on the host surface as a dark ring some distance from the simple ostiole. The wall cells are quite large but thin-walled. The ellipsoidal asci fill the centrum except for a small space at the base of the simple beak. This latter area is filled with the ends of the numerous physes. *Phaeosphaeria juncicola* is distinguished by the large cells in the moderately thick ascoma walls, faintly striped ascospores with a thin sheath, a darkened band in the wall of the enlarged cell of the ascospores that have the central cells shorter than the end cells. In *Phaeosphaeria juncina* (Auersw.) L. Holm the four cells are subequal.

Collection 184977(*b*) was found on material labelled *Leptosphaeria petrakii* Saccardo (1914, p. 287), but is clearly not that species. The fungus is *Phaeosphaeria juncicola* but differs in the thinner walls of the ascocarps made up of rectangular cells, and in the slightly shorter ascospores.

The slide for 184849 was lost. Only a few notes remain with sketches of two spores.

Phaeosphaeria juncina (Auerswald) L. Holm, Symb. Bot. Upsal. 14(3): 127. 1957 Figs. 1, 14

≡*Sphaeria juncina* Auersw. apud Rabenh., F. Eur. No. 748. 1865

≡*Sphaerella juncina* (Auersw.) Auersw. in Gonnerm. & Rabenh., Mycol. Europ., p. 18. 1869

≡*Leptosphaeria juncina* (Auersw.) Sacc., Syll. Fung. 2: 66. 1883

Ascocarps scattered, immersed, subepidermal, globose to pyriform, glabrous, 60–70 μm wide, 60–80 μm high. Beak central, terete, flush, truncate-conical, 10–14 μm long, 25–30 μm wide, of 2 or 3 layers of brown rectangular 3–6 × 2–3 μm cells, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 4–6 μm thick, of 2 or 3 layers of rectangular yellow to hyaline 3–7 × 2–3 μm pseudoparenchyma cells. Physes not seen. Asci not numerous, in a narrow hymenium, curved ovoid to cylindrical, 31–48 × 10–12(17) μm, short-stalked, with 8 overlapping linearly fascicled to tetraseriate ascospores. Ascospores narrowly fusiform, L/W 5.5, straight or slightly curved, 23–28 × 4–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), not constricted at other septa, second cell from apex enlarged towards middle, central cells as long as end cells, pale yellow, without guttules, finely granular and appearing lined on surface but not clearly roughened, with an inconspicuous sheath, 1.5–3 μm wide.

HOST: *Juncus effusus* L.

COLLECTIONS EXAMINED: CZECHOSLOVAKIA: 191881(*a*), Ohrensdorf bei Mähr.-Wei., F. Petrak, May 1930, ex DAOM, Mycotheca gen. 318, as *Leptosphaeria juncina*. GERMANY: 195159, ex BPI and 196085(*a*), ex DAOM, Leipzig, Auerswald, 18 July 1862, TYPE, as *Sphaeria juncina* Awd.; 196117(*a*), Stralsund, Fischer, 1869, ex DAOM, Fungi europaei 1344, as *Sphaerella juncina* Awd.

The type is Rabenhorst's Fungi europaei 748 (Holm 1957, p. 127; Leuchtmann 1984, p. 150). We examined this number from sets at BPI, DAOM, FH, K, and S and finally found a fungus on the DAOM set that matches the redescription of *Phaeosphaeria juncina* given by Auerswald (1869, p. 18). The search was made difficult by the presence of an abundant *Mycosphaerella* with ascomata about 50 μm diameter. *Phaeosphaeria juncina* was about the same size, but much lighter colored, deeper in the host, and without any prominent beak features. *Phaeosphaeria juncina* was found on F. eur. 1344, and the redescription given above is based on material from both numbers.

In the study of the isotypes we found a *Mycosphaerella* (? *M. wichuriana* (Schroeter) Johans.), the *Coniothyrium* anamorph of *Paraphaeosphaeria michotii* (Westendorp) O. Eriksson, and a *Stagonospora*. In the number in the Rehm herbarium at S we found *Phaeosphaeria culmorum* (Auerswald ex Rehm) Leuchtmann with ascospores 22–24 × 6.5–7 μm. Rehm's notes on the packet described a fungus with spores 18 × 4 μm in asci 40 × 9–10 μm and his figure was not a match to *Phaeosphaeria juncina*. Holm found the samples in UPS and S to be very young.

The original diagnosis of *Sphaeria juncina* Auersw. apud Rabenh. is very vague. Later authors have discounted the observation that the spores become 2-septate. The only explanation that we can suggest for this observation is that the original description on the exsiccatus label referred to the *Mycosphaerella*. In the ascus the 1-septate spores overlap, often creating the impression that some of the spores are furnished with two septa near the middle. This impression is not compelling enough to suggest that the original description did not apply to the species we redescribed above. We are convinced we examined the fungus that Auerswald redescribed as *Sphaerella juncina*. The species agrees with the original description except for the ascospores "becoming 2-septate." It is clear that we adopted a very restricted concept of *Phaeosphaeria juncina* that is not in accord with Leuchtman (1984), or Holm (1957). However, we tried to match the original description and Auerswald's redescription and illustration that followed shortly thereafter. Holm (1957, pp. 127–128) gave a good resumé of the problems with the type of *Phaeosphaeria juncina*, and expressed a reasonable disbelief about Auerswald's observation of a sheath around the ascospores. Although we observed a sheath of *Phaeosphaeria juncina* ascospores, it is not so prominent that it would have been noted in 1869 with the optics then available.

We do not accept that *Phaeosphaeria petkovicensis* (Bubák & Ranoj.) Shoem. & Babc. is a synonym. It does occur mixed with *Phaeosphaeria juncina* on Petrak, Myc. germ. 318. Another species that occurs on *Juncus* is *Phaeosphaeria juncophila* Leuchtmann. It is close to our concept of *Phaeosphaeria juncina* but perhaps more robust: ascomata 100–150, asci 50–85 × 12–20, ascospores 23–31 × 5–6 μm. *Phaeosphaeria juncinella* (Mouton) Shoem. & Babc. is recognized as distinct.

Phaeosphaeria juncinella (Mouton) n.comb. Figs. 6, 17, 24

≡*Metasphaeria juncinella* Mouton, Bull. Soc. Roy. Bot. Belg. 39: 47. 1900

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200–220 μm wide, 175–220 μm high. Beak central, terete, truncate-conical, 20–35 μm long, 60–70 μm wide, of 4 or 5 layers of brown polygonal 5–7 × 5–7 μm cells around a 30–35 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–14 μm thick, of 2 or 3 layers of rectangular brown 10–14 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with numerous yellow granules, with slime coating. Asci numerous, in a broad hymenium around a large central lumen, cylindrical, 100–140 × 12–16 μm, short-stalked, with 8 overlapping

linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 6.0, straight or slightly curved, 31–37(41) × 5.5–6.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, second cell from apex enlarged towards base, central cells no longer than end cells, yellowish brown, without guttules, with granules accumulated near septa, smooth, with a thin inconspicuous sheath, 1 μm wide.

HOST: *Juncus conglomeratus* L.

COLLECTION EXAMINED: BELGIUM: 192844, Beaufays, V. Mouton 539, autumno, TYPE, *Metaphaeria juncinella* Mouton n.sp. ad. int., ex BR.

The type specimen agrees well with Mouton's description. The ascocarps are larger than given for *Phaeosphaeria juncina* (Auersw.) L. Holm. The ascocarp wall is uniformly thin but thickened around the base of the short beak. The asci sometimes exceed the width given by Mouton; however, the ascospores are about the same width. An unusual feature noted is the presence of numerous small yellow granules near the septa of the ascospores and within the physes.

This specimen is distinct from *Phaeosphaeria juncina* in having larger ascocarps, longer asci, a thin sheath on the spores, absence of a dark band on the enlarged cell, and differences in the proportions of the ascospore cells. *Phaeosphaeria juncophila* Leuchtmann has shorter spores.

Phaeosphaeria kukutae G. S. Ridley, N.Z. J. Bot. 26: 413. 1988 Figs. 5, 15, 30

Ascocarps scattered, immersed, subepidermal, pyriform to globose, glabrous, 150–225 μm wide, 110–220 μm high, with brown hyphae in host epidermis around beak. Beak central, intraepidermal, terete, flush, 15–20 μm long, 30–65 μm wide, of 2 or 3 layers of brown polygonal 3–5 × 3–5 μm cells around a 25–30 μm diameter ostiole, with a few short hyaline periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–15 μm thick, of 3 or 4 layers of polygonal brown 4–6 × 3–4 μm pseudoparenchyma cells but darker and more compact at base of short beak. Physes numerous, 2–3 μm wide, with thin septa at 10- to 25-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 75–90 × 12–15 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 5.6, straight or slightly curved, 26–35 × 5–6 μm, 3-septate in sequence 2:1:2, first septum median (0.50), slightly constricted at all septa, without dots at ends of septa, second cell from apex enlarged towards base, all cells subequal, yellowish brown, with two guttules per cell, coarsely echinulate to verrucose, with a conspicuous sharply delimited sheath, 5–8 μm wide.

HOST: *Scirpus nodosus* Rottb.

COLLECTION EXAMINED: NEW ZEALAND: WELLINGTON: 198173, Wellington, 2 km W Sinclair Head, G. S. Ridley, 22 September 1985, HOLOTYPE, PDD 50249.

The fungus is easily detected in the host because the epidermal cells are darkened around the small flush beaks by extensive intracellular mycelium. The ascomata dry to a variety of shapes: vaselike, pyriform, or rarely depressed globose. The ascoma walls are thin and composed of very small cells. The beak is flush and short but made conspicuous by the thicker, darker, denser wall at the base of the beak. The species is closest to *Phaeosphaeria franklinensis* Shoem. & Babc. but has ascospores with more conspicuous echinulations and a more robust sheath.

Phaeosphaeria moravica n.sp. Figs. 2, 16

Ascomata dispersa, immersa, globosa, glabra, 100–120 μm lat., 100–120 μm alt. Rostrum non vidi. Paries ascomatis 6–9 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 3–4 × 3–4 μm compositus. Physes non vidi. Asci pauci, cylindrici, 50–65 × 10–13 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, (22)24–25(30) × 4–5 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), non constricto, olivaceae, eguttulatae, leves, strato muco 2–3 μm omnino circumdato.

Hab. in culmis *Junci effusi*, "CZECHOSLOVAKIA: 191881(*c*), Mähren, Ohrensdorf bei Mähr.-Weisskirchen, F. Petrak, V.1930, TYPE, ex DAOM, Myc. gen. 318, as *Leptosphaeria juncina*."

The epithet refers to the Moravia region of Czechoslovakia.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–120 μm wide, 100–120 μm high. Beak not seen. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 6–9 μm thick, of 2 or 3 layers of polygonal brown 3–4 × 3–4 μm pseudoparenchyma cells. Physes not seen. Asci not numerous, in a basal cluster, cylindrical, 50–65 × 10–13 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.3, straight or slightly curved, (22)24–25(30) × 4–5 μm, 3-septate in sequence 2:1:2, first septum not constricted, median (0.50), not constricted at other septa, without dots at ends of septa, septa thin, second cell from apex scarcely enlarged towards base, central cells slightly longer than end cells, very pale greenish brown, without guttules, smooth, with a sheath, 2–3 μm wide and widest at enlarged cell.

HOST: *Juncus effusus* L.

COLLECTION EXAMINED: CZECHOSLOVAKIA: 191881(*c*), Mähren, Ohrensdorf bei Mähr.-Weisskirchen, F. Petrak, V.1930, TYPE, ex DAOM, Myc. gen. 318, as *Leptosphaeria juncina*.

This is a very small spored species with reduced fruitbodies without a noticeable beak and apparently lacking physes. It is allied to *Phaeosphaeria juncina* (Auersw.) L. Holm but is included in *Phaeosphaeria* with some reservation.

Phaeosphaeria petkovicensis (Bubák & Ranojević in Ranojević) n.comb. Figs. 9, 21, 26, 29)

≡*Leptosphaeria petkovicensis* Bubák & Ranojević in Ranojević, Ann. Mycol. 8: 361. 1910

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–150 μm wide, 60–140 μm high. Beak central, intraepidermal, terete, flush, truncate-conical, 5–20 μm long, 20–35 μm wide, of 2–5 layers of yellow to brown polygonal 2–5 × 2–5 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–20 μm thick, of 2–4 layers of polygonal brown 4–8 × 4–7 μm to rectangular 8–16 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–4 μm wide, with thin septa at 5- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 50–100 × 10–24 μm, short-stalked, with 8 overlapping linearly fascicled to tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.8, straight or slightly curved, (26)34–50 × 4.5–6(7) μm, 3-septate in sequence 2:1:2, first septum slightly constricted and terminated with a small black dot, submedian (0.53), not constricted at other septa, central cells as long as end cells, second cell from apex enlarged towards base, central cells not shorter than end cells, yellow-

ish brown, with fine granular cytoplasm but no large guttules, smooth to finely echinulate, with a centrally constricted diffuse sheath, 2−5 μm wide.

HOSTS: (*1*) *Juncus conglomeratus* L., (*2*) *Juncus effusus* L., (*3*) *Juncus glaucus* Ehrh., (*4*) *Juncus lamprocarpus* Ehrh. ex Hoffm., (*5*) *Juncus* sp.

COLLECTIONS EXAMINED: CZECHOSLOVAKIA: 191881(*b*), on *2*, Ohrensdorf bei Mähr-Weisskirchen, F. Petrak, May 1930, ex Mycotheca generalis 318, as *Leptosphaeria juncina* (Auersw.) Sacc. ENGLAND: 121684, on *2*, Goose Hill Woods, Hanbury, Worcestershire, P. S. M. Rhodes 3808, 3 Nov. 1928. FRANCE: 196468(*b*), on *3*, Noidan, Côte d'Or, F. Fautrey, Décembre 1888, ex FH, Roumeguère, Fungi selecti exsiccati 4948, as *Leptosphaeria riparia* (with *Phaeosphaeria norfolcia* 186468(*a*). GERMANY: 126613, on *4*, Oestricherwald (Nassau), Fuckel, Autumno, ex Herb. Fuckel 1884, ex Herb. Barbey-Boissier 368, as *Leptosphaeria monilispora*; 193360, on *1*, Brandenburg: Zepenschleuse bei Liebenwalde, H. Sydow, 12 June 1905, ex DAOM, ex Mycotheca germanica 382; 196129, ex DAOM 196418, ex FH, on *1*, Brandenburg: Rangsdorf bei Zossen, H. Sydow, 24.6.1919, ex Mycotheca germanica 1562, as *Leptosphaeria petkovicensis*; 196552, on *2*, Stralsund, Fischer, 1869, Rabenh. F. Eur. 1334, ex FH, as *Sphaerella juncina*. SWITZERLAND: ZÜRICH: 123582(*a*), on *5*, Katzensee, E. Müller, 25 Apr. 1949, ex ZT, ex Herb. Wehmeyer, as *Leptosphaeria petkovicensis* Bub. & Ran. ST. GALLEN: 123575, on *5*, Molser Alp., E. Müller, 21.6.1949, as *Leptosphaeria juncina*, Herb. L. E. Wehmeyer. YUGOSLAVIA: 196084, on *2*, Nähe Kloster Petkovica (herruck von Schabarr) (Sr. Dozudic), 29.VI.(1)906, ex Herb. Bubák, ex Brooklyn Bot. Gard. Herb., Ex BPI, TYPE.

We have included collections with both smooth and echinulate ascospores within our concept of *Phaeosphaeria petkovicensis*. It is distinct from *Phaeosphaeria consobrina* (Karst.) O. Eriksson, which has broader, shorter, dark reddish brown ascospores with thick walls. Both are distinct from *Phaeosphaeria juncinella* (Mouton) Shoem. & Babc., which has delicate, nearly hyaline short ascospores in long cylindrical asci in large thin-walled ascomata. The concept we adopt for *Phaeosphaeria juncina* (Auersw.) L. Holm differs from the one adopted by Leuchtmann (1984) as explained with that species. We believe that the presence of *Phaeosphaeria petkovicensis* on many exsiccatae specimens mixed with the smaller and inconspicuous *Phaeosphaeria juncina* has caused considerable confusion. For this reason, remarks are given on a number of individual specimens below.

The type packet bears handwritten notes that correspond with the original description. The material is mature with only a few asci per ascocarp. Physes were not seen by us but were mentioned in the description. The asci are mainly ellipsoidal with 8 fasciculate to rarely tetraseriate ascospores that become free and spread like fingers. The spores resemble those of *Phaeosphaeria juncina* in septation but are much larger than given in Auerswald's emendation (24−30 × 3−4 μm). The sheath is broad, inconspicuous, and has a diffuse margin. No dark band was observed on the enlarged cell as described by Leuchtmann (1984) for *Phaeosphaeria juncina* with which he synonymized *Phaeosphaeria petkovicensis*.

Collection 123582 determined as *L. petkovicensis* by E. Müller was not the basis of his published redescription (1950, p. 223), nor was it cited by Leuchtmann (1984). Generally, this collection agrees with Leuchtmann's concept of *Phaeosphaeria juncina* in possessing the long central cells in the ascospores and the thick sheath. However, the characteristic band was not observed on the enlarged cell. The sheath appears to cause distortion of the appearance of spores within the ascus where they appear much broader and seem to lack cell contents even when contrasted with recently released spores. *Massariosphaeria typhicola* (Karsten) Leuchtmann, is also present on the collection.

Collection 121684 matches Leuchtmann's concept of *Phaeosphaeria juncina* reasonably well except for the lack of a band on the enlarged cell; however, his concept is rather broad.

Although referred to *Phaeosphaeria juncina* (Auersw.) L. Holm by Leuchtmann (1984), collection 191881 (*b*) does not fully match his concept. It does have a moderately broad sheath.

Collection 193360 has abundant material in poor condition. The ascocarps appear very desiccated and do not revive. There are few asci in each ascocarp and free spores are hard to find. The collection was cited by Holm (1957, p. 127) and Leuchtmann (1984, p. 98). The ascospores differ slightly from Leuchtmann's description of spore features. No band was observed on the enlarged cell, the sheath was thin not thick, and the surface is finely echinulate not smooth.

Phaeosphaeria petkovicensis 126613 was found as a second species on Fuckel's collection of *Leptosphaeria monilispora* = *Pleospora monilispora* Fuckel, which was discussed under *Paraphaeosphaeria michotii* (Shoemaker and Babcock 1985) and is discussed further in the excluded species.

SUBGENUS *Ovispora*

SUBGENUS ***Ovispora*** n.subg.

Ascosporae 3-septatae, late ellipsoideae long./lat. minus quam 3.5, leves vel echinulatae, strato muco impariter vel omnino circumdato vel nullo.

TYPE: *Phaeosphaeria microscopica* (Karsten) O. Eriksson.

The name of the subgenus is derived from ovum and spora, and refers to the ovoid shape of the ascospores.

Ascospores 3-septate, broadly ellipsoidal with broadly rounded ends, L/W less than 3.5, smooth or echinulate, sheath uniform, variously differentiated or lacking.

Key to species included in subgenus *Ovispora*

1. Ascospores over 9 μm wide 2
2. Ascospores smooth 3
3. Ascospores without a sheath ..... *P. gaubae*
3. Ascospores with a sheath 4
4. Sheath uniform ..... *P. caricinella*
4. Sheath narrowed to ends ..... *P. oreochloae*

2. Ascospores echinulate 5

5. Ascospores broadly rounded ..... *P. typharum*
5. Ascospores acute ..... *P. canadensis*

1. Ascospores less than 9 μm wide 6

6. Ascospores smooth 7

7. Ascospores without a sheath 8

8. First septum 0.48, central cells long ..... *P. marcyensis*
8. First septum 0.52, central cells short ..... *P. lycopodina*

7. Ascospores with a sheath 9

9. Sheath uniform 10

10. Ascospore L/W 2.3 ..... *P. halima*
10. Ascospores slender, L/W over 2.8 11

11. Ascospores under 18 μm long 12

12. Ascospore central cells short ..... *P. tricincta*
12. Ascospore cells subequal ..... *P. borealis*

11. Ascospores over 18 μm long 13

13. First septum above middle 0.45 ..... *P. parvula*
13. First septum 0.53 ..... *P. culmorum*

9. Sheath with bell like depression at ends 14

14. Ascospores 18–20 × 6–8 μm ..... *P. alpina*
14. Ascospores 22–27 × 7.5–9 μm ..... *P. cookei*

6. Ascospores verrucose or echinulate 15

15. Ascospores verrucose, 14–16.5 × 4–5 μm ..... *P. lutea*
15. Ascospores echinulate, 20–24 × 6.5–7 μm ..... *P. microscopica*

Phaeosphaeria alpina Leuchtmann, Sydowia, 37: 117–118. 1984 Figs. 41, 53

Ascocarps scattered to clustered, immersed, subepidermal, subglobose, glabrous, 150–200 μm wide, 150–200 μm high. Beak central, terete, flush 5–10 μm long, 30–40 μm wide, of 4 or 5 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 3 to 5 layers of polygonal to rectangular brown 6–8 × 2–3 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci not numerous, clustered, cylindrical, 62–75 × 15–17 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores ellipsoidal to clavate, L/W 2.6, straight or slightly curved, thick-walled, 18–20 × 6–8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, golden (in lactic), olive (in water), without guttules, smooth, with a sheath 2–8 μm wide laterally but bell-shaped at ends.

HOSTS: (*1*) *Carex curvula* All., (*2*) *Juncus ensifolius* Wikstr., (*3*) *Juncus* sp., (*4*) *Luzula divaricata* Wats., (*5*) *Stellaria crassipes* Hulten, (*6*) undetermined grass.

COLLECTIONS EXAMINED: CANADA: BRITISH COLUMBIA: 97790, on *2*; 105333, on *4*; 111069, on *3*, Revelstoke, elevation 5100 ft, R. A. Shoemaker, 23 July 1963. NORTHWEST TERRITORIES: District of Franklin: 83286, on *5*, northern Borden Island, D. R. Horn, late July 1960. UNITED STATES OF AMERICA: OREGON: 179098, on *5*, Tombstone Prairie, Lane County, MSA Foray, W. B. & V. G. Cooke 50353, 16.8.1975, as *Leptosphaeria culmorum* Auersw. AUSTRIA: 123677, on *1*; 123693, on *6*, Patcherkofel, Innsbruck, L. E. Wehmeyer, 21 July 1953, as *Leptosphaeria typharum*.

This fungus has an obvious intraepidermal dark mycelial growth around the ostiolar region that at first is covered by a waxy white layer of cuticle and the upper part of some epidermal cells. The white area eventually disappears leaving a circular opening. The distinctive features are the large cells of the thin ascoma wall and the peculiar ascospores. The ascoma wall is composed of relatively large cells approaching those seen in *Mycosphaerella*. However, some physes are present and their upper parts can be seen agglutinated above the ascus tips. The ascospores are like those of *Phaeosphaeria typharum* (Desm.) L. Holm but distinctly smaller with thick septa and a shape approaching clavate. Superficially, they are somewhat like those of *Phaeosphaeria microscopica* (Karst.) O. Eriksson. However, the wall is double layered and thick and the septa are thick with very prominent dots at the junctions. The outer surface of the spore is smooth, but in at least some collections the inner wall of the spore is roughened. The sheath is strongly developed, constricted at the first septum and lacking at the ends. There are no globoid guttules but a cuboid cell content is visible in most cells.

This species occurs on a variety of hosts in alpine regions of central Europe and is here reported for the first time from Canada.

Collection 83286 on *Stellaria* may be saprobic.

Leuchtmann (1984) found that in culture, a *Stagonospora* anamorph with 3-septate conidia 24–33 × 3.5–5 μm occurs. Some strains gave smaller 1-septate conidia. The teleomorph formed in some isolates.

Phaeosphaeria borealis n.sp. Figs. 34, 52, 69

Ascomata dispersa, immersa, globosa, glabra, 200–225 μm lat., 200–225 μm alt. Rostrum inclusum, teres, 0–10 μm long., 30–40 μm lat., cellulis brunneis polygoniis, 4–6 × 2–4 μm compositum; ostiolum 20–25 μm diam., sine periphysibus. Paries ascomatis 8–10 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 4–6 × 2–4 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, cylindrici, 40–60 × 11–13 μm, 8-spori. Ascosporae tetraseriatae vel biseriatae, fusiformes, 16–18(20) × 5.5–6.5(8.5) μm, 3-septatae, in ordinem 2:1:2, septo primo submedio, (0.53), constricto, brunneae, eguttulatae, leves, sine muco.

Hab. in culmis *Luzulae nivalis*, "CANADA: NORTHWEST TERRITORIES: District of Franklin: 70472, Somerset Island, Central Plateau, 1100–1200 ft, 73°15′N, 94°50′W, D.B.O. Savile 3795A, 11 Aug. 1968, TYPE."

The epithet refers to the northern regions where the fungus occurs.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200–225 μm wide, 200–225 μm high. Beak substomatal, central, terete, flush, intraepidermal, 0–10 μm long, 30–40 μm wide, of 3–5 layers of brown polygonal to rectangular 4–6 × 2–4 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–10 μm thick, of 2 or 3 layers of polygonal brown 4–6 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci not numerous, cylindrical, 40–60 × 11–13 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores broadly fusiform, L/W 2.8, straight, 16–18(20) × 5.5–6.5(8.5) μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, cells subequal, yellowish brown, without guttules, moderately thick walled, smooth, without a sheath.

HOSTS: (*1*) *Carex* sp., (*2*) *Luzula nivalis* (Laest.) Beurl.

COLLECTIONS EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 70472, on *2*, Somerset Island, Central Plateau, 1100–1200 ft, 73°15′N, 94°50′W, D.B.O. Savile 3795A, 11 Aug. 1958, TYPE. QUEBEC: 74294, on *1*, Lac Cascapedia, H. E. & M. E. Bigelow 2248, 21 Aug. 1957.

Phaeosphaeria borealis is close to *Phaeosphaeria lutea* Eriksson but has larger ascomata and smooth ascospores. It does not match the description of *Leptosphaeria luzulae* Winter, which has greenish spores that are spindle shaped and slender, 19 × 4 μm.

Phaeosphaeria canadensis n.sp. Figs. 45, 60, 63, 66

Ascomata dispersa, immersa, globosa, glabra, 250–300 μm lat., 250–300 μm alt. Rostrum erumpens, teres, 50–80 μm long., 70–120 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 30–50 μm diam.; periphyses hyalinae, 2 μm lat. Paries ascomatis 25–30 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 8–10 × 3–5 μm compositus. Physes 1–1.5 μm lat., multiseptatae, eguttulatae, mucosae, anastomosans. Asci copiosi, cylindrici, 110–130 × 12–15 μm, 8-spori. Ascosporae uniseriatae, fusiformes, curvatae, (22)28–33 × 8–10 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), constricto, castaneae, eguttulatae, echinulatae, strato muco 5–8 μm circumdato.

Hab. in culmis *Caricis spectabilis*, "CANADA: BRITISH COLUMBIA: 105100, Mt. Revelstoke, elev. 6300 ft, R. A. Shoemaker, 24 July 1963, TYPE, as *Leptosphaeria epicarecta*."

The epithet refers to Canada.

Ascocarps scattered, immersed, subepidermal but appearing exposed, globose, glabrous, 250–300 μm wide, 250–300 μm high. Beak central, terete, erumpent, truncate-conical, 50–80 μm long, 70–125 μm wide, of 8–10 layers of very dark brown polygonal 5–7 × 5–7 μm cells around a 30–50 μm diameter ostiole, with hyaline 2 μm wide periphyses. Ascocarp wall surface a textura prismatica. Wall in longitudinal section laterally uniformly 25–30 μm thick, of 6–10 layers of rectangular brown 8–10 × 3–5 μm pseudoparenchyma cells. Physes numerous, 1–1.5 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating, much anastomosed. Asci numerous, in a broad hymenium, cylindrical, 110–130 × 12–15 μm, short-stalked, with 8 linearly uniseriate ascospores. Ascospores broadly fusiform, L/W 3.2, slightly curved, (22)28–33 × 8–10 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), slightly constricted at other septa, with dots at ends of broad septa, second cell from apex enlarged towards base, central cells short, reddish brown, without guttules, finely echinulate, with a conspicuous sharply delimited sheath, 5–8 μm wide, germ tubes lateral from all four cells.

HOST: *Carex spectabilis* Dewey.

COLLECTION EXAMINED: CANADA: BRITISH COLUMBIA: 105100, Mt. Revelstoke, elev. 6300 ft, R. A. Shoemaker, 24 July 1963, as *Leptosphaeria epicarecta*.

The opening in the terete beak varies from a circular pore to a slit to a cruciate opening, but the beak itself is not flattened as in Lophiostomataceae. A number of subtle features make this species unusual in *Phaeosphaeria*: the narrow anastomosed physes, the uniseriately arranged ascospores with thick walls and prominent septa, the fine echinulations, and the very prominent sheath evident even after long storage. It differs from *Diapleella clivensis* (Berk. & Br.) Munk, which has long-stalked asci, a triparted ascoma wall, and larger ascospores.

Phaeosphaeria caricinella (Karsten) O. Eriksson, Ark. Bot. 6: 414. 1967 Figs. 46, 58

≡*Leptosphaeria caricinella* Karst., Oefvers. K. Sv. Vet.-Akad. Förh. 2: 100. 1872

=*Leptosphaeria vagans* Karst., Oefvers. K. Sv. Vet.-Akad. Förh. 2: 101. 1872. non *Phaeosphaeria vagans* (Niessl) O. Eriksson, Ark. Bot. 6: 430. 1967

=*Leptosphaeria junciseda* Karsten, Oefvers. K. Sv. Vet.-Akad. Förh. 2: 102. 1872

Ascocarps scattered, immersed, subcuticular, globose, glabrous, 150–250 μm wide, 150–250 μm high. Beak central, intraepidermal, flush, terete, 10–35 μm long, 50–80 μm wide, of 3–5 layers of brown polygonal 3–10 × 3–10 μm cells around a 17–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–28 μm thick, of 2–5 layers of polygonal to slightly flattened to rectangular brown 5–12 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–4 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci not numerous, clustered, cylindrical, 85–140 × 20–34 μm,

short-stalked, with 8 overlapping obliquely triseriate to biseriate ascospores. Ascospores broadly fusiform, L/W 3.2, straight or slightly curved, 30−41 × 9−12 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.52), not constricted at other septa, all septa with black dot at ends (visible in pale colored spores), second cell from apex enlarged towards middle, yellowish to reddish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 2−5 μm wide.

HOSTS: (*1*) *Carex aquatilis* Wahlenb. var. *stans* (Drej.) Boott, (*2*) *Carex rariflora* (Wahlenb.) J. E. Sm., (*3*) *Carex salina* Wahlenb., (*4*) *Carex saxatilis* L. as *Carex pulla* Good., (*5*) *Carex* sp., (*6*) *Deschampsia* ? *brevifolia* R. Br., (*7*) *Dupontia fisheri* R. Br., (*8*) *Eriophorum angustifolium* Honckeny subsp. *alpinum* (Gaudin) Rothm., (*9*) *Eriophorum scheuchzeri* Hoppe, (*10*) *Phippsia concinna* (Fries) Lindeb., (*11*) *Phippsia* sp., (*12*) *Puccinellia angustata* (R. Br.) Rand. & Redf., (*13*) *Puccinellia bruggemanii* Th. Sor., (*14*) *Saxifraga hirculus* L. var. *propinqua* (R. Br.) Simm.

COLLECTIONS EXAMINED: CANADA: QUEBEC: 63513(*a*), on *5*, Port Burwell, R. T. Wilce 254, 17 August 1954. NORTHWEST TERRITORIES: District of Franklin: 63537, on *2*, 4 July 1950 and 63123(*a*), on *3*?, 14 July 1950 and 63475, on *8*, 28 August 1950 and 63135, on *9*, 16 July 1950, Baffin Island, Head of Clyde Inlet, P. Dansereau; 88205, on *1*, Viks Fiord, Devon Island, H. C. Honeyman, 19 July 1961; 83278, on *7*, 1.5 mi SW of Isachsen, Ellef Ringnes Island, D.B.O. Savile 4321B, 28 July 1960; 83280 on *10*, 0.75 mi S of Isachsen, D.B.O. Savile 4352F, 2 August 1960; 83282, on *12*, 7 July 1960, D.B.O. Savile 4191B and 83298, on *6*, 7−8 July 1960, D.B.O. Savile 4195AC, Christopher Peninsula, Ellef Ringnes Island; 70448, on *14*, D.B.O. Savile 3559A, 21 July 1958 and 70447, on *1*, D.B.O. Savile 3805B, 13 August 1958, Base Camp, Somerset Island; 70444, on *10*, Aston Bay, Somerset Island, D.B.O. Savile 3726B, 8 August 1958; 70445, on *13*, Four Rivers Bay, Somerset Island, D.B.O. Savile 3721B, 29 July 1958; 83279, on *10*, eastern side of ice cap, Meighen Island, K. C. Arnold, Summer 1959; 83281, on *10*, Decca Green Station, Meighen Island, D.B.O. Savile 4322A, 28 July 1960; 88149, on *11*, Nunatak D, Meighen Island, I. Stabelsky, 21 August 1961. NORWAY: SPITZBERGEN: 196179, on *4*, Nordfjorden, Th. M. Fries, 10.8.1868, ex UPS, as *Leptosphaeria caricinella* TYPE with *Leptosphaeria consobrina*; 196176, on *7*, Advent Bay, Th. M. Fries 4−8.8.1868, ex UPS as *Leptosphaeria vagans* Karsten Type, non *Phaeosphaeria vagans* (Niessl) O. Eriksson.

The two slides from the type of *Leptosphaeria caricinella* obtained from O. Eriksson were in excellent condition with thin sections for ascoma wall structure. Sections of the beak area were not seen by us. The slides were mounted in Glyceel and spore sheath features were not evident as in water mounts but a trace of a sheath was observed. Eriksson (1967*b*) described it as circa 2 μm wide. Eriksson included *Leptosphaeria vagans* Karsten as a synonym, but noted the difference in the end cells of ascospores of the two collections. We attempted to segregate two taxa on arctic grasses and arctic species of *Carex* corresponding to *Leptosphaeria vagans* Karsten described from *Dupontia fisheri* and *Leptosphaeria caricinella* without success and conclude that it is one variable species. The diagnostic features we noted in the ascospores are the slightly submedian first septum, the dark dots at the ends of septa detectable in light colored spores, the smooth surface, and the uniform sheath 2−5 μm wide.

We saw two slides prepared by O. Eriksson from the type of *Leptosphaeria vagans* Karsten. The material was in good condition, but some features could not be observed because of the mountant used. The only difference noted between this collection and the type of *Phaeosphaeria caricinella* was in the end cells of the ascospores, as previously noted by Eriksson. In the collection of *Leptosphaeria vagans*, the end cells approach being semiglobose. In *Phaeosphaeria caricinella*, the ends are hemiellipsoidal. Six arctic Canadian collections did not correlate the spore form with the host. In fact, the best example of the hemiellipsoidal spore form supposedly characteristic of *Phaeosphaeria carcinella* was found on a collection on *Dupontia*. Eriksson's synonymy is accepted.

According to Eriksson (1967*b*, p. 415) the type of *Leptosphaeria junciseda* Karst. on *Juncus biglumis* from Spitzbergen is immature. The description does not differ from that of *Phaeosphaeria caricinella*. Berlese (1894) illustrated material of both and the figures appear to be of one species.

Phaeosphaeria cookei n.sp. Figs. 42, 56

Ascomata dispersa, immersa diende erumpentia, globosa, glabra, 150−170 μm lat., 140−170 μm alt. Rostrum inclusum, teres, 15−25 μm long., 50−60 μm lat., cellulis brunneis polygoniis, 3−5 × 3−5 μm compositum; ostiolum 20−25 μm diam., sine periphysibus. Paries ascomatis 18−24 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 5−8 × 5−8 μm compositus. Physes non vidi. Asci copiosi, cylindrici, 80−90 × 20−22 μm, 8-spori. Ascosporae biseriatae, fusiformes, 22−27 × 7.5−9 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), constricto, brunneae, eguttulatae, leves, strato muco 5−6 μm impariter circumdato.

Hab. in culmis *Luzulae subcongestae*, "UNITED STATES OF AMERICA: CALIFORNIA: 121686(*a*), Horse Camp, Mt. Shasta, 8250 ft, Wm. B. Cooke (20467), 20 Aug. 1947, TYPE, ex Herb. Wehmeyer, as *Leptosphaeria typharum*."

The epithet refers to the collector, Dr. W. B. Cooke.

Ascocarps scattered, immersed, appearing exposed, intraepidermal, globose, glabrous, 150−170 μm wide, 140−170 μm high. Beak central, terete, flush, 15−25 μm long, 50−60 μm wide, of 4−6 layers of brown polygonal 3−5 × 3−5 μm cells around a 20−25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 18−24 μm thick, of 3 or 4 layers of polygonal brown 5−8 × 5−8 μm pseudoparenchyma cells. Physes not seen. Asci numerous, in a broad hymenium, cylindrical, 80−90 × 20−22 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.0, slightly curved, 22−27 × 7.5−9 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), slightly constricted at other septa, second cell from apex enlarged towards middle, yellowish brown, without guttules, smooth, with a thin inner conspicuous sharply delimited sheath, 1 μm wide and a diffuse sheath 5−6 μm wide laterally but lacking at ends.

HOSTS: (*1*) *Luzula subcongesta* Jepson, (*2*) *Sitanion jubatum* J. G. Sm.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: CALIFORNIA: 121686(*a*), on *1*, Horse Camp, Mt. Shasta, 8250 ft, Wm. B. Cooke (20467), 20 Aug. 1947, TYPE, ex Herb. Wehmeyer, as *Leptosphaeria typharum*; 196188(*b*), on *2*, Shore of Lake Butte, Lassen National Park, Lee Bonar. 10 July 1962, California Fungi 1168, ex DAOM as *Leptosphaeria vagans* Karst.

This species has a peculiar two-layered sheath on the ascospores. The spores are the same general size as for *Phaeosphaeria alpina* Leuchtmann but longer and hemiellipsoidal at the ends, not hemispherical. The beak features might be interpreted as a very small cap, but fully mature ascomata with obvious discharge openings were not seen.

A new species, *Diadema tetramera*, collection 121686(*b*), occurs on the same gathering as *Phaeosphaeria cookei* but is easily distinguished by the larger ascomata.

Phaeosphaeria culmorum (Auerswald ex Rehm) Leuchtmann, Sydowia, 37: 113. 1984 Figs. 39, 51, 68
≡*Leptosphaeria culmorum* Auerswald ex Rehm, Ber. Naturhist. Ver. Augsburg, 26: 60. 1881
≡*Scleropleella culmorum* (Auersw.) Höhnel, Ber. Deutsch. Bot. Ges. 36: 135. 1918
≡*Phaeosphaeria microscopica* var. *culmorum* (Auersw. in Rehm) O. Eriksson, Ark. Bot. 6: 427. 1967
=*Leptosphaeria lolii* H. & P. Sydow, Hedwigia, 39: 1. 1900
=*Leptosphaeria culmorum* Auersw. var. *paleicola* P. Hennings, Verh. Bot. Ver. Brandenburg, p. 177, 1902
=*Leptosphaeria penniseti* Hansford, Proc. Linn. Soc. London, 153: 24. 1941

Ascocarps scattered, immersed in culm, subepidermal, ellipsoidal to globose, 150−250 μm wide, 250−400 μm long, 110−250 μm high. Beak central, terete, flush, 5−35 μm long, 50−70 μm wide, of 2−8 layers of brown polygonal 4−12 × 3−12 μm cells around a 20−40 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−35 μm thick, of 2−6 layers of polygonal 8−13 × 8−12 μm to prismatic to rectangular 5−12 × 2−5 μm brown pseudoparenchyma cells, thicker above and thinner at base. Physes numerous, 2−4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 60−85 × 15−20 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores broadly fusiform, L/W 3.1, straight or inequilateral, 19−28 × 5−8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.54), not or slightly constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, pale yellowish brown, with or without guttules, smooth, with a thin uniform sheath 1−3 μm wide.

HOSTS: (*1*) *Bromus inermis* Leyss, (*2*) *Calamagrostis epigejos* (L.) Roth, (*3*) *Calamagrostis montana* Host., (*4*) *Calamagrostis* sp., (*5*) *Canna* ? *generalis* Bailey, (*6*) *Carex leporina* L., (*7*) *Dactylis glomerata* L., (*8*) *Deschampsia caespitosa* (L.) Beauv., (*9*) *Festuca* sp., (*10*) *Hierochloa alpina* (Willd.) Roemer & Schultes, (*11*) *Juncus conglomeratus* L., (*12*) *Juncus effusus* L., (*13*) *Juncus* sp., (*14*) *Lolium perenne* L., (*15*) *Luzulae albibae* DC, (*16*) *Phleum alpinum* L., (*17*) *Pleuropogon sabinei* R. Br., (*18*) Poaceae, (*19*) *Scirpus atrovirens* Muhl., (*20*) *Scirpus lacustris* L., (*21*) *Triticum vulgare* L., (*22*) *Typha latifolia* L., and *Typha angustifolia* L.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 189020 and 189021, on *13*, Bog Trail, Cape Breton Highlands National Park, Cape Breton, R. A. Shoemaker, 23 June 1982. NEWFOUNDLAND: Labrador: 63052(*a*), on moss capsule, Red Bay, R. T. Wilce, 23 June 1958. QUEBEC: 54678, on *5*, Ste-Foy, D. Leblond (80), 9 August 1956. 23365, on *22*, Baie d'Urfé, I. H. Crowell, 21 July 1940. ONTARIO: 161941, on *21*, Douglas, Renfrew County, W. L. Seaman, 11 May 1976; 188917(*f*), on *19*, side road Hay Twp., Con. 8−9, north of Hwy. 83, Huron County, M. Corlett 83(59), 6 July 1983. MANITOBA: 187170, on *1*, Winnipeg, M. Page, 24 May 1983, 83M-110; 180637, on grass, Deep Lake, Riding Mountain National Park, R. A. Shoemaker, 16 July 1979; 182611(*c*), on grass, Hwy. 19, 1 mi W of Swanson Creek, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979. NORTHWEST TERRITORIES: District of Franklin: 63409, on *10*, Head of Clyde Inlet, Baffin Island, P. Dansereau 5007210354, 21 July 1950; 83283, on *17*, 1.5 miles SW of Isachsen, 78°46′N 103°36′W, Ellef Ringnes Island, D.B.O. Savile 4247A, 15 July 1960; 83284, on *17*, 3 miles WNW of Isachsen, 78°48′N 103°40′W, Ellef Ringnes Island, D.B.O. Savile 4334B, 31 July 1960. UNITED STATES OF AMERICA: CALIFORNIA: 121720, on *16*, Panther Creek Meadow, Mt. Shasta, 8500′, Wm. B. Cooke 18405, 29 August 1946. BELGIUM: 115538(*b*), on *4*, Groenendael, ? Ch. B., Janvier 1889, ex BR, as *Leptosphaeria michotii*. CZECHOSLOVAKIA: 195221, on *11*, Jestribi, J. E. Kabat, 8 June 1901, Fungi bohemici 842, ex BPI. DENMARK: 90323, on *7*, Grenaa, J. Lind, June 1929, Fungi of Denmark. GERMANY: 184950, on *12*, Leipzig, Auerswald, 18 July 1862, ex Herb. Rehm, ex S, Rabenhorst, Fungi europaei 748, as *Sphaeria juncina*; 196469, on *3*, bei Windsheim, Rehm, 11.1872, Rehm Ascomyceten 240, ex FH, as *Leptosphaeria culmorum* Awd, ISOTYPE; 184917, same, ex S; 196529, on *14*, Berlin, Sydow, 16 April 1899, Myc. March. 4810, ex FH, as *Leptosphaeria lolii* n.sp., ISOTYPE; 196533, on *6*, Dahlem, pr. Berlin, P. Hennings, 1902, Rabenhorst-Pazsche, Fungi eur. et extraeur. 4462, ex FH, as *Leptosphaeria culmorum* Auersw. var. *paleicola* P. Henn.; 196421, on *22*, Islebiam, J. Kunze, Mai 1879, J. Kunze, Fungi selecti exs. 256, ex FH, as *Leptosphaeria typharum* (Rbh.) Awd.; 3859, on *9*, bei Eurasburg in Oberbayern, Dr. Rehm, May 1902, ex Rehm Ascomyceten 240*b*, as *Leptosphaeria culmorum* Awd.; 197091, on *15*, prope Königstein, W. Krieger, 1 July 1880, ex DAOM, Fungi eur. 2759; 184932, on *2*, Westend bei Berlin, P. Sydow, 6. 1888, ex S, ex Herb. Sydow, Mycotheca Marchica 2044, as *Leptosphaeria graminum*. SWEDEN: 195678, on *20*, Nericia, Porla, G. Lagerheim, 7.1900, Vestergren, Micromycetes rariores selecti 359, ex BPI as *Leptosphaeria junciseda* Karsten. 196420, Porla in Nerike, Lagerheim, 7.1899, Rehm Ascomyceten 1334, ex FH, as *Leptosphaeria junciseda* Karst. SWITZERLAND: GRAUBÜNDEN: 123629(*a*), on *8*, Lü, E. Müller, 5 July 1949, ex ZT. USSR: LATVIA: VIDZEME; 121533, on *7*, Nestiena, K. Starcs, 3 May 1930, ex Herb. K. Starcs, Nr. 38.

Eriksson (1967*b*) recognized this taxon at the varietal level. However, the smooth ascospores set it apart from *Phaeosphaeria microscopica* (Karst.) O. Eriksson, which has echinulate ascospores. Leuchtmann (1984) recognized the taxon at the species level. In the isotype the ascospores have the first septum slightly below the middle. This may prove to be another feature that separates *Phaeosphaeria culmorum* from *Phaeosphaeria microscopica*.

Collection 196421 labelled *Leptosphaeria typharum* (Rbh.) Awd. was found to bear *Phaeosphaeria culmorum*. The two species often occur together on *Typha* (Holm 1957, p. 126). *Phaeosphaeria typharum* (Desm.) L. Holm may be present, but was not found by us.

195221 was referred to *Leptosphaeria hydrophila* Saccardo, but it does not match the figures in Saccardo (1877−1886

(1878, Tab. 280)) or Berlese (1894), who both saw the type.

The slide of 184950 made at S was not ideal. It seemed to be the same fungus that Rehm found on the specimen, but is not *Phaeosphaeria juncina*; it is referred to *Phaeosphaeria culmorum*.

Collection 195678 has abundant, mainly empty, fruitbodies immersed in the culm. The ostiole is evident as a wide circular opening with an internal white ring and an external brown ring. The host *Scirpus lacustris* and the ascospores that are much too small show that this is not *Leptosphaeria junciseda* Karsten. Holm (1957, p. 109) included this collection within his broad concept of *Phaeosphaeria eustoma* (Fuckel) L. Holm. Eriksson (1967*b*) segregated *Phaeosphaeria microscopica* from that complex but did not mention this collection because the host is not a grass. He did report (1967*b*, p. 415) that the type of *Leptosphaeria junciseda* Karst. now contains only immature pseudothecia.

The type of *Leptosphaeria penniseti* Hansford was not see but the description (Hansford 1941) is not distinct from *Phaeosphaeria culmorum*.

Phaeosphaeria gaubae (Petrak) n.comb. Figs. 47, 59
≡*Leptosphaeria gaubae* Petrak, Sydowia, 9: 562. 1955

Ascocarps scattered, immersed, subepidermal, ellipsoidal to globose, glabrous, 170−270 μm wide, 170−270 μm high. Beak central, terete, truncate-conical, 50−70 μm long, 100−120 μm wide, of 5 or 6 layers of brown polygonal 5−7 × 5−7 μm cells around a 20−50 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 30−35 μm thick, of 4 or 5 layers of polygonal brown 8−12 × 8−12 μm pseudoparenchyma cells. Physes numerous, 3−4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a cluster, cylindrical, 100−120 × 38−42 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 2.4, straight or slightly curved, 35−45 × 13−16 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, without a sheath.

HOST: *Chionochloa frigida* (Vickery) Convert as *Danthonia frigida* Vickery.

COLLECTION EXAMINED: AUSTRALIA: NEW SOUTH WALES: 195218, Mt. Kosciuko, 6000 ft, E. Gauba, 29 Mar. 1955, F. Petrak Pilzherbarium, Typus, ex BPI, as *Leptosphaeria gaubae*.

This collection is not ideal as Petrak noted. The majority of ascomata are overmature, probably from the previous season. A few have produced new young ascomata at the upper part of the old fruitbody. The young ascomata have young asci and physes.

Phaeosphaeria halima (T. W. Johnson) n.comb. Fig. 35
≡*Leptosphaeria halima* T. W. Johnson, Mycologia, 48: 502−504. 1956

Ascocarps solitary or gregarious, immersed to superficial, subglobose to pyriform, hairy at base, 100−216 μm wide, 90−252 μm high. Beak central, terete, papillate, 40−70 μm long, 40−50 μm wide, ostiolate. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10−12.5 μm thick, of 4 or 5 layers of polygonal brown thick-walled pseudoparenchyma cells with large lumina. Physes 2−2.5 μm wide, septate, branched. Asci arising from the venter base, subclavate to subcylindrical, (64)70−80(108) × (8)9−12(14) μm, short-stalked, with 8 biseriate ascospores. Ascospores oblong ellipsoidal subcylindrical or subfusiform, L/W 2.3, straight or slightly curved, 12−16(18) × 5−7(8) μm, 3-septate in sequence 2:1:2, septa slightly constricted, submedian (0.53), second cell from apex enlarged towards base, yellow brown, without guttules, smooth, with an indistinct sheath, 1−2 μm wide.

HOST: *Spartina alterniflora* Loisel.

COLLECTION EXAMINED: None; information from original description and from Kohlmeyer and Kohlmeyer (1979).

This species is very close to *Phaeosphaeria culmorum* (Auersw. ex Rehm) Leuchtmann but has slightly shorter ascospores.

Phaeosphaeria lutea Leuchtmann, Sydowia, 37: 116−117. 1984 Fig. 32

Ascocarps numerous, scattered, immersed, globose to ovoid, glabrous, 60−90 μm wide, 60−90 μm high. Beak central, terete, flush, intraepidermal, 0−15 μm long, 30−35 μm wide, of 4−5 layers of brown polygonal 3−4 μm cells around a 5−10 μm diameter ostiole, without periphyses. Wall in longitudinal section laterally uniformly 6−8 μm thick, of 2−3 layers of polygonal brown 6−8 × 2−4 μm pseudoparenchyma cells. Physes not numerous, 1.5−2 μm wide, with thin septa at 5- to 10-μm intervals, without guttules. Asci not numerous, clustered, clavate-cylindrical, 48−60 × 10 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores ellipsoidal, L/W 3.1, straight or slightly curved, thick-walled, 14−16.5 × 4−5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), slightly constricted at other septa, second cell from apex enlarged towards base, golden yellow, without guttules, finely warted, with a uniform sheath.

HOST: *Luzula lutea* (All.) DC.

COLLECTION EXAMINED: None; information from Leuchtmann (1984).

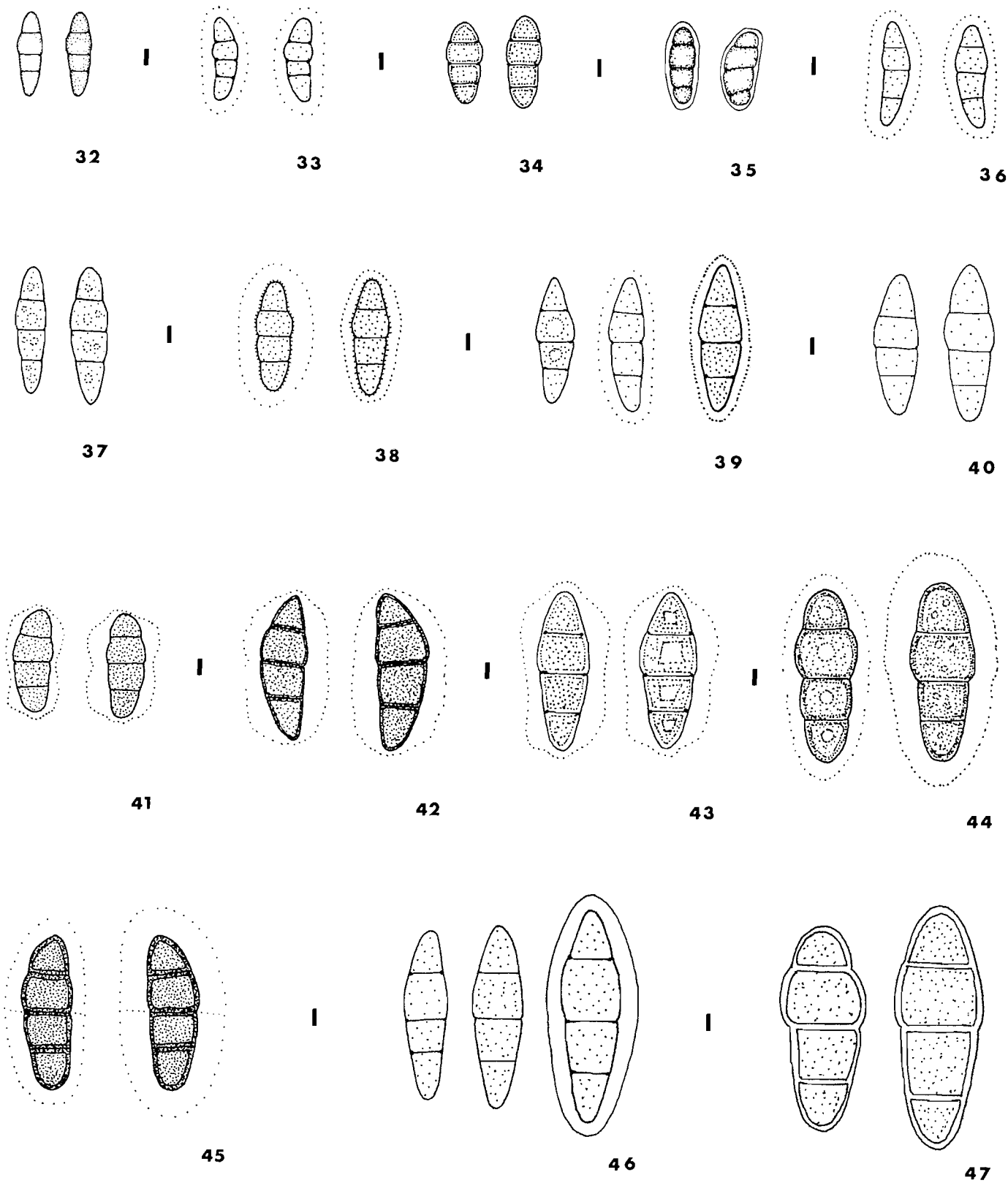
This species is recognized by the small golden spores with superficial warts and the small ascomata in leaves of *Luzula*.

The teleomorph formed in culture, but no anamorph was found (Leuchtmann 1984).

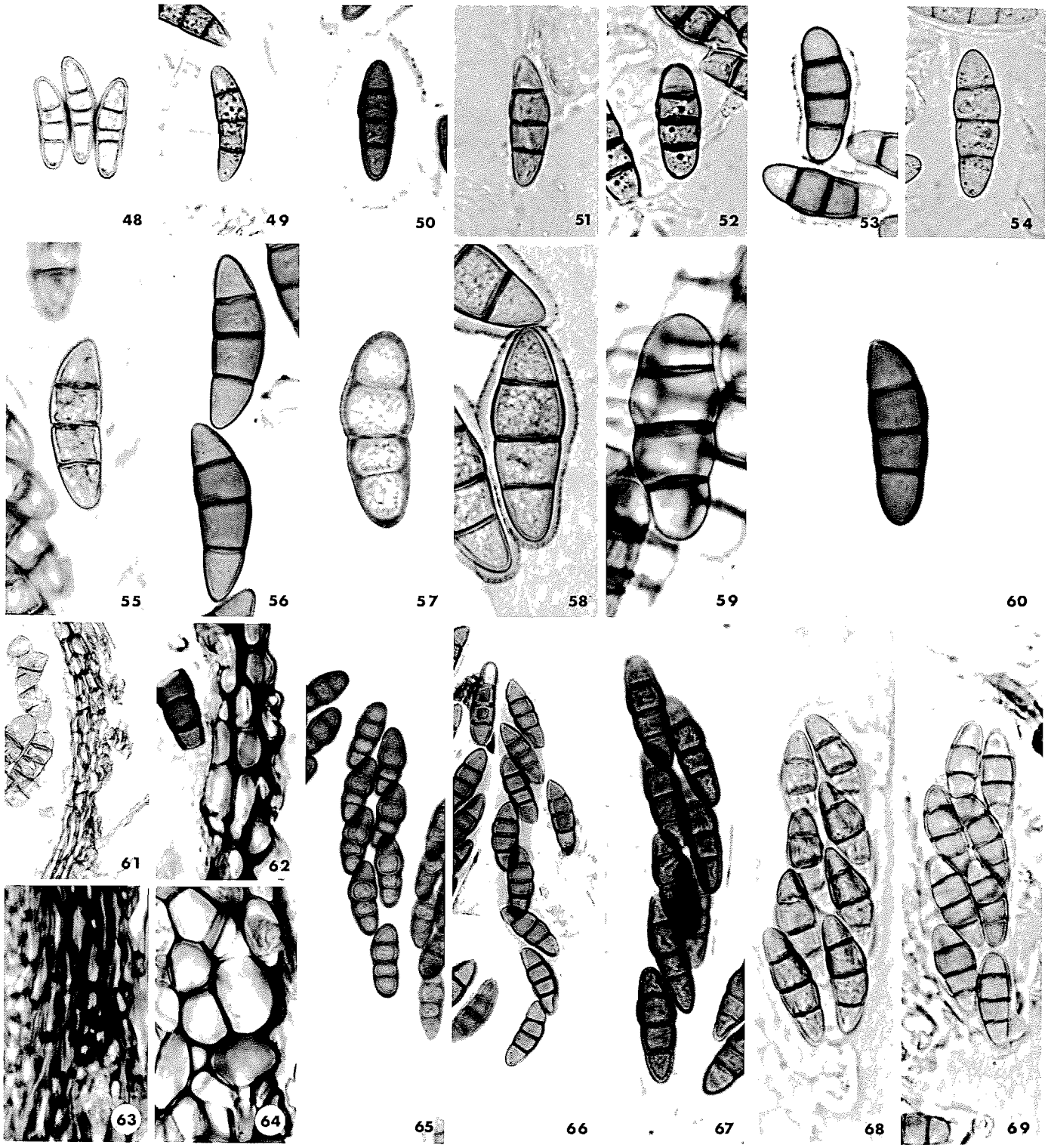
Phaeosphaeria tricincta Shoem. & Babc. is close to *Phaeosphaeria lutea*, but the latter species differs in having warted ascospores.

Phaeosphaeria lycopodina (Montagne) Hedjaroude, Sydowia, 22: 78. 1969 Figs. 40, 55, 61
≡*Sphaeria lycopodina* Mont., Ann. Sci. Nat. 3: 313. 1849
≡*Leptosphaeria lycopodina* (Mont.) Saccardo, Syll. Fung. 2: 81. 1883
=*Sphaeria crepini* Westendorp, Bull. Acad. Roy. Belg. 7: 18. 1859. fide Hedjaroude 1968 (1969) fide Holm 1957
=*Leptosphaeria crepini* (West.) De Notaris Comment. Soc. Critt. Ital. 2: 10. 1867

Ascocarps scattered, immersed, centrally intraepidermal and laterally subepidermal in blackened bracts of spikes, globose, 150−300 μm wide, 160−250 μm high with radiating brown 4−6 μm wide septate hyphae. Beak central, terete, scarcely more than a thickening in the wall, of 3−10 layers of brown polygonal 3−7 × 3−7 μm cells around a 15−40 μm diameter ostiole, filled with hyaline pseudoparenchyma. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally 10−17 μm thick, of 2−7 layers of rectangular brown 5−12 × 2−4 μm pseudoparenchyma cells. Physes



FIGS. 32–47. Ascospores. ×1000. Fig. 32. *Phaeosphaeria lutea*, (Leuchtmann 1984, Abb. 4*g*). Fig. 33. *Phaeosphaeria tricincta*, 175858(*b*). Fig. 34. *Phaeosphaeria borealis*, 70472 TYPE. Fig. 35. *Phaeosphaeria halima*, (Johnston 1956, Fig. 32). Fig. 36. *Phaeosphaeria parvula*, 123596. Fig. 37. *Phaeosphaeria marcyensis*, 184013 TYPE. Fig. 38. *Phaeosphaeria microscopica*, 63149(*d*), 123845(*a*). Fig. 39. *Phaeosphaeria culmorum*, 196469 TYPE, 196529 (Type of *Leptosphaeria lolii*), 197297. Fig. 40. *Phaeosphaeria lycopodina*, 105450, 74325(*a*), 74285(*a*). Fig. 41. *Phaeosphaeria alpina*, 83286, 179098(*a*). Fig. 42. *Phaeosphaeria cookei*, 121686(*a*) TYPE. Fig. 43. *Phaeosphaeria oreochloae*, 197298. Fig. 44. *Phaeosphaeria typharum*, 183311, 189011. Fig. 45. *Phaeosphaeria canadensis*, 105100 TYPE. Fig. 46. *Phaeosphaeria caricinella*, 196176 TYPE (two), 83287. Fig. 47. *Phaeosphaeria gaubae*, 195218 TYPE.



FIGS. 48–60. Ascospores. ×1000. FIGS. 61–64. Wall structure. ×1000. FIGS. 65–69. Asci. Fig. 48. *Phaeosphaeria trincincta*, 175858(*b*), TYPE. Fig. 49. *Phaeosphaeria parvula*, 123596. Fig. 50. *Phaeosphaeria microscopica*, 63149(*d*). Fig. 51. *Phaeosphaeria culmorum*, 196469 TYPE. Fig. 52. *Phaeosphaeria borealis*, 70472 TYPE. Fig. 53. *Phaeosphaeria alpina*, 83286. Fig. 54. *Phaeosphaeria marcyensis*, 184013 TYPE. Fig. 55. *Phaeosphaeria lycopodina*, 74285(*a*). Fig. 56. *Phaeosphaeria cookei*, 121686(*a*) TYPE. Fig. 57. *Phaeosphaeria typharum*, 189905. Fig. 58. *Phaeosphaeria caricinella*, 88205. Fig. 59. *Phaeosphaeria gaubae*, 195218 TYPE. Fig. 60. *Phaeosphaeria canadensis*, 105100 TYPE. Fig. 61. *Phaeosphaeria lycopodina*, 182898. Fig. 62. *Phaeosphaeria microscopica*, 63149(*d*). Fig. 63. *Phaeosphaeria canadensis*, 105100 TYPE. Fig. 64. *Phaeosphaeria tricincta*, 175858(*b*) TYPE. Fig. 65. *Phaeosphaeria typharum*, 189905 (×430). Fig. 66. *Phaeosphaeria canadensis*, 105100 TYPE (×430). Fig. 67. *Phaeosphaeria microscopica*, 63149(*d*) (×1000). Fig. 68. *Phaeosphaeria culmorum*, 196469 TYPE (×1000). Fig. 69. *Phaeosphaeria borealis*, 70472 TYPE (×1000).

numerous, 1−2.5 μm wide, with thin septa at 10- to 30-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 55−100 × (10)15−25 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores broadly fusiform, L/W 3.0, slightly curved, 17−27 × 5−8 μm, (overmature spores 25−32 × 8−11 μm), 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.52), not or slightly constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, central cells slightly shorter than end cells, yellowish brown, without guttules, smooth, without sheath or appendages.

HOSTS: (*1*) *Lycopodium annotinum* L., (*2*) *Lycopodium annotinum* var. *alpestris* Hartm., (*3*) *Lycopodium annotinum* var. *pungens* Desv., (*4*) *Lycopodium obscurum* L., (*5*) *Lycopodium obscurum* var. *dendroideum* Eaton., (*6*) *Lycopodium* sp.

COLLECTIONS EXAMINED: CANADA: QUEBEC: 74285(*a*) and 74325(*a*), on *3*, Mt. Albert, H. E. & M. E. Bigelow, 8 July 1957. ONTARIO: 1597, on *1*, Bear Island, Lake Timagami, I. L. Conners, 16 August 1930, as *Leptosphaeria crepini* (West.) De Not.; 85693 and 85694, on *5*, Bear Island, Timagami, H. S. Jackson, 15 August 1930, U. of T. Herb. 2131, as *Leptosphaeria crepini* (West.) De Not.; 156223, on *1*, near Circle Lake Creek, Lakehead University, Black Sturgeon Lake, Thunder Bay District, Ontario, E. Kokko 86, 7 June 1976; 176269, on *4*, Hwy. 511, 3 km south of White Lake, Lanark County, K. N. Egger 370; 180627, on *6*, near mouth of Little Pic River, Lake Superior, Area 2, Neys Provincial Park, Thunder Bay District, R. A. Shoemaker, 24 June 1980. UNITED STATES OF AMERICA: NEW YORK: 182898, on *1*, Mt. Marcy, C. H. Peck, July, as *Leptosphaeria lycopodina* (Mont.) Sacc. = *Leptosphaeria crepini*. AUSTRIA: 184961, on *1*, prope Lofer, Salisburg, G. Niessl, August 1885, as *Leptosphaeria lycopodina*, ex S. FINLAND: 105450, on *1*, Ostrobottnia kajanensis, Hyrynsalmi, Viljo Kujala, 16 August 1946, as *Leptosphaeria crepini* (West.) Wint. NORWAY: 166486, on *1*, Norv. Hordaland, Bergen, on top of Smöråsfjellet (Fana), Dagfinn Moe, 20 October 1974, Flora Norvegica. SWEDEN: 36830, on *2*, Lapponia Lulensis, alpes Sarjekenses, C. Skottsberg & T. Vestergren, 7/1900, as *Leptosphaeria crepini* (Westend.) De Not., Vestergren, Micromycetes rariores selecti 518. SWITZERLAND: GRAUBÜNDEN: 189138, on *6*, Susch, E. Müller, 30 August 1980. POLAND−CZECHOSLOVAKIA BORDER: 36829, on *6*, Montes Magas Tatra, in silvis vallis, Liebseifen ad latus septentrionali-orientale montis Faresik, Mens., F. Filarszky et J. B. Kümmerle, August 1916, as *Leptosphaeria crepini* (West.) De Not., Flora Hungarica exsiccata 409.

This species is specialized in the bracts of sporophylls of *Lycopodium*. The ascocarps have no beak, only an evident white intraepidermal ostiole, and are surrounded by a basal hyphal web that blackens the bracts. The ascospores have a considerable size range within and between collections. They are rarely as large as figured by Hedjaroude (1968, Fig. 5*d*), although the scale for that drawing may be in error because he gave the spore size as only 22−25 × 6−9 μm.

The variation in this species is worthy of comment. The ascomata occur dorsally in the bracts of strobili of *Lycopodium*. The beak is very short and quite broad and entirely intraepidermal. The white disc of host cuticle and upper layer of the epidermal cells remains in position after the spores are well matured. The central part of the beak is filled with hyaline pseudoparenchyma. Holm (1957) recorded periphyses, but we did not see them in the very short beak. Ascomata with circular openings are found frequently in the older bracts. The centrum is filled with abundant physes and a few asci bearing large spores with inflated cells. These spores appear to be overmature. Intermediate stages with an obvious ostiole and many normal mature asci were not noted. The two conditions are so distinct that we thought for some time that two taxa might be involved. However, some normal small spores occur with the inflated spores in the overmature ascomata, and we think that only one species is present, but in vastly different stages of maturity.

Hedjaroude (1968) recorded a sheath on the ascospores, but Leuchtmann (1984) stated there was none. We did not see one.

At first Holm (1957) did not place this species in *Phaeosphaeria* but in an appendix to *Leptosphaeria* with *Leptosphaeria sepalorum* (Vleugel) Lind that was later made the type of the new genus *Bricookea* Barr (1982). The occurrence on floral parts suggested comparison with *Bricookea*. The lack of a slit-like opening for spore discharge and the presence of pigment in the ascospores make such a placement unwarranted.

In culture the fungus only produces the teleomorph (Leuchtmann 1984).

The distinctions from the closely allied *Phaeosphaeria marcyensis* (Peck) L. & K. Holm are given with that species.

Phaeosphaeria marcyensis (Peck) L. & K. Holm, Karstenia, 21: 68. 1981 Figs. 37, 54

≡ *Sphaeria marcyensis* Peck, Ann. Rep. New York State Museum, 31: 51. 1879 as *marciensis*

≡ *Leptosphaeria marcyensis* (Peck) Saccardo, Syll. Fung. 2: 80. 1883

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 125−180(250) μm wide, 125−180(250) μm high. Beak central, terete, truncate-conical, erumpent, 30−90 μm long, 60−90 μm wide of 3−8 layers of brown polygonal 3−5 × 2−4 μm cells around a 20−50 μm diameter ostiole, lined with hyaline 10−20 × 1.5−3 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−14 μm thick, of 3 or 4 layers of rectangular brown 6−10 × 3−6 μm pseudoparenchyma cells. Physes numerous, 1.5−2 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, (60)80−100(115) × 10−14 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.4, straight, 19−24(26) × 5−7 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.48), slightly constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, central cells slightly longer than end cells, pale yellow, with several guttules per cell, smooth, without a sheath.

HOSTS: (*1*) *Lycopodium annotinum* var. *pungens* Desv., (*2*) *Lycopodium obscurum* L., (*3*) *Lycopodium selago* L., (*4*) *Lycopodium* sp.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 188997, on *4*, Broad Cove Mountain Trail, Cape Breton Highlands National Park, Cape Breton, 50 m alt., R. A. Shoemaker, 21 June 1982. QUEBEC: 74285(*b*), on *1*, Mt. Albert, H. E. & M. E. Bigelow (1959A), 8 July 1957; 74325(*a*), on *1*, Mt. Albert, H. E. & M. E. Bigelow (1978), 8 July 1978. ONTARIO: 176269(*b*), on *2*, Hwy. 511, 3 km south of White

Lake, Lanark County, K. N. Egger (370), 2 June 1980; 180627(*a*), on *4*, Area 2, Neys Provincial Park, Thunder Bay District, R. A. Shoemaker, 24 June 1980. NORTHWEST TERRITORIES: District of Franklin: Baffin Island: 63087, on *3*, Lake Gillian, P. Dansereau 5008090770, 9 August 1950 (all of the above as *Leptosphaeria marcyensis*). UNITED STATES OF AMERICA: NEW YORK: 184013, on *3*, Mt. Marcy, C. H. Peck, August 1877, TYPE, ex NYS, = *Leptosphaeria microsticta* Niessl.

This species occurs in leaves of *Lycopodium* species and is distinguished by the erumpent beaks that often emerge from the margins of the leaves. It is distinct from the bract-inhabiting *Phaeosphaeria lycopodina* (Mont.) Hedjaroude, which has no beak but does have abundant radiating hyphae around the ascocarp base. Holm and Holm (1981) illustrated the macroscopic distinctions between these two species. The ascospores are narrower in *Phaeosphaeria marcyensis* and also guttulate and pale colored. The first septum is supramedian in ascospores of *Phaeosphaeria marcyensis* but submedian in *Phaeosphaeria lycopodina*. We did not observe a sheath on the ascospores, although Hedjaroude (1968) reported one for both *Phaeosphaeria marcyensis* and *Phaeosphaeira lycopodina*.

The spelling of *marcyensis* with a *y* is retained as permitted under article 73.4 (Voss 1983), though it is realized that the letter *y* was rare in classical Latin.

Holm (1957, pp. 70–71) explained why *Leptophaeria microsticta* Niessl is not a synonym of *Phaeosphaeria marcyensis*.

Lucas and Webster (1967) found the anamorph to be a *Diplodina* with hyaline 1-septate pycnospores that are 13–25 × 3–4 μm. Leuchtmann (1984) suggested the anamorph might be a *Stagonospora*.

Phaeosphaeria microscopica (Karsten) O. Eriksson, Ark. Bot. 6: 416. 1967 Figs. 38, 50, 62, 67

≡*Leptosphaeria microscopica* Karst., Oefvers. K. Sv. Vet.-Akad. Förh. 2: 102. 1872

≡*Scleropleella microscopica* Munk, Dansk. Bot. Ark. 15(2): 107. 1953

≡*Phaeosphaeria microscopica* var. *microscopica* See: O. Eriksson, Ark. Bot. 6: 426–428. 1967

Ascocarps scattered, immersed, subepidermal or exposed on culm, subglobose or elongated, glabrous, 75–190 μm wide, 75–190 μm high. Beak none or short papillate, central, terete, 40–50 μm wide, around a 20–30 μm wide ostiole, without periphyses. Ascocarp wall surface a textura angularis of cells 8–15 μm diameter. Wall in longitudinal section laterally uniformly 10–15 μm thick, of 3 or 4 layers of rectangular brown thick-walled cells. Physes sparse, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci not numerous, in a basal cluster, clavate or clavate-cylindrical, 50–70 × 15–18 μm, short-stalked, with 8 biseriate ascospores. Ascospores broadly fusiform to clavate, L/W 3.1, straight or inequilateral, 18–24 × 6.5–8(10) μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, pale yellowish brown to dark reddish brown, with or without guttules, echinulate, with a uniform sheath, 2–3 μm wide.

HOSTS: (*1*) *Calamagrostis pseudophragmites* (Haller fil.) Koeler, (*2*) *Carex atrata* DC., (*3*) *Carex nivalis* Boott., (*4*) *Carex nubigena* D. Don., (*5*) *Carex* sp., (*6*) *Deschampsia caespitosa* (L.) Beauv., (*7*) *Elymus nutans* Briseb., (*8*) *Festuca ovina* L., (*9*) *Festuca rubra villosa* Spenner, (*10*) *Pleuropogon sabinei* R. Br., (*11*) *Trisetum spicatum* (L.) Richt.

COLLECTIONS EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 63149(*d*), on *5*, Parr Inlet, Ellesmere Island, R. Schuster 35684, 14 Aug. 1955, as *Leptosphaeria insignis*; 63485(*a*), on *10*, Head of Clyde Inlet, Baffin Island, P. Dansereau 5007160454, 16 July 1950. INDIA: KASHMIR: 123884(*a*), on *4*, Pahlam, E. Lidder River, 27 mi N of Islamabad, F. G. Dickason 16, July–August 1927, ex Herb. Wehmeyer; 123986(*b*), on *6*, Purig, W. Koelz 6020, 25–27 July 1933, ex Herb. Wehmeyer; 123978(*b*), on *9*, Pensi La, Zaskar, 16 500 ft, W. Koelz 5873, 23 July 1933, ex Herb. Wehmeyer; 123831(*c*), on *11*, Pensi La, Zaskar, 16 500 ft, W. Koelz 5906, 23 July 1933, ex Herb. Wehmeyer. PUNJAB: 123851(*a*), on *1*, Kolang, Bhaga Valley, Lahul, Kangra, 11 000 ft, Thakur Rup Chand 92A, 14 July 1933, ex Herb. Wehmeyer; 123841(*a*), on *2*, Kinlung?, Lahul, 13 500 ft, W. Koelz 6735, 24–25 August 1933, ex Herb. Wehmeyer; 123906(*a*), on *8*, Chandrakar, Kulu, W. Koelz 258, 30 June 1930, ex Herb. Wehmeyer; 123913(*a*), on *2*, Bailing Nulla, Lahul, 14 000 ft, W. Koelz 1260, 29 August 1939, ex Herb. Wehmeyer; 123920, on *7*, Tarloknath, Chamba, 9500 ft, W. Koelz 1132, 19 Aug. 1930, ex Herb. Wehmeyer; 123921, on *2*, Kukti Pass, Lahul, 11 000 ft, W. Koelz 1205, 25 August 1930, ex Herb. Wehmeyer; 123838(*a*), on *3*, Tso Yunnan, Bara Lache La, Lahul, Kangre, 16 500 ft, W. Koelz 6746, 26–29 August 1933, ex Herb. Wehmeyer; 123845(*a*), on *3*, Kinlung, Lahul, 13 500 ft, W. Koelz 6728, 24–25 August 1933, ex Herb. Wehmeyer; 123997, on *11*, Bailing Nulla, Lahul, 13 000 ft, W. Koelz 1242, 29 Aug. 1930, ex Herb. Wehmeyer; 124003(*a*), on *1*, Kukti Pass, Lahul, 14 000 ft, W. Koelz 1214, 25 August 1930, ex Herb. Wehmeyer.

This species differs from *Phaeosphaeria culmorum* (Auersw. ex Rehm) Leuchtmann in the echinulate surface of the ascospores. Leuchtmann (1984) produced an electron micrograph of the surface markings. *Phaeosphaeria microscopica* is less common than *Phaeosphaeria culmorum* and occurs only in arctic and alpine regions (Leuchtmann 1984).

Wehmeyer's material was described from his original slides preserved in polyvinyl alcohol. The fungus was rarely found again on his specimens, which bear a variety of fungi.

Phaeosphaeria oreochloae Leuchtmann, Sydowia, 37: 118, 120. 1984 Fig. 43

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 125–200 μm wide, 125–200 μm high. Beak central, terete, flush, intraepidermal, rarely erumpent and truncate-conical, 0–40 μm long, 30–60 μm wide, of 3–5 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–30 μm thick, of 3–5 layers of polygonal brown 8–15 × 8–10 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, clavate, 60–80 × 20–25 μm, short-stalked, with 8 overlapping linearly triseriate ascospores. Ascospores broadly fusiform, L/W 2.6, straight, 27–31 × 9–12 μm, thick-walled, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.52), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged

towards base, yellowish brown, with guttules or angular content, smooth, (wrinkled in PVA), with a sheath, 2–3 μm wide laterally but reduced at ends.

HOSTS: (*1*) *Danthonia intermedia* Vasey, (*2*) *Festuca rubra* L., (*3*) *Poa epilis* Scribner.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: WASHINGTON: 191289, on *1*, Pierce Co., Mazama Ridge, 5700 ft., Mt. Rainier Nat. Park, E. G. Simmons 2213, 21 July 1948, ex Herb. E. G. Simmons, as *Leptosphaeria vagans* Karst. det L. E. Wehmeyer, also slide Rainier 2213 ex Herb. Wehmeyer; 191287, on *3*, same data slide Rainier 2211 ex Herb. Wehmeyer; 191288, on *2*, Eagle Peak, 5800 ft, E. G. Simmons 2199, 29 July 1948, ex Herb. Wehmeyer.

The ascomata have thick walls made up of large cells. This species is easily distinguished by the spore features and the sheath that is constricted at the middle and depressed at the ends. The spores are too large for *Phaeosphaeria alpina* Leuchtmann and too small for *Phaeosphaeria caricinella* (Karst.) O. Eriksson. The collections examined match those of *Phaeosphaeria oreochloae* Leuchtmann and lack only the characteristic median division of the sheath. It is close to *Phaeosphaeria gaubae* (Petrak) Shoem. & Babc., which is known to us only from the overmature type.

Wehmeyer (1952) described these collections and one more that we did not see (Rainier 2201(*a*)) and referred them to *Leptosphaeria vagans* Karsten, which is discussed under *Phaeosphaeria caricinella*.

Phaeosphaeria parvula (Niessl) Leuchtmann, Sydowia, 37: 109–110. 1984 Figs. 36, 49

≡*Leptosphaeria parvula* Niessl, Hedwigia, 12: 119. 1873

Ascocarps scattered or in groups, immersed, globose, glabrous, 100–175 μm wide, 100–140 μm high. Beak central, terete, intraepidermal, truncate-conical, 0–35 μm long, 40–50 μm wide, of 3 or 4 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–40 μm diameter ostiole with hyaline periphyses-like hyphae. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 7–12 μm thick, of 2 to 4 layers of polygonal to retangular brown 5–8 × 3–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 5- to 10-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, broadly cylindrical, 40–55 × 10–12 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores fusiform, L/W 3.5, slightly curved, 19–22 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.45), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, with or without guttules, smooth, with a conspicuous, uniform sheath 2–3 μm wide.

HOSTS: (*1*) *Iris pseudacorus* L., (*2*) *Iris* sp.

COLLECTIONS EXAMINED: SWITZERLAND: ZÜRICH: 123596, on *1*, Glattfelden, E. Müller, 15.5.1949, ex ZT, ex Herb. Wehmeyer; 123627(*a*), on *2*, Zollikon, E. Müller, 24.5.1949, ex ZT, ex Herb. Wehmeyer.

We have not seen good material of this fungus. The two collections we saw were parts of specimens studied by Leuchtmann (1984), who reported that the fungus produces the teleomorph in culture but no anamorph.

We saw one exsiccatus specimen issued under this name, but the fungus found proved to be a *Lophiostoma* and is treated as *Lophiostoma* sp. under excluded species.

Phaeosphaeria tricincta n.sp. Figs. 33, 48, 64

Ascomata dispersa, immersa, globosa, villosa, 130–190 μm lat., 130–190 μm alt. Rostrum inclusum, teres, 5–10 μm long., 20–30 μm lat., cellulis brunneis polygoniis, 3–5 × 3–5 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 25–30 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 8–13 × 8–13 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 55–65 × 10–12 μm, 8-spori. Ascosporae biseriatae, fusiformes, 14–18 × 5– 5.5 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), constricto, brunneae, guttulatae, leves, strato muco 2–3 μm omnino circumdato.

Hab. in culmis *Junci falcati*, "CANADA: BRITISH COLUMBIA: 175858(*b*), on *1*, 11 km NW of Tlell River Bridge, Queen Charlotte Islands, K. N. Egger 202, 12 June 1979, TYPE."

The epithet refers to the three very close septa in the ascospores.

Ascocarps scattered, immersed, subepidermal, globose, with dark brown subcuticular hyphae branching at right angles forming a surface net, 130–190 μm wide, 130–190 μm high. Beak central, terete, flush, intraepidermal, 5–10 μm long, 20–30 μm wide, of 2 or 3 layers of brown polygonal 3–5 × 3–5 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25–30 μm thick, of 3–5 layers of polygonal brown 8–13 × 8–13 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 5- to 12-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 55–65 × 10–12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.2, straight or slightly curved, 14–18 × 5–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, central cells short, yellowish brown, with small guttules, smooth, with a diffuse uniform sheath, 2–3 μm wide.

HOSTS: (*1*) *Juncus falcatus* E. Meyer, (*2*) *Phleum boehmeri* Wibel.

COLLECTIONS EXAMINED: CANADA: BRITISH COLUMBIA: 175858(*b*), on *1*, 11 km NW of Tlell River Bridge, Queen Charlotte Islands, K. N. Egger 202, 12 June 1979, TYPE. FRANCE?: 59115(*b*), on *2*, AB AM. Roussel, Cryptogamae Vogeso-Rhenanae, Fasc. 13 1850, as *Leptosphaeria rousseliana*.

Phaeosphaeria tricincta has distinctive prominent septa, like those recorded in *Leptosphaeria bellynckii* (West.) Auersw., that delimit the short central cells in the ascospores. It resembles *Phaeosphaeria lutea* Leuchtmann to a degree, but lacks its warted spore surface.

Phaeosphaeria typharum (Desm.) L. Holm, Symb. Bot. Upsal. 14(3): 126. 1957 Figs. 44, 57, 65

≡*Sphaeria scirpicola* DC. var. *typharum* Desm., Plantes Crypt. France, ed. 2. No. 1778. 1849

≡*Sphaeria typharum* (Desm.) Raben., Herb. Myc. ed. 2, No. 731. 1858

≡*Pleospora typharum* (Desm.) Fckl., Symb. Mycol., p. 137. 1870

≡*Leptosphaeria typharum* (Desm.) Karst., Mycol. Fenn. 2: 100. 1873

=*Leptosphaeria kunzeana* Berl., Icon. Fung. 1: 66. 1892

=*Sphaeria perpusilla* Desmazières, var. *typhae* Auerswald in Rabenhorst, Fungi europaeae, 831, 1865, nom. nud.

ANAMORPH: *Scolecosporiella typhae* (Oudem.) Petrak, Ann. Mycol. 19: 31. 1921 (Sivanesan 1984).

Ascocarps scattered, immersed, subepidermal, ovoid, glabrous, 90–110 μm wide, 130–150 μm high. Beak central, terete, flush, intraepidermal, 0 μm long, 30–40 μm wide, of 4–6 layers of brown rectangular 6–12 × 4–6 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 3 or 4 layers of polygonal brown 6–8 × 3–4 μm pseudoparenchyma cells. Physes numerous, 2–4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85–110 × 15–20 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 2.7, straight or slightly curved, (21)24–30(35) × (8)9–11(12) μm, thick-walled, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.55), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, reddish brown, without guttules, finely echinulate, with a conspicuous sharply delimited sheath, 1–1.5 μm wide.

HOSTS: (*1*) *Typha angustifolia* L., (*2*) *Typha latifolia* L., (*3*) *Typha* sp.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 175841, on 2, Mer Bleu Bog, Gloucester Township, K. N. Egger (354*a*), 17 April 1980; 189011, on 2, 5 mi north of Leamington, R. A. Shoemaker, 3 July 1983. ALBERTA: 180031, on 2, south end of Maskinonge Lake, Waterton National Park, K. N. Egger (565A), 6 August 1980. UNITED STATES OF AMERICA: COLORADO: 36852, on 2, Fort Collins, C. F. Baker, April 1894, ex Ellis & Everhart, Fungi Columbiani 420, with *Phoma typharum* Fuckel, as *Leptosphaeria typharum*. MONTANA: 184257, on 2, Helena, Rev. F. D. Kelsey, ex Herb. Dearness 1124, Ellis & Everhart, N.A.F. 2366, as *Leptosphaeria typharum*. NEW YORK: 183311, on *1*, Oneida, H. D. House (15), ex Herb. Dearness 3986, as *Leptosphaeria hydrophila*. BELGIUM: 185007, on 2, Groenendael, Bomer & Rousseau, ex S, Rehm Ascomyceten 985, as *Leptosphaeria microscopica* Karst. f. *Typhae*. FRANCE: 196856, on *3*, Desm. Pl. Cryptogames de France 1778, ex FH, TYPE, as *Sphaeria scirpicola* DeC. var. *typharum* Desm. GERMANY: 20227, on 2, Amberg, K. Starcs, 6 June 1946, as *Leptosphaeria typharum*; 126616, on 2, Nassau, Fuckel, Heime, ex Herb. Fuckel, Fungi rhen. 858 (sub *Sphaeria*), as *Leptosphaeria typharum*; 189904, on *1* and 2, Islebiam (Sax. Bor.), J. Kunze, Mai 1879, ex J. Kunze, Fungi selecti 256; 189905, on *1*, Branenburg: Sperenberg bei Zossen, H. Sydow, 16 Mai 1912, ex Sydow, Mycotheca germanica 1096, as *Leptosphaeria typharum*; 196416, on 2, prope Moritzburg ad Dresdam, legi ipse, ex FH, Rabenhorst Fungi europaei 831, as *Sphaeria perpusilla* Desmaz. var. *typhae* Awd. mspt. NEW ZEALAND: 178387, on *1*, Auckland Prov.: Thames: Zeon Mine Track, J. M. Dingley, 26 August 1958, as *Leptosphaeria typharum*. USSR: LATVIA: 121660, on 2, Prov. Vidzeme, Vestieur? K. Starcs, 18 July 1933 as *Leptosphaeria typharum*.

The fungus was recognized as not belonging to the main series of *Phaeosphaeria* (Leuchtmann 1984). The ascoma is much reduced with a slightly thickened upper wall perforated by a small ostiole. The ascospore form varies from ellipsoidal with acute ends to broadly ellipsoidal with hemispherical ends. The spores are thick-walled and echinulate. In time it may be segregated from the genus *Phaeosphaeria*.

SUBGENUS *Phaeosphaeria*

SUBGENUS ***Phaeosphaeria***

=Series *Eustoma* Leuchtmann (1984, p. 95) nom. invalid. Art. 36

Ascosporae 3-septatae, vel raro 3–5-septatae, late fusiformes long./lat. 3.5 excedentibus, leves vel echinulatae, strato muco tripartito interdum omnino circumdato vel nullo.

TYPE: *Phaeosphaeria oryzae* Miyake.

Ascospores 3-septate, or rarely variable and 3- to 5-septate, fusoid with hemielliptical apex, L/W greater than 3.5, echinulate or smooth, sheath often 3-parted, sometimes uniform or lacking.

Key to species of subgenus *Phaeosphaeria*

1. Ascospore septation variable 3- to 5-septate 2
2. Ascospores echinulate ..... *P. licatensis*
2. Ascospores smooth 3
3. Ascospores 24–28 × 6–7 μm ..... *P. hiemalis*
3. Ascospores 18–25 × 4.5–5.5 μm ..... *P. variiseptata*
1. Ascospores 3-septate 4
4. Ascospores slender, L/W over 6.0 5
5. Ascospore central cells short ..... *P. emilii*
5. Ascospores cells subequal ..... *P. brizae*
4. Ascospores less elongate, L/W 6.0 or less 6
6. Ascospores sheath broad but lacking at upper septum 7
7. Ascospores 25–33 × 7–8 μm, first septum submedian ..... *P. marram*
7. Ascospores smaller, first septum median or supramedian 8
8. Ascospores 17–29 × 4–5.5 μm, polyphagous ..... *P. eustoma*
8. Ascospores shorter 9
9. Ascospores 18–24 × 3.5–5.5 μm ..... *P. avenaria*
9. Ascospores shorter 10

10. Ascospores 16–25 × 4–5 μm ..... *P. nodorum*
10. Ascospores 16–19 × 4–5 μm ..... *P. tritici*

6. Ascospore sheath continuous, lacking, or appendage like 11

11. Ascospore surface echinulate or ridged, not smooth 12

12. Ascospores ridged longitudinally ..... *P. exarata*
12. Ascospores echinulate, verrucose or foveolate 13

13. Ascospores foveolate ..... *P. sorgho-arundinacei*
13. Ascospores echinulate or verrucose 14

14. Ascospores verrucose 15

15. Ascospores more than 25 μm long ..... *P. triglochinicola*
15. Ascospores less than 25 μm long ..... *P. brevispora*

14. Ascospores echinulate 16

16. Ascospores 34–38 × 8–9 μm ..... *P. calderi*
16. Ascospores smaller 17

17. Ascospores less than 25 μm long 18

18. Ascospores mostly 19–22 × 4–5.5 μm ..... *P. oryzae*
18. Ascospores 20–25 × 4.5–5.5 μm ..... *P. tofieldiae*

17. Ascospores 25–30 × 5–6 μm ..... *P. panici*

11. Ascospores smooth 19

19. Ascospores with color only in septa ..... *P. annulata*
19. Ascospores with color in walls and septa 20

20. Ascospores appendaged at ends ..... *P. maritima*
20. Ascospores not appendaged 21

21. Ascospore sheath uniform 22

22. Ascospores 26–29 × 7–8 μm ..... *P. lunata*
22. Ascospores narrower 23

23. Ascospore first septum 0.45 ..... *P. glyceriae-plicatae*
23. Ascospore first septum median 24

24. Ascospores 18–25 × 5–5.5 μm ..... *P. eustomoides*
24. Ascospores 23–31 × 5–6 μm ..... *P. juncophila*

21. Ascospore sheath narrowed at end(s) or absent 25

25. Sheath present and narrowed to end(s) 26

26. Ascospores 20–25 × 5–6 μm ..... *P. humerata*
26. Ascospores 11–14 × 3–3.5 μm ..... *P. minima*

25. Sheath absent 27

27. Ascospores 35–68 × 8–12 μm ..... *P. macrosporidium*
27. Ascospores smaller 28

28. Ascospores 22–24 × 5–6 μm ..... *P. donacina*
28. Ascospores smaller 29

29. Ascospores 20–24 × 4–5 μm ..... *P. sacchari*
29. Ascospores smaller 30

30. Ascospores 18–22 × 4.5–5.5 μm ..... *P. typhae*
30. Ascospores smaller 31

31. Ascospores 18–22 × 5–6 μm ..... *P. fautreyi*
31. Ascospores 18–21 × 4 μm ..... *P. caricicola*

Phaeosphaeria annulata n.sp. Figs. 93, 102

Ascomata dispersa, immersa, subglobosa, glabra, 150–200 μm lat., 100–150 μm alt. Rostrum inclusum, teres, 10–20 μm long., 35–50 μm lat., cellulis brunneis polygoniis, 5–8 × 5–8 μm compositum; ostiolum 15–25 μm diam., sine periphysibus. Paries ascomatis 8–10 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 8–10 × 4–6 μm compositus. Physes 1.5–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 50–60 × 9–12 μm, 8-spori. Ascosporae tetraseriatae vel biseriatae, fusiformes, 16–19 ×

3–3.5 μm, 3-septatae, in ordinem 2:1:2, septo primo medio, (0.50), constricto, flavae, eguttulatae, leves, strato muco circumdato.

Hab. in caulibus *Elymi mollis*, "CANADA: QUEBEC: 70467, Fort Chimo, 58°09′N, 68°18′W, D.B.O. Savile 4051 et al., 17 August 1959, TYPE."

The epithet refers to the ringlike septa.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 150–200 μm wide, 100–150 μm high. Beak central, terete, flush, intraepidermal, 10–20 μm long, 35–50 μm wide, of 2–6 layers of brown polygonal 5–8 × 5–8 μm cells around a 15–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–10 μm thick, of 2 or 3 layers of prismatic brown 8–10 × 4–6 μm pseudoparenchyma cells. Physes numerous, 1.5–3 μm wide, with thin septa at 8- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–60 × 9–12 μm, short-stalked, with 8 overlapping obliquely tetraseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 5.4, straight or slightly curved, 16–19 × 3–3.5 μm, 3-septate in sequence 2:1:2, first septum median (0.50), not constricted at septa, with prominent dots at ends of septa, second cell from apex not enlarged, pale yellow, mainly hyaline with yellow pigment concentrated in septa, without guttules, smooth, with a faint sheath, 0.5 μm wide.

HOSTS: (*1*) *Elymus* sp., (*2*) *Poa violacea* Bell.

COLLECTIONS EXAMINED: CANADA: QUEBEC: 70467, on *1*, Fort Chimo, 58°09′N, 68°18′W, D.B.O. Savile 4051 et al., 17 August 1959, TYPE. SWITZERLAND: WALLIS: 184811, on *2*, Saas Fee, E. Müller, ex ZT, ex Herb. Z. Favrat, as *Leptosphaeria apogon*.

One of the collections, 184811, was referred to *Leptosphaeria apogon* (Müller 1950, p. 219). However that species is a synonym of *Phaeosphaeria eustoma* (Fuckel) L. Holm according to Leuchtmann (1984), who studied the type. The present fungus is quite distinct in having prominent ringlike septa like those of *Leptosphaeria bellynckii*, which occurs on *Polygonatum* (Liliaceae) and has larger ascospores and thicker walled, larger ascomata.

Phaeosphaeria avenaria (Weber) O. Eriksson, Arkiv för Botanik, 6(9): 408. 1967 Figs. 74, 108, 109, 126, 133
≡*Leptosphaeria avenaria* G. F. Weber, Phytopathology, 12: 454–455. 1922
=*Phaeosphaeria avenaria* (Weber) O. Eriksson f.sp. *triticea* (T. Johnson) comb. nov.
≡*Leptosphaeria avenaria* G. F. Weber f.sp. *triticea* T. Johnson, Can. J. Research, C, 25: 262–263. 1947
ANAMORPH: *Stagonospora avenae* (A. B. Frank) J. Bissett, Fungi Canadenses, 239. 1982
≡*Septoria avenae* Frank, Ber. Deutsch. Bot. Ges. 13: 64. 1895
≡*Hendersonia avenae* (Frank) Petrak, Sydowia, 1: 76. 1947
=*Stagonospora avenaria* (Frank) Bissett f.sp. *triticea* (T. Johnson) J. Bissett, Fungi Canadenses, 239. 1982
≡*Septoria avenae* Frank f.sp. *triticea* T. Johnson, Can. J. Research, C, 25: 263. 1947

Ascocarps in longitudinal rows, immersed in sheath near nodes, subepidermal, globose, glabrous, 120–150 μm wide, 120–150 μm high. Beak central, raising a white disc of cuticle, terete, flush, 27–50 μm long, 25–40 μm wide, of 2 to 4 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 9–12 μm thick, of 2 or 3 layers of polygonal to rectangular brown 4–8 × 2–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–84 × 7–11 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.0, straight or slightly curved, 18–24 × 3.5–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.46), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, with a few small guttules, smooth, with a sheath, 2–3 μm wide but interrupted at first cell.

HOST: *Avena sativa* L.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 109709, New Experimental Farm, Woodroffe Ave., Carleton County, Ontario, R. V. Clark, 31 May 1965, as *Leptosphaeria avenaria* Weber f.sp. *avenaria*, *Phaeosphaeria avenaria*, NEOTYPE; 129800, East of Ontario Agricultural College, near Guelph, J. Dearness, 9 August 1915, as *Leptosphaeria avenaria* Weber. f.sp. *avenaria* stat. conid., *Septoria avenae* Frank f.sp. *avenae*. UNITED STATES OF AMERICA: "FLORIDA": 195685, G. F. Weber, April 1922, photographs only (*Sept. avenae*) I oats 6, ex BPI, as *Leptosphaeria avenaria* Weber. WISCONSIN: (G.) F. Weber, 26 Feb. 1922, inoc. (inoculated), ex WIS, as *Leptosphaeria avenaria* n.sp.

HOSTS: (*1*) *Triticum aestivum* L., (*2*) *Triticum durum* Desf., (*3*) *Triticum sp.*

COLLECTIONS EXAMINED: CANADA: MANITOBA: 157619, on *2*, Winnipeg (Barn Plot), T. Johnson, 25 August 1944, collection No. 46, No. 774*b*, as *Leptosphaeria avenaria* f. *triticea*; 19545, on *2*, Winnipeg, T. Johnson, 7 Sept. 1944, as *Leptosphaeria avenaria* Weber f.sp. *triticea* T. Johnson, TYPE; 19546, on *2*, Winnipeg, T. Johnson, 3 August 1944, collection No. 15, No. 774*a*, as *Leptosphaeria avenaria* f. *triticea*, TYPE; 157618, on *3*, Winnipeg, T. Johnson, 4 Aug. 1944, No. 775, as *Leptosphaeria avenaria* f. *triticea*. SASKATCHEWAN: 34875, on *1*, R. J. Ledingham, Sept. 1953, as *Leptosphaeria avenaria* Weber f.sp. *triticea* T. Johnson (stat. conid.).

The description given is based on material of the neotype of *Phaeosphaeria avenaria* and the type of *Phaeosphaeria avenaria* f.sp. *triticea*, which did not differ in morphological features. However, the names of the host-specialized forms are available to discriminate the oat pathogen from the more generalized form on wheat and cereals other than oats.

The specimen sent from WIS in response to a request for the type consists of diseased leaves that had been inoculated, but that are without trace of pycnidia or ascocarps. The ascocarps were described from potato dextrose agar cultures in test tubes and the cultures may not have been dried and preserved in the herbarium. On the surface of one of the inoculated leaves we found a group of about 8 ascospores. The spores had not germinated. A drawing was made of one of these while it was mounted in lactic acid. Attempts to remove the spores from the leaf material for a clearer view resulted in loss of the spores. The spore was not inconsistent with the description, but because of the mountant used, we could not determine the nature of the sheath around the spore. The material received from WIS is not suitable as type. It appears that there is no

type specimen of the teleomorph. In this case, the original illustrations can be used. In this respect it is of interest to know that the original prints of germinated ascospores stained to show the gelatinous sheath around the spores and the older part of the germ tubes are preserved at BPI, but that there is no specimen at BPI.

The packet of BPI bears 5 prints of photomicrographs said to be at magnification × ±900, with the further handwritten notes: "Ascospores from culture, germinated in water on slides—water drained off and diluted India ink applied plus cover." In a different handwriting are the words "*Avena sativa*" and "Fla." The reference to Florida is an understandable mistake because Weber may have sent the material from Florida, but his research was done in Wisconsin in 1922 before he started his job in Florida. Some of the prints match the figures of germinated ascospores published in Plate XXIX by Weber (1922). The magnification must be in error and less than ×900. To enlarge the spores to match the mean size given by Weber, 25 × 5 μm, requires a further one-third enlargement. Germinated spores would be somewhat larger than the mean. Three of the spores were redrawn to about 1000 times the mean size. The sheath on the germinated spores was very conspicuous around the spores and along the proximal part of the germ tubes. We could not determine with certainty whether the sheath was continuous or of the interrupted kind found in *Phaeosphaeria eustoma* (Fuckel) L. Holm. The illustrations are particularly important because there does not seem to be an extant type specimen.

Bissett (1982) transferred the anamorph to *Stagonospora*. He proposed a new combination for the forma speciales. While this rank is not covered by the ICBN, it seems appropriate to make the new combination so that it can be used by those who wish to distinguish between the oat pathogen as f.sp. *avenaria* without citation of authority, and the less highly specialized f.sp. *triticea*.

Phaeosphaeria brevispora (Nagasawa & Otani) n.comb. Figs. 87, 112, 136

≡*Phaeosphaeria arundinacea* (Sowerby) Hedjaroude, Sydowia 22: 78. 1968 var. *brevispora* Nagasawa & Otani, Rep. Tottori Mycol. Inst. 15: 38–39. 1977

Ascocarps in single or double rows, immersed beneath cracks in culm epidermis, globose, glabrous, 250–350 μm wide, 200–300 μm high. Beak compound, confluent, trough like, centrally depressed, 75–90 μm long, 120–140 μm wide, of 10–15 layers of dark brown polygonal 5–7 × 5–7 μm cells around a 20–25 μm diameter ostiole, without periphyses. Wall in longitudinal section laterally uniformly 25–35 μm thick, of 9–11 layers of prismatic hyaline 8–12 × 4–6 μm pseudoparenchyma cells with two external layers of similar brown cells. Physes numerous, 1–1.5 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, with slime coating. Asci not numerous, cylindrical, 85–100 × 10–15 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.8, straight or slightly curved, (16)19–21 × 5–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), not constricted at other septa, with dots at ends of septa, second cell from apex shorter than wide and enlarged towards middle, reddish brown, with guttules, moderately thick walled, coarsely verrucose, with a sheath 3–4 μm wide.

HOSTS: (*1*) *Sasa kurilensis* Makino et Shibata, (*2*) *Sasa senanensis* (Franch. & Sav.) Rehder, (*3*) *Sasa* sp.

COLLECTIONS: JAPAN: 198162, on *3*, Moiwa-yama, Sapporo-city, Hokkaido, E. Nagasawa, 13 June 1972, ex TMI-3175, as *Phaeosphaeria arundinacea* (Sow.) Hedjaroude var. *brevispora* Nagasawa & Otani, HOLOTYPE; 198163, on *2*, Kyoritsu-Daiichi, Saroma-cho, Tokoro-gun, Hokkaido, E. Nagasawa, 2 January 1973, ex TMI-1026, as *Phaeosphaeria arundinacea* (Sow.) Hedjaroude var. *brevispora* Nagasawa & Otani, PARATYPE; 198164, on *1*, Hinaizawa, Kakunodate-cho, Senpoku, Akita Pref., E. Nagasawa, ex TMI-3520, as *Phaeosphaeria arundinacea* (Sow.) Hedjaroude var. *brevispora* Nagasawa & Otani, PARATYPE.

The discrete ascomata occur close together in single or double rows and have a common troughlike covering that is evident through cracks in the epidermis. The actual ostiole is not easily detected. It sometimes occurs at the side of the compound covering, not in the central depressed area as might be expected. The position may depend on the number of rows of ascomata present. The ascospores are heavily warted even when hyaline. They are shorter than given for *Phaeospheria arundinacea* (Sow.: Fr.) Hedjaroude, which is now accepted as *Massarina arundinacea* (Sow.: Fr.) Leuchtmann (1984). The taxon merits recognition at species level as proposed here.

Phaeosphaeria brizae (Passerini) n.comb. Fig. 96

≡*Leptosphaeria brizae* Passerini, DFN, II: 10. 1887, (as *Leptosphaeria bryzae*)

Ascocarps scattered, 165 μm wide, 165 μm high. Beak central, terete, flush, intraepidermal, 10–20 μm long, 20–30 μm wide, without periphyses. Wall in longitudinal section laterally uniformly 20 μm thick. Physes not recorded. Asci clavate-cylindrical, 55–60 × 18–20 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.7, straight or slightly curved, 35–38 × 5.5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth.

HOST: *Briza* sp.

COLLECTION EXAMINED: None; data from Berlese (1894).

Phaeosphaeria calderi n.sp. Figs. 99, 123

Ascomata dispersa, immersa, globosa, glabra, 80–110 μm lat., 80–110 μm alt. Rostrum inclusum, teres, 10–15 μm long., 25–30 μm lat., cellulis brunneis polygoniis, 3–6 × 3–6 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 10–14 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 4–6 × 4–6 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, ovati, 70–85 × 27–34 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, 34–38 × 8–9 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.48), constricto, brunneae, guttulatae, echinulatae, strato muco 1 μm omnino circumdato.

Hab. in culmis *Junci castanei*, "CANADA: NORTHWEST TERRITORIES: District of Keewatin: 70493(*a*), Coral Harbour, Southampton Island, D.B.O. Savile 4095, J. A. Calder, I. Kukkonen, 16 Aug. 1959, TYPE, as *Phaeosphaeria juncina*."

The epithet refers to one of the collectors, J. A. Calder.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–110 μm wide, 80–110 μm high. Beak central, flush, intraepidermal, terete, 10–15 μm long, 25–30 μm

wide, of 2 or 3 layers of brown polygonal 3−6 × 3−6 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10−14 μm thick, of 2 or 3 layers of polygonal brown 4−6 × 4−6 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa to 10- to 20-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 70−85 × 27−34 μm, short-stalked, with 8 overlapping obliquely tetraseriate ascospores. Ascospores broadly fusiform, L/W 4.5, straight or slightly curved, 34−38 × 8−9 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.48), not constricted at other septa, second cell from apex enlarged towards middle, central cells longer than end cells, yellowish brown, sometimes guttulate, finely uniformly echinulate, with a very thin sheath, 1 μm wide.

HOST: *Juncus castaneus* Sm.

COLLECTION EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Keewatin: 70493(*a*), Coral Harbour, Southampton Island, D.B.O. Savile 4095, J. A. Calder, I. Kukkonen, 16 Aug. 1959, TYPE, as *Phaeosphaeria juncina*.

The ascospores are much larger than those of *Phaeosphaeria juncina* (Auersw.) L. Holm.

Phaeosphaeria caricicola (Fautrey) Leuchtmann, Sydowia, 37: 109. 1984 Fig. 70

≡*Leptosphaeria caricicola* Fautrey in Roum., Rev. Mycol. (Toulouse), 15: 20. 1893

Ascocarps scattered, immersed, subepidermal, globose, hairy below, 120−140 μm wide, 120−140 μm high. Beak central, terete, flush, filled with hyaline cells. Ascocarp wall surface a textura angularis. Wall not seen in longitudinal section. Physes not seen. Asci cylindrical, 60−70 × 6−8 μm. Ascospores fusiform, 18−21 × 4 μm, 3-septate, curved, olivaceous.

HOST: *Carex riparia* Curt.

COLLECTION EXAMINED: FRANCE: F. Fautrey, Oct. 1891, ex BPI, C. Roumeguère, Fungi selecti exsiccati 6243, TYPE, as *Leptosphaeria caricicola* Faut., avec *Lepto. michotii*.

The ascomata were empty. Some pycnidia were found as were spores of *Paraphaeospheria michotii* (West.) O. Eriksson. The ascus and ascospore details were taken from the label information on the exsiccatus.

Leuchtmann (1984, p. 109) redescribed this species from *Carex pendula* Huds. from Switzerland and noted the presence of a microconidial state in culture. The ascospores were like *Phaeosphaeria eustoma* (Fuckel) L. Holm but perhaps small. He did not find a *Stagonospora* anamorph as he did in some isolates of *Phaeosphaeria eustoma*, some of which produced a microconidial state. Leuchtmann did not see type material. The nature of *Phaeosphaeria caricicola* is not resolved at this time.

Phaeosphaeria donacina (Saccardo) n.comb. Fig. 94

≡*Leptosphaeria donacina* Saccardo, Atti Soc. Veneto-Trentina Sci. Nat., Padova 2: 155. 1873

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 165−200 μm wide, 165−250 μm high. Beak central, terete, flush, intraepidermal, 20 μm long, 30 μm wide. Wall in longitudinal section laterally uniformly 20−25 μm thick. Physes numerous, filiform. Asci numerous, in a broad hymenium, cylindrical, 85−95 × 10−12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.2, straight or slightly curved, 22−24 × 5−6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, with guttules, smooth.

HOST: *Arundo donax* L.

COLLECTION EXAMINED: None; data from Saccardo's original description and from Berlese (1894), who examined and illustrated Saccardo's material.

Phaeosphaeria emilii n.sp. Figs. 75, 115

Ascomata dispersa, immersa, globosa, glabra, 60−100 μm lat., 60−100 μm alt. Rostrum inclusum, teres, 15−20 μm long., 25−30 μm lat., cellulis brunneis polygoniis, 2−3 × 2−3 μm compositum; ostiolum 10−15 μm diam., sine periphysibus. Paries ascomatis 10−12 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 4−6 × 2−4 μm compositus. Physes 2.5−3.5 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 40−45 × 9−12 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, 24−31 × 4−5 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.46), constricto, brunneae, eguttulatae, leves, strato muco 1−4 μm impariter circumdato.

Hab. in culmis *Caricis davallianae*, "SWITZERLAND: GRAUBÜNDEN: 123615, Fetan, Clunas, E. Müller, 15 July 1949, TYPE, ex ZT, ex Herb. Wehmeyer as *Leptosphaeria caricicola* Fautrey."

The epithet refers to the collector Dr. Emil Müller.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 60−100 μm wide, 60−100 μm high. Beak central, flush, terete, light colored, 15−20 μm long, 25−30 μm wide, of 4 or 5 layers of brown polygonal 2−3 × 2−3 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10−12 μm thick, of 3 or 4 layers of rectangular brown 4−6 × 2−4 μm pseudoparenchyma cells, darker colored around beak base. Physes numerous, 2.5−3.5 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 40−45 × 9−12 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.6, straight or slightly curved, 24−31 × 4−5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.46), not constricted at other septa, second cell from apex enlarged towards base, central cells shorter than end cells, yellowish brown, without guttules, smooth, with a two-parted sheath, a globose appendage 5−6 μm wide on the apical cell and a 1−4 μm wide sheath around the other cells.

HOST: *Carex davalliana* Sm.

COLLECTION EXAMINED: SWITZERLAND: GRAUBÜNDEN: 123615, Fetan, Clunas, E. Müller, 15 July 1949, TYPE, ex ZT, ex Herb. Wehmeyer as *Leptosphaeria caricicola* Fautrey.

This species has very small ascomata with a dark zone at the base of the light brown beak. All the parts are small except the physes, which are relatively broad and copiously coated with slime. In the ascospores, the end cells are longer than the central cells.

Phaeosphaeria eustoma (Fuckel) L. Holm, Symb. Bot. Upsal. 14(3): 109. 1957 Figs. 72, 110, 127, 131

≡***Pleospora eustoma*** Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 139. 1869 (1870)

≡*Leptosphaeria eustoma* (Fuckel) Saccardo, Atti Sci. Venet.-Trent. Sci. Nat. 2: 210. 1873

=*Leptosphaeria apogon* Sacc. & Speg., Michelia, 1: 398. 1877
=*Leptosphaeria ophiopogonis* forma *graminum* Saccardo, Syll. Fung. 2: 68. 1883
=*Leptosphaeria leersiana* Saccardo, Syll. Fung. 2: 60. 1883
=*Leptosphaeria leersiae* Passerini, (Fungi Parm. IV) Atti Soc. Critt. Ital. 2: 43. 1879. nec (ut videtur) *Sphaerella leersiae*, Hedwigia p. 46. 1878

Ascocarps scattered, superficial or immersed, globose, 80–200 μm wide, 60–200 μm high. Beak central, terete, truncate-conical, 0–30 μm long, 25–45 μm wide, of 2–4 layers of brown prismatic 2–8 × 2–6 μm cells around a 15–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 6–14 μm thick, of 1–5 layers of polygonal to prismatic brown, 4–10 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with or without peculiar accumulations near septa, with or without slime coating. Asci numerous, in a broad hymenium, cylindrical, 38–80 × 7–14 μm, short-stalked, with 8 overlapping linearly to obliquely biseriate ascospores. Ascospores narrowly fusiform, L/W 4.4, straight or slightly curved, 17–29 × 4–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.45), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base and slightly shorter than adjacent cells with a faint band from a series of short ridges above the middle of the cell, pale yellowish to greyish brown, with or without guttules, smooth, with a two-parted sheath, a globose appendage 5–6 μm wide on the apical cell and a 1–4 μm wide sheath around the other cells.

HOSTS: (*1*) *Agropyron repens* L., (*2*) *Agrostis stolonifera* L. var. *palustis* (Huds.) Farw., (*3*) *Arrhenatherum elatius* (L.) Presl., (*4*) *Bromus sterilis* L., (*5*) *Bromus* sp., (*6*) *Dactylis glomerata* L., (*7*) *Deschampsia caespitosa* (L.) Beauv., (*8*) *Elymus* sp., (*9*) *Elytrigia repens* (L.) Nevski, (*10*) *Festuca* sp., (*11*) *Oryza sativa* L., (*12*) *Panicum virgatum* L., (*13*) *Phleum pratense* L., (*14*) *Poa pratensis* L., (*15*) Poaceae, (*16*) *Typha latifolia* L.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 189025, on *1*, Leamington, R. A. Shoemaker, 3 July 1983; 188916, on *9*, Conc. 8 and HWY 81, several miles south of Corbett, Middlesex Co., M. Corlett 83(73), 7 July 1983; 187330(*a*), on *10*, east side of HWY 21, south of Pinery Provincial Park, Lambton Co., M. Corlett, 28 June 1983; 189086, on *12*, tip of Point Peelee Island, Point Pelee National Park, Mersea Twp., Essex Co., R. A. Shoemaker, 22 June 1983; 189067(*b*), on *13*, Benmiller, Colborne Twp., Huron Co., R. A. Shoemaker, 18 June 1983; 110682(*a*), on *16*, Blacksands Provincial Park, north of Nipigon, Thunder Bay District, R. A. Shoemaker, 4 August 1964. MANITOBA: 182691, on *15*, Whirlpool Lake, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979; 150582, on *1*, Manitoba Agricultural College, Winnipeg, W. Popp, A. M. Brown & I. L. Conners, 10 September 1926; 180639, on *5*, Deep Lake, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 16 July 1979; 180647(*b*), on *8*, Deep Lake, Riding Mountain National Park, R. A. Shoemaker, 16 July 1979; 182611(*b*), on grass, HWY 19, 1 mile west of Swanson Creek, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979. ALBERTA: 180112, on *2*, south end of Maskinonge Lake, Waterton National Park, 49°05′N, 113°51′W, K. N. Egger 652, 8 August 1980. UNITED STATES OF AMERICA: IOWA: 189074(*c*), on *5*, Lost Lake, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983. OREGON: 191555(*c*), on *14*, G. P. White, 14 January 1985. GERMANY: 189835(*a*), on *15*, ad straman putridum, raro, im Oestrich, Fuckel, Vere, ex G, Fungi rhen. 889, as *Sphaeria eustoma* Fr., *Pleospora eustoma* (Fr.) Fuckel, ex G, ex Herb. Fuckel 1894, Herb. Boissier, ISOTYPE; 196569, same as preceding, ex FH, Fungi rhen. 889, as *Sphaeria eustoma* Fr., TYPUS. ITALY: 190579, on *4*, 5/5 17, ex PAD 2700, as *Leptosphaeria eustomoides* Sacc. forma *Bromo-sterilis*. JAPAN: 195300(*a*), on *11*, Prov. Ehime, Nov. 1906, ex Herb. R. Ciferri, ex BPI, as *Leptosphaeria oryzae* Hori und *Phoma oryzae* Hori. SWITZERLAND: GRAUBÜNDEN: 123588, on *7*, Lü, E. Müller, 5.7.1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria nigrans* (Desm.) Ces. et De Not. ZÜRICH: 123558, on *3*, Glattfelden, E. Müller, 12.6.1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria eustoma*; 123560(*a*), auf durrem Gras, Glattfelden, E. Müller, 15.5.1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria culmorum*; 123533, on *14*, Glattfelden, E. Müller, 15.5.1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria apogon* Sacc.; 123561, on *14*, Glattfelden, E. Müller, 15.5.1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria culmorum* Auersw.; 92006, on *16*, Katzensee, E. Müller, 12 September 1961, as *Leptosphaeria typhae* (Auersw.) Karst.

Holm (1957) studied part of the type of *Phaeosphaeria eustoma* from Geneva, and Eriksson (1967*b*) examined a part from Stockholm. The type of *Phaeosphaeria eustoma* from G is a very mixed collection with several pyrenomycetes present. This collection 189835(*a*), which has sketches for Fuckel's published illustrations with the packet, is clearly type. However, several pyrenomycetes are present on the material and their gross features may have been incorporated in Fuckel's description of the ascomata. Our preparation 189835(*a*) from the type at G matches Eriksson's (1967*b*, p. 413, Fig. 2*d*) illustration from isotype material from S. In the type the asci measure 38–56 × 9–14 μm. Fuckel gave 46 × 14 μm for asci and 20 × 5 μm for ascospores. Holm (1957, p. 111) reported Fuckel's type as having small narrow spores, 18–20 × 5 μm. On the type specimen is some material of overmature *Phaeosphaeria eustoma* with dark ascospores with somewhat swollen cells resembling those of *Phaeosphaeria culmorum* (Auersw. ex Rehm) Leuchtmann but smaller. This material might have influenced Holm to develop a broad species concept and merge *Phaeosphaeria culmorum* with *Phaeosphaeria eustoma*. For example, Holm (1957, p. 109) gave 75–105 × 15–20 μm for the asci. His broad species concept is not used herein. The material 189835(*a*) described here best matches Fuckel's description and illustration. It coincides with the illustration from the isotype by Eriksson and Holm's brief note pertaining particularly to the type. The characteristic two-parted sheath was found on ascospores from the type after prolonged exposure of the slides in water for several days followed by staining with India ink. Preparations stained after a short immersion in water showed the sheath on a very few ascospores. Most were as illustrated by Eriksson (1967*b*, Fig. 2*d*), without a sheath. No sheath was detected on the sample from FH. However, with the caution that the collection in G is mixed, and that the sheath was not always detectable on the ascospores, we were able to find some spores with the eustoma type sheath and stabilize the species concept

in accord with the original concept and that of Leuchtmann (1984) and Eriksson (1967*b*).

The specimen 190579, though from PAD, is not the type of *Leptosphaeria eustomoides* Sacc., the date of collection and host being discordant. Eriksson (1967*b*, p. 416) considered *Leptosphaeria eustomoides* to be close to *Phaeosphaeria eustoma* and Leuchtmann (1984, p. 102) placed it as a doubtful synonym but did not cite a type. The packet had drawings and notes as follows: "Perithecia membranacea, carbonacea, atris, contextu, cellularia indistincta, 170–200 μm, ostiolo compresso 20-pauci paraphysoidibus, (asci) 70–75(100) × 8–10 μm, (ascospores) 23–24 × 4–5 (3-septate, biseriate, guttulate)." The collection bears the names *Leptosphaeria eustomoides* f. *Bromo sterile*, *Leptosphaeria gregaria* affinis *L. microscopica* Karst., the date 5/5 77, and the numbers 47 and 2700. It is simply another collection of ***Phaeosphaeria eustoma***.

Saccardo proposed a new name for *Leptosphaeria leersiae* Passerini. The illustration and redescription in Berlese (1894) indicate that *Leptosphaeria leersiana* is not distinct from *Phaeosphaeria eustoma*.

Collection 195300(*a*) is *Phaeosphaeria eustoma* intermixed with a less common *Phaeosphaeria oryzae* Miyake segregated as 195300(*b*). The collection is not the type of *Leptosphaeria oryzae* Miyake. Although Miyake (1910) collected at Ehime Landwirtschaftliche Versuchsstation (see p. 238), he did not begin his study until 1907 (see p. 237). This collection is earlier. It may be the type of *Leptosphaeria oryzae* Hori, a name that was probably not published. The fungus referred to *Phaeosphaeria eustoma* is not remarkable. The immersed ascomata have a flush ostiole surrounded by a dark brown ring. The physes are abundant in young material. The spores have a *eustoma* type sheath when viewed in India ink. *Phaeosphaeria oryzae* differs strikingly in the echinulation on the dark brown spores.

Phaeosphaeria eustomoides (Saccardo) n.comb.
Figs. 78, 107, 138

≡ *Leptosphaeria eustomoides* Sacc. Nuovo Giorn. Bot. Ital. 7: 319–320. 1875

Ascocarps scattered, immersed, subepidermal with some colonization of epidermal cells, ellipsoidal to globose, glabrous, glistening, 150–250 μm wide, 150–250 μm high. Beak central, terete, truncate-conical, 25–30 μm long, 45–50 μm wide, of 10–12 layers of brown polygonal 3–4 × 3–4 μm cells around a 10–20 μm diameter ostiole, without periphyses, filled with tips of physes. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–10 μm thick, of 3 or 4 layers of compressed brown 6–10 × 2–3 μm pseudoparenchyma cells. Physes numerous, 2–2.5 μm wide, with thin septa at 10–15 μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 70–75 × 8–10 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.1, straight or slightly curved, 18–25 × 5–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a vague thin sheath, 0.5–1 μm wide.

HOST: *Andropogon ischaemum* L.

COLLECTION EXAMINED: 195683, Lequis Berria, Gutermann, 1912, ex Herb. R. Ciferri, ex BPI.

This collection is too late to be type. It is, however, on the same host as recorded for the original collection. Some of the collection data are difficult to decipher and the country of origin is not known to us. The inner package is a glassine packet of the kind used by Saccardo and might indicate that the material was from him on exchange with Ciferri. It is used as a basis for a concept of *Phaeosphaeria eustomoides* in the absence of the original material.

Phaeosphaeria exarata n.sp. Figs. 98, 122, 129, 135

Ascomata dispersa, immersa, globosa, glabra, 70–100 μm lat., 60–90 μm alt. Rostrum inclusum, teres, 5–15 μm long., 20–30 μm lat., cellulis brunneis polygoniis, 2–4 × 2–4 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 12–15 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 8–10 × 7–9 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, cylindrici, 65–85 × 14–17 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, 30–36 × 7–8 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.48), constricto, brunneae, eguttulatae, exaratae, strato muco 2–3 μm impariter circumdato.

Hab. in culmis *Caricis sempervirentis*, "SWITZERLAND: GRAUBÜNDEN: 123535. Lü, Champatsch, E. Müller, 5 July 1949, TYPE, ex ZT, ex Herb. Wehmeyer as *Leptosphaeria caricicola* Fautrey."

The epithet refers to the longitudinally furrowed surface of the ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 70–100 μm wide, 60–90 μm high. Beak central, flush, terete, 5–15 μm long, 20–30 μm wide, of 2 or 3 layers of brown polygonal 2–4 × 2–4 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–15 μm thick, of 2 or 3 layers of polygonal brown 8–10 × 7–9 μm pseudoparenchyma cells. Physes, numerous 2–3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci few, cylindrical, 65–85 × 14–17 μm, short-stalked, with 8 overlapping obliquely tetraseriate ascospores. Ascospores fusiform, L/W 4.6, straight or slightly curved, 30–36 × 7–8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.48), not constricted at other septa, second cell from apex enlarged towards base and short, brown, with guttules, coarsely ridged longitudinally, with a conspicuous sharply delimited sheath, 2–3 μm wide, widest around enlarged cell.

HOST: *Carex sempervirens* Vill.

COLLECTION EXAMINED: SWITZERLAND: GRAUBÜNDEN: 123535, Lü, Champatsch, E. Müller, 5 July 1949, TYPE, ex ZT, ex Herb. Wehmeyer as *Leptosphaeria caricicola* Fautrey.

Phaeosphaeria exarata has very large cells in the ascoma wall, ascospores with a continuous sheath and coarse longitudinal ridges. There is some similarity in spore surface to that of *Sulcispora pleurospora*.

Phaeosphaeria fautreyi n.sp. Fig. 77

Ascomata dispersa, immersa, depresso-globosa, glabra, 250–300 μm long., 150–200 μm lat., 150–200 μm alt. Rostrum inclusum, teres, cellulis brunneis polygoniis, 5–7 × 3–5 μm compositum; ostiolum 30–35 μm diam., sine periphysibus. Paries ascomatis 10–14 μm lat., cellulis brunneis tenuitunicatis, 5–7 × 3–5 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 60–70 × 14–16 μm, 8-spori. Ascosporae biseriatae, fusiformes, 18–22 × 5–6 μm, 3-septatae, in ordinem 2:1:2,

septo primo supramedio, (0.47), constricto, brunneae, eguttulatae, leves, sine strato muco.

Hab. in culmis *Arundinis epigeios,* "FRANCE: 196665(*b*), Fautrey, June 1896, TYPE, Roum. F. sel. 7067, ex FH, as *Pleospora donacina* Niessl forma *epigeios* Lambotte in Roumeguère. Rev. Mycol. 18: 153. 1896."

The epithet commemorates the collector.

Ascocarps scattered, immersed, subepidermal, depressed globose, glabrous, 250–300 μm long, 150–200 μm wide, 150–200 μm high. Beak central, terete, flush, intraepidermal, 0 μm long., a slightly thickened area of the wall, of 4–6 layers of brown polygonal 5–7 × 3–5 μm cells around a 30–35 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–14 μm thick, of 3 or 4 layers of polygonal brown 5–7 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 60–70 × 14–16 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.6, straight or slightly curved, 18–22 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, without a sheath.

HOST: *Arundo epigeios* L. = *Calamagrostis epigeios* Roth.

COLLECTION EXAMINED: FRANCE: 196665(*b*), Fautrey, June 1896, TYPE, Roum. F. sel. 7067, ex FH, as *Pleospora donacina* Niessl forma *epigeios* Lambotte in Roumeguère. Rev. Mycol. 18: 153. 1896.

Phaeosphaeria fautreyi has small spores without a sheath. The fruitbodies are peculiar in having a thickened upper wall with a simple ostiole and no beak.

Phaeosphaeria fautreyi is a second species of pyrenomycete present on the collection. A fungus close to *Pleospora donacina* (Fr.) Niessl was found as well.

Phaeosphaeria glyceriae-plicatae (Sàvul. & Sandu) n.comb. Figs. 79, 106, 132, 140

≡*Leptosphaeria glyceriae-plicatae* Sàvul. & Sandu, Hedwigia. 73: 74. 1933 (Aug.)

=*Leptosphaeria glyceriae* Unamuno, Rev. Acad. Cienc. exact., fis. quim. y natur., Madrid, 30: 483. 1933 (Sept.)

Ascocarps hypophyllous in dead leaf tips, scattered, immersed, subepidermal, globose, glabrous, 100–150 μm wide, 100–150 μm high. Beak central, terete, flush, 10–20 μm long, 40–50 μm wide, of 3 or 4 layers of brown polygonal 3–5 × 3–5 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 1–3 layers of rectangular brown 4–8 × 2–4 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–60 × 13–15 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores fusiform, L/W 4.0, straight, 19–22 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.45), not constricted at other septa, all septa with black dots at ends, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 1–1.5 μm wide.

HOSTS: (*1*) *Glyceria fluitans* (L.) R. Br., (2) *Glyceria plicata* Fr.

COLLECTIONS EXAMINED: ROMANIA: 195223, on 2, Valea Mare, Năsăud, T. Sàvulescu & C. Sandu, 9 July 1931, TYPE, Herb. Myc. Romanicum Fasc. VIII, No. 355, as *Leptosphaeria Glyceriae-plicatae* Sàvul. & Sandu soc. *Fusicladium harotianum* Sacc., Ann. Mycol. 6: 56. 1908, ex BPI. SPAIN: on *1*, Celanova, Orense, P. Unamuno, 11 Aug. 1931, Herb. Jard. Bot. Madrid, cum *Cladosporium fasciculatum* Corda, ex BPI, as *Leptosphaeria glyceriae*.

The material of *Leptosphaeria glyceriae* Unamuno bears no mature ascomata. The symptoms strongly resemble those caused by *Leptosphaeria glyceriae-plicatae* Sàvul. & Sandu. The older epithet is adopted, though both were published in 1933.

Phaeosphaeria hiemalis (Saccardo & Spegazzini in Saccardo) n.comb. Figs. 85, 121, 130

≡*Leptosphaeria hiemalis* Sacc. & Speg. in Sacc., Michelia, 1: 395. 1878

Ascocarps scattered near nodes, erumpent, globose, 300–400 μm wide, 250–300 μm high, hairy below. Beak central, terete, truncate-conical, 60–70 μm long, 120–140 μm wide, of 8–12 layers of brown polygonal 3–5 × 3–5 μm cells around a 15–20 μm diameter ostiole, lined with 15–20 × 1–1.5 μm hyaline periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 18–25 μm thick, of 4–6 layers of polygonal to prismatic brown 6–9 × 4–6 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 30- to 40-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85–100 × 14–17 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 4.0, straight, 24–28 × 6–7 μm, 3- to (5-)septate in sequence (3):2:1:2:(3), first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base and slightly shorter than adjacent cells, mid yellowish brown, with guttules, smooth, without a sheath.

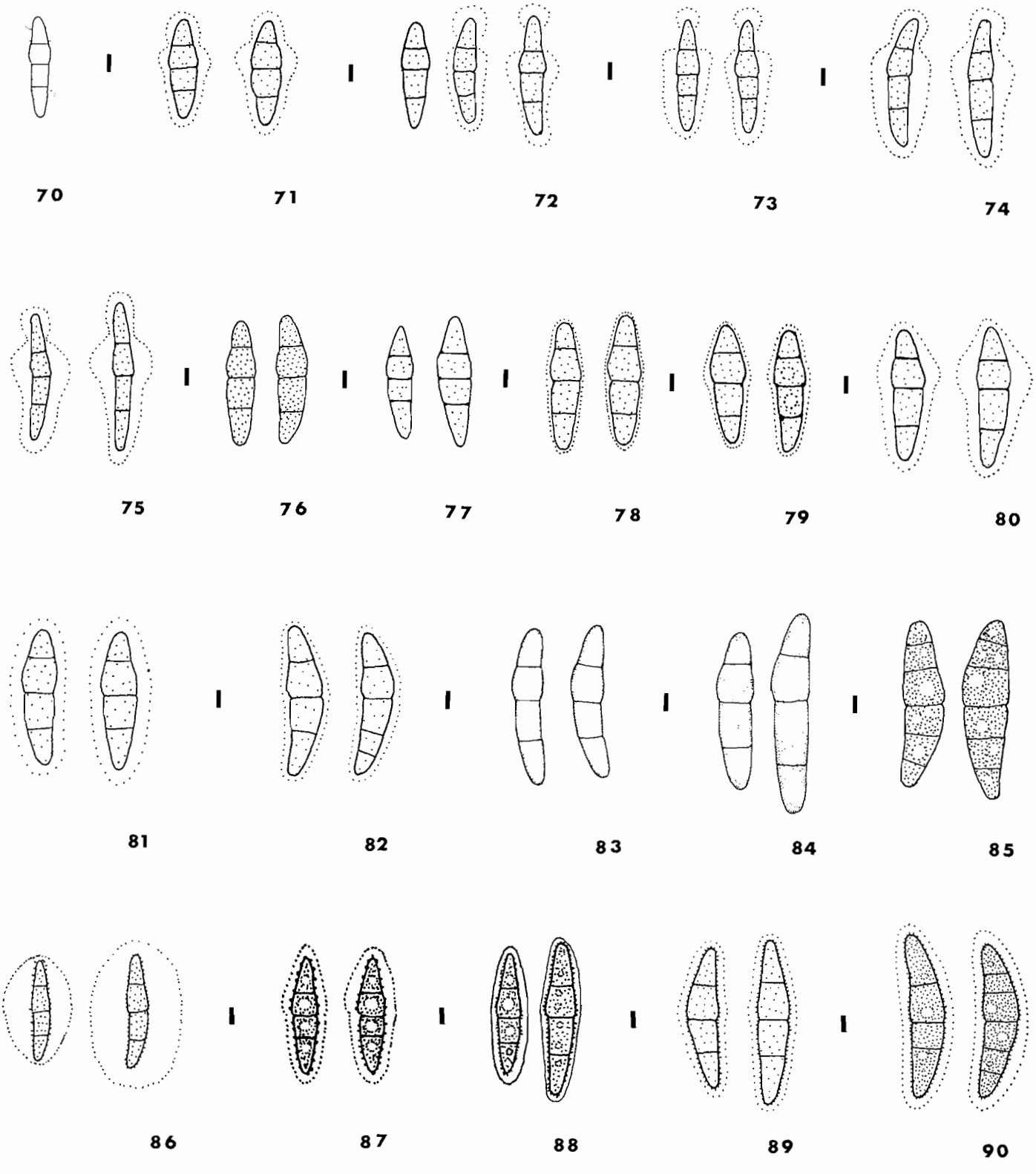
HOST: *Equisetum hiemale* L.

COLLECTIONS EXAMINED: CANADA: BRITISH COLUMBIA: 161124, University of British Columbia, Wreckbeach, Vancouver, Redhead 220, 20 January 1971. UNITED STATES OF AMERICA: MICHIGAN: 121635(*b*), Warren Dunes State Park, St. Joseph, L. E. Wehmeyer, 13 Sept. 1951, ex Herb. Wehmeyer 9292 as *Leptosphaeria equiseti* Karst.

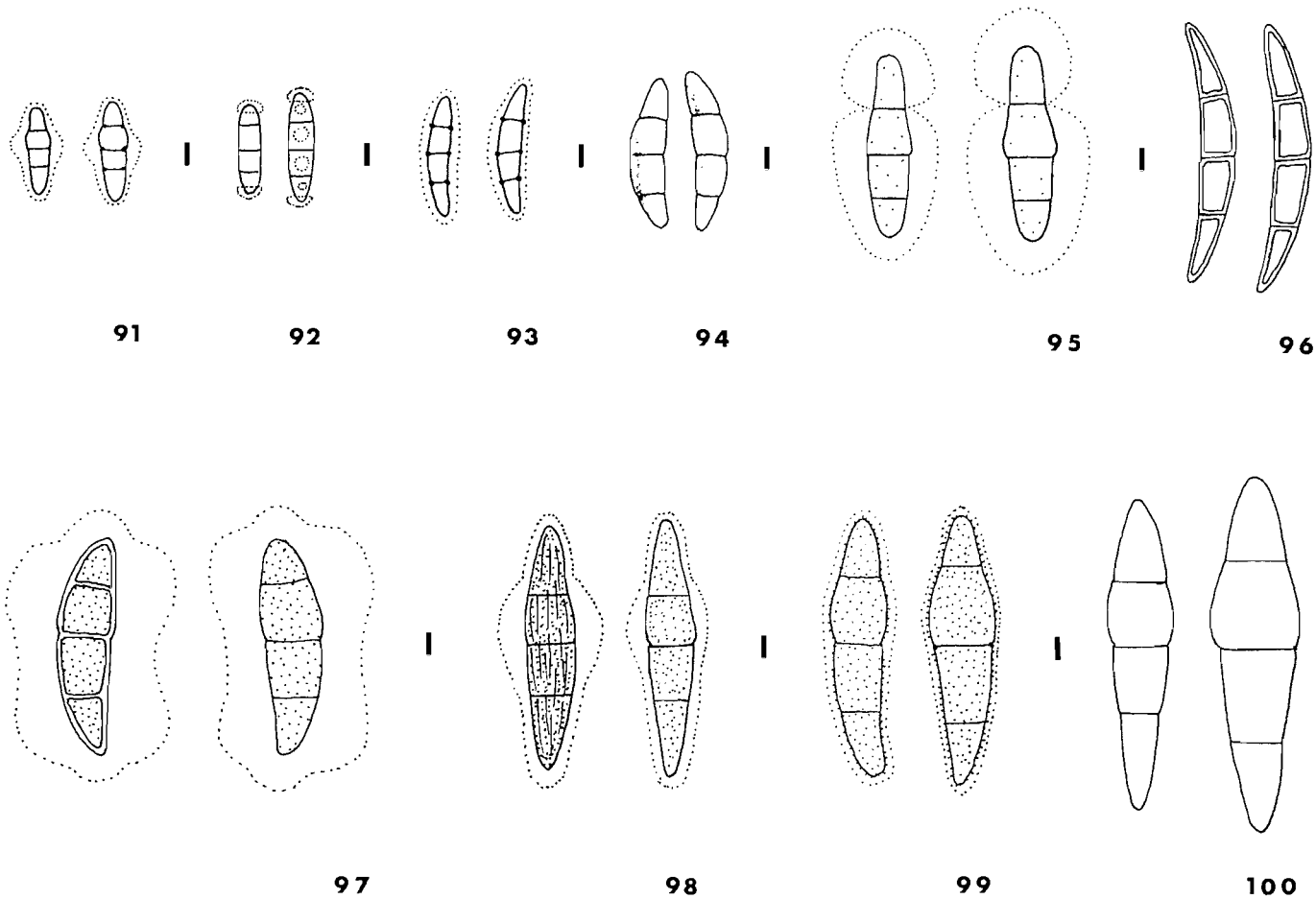
This species was found mixed with *Phaeosphaeria berlesei* (Larsen & Munk) Hedjaroude on *Equisetum hiemale* L., but was readily distinguished from this fungus by the much larger erumpent beaked ascocarps located near the nodes. *Phaeosphaeria berlesei* has small beakless ascocarps immersed beneath stomata. In *Phaeosphaeria hiemalis* the ascospores are 3- to 5-septate as illustrated by Saccardo (1877–1886 (1878, Fig. 365)) and Berlese (1894, Pl. 45, Fig. 5). The description of *Leptosphaeria arvensis* Spegazzini is similar in many respects, but no material of it has been examined by us.

Phaeosphaeria humerata n.sp. Figs. 80, 119, 137

Ascomata dispersa, immersa, subglobosa, glabra, 125 μm lat., 100 μm alt. Rostrum inclusum, teres, papilliforme, 25–30 μm long., 35–50 μm lat., cellulis brunneis polygoniis, 3–5 × 3–5 μm compositum; ostiolum 12–16 μm diam., sine periphysibus. Paries ascomatis 10–12 μm lat., cellulis brunneis, tenuitunicatis, 6–8 × 3–5 μm compositus. Physes 2–



FIGS. 70–90. Ascospores. ×1000. Fig. 70. *Phaeosphaeria caricicola*, (Leuchtmann 1984, Abb. 1*h*). Fig. 71. *Phaeosphaeria tritici*, 196650. Fig. 72. *Phaeosphaeria eustoma*, 189835(*a*) TYPE (two), 189074(*a*). Fig. 73. *Phaeosphaeria nodorum*, 97971. Fig. 74. *Phaeosphaeria avenaria*, 109709 f.sp. *avenaria* TYPE, 19545 (f.sp. *triticea* Type). Fig. 75. *Phaeosphaeria emilii*, 123615 TYPE. Fig. 76. *Phaeosphaeria typhae*, 133990 TYPE. Fig. 77. *Phaeosphaeria fautreyi*, 196665(*b*). Fig. 78. *Phaeosphaeria eustomoides* 195683. Fig. 79. *Phaeosphaeria glyceriae-plicatae*, 195223 TYPE. Fig. 80. *Phaeosphaeria humerata*, 175858(*a*) TYPE. Fig. 81. *Phaeosphaeria tofieldiae*, 123650(*a*). Fig. 82. *Phaeosphaeria variiseptata*, 189235 TYPE. Fig. 83. *Phaeosphaeria juncophila*, (Leuchtmann 1984, Abb. 1*o*). Fig. 84. *Phaeosphaeria triglochinicola*, (Leuchtmann 1984, Abb. 4*k*). Fig. 85. *Phaeosphaeria hiemalis*, 123635(*b*). Fig. 86. *Phaeosphaeria sorgho-arundinacea*, 189074(*d*). Fig. 87. *Phaeosphaeria brevispora*, 198162 TYPE. Fig. 88. *Phaeosphaeria oryzae*, 195300(*b*), 196178 TYPE. Fig. 89. *Phaeosphaeria panici*, 195446 TYPE. Fig. 90. *Phaeosphaeria licatensis* 106164.



FIGS. 91–100. Ascospores. ×1000. Fig. 91. *Phaeosphaeria minima*, 123630(*a*) TYPE. Fig. 92. *Phaeosphaeria maritima* (Eriksson 1982, redrawn from Fig. 4B). Fig. 93. *Phaeosphaeria annulata*, 70467 TYPE. Fig. 94. *Phaeosphaeria donacina* (Berlese 1894, Tab. XLV, Fig. 3). Fig. 95. *Phaeosphaeria marram*, 189007(*a*). Fig. 96. *Phaeosphaeria brizae* (Berlese 1894, Tab. LV, Fig. 4). Fig. 97. *Phaeosphaeria lunata*, 191290 TYPE. Fig. 98. *Phaeosphaeria exarata*, 123535 TYPE. Fig. 99. *Phaeosphaeria calderi*, 70493(*a*) TYPE. Fig. 100. *Phaeosphaeria macrosporidium*, (Gessner and Kohlmeyer 1976, redrawn from photo Fig. 2), (Kohlmeyer and Kohlmeyer 1979, redrawn from photo Fig. 92*g*).

3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 65–75 × 10–13 μm, 8-spori. Ascosporae triseriatae vel biseriatae, fusiformes, 20–25 × 5–6 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.47), constricto, brunneae, eguttulatae, granulatae, leves, strato muco 2–5 μm impariter circumdato.

Hab. in culmis *Junci falcati*, "CANADA: BRITISH COLUMBIA: 175858(*a*), 11 km NW of Tlell River Bridge, Queen Charlotte Islands, K. N. Egger 202, 12 June 1979, TYPE."

The epithet refers to the distinctly enlarged sheath that resembles shoulders.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 125 μm wide, 100 μm high. Beak central, terete, papillate, intraepidermal, 25–30 μm long, 35–50 μm wide, of 3 or 4 layers of brown polygonal 3–5 × 3–5 μm cells around a 12–16 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 2 or 3 layers of polygonal brown 6–8 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 65–75 × 10–13 μm, short-stalked, with 8 overlapping linearly bi- to triseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, slightly curved, 20–25 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without large guttules, with some fine granules, smooth, with a conspicuous sharply delimited sheath, 2–5 μm wide and much wider at the second cell.

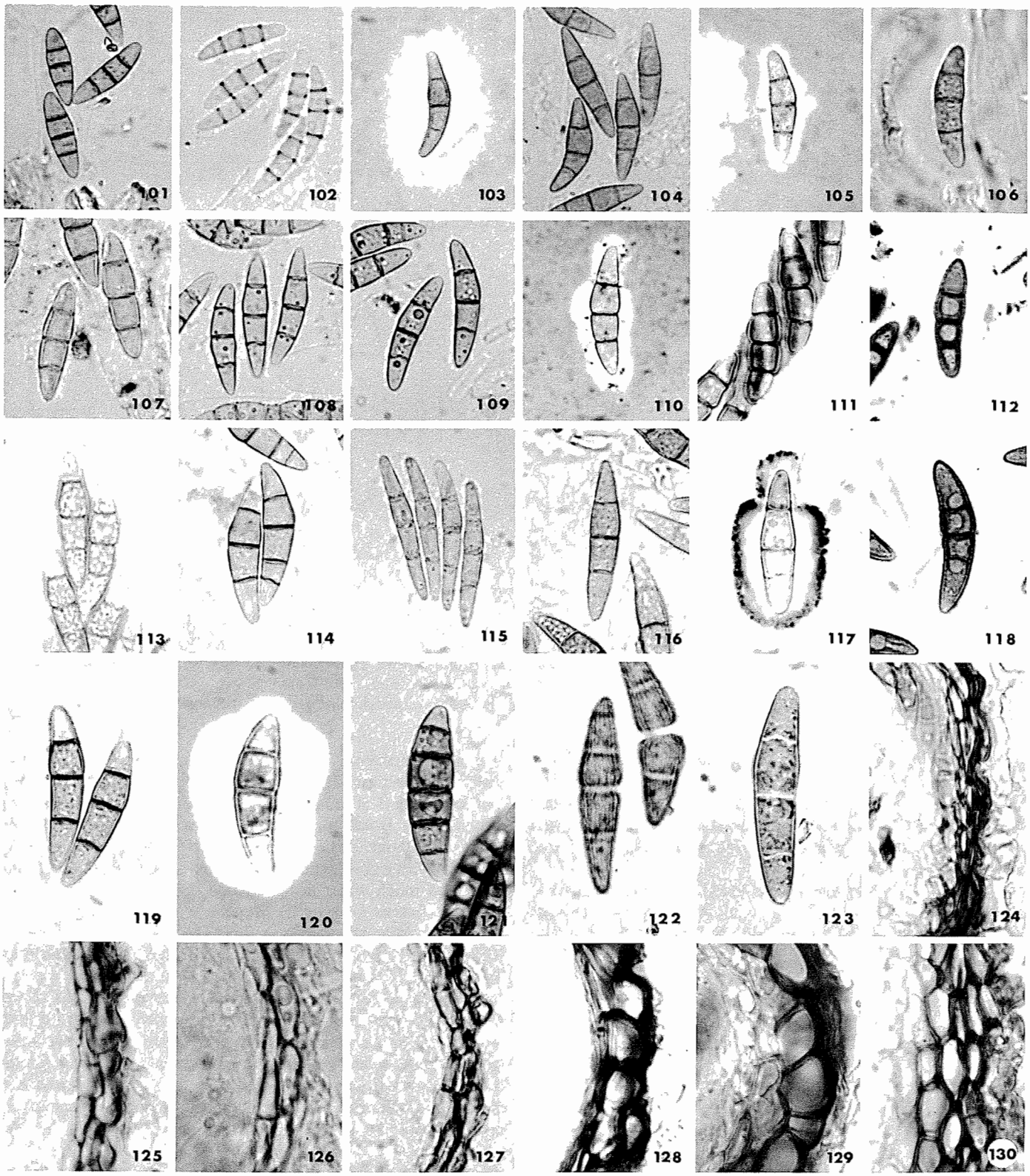
HOST: *Juncus falcatus* E. Meyer.

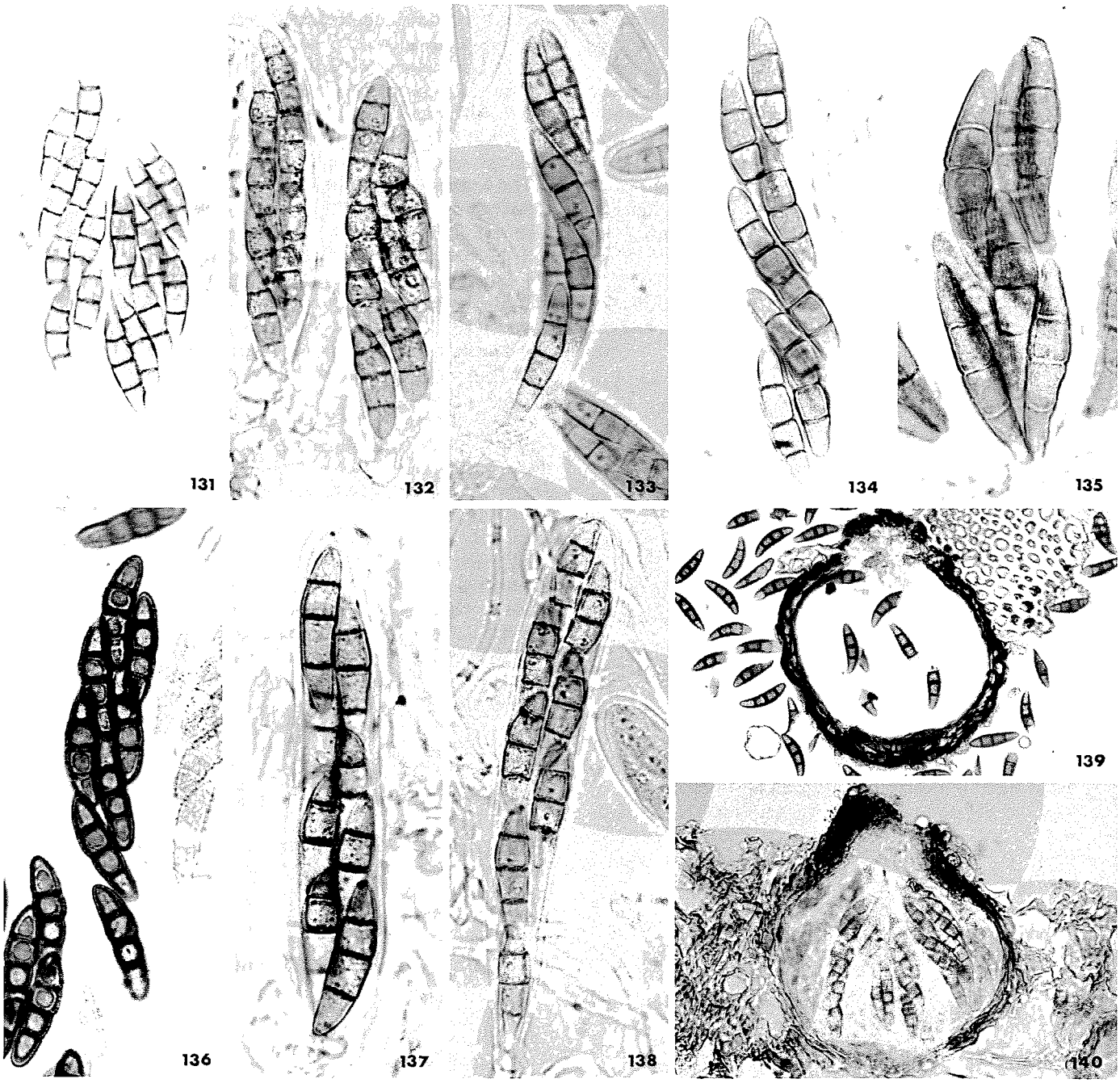
COLLECTIONS EXAMINED: CANADA: BRITISH COLUMBIA: 175858(*a*), 11 km NW of Tlell River Bridge, Queen Charlotte Islands, K. N. Egger 202, 12 June 1979, TYPE.

The ascospores sheath is not of the *eustoma* type. It is about 2 μm wide over most of the spore but widens to 5 μm at the second cell in "shoulders." The L/W ratio places it in subgenus *Phaeosphaeria* close to *Phaeosphaeria juncophila* Leuchtmann but has shorter spores, and to *Phaeosphaeria tofieldiae* (Müller) Leuchtmann, which has slightly narrower ascospores and a broad undivided sheath.

Phaeosphaeria juncophila Leuchtmann, Sydowia, 37: 112. 1984 Fig. 83

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–150 μm wide, 100–150 μm high. Beak central, short or lacking, not differentiated. Wall in longitudinal





FIGS. 131–138. Asci. ×1000. FIGS. 139–140. Sections. Fig. 131. *Phaeosphaeria eustoma*, 189835 TYPE. Fig. 132. *Phaeosphaeria glyceriae-plicatae*, 195223 TYPE. Fig. 133. *Phaeosphaeria avenaria* f.sp. *triticea*, 19545 TYPE. Fig. 134. *Phaeosphaeria typhae*, 133990 TYPE. Fig. 135. *Phaeosphaeria exarata*, 123535 TYPE. Fig. 136. *Phaeosphaeria brevispora*, 198162 TYPE. Fig. 137. *Phaeosphaeria humerata*, 175858(*a*) TYPE. Fig. 138. *Phaeosphaeria eustomoides*, 195683. Fig. 139. *Phaeosphaeria lunata*, 191290 TYPE (×280). Fig. 140. *Phaeosphaeria glyceriae-plicatae*, 195223 TYPE (×430).

FIGS. 101–123. Ascospores. ×1000. FIGS. 124–130. Wall structure. ×1000. Fig. 101. *Phaeosphaeria minima*, 123630(*a*). Fig. 102. *Phaeosphaeria annulata*, 70467 TYPE. Fig. 103. *Phaeosphaeria sorgho-arundinacei*, 189074(*d*). Fig. 104. *Phaeosphaeria oryzae*, 195300(*b*). Fig. 105. *Phaeosphaeria tritici*, 196550. Fig. 106. *Phaeosphaeria glyceriae-plicatae*, 195223 TYPE. Fig. 107. *Phaeosphaeria eustomoides*, 195683. Fig. 108. *Phaeosphaeria avenaria* f.sp. *avenaria*, 109709 TYPE. Fig. 109. *Phaeosphaeria avenaria* f.sp. *triticea*, 19545 TYPE. Fig. 110. *Phaeosphaeria eustoma*, 189835 TYPE. Fig. 111. *Phaeosphaeria typhae*, 133990 TYPE. Fig. 112. *Phaeosphaeria brevispora*, 198162 TYPE. Fig. 113. *Phaeosphaeria tofieldiae*, 123650(*a*). Fig. 114. *Phaeosphaeria variiseptata*, 189235 TYPE. Fig. 115. *Phaeosphaeria emilii*, 123615 TYPE. Fig. 116. *Phaeosphaeria panici*, 195446 TYPE. Fig. 117. *Phaeosphaeria marram*, 189007(*a*). Fig. 118. *Phaeosphaeria licatensis*, 106164. Fig. 119. *Phaeosphaeria humerata*, 175858(*a*) TYPE. Fig. 120. *Phaeosphaeria lunata*, 191290 TYPE. Fig. 121. *Phaeosphaeria hiemalis*, 121635(*b*). Fig. 122. *Phaeosphaeria exarata*, 123535 TYPE. Fig. 123. *Phaeosphaeria calderi*, 70493(*a*) TYPE. Fig. 124. *Phaeosphaeria oryzae*, 195300(*b*). Fig. 125. *Phaeosphaeria variiseptata*, 189236 TYPE. Fig. 126. *Phaeosphaeria avenaria* f.sp. *avenaria*, 109709 TYPE. Fig. 127. *Phaeosphaeria eustoma*, 195300(*a*). Fig. 128. *Phaeosphaeria lunata*, 191290 TYPE. Fig. 129. *Phaeosphaeria exarata*, 123535 TYPE. Fig. 130. *Phaeosphaeria hiemalis*, 121635(*b*).

section laterally uniformly 8–15 μm thick, of 2 or 3 layers of brown cells. Physes few, septate. Asci not numerous, ellipsoidal to broadly cylindrical, 50–85 × 12–20 μm, short-stalked, with 8 overlapping linearly biseriate to triseriate ascospores. Ascospores oblong to fusiform, L/W 4.7, slightly curved, 23–31 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth or finely echinulate when old, with a conspicuous sharply delimited sheath, 1.5–2 μm wide.

HOST: *Scirpus erectus* Poir.

COLLECTION EXAMINED: INDIA: PUNJAB: 123905, Bhadawar, Kangra, 2000 ft, W. Koelz 4200, 22 April 1933, as *Leptosphaeria luzulae*.

Phaeosphaeria licatensis (Saccardo) n.comb. Figs. 90, 118
≡*Leptosphaeria licatensis* Sacc., Syll. Fung. 2: 70. 1883

Ascocarps scattered, immersed, subepidermal, globose, 300–400 μm wide, 300–400 μm high. Beak central, terete, truncate-conical, 80–100 μm long, 60–80 μm wide, of 6–8 layers of brown polygonal 3–4 × 3–4 μm cells around a 30–40 μm diameter ostiole, lined with hyaline to brown 15–20 × 1.5–2 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–25 μm thick, of 4–6 layers of polygonal brown 6–12 × 4–7 μm scleroplectenchyma cells but thinner at base. Physes numerous, 2–2.5 μm wide, with thin septa at 30- to 40-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 120–140 × 16–18 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.7, curved, 28–33 × 6–8 μm, 3- to 5-septate in sequence (3):2:1:2:(3), first septum slightly constricted, supramedian (0.46), not constricted at other septa, second cell from apex enlarged towards base, central cells slightly longer than end cells, yellowish brown, with guttules, echinulate, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Typha latifolia* L.

COLLECTION EXAMINED: CANADA: ONTARIO: 106164, Opinicon Lake, Frontenac County, R. A. Shoemaker, 28 Sept. 1963.

The only Canadian collection is on *Typha* and matches well the description and illustration by Berlese (1894, p. 74, Pl. 61, Fig. 5). The species has not been reported frequently. It is characterized mainly by the 3- to 5-septate echinulate ascospores with a thick sheath. Young ascospores are hyaline, 1-septate and 6-guttulate and have a very conspicuous sheath. Eriksson (1967*b*, p. 396) discussed this range of spore development relative to *Lophiostoma arundinis* (Pers.: Fr.) Cesati & De Notaris.

Phaeosphaeria lunata n.sp. Figs. 97, 120, 128, 139

Ascomata dispersa, immersa, globosa, glabra, 140–160 μm lat., 140–160 μm alt. Rostrum inclusum vel erumpens, teres, truncato-conicum, 20–24 μm long., 50–60 μm lat., cellulis hyalinis vel brunneis polygoniis, 3–5 × 3–5 μm compositum; ostiolum 25–30 μm diam., sine periphysibus. Paries ascomatis 10–12 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 6–9 × 4–7 μm compositus. Physes 1.5–2 μm lat., multiseptatae, eguttulatae. Asci copiosi, cylindrici, 80–90 × 17–19 μm, 8-spori. Ascosporae tetraseriatae vel biseriatae, lunatae, fusiformes, 26–29 × 7–8 μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.47), non constricto, brunneae, eguttulatae, leves, strato muco 6–7 μm impariter circumdato.

Hab. in culmis *Caricis* sp., "UNITED STATES OF AMERICA: CALIFORNIA: 191290, along Highway 89, east slope of Diamond Peak, Lassen National Park, Lee Bonar, 11 July 1962, TYPE, California Fungi 1167, ex DAOM, as *Leptosphaeria vagans* Karst."

The epithet refers to the curved ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 140–160 μm wide, 140–160 μm high. Beak central, terete, flush to slightly erumpent, truncate-conical, 20–24 μm long, 50–60 μm wide, of 3 or 4 layers of hyaline to brown polygonal 3–5 × 3–5 μm cells around a 25–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 3 or 4 layers of polygonal to compressed brown 6–9 × 4–7 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, slime coating not seen. Asci numerous, clustered, cylindrical, 80–90 × 17–19 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 3.6, straight or slightly curved, 26–29 × 7–8 μm, 3-septate in sequence 2:1:2, first septum not constricted, supramedian (0.47), not constricted at other septa, second cell from apex enlarged towards base, dark yellowish brown but end cells pale, without guttules but with cubical cytoplasm, smooth, with a conspicuous sharply delimited sheath, 6–7 μm wide laterally but a mere papilla at ends.

HOST: *Carex* sp.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: CALIFORNIA: 191290, along Highway 89, east slope of Diamond Peak, Lassen National Park, Lee Bonar, 11 July 1962, TYPE, California Fungi 1167, ex DAOM, as *Leptosphaeria vagans* Karst.

The small immersed ascomata in the culm bear ascospores that are curved despite their short length, pale colored in the end cells, furnished with cubical cytoplasm, and covered with a unique sheath.

Phaeosphaeria macrosporidium (E. B. G. Jones) n.comb. Fig. 100
≡*Leptosphaeria macrosporidium* E. B. G. Jones, Trans. Br. Mycol. Soc. 45: 103. 1962

Ascocarps scattered, immersed beneath blackened epidermis and later erumpent, globose to subellipsoidal, 187–550 μm wide, 105–400 μm high. Beak central, terete, papillate, erumpent, deciduous leaving a large opening. Physes filiform, simple or branched. Asci clavate or cylindrical, 112–220 × 18–35 μm, short-stalked, with 8 ascospores triseriate above and uniseriate below. Ascospores fusiform or clavate-fusiform, L/W 4.8, straight or slightly curved, 35–68(72) × 8–12(14) μm, 1- to 3-septate in sequence (2):1:(2), first septum constricted, supramedian (0.48), not or slightly constricted at other septa, second cell from apex enlarged towards base, subhyaline later yellowish, with guttules, smooth, without a sheath.

HOSTS: *Juncus roemerianus* Scheele, *Spartina alterniflora* Loisel., *Spartina townsendii* H. & J. Groves, *Spartina sp.*

COLLECTIONS EXAMINED: none; data from Kohlmeyer and Kohlmeyer (1979).

This species has ascospores that are hyaline for a long time. They are variable in form because the second septa are slow

to develop. The spores can be 1- or 3-septate in the same ascus according to Gessner & Kohlmeyer (1976, Fig. 2).

The synonymy suggested by Kohlmeyer and Kohlmeyer (1979) is not accepted.

Phaeosphaeria maritima O. Eriksson, Mycotaxon, 15: 196–197. 1982 Fig. 92

Ascocarps scattered, immersed or almost immersed, flattened subglobose, 80–120 μm wide, 80–120 μm high. Beak central, terete, papillate, with a 15–20 μm diameter ostiole. Physes rather numerous, 1–1.5 μm wide, branched. Asci numerous, cylindrical, 32–50 × 9–12 μm, short-stalked, endotunica thin above and invisible below, with 8 ascospores. Ascospores cylindric, L/W 4.1, straight, 14–15 × 3–4 μm, 3-septate in sequence 2:1:2, first septum median (0.50), not constricted at septa, pigmentation of ascospores unknown, with guttules, smooth, with a subglobose gelatinous appendage 4–5 μm wide at each end.

HOST: *Ammophila arenaria* (L.) Link.

COLLECTIONS EXAMINED: None; data from Eriksson (1982).

This small-spored species was not described until 1982 but may have been overlooked because it is much smaller than many other pyrenomycetes found on *Ammophila*. The spores are distinctive in their cylindrical form and subglobose appendages at each end. They do not seem to be similar to the spores of any other *Phaeosphaeria* species.

Phaeosphaeria marram (Cooke) O. Eriksson, Ark. Bot. 6: 425. 1967 Figs. 95, 117

≡ *Sphaeria marram* Cooke, Grevillea, 5: 120. 1877

≡ *Leptosphaeria marram* (Cooke) Sacc., Syll. Fung. 2: 60. 1883

≡ *Heptameria marram* (Cooke) Cooke, Grevillea, 18: 31. 1889

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 210–420 μm wide, 210–420 μm high. Beak central, terete, flush, intraepidermal, truncate-conical, 14–40 μm long, 60–120 μm wide, of 6–8 layers of brown polygonal 5–7 × 5–7 μm cells around a 20–25 μm diameter ostiole, without periphyses. Host epidermis around beak with meandering 5–6 μm brown hyphae forming a brown ellipse. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 2 or 3 layers of polygonal to rectangular brown 6–10 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 15- to 20-μm intervals, with granules or guttules, with slime coating, anastomosed, filling upper half of centrum. Asci numerous, in a broad basal hymenium, free-floating at maturity, cylindrical, 70–80 × 12–15 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 4.2, straight, 25–33 × 7–8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.55), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellow, with granules or guttules, smooth, with a conspicuous sharply delimited sheath, 4–5 μm wide, of three parts, one globose at apex, one around enlarged cell and one around lower two cells, all eventually fused.

HOSTS: (*1*) *Elymus arenarius* L. as *Ammophila*, (*2*) *Elymus sp.*

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 189007(*a*), on *2*, Atlantic shore between Cap Rouge and Chéticamp, Cape Breton, R. A. Shoemaker, 23 June 1982. ENGLAND: 196417, on *1*, Happisburgh, M. C. Cooke, Fungi Britannici Exs. 574, ex FH, as *Sphaeria marram* Cooke, ISOTYPE.

Eriksson (1967*b*, p. 426) reported that the host is actually *Elymus arenarius* L. based on examination of isotype at UPS. The limited material we have seen matches his description. The ascospores in the isotype from FH did not exhibit the sheath but otherwise matched the later collection. The fungus is very distinctive and not apt to be confused with any other species of *Phaeosphaeria*. The placement in subgenus *Phaeosphaeria* is rather arbitrary. The distribution of this species in Sweden seems to be confined to the southern part according to Eriksson.

Phaeosphaeria minima n.sp. Figs. 91, 101

Ascomata dispersa, immersa, subglobosa, glabra, 70–80 μm lat., 70–80 μm alt. Rostrum inclusum, teres, 0 μm long., 20–25 μm lat., cellulis brunneis prismaticis, 5–6 × 2–3 μm compositum; ostiolum 10–12 μm diam.; periphyses hyalinis, 1 μm lat. Paries ascomatis 5–8 μm lat., cellulis brunneis tenuitunicatis, 5–7 × 2–3 μm compositus. Physes 2.5–3.5 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 45–50 × 8–10 μm, 8-spori. Ascosporae biseriatae, fusiformes, 11–14 × 3–3.5(4) μm, 3-septatae, in ordinem 2:1:2, septo primo supramedio, (0.47), constricto, brunneae, eguttulatae, granulatae, leves, strato muco 2.5–3 μm impariter circumdato.

Hab. in culmis *Deschampsiae caespitosae*, "SWITZERLAND: ZÜRICH: 123630(*a*), Glattfelden, E. Müller, 15.5.1949, ex ZT, ex Herb. Wehmeyer."

The epithet refers to the extremely small ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 70–80 μm wide, 70–80 μm high. Beak central, terete, flush, intraepidermal, 0 μm long, 20–25 μm wide, of 2 layers of brown rectangular 5–6 × 2–3 μm cells around a 10–12 μm diameter ostiole, with hyaline 1 μm wide periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 5–8 μm thick, of 2 layers of rectangular brown 5–7 × 2–3 μm pseudoparenchyma cells, darker above and paler at ascoma base. Physes numerous, 2.5–3.5 μm wide, with thin septa at 5- to 10-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 45–50 × 8–10 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.6, straight or slightly curved, 11–14 × 3–3.5(4) μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, central cells short, yellowish brown, without guttules, with granules near septa, smooth, with a sheath, 2.5–3 μm wide at the central septum or second cell and less than 1 μm wide at ends.

HOST: *Deschampsia caespitosa* (L.) Beauv.

COLLECTION EXAMINED: SWITZERLAND: ZÜRICH: 123630(*a*), Glattfelden, E. Müller, 15.5.1949, TYPE, ex ZT, ex Herb. Wehmeyer.

This species has the smallest ascomata, asci and ascospores of those currently included in the genus. Despite the small size of the ascospores, they are robust with very well defined septa with evident dots at the ends. The central cells are short. The spores are smaller than those of *Phaeosphaeria lutea* Leuchtmann and not warted. The ascospores are smaller than in *Phaeosphaeria eustoma* (Fuckel) L. Holm. The sheath has a faint resemblance to the eustoma-type sheath but does not have

the conspicuous apical globoid part separated from the sheath covering the other three cells. Instead the sheath is continuous, thin at the ends and much thickened at the second cell or first septum. The ascospores are smaller than in *Phaeosphaeria eustoma* that, not unexpectedly, is present on the type collection along with *Phaeosphaeria nigrans* (Rob. ex Desm.) L. Holm and *Phaeosphaeria sylvatica* (Pass. in Rab.) Hedjaroude.

Phaeosphaeria nodorum (E. Müller) Hedjaroude, Sydowia, 22: 79. 1968 Fig. 73
≡*Leptosphaeria nodorum* E. Müller, Phytopath. Z. 19: 409. 1952

ANAMORPH: *Stagonospora nodorum* (Berk.) Castellani & Germano (Müller 1952) and *Aposphaeria* sp. (Harrower 1976).

Ascocarps scattered, immersed beneath stomata, subepidermal, globose, glabrous, 110−250 μm wide, 110−250 μm high. Beak central, terete, flush, intraepidermal, 5−20 μm long, 30−50 μm wide, of 2−5 layers of brown polygonal 2−5 × 2−5 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−13 μm thick, of 2 or 3 layers of rectangular brown 5−14 × 2−6 μm pseudoparenchyma cells. Physes numerous, 2−4 μm wide with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous in a broad hymenium, cylindrical, 45−70 × 8−12 μm. Ascospores narrowly fusiform, L/W 4.9, straight or slightly curved, 16−24 × 4−5 μm, 3-septate in sequence 2:1:2, first septum constricted, supramedian (0.47), slightly constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellow, without guttules, smooth, with eustoma type sheath 2−4 μm wide but lacking over base of upper cell.

HOSTS: (*1*) *Hordeum vulgare* L., (2) *Triticum vulgare* L.

COLLECTIONS EXAMINED: KENYA: 97971, on *2*, Mau Summit, E. J. Guthrie, 1961, IMI 91819(*a*); 97981(*c*), on *1*, North Kinangop, E. J. Guthrie, xii 1961, ex IMI 91011.

ANAMORPH COLLECTIONS EXAMINED as *Stagonospora nodorum* on *Triticum aestivum* L.: CANADA: ONTARIO: 162788, C.E.F., Ottawa, L. Seaman & R. V. Clark, 14 April 1977; 162796, Guelph, R. V. Clark, 11 July 1977; 162797, Ridgetown, R. V. Clark, 11 July 1977. ALBERTA: 182570, University of Alberta, Edmonton, J. Williams isolate B; 182571, University of Alberta, Edmonton, J. Williams isolate 3C, Sept. 1981.

This species is unique in the very slender and narrow ascospores, smaller than those of *Phaeosphaeria eustoma* (Fuckel) L. Holm and *Phaeosphaeria avenaria* (Weber) O. Eriksson. The two collections from Kenya are very similar despite their occurrence on *Hordeum* and *Triticum*.

Phaeosphaeria oryzae Miyake, Bot. Mag. Tokyo, 23(266): 93. 1909 Figs. 88, 104, 124
≡*Leptosphaerella oryzae* (Miyake) Hara, A monograph of rice diseases. p. 53. 1959
≡*Trematosphaerella oryzae* (Miyake) Padwick, A manual of rice diseases. p. 153. 1950
=*Leptosphaeria oryzae* Hori, unpublished herbarium name
=*Leptosphaeria oryzicola* K. Hara, A monograph of rice diseases. (3rd ed.). p. 113. 1959, as *oryzaecola*
=*Leptosphaeria oryzina* Saccardo, Accad. Veneto-trent., p. 67. 1917

Ascocarps scattered, immersed, subepidermal, ellipsoidal to globose, glabrous, (70)120−150 μm wide, (90)120−150 μm high. Beak central, flush, 0−20 μm long, 25−35 μm wide, of 3 to 5 layers of brown polygonal 2−3 × 2−3 μm cells around a 14−20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis but of darker smaller cells around ostiole. Wall in longitudinal section uniformly 6−8 μm thick, of 2 or rarely 3 layers of polygonal to rectangular brown 2−7 × 2−3 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 20-μm intervals, with or without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 30−55 × 6−9 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.7, straight or slightly curved, (16)19−22(28) × 4−5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards base, dark yellowish brown, with small guttules, finely echinulate, with a sheath 1.5−2 μm wide.

HOSTS: (*1*) *Cyperus monti* L. fil., (*2*) *Oryza sativa* L.

COLLECTIONS EXAMINED: CHINA: 198947, on *2*, interception on general cargo, Los Angeles, California, received 5 Jan 1987, M. E. Palm. ITALY: 184919(*b*), on *1*, Parma, G. Passerini, ex Herb. Sydow, ex S, as *Leptosphaeria cyperina* Pass. JAPAN: 196178, on *2*, Prov. Susuya Shizuoka, 9.1907, ex Herb. Sydow, ex S., as *Leptosphaeria Oryzae* Hori = *Phaeosphaeria Oryzae* Miy., slides prepared by O. Eriksson, lectotype (UPS); 195300(*b*), Prov. Ehime, Nov. 1906. ex Herb. R. Ciferri, ex BPI, as *Leptophaeria Oryzae* Hori und *Phoma Oryzae* Hori.

Collection 193500(*b*) is an excellent match to the lectotype of *Phaeosphaeria oryzae* Miyake (ex S) and to the diagnosis and original Figs. 15−17. The ascomata are intraepidermal and covered only by the upper part of the epidermis although Miyake (1909, Fig. 15) indicates a subepidermal position. He illustrated the ascospores as tapering to the tip and this feature was seen but is scarcely typical. Pseudoparaphyses are present in abundance. The most distinctive feature of the collection is the regular echinulation of the ascospores. This was not recorded by Miykae (1909) or Eriksson (1967*b*). The collection bears two somewhat similar *Phaeosphaeria* species. The common one is *Phaeosphaeria eustoma* (Fuckel) L. Holm. Holm (1957), on the basis of a recent collection on *Oryza*, had a concept of *Phaeosphaeria eustoma* s.l. to serve in the unfortunate absence of a type specimen. Eriksson's discovery of original material and careful preservation of slides of the small fungus has permitted a very satisfactory resolution of the nature of *Phaeosphaeria oryzae*. This collection in BPI, despite the mixture of two species, permits a more detailed redescription of the type species of *Phaeosphaeria*.

Collection 196178 is lectotype (Eriksson (1967*b*, p. 408). He found it matched the diagnosis in all respects except for being distinctly pseudoparaphysate. He illustrated the asci (Fig. 1*d*) but not the free spores. The slides were sealed in Glyceel and the sheath or appendages were not detectable. The ascospores are relatively dark colored for such small thin-walled spores. The darker appearance probably relates to the surface echinulations.

Luc (1953) emended the description of *Leptosphaeria oryzina* Saccardo. On the basis of a collection from the Ivory Coast, he noted that the spore wall is granular and at maturity foveolate. This might be another interpretation for the echinulate spore surface we describe for *Phaeosphaeria oryzae*. On the basis of Luc's emended description of *Leptosphaeria ory-*

zina we include it as a synonym of *Phaeosphaeria oryzae*. We did not see the type and it might not be the same species.

The genus *Leptosphaerella* (Saccardo) K. Hara (1918) sometimes used for this species is antedated by *Leptosphaerella* Spegazzini, Anals Mus. Nac. Hist. Nat., Buenos Aires, 23: 56. 1912 (29 Apr.), and cannot be employed.

Phaeosphaeria panici (Sydow) n.comb. Figs. 89, 116
≡*Leptosphaeria panici* Sydow, Leaflets Philippine Botany, 9: 3121. 1925

Ascocarps scattered, immersed, subepidermal, depressed globose, glabrous, 100–140 μm wide, 85–100 μm high. Beak central, flush, 0–20 μm long, 50–70 μm wide, of 4 or 5 layers of brown polygonal 2–4 × 2–4 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis, but of darker, smaller cells around ostiole. Wall in longitudinal section uniformly 8–10 μm thick, of 2 or 3 layers of polygonal brown 4–6 × 4–6 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–70 × 10–12 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 5.2, straight or slightly curved, 25–30 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, second cell from apex enlarged towards base, dark yellowish brown, with small guttules, finely echinulate, with a sheath 1–1.5 μm wide.

HOST: *Panicum palmatifolium* Konig.

COLLECTION EXAMINED: PHILIPPINES: 195446, Irosin, Mt. Bulusan, Province of Sorsogon, Luzon, A. D. E. Elmer, December 1915, TYPE, Philippine Island Plants 14629, ex MO 68454, ex BPI, as *Leptosphaeria panici* Syd. nov.sp.

Collection 195446 is the type of *Leptosphaeria panici* Sydow. There are two later collections in BPI. There were a few discrepancies noted from the original description. The spores measured somewhat longer, 25–30 μm, and slightly wider. The thin sheath was not recorded by Sydow. This species has larger ascospores than for *Phaeosphaeria oryzae* Miyake.

Phaeosphaeria sacchari (van Breda de Haan) n.comb.
≡*Leptosphaeria sacchari* v. Breda de Haan, Meded. Het. Proefstat. Suikerr. West Java, Semarang, p. 25. 1892
≡*Leptosphaerella sacchari* (v. Breda de Haan) Teng, Sinensia, 9: 224. 1938

Ascocarps 140 μm diameter. Ascospores 3-septate, 20–24 × 5 μm, L/W 4.4, brown.

HOST: *Saccharum officinarum* L.

COLLECTION EXAMINED: None; data from Saccardo (1895).

The species belongs in subgenus *Phaeosphaeria*, but the brief description does not permit a more refined placement.

Phaeosphaeria sorgho-arundinacei (Luc) n.comb. Figs. 86, 103
≡*Leptosphaeria sorgho-arundinacei* Luc, Rev. Mycol., Suppl. Colon. 1: 15–18. 1953

Ascocarps scattered, immersed, subepidermal, globose to slightly flattened, glabrous, 140–160 μm wide, 110–130 μm high. Beak central, terete, barely erumpent, intraepidermal, punctiform, 8–10 μm long, 20 μm wide, of 2–4 layers of brown polygonal 3–5 × 3–5 μm cells around a 10–20 μm diameter ostiole, without periphyses. Wall in longitudinal section laterally uniformly 5–7 μm thick, of 2(3) layers of rectangular brown 6–10 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous in a broad hymenium, cylindrical, 50–60 × 9–11 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.1, straight or slightly curved, 15–18 × 3.5–4.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), not constricted at other septa, second cell from apex enlarged towards base, yellow, with guttules, finely echinulate, with a diffuse sheath 6–8 μm wide at sides and narrowed to ends.

HOSTS: (*1*) *Bromus* sp., (*2*) Poaceae.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 189179(*a*), on *2*, Hay Twp., Concession 6–7, Huron County, M. Corlett 83(67), 6 July 1983. UNITED STATES OF AMERICA: IOWA: 189074(*d*), on *1*, Lost Lake, Ledges State Park, R. A. Shoemaker, 25 June 1983.

The collections conform to the original description and illustrations. The species resembles *Phaeosphaeria oryzae* Miyake but has smaller ascospores.

Phaeosphaeria tofieldiae (Müller) Leuchtmann, Sydowia, 37: 110. 1984 Figs. 81, 113
≡*Leptosphaeria tofieldiae* Müller, Sydowia, 5: 53. 1951

Ascocarps scattered to clustered, immersed, globose, glabrous, 60–150 μm wide, 60–150 μm high. Beak central, terete, papillate, intraepidermal to erumpent, 40–60 μm long, 40–60 μm wide, of 4–6 layers of brown polygonal 2–6 × 2–4 μm cells around a 10–15 μm diameter ostiole, with hyaline periphyses. Wall in longitudinal section laterally uniformly 6–10 μm thick, of rectangular brown 6–10 × 2–4 μm cells with somewhat thickened walls in the external layer near the base of the beak. Physes numerous, 2–3 μm wide, with thin septa at 5- to 10-μm intervals, without guttules, with slime coating. Asci numerous in a broad hymenium, broadly cylindrical, 45–60 × 10–14 μm, short-stalked, with 8 overlapping linearly tri- to biseriate ascospores. Ascospores fusiform, L/W 4.1, slightly curved, 20–25 × 4.5–5.5(6) μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.45), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, finely echinulate, with a broad uniform sheath 2–2.5 μm wide.

HOST: *Tofieldia calyculata* (L.) Wahlenb.

COLLECTION EXAMINED: SWITZERLAND: GRAUBÜNDEN: 123650(*a*), Saumann, Val Maisas, E. Müller, 15.8.1951, ex ZT, ex Herb. Wehmeyer.

This species causes small leaf spots and resembles *Phaeosphaeria oryzae* but has shorter spores although they are about the same width. The fungus produced ascomata in culture, but no anamorph was noted (Leuchtmann 1984).

Phaeosphaeria triglochinicola (Currey) Leuchtmann, Sydowia, 37: 111–112. 1984 Fig. 84
≡*Sphaeria triglochinicola* Currey, Trans. Linn. Soc. London, 14: 158. 1863
≡*Leptosphaeria triglochinicola* (Currey) Saccardo, Syll. Fung. 2: 69. 1883

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–150 μm wide, 100–150 μm high. Beak central, terete, papillate or not, not differentiated. Wall in longitudinal section laterally uniformly 8–15 μm thick, of 2

or 3 layers of flattened brown thin-walled cells. Physes sparse, thread-like, septate. Asci not numerous, ellipsoidal to broadly cylindrical, 50−85 × 12−20 μm, short-stalked, with 8 overlapping linearly triseriate to biseriate ascospores. Ascospores oblong, L/W 4.4, slightly curved, 25−34 × 6.5−8 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.46), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, or in older spores finely warted, with a broad uniform sheath.

HOST: *Triglochin palustris* L.

COLLECTION EXAMINED: None; from England and Switzerland fide Leuchtmann (1984).

The fungus produced ripe ascomata in culture but no anamorph was reported (Leuchtmann 1984).

Leuchtmann considered this species to be restricted to *Triglochin*. He noted some affinity with *Phaeosphaeria culmorum* (Auersw. ex Rehm) Leuchtmann from which it differs in size and, more especially, shape of ascospores. The oblong spores with the very long third cell are distinguishing features of the species.

Phaeosphaeria tritici (Garov.) Hedjaroude, Sydowia, 22: 74. 1968 Figs. 71, 105

≡*Pleospora tritici* Garov., Arch. Trienn. Lab. Bot. Critt. 1: 119. 1874

≡*Leptosphaeria tritici* (Garov.) Pass., Hedwigia, 17: 45. 1878

≡*Leptosphaeria eustoma* Fuckel f. *tritici* (Garov.) Berl., Icon. Fung. 1: 56. 1894

Ascocarps scattered, immersed in sheath, subepidermal, depressed globose, glabrous, 80−120 μm wide, 60−80 μm high. Beak central, terete, flush, intraepidermal, 10−15 μm long, 20−25 μm wide, of 3 or 4 layers of brown polygonal 3−5 × 3−5 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−12 μm thick, of 2 or 3 layers of polygonal brown 5−7 × 3−5 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 45−55 × 14−17 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, straight or slightly curved, 16−19 × 4−5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.48), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a eustoma-type sheath, 2−3 μm wide interrupted at apical cell.

HOSTS: (*1*) *Triticum vulgare* L., (*2*) *Triticum* sp.

COLLECTIONS EXAMINED: ITALY: 196550, on *1*, Parma, Vigheffio, Passerini, August 1876, Rabenh. Fung. Europ. 2333, ex FH, as *Leptosphaeria tritici*. KENYA: 140448(*a*), on *2*, Njoro, E. Guthrie, 19 December 1961, ex C.M.I., ex Herb. I.M.I. 91010, as *Leptosphaeria tritici*.

The original description gave ascospores as 18.5 × 4.2−5.7 in asci 48 × 15 μm. The collections cited match the original description. The species has shorter ascospores than *Phaeosphaeria eustoma* (Fuckel) L. Holm or *Phaeosphaeria avenaria* (Weber) O. Eriksson.

Leuchtmann (1984) studied Rabenh. Fung. Europ. 2333, but recorded longer ascospores more like those of the ubiquitous *Phaeosphaeria eustoma*.

The anamorph reported in the original description was *Phoma*-like.

Phaeosphaeria typhae (Karsten) n.comb. Figs. 76, 111, 134

≡*Leptosphaeria typhae* (Karsten) Saccardo, Nuovo Giorn. Bot. Ital. 7: 321. 1875

≡*Leptosphaeria perpusilla* Desm. f. *typhae* Karsten, Mycol. Fenn. 2: 99. 1873

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100−200 μm wide, 100−200 μm high. Beak not protruding, central, terete, flush, 30−40 μm wide, of 1 or 2 layers of hyaline polygonal 3−5 × 3−5 μm cells around a 15−20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in surface view of a few layers of polygonal brown 5−8 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 45−65 × 10−12 μm, short-stalked, with 8 overlapping linearly to obliquely biseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, straight or slightly curved, 18−22 × 4.5−5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.47), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, without a sheath.

HOST: *Typha latifolia* L.

COLLECTION EXAMINED: GERMANY: 133990, Mortizburg ad Dresdam, Rabenhorst, Fungi europaei 831, ex DAOM, as *Sphaeria perpusilla* Desm. var. *Typhae* Awd. mspt.

The collection has several fungi present. The fungus described was found by Dr. K. A. Pirozynski and the description drawn from his slide. The fungus was not found again on the collection; only a *Phoma* and a species similar to *Phaeosphaeria typhae* but with larger spores 28−35 × 7−8 μm. The set of this number in FH bears *Phaeosphaeria typharum* (Desm.) L. Holm. As Holm (1957, p. 112) remarked, "La situation n'est donc pas aussi simple que les auteurs ... le laisent supposer." However, we provided a fairly full redescription, plus photomicrographs and drawings. It is hoped these will eventually lead to stability. The fungus described matches Karsten's description.

Phaeosphaeria variiseptata (Stout) n.comb. Figs. 82, 114, 125

≡*Leptosphaeria variiseptata* Stout, Mycologia, 22: 276−277. 1930

=*Leptosphaeria maydis* Stout, Mycologia, 22: 275. 1930

Ascocarps scattered, immersed in leaf mesophyll, subepidermal, hypophyllous or epiphyllous, substomatal, globose, glabrous, 50−130(150) μm wide, 50−130(150) μm high. Beak central, a mere papilla, darker brown than wall cells, 10−15 μm long, 30−40 μm wide, of 2−4 layers of brown polygonal 2−5 × 3−5 μm cells around a 12−26 μm diameter ostiole, without periphyses but having 15 × 1.5−2 μm hyaline hairs at early stages. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−12 μm thick, of 2−4 layers of prismatic brown 7−12 × 3−4 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 50−65(95) × 9−11(14) μm, short-stalked, with 8 overlapping linearly biseriate ascospores.

Ascospores narrowly fusiform, L/W 4.3, straight or slightly curved, 18−25 × 4.5−6.5 μm, 3(5)-septate in sequence (3):2:1:2:(3), first septum slightly constricted, median (0.50), not constricted at other septa, second (third) cell from apex enlarged towards base and not longer than adjacent cells, greenish yellow to yellowish brown, usually without guttules, smooth, with a thin sheath, 1−1.5 μm wide.

HOST: *Zea mays* L.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: ILLINOIS: 189235, Roscoe, Winnebago County, G. L. Stout, 25 September 1926, *Leptosphaeria variiseptata* Stout, TYPE, ex ILLS 19726; 189236, Vandalia, Fayette County, G. L. Stout, 6 November 1926, *Leptosphaeria maydis* Stout, TYPE, ex ILLS 19423; Additional collections ex ILLS not in DAOM; 19716, Moline, Rock County, G. L. Stout, 8 October 1926; 19671, Streator, La Salle County, G. L. Stout, 23 September 1926; 19725, Elgin, Kane County, G. L. Stout, 24 September 1926; 19727, Carmi, White County, G. L. Stout, 10 November 1926.

This species commonly has an intimately associated pycnidial anamorph. The conidia are basically 7-septate in sequence 3:2:4:1:4:2:3, and 35−60 × 3−4 μm. Webster and Hudson (1957) applied the name *Leptosphaeria eustomoides* Saccardo to a species with which *Phaeosphaeria variiseptata* has many similarities in ascocarp and pycnidium features. However, they did not find the type specimen of *Leptosphaeria eustomoides* and a decision on the probable synonymy is deferred until another search is made for the type.

There is no sharp distinction between the type of *Leptosphaeria variiseptata* Stout and *Leptosphaeria maydis* Stout and they are treated as conspecific. The epithet *maydis* had previously been transferred to *Phaeosphaeria* as *P. maydis* (Hennings) Rane et al. (1966), which is treated below in the excluded species as *Metasphaeria maydis* (Hennings) Höhnel.

SUBGENUS *Sicispora*

SUBGENUS ***Sicispora*** n.subg.

=Series *Nigrans* Leuchtmann (1984, p. 95), nom. invalid. Art. 36

Ascosporae minimum 4-septatae, leves vel echinulatae, septo primo supramedio vel raro medio, strato muco impariter vel omnino circumdato vel nullo.

TYPE: *Phaeosphaeria nigrans* (Roberge in Desm.) L. Holm.

The name of the subgenus is derived from sica and spora, and relates to the daggerlike shape of the ascospores.

Ascospores 4-septate or more, first septum supramedian or rarely median in two species, smooth or echinulate, sheath uniform, variously differentiated or lacking.

Key to species in subgenus *Sicispora*

1. Ascospores 4-septate ..... *P. cyperina*
1. Ascospores more than 4-septate 2

2. Ascospores 5-septate 3

3. Ascospores longer than 35 μm, slender, L/W over 8.0 4

4. Ascospores 35−48 × 3.5−4 μm ..... *P. occulta*
4. Ascospores 40−58 × 5−6 μm ..... *P. narmari*

3. Ascospores less than 30 μm long, L/W under 6.0 5

5. Ascospores echinulate 6

6. Ascospores 21−31 × 5−6 μm ..... *P. norfolcia*
6. Ascospores 16−20 × 4−4.5 μm ..... *P. huronensis*

5. Ascospores smooth 7

7. Ascospores L/W 3.5 or less 8

8. Ascospores 15−23 × 5−6 μm ..... *P. arenaria*
8. Ascospores 15−19 × 4−5 μm ..... *P. rousseliana*

7. Ascospores L/W greater than 3.5 9

9. Ascospores L/W less than 5.0 10

10. Ascospores 22−29 × 5−7 μm ..... *P. epicalamia*
10. Ascospores 24−27 × 4−5 μm ..... *P. recessa*

9. Ascospores L/W 5.0 to 6.0 11

11. Ascospores 17−26 × 3.5−5 μm, sheath uniform ..... *P. nigrans*
11. Ascospores sheath much differentiated 12

12. Sheath eustomoid, lacking at top septum ..... *P. associata*
12. Sheath different 13

13. Sheath enlarged at ends ..... *P. herpotrichiodes* form 2
13. Sheath reduced, on ends and enlarged cell ..... *P. lineolaris*

2. Ascospores more than 5-septate 14

14. Ascospores mostly 6-septate 15

15. Ascospores 20–27 × 3.5–4.5 μm ..... *P. heptamera*
15. Ascospores 45–50 × 5.5–6.6 μm ..... *P. sowerbyi*

14. Ascospores 7-septate or more 16

16. Ascospores 7-septate 17

17. Ascospores 44–48 × 6–7 μm, margin wavy ..... *P. crenata*
17. Ascospores smaller 18

18. Ascospores coarsely echinulate or verrucose 19

19. Ascospores 27–34 × 4.5–6 μm ..... *P. erikssonii*
19. Ascospores shorter 20

20. Sheath narrowed to ends ..... *P. sparsa*
20. Sheath uniform, not narrowed ..... *P. minuscula*

18. Ascospores smooth or very finely echinulate 21

21. Ascospores smooth, 33–39 × 5–6 μm ..... *P. pulchra*
21. Ascospores very finely echinulate 22

22. Ascospore sheath wavy ..... *P. cinnae*
22. Sheath contour smooth 23

23. Ascospores 36–42 × 5–6.5 μm ..... *P. ovei*
23. Ascospores 26–31 × 3.5–4 μm ..... *P. guttulata*

16. Ascospores 8-septate or more 24

24. Ascospores 8-septate 25

25. Ascospores 28–33 × 4–5 μm ..... *P. herpotrichoides*
25. Ascospores 32–45 × 7–8.5 μm ..... *P. volkartiana*

24. Ascospores more than 8-septate 26

26. Ascospores echinulate 27

27. Ascospores 44–52 × 6–8 μm ..... *P. elongata*
27. Ascospores 50–60 × 5–6 μm ..... *P. graminis*

26. Ascospores smooth 28

28. Spores 26–32 × 4–4.5 μm, sheathed ..... *P. parvograminis*
28. Spores 40–50 × 3.5–5.5 μm, appendaged ..... *P. pontiformis*

Phaeosphaeria arenaria (Guyot) n.comb. Fig. 155
≡*Leptosphaeria arenaria* Guyot, Rev. Mycol. N.S., 14: 69, 71. 1949

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–150 μm wide, 80–150 μm high. Beak central, terete, papillate, intraepidermal, 12–15 μm long, 25–30 μm wide, of 2 or 3 layers of brown polygonal 2–4 × 2–4 μm cells around a 15–20 μm diameter ostiole. Physes numerous, 2 μm wide, with thin septa at 10- to 15-μm intervals. Asci numerous, in a broad hymenium, cylindrical, 45–80 × 13–16 μm, short-stalked, with 8 tetraseriate to biseriate ascospores. Ascospores oblong to subcylindrical, L/W 3.5, straight or slightly curved, 15–23 × 5–6 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.48), not constricted at other septa, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth.

HOSTS: *Festuca arenaria* Osb., *Phleum arenarium* L.

COLLECTIONS EXAMINED: None; data from Guyot.

This species was well illustrated and described. One of the original collections was on *Phleum* and the fungus is very close to *Phaeosphaeria nigrans* (Rob. ex Desm.) L. Holm except that the L/W ratio does not match and the presumed sequence of septation does not match.

Phaeosphaeria associata (Rehm) O. Eriksson, Ark. Bot. 6: 412. 1967 Figs. 143, 172, 198
≡*Leptosphaeria associata* Rehm, Ann. Mycol., 10: 356–357. 1912

Ascocarps closely scattered, appearing superficial on cream colored stromata of *Epichloe typhina* but actually internal in pale perithecia of the host fungus, globose, glabrous, 85–180 μm wide, 85–180 μm high. Beak central, terete, 0–10 μm long, 30–40 μm wide, of 3–5 layers of dark brown polygonal 2–4 × 2–4 μm cells around a 15–25 μm diameter ostiole, with hyaline periphyses 6–8 × 2–3 μm. Ascocarp wall surface a textura angularis to linear in some ascomata. Wall in longitudinal section laterally uniformly 5–9 μm thick, of 2–4 layers of rectangular brown 5–10 × 2–3 μm pseudoparenchyma cells darker and smaller around ostiole. Physes few, 2.3–3.5 μm wide, with thin septa at 5- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, cylindrical, 40–60(70) × 9–11(15) μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.2, straight or slightly curved, 18–25 × 3.5–4.5 μm, 5-septate in sequence 2:1:4:2:3, first septum slightly constricted, supramedian (0.39), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules,

smooth, with a eustoma-type sheath, 3–4 μm wide at widest cell.

HOSTS: (*1*) *Bromus* sp., (*2*) *Crepis* sp., (*3*) *Epichloe typhina* (Pers.) Tul. on *Glyceria nervata* (Willd.) Trin., (*4*) *Panicum virgatum* L., (*5*) Poaceae.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 190999, on *3*, London, J. Dearness, 7.8. 1911, Rehm, Ascomycetes 1994, ex Herb. Dearness, as *Leptosphaeria consociata*, ISOTYPE; s.n., part of preceding with place, Cootes Woods, sent Rehm 180 stems 13 November 1911; 182894, on *3*, Woods north of Bachelor's, (London), J. Dearness, 29 July 1911, ex Herb. Dearness 3322, as *Leptosphaeria consociata* Rehm; s.n. North of Cootes Woods, J. Dearness, 23 August 1911, ex Herb. Dearness 3322; 85679, on *3*, South of Sutton, York Co., H. S. Jackson, 23 Sept. 1936, ex Herb. R. F. Cain 8843, TRTC 10545; 41051(*a*), on *3*, Eden Mills, Waterloo Co., R. F. Cain, 8 July 1954, TRTC 31044; 189087, on *4*, Tip of Point Pelee Island, Point Pelee National Park, Mersea Township, Essex County, R. A. Shoemaker, 22 June 1983. ALBERTA: 180123(*b*), on *2*, Bertha Lake Trail, Waterton National Park, K. N. Egger 603, 7 Aug. 1980. BRITISH COLUMBIA: 110720, on *5*, Trail to Great Glacier, Glacier, 4200 ft, R. A. Shoemaker, 1 Aug. 1963. UNITED STATES OF AMERICA: IOWA: 189074(*a*), on *1*, Lost Lake, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983, TYPE.

The ascomata were globose, not lageniform as mentioned by Eriksson (1967*b*), nor were they as high as he indicated. The fungus is peculiar in its parasitic habit. The spores have a eustoma-type sheath and are 5-septate as in *Phaeosphaeria nigrans* but with a different outline because of the nature of the slightly enlarged cell. The fungus may have some application in biological control. It is not common in Scandinavia according to Eriksson (1967*b*). The periphyses impart a white color to the opening in contrast to the much thickened and darkened ascoma wall at the beak area.

The collections from Alberta and British Columbia are not parasitic on a fungus, but occur on old overwintered stems mixed with other pyrenomycetes. One collection is not even on a grass. However, the close correspondence of the ascospore form, including the distinctive sheath, seems to warrant their inclusion here. The redescription was based only on the collections parasitizing *Epichloe*, but covers the range of variation of the other collections cited.

Collection 189087 is referred to this species with reservations. Not much material was found on the collection. The spores found were mainly 4-septate but the occasional 5-septate spore matched those of 189074(*a*).

Phaeosphaeria cinnae n.sp. Figs. 158, 183, 209, 213

Ascomata dispersa vel seriata, immersa diende erumpentia, pontiforme, globosa, villosa, 180–200 μm lat., 180–200 μm alt. Rostrum erumpens, teres, truncato-conicum 60–80 μm long., 60–70 μm lat., cellulis brunneis polygoniis, 4–6 × 4–6 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 20–25 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 6–9 × 4–6 μm compositus. Physes 1.5–2 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 100–115 × 11–15 μm, 8-spori. Ascosporae triseriatae vel uniseriatae, fusiformes, 30–35 × 5–5.5 μm, 7(8)-septatae, in ordinem 3:2:1:3:2:(5):3:4, septo primo supramedio, (0.40), constricto, ochraceae, guttulatae, leves vel echinulatae, strato muco undulato 2–4 μm omnino circumdato.

Hab. in culmis *Cinnae arundinaceae*, "CANADA: ONTARIO: 189053, Tulip Tree Trail, Rondeau Provincial Park, Harwich Township, Kent County, R. A. Shoemaker, 22 June 1983, TYPE."

The epithet refers to the host genus.

Ascocarps scattered to clustered in twos or threes in rows, immersed, subepidermal, soon erumpent under strips of culm epidermis in a pontiform fashion, globose, 180–200 μm wide, 180–200 μm high with smooth, brown hairs 50–70 × 5–6 μm, septate at 10- to 20-μm intervals. Beak central, terete, erumpent, truncate-conical, 60–80 μm long, 60–70 μm wide, of 5 or 6 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–25 μm thick, of 6 or 7 layers of polygonal brown 6–9 × 4–6 μm pseudoparenchyma cells, inner layers thin walled and hyaline and apt to be crushed at later stages. Physes numerous, 1.5–2 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–115 × 11–15 μm, short-stalked, with 8 overlapping linearly triseriate ascospores above to uniseriate near base. Ascospores narrowly fusiform, L/W 6.2, straight or slightly curved, 30–35 × 5–5.5 μm, 7(8)-septate in sequence 3:2:1:3:2:(5):3:4, first septum slightly constricted, supramedian (0.40), not constricted at other septa, with dots at ends of septa, septa thin, second cell from apex shorter than wide, enlarged towards base without a band, pale yellowish brown, with large greenish guttules, smooth to very finely echinulate, with a uniform but slightly wavy sheath, 2 μm wide.

HOST: *Cinna arundinacea* L.

COLLECTION EXAMINED: CANADA: ONTARIO: 189053, Tulip Tree Trail, Rondeau Provincial Park, Harwich Township, Kent County, R. A. Shoemaker, 22 June 1983, TYPE.

This is distinct from the European species *Phaeosphaeria pulchra* Shoem. & Babc., which has smooth ascospores.

Phaeosphaeria crenata n.sp. Figs. 168, 193

Ascomata dispersa, immersa, globosa, glabra, 75–100 μm lat., 75–100 μm alt. Rostrum inclusum, teres, 5–10 μm long., 25–35 μm lat., cellulis brunneis polygoniis, 4–6 × 4–6 μm compositum; ostiolum 10–20 μm diam., sine periphysibus. Paries ascomatis 8–12 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 6–8 × 3–5 μm compositus. Physes 2–4 μm lat., multiseptatae, eguttulatae, mucosae. Asci pauci, ovati, 60–75 × 27–30 μm, 8-spori. Ascosporae fasciculatae, cylindricae, 44–48 × 6–7 μm, 7-septatae, in ordinem 4:3:2:1:2:3:4, septo primo supramedio, (0.44), constricto, brunneae, eguttulatae, undulatae, leves, strato muco 1–3 μm impariter circumdato.

Hab. in culmis *Caricis membranaceae*, "CANADA: District of Franklin: 70477, Resolute Bay, Cornwallis Island, D.B.O. Savile (4086) et al., 13 Aug. 1959, TYPE, as *Phaeosphaeria sowerbyi* (Fuckel) L. Holm."

The epithet refers to the uneven surface of the ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 75–100 μm wide, 75–100 μm high. Beak central, terete, flush, intraepidermal, 5–10 μm long, 25–35 μm wide, of 3–5 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–12 μm thick, of 2 or 3 layers of

polygonal brown 6−8 × 3−5 μm pseudoparenchyma cells. Physes not numerous, 2−4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci few, clustered, ovoid, 60−75 × 27−30 μm, short-stalked, with 8 overlapping linearly fascicled ascospores. Ascospores nearly cylindrical, L/W 6.9, straight or slightly curved, 44−48 × 6−7 μm, 7-septate in sequence 4:3:2:1:2:3:4, first septum slightly constricted, supramedian (0.44), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules, finely wavy, with a conspicuous sharply delimited sheath, 1−3 μm wide, wider at first septum and at ends.

HOST: *Carex membranacea* Hook.

COLLECTION EXAMINED: CANADA: District of Franklin: 70477, Resolute Bay, Cornwallis Island, D.B.O. Savile (4086) et al., 13 Aug. 1959, TYPE, as *Phaeosphaeria sowerbyi* (Fuckel) L. Holm.

The specimen was first determined as *Phaeosphaeria sowerbyi* and although somewhat similar is distinct. The ascospores have a wavy surface that at times appears linearly ridged, are usually 7-septate, and have a distinctive sheath wider around the enlarged cells and at the ends. The old ascomata frequently produce a young ascoma within the empty locule.

Phaeosphaeria cyperina (Passerini) n.comb. Fig. 145
≡*Leptosphaeria cyperina* Passerini, Erbario Crittogamico Italiano, No. 1074. 1863

Ascocarps scattered, immersed, subepidermal, with a brown clypeuslike growth of mycelium in the epidermis, globose, glabrous, 150−180 μm wide, 150−180 μm high. Beak central, terete, flush, 10−20 μm long, 40−50 μm wide, of several layers of brown polygonal 3−5 × 3−5 μm cells around a 15−20 μm diameter ostiole, with hyaline 10−15 × 2−3 μm periphyses. Ascocarp wall surface a textura angularis of cells 8−12 μm diameter. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, clustered, cylindrical, 50−65 × 8−13 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores long fusiform, L/W 6.9, straight or slightly curved, 25−36 × 4.5−5 μm, 4-septate in sequence 2:1:2:3, first septum not constricted, supramedian (0.35), not constricted at other septa, with dots at ends of septa, septa thin, second cell from apex longer than wide, enlarged towards base without a band, pale yellowish brown, with some guttules, smooth.

HOST: *Cyperus monti* L. fil.

COLLECTION EXAMINED: ITALY: 184919(*a*), Parma, G. Passerini, ex Herb. Sydow, ex S, as *Leptosphaeria cyperina* Pass.

This collection is certainly authentic and is probably part of the type. The fungus found is a good match to the redescription given by Saccardo (1883, p. 65). Also present on the collection are some ascomata of *Phaeosphaeria oryzae* Miyake, which are easily distinguished by the 3-septate echinulate ascospores.

This species keys readily to the subgenus *Sicispora*, but does not have a strong resemblance in spore characters to the other species. No sheath was detected on the ascospores, but the material was too scanty for thorough testing. The fungus appears to be rare.

Phaeosphaeria elongata (Wehmeyer) n.comb.
Figs. 153, 181, 219
≡*Leptosphaeria elongata* Wehmeyer, Mycologia, 44: 633.

Ascocarps scattered, immersed, subepidermal, globose with a flattened base, 350−500 μm wide, 300−400 μm high. Beak central, terete, truncate-conical, 0−40 μm long, 80−120 μm wide, of 5−7 layers of brown polygonal 8−10 × 3−5 μm cells around a 20−30 μm diameter ostiole, not lined internally with periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25−35 μm thick, of 3−6 layers of rectangular brown 8−12 × 3 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100−120 × 16−18 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.4, straight or slightly curved, 44−52 × 6−7(8) μm, 10-septate in sequence 4:3:2:1:4:2:4:3:5:4, first septum slightly constricted with a flange, supramedian (0.38), not constricted at other septa, fourth cell from apex enlarged towards middle and slightly longer than adjacent cells, reddish brown, without guttules, echinulate, with a conspicuous sharply delimited sheath, 2−3 μm wide.

HOSTS: (*1*) *Calamagrostis canadensis* (Michx.) Beauv., (*2*) *Calamagrostis purpurea* Trin., (*3*) *Elymus glaucus* Buckl., (*4*) *Luzula* sp., (*5*) unknown grass.

COLLECTIONS EXAMINED: CANADA: MANITOBA: 180668(*b*), on *5*, Whirlpool Lake, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979; 182691(*a*), on *5*, Whirlpool Lake, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979. BRITISH COLUMBIA: 105791, on *4*, Mt. Revelstoke, 6350 ft, R. A. Shoemaker, 18 July 1963; 110712(*a*), on *5*, Mt. Abbott near Marion Lake, Glacier, R. A. Shoemaker, 6 August 1963; 110720(*b*), on *5*, Trail to Great Glacier, 4200 ft, Glacier, R. A. Shoemaker, 1 August 1963. UNITED STATES OF AMERICA: WASHINGTON: 120200(*a*), on *3*, Dege Peak Trail, 6800 ft, Mt. Rainier National Park, E. G. Simmons 2195, 19 Aug. 1948, TYPE, *Leptosphaeria elongata* Wehm., ex Herb. Wehmeyer; 197664, on *1*, Paradise River, 4600 ft, Mt. Rainier National Park, E. Simmons R2214, 4 July 1949, ex Herb. Wehmeyer, as *Leptosphaeria elongata*. FINLAND: 144281(*b*), on *2*, Enontekiö, Lätäseno, 2 km south of Lohiselka, Laila Ollila & H. Roivainen, 3 July 1955, as *Phaeosphaeria culmifraga* (De Not.), ex Herbario muesi Universitalis, Helsinki.

This species was distinguished from the common *Phaeosphaeria erikssonii* Shoem. & Babc. on the basis of greater spore length and additional septa by Wehmeyer (1952, p. 633), who used the name *Leptosphaeria culmifraga* (Fr.) Cesati & De Notaris for *Phaeosphaeria erikssonii*. He cited two collections. The type, 120200(*a*), matches well Eriksson's form 5*c* and is very mature, perhaps overmature. In the type of *Phaeosphaeria elongata*, the spores are finely echinulate and have a uniform sheath, fractionally wider around the broad cell. Above the first septum the septa form centripetally. Below the first septum in the long basal part, the initial divisions divide it in thirds and four additional septa form. This material provides a name at the species level for Eriksson's form 5*c*.

The presence of some ascomata of *Phaeosphaeria erikssonii* on the type and 184827 is not unexpected because it is a common species. The two species were segregated under separate letters (*a*) and (*b*).

Phaeosphaeria epicalamia (Riess in Rabenhorst) L. Holm, Symb. Bot. Upsal. 14(3): 114. 1957
Figs. 146, 173, 205, 215

≡*Sphaeria epicalamia* Riess in Rabenhorst, Herb, Myc. ed. 1, 1828. 1854

≡*Leptosphaeria epicalamia* (Riess) Cesati & De Notaris, Comment. Soc. Critt. Ital. 1: 236. 1863

≡*Pleospora epicalamia* (Riess) Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 138. 1869. (1870)

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200−280 μm wide, 140−240 μm high. Beak central, terete, truncate-conical, 20−70 μm long, 40−60 μm wide, of 2−5 layers of brown polygonal 3−6 × 2−5 μm cells around a 20−35 μm diameter ostiole, not lined with periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 14−17 μm thick, of 2−4 layers of polygonal to prismatic brown 5−8 × 3−6 μm pseudoparenchyma cells. Physes numerous, 2−4 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 70−100 × 9−12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.2, straight, 22−29 × 5−7 μm, 5-septate in sequence 3:1:4:2:4, first septum slightly constricted, supramedian (0.38), not constricted at other septa, second cell from apex enlarged towards base and slightly shorter than apical cells, yellowish brown, without guttules, smooth, without a sheath.

HOSTS: (*1*) *Luzula albida* (Hoffmann) DC., (*2*) *Luzula maxima* (Reichard) DC.

COLLECTIONS EXAMINED: GERMANY: 189902, on *2*, (am Oelberg im Oestricher Wald, Fuckel, im Fruhling) Fungi rhenani 890, ex G, and 189859, hieme, as *Sphaeria epiculmia* Riess, ex G; 189901, on culmos siccas, Dresdam, ex G, Fungi europaei 945, ex G; 195965, on *1*, prope Cassellas, Riess, vere 1853, ex BPI, (Rabenhorst, Herb. Myc. Ed. I No. 1828), as *Sphaeria epicalamia* Riess ex *caulicolis* Fr. Typus. SWITZERLAND: NEUCHÂTEL: 191056, ex G and 191331, ex G "1876", on *1*, Corçelles pr. Neuchâtel, Morthier, vere 1875, Thümen Mycotheca universalis 564; 184928, ex S and 191553, ex G, on *1*, prope Neuchâtel, Dr. P. Morthier, 30 Mai 1882, Fungi europaei 2760, as *Leptosphaeria epicalamia*.

Sphaeria epicalamia was illustrated by Riess (1854 (1857), Pl. IV, Figs. 6*a*−6*c*) but without a description, and the material was not actually published until 1857. Rabenhorst published the description in his exsiccatus in 1854 and the species is ascribed to Reiss in Rabenhorst. Fuckel's material is the same species except that the apical cell is somewhat longer than shown by Riess. *Phaeosphaeria epicalamia* differs from *Phaeosphaeria nigrans* (Rob. ex Desm.) L. Holm and *Phaeosphaeria rousseliana* (Desm.) L. Holm in having consistently broader ascospores.

Phaeosphaeria erikssonii n.sp. Figs. 151, 179, 206

Ascomata dispersa, immersa in vaginis, erumpentia in culmis, gregaria in nodis, subglobosa vel pyriforme, villosa, 200−400 μm lat., 200−300 μm alt. Rostrum erumpens, teres, truncato-conicum, 30−125 μm long., 50−100 μm lat., cellulis brunneis polygoniis, 7−9 × 5−6 μm compositum; ostiolum 25−30 μm diam., sine periphysibus. Paries ascomatis 25−30 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 7−12 × 3−5 μm compositus. Physes 2−3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 100−120 × 10−14 μm, 8-spori. Ascosporae biseriatae, fusiformes, 27−34 × 4.5−5 μm, 8-septatae, in ordinem 3:2:1:4:2:4:3:4, septo primo supramedio, (0.35), constricto, castaneae, guttulatae vel eguttulatae, verrucosae, strato muco 2−5 μm omnino circumdato.

Hab. in culmis *Calamagrostidis* sp., "SWITZERLAND: GRAUBÜNDEN: 189111, Davos, Zügenschlucht, 1230−1330 m, R. A. Shoemaker and E. Müller, 28 August 1980, TYPE."

The epithet refers to Dr. Ove Eriksson.

Ascocarps scattered, immersed in sheath or erumpent from bare culm or clustered at nodes, subepidermal, globose to pyriform with a flattened base, 200−400 μm wide, 200−300 μm high with smooth, brown hairs 50−150 × 4−6 μm, septate at 20- to 30-μm intervals. Beak central, terete, erumpent, truncate-conical, 30−125 μm long, 50−100 μm wide, of 8 or 9 layers of brown polygonal 7−9 × 5−6 μm cells around a 25−30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25−30 μm thick, of 6 or 7 layers of rectangular brown 7−12 × 3−5 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100−120 × 10−14 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 6.3, straight or slightly curved, 27−34 × 4.5−5 μm, 8-septate in sequence 3:2:1:4:2:4:3:4, first septum slightly constricted with a flange, supramedian (0.35), not constricted at other septa, with dots at ends of septa, septa thick, third cell from apex shorter than wide, enlarged towards base without a band, mid to dark reddish brown, with or without guttules, coarsely verrucose, with a uniform sheath, 2−5 μm wide.

HOSTS: (*1*) *Aconitum* sp., (*2*) *Andropogon scoparius* Michx., (*3*) *Calamagrostis canadensis* (Michx.) Beauv., (*4*) *Calamagrostis* sp., (*5*) *Deschampsia caespitosa* (L.) Beauv., (*6*) *Deschampsia flexuosa* (L.) Trin. as *Aira flexuosa* L., (*7*) *Elymus canadensis* L., (*8*) *Elymus glaucus* Buckl., (*9*) *Hystrix patula* Moench. as *Asperella hystrix* Humb., (*10*) *Nardus sticta* L., (*11*) *Phleum alpinum* L., (*12*) *Poa* sp., (*13*) *Smilacina racemosa* (L.) Desf., (*14*) unknown grass.

COLLECTIONS EXAMINED: CANADA: QUEBEC: 121718, on *12*, Mt. Albert, Gaspé National Park, L. E. Wehmeyer, 25 August 1947. ONTARIO: 91061, on *2*, Sauble Beach, Bruce County, R. F. Cain, 1 August 1934; 182901, on *9*, McGradys Bank, London, Middlesex County, J. Dearness, 1 August 1895, ex Herb. Dearness 2291, as *Leptosphaeria culmicola*; 188914, on *14*, campsite 193, Dunes Area, Pinery Provincial Park, Lambton County, M. Corlett 83(97), 10 July 1983. ALBERTA: 180133(*b*), on *13*, south end of Maskinonge Lake, Waterton National Park, 49°05′N, 113°51′W, K. N. Egger 648, 8 August 1980. BRITISH COLUMBIA: 110680, on *7*, Trail to Millar Lake, Mt. Revelstoke, elevation 6300 ft, R. A. Shoemaker, 7 August 1963; 110719(*a*), on *14*, Trail to Great Glacier, elevation 4800 ft, Glacier, R. A. Shoemaker, 1 August 1963; 110723(*b*), on *14*, Eagle Pass, west of Revelstoke, elevation 1800 ft, R. A. Shoemaker, 23 July 1963. UNITED STATES OF AMERICA: NEW YORK: 182906, on *14*, west Albany, C. H. Peck, July, ex Herb. Dearness 2365, as *Leptosphaeria culmifraga*. WASHINGTON: 120200(*b*), on *8*, Dege Peak Trail, 6800 ft, Mt. Rainier National Park, E. G. Simmons 2195, August 1948, with *Phaeosphaeria elongata*; 184827, on *3*, Paradise River, 4600 ft, Mt. Rainier National Park, E. G. Simmons 2214, 4 July 1949, as *Leptosphaeria elongata*; 197671, on *8*, Takoma Creek, Mt. Rainier National Park, E. G. Simmons 2186, as *Leptosphaeria culmifraga*. FRANCE: 123685, on *14*, Chamonix, L. E. Wehmeyer 9345,

5 July 1953, as *Leptosphaeria culmifraga*. NORWAY: 123687(*b*), on *12*, Falls, Geiranger, L. E. Wehmeyer 9285, 30 July 1950, as *Leptosphaeria culmifraga*. SWEDEN: 15836(*b*), on *6*, Jamtland, A. G. Eliasson, 3 September 1931, as *Leptosphaeria culmifraga*; 123684, on *10*, Skurdalshöjden, Storlien, ex Herb. L. E. Wehmeyer, as *Leptosphaeria culmifraga*; 123705(*a*), on *5*, Skurdalshöjden, Storlien, L. E. Wehmeyer 9282, 25 July 1950, as *Leptosphaeria* sp. SWITZERLAND: 184835, on *14*, Frauenfeld, Wegelin, 20 October 1896, as *Leptosphaeria hyalospora*; 184888, on *1*, Gotthart Pass, Dr. Rehm, September 1891, Rehm Ascomyceten 1241, as *Leptosphaeria aconiti*. GRAUBÜNDEN: 123616, on *11*, Val Plaz-bi, E. Müller, 30 July 1949, as *Leptosphaeria sparsa*; 189098, on *14*, Zuos, Val Arpigla, 1700–1900 m, R. A. Shoemaker, 27 August 1980; 189111, on *4*, Davos, Zugenschlucht, 1230–1330 m, R. A. Shoemaker and E. Müller, 28 August 1980, TYPE; 189137(*a*), on *14*, Davos-Dischma, über Teufi, 1700–1800 m, R. A. Shoemaker, 26 August 1980.

The fungus on these collections is quite consistent and is characterized as follows based on features of the mature ascospores. The first septum is at 0.35 and 2 septa form in the short apical part and 5 form below giving consistently 8-septate spores. The enlarged cell is short and the end cells are long. The spores appear slender because they are narrow and are gracefully curved and tapered. The septa are not thin, just the normal thickness seen in many species. The surface marking is very conspicuous, consisting of small circular truncate projections rather than acute spines. There are approximately 10 of these in a line across the widest cell. The color is mid to dark reddish brown.

Phaeosphaeria elongata (Wehmeyer) Shoem. & Babc. differs in having 10-septate ascospores that are wider and longer, but despite the larger dimensions, less robust and easily distorted by swelling of some cells or collapse of many cells. The enlarged cell tends to be widest near the middle and not much wider than the cells below it.

Phaeosphaeria erikssonii Shoem. & Babc. is a common species to which the name *Phaeosphaeria herpotrichoides* (De Notaris) L. Holm has previously been applied but *Phaeosphaeria herpotrichoides* in the strict sense is rare. Eriksson (1967*b*) treated *Phaeosphaeria herpotrichoides* as a species complex and segregated a number of forms. Leuchtmann (1984) used that system and was able to sort two-thirds of his collections into the described forms. Wherever possible, we have applied a name to the taxon at the species level and only used the form designation once for a collection that was too scanty for description as a new species.

Phaeosphaeria graminis (Fuckel) L. Holm, Symb. Bot. Upsal. 14(3): 118. 1957 Figs. 164, 189, 208, 220
≡ *Pleospora graminis* Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 139. 1869 (1870)
≡ *Leptosphaeria graminis* (Fuckel) Saccardo, Syll. Fung. 2: 76. 1883

Ascocarps scattered, at first immersed in sheath, later exposed on culm, globose with a flattened base, 180–300 μm wide, 140–200 μm high, depressed at maturity. Beak central, terete, truncate-conical, 40–60 μm long, 70–90 μm wide, of 4–6 layers of brown polygonal 3–6 × 3–5 μm cells around a 25–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–30 μm thick, of 3–5 layers of polygonal to prismatic brown 4–7 × 3–5 μm pseudoparenchyma cells. Physes numerous, 3–4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 120–140 × 12–16 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 8.3, straight or slightly curved, 40–50 × 4.5–5.5 μm, 10-septate in sequence 3:2:1:4:3:4:2:4:3:4, first septum slightly constricted with a flange, supramedian (0.30), not constricted at other septa, without dots at ends of septa, septa thick, third cell from apex shorter than wide, enlarged towards base without a band, pale yellowish brown, without guttules, finely echinulate, with a uniform sheath, 2–3 μm wide.

HOST: *Phragmites communis* Trin.

COLLECTION EXAMINED: GERMANY: 189837, am Rheinufer bei Hattenheim, Fuckel, in Frühling, TYPE, ex Herb. Fuckel 1894, ex Herb. Barbey-Boissier, ex G.

The type collection is in good condition though slightly immature. The ascocarps are beaked and globose when young but mature fruitbodies are centrally depressed and flattened below. The hairs are light brown and sometimes appear grey as noted by Fuckel. Our microscopic findings confirm his observations. The sketches of two spores with the packet have one spore with 9 septa and another with 10. Dennis (1978, p. 444) indicated the number to be 10–12. The most distinctive feature is the position of the first-formed septum at 0.30, giving a short upper segment of two or rarely three cells. Some cells of the ascospores and some ascocarp cells contained peculiar condensed yellow cytoplasm.

The species is close to *Phaeosphaeria pontiformis* (Fuckel) Leuchtmann but quite distinct with much wider ascospores as noted by Fuckel, who gave 3 μm for *Phaeosphaeria pontiformis* and 7 μm for *Phaeosphaeria graminis*. *Phaeosphaeria elongata* (Wehmeyer) Shoem. & Babc. has a different pattern of septation which is 3:1:6.

The sheath on the spores is broad and its outline is well defined as noted by Eriksson (1967*b*, p. 424, Pl. 1*g*). In collection 189837 no spores with more than 10 septa were noted, but the collection was slightly immature and 10 may be the characteristic number for the mature spores. Holm (1957, p. 119) indicated that some wall cells toward the exterior have thick walls approaching a scleroplectenchyma. We did not find this sort of thickening in sections of three ascomata that were all juvenile.

Fuckel (1869, p. 7) described in detail his method of measuring with a microscope without an ocular scale. He set up the microscope and camera lucida so that when in focus on the object, a circle equivalent to 290 μm was sharply produced on the table. He then laid a ruler in the circle on the table and measured the object. His sketches and finished drawings are at a magnification of about ×500, so the measurements of projected images would not be very precise. In addition, his standard for calibration was the length of the ascospores of *Ustulina vulgaris* Tul., which on Nitschke's advice he accepted as 32 μm long. The size range is larger, 32–40 μm, and, consequently, measurements could be underestimated by 25% because of the choice of standard. Our impression from the study of the type of *Phaeosphaeria graminis* and the accompanying sketches is that Fuckel underestimated its microscopic dimensions by at least one-third.

Phaeosphaeria guttulata n.sp. Figs. 162, 185, 197, 201

Ascomata dispersa, immersa, globosa, villosa, 200–240 μm lat., 200–240 μm alt. Rostrum erumpens, teres,

truncato-conicum, 70–80 μm long., 60–80 μm lat., cellulis brunneis polygoniis, 4–5 × 4–5 μm compositum; ostiolum 30–40 μm diam., sine periphysibus. Paries ascomatis 12–15 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 8–12 × 3–4 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 75–85 × 10–12 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, 26–31 × 3.5–4 μm, 6(8)-septatae, in ordinem 3:2:1:3:2:(4):3:(5), septo primo supramedio, (0.40), flavae, guttulatae, leves vel echinulatae, strato muco 2–4 μm omnino circumdato.

Hab. in culmis *Muhlenbergiae mexicanae*, "UNITED STATES OF AMERICA: IOWA: 189185, wooded area near Inspiration Point, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983, TYPE."

The epithet refers to prominent guttules in the ascospores.

Ascocarps scattered, immersed, subepidermal, globose, 200–240 μm wide, 200–240 μm high with smooth, brown hairs 50–100 × 4–6 μm, septate at 5–15 μm intervals. Beak central, terete, erumpent, truncate-conical, 70–80 μm long, 60–80 μm wide, of 4–6 layers of brown polygonal 4–5 × 4–5 μm cells around a 30–40 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–15 μm thick, of 3 or 4 layers of prismatic brown 8–12 × 3–4 μm pseudoparenchyma cells but wider and darker at base of the beak. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 75–85 × 10–12 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 7.6, straight or slightly curved, 26–31 × 3.5–4 μm, 6(8)-septate in sequence 3:2:1:3:2:(4):3:(5), first septum slightly constricted without a flange, supramedian (0.40), not constricted at other septa, with dots at ends of septa, septa thin, third cell from apex shorter than wide, enlarged towards base with a band, very pale yellow, with large greenish guttules, smooth to finely echinulate, with a uniform sheath, 2–4 μm wide.

HOSTS: (*1*) *Agropyron repens* L., (*2*) *Agropyron* sp., (*3*) *Bromus inermis* Leyss, (*4*) *Bromus* sp., (*5*) *Cornus* sp., (*6*) *Dactylis glomerata* L., (*7*) *Elymus canadensis* L., (*8*) *Elymus virginicus* L., (*9*) *Elymus* sp., (*10*) *Festuca rubra* L., (*11*) *Muhlenbergia mexicana* (L.) Trin., (*12*) *Panicum* sp., (*13*) *Phleum pratense* L., (*14*) *Smilax herbacea* L., (*15*) unknown grass.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 188996, on *13*, Midway Lake, near Centerville, Digby County, R. A. Shoemaker, 27 June 1982. QUEBEC: 182717, on *15*, Mt. Albert, Gaspé Park, R. A. Shoemaker, 27 August 1981. ONTARIO: 110685, on *15*, 2 miles west of Dryden, Kenora District, R. A. Shoemaker, 12 August 1964; 165732, on *5*, Lot 4, Concession 3, Bathurst Township, Lanark County, near Perth, R. A. Shoemaker, 3 November 1977; 182913, on *8*, west city limits, London Street Railway, London, J. Dearness, 8 September 1923, as *Leptosphaeria culmifraga*; 189068, on *13*, and 189071, on *3*, and 189101, on *6*, Benmiller, Colborne Township, R. A. Shoemaker, 18 June 1983; 189026, 189027, and 189028, on *1*, Leamington, R. A. Shoemaker, 3 July 1983; 182902, on *7*, McGrady's Bank, London, J. Dearness, 1 August 1895, ex Herb. Dearness 2291, as *Leptosphaeria culmicola*; 189060, on *10*, Pinery Provincial Park, south of Grand Bend, Lambton County, R. A. Shoemaker, 20 June 1983. MANITOBA: 165731, on *14*, Manitoba Agricultural College, Winnipeg, G. R. Bisby, 29 August 1926, ex Herb. Dearness 6009(*c*); 180647(*a*), on *9*, Deep Lake, Riding Mountain National Park, R. A. Shoemaker, 16 July 1979; 182613, on *9*, Burls and Bittersweet Trail, Riding Mountain National Park, D. R. H. Hammersley RMNP 377, 24 July 1979. UNITED STATES OF AMERICA: IOWA: 189073 and 189074(*b*), on *4*, Lost Lake, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983; 189185, on *11*, wooded area near Inspiration Point, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983, TYPE; 189090, on *2*, Lost Lake, Ledges State Park, Boone County, R. A. Shoemaker, 25 June 1983. NEW YORK: 183081, on *12*, Oneida, H. D. House, 20 May 1918, ex Herb. Dearness 2365, as *Leptosphaeria culmifraga*. SWITZERLAND: ZÜRICH: 123560(*b*), on *15*, Glattfelden, E. Müller, 15 May 1949, ex ZT, ex Herb. L. E. Wehmeyer, as *Leptosphaeria culmorum*.

This species has distinctive spores. They are pale yellow and bear large greenish guttules. The septa are thin but the dot is very conspicuous at the ends of the septa. The two apical cells are long. When the lower part is only 3-septate, the two lower cells are long. These long cells are often divided once more giving 4 or 5 septa in the lower part. The enlarged cell has a peculiar darkened band. The septa are usually 4 in the lower part but spores with 3 or 5 septa in the lower part do occur. The spores are very thin like those of form 1*a* and 1*b* of Eriksson (1967*b*).

Phaeosphaeria heptamera n.sp. Figs. 148, 176

Ascomata dispersa, immersa, globosa, villosa, 220–250 μm lat., 220–250 μm alt. Rostrum erumpens, teres, truncato-conicum, 60–80 μm long., 50–60 μm lat., cellulis brunneis prismaticis, 8–12 × 4–5 μm compositum; ostiolum 10–15 μm diam., sine periphysibus. Paries ascomatis 20–25 μm lat., cellulis brunneis polygoniis vel prismaticis, tenuitunicatis, 6–12 × 4–6 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 75–85 × 10–12 μm, 8-spori. Ascosporae biseriatae, fusiformes, 20–27 × 3.5–4.5 μm, 6-septatae, in ordinem 4:3:1:3:2:3:(5), septo primo supramedio, (0.40), constricto, ochraceae, eguttulatae, echinulatae, strato muco 5–6 μm impariter circumdato.

Hab. in culmis *Phlei pratenesis* L., "CANADA: QUEBEC: 74180, on *7*, trail east of chalet, Mt. Albert, H. E. Bigelow & M. E. Bigelow, 10 July 1957, TYPE."

The epithet refers to the seven-celled ascospores.

Ascocarps scattered, immersed, subepidermal, globose, 220–250 μm wide, 220–250 μm high with smooth, brown hairs 50–150 × 5–6 μm, septate at 20–30 μm intervals. Beak central, terete, erumpent, truncate-conical, 60–80 μm long, 50–60 μm wide, of 3 or 4 layers of brown rectangular 8–12 × 4–5 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–25 μm thick, of 3–5 layers of polygonal to rectangular brown 6–12 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 75–85 × 10–12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.2, straight or slightly curved, 20–27 × 3.5–4.5 μm, 6-septate in sequence 4:3:1:3:2:3:(5), first septum slightly constricted with a flange, supramedian (0.40), not constricted at other septa, with dots

at ends of septa, septa thin, third cell from apex shorter than wide, enlarged towards base without a band, pale yellowish brown, without guttules, very finely echinulate, with a sheath, 5–6 μm wide laterally but narrow at ends.

HOSTS: (*1*) *Agropyron repens* L., (*2*) *Calamagrostis purpurea* Trin., (*3*) *Calamagrostis* sp., (*4*) *Deschampsia caespitosa* (L.) Beauv., (*5*) *Lycopodium clavatum* L., (*6*) *Phleum alpinum* L., (*7*) *Phleum pratensis* L., (*8*) *Phleum* sp., (*9*) *Triticum aestivum* L.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 189024, on *7*, Warren Lake, Cape Breton, R. A. Shoemaker, 18 June 1982. QUEBEC: 74180, on *7*, trail east of chalet, Mt. Albert, H. E. Bigelow & M. E. Bigelow, 10 July 1957, TYPE; 74291, on *7*, beach, Lac Cascapedia, H. E. Bigelow & M. E. Bigelow, 21 August 1957. ONTARIO: 8075, on *9*, Walkerton, J. E. Howitt, 3 July 1942; 15368, on *9*, Maple, H. Winger, 1 July 1945; 183080(*b*), on *7*, side road, School Section No. 9, London, J. Dearness, 5 Sept. 1895, as *Leptosphaeria culmifraga*. ALBERTA: 180129, on *7*, Belly River, Waterton National Park, K. N. Egger 637, 8 August 1980. BRITISH COLUMBIA: 105258(*a*), on *1*, Eagle Pass, elevation 1800 ft, R. A. Shoemaker, 23 July 1963. UNITED STATES OF AMERICA: NEW YORK: 183468(*b*), on *5*, Aiden Lain, Essex County, C. H. Peck, June 1884, part type of *Leptosphaeria lycopodicola*. FINLAND: 144281(*a*), on *2*, Enontekiö, 2 km south of Lohiselkä, L. Ollila & H. Roivainen, 5 July 1955, as *Phaeosphaeria culmifraga*. FRANCE: 92095, on *6*, Tende, Alpes Maritimes, R. A. Shoemaker, 28 June 1961. SWEDEN: 121423(*b*), on *8*, Bro, Gotland, T. Vestergren, 18 July 1913, Riksmuseet, Fungi Suec., as *Pleospora* (*tenuis*?). SWITZERLAND: GRAUBÜNDEN: 189143, on *3*, Albula-Pass, way to Fiorcha Crap alv. 2050–2300 m, R. A. Shoemaker, 25 August 1980; 123629(*b*), on *4*, Lü, E. Müller, 5 July 1949, ex ZT, with *Phaeosphaeria culmorum*.

This species differs in a few subtle features from the common *Phaeosphaeria sparsa* (Fuckel) Shoem. & Babc. in having shorter, paler, more finely echinulate ascospores that usually have 6 septa and a broad sheath distinctly narrowed at the ends. Occasional spores (often at the ascus base) have 7 septa, but even these are slightly shorter than those of *Phaeosphaeria sparsa*.

Phaeosphaeria herpotrichoides (De Notaris) L. Holm, Symb. Bot. Upsal. 14(3): 115. 1957 sensu stricto Figs. 161 184, 200, 214

≡*Leptosphaeria herpotrichoides* De Notaris, Sferiacei italici, Genova. p. 80. 1863

="*Sphaeria culmifraga* Fries, Syst. Mycol. 2(2); 510. 1823." nom. conf. fide Holm (1957, p. 117)"

≡"*Leptosphaeria culmifraga* (Fries) Cesati & De Notaris, Comment. Soc. Critt. Ital. 1: 235. 1863"

≡"*Pleospora culmifraga* (Fries) Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 137. 1869 (1870)"

=*Leptosphaeria amphibola* Saccardo, Nuovo Giorn. Bot. Ital. 7: 322. 1875

=*Leptosphaeria secalis* Haberlandt, Just Bot. Jahresb. 1878. p. 319

Ascocarps scattered, immersed in sheath, globose, 180–250 μm wide, 150–200 μm high, subepidermal in culm ellipsoidal 200–300 μm long, 150–180 μm wide, 150–180 μm high, with smooth, brown hairs 100–200 × 4–5 μm, septate at 20- to 40-μm intervals. Beak central, terete, erumpent, truncate-conical, 50–100 μm long, 40–100 μm wide, of 4–7 layers of brown polygonal 3–6 × 3–6 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–18 μm thick, of 2–4 layers of prismatic brown 8–16 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–5 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 75–90 × 12–14 μm, short-stalked, with 8 overlapping linearly tetraseriate above to uniseriate below ascospores. Ascospores narrowly fusiform, L/W 6.7, straight or slightly curved, 28–33 × 4–5 μm, 8-septate in sequence 3:2:1:3:2:4:3:4, first septum slightly constricted without a flange, supramedian (0.37), not constricted at other septa, with dots at ends of septa, septa thin, third cell from apex shorter than wide, enlarged towards middle without a band, pale to mid yellowish brown, without guttules, smooth, or at most very finely echinulate, with a sheath, 2–3 μm wide but wider at enlarged cell.

HOST: *Secale cereale* L. (according to description).

COLLECTION EXAMINED: ITALY: 197958, Rovegro in Valle Intrasaca ad Verbanum, DeNotaris, Octobre 1862, ex UPS, ex Herb. E. Fries, as *Leptosphaeria herpotrichoides*, TYPE.

The type is distinct from any other collections we examined. Most of the collections that had been identified as *Phaeosphaeria herpotrichoides* are referred to *Phaeosphaeria sparse* or *Phaeosphaeria erikssonii*.

The type collection is in very good condition with numerous ascomata in the middle stages of maturity. A few have open beaks and even in these fully mature ascomata, the spores are smooth or nearly so, consistently 8-septate and not very variable in dimensions. The sheath has a tendency to enlarge slightly at the widest cell but does not match the sheath described for form 6 by Eriksson (1967*b*).

No anamorph was found on the collection.

Holm (1957) sought a type specimen of *Sphaeria culmifraga* Fries but found a variety of fungi, none of which corresponded to the fungus usually treated under that name. The next available name was *Phaeosphaeria herpotrichoides*. Eriksson (1967*b*) segregated many forms within a species complex. Wherever possible, we have tried to relate these forms to taxa described at the species level.

Leptosphaeria secalis Haberlandt described on *Secale cereale* from Austria appears from the description given by Saccardo (1883, p. 76) to be a synonym. Munk (1952, p. 27, and 1957, p. 360) applied the name, but it appears not to have been much used.

Phaeosphaeria herpotrichoides form 2 (O. Eriksson, Arkiv för Botanik, Ser. 2, 6(9): 420. 1967 Figs. 147, 182

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 125 μm wide, 125 μm high. Beak none, opening area central, terete, flush, intraepidermal, 0 μm long, 50 μm wide, with a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Physes not seen. Asci numerous, in a broad hymenium, cylindrical, 70–85 × 10–13 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 5.5, straight or slightly curved, (24)28–32 × 5–6 μm, 5(6)-septate in sequence (4):2:1:3:2:3, first septum slightly constricted, supramedian (0.40), not constricted at other septa, without dots at ends of septa, septa and walls thick, second (third) cell from apex enlarged towards base, hyaline to pale

yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 1–2 μm wide at sides and enlarged to 3–4 μm at ends.

HOST: *Typha latifolia* L.

COLLECTION EXAMINED: CANADA: ONTARIO: 110683, Blacksands Provincial Park, North of Nipigon, R. A. Shoemaker 4 Aug. 1964.

This collection is very scanty. It matches Eriksson's concept of form 2. There is not enough material for a full description as a new species. The material is distinct from the other taxa recognized by us. It is not very close to *Phaeosphaeria herpotrichoides* in the strict sense. It is the only material of form 2 from North America seen during this study.

Phaeosphaeria huronensis n.sp. Figs. 156, 174, 194

Ascomata aggregata in nodis, immersa, depresso globosa, glabra, 180–220 μm lat., 120–140 μm alt. Rostrum inclusum, teres, 15–20 μm long., 35–45 μm lat., cellulis brunneis polygoniis, 4–6 × 4–6 μm compositum; ostiolum 15–20 μm diam., sine periphysibus. Paries ascomatis 15–20 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 5–7 × 5–7 μm compositus. Physes 1.5–2 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 50–70 × 8–10 μm, 8-spori. Ascosporae biseriatae, fusiformes, 16–20 × 4–4.5 μm, 5-septatae, in ordinem 3:2:1:2:3, septo primo supramedio, (0.46), constricto, castaneae, guttulatae vel eguttulatae, echinulatae, strato muco 7–9 μm impariter circumdato.

Hab. in culmis *Dactylidis glomeratae*, "CANADA: ONTARIO: 189064, Benmiller, Colborne Twp., Huron Co., R. A. Shoemaker, 18 June 1983, TYPE."

The epithet refers to the county where the species was found.

Ascocarps clustered at nodes, immersed in culm, depressed, globose, glabrous, 180–220 μm wide, 120–140 μm high. Beak central, terete flush, intraepidermal, 15–20 μm long, 35–45 μm wide, of 4 or 5 layers of brown polygonal 4–6 × 4–6 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–20 μm thick, of 5 or 6 layers of polygonal brown 5–7 × 5–7 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–70 × 8–10 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.2, straight or slightly curved, 16–20 × 4–4.5 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted with a minute flange, supramedian (0.46), not constricted at other septa, without dots at ends of septa, septa thin, third cell from apex enlarged towards base without a band, dark reddish brown, with or without guttules, coarsely echinulate, with a sheath, 7–9 μm wide laterally and 2 μm wide at ends.

HOST: *Dactylis glomerata* L.

COLLECTION EXAMINED: CANADA: ONTARIO: 189064, Benmiller, Colborne Twp., Huron Co., R. A. Shoemaker, 18 June 1983, TYPE.

The ascomata are immersed with an intraepidermal beak. The wall is well developed apically and laterally but very thin below. The spores are regularly 5-septate with the first septum above the middle. The spore surface markings are prominent despite the small size of the spores. The sheath is very broad laterally and narrowed to the ends. It is not three-parted as in *Phaeosphaeria rousseliana* (Desm.) L. Holm, which sometimes is reported on *Dactylis* (Leuchtmann 1984).

Phaeosphaeria lineolaris (Niessl in Linhart) n.comb. Fig. 144

≡*Leptosphaeria lineolaris* Niessl in Linhart, Fungi Hungarici 466. 1886

Ascocarps scattered to aligned in short rows, immersed, subepidermal, depressed ellipsoidal, glabrous, 200–250 μm long, 100–150 μm wide, 90–110 μm high. Beak central, terete, flush, intraepidermal, 0–10 μm long, 40–50 μm wide, of 2 or 3 layers of brown polygonal 4–6 × 3–5 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick, of 2 or 3 layers of rectangular brown 6–10 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a very broad hymenium, cylindrical, 35–55 × 9–12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.9, straight or slightly curved, 22–25 × 4–4.5 μm, 5-septate in sequence 2:1:4:2:3, first septum slightly constricted, supramedian (0.44), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, yellow, without guttules, smooth, with globose appendages at ends 2–3 μm wide and a thin sheath around the enlarged cell.

HOST: *Aira caespitosa* L.

COLLECTION EXAMINED: HUNGARY: 196506, Petrozseny in Siebenburgen, Linhart, Aug. 1885, Linhart, Fungi Hungarici 466, ex DAOM, as *Leptosphaeria lineolaris* Niessl in Herb. with *Leptosphaeria culmifraga*.

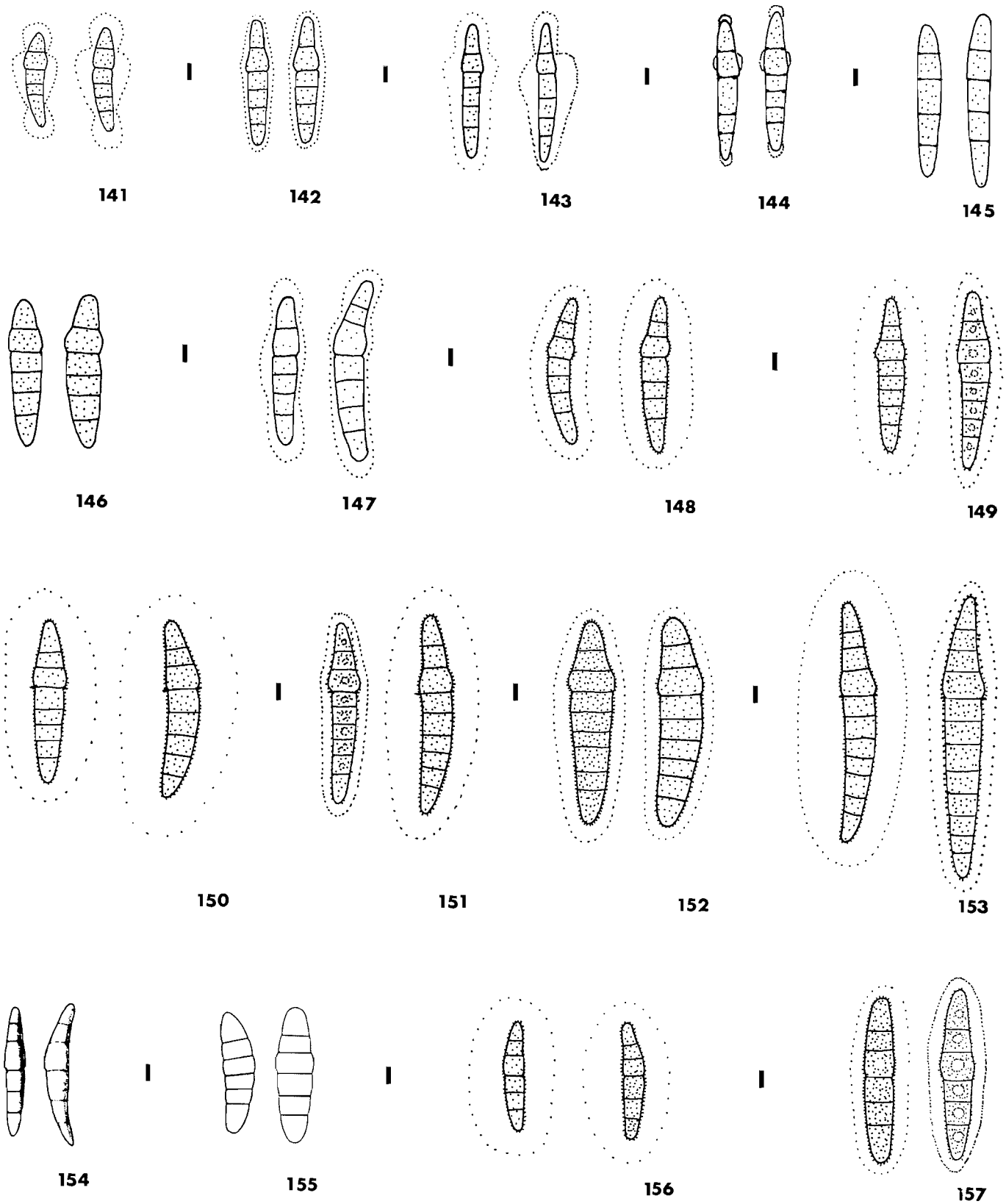
This taxon was synonymized with *Phaeosphaeria nigrans* (Rob. in Desm.) L. Holm by Leuchtmann (1984, p. 123). However, the spore appendages are quite different, like those of *Phaeosphaeria pontiformis* (Fuckel) Leuchtmann.

The ascospores are reminiscent of those of *Entodesmium niessleanum* (Rab. ex Niessl) L. Holm but differ in having the central appendage around the enlarged cell, not around the first septum as in the latter species (Shoemaker 1984*b*).

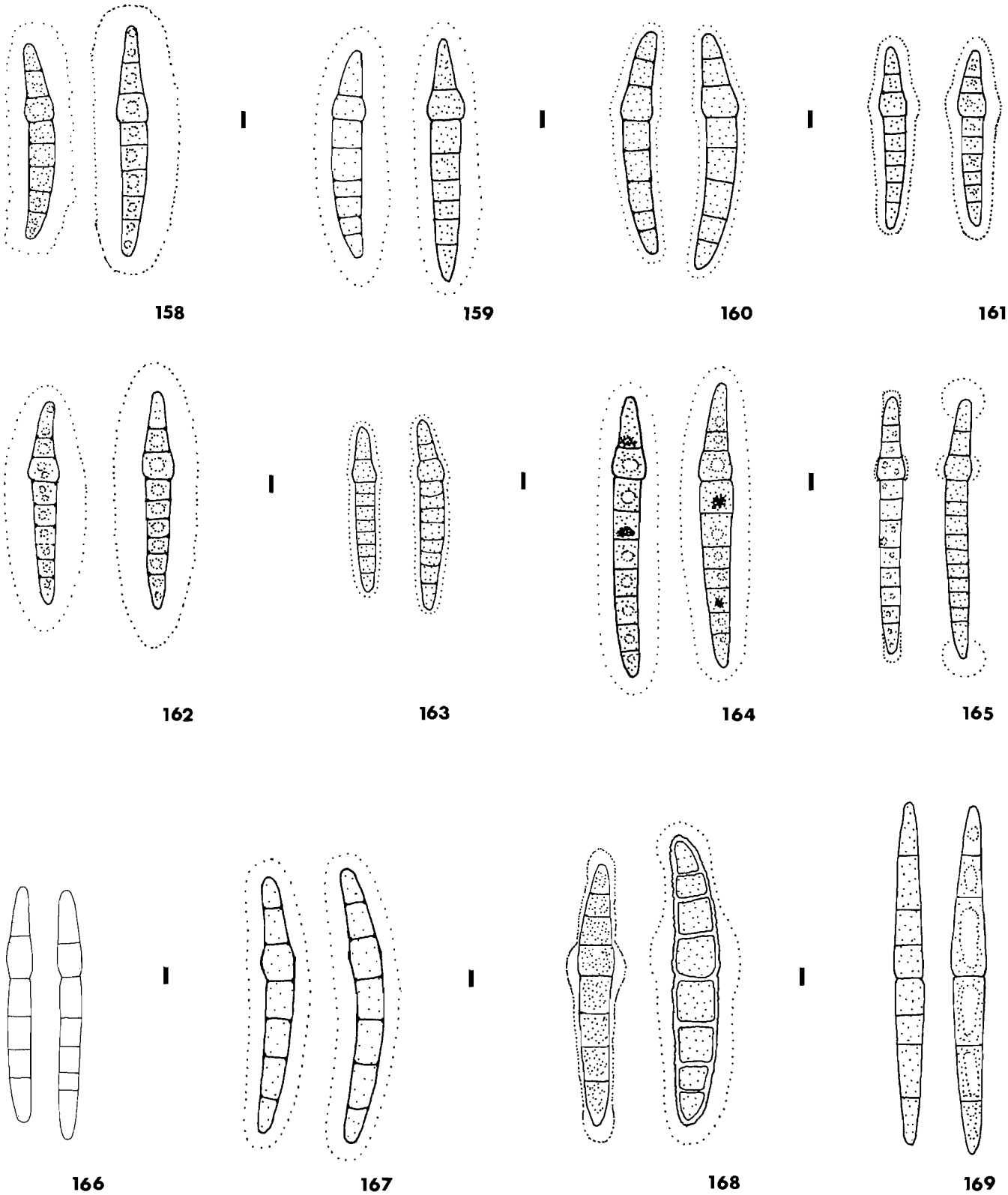
Phaeosphaeria minuscula (Rehm) n.comb. Figs. 150, 178, 207, 211

≡*Leptosphaeria culmifraga* (Fr.) Ces. & De Not. f. *minuscula* Rehm, Hedwigia, 1887. pp. 66–67

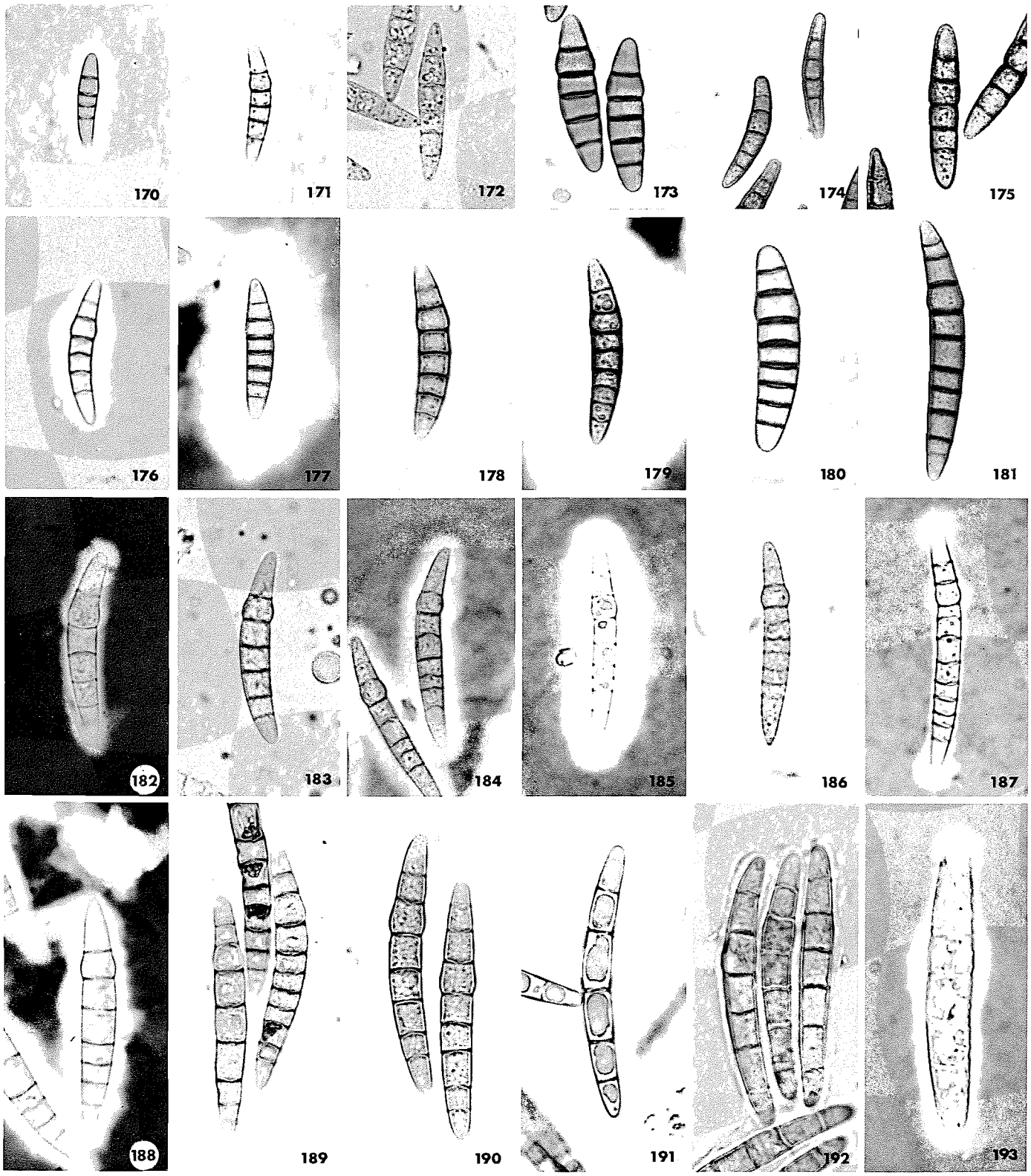
Ascocarps scattered, immersed, subepidermal, globose, 175–350 μm wide, 175–250 μm high with smooth to verrucose brown hairs 90–150 × 5–6 μm, septate at 10–20 μm intervals. Beak central, terete, erumpent, truncate-conical, 30–120 μm long, 50–100 μm wide, of 4–7 layers of brown polygonal 5–7 × 5–8 μm cells around a 20–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–35 μm thick, of 3–7 layers of polygonal to rectangular brown 5–15 × 3–7 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 60–100 × 10–15 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores above to uniseriate at base. Ascospores narrowly fusiform, L/W 5.3, straight or slightly curved, 22–30 × 4.5–5.5 μm, 7-septate in sequence 3:2:1:3:2:3:4,



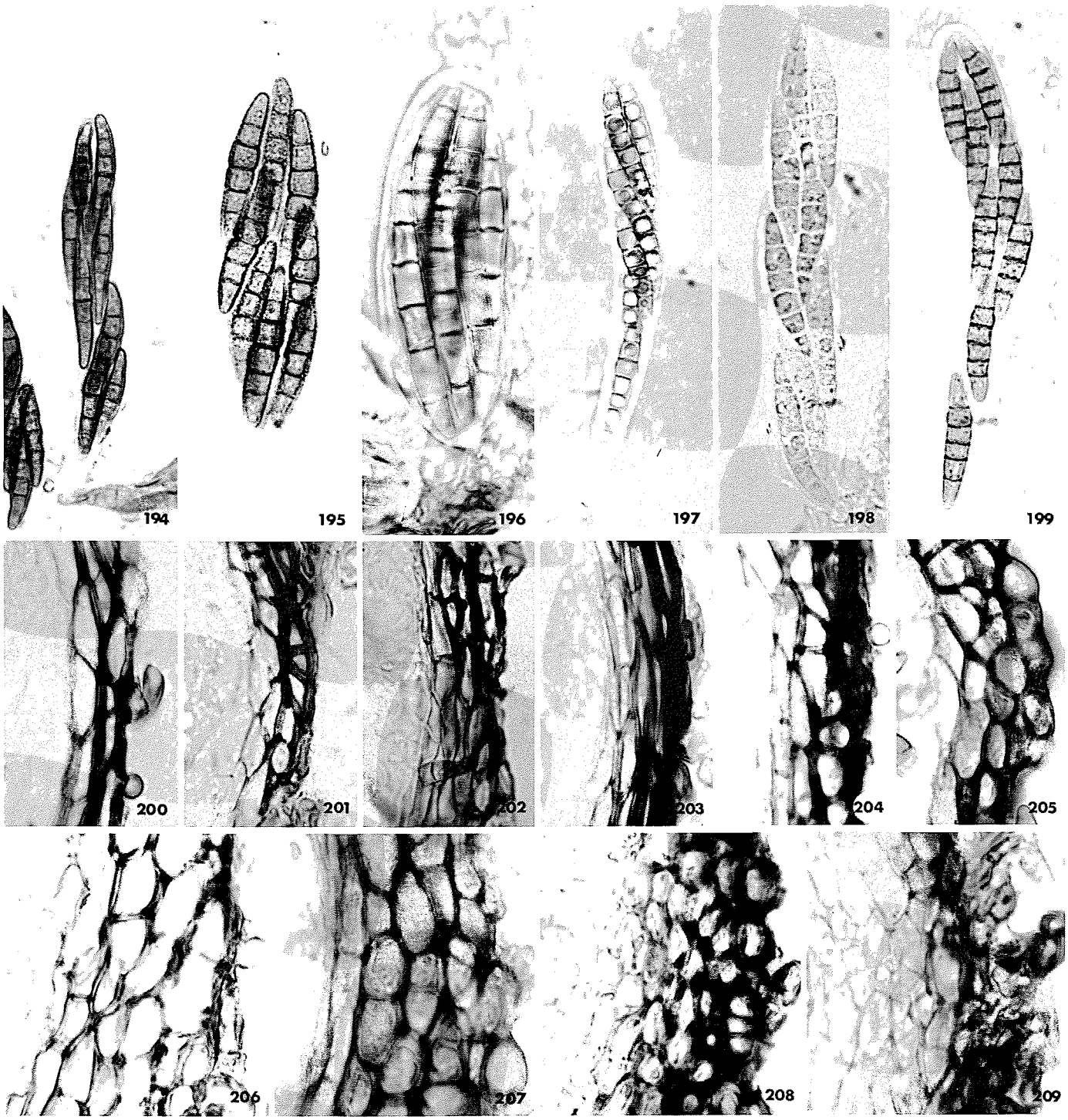
FIGS. 141–157. Ascospores. ×1000. Fig. 141. *Phaeosphaeria rousseliana*, 188991, 188999. Fig. 142. *Phaeosphaeria nigrans*, 174172, 123548. Fig. 143. *Phaeosphaeria associata*, 110720, 180123(*b*). Fig. 144. *Phaeosphaeria lineolaris*, 196560 TYPE. Fig. 145. *Phaeosphaeria cyperina*, 184919(*a*). Fig. 146. *Phaeosphaeria epicalamia*, 191331, 191056. Fig. 147. *Phaeosphaeria herpotrichoides* form 2, 110683. Fig. 148. *Phaeosphaeria heptamera*, 74180 TYPE, 183080(*b*). Fig. 149. *Phaeosphaeria sparsa*, 174170(*a*), 123537(*a*). Fig. 150. *Phaeosphaeria minuscula*, 83278(*a*), 56052. Fig. 151. *Phaeosphaeria erikssonii*, 123684, 189111 TYPE. Fig. 152. *Phaeosphaeria volkartiana*, 123550, 91922. Fig. 153. *Phaeosphaeria elongata*, 144281(*b*), 120200(*a*) TYPE. Fig. 154. *Phaeosphaeria recessa*, (Berlese 1894, Tab. LX, Fig. 5). Fig. 155. *Phaeosphaeria arenaria*, (Guyot 1949, Fig. 7*c*). Fig. 156. *Phaeosphaeria huronensis*, 189064 TYPE. Fig. 157. *Phaeosphaeria norfolcia*, 195445.



FIGS. 158–169. Ascospores. ×1000. Fig. 158. *Phaeosphaeria cinnae*, 189053 TYPE. Fig. 159. *Phaeosphaeria pulchra*, 123595 TYPE, 123562. Fig. 160. *Phaeosphaeria ovei*, 121592 TYPE, 123686. Fig. 161. *Phaeosphaeria herpotrichoides*, 197958 TYPE. Fig. 162. *Phaeosphaeria guttulata*, 189185 TYPE, 189068. Fig. 163. *Phaeosphaeria parvograminis*, 105749(*b*), 140150(*a*) TYPE. Fig. 164. *Phaeosphaeria graminis*, 189873 TYPE. Fig. 165. *Phaeosphaeria pontiformis*, 189960 TYPE, 197322. Fig. 166. *Phaeosphaeria occulta*, (Leuchtmann 1984, Fig. 6*g*). Fig. 167. *Phaeosphaeria sowerbyi*, 196526. Fig. 168. *Phaeosphaeria crenata*, 70477 TYPE. Fig. 169. *Phaeosphaeria narmari*, 195682 TYPE.



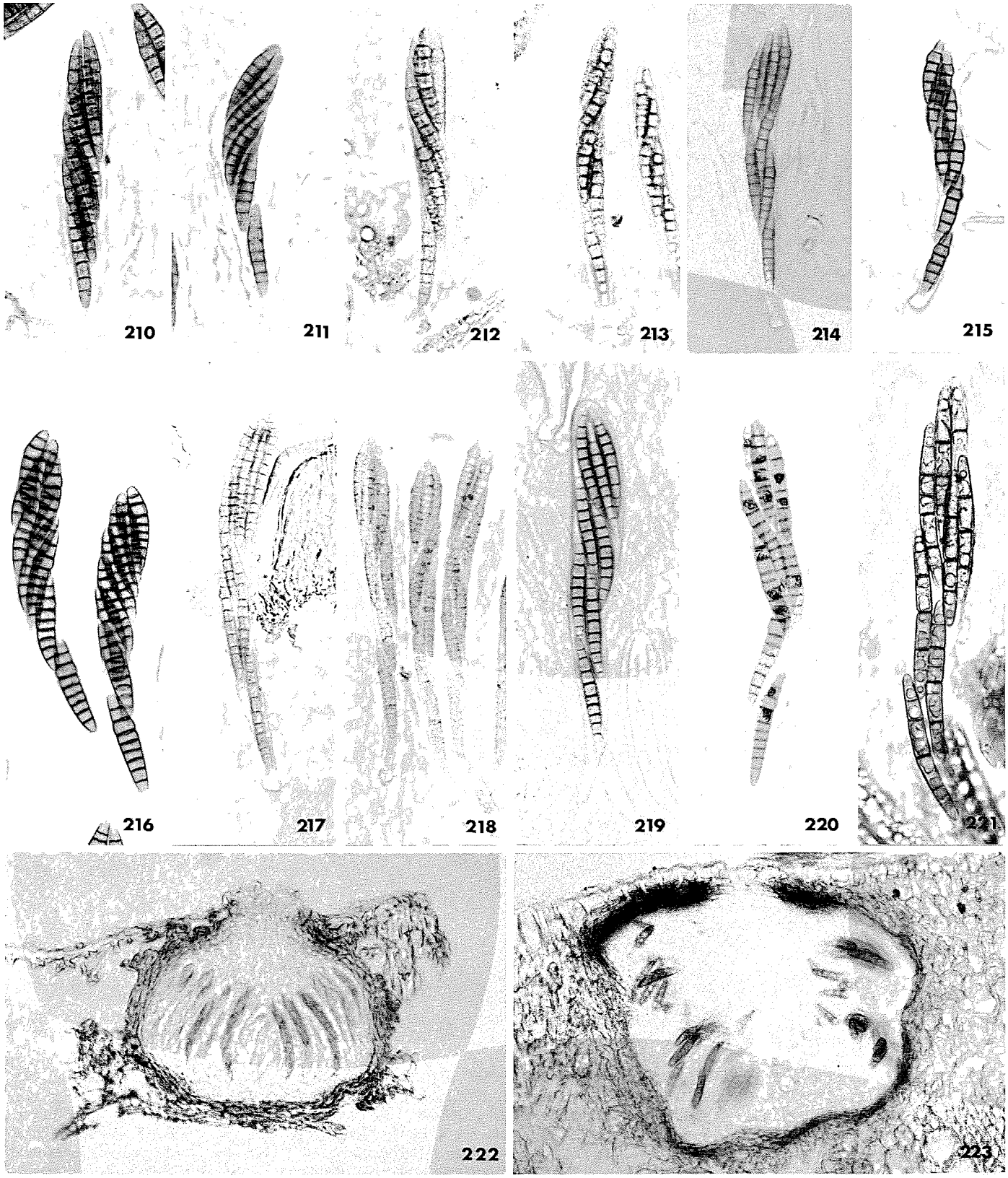
FIGS. 170–193. Ascospores. ×1000. Fig. 170. *Phaeosphaeria rousseliana*, 189067(*a*). Fig. 171. *Phaeosphaeria nigrans*, 123686(*b*). Fig. 172. *Phaeosphaeria associata*, 182894. Fig. 173. *Phaeosphaeria epicalamia*, 191056. Fig. 174. *Phaeosphaeria huronensis*, 189064 TYPE. Fig. 175. *Phaeosphaeria norfolcia*, 195445. Fig. 176. *Phaeosphaeria heptamera*, 74180 TYPE. Fig. 177. *Phaeosphaeria sparsa*, 182614. Fig. 178. *Phaeosphaeria minuscula*, 56052. Fig. 179. *Phaeosphaeria erikssonii*, 189111 TYPE. Fig. 180. *Phaeosphaeria volkartiana*, 91922. Fig. 181. *Phaeosphaeria elongata*, 120200(*a*) TYPE. Fig. 182. *Phaeosphaeria herpotrichoides* form 2, 110683. Fig. 183. *Phaeosphaeria cinnae*, 189053 TYPE. Fig. 184. *Phaeosphaeria herpotrichoides*, 197958 TYPE. Fig. 185. *Phaeosphaeria guttulata*, 110685. Fig. 186. *Phaeosphaeria parvograminis*, 140150 TYPE. Fig. 187. *Phaeosphaeria pontiformis*, 179322. Fig. 188. *Phaeosphaeria pulchra*, 123595 TYPE. Fig. 189. *Phaeosphaeria graminis*, 189837 TYPE. Fig. 190. *Phaeosphaeria ovei*, 121592 TYPE. Fig. 191. *Phaeosphaeria narmari*, 195682 TYPE. Fig. 192. *Phaeosphaeria sowerbyi*, 196526 (note dark median band on enlarged cell). Fig. 193. *Phaeosphaeria crenata*, 70477 TYPE.



FIGS. 194–199. Asci. ×1000. FIGS. 200–209. Wall structure. ×1000. Fig. 194. *Phaeosphaeria huronensis*, 189064 TYPE. Fig. 195. *Phaeosphaeria norfolcia*, 195445. Fig. 196. *Phaeosphaeria sowerbyi*, 196526. Fig. 197. *Phaeosphaeria guttulata*, 189074(*b*). Fig. 198. *Phaeosphaeria associata*, 190999 TYPE. Fig. 199. *Phaeosphaeria nigrans*, 123686(*b*). Fig. 200. *Phaeosphaeria herpotrichoides*, 197958 TYPE. Fig. 201. *Phaeosphaeria guttulata*, 189185 TYPE. Fig. 202. *Phaeosphaeria nigrans*, 180618. Fig. 203. *Phaeosphaeria sparsa*, 182614. Fig. 204. *Phaeosphaeria pontiformis*, 189960 TYPE. Fig. 205. *Phaeosphaeria epicalamia*, 191056. Fig. 206. *Phaeosphaeria erikssonii*, 184827. Fig. 207. *Phaeosphaeria minuscula*, 56052. Fig. 208. *Phaeosphaeria graminis*, 189837 TYPE. Fig. 209. *Phaeosphaeria cinnae*, 189053 TYPE.

first septum slightly constricted with a flange, supramedian (0.42), not constricted at other septa, with dots at ends of septa, septa thin to slightly thick, third cell from apex shorter than wide, enlarged towards base without a band, mid yellowish to reddish brown, with or without guttules, coarsely echinulate, with a uniform sheath, 2–6 μm wide.

HOSTS: (*1*) *Deschampsia pumila* (Ledeb.) Ost., (2) *Melica ciliata* L.



FIGS. 210–221. Asci. ×520. FIGS. 222–223. Sections. ×340. Fig. 210. *Phaeosphaeria ovei*, 121592 TYPE. Fig. 211. *Phaeosphaeria minuscula*, 56052. Fig. 212. *Phaeosphaeria pulchra*, 123595 TYPE. Fig. 213. *Phaeosphaeria cinnae*, 189053 TYPE. Fig. 214. *Phaeosphaeria herpotrichoides*, 197958 TYPE. Fig. 215. *Phaeosphaeria epicalamia*, 195965 TYPE. Fig. 216. *Phaeosphaeria volkartiana*, 123550. Fig. 217. *Phaeosphaeria pontiformis*, 189960 TYPE. Fig. 218. *Phaeosphaeria parvograminis*, 140150 TYPE. Fig. 219. *Phaeosphaeria elongata*, 182691(*a*). Fig. 220. *Phaeosphaeria graminis*, 189837 TYPE. Fig. 221. *Phaeosphaeria narmari*, 195682 TYPE. Fig. 222. *Phaeosphaeria rousseliana*, 196530. Fig. 223. *Phaeosphaeria norfolcia*, 195445.

COLLECTIONS EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 83287(*a*), on *1*, Isachsen, Ellef Ringnes Island, 78°47′N, 103°33′W, D.B.O. Savile 4381A, 8 August 1960. SWEDEN: 56052, Persnas parish, between Jordhamn and Grythamn, J. A. Nannfeldt, 29.VII.1952, Flora Suecica 12429.

The fungus was described by Rehm as follows: Perithecium parenchymatic, brown with brown septate 5 μm wide hyphae. Asci cylindric, 8-spored, 75 × 10−12 μm. Spores biseriate, long spindleform, straight or slightly bent, 6- to 7-septate, the third cell from the top broader, 21−24 × 4 μm. Episporium iodine positive. He distinguished it from forma *majuscula*, which has ascospores with 7−8 septa and measure 25−30 × 5 μm.

The type is Rehm Ascomyceten 784, which we have not studied. Collection 56052 was referred to *minuscula* by Eriksson who saw the type.

Phaeosphaeria narmari (J. Walker & A. M. Smith) n.comb.
Figs. 169, 191, 221

≡*Leptosphaeria narmari* J. Walker & A. M. Smith, Trans. Br. Mycol. Soc. 58(3): 459. 1972

Ascocarps scattered, immersed, later exposed and partly immersed at base, pyriforme, hairy below, mostly 450−500 μm wide, 450−500 μm high. Beak central, terete, conical, 180−250 μm long, 180−350 μm wide of 20−25 layers of brown interwoven 6−12 × 4−6 μm cells around a 60−100 μm diameter ostiole, lined with 20−50 × 1−2 μm periphyses with red pigment. Ascocarp wall surface a textura globosa. Wall in longitudinal section laterally uniformly 45−70 μm thick of two zones, inner zone of prismatic brown pseudoparenchyma 12−18 × 5−7 μm, outer zone of dark brown 10−12 × 8−10 μm pseudoparenchyma, with brown hyphae 4−6 μm wide. Physes numerous, 1−1.5 wide, with thin septa at 20- to 30-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 100−140 × 12−17 μm, short-stalked, with 8 linearly triseriate ascospores above to single near base. Ascospores narrowly fusiform, L/W 8.0, straight or slightly curved, 40−58 × 5−6 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, third cell from apex enlarged towards base, yellowish brown except pale end cells, with guttules, smooth, without sheath or appendages.

HOST: *Stenotaphrum secundatum* (Walt.) Kuntze.

COLLECTION EXAMINED: AUSTRALIA: NEW SOUTH WALES: 195682, Leeton, P. Kable, XI. 1966, ex DAR 16020, ex BPI, as *Leptosphaeria narmari*, ISOTYPE.

The anatomy of the ascomata is difficult to describe because of the extensive beak area that is made up of several tissues that extend and merge with the lateral wall. The lateral wall consists of two zones. The beak wall has a broad layer of intricately interwoven cells constituting the main part of the wall. Inwardly and towards the apex of the beak the cells are smaller, yellow, and irregular in outline. The periphyses that line the ostiole are hyaline, narrow, and carry a bright red pigment between the strands that imparts a red colour to the beak interior. The asci do not persist as permanently as do most bitunicate asci. The ascospores are mainly 5-septate but some are 3-septate and others 7-septate. The species has similarities to *Ophiosphaerella korrae* (J. Walker & A. H. Smith) Shoem. & Babc., notwithstanding the difference in spore form and the distinctions noted in the ascoma wall layers.

Phaeosphaeria nigrans (Roberge in Desmazières) L. Holm, Symb. Bot. Upsal. 14(3): 112. 1957
Figs. 142, 171, 199, 202

≡*Sphaeria nigrans* Roberge in Desmazières, Ann. Sci. Nat. Bot., Ser. 3, 6: 79. 1846

≡*Leptosphaeria nigrans* (Roberge in Desm.) Ces. & De Not., Comment. Soc. Critt. Ital. 1: 235. 1863

=*Leptosphaeria eustomella* Sacc., Michelia, 2: 251. 1881. fide Leuchtmann (1984)

Ascocarps scattered, immersed, subepidermal, globose, hairy below with warted mycelium 5−6 μm wide, 160−250 μm wide, 160−250 μm high. Beak central, terete, intraepidermal to slightly erumpent, truncate-conical, 35−60 μm long, 40−80 μm wide, of 3−8 layers of brown polygonal 4−7 × 4−7 μm cells around a 20−25 μm diameter ostiole, not lined with periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−14 μm thick, of 2−4 layers of rectangular brown 8−12 × 2−5 μm pseudoparenchyma cells. Physes numerous, 1.5−3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad peripheral hymenium, cylindrical, 60−90 × 7−12 μm, short to long-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores above, uniseriate below. Ascospores narrowly fusiform, L/W 5.0, straight, 17−26 × 3.5−5 μm, (4)5-septate in sequence 2:1:4:3:2, first septum slightly constricted, supramedian (0.41), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base and slightly shorter than adjacent cells with a dark band near top of cell, hyaline to yellow, with small guttules, smooth, with a sharply delimited sheath, 1−5 μm wide.

HOSTS: (*1*) *Anthoxanthum odoratum* L., (*2*) *Bromus erectus* Hudson, (*3*) *Carex inanis* Kunth, (*4*) *Cinna latifolia* (Trev.) Griseb., (*5*) *Dactylis glomerata* L., (*6*) *Deschampsia caespitosa* (L.) Beauv., (*7*) *Festuca rubra* L. var. *rubra*, (*8*) *Poa alpina* L., (*9*) Poaceae.

COLLECTIONS EXAMINED: CANADA: QUEBEC: 74204, on *9*, near Chalet, Mt. Albert, M. E. Bigelow (1912), 6 July 1957, ONTARIO: 180618, on *9*, near mouth of Little Pic River, Neys Provincial Park, R. A. Shoemaker, 23 June 1980; 136688, on *9*, north of Chepstow, Bruce Co., D. Malloch, 21 May 1970; 189062; 189063, on *5*, Benmiller, Colborne Twp., Huron Co., R. A. Shoemaker, 18 June 1983. ALBERTA: 126825(*a*), on *7*, Beaverlodge, J. D. Smith, July 1968. BRITISH COLUMBIA: 105334, on *5*, Eagle Pass, 1800 ft, R. A. Shoemaker, 25 July 1963, 110719, on *9*, trail to Great Glacier, Glacier, 4800 ft, R. A. Shoemaker 1 Aug. 1963; 174172, on *1*, Skidegate Mission, Queen Charlotte I., K. Egger (233), 15 June 1979. UNITED STATES OF AMERICA: WASHINGTON: 184870, on *4*, Comet Falls Trail, 4500 ft, Mt. Rainier Nat. Park, E. G. Simmons (2197), ex ZT, ex Herb. Wehmeyer. AUSTRIA: 182907, on *9*, Kesselberg, bayerischen Alpen, Rehm ex Herb. Dearness 2291, as *Leptosphaeria culmicola* (Fr.) Awd. FRANCE: 196583, on *5*, Caen, Desm. Pl. Cr. Fr. (36) 1774, ex FH, as *Sphaeria nigrans* Rob., ISOTYPE. GERMANY: 189835(*b*), on *9* ad stramen putridum, raro, im Oestrich, Fuckel, Vere, (Fungi rhenani) 889, with *Sphaeria eustoma* Fr., *Pleospora eustoma* (Fr.) Fuckel, ex G, ex Herb. Fuckel 1894, Herb. Boissier. INDIA: PUNJAB: 123942, on *3*, Shipting Nulla, Lahul, 11 000 ft, W. Koelz (897), 2 Aug. 1930. SWEDEN: 123689, on *6*, Hotel Hogfjallet, Storlien, L. E. Wehmeyer, 24 July 1950, ex Herb. Wehmeyer 9362; 121593, on *5*, Oland, Borgholm, A. G. Eliasson, 12.6.1928, ex Herb.

Wehmeyer, as *Leptosphaeria culmicola* (Fr.) Auersw.; 123705, on *6*, Skurdalshöjden, Storlien, L. E. Wehmeyer, 25 July 1950, ex Herb. Wehmeyer 9282, as *Leptosphaeria*. SWITZERLAND: VALAIS: 123688, on *9*, Zermatt, 5000 ft, L. E. Wehmeyer, 7 July 1953, ex Herb. Wehmeyer 9305; 123686(*b*) as preceding, Wehmeyer 9357; 123690, as preceding but Riffleralp trail, ex Herb. Wehmeyer 9300, all 3 as *Leptosphaeria culmicola* (Fr.) Awd. GLARUS: 123599, on *5*, Mollis, Müllern, E. Müller, 5.6.1949, ex Herb. Wehmeyer; 123613, on *8*, Mollis, m. Fronalp, E. Müller, 5.6.1949; 123612, on *6*, Mollis, Fronalp, E. Müller, 5.6.1949; 123620 as preceding but untere Fronalp. GRAUBÜNDEN: 123546, on *5*, Lü, E. Müller, 7.7.1949, 189142, on *5*, Susch, R. A. Shoemaker, E. Müller et alia, 30 Aug. 1980; 128742, on *5*, Tuors Davant, near Bergün, 1800 m., R. A. Shoemaker, 4 June 1962; 123537, on *2*, Bergün, Bahnhof, E. Müller, 29.7.1949.

The diagnostic features of this species include the warted broad mycelium, the dark intraepidermal hyphae, the short beak that is surrounded by a dark ring of heavily pigmented cells, the extremely numerous proportionately small asci around the periphery of the locule. The spores are very distinctive despite their small size. The sheath is uniform and broad on fresh collections. On older collections it is narrow or lacking.

This species is common on *Dactylis* but occurs on a wide range of grasses and other hosts. It often darkens the grass sheath, but, as noted by Holm (1957), this is not invariable. Although common in the sheath, the fungus can occur in the culm where the ascomata are subepidermal, ellipsoidal, and partly erumpent.

The isotype from FH is in very good condition. The ascomata are rather large in relation to the small asci and spores. However, the asci line the periphery of the centrum and more or less fill the large area. The beak is almost as long as the asci. Spore discharge in this species must be an interesting process because of the great elongation required for the ascus tip to extend to the ostiolar opening. Leuchtmann (1984) found the ascospores might or might not have sheath. Following Holm (1957), he included *Leptosphaeria lineolaris* Niessl in Linhart as a synonym, but we treat this as a separate species. *Phaeosphaeria nigrans* is easily distinguished from *Phaeosphaeria rousseliana* (Desm.) L. Holm, which has nearly clavate ascospores without an enlarged cell, without constrictions at septa, and with a *eustoma*-type sheath.

Phaeosphaeria nigrans, 189835(*b*), along with several other pyrenomycetes, was found on the type of *Phaeosphaeria eustoma* (Fuckel) L. Holm.

Phaeosphaeria norfolcia (Cooke) Leuchtmann, Sydowia, 37: 152. 1984 Figs. 157, 175, 195, 223
≡*Sphaeria norfolcia* Cooke, Grevillea, 5: 120. 1877
≡*Leptosphaeria norfolcia* (Cooke) Saccardo, Syll. Fung. 2: 73. 1883
=*Leptosphaeria riparia* Saccardo, Michelia, 1: 39. 1877

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–200 μm wide, 80–200 μm high. Beak central, flush, terete, 0–25 μm long, 30–70 μm wide, of 2–5 layers of brown polygonal 4–8 × 2–5 μm cells around a 10–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 6–10 μm thick, of 2 or 3 layers of rectangular brown 6–8 × 2–4 μm pseudoparenchyma cells. Physes numerous, 1–3 μm wide, with thin septa at 10- to 30-μm intervals, without guttules, with slime coating. Asci few to numerous, clustered, ovoid to cylindrical, 50–60 × 11–20 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores clavate, L/W 4.8, straight, 21–31 × 5–6 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, third cell from apex enlarged towards base, yellowish to reddish brown, with guttules, echinulate, with a conspicuous sharply delimited sheath, 1–3 μm wide.

HOSTS: (*1*) *Juncus effusus* L., (*2*) *Juncus glaucus* Ehrh.

COLLECTIONS EXAMINED: FRANCE: 195445, on *1*, Var, Dardennes, A. de Crozals, Février 1928, ex MO, ex BPI, as *Leptosphaeria nigrans* (Desm.) Ces. & de N; 196468(*a*), on *2*, Noidan, Côte d'Or, F. Fautrey, Decembre 1888, Roumeguère, Fungi selecti exsiccati 4948, ex FH, as *Leptosphaeria riparia* Sacc. (with *Phaeosphaeria petkovicensis* 186468(*b*)).

The specimens match well the redescription and illustrations given by Leuchtmann. The writing on the packet of 195445 may be by G. D. Darker, some of whose collections were at Missouri Botanical Garden. Collection 196468 has three *Leptosphaeria* species present according to the label information. We found *Phaeosphaeria petkovicensis* (Bubák & Ranoj.) Shoem. & Babc. but did not find a third species.

The fungus is very distinctive with heavily echinulate 5-septate ascospores that often have a guttule present in each cell. The sheath is uniform but sharply limited. Leuchtmann's synonymy is accepted.

Phaeosphaeria occulta (Lind) Leuchtmann, Sydowia, 37: 128. 1984 Fig. 166
≡*Leptosphaeria occulta* Lind, Dan. Fungi, p. 218. 1913

Ascocarps scattered to clustered, immersed, subepidermal, globose, hairy, 170–200 μm wide, 170–200 μm high. Beak central, terete, short. Wall in longitudinal section laterally uniformly 15–20 μm thick, of 3 or 4 layers of flattened thin-walled cells. Physes numerous, thin, septate. Asci numerous, broadly cylindrical, 70–80 × 12–13.5 μm, short-stalked, with 8 overlapping linearly triseriate ascospores. Ascospores cylindrical, L/W 10.0, curved, 35–48 × 3.5–4 μm, 5-septate in sequence 2:1:3:2:3, first septum slightly constricted, supramedian (0.38), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with or without a thin sheath.

HOST: *Carex hirta* L.

COLLECTION EXAMINED: DENMARK: Själland, Hornbaek Plantage, E. Rostrup, 27 July 1899, Plantae danicae, ex BPI, as *Leptosphaeria occulta* sp.nov. J. Lind, TYPUS.

Leuchtmann (1984) found this fungus on the part of the type in C. We did not find it on the portion in BPI. *Phaeosphaeria vagans* (Niessl) O. Eriksson was common and *Paraphaeosphaeria michotii* (Westendorp) O. Eriksson was rare on the material. A *Mycosphaerella* is present as well. The description is from Leuchtmann (1984). In culture he found a *Stagonospora* anamorph with 3-septate conidia 16–26 × 2.5–3 μm.

Leuchtmann's drawings show ascospore septation from 5 to rarely 11 in one collection.

Phaeosphaeria ovei n.sp. Figs. 160, 190, 210

Ascomata dispersa, immersa in vaginis, erumpentia in culmis, subglobosa, glabra, 200–250 μm lat., 150–180 μm alt. Rostrum erumpens, teres, truncato-conicum, 20–30 μm long., 55–65 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 15–25 μm diam., sine

periphysibus. Paries ascomatis 12−17 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 7−9 × 5−7 μm compositus. Physes 2−3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici vel ovati, 75−100 × 15−20 μm, 8-spori. Ascosporae tetraseriatae, fusiformes, (32)36−42 × 5−6.5 μm, 7-septatae, in ordinem 3:2:1:3:2:3:4, septo primo supramedio, (0.38), constricto, flavae, eguttulatae, echinulatae, strato muco 1−2 μm omnino circumdato.

Hab. in vaginis culmis *Agropyri canini*, "SWEDEN: 121592, Jukkasjärvi parish, Nuolja, J. A. Nannfeldt, 10 August 1928, TYPE, ex Fungi exs. suec. 1071(*a*), as *Leptosphaeria culmifraga*."

The epithet refers to Dr. Ove Eriksson.

Ascocarps scattered, immersed in sheath, subepidermal and partly erumpent from culm, globose, 200−250 μm wide, 150−180 μm high. Beak central, terete, erumpent, truncate-conical, 20−30 μm long, 55−65 μm wide, of 3 or 4 layers of brown polygonal 5−7 × 5−7 μm cells around a 15−25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12−17 μm thick, of 4 or 5 layers of polygonal brown 7−9 × 5−7 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical to ovoid, 75−100 × 15−20 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 7.7, straight or slightly curved, (32)36−42 × 5−6.5 μm, 7-septate in sequence 3:2:1:3:2:3:4, first septum slightly constricted without a flange, supramedian (0.38), not constricted at other septa, with dots at ends of septa, septa thin, third cell from apex shorter than wide, enlarged towards base without a band, pale yellow, without guttules, very finely echinulate, with a uniform sheath, 1−2 μm wide.

HOSTS: (*1*) *Agropyron caninum* (L.) Beauv., (*2*) *Agropyron mutabile* Drobov, (*3*) *Deschampsia flexuosa* (L.) Trin. (*Aira flexuosa* L.), (*4*) *Roegneria canina* (L.) Newski, (*5*) unknown grass.

COLLECTIONS EXAMINED: FINLAND: 144261, on *2*, Lapponia enontekiensis, Enontekiö, W-Saana, J. I. Liro & H. Roivainen, 20 July 1939, ex H, as *Phaeosphaeria herpotrichoides*; 149623, on *4*, Lapponia enontekiensis, pars NW, W-Tshoktsoaivi, H. Roivainen, 11 August 1956, ex H, as *Phaeosphaeria herpotrichoides*. SWEDEN: 15836(*a*), on *3*, Jämtland, A. G. Eliasson, 3 September 1931, ex S, as *Leptosphaeria culmifraga*; 121592, Jukkasjärvi parish, Nuolja, J. A. Nannfeldt, 10 August 1928, TYPE, ex Fungi exs. suec. 1071(*a*), as *Leptosphaeria culmifraga*. SWITZERLAND: 123686(*a*), on *5*, Zermatt, 5000 ft, L. E. Wehmeyer 9357, 7 July 1953, as *Leptosphaeria graminis*.

This species is distinguished by the broad ascospores with 7 septa and the very fine echinulations. Eriksson recognized it as form 5*a*, which is common in Scandinavia.

Phaeosphaeria parvograminis n.sp. Figs. 163, 186, 218

Ascomata dispersa, immersa, globosa vel depresso globosa, villosa, 250−300 μm lat., 150−200 μm alt. Rostrum erumpens, teres, truncato-conicum, 25−80 μm long., 70−80 μm lat., cellulis brunneis polygoniis, 5−7 × 5−7 μm compositum; ostiolum 20−30 μm diam., sine periphysibus. Paries ascomatis 25−40 μm lat., cellulis brunneis polygoniis vel prismaticis, tenuitunicatis, 8−12 × 4−6 μm compositus. Physes 2−3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 85−100 × 10−12 μm, 8-spori. Ascosporae biseriatae, fusiformes, 28−32 × 4−4.5 μm, 9(10)-septatae, in ordinem (3):2:1:4:3:4:2:4:3:4, septo primo supramedio, (0.32), constricto, flavae, eguttulatae, leves, strato muco 1−2 μm omnino circumdato.

Hab. in culmis *Phalaridis arundinaceae*, "GREAT BRITAIN: 140150(*a*), Yorkshire, W. G. Bramley, 6 June 1948, TYPE, Herb. I.M.I. 34222, ex Herb. CMI, as *Leptosphaeria graminis*."

The epithet refers to the small ascospores resembling those of *Phaeosphaeria graminis*.

Ascocarps scattered, immersed in culm or subepidermal in sheath, globose or with a flattened base, 250−300 μm wide, 150−200 μm high with smooth, brown hairs 50−100 × 5−6 μm, septate at 20- to 30-μm intervals. Beak central, terete, erumpent, truncate-conical, 25−80 μm long, 70−80 μm wide, of 5 or 6 layers of brown polygonal 5−7 × 5−7 μm cells around a 20−30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally 25−40 μm thick, of 5 or 6 layers of polygonal to prismatic brown 8−12 × 4−6 μm pseudoparenchyma cells but wider and of larger cells near corner of base. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85−100 × 10−12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores to uniseriate below. Ascospores narrowly fusiform, L/W 7.0, straight or slightly curved, 28−32 × 4−4.5 μm, 9(10)-septate in sequence (3):2:1:4:3:4:2:4:3:4, first septum slightly constricted without a flange, supramedian (0.32), not constricted at other septa, with dots at ends of septa, septa thin, second (third) cell from apex shorter than wide, enlarged towards middle without a band, very pale yellow, without guttules, smooth, with a uniform sheath, 1−2 μm wide.

HOSTS: (*1*) *Phalaris arundinacea* L., (*2*) *Phragmites communis* Trin., (*3*) *Phragmites* sp.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 182783, on *1*, Ontario Agricultural College, Guelph, J. Dearness, 6 August 1914, ex Herb. Dearness 3639, as *Leptosphaeria amphibola*. GREAT BRITAIN: 140150(*a*), on *1*, Yorkshire, W. G. Bramley, 6 June 1948, TYPE, Herb. I.M.I. 34222, ex Herb. CMI, as *Leptosphaeria graminis*. NETHERLANDS: 184939, on *3*, Valkenburg/Limburg, Rick S. J., 12. 1901, ex S, Rehm Ascomyceten 1437, as *Leptosphaeria graminis*. SWEDEN: 105749(*b*), on *1*, Gästrikland, Gävle, Lövudden, at the River Gavleån, J. Ax. Nannfeldt, 10 July 1963, ex Flora Suecica 18218*d*, with *Phaeosphaeria fuckelii*. SWITZERLAND: ZÜRICH: 123591, on *2*, Glattfelden, E. Müller, 15 May 1949, ex ZT, as *Leptosphaeria graminis*.

This species is close to *Phaeosphaeria graminis* (Fuckel) L. Holm, which has broader, longer, echinulate ascospores with a flange at the first septum but without dots at the ends of the septa.

Phaeosphaeria pontiformis (Fuckel) Leuchtmann, Sydowia, 37: 134. 1984 Figs. 165, 187, 204, 217

≡*Pleospora pontiformis* Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 139. 1869 (1870)

≡*Leptosphaeria pontiformis* (Fuckel) Saccardo, Syll. Fung. 2: 78. 1882

=*Leptosphaeria cumulata* Kirschst., Verh. Bot. Ver. Prov. Brandenburg, 48: 56. 1906

Ascocarps scattered or clustered in one or two short rows, immersed or erumpent beneath a strip of epidermis, subepidermal, globose, hairy below, 200–400 μm wide, 180–300 μm high. Beak central, terete, truncate-conical, 40–120 μm long, 40–90 μm wide, of 3–6 layers of brown polygonal 3–7 × 3–6 μm cells around a 20–30 μm diameter ostiole, lined with a few hyaline slime coated 10–15 × 2–3 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–35 μm thick, of 4–7 layers of polygonal to prismatic brown 5–12 × 3–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 30-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85–140 × 9–17 μm, short-stalked, with 8 overlapping linearly biseriate to tetraseriate ascospores. Ascospores narrowly fusiform, L/W 9.3, straight or slightly curved, 40–50 × 3.5–5.5 μm, 10- to 13-septate in sequence (6):5:4:1:(6):5:4:3:2:3:4:5:(6), first septum slightly constricted, supramedian (0.27), not constricted at other septa, third (fourth) cell from apex enlarged towards base and short, pale yellowish to greyish brown, with fine guttules, smooth, with a sheath, 1–1.5 μm wide around enlarged cell, and with appendages at ends, 4–5 μm wide.

HOSTS: (*1*) *Agropyron repens* (L.) Beauv. as *Triticum repens* L., (*2*) *Phalaris arundinacea* L., (*3*) *Phragmites communis* Trin.

COLLECTIONS EXAMINED: CZECHOSLOVAKIA: 184825, on *3*, Sternberg im Mähren, J. Piskov, May 1926, ex ZT, as *Leptosphaeria cumulata*. GERMANY: 190846, on *2*, Rathenow, am Körgraben, Kirschstein, Juni 1905, ex B, as *Leptosphaeria cumulata* TYPE; 189836(*a*), on *1*, Fuckel, im Winter, TYPE, ex G, Fungi rhen. 59 & 782, as *Pleospora pontiformis*; 189960, ex FH, ISOTYPE and 195313, ex BPI, on *1*, Hattenheim, Nassau, Fuckel, Hieme, ex Herb. Fuckel 1894, ex Herb. Barbey-Boissier 378, Fungi Rhenani 782, as *Leptosphaeria pontiformis* (Fckl.) Sacc. HUNGARY: 179322, on *2*, Gödöllö, S. Tóth, 23 July 1954, as *Phaeosphaeria graminis*.

In gross appearance this species is distinctive in the tightly clustered, linear rows of ascocarps with punctate beaks emerging through culm tissue or exposed through fissures or from under strips of epidermis. The thick wall is soft and pseudoparenchymatic. The ascospores have the third cell enlarged and supplied with a distinctive thin, band-like sheath. The terminal appendages are conspicuous and demonstrable by negative staining with India ink, or positive staining with nigrosin.

Collection 189960 ex FH is part of Fungi rhenani 782, the collection cited with the description of the teleomorph. Because it is ample, mature, and agrees with the original description, it is here designated lectotype. It matches Fuckel's description, although the asci are slightly longer and broader than he reported but relatively long and slender as he indicated. The ascospores are long and slender and although no spores were found with 16 septa as he indicated, 11 or 12 septa were common. An appendage was found on the end cells of the ascospores and a small sheath surrounds the enlarged cell. The appendages and minisheath are difficult to demonstrate except by the India ink procedure used exactly as described by Eriksson (1981, p. 13).

A part of Fungi rhenani 782 (195313) with the same label information but housed in BPI was examined. The pontiform structure was evident, but asci and spores were absent.

The proposed type from G (189836*a*) bearing the label Typus with handwritten "*Pleospora pontiformis* Fckl. I & II and p. 139 and Fung. rhen. 59 & 782" was examined. It had not been annotated, but, judging from the many partial fruitbodes left, had been examined and is scanty and mixed. Near the node of one piece of culm are depressed, scattered, immersed, 200–300 μm diameter ascocarps with projecting beak hairs like those of *Nodulosphaeria modesta* (Desm.) Munk ex L. Holm, but ascospores are absent. The other piece of culm bears seriate, globose, small-beaked ascocarps that raise the epidermis in a manner resembling a bridge. In these, a few asci and overmature, agglutinated, and germinated ascospores were found. They do not match the description given by Fuckel, 40 × 3 μm and 16-septate, but are 28–30 × 4.5–5.5 and 8-septate. Fuckel gave almost the same spore length for *Phaeosphaeria pontiformis* (40 μm) as for *Phaeosphaeria graminis* (Fuckel) L. Holm (38 μm). In his material of *Phaeosphaeria graminis* we found the ascospores were 50–58 μm long. The material from the ascocarps that raised the epidermis in a pontiform structure is not distinguishible from *Phaeosphaeria erikssonii* Shoem. & Babc. The material from G is not in sufficiently good condition to provide a satisfactory conclusion, and it is not really convincing type material despite the red label indicating Typus. Part of it with seriate, globose ascocarps raising a strip of epidermis matched the macroscopic features of *Phaeosphaeria pontiformis*. However, the ascocarps we studied were overmature *Phaeosphaeria erikssonii* (189836*b*). Berlese (1894, p. 87) reported the original material to be sterile.

Webster and Hudson (1957, p. 519) studied part of Fungi rhenani 782 from K and published good illustrations. Winter (1887) redescribed the fungus from another part of the exsiccatus, but added little to the original description. Leuchtmann (1984) did not cite Fuckel's material, but gave splendid illustrations of the ascospores noting the terminal appendages and thin lateral sheath on the enlarged cell. He gave *Leptosphaeria cumulata* Kirschstein as a synonym and our studies support this conclusion.

Webster and Hudson (1957) found a *Hendersonia* (*Stagonosopora*) anamorph in 3 of 6 isolates. Leuchtmann found only the teleomorph in 3 of 3 isolates. Leuchtmann's results indicate that the fungus is homothallic. The conidia of the *Stagonospora* sp. found in some strains are pale brown, narrowly obclavate, smooth to verrucose, straight to slightly curved, 3(5)-septate, 18–32 × 2–4 μm (Sivanesan 1984; Webster and Hudson 1957). Rare *Phoma* conidia are hyaline, allantoid to rod-shaped, 3.5–6 × 1 μm (Webster and Hudson 1957).

Phaeosphaeria pulchra n.sp. Figs. 159, 188, 212

Ascomata dispersa, immersa, globosa, villosa, 200–250 μm lat., 200–250 μm alt. Rostrum erumpens, teres, truncato-conicum, 80–100 μm long., 60–110 μm lat., cellulis brunneis polygoniis, 3–5 × 3–5 μm compositum; ostiolum 20–25 μm diam., sine periphysibus. Paries ascomatis 12–15 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 6–8 × 3–4 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 100–120 × 12–17 μm, 8-spori. Ascosporae triseriatae vel uniseriatae, fusiformes, 33–37(39) × 5–6 μm, 7-septatae, in ordinem 2:1:3:2:4:3:4, septo primo supramedio, (0.32), constricto, ochraceae, eguttulatae, leves, strato muco 2 μm omnino circumdato.

Hab. in culmis *Calamagrostidis* sp., "SWITZERLAND:

ST. GALLEN: 123595, Weite, E. Müller, 15 June 1949, TYPE, ex ZT, as *Leptosphaeria apogon*."

The epithet refers to the attractive ascospores.

Ascocarps scattered, immersed, subepidermal, globose, 200–250 μm wide, 200–250 μm high with smooth to echinulate, brown hairs 100–200 × 5–6 μm, septate at 15- to 30-μm intervals. Beak central, terete, erumpent, truncate-conical, 80–100 μm long, 60–110 μm wide, of 3 or 4 layers of brown polygonal 3–5 × 3–5 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–15 μm thick, of 4 or 5 layers of polygonal to rectangular brown 6–8 × 3–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–120 × 12–17 μm, short-stalked, with 8 overlapping linearly triseriate ascospores above to uniseriate near base. Ascospores narrowly fusiform, L/W 6.3, straight or slightly curved, 33–37(39) × 5–6 μm, 7-septate in sequence 2:1:3:2:4:3:4, first septum slightly constricted without a flange, supramedian (0.32), not constricted at other septa, with dots at ends of septa, septa thin, second cell from apex shorter than wide, enlarged towards base without a band, pale yellowish brown, without guttules, smooth, with a uniform sheath, 2 μm wide.

HOSTS: (*1*) *Calamagrostis* sp., (*2*) *Melica nutans* L.

COLLECTIONS EXAMINED: SWITZERLAND: ST. GALLEN: 123595, on *1*, Weite, E. Müller, 15 June 1949, TYPE, ex ZT, as *Leptosphaeria apogon*. ZÜRICH: 123562, on *2*, Zollikon, E. Müller, 8 May 1949, ex ZT, as *Leptosphaeria culmifraga*; 123563(*a*), on *2*, Glattfelden, E. Müller, 15 May 1949, ex ZT, as *Leptosphaeria culmifraga*.

This species has distinctive ascospores. It is allied to a North American collection 189053 (*Phaeosphaeria cinnae* Shoem. & Babc.) that, however, has spores with the apical cell regularly subdivided by a septum and that are slightly narrower overall the guttulate. The two species are close but distinct.

Phaeosphaeria recessa (Passerini) n.comb. Fig. 154

≡*Leptosphaeria recessa* Passerini, Mem. R. Accad. Lincei, Ser. 4, 6: 459. 1890

Ascocarps clustered, immersed to partly exposed, subepidermal, globose, glabrous, 250–330 μm wide, 250–330 μm high. Beak central, terete, truncate-conical, 60–80 μm long, 80–110 μm wide with a 15–25 μm diameter ostiole. Wall in longitudinal section laterally uniformly 15–20 μm thick. Physes present. Asci cylindrical, 60–70 × 8–10 μm, short-stalked, with 8 overlapping linearly triseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 4.6, straight or slightly curved, 24–27 × 4–5 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.45), not constricted at other septa, third cell from apex enlarged towards base, yellowish brown, with guttules, smooth.

HOST: *Arundo donax* L.

COLLECTIONS EXAMINED: None; data from Passerini (1890) and Berlese (1894).

Phaeosphaeria rousseliana (Desmazières) L. Holm, Symb. Bot. Upsal. 14(3): 114. 1957 Figs. 141, 170, 222

≡*Sphaeria rousseliana* Desm., Ann. Sci. Nat. Bot., Ser. 3, 11: 355. 1849

≡*Leptosphaeria rousseliana* (Desm.) Ces. & De Not., Comment. Soc. Critt. Ital. 1: 236. 1863

=*Leptosphaeria anisomeres* Wehmeyer, Can. J. Res., Sect. C, 20: 582. 1942

Ascocarps in rows, immersed, subepidermal, depressed globose, glabrous, 100–150 μm wide, 80–100 μm high with a clypeus of brown mycelium in the host epidermis. Beak central, terete, flush, intraepidermal, up to 12 μm long, 30–35 μm wide, of 3 or 4 layers of brown polygonal 4–6 × 4–6 μm cells around a 10–12 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–15 μm thick, of 4–6 layers of polygonal brown 8–12 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thickened septa at 20- to 25-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 40–80 × 8–10 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly clavate, L/W 3.2, straight or slightly curved, 15–19 × 4–5 μm, 5-septate in sequence 2:1:3:2:3, first septum slightly constricted, supramedian (0.40), not constricted at other septa, with strong dots at ends of septa, second cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with eustoma-like sheath, 1.5–2.5 μm wide.

HOSTS: (*1*) *Calamagrostis sp.*, (*2*) *Phleum boehmeri* Wibel, (*3*) *Phleum pratense* L., (*4*) *Phleum* sp., (*5*) Poaceae.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 188991, on *3*, Meat Cove, Cape Breton, R. A. Shoemaker 21 June 1982; 188999, 189000, on *3*, Middle Head Trail, Keltic Lodge, Cape Breton, R. A. Shoemaker, 14 June 1982; 189002, on *3*, Tip of Middle Head Trail, Keltic Lodge, Cape Breton, 16 June 1982; 189010, on *3*, Warren Lake, Cape Breton, R. A. Shoemaker, 18 June 1982. ONTARIO: 189067(*a*), on *3*, Benmiller, Colborne Twp., Huron Co., R. A. Shoemaker, 18 June 1983. CZECHOSLOVAKIA: 196530, on *2*, Brünn, Niessl, Rab. Fungi Europaeae 2048, ex FH, as *Leptosphaeria rousseliana* Cesa. & De Not. SWITZERLAND: ZÜRICH: 123548, on *1*, Sihlwald, E. Müller, 26.5.1949, ex ZT, ex Herb. Wehmeyer, as *Leptosphaeria nigrans* (Desm.) Ces. & De Not. THE NETHERLANDS: 184773, on *5*, ex Herb. Persoon, ex L, 910. 267–152, as *Sphaeria graminis*.

We did not see the type. The exsiccatus cited (196530) was studied by Holm (1957) and Leuchtmann (1984). The fungus is quite characteristic with clavate ascospores that are not enlarged at any cell or constricted at the septa. The sheath is of the eustoma type. However, old collections do not show the sheath regularly. *Leptosphaeria anisomeres* Wehmeyer is a synonym.

Phaeosphaeria sowerbyi (Fuckel) L. Holm, Symb. Bot. Upsal. 14 (3): 130. 1957 Figs. 167, 192, 196

≡*Pleospora sowerbyi* Fuckel, Jahrb. Nass. Ver. Naturk. 25: 301. 1871

≡*Leptosphaeria sowerbyi* (Fuckel) Saccardo, Sylloge Fungorum 2: 78. 1883

Ascocarps scattered, immersed, subepidermal, pyriform, glabrous, 50–75 μm wide, 100–130 μm high. Beak central, terete, flush, subepidermal, truncate-conical, 40–50 μm long, 40–50 μm wide, of 3–5 layers of dark brown polygonal 5–8 × 4–6 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–10 μm thick, of 2 or 3 layers of rectangular light brown 6–12 × 4–6 μm pseudoparenchyma cells. Physes few, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules,

with slime coating. Asci few, clustered, ovoid, 60–80 × 20–30 μm, short-stalked, with 8 overlapping linearly fascicled ascospores. Ascospores nearly cylindrical, L/W 8.0, straight or slightly curved, 45–50 × 5.5–6.5 μm, 6-septate in sequence 3:2:1:3:2:3, first septum slightly constricted, supramedian (0.40), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base and with a dark median band, yellowish brown, without guttules, smooth, with a conspicuous vaguely delimited sheath, 2–3 μm wide but 3–4 μm wide at widest cell.

HOSTS: (*1*) *Scirpus atrovirens* Muhl., (*2*) *Scirpus lacustris* L.

COLLECTIONS EXAMINED: CANADA: 188917(*d*), on *2*, side road off Hay Township, Concession 8–9, north of HWY 83, Huron County, M. Corlett 83(59), 6 July 1983. BELGIUM: 184999, on *1*, Liège, Mouton, Rehm, Ascomyceten 1290, ex Herb. Rehm, ex S, as *Phaeosphaeria sowerbyi* det L. Holm.; 196537, same as preceding, ex FH. POLAND: 196526, on *1*, Strzalkowo, F. Petrak, 12 June 1917, Petrak, Fungi polonici exsiccati 429, ex FH, as *Leptosphaeria Sowerbyi*.

This species has been well described and illustrated. Holm (1957) seems to be the first to have noted the dark band around the enlarged cell. Leuchtmann (1984) noted a similar feature in some allied species. The ascomata are very small and packed with asci with very few physes. The ascomata are often pear-shaped with a beak darker than the rest of the ascoma. One Canadian collection had been referred to this species, but the fungus appears to be distinct and is described as *Phaeosphaeria crenata* Shoem. & Babc.

Phaeosphaeria sparsa (Fuckel) n.comb.

Figs. 149, 177, 203

≡*Pleospora sparsa* Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 138. 1869 (1870)

Ascocarps scattered, immersed, subepidermal, globose, hairy, 150–250 μm wide, 120–250 μm high with smooth brown hairs 50–100 × 4–6 μm, septate at 20- to 30-μm intervals. Beak central, terete, truncate-conical, 50–80 μm long, 70–80 μm wide, of 3–8 layers of brown polygonal 5–7 × 5–7 μm cells around a 10–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–19 μm thick, of 2–4 layers of polygonal to rectangular brown 6–12 × 4–8 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 80–110 × 10–14 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 6.6, straight or slightly curved, 23–31 × 3.5–5(6) μm, 7-septate in sequence 3:2:1:3:2:3:4, first septum slightly constricted with a flange, supramedian (0.38), not constricted at other septa, with dots at ends of septa, septa thin, third cell from apex shorter than wide, enlarged towards base without a band, mid yellowish brown, with or without guttules, coarsely echinulate, with a uniform sheath 2–5 μm wide laterally but narrowed at ends.

HOSTS: (*1*) *Agrostis* sp., (*2*) *Anaphalis margaritacea* (L.) Benth. & Hook., (*3*) *Anthoxanthum odoratum* L., (*4*) *Bromus ciliatus* L., (*5*) *Bromus erectus* Hudson, (*6*) *Bromus inermis* Leyss, (*7*) *Calamagrostis montana* Host, (*8*) *Calamagrostis* sp., (*9*) *Dactylis glomerata* L., (*10*) *Deschampsia caespitosa* (L.) Beauv., (*11*) *Elymus canadensis* L., (*12*) *Elymus* sp., (*13*) *Hordeum vulgare* L., (*14*) *Melica nutans* L., (*15*) *Poa nemoralis* L., (*16*) *Poa palustris* L., (*17*) *Poa* (*pseudopratensis* Hook. f.), (*18*) *Poa* (*sterilis*) Bieb., (*19*) *Poa* sp., (*20*) unknown grass.

COLLECTIONS EXAMINED: CANADA: NEW BRUNSWICK: 169493(*a*), on *16*, 6 miles into park on HWY 117, north on dirt road, Kent County, Kouchibouguac National Park, D. Munro 886, 8 July 1977. MANITOBA: 180636, on *12*, Deep Lake, Riding Mountain National Park, R. A. Shoemaker, 16 July 1979; 180662, on *20*, Bog Trail, 13 km east of HWY 10 on HWY 19, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979; 180668(*a*), on *20*, Whirlpool Lake, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979; 182696, on *20*, HWY 19, 1 mile west of Swanson Creek, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979; 182614, on *4*, 0.7 km south of HWY 19, on Firetower Road, Riding Mountain National Park, 19 July 1979; 182615, on *8*, Muskrat Lake, Riding Mountain National Park, D. R. H. Hammersley, R. A. Shoemaker & J. A. Parmelee RMNP 29, 19 July 1979; 192267, on *11*, Bead Lake Trail, Riding Mountain National Park, R. A. Shoemaker & D. R. H. Hammersley RMNP 340. SASKATCHEWAN: 133200 and 133201, on *6*, Saskatoon Forestry Farm, Saskatoon, W. Reiter, 25 July 1970; 133203, on *6*, Saskatoon Forestry Farm, spore trap site, W. Reiter, 25 April 1970; 129794, on *6*, Forestry Farm, Saskatoon, site of 1969 spore trap, J. Drew Smith, 18 March 1970; 184121(*b*), on *6*, Saskatoon, R. C. Russel 117, Spring 1925, ex Herb. Dearness 7626, near *Leptosphaeria straminis* – *Leptosphaeria culmifraga*. BRITISH COLUMBIA: 105307, on *2*, Mt. Revelstoke, 3000 ft, R. A. Shoemaker, 20 July 1963; 110712(*b*), on *20*, Mt. Abbott near Marion Lake, Glacier, R. A. Shoemaker, 6 August 1963; 110723(*a*), on *20*, Eagle Pass, west of Revelstoke, elevation 1800 ft, R. A. Shoemaker, 23 July 1963; 174170(*a*), on *3*, Skidegate Mission, Queen Charlotte Islands, K. Egger 233, 15 June 1979. GERMANY: 191057, on *13*, Hostrichiam, Fuckel, Vere, ex G, F. rh. 2245, as *Pleospora culmifraga*; 196579, on *13*, Hostrichiam, Fuckel, Vere, ex FH, Fungi rhen. 2245, as *Sphaeria culmifraga*. INDIA: PUNJAB: 123910, on *17*, Bailing Nulla, Lahul, W. Koelz 1346, 16 September 1930, as *Leptosphaeria culmifraga*; 123979, on *18*, Khokhsar, Lahul, elevation 11 000 ft, W. Koelz 1062, 7 August 1930. NORWAY: 123687(*c*), on *19*, Falls, Geiranger, L. E. Wehmeyer 9285, 30 July 1950, as *Leptosphaeria culmifraga*. SWITZERLAND: on *1* and *15*, Jura, Morthier, Frühling, "TYPE", as *Pleospora sparsa*, Fungi rhen. 2525, ex G; GRAUBÜNDEN: 90647, on *20*, Vo, Val Raveisch, 1900 m, near Bergün, R. A. Shoemaker, 31 May 1962; 123537(*a*), on *5*, Bahnhof., E. Müller, 29 July 1949, as *Leptosphaeria sparsa*; 123538, on *10*, Lü, E. Müller, 5 July 1949, as *Leptosphaeria sparsa*; 128742(*a*), on *9*, Tours Davant near Bergün, 1800 m, R. A. Shoemaker, 4 June 1962; 189137(*b*), on *20*, Davos-Dischima, über Teufi, 1700–1800 m, R. A. Shoemaker, 26 August 1980. VALAIS: 123686(*c*), on *20*, Zermatt, 5000 ft, L. E. Wehmeyer 9357, 7 July 1953; 123719, on *20*, Staffelalp, Zermatt, 7500 ft, L. E. Wehmeyer 9359, 11 July 1953. ST. GALLEN: 189961, on *7*, Ragaz, Fuckel, im nachsommer, ex FH, ex Herb. Barbey-Boissier 732, as *Leptosphaeria sparsa*. ZÜRICH: 123563(*b*), on *14*, Glattfelden, E. Müller, 15 May 1949, ex ZT, as *Leptosphaeria culmifraga*.

Holm (1957) saw the type from G labelled: "Suisse, Jura, *Agrostis*-Arten u. *Poa nemoralis*, leg. Morthier." He found the ascocarps were about 150 μm diameter and 200 μm high,

nearly smooth, with spores 22−27 × 4−4.5 μm and 7- or 8-septate, not 30 μm long nor 8−10 septate as described by Fuckel. Eriksson (1967*b*, p. 420) confirmed Holm's observations and added that the spores are punctate with a sheath and he referred the collection to form 3*a* of *Phaeosphaeria herpotrichoides*. We employ the concept of Holm and Eriksson for this species and equate form 3*a* of Eriksson to it.

Specimen 189961 is not the type. The host, locality and collector do not agree with the diagnosis. However, the fungus is *Phaeosphaeria sparsa*, which Eriksson includes as form 3*a* of *Phaeosphaeria herpotrichoides* s.l.

Fungi Rhenani 2525 ex G, despite the type label, cannot be the type because it was issued after the publication of the species and the label information does not agree with the collection information with the diagnosis. Fuckel (1869, p. 7) stated that numbers up to 2300 in Fungi rhenani were covered in that work. The four short pieces of fine grass culm in the packet bear mostly *Keissleriella culmifida* (Karsten) Bose = *Trichometasphaeria culmifida* (Karsten) L. Holm, which is easily recognized, using a dissecting microscope, by the presence of conspicuous hairs projecting from the tip of the beak. No material matching *Phaeosphaeria sparsa* was found on it by us.

Phaeosphaeria volkartiana (Müller) Hedjaroude, Sydowia, 22: 84. 1968 Figs. 152, 180, 216
≡*Leptosphaeria volkartiana* Müller, Sydowia, 4: 210. 1950

Ascocarps scattered clustered or in rows, subepidermal, globose, hairy, 200−350 μm wide, 200−350 μm high. Beak central, terete, erumpent, truncate-conical, 100−120 μm long, 130−150 μm wide, of 6−10 layers of brown polygonal 5−8 × 5−8 μm cells around a 25−30 μm diameter ostiole filled with hyaline pseudoparenchyma, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 30−35 μm thick, of 4−7 layers of cells, outer cells polygonal, darkly pigmented, thick-walled, 8−12 × 7−9 μm, inner layers of flattened thin-walled light colored cells. Physes numerous, 2−3 μm wide, septate at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, broadly cylindrical, 90−130 × 12−20 μm, short-stalked, with 8 overlapping linearly triseriate to biseriate ascospores. Ascospores narrowly fusiform with a tendency to clavate, L/W 4.3, straight or slightly curved, 27−38 × 6.5−8.5 μm, 8-septate in sequence 3:2:1:3:2:3:2:3, first septum slightly constricted, supramedian (0.39), often slightly constricted at other septa, third cell from apex enlarged towards base, yellowish brown, with guttules, coarsely warted, with a conspicuous sharply delimited sheath 1.5−2.5 μm wide.

HOSTS: (*1*) *Trisetum distichophyllum* (Vill.) Beauv., (*2*) *Trisetum spicatum* (L.) Richter.

COLLECTIONS EXAMINED: SWITZERLAND: GRAUBÜNDEN: 91922, on *1*, Tours Davant, Bergün, E. Müller & R. A. Shoemaker, 13 July 1961; 123549, on *1*, Lü, Champatsch, E. Müller, 4 July 1949, ex ZT; 123550, on *2*, 4 August 1946, and 123556, on *2*, 3 August 1949, Filisur, Muchetta, E. Müller, ex ZT; 123590, on *1*, Ducantal, E. Müller, 31 July 1949, ex ZT; 123670, on *1*, Corviglia, St. Moritz, 7500 ft, L. E. Wehmeyer and E. Müller 7334, 17 July 1953. All of the above as *Leptosphaeria volkartiana*.

This species has robust echinulate 8-septate spores with a tendency to clavate shape. It is clearly an ally of *Phaeosphaeria erikssonii*. *Massariosphaeria melicae* (Bubák) Shoem. & Babc. has 8-septate ascospores that are larger.

In culture the fungus produces the teleomorph and a *Stagonospora* anamorph with yellowish brown, smooth (3)7(11)-septate conidia 21−33 × 3−5 μm (Leuchtmann 1984).

SUBGENUS *Spathispora*

SUBGENUS ***Spathispora*** n.subg.
=Series *Fuckelii* Leuchtmann (1984, p. 95), nom. invalid. Art. 36

Ascosporae minimum 5-septatae, antice cylindricae postice angustatae, leves vel echinulatae, septo primo submedio raro medio, plus minusve strato muco cinctae.

TYPE: *Phaeosphaeria fuckelii* (Niessl) L. Holm.

The name of the subgenus is derived from spatha and spora, in reference to the sword-like ascospores with a long bladelike upper part and a short basal part resembling a handle.

Ascospores 5-septate or more, apical part cylindrical, basal part tapered and usually shorter, first septum submedian or very rarely median, smooth to echinulate, sheath uniform or lacking.

Key to species in subgenus *Spathispora*

1. Ascospores smooth 2
2. Ascospores without sheath 3
3. Ascospores 40−50 × 6−7 μm, 8- to 10-septate ..... *P. equiseti*
3. Ascospores smaller, 5- to 8-septate 4
4. Ascospores 5-septate 5
5. Ascospores 22−32 × 4−4.5 μm ..... *P. fuckelii*
5. Ascospores 35−40 × 5−6 μm ..... *P. saxonica*
4. Ascospores mainly 7-septate 6
6. Ascospore L/W more than 6.0 ..... *P. fuckeloides*
6. Ascospore L/W less than 6.0 7
7. Ascospore L/W less than 4.3 ..... *P. robusta*
7. Ascospore L/W greater than 4.9 8

8. Ascospores 7 μm wide, first septum 0.67 ..... *P. lindii*
8. Ascospores 5–6 μm wide, first septum 0.59 ..... *P. lycopodiicola*

2. Ascospores with a sheath 9

9. Ascospore L/W 6.0 or more 10

10. Ascospores 5-septate ..... *P. caricis*
10. Ascospores 7(9)-septate ..... *P. inclusa*

9. Ascospore L/W less than 6.0 11

11. Ascospores 5-septate 12

12. Ascospores broadly rounded at ends, on *Nardus* ..... *P. nardi*
12. Ascospores not broadly rounded, ubiquitous ..... *P. fuckelii*

11. Ascospores 5- to 7-septate ..... *P. sylvatica*

1. Ascospores echinulate ..... *P. michiganensis*

Phaeosphaeria caricis (Schroeter) Leuchtmann, Sydowia, 37: 147–148. 1984 Figs. 226, 245, 249, 256
≡*Leptosphaeria caricis* Schroet. Jahresb. Schles. Ges. Vaterl. Cult. 58: 175. 1880
=*Leptosphaeria nardi* var. *dubiosa* Mouton, Bull. Soc. Roy. Bot. Belgique, 26: 177. 1887
≡*Leptosphaeria dubiosa* (Mouton) Oudemanns, Enum. Syst. Fung. 1, 981. 1919
=*Phaeosphaeria punctillum* (Rehm) L. Holm, Symb. Bot. Upsal. 14(3): 125. 1957
≡*Leptosphaeria punctillum* Rehm, Ann. Mycol. 10: 356. 1912
=*Leptosphaeria typhiseda* Petrak, Hedwigia, 65: 220. 1925, non *L. typhiseda* Saccardo & Berlese, Rev. Mycol. Toulouse, 8: 33. 1886
=*Leptosphaeria petrakii* Saccardo, Ann. Mycol. 12: 287. 1914

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 90–120(250) μm wide, 90–120(250) μm high. Beak central, punctiform, terete, truncate-conical, 12–20 μm long, 25–50 μm wide, of 3–7 layers of brown polygonal 3–6 × 3–6 μm cells around a 10–30 μm diameter ostiole, with hyaline 5–8 × 3–4 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 5–12 μm thick, of 2–4 layers of polygonal to rectangular, brown 4–12 × 2–4 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 2–3 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 65–75 × 10–18 μm, short-stalked, with 8 overlapping obliquely tetraseriate ascospores. Ascospores narrowly fusiform, L/W 7.6, straight or slightly curved, 33–40 × 4–5.5 μm, 5-septate in sequence 5:2:4:1:3, first septum slightly constricted, submedian (0.58), not constricted at other septa, with dots at ends of septa, fourth cell from apex enlarged towards base, central cells longer than wide, yellowish brown, without guttules, with fine internal granules, smooth, with a sheath, 1.5–2 μm wide.

HOSTS: (*1*) *Carex* sp., (*2*) *Juncus* sp., (*3*) *Luzula nemorosa* (Pollich) E. Mey., (*4*) *Lycopodium clavatum* L., (*5*) *Typha latifolia* L., (*6*) *Typha* sp.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 188994(*a*), on *2* and 188995, on *1*, Broad Cove Mountain Trail, Cape Breton Highlands National Park, Cape Breton, R. A. Shoemaker, 21 June 1982. ONTARIO: 184052, on *6*, Springbank (Park), (London), J. Dearness, 3 Sept. 1910, TYPE of *Leptosphaeria punctillum*, ex Herb Dearness 3270 as *Leptosphaeria praeclara & typhiseda* fide Rehm 30 Mar. 1911; 165521=184049, ex DAOM and 184981, ex S, on *5*, London, J. Dearness, September 1910, part of TYPE, Rehm Ascomycetes 1993. UNITED STATES OF AMERICA: NEW YORK: 183468(*d*), on *4*, Aiden Lane, Essex County, C. H. Peck, June 1884, ex Herb. Dearness 3648, with *Leptosphaeria lycopodiicola* TYPE. CZECHOSLOVAKIA: 195447, on *3*, Mähr.-Weisskirchen, F. Petrak, 1914, ex BPI, ex Herb. J. A. Stevenson, TYPE, as *Leptosphaeria petrakii* Sacc. n.sp.; 196536, on *5*, Mähr.-Weisskirchen, Thein, F. Petrak, September 1927, ex FH, ex Flora Boh. et Mor. 2480, as *Leptosphaeria typhiseda*.

Phaeosphaeria caricis has ascospores that are tapered to both apex and base. In *Phaeosphaeria fuckelii* (Niessl) L. Holm, by contrast, the upper part of the spore is nearly cylindrical and the apex is bluntly rounded.

Collection 195447, part of the type of *Leptosphaeria petrakii* Sacc., is *Phaeosphaeria caricis*. It does not match some points found in the description: spores 8–10 guttulate, 7- to 9-septate. The material examined has consistently 5-septate ascospores, but they are of the size given in the original description, 35 × 4–5 μm. On another part of the type preserved at FH, only a species with 3-septate ascospores was found.

Collection 185042 is part of the type of *Leptosphaeria punctillum* Rehm. The fungus matches *Phaeosphaeria caricis* (Schroeter) Leuchtmann found mixed with the type of *Phaeosphaeria lycopodiicola* (Peck) Shoem. & Babc. Both match Leuchtmann's concept of *Phaeosphaeria caricis*. The distinctive features are the dot-like beak with a tiny white centre, the small thin-walled ascocarps filled with short asci containing tetraseriate ascospores. The spores have a septation sequence of 5:2:4:1:3 and a sheath that can be detected after long exposure in water.

We did not see the type of *Leptosphaeria typhiseda* Petrak, only an authentic collection, part of which Holm (1957) used to establish his concept when he reduced it to synonymy with *Phaeosphaeria punctillum*. Leuchtmann (1984) adopted *Phaeosphaeria caricis* based on an earlier epithet. In DAOM 196536, the sheath was thin and uniform, not like that in *Phaeosphaeria fuckelii* (Niessl) L. Holm as mentioned by Leuchtmann. In this collection the ascomata were large and the beak apex was filled with very short hyaline periphyses-like cells that give a white appearance to the centre of the beak.

There is some confusion about two similar epithets: *caricina*

and *caricis*. According to Holm (1952), the type of *Leptosphaeria caricina* was destroyed, but Holm's reference was to the publication of *Leptosphaeria caricis*. *Leptosphaeria caricina* Schroeter in Cohn was published later and might belong in the subgenus *Phaeosphaeria* but has been excluded from the present treatment.

Phaeosphaeria equiseti (Karsten) L. & K. Holm, Nordic J. Botany, 1: 113. 1981. Figs. 235, 247
≡ *Leptosphaeria equiseti* Karsten, Oefvers K. Sv. Vet. Akad. Förh. 2: 101. 1872

Ascocarps scattered, immersed, subepidermal, globose, 250−300 μm wide, 250−300 μm high, glabrous above, hairy below. Beak a simple central substomatal pore, 60−70 μm wide, of 4−8 layers of brown polygonal 3−5 × 3−4 μm cells around a 15−20 μm diameter ostiole, lined with hyaline 10−15 × 1−1.5 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10−15 μm thick, of 1−3 layers of polygonal brown 6−9 × 3−4 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 90−140 × 14−17 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores broadly fusiform, L/W 8.0, straight or slightly curved, 40−50 × 6−7 μm, 8- to 10-septate in sequence 4:5:3:5:2:5:1:2:3:4, first septum slightly constricted, median (0.50), not constricted at other septa, cell above primary septum enlarged towards base and longer than superior cells, yellowish brown, without guttules, smooth, without a sheath.

HOST: *Equisetum scirpoides* Michx.

COLLECTION EXAMINED: CANADA: ONTARIO: 147520, Kilworth, (Oxbow) foot of bank, Dearness, 14 Sept. 1928, ex Herb. Dearness 6704.

The ascocarps are immersed below stomata like those of *Phaeosphaeria berlesei* (Larsen & Munk) Hedjaroude. The ascospores are distinctive in that the basal part is conspicuously tapered and subdivided by three equidistant septa, while the upper part is nearly cylindrical with a broadly rounded apex. The upper part is at first divided by three equidistant septa, but later subdivided into very short intercalary cells by about 3 septa. The usual number of septa is 9, but many variations occur as noted by Holm and Holm (1981, p. 113). The current record on *E. scirpoides* has a precedent, although the usual host is *Equisetum variegatum* (Holm and Holm 1981). *Phaeosphaeria lindii* (L. & K. Holm) Leuchtmann (as *Phaeosphaeria equiseti* var. *lindii* L. & K. Holm) occurs on *E. variegatum* and *E. scirpoides* (Holm and Holm 1981).

Phaeosphaeria fuckelii (Niessl) L. Holm, Symb. Bot. Upsal. 14(3): 123. 1957 Figs. 224, 236, 237, 250, 254
≡ *Leptosphaeria fuckelii* Niessl in Voss, Osterr. Bot. Z. 32: 357. 1882

ANAMORPH: *Stagonospora* sp. (Leuchtmann 1984).

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 160−190 μm wide, 160−190 μm high. Beak central, terete, truncate-conical, 25−35 μm long, 45−55 μm wide, of 4 or 5 layers of brown polygonal 4−6 × 4−6 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15−20 μm thick, of 3 or 4 layers of polygonal brown 6−8 × 5−7 μm pseudoparenchyma cells. Physes numerous, 2−3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 65−75 × 7−9 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.5, straight or slightly curved, 22−32 × 4−4.5 μm, 5-septate in sequence 3:2:3:1:2, first septum slightly constricted, submedian (0.58), not constricted at other septa, with dots at ends of septa, fourth cell from apex enlarged towards base, second and fourth cells from apex short, yellowish brown, with guttules, smooth, with a sheath 1.5−3 μm but without a sheath in some collections.

HOSTS: (*1*) *Anthoxanthum odoratum* L., (*2*) *Aria caespitosa* L., (*3*) *Brachyelytrum erectum* (Schreb.) Beauv., (*4*) *Calamagrostis arundinacea* (L.) Roth as *Calamagrostis silvatica* Host, (*5*) *Calamagrostis* sp., (*6*) *Cinna arundinacea* L., (*7*) *Danthonia spicata* (L.) Beauv., (*8*) *Deschampsia caespitosa* (L.) Beauv., (*9*) *Glyceria striata* (Lam.) Hitchc. var. *striata*, (*10*) *Melica purpurascens* Hitchc., (*11*) *Molinia caerulea* (L.) Moench., (*12*) *Phalaris arundinacea* L., (*13*) *Scirpus cyperinus* L., (*14*) *Typha latifolia* L., (*15*) unknown.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 189003, on *3*, Warren Lake, Cape Breton, R. A. Shoemaker, 18 June 1982; 189083, on *7*, Middle Head Trail, Keltic Lodge, Cape Breton, R. A. Shoemaker, 16 June 1982. NEW BRUNSWICK: 166026, on *9*, Carleton Parish, Kouchibouguac National Park, D. Munro 1263 & D. B. Lyons, 25 July 1977. ONTARIO: 23271, on *12*, Woodroffe, C. Frankton, July 1949; 110682(*b*), on *14*, Blacksands Provincial Park, North of Nipigon, Thunder Bay District, R. A. Shoemaker, 4 August 1964; 114672(*a*), on *14*, Queen's Biological Station, Chaffeys Locks, R. A. Shoemaker, 10 September 1966; 171015, on *15*, Dow's Lake Ottawa, S. A. Redhead, 24 April 1979; 189057, on *6*, Tulip Tree Trail, Rondeau Provincial Park, Harwich Township, Kent County, R. A. Shoemaker, 22 June 1983. MANITOBA: 182696, on *15*, Hwy. 19, 1 mile west of Swanson Creek, Riding Mountain National Park, R. A. Shoemaker & J. A. Parmelee, 18 July 1979. BRITISH COLUMBIA: 114067, on *15*, Rogers Pass, 4400 feet, R. A. Shoemaker, 29 May 1966; 174170(*b*) and 174171, on *1*, Skidegate Mission, Queen Charlotte Islands, K. N. Egger 233, 15 June 1979. UNITED STATES OF AMERICA: NEW YORK: 183082, on *13*, Newcomb, Essex County, H. D. House 1111, 12 September 1925, ex Herb. Dearness 2365, as *Leptosphaeria* pro tem *culmifraga* var. *scirpi*; 182912, on *10*, Oneida, H. D. House 249, 11 June 1924, ex Herb. Dearness 2365, as *Leptosphaeria culmifraga*. GERMANY: 196561, on *12*, Braunschweig, Wilda, Südherz, H. Sydow, 28 June 1935, ex FH, ex Sydow Mycotheca germanica 2936, as *Leptosphaeria fuckelii*. ROMANIA: 184936, on *2*, bei Rodna, Bistrilz-Naszoder Comitat, Siedenburgen, Linhart, Ende Juli 1883, ex S, ex Linhart Fungi hungarici 272, as *Leptosphaeria fuckelii*. SWEDEN: 123705(*c*), on *8*, Skurdalshöjden, Storlien, L. E. Wehmeyer, 25 July 1950, ex Herb. Wehmeyer 9282; 105749(*a*), on *12*, Gästrikland, Gävle, Lövudden, at the river Gavleån, J. A. Nannfeldt, 10 July 1963. SWITZERLAND: GRAUBÜNDEN: 123573(*a*) and 123629(*c*), on *8*, Lü, E. Müller, 5 July 1949, as *Leptosphaeria fuckelii*. ZÜRICH: 123574, on *11*, Sihlbrugg, E. Müller, 26 May 1949, ex ZT; 123601, on *5*, Sihlwald, E. Müller, 26 May 1949, ex ZT. YUGOSLAVIA: 185011, on *4*, Karnten, Laibach, W. Voss, 13.8.1882, ex Herb. Rehm, ex S., Typus O. Eriksson 1967, as *Leptosphaeria fuckelii*.

The concept adopted here is a narrow one, including 5-septate ascospores that are relatively short like those of the type. Eriksson (1967*b*, p. 417) indicated that the forms with

larger 6- to 10-septate ascospores might merit segregation and this course has been followed in the present treatment.

Phaeosphaeria fuckeloides Otani, Bull. Natl. Sci. Mus., Ser. B, 2(3): 90. 1976 Figs. 227, 242, 253

Ascocarps scattered, superficial, globose with a flattened base, glabrous, 180–250 μm wide, 160–220 μm high. Beak central, terete, truncate-conical, 0–25 μm long, 35–80 μm wide, of 6–8 layers of brown polygonal 5–7 × 3–7 μm cells around a 15–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–30 μm thick, of 3–5 layers of polygonal to rectangular brown 5–8 × 3–6 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 25-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 80–90 × 9–15 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 6.0, straight, 28–38 × 4.5–6 μm, 6(8)-septate in sequence (5):4:3:4:2:1:4:(5), first septum slightly constricted, submedian (0.60), not constricted at other septa, fifth (sixth) cell from apex enlarged towards base and slightly longer than wide, yellowish brown, with or without guttules, smooth, without sheath or appendages.

HOSTS: (*1*) *Calamagrostis canadensis* (Michx.) Nutt., (*2*) *Populus tremuloides* Michx.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 178431(*c*), on decorticated wood of *2*, boreal forest beaver pond, Tarzwell, near Kirkland Lake, G. P. White 681, 3 July 1980; 179943(*b*), on log of *2*, G. P. White 995, 17 May 1981; both with *Cladosporium nigrellum* Ell. & Ev. UNITED STATES OF AMERICA: NEW YORK: 182911, on *1*, Newcomb, Essex Co., H. D. House 798, 2 July 1925, ex Herb. Dearness 2365, as *Leptosphaeria culmifraga* (Fr.) Ces. & DeNot.

One peculiarity of this species is that the basal ascospore in the ascus is consistently the smallest and is usually 5-septate. A collection of this species was found on *Calamagrostis canadensis* (182911) and was in accord in all features, including the presence of a small 5-septate ascospore at the base of each ascus, which otherwise contains 6-septate spores.

Two collections referred to this species are unusual in their occurrence on wood heavily overgrown with *Cladosporium nigrellum* Ell. & Ev. The ascospores are slightly longer than reported by Hedjaroude for *Phaeosphaeria sylvatica* (Pass. in Rabenh.) Hedjaroude. They are similar in basic form to the spores of *Phaeosphaeria fuckelii* (Niessl) L. Holm, *Phaeosphaeria nardi* (Fries) L. Holm, and *Phaeosphaeria sylvatica*. They are referred here despite the obvious discrepancy of a woody "host." The woody substrate is certainly aberrant and probably represents a saprophytic growth of a grass parasite. It is possible that the pyrenomycete is parasitic on the *Cladosporium nigrellum*.

The type was requested but not received for study.

The anamorph has 6- to 8-septate, olivaceous yellow, cylindrical, slightly curved conidia 25–30 × 4–5 μm (Otani 1976).

Phaeosphaeria inclusa n.sp. Figs. 234, 244

Ascomata dispersa, immersa, subglobosa, glabra, 200–250 μm lat., 180–220 μm alt. Rostrum erumpens, teres, 30–40 μm long., 70–85 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 15–20 μm diam., sine periphysibus. Paries ascomatis 15–20 μm lat., cellulis flavis, rhombiformiis, tenuitunicatis, 6–9 × 3–5 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 100–140 × 12–16 μm, 8-spori. Ascosporae tetraseriatae vel biseriatae, fusiformes, 28–35 × 4.5–5.5 μm, 7(9)-septatae, in ordinem 4:3:2:(5):3:1:2:4:(5), septo primo submedio, (0.52), constricto, brunneae, guttulatae, leves, strato muco 5–6 μm omnino circumdato.

Hab. in culmis *Calamagrostidis canadensis*, "CANADA: ONTARIO: 189059(*a*), Warwick, Lambton County, R. A. Shoemaker, 22 June 1983, TYPE."

The epithet refers to the immersed ascomata.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200–250 μm wide, 180–220 μm high. Beak central, terete, truncate-conical, 30–40 μm long, 70–85 μm wide, of 4–6 layers of brown polygonal 5–7 × 5–7 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–20 μm thick, of 4 or 5 layers of rhomboidal yellow 6–9 × 3–5 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 2–3 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–140 × 12–16 μm, short-stalked, with 8 overlapping obliquely tetraseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 6.0, straight or slightly curved, 28–35 × 4.5–5.5 μm, 7(9)-septate in sequence 4:3:2:(5):3:1:2:4:(5), first septum slightly constricted, slightly submedian (0.52), not constricted at other septa, fifth cell from apex enlarged towards base, yellowish brown, with guttules, smooth, with a conspicuous sharply delimited sheath, 5–6 μm wide.

Pycnidia scattered, immersed in nodes, subepidermal, globose, glabrous, 90–110 μm wide, 90–110 μm high. Beak central, terete, truncate-conical, 15–20 μm long, 30–35 μm wide, of 2 or 3 layers of brown polygonal 4–6 × 3–5 μm cells around a 10–15 μm diameter ostiole, without periphyses. Pycnidium wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–15 μm thick of 2 or 3 layers of rhomboidal yellow 6–8 × 3–4 μm pseudoparenchyma cells. Conidia narrowly fusiform, L/W 9.1, slightly curved, 35–46 × 4–5 μm, 7-septate, tapered to the apex, with hemispherical appendages at each end.

HOST: *Calamagrostis canadensis* (Michx.) Nutt.

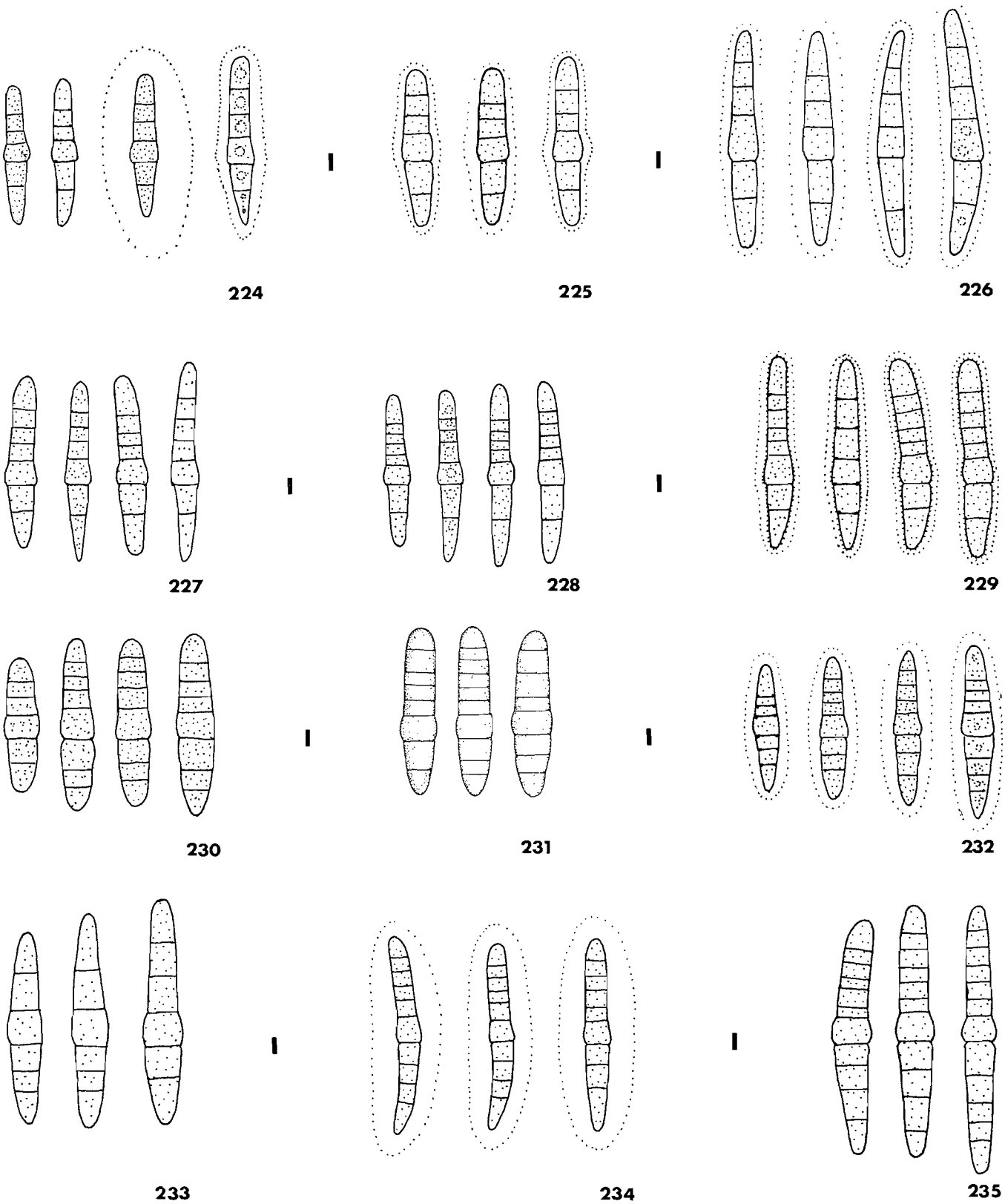
COLLECTIONS EXAMINED: CANADA: ONTARIO: 189059(*a*), Warwick, Lambton County, R. A. Shoemaker, 22 June 1983, TYPE; 189059(*b*), identified as *Stagonospora sp.*

This species bears a resemblance to *Phaeosphaeria fuckeloides* Otani, including the presence of a *Stagonospora* anamorph. However, the fine details of ascospore structure permit the recognition of *Phaeosphaeria inclusa* that has the first septum just below the middle (0.52), whereas in *Phaeosphaeria fuckeloides* the first septum occurs much lower at 0.62. *Phaeosphaeria inclusa* occurs immersed in the nodes. The *Stagonospora* anamorph with pycnidia smaller than the ascocarps was found in some nodes. The conidia are regularly 7-septate, tapered to the apex and furnished with a small hemispherical gelatinous appendage at each end.

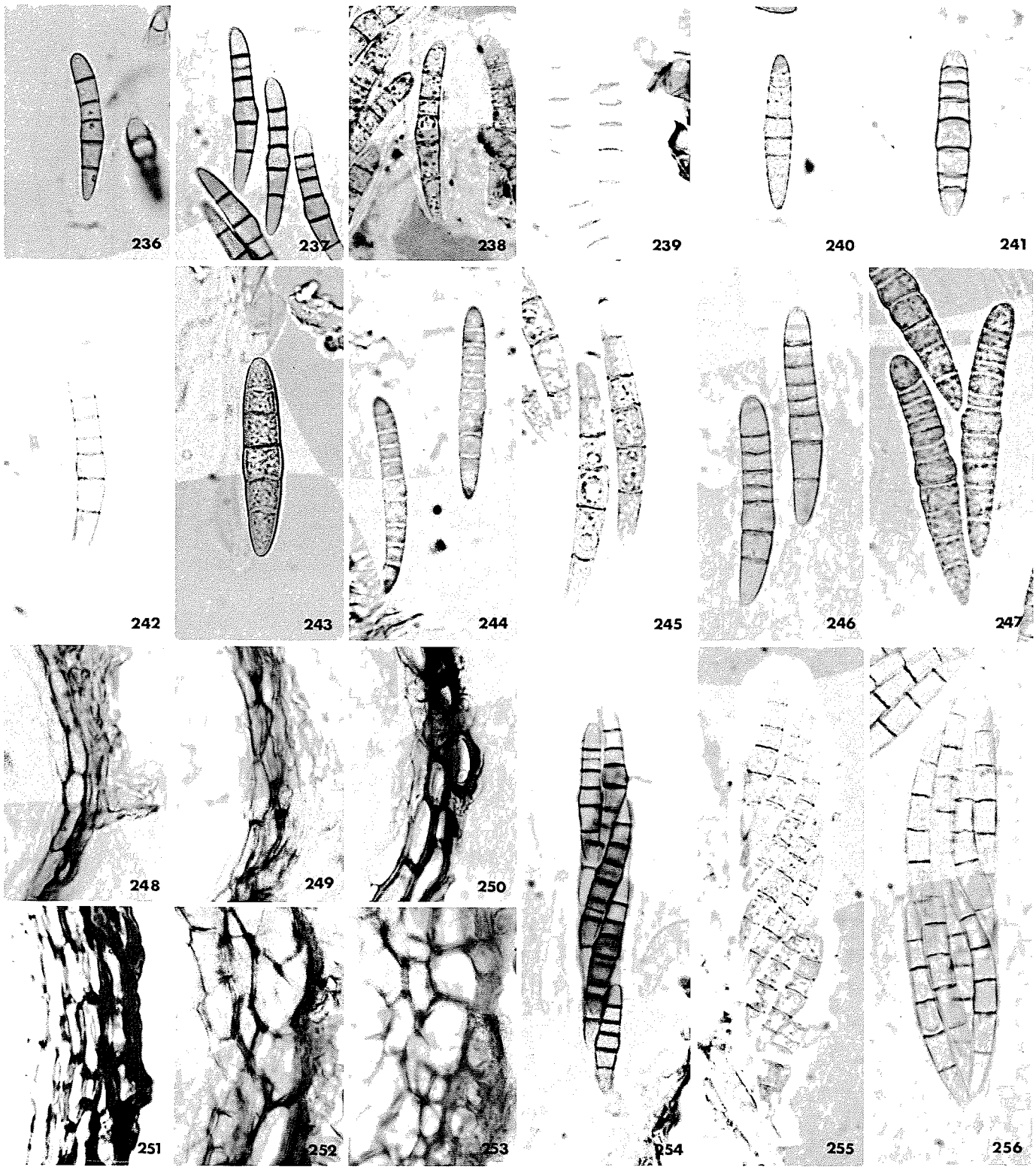
Phaeosphaeria lindii (L. & K. Holm) Leuchtmann, Sydowia, 37: 149. 1984 Fig. 231

≡ *Phaeosphaeria equiseti* var. *lindii* L. & K. Holm, Nord. J. Bot. 1: 113. 1981

Ascospores oblong, L/W 4.9, straight, 25–32 × 6–7 μm, 7-septate, first septum slightly constricted, submedian (0.67),



FIGS. 224–235. Ascospores. ×1000. Fig. 224. *Phaeosphaeria fuckelii*, 23271, 185011 TYPE, 189083, 189057. Fig. 225. *Phaeosphaeria nardi*, 26324. Fig. 226. *Phaeosphaeria caricis*, 165521 TYPE of *Leptosphaeria punctillum*, 194547 TYPE of *Leptosphaeria petrakii*, 184052, 184049. Fig. 227. *Phaeosphaeria fuckeloides*, 178431(*c*), 182911, 178431(*c*). Fig. 228. *Phaeosphaeria lycopodiicola*, 188917(*b*) (two), 183468(*a*) TYPE (two). Fig. 229. *Phaeosphaeria michiganensis*, 140901 TYPE. Fig. 230. *Phaeosphaeria robusta*, 63427 TYPE. Fig. 231. *Phaeosphaeria lindii* (Leuchtmann 1984, Fig. 12*e*). Fig. 232. *Phaeosphaeria sylvatica*, 183913 TYPE, 123619, 123547 (two). Fig. 233. *Phaeosphaeria saxonica*, 195314(*a*), TYPE. Fig. 234. *Phaeosphaeria inclusa*, 189059(*a*) TYPE. Fig. 235. *Phaeosphaeria equiseti*, 147520.



FIGS. 236–247. Ascospores. ×1000. FIGS. 248–253. Wall structure. ×1000. FIGS. 254–256. Asci. ×1000. Figs. 236 and 237. *Phaeosphaeria fuckelii*, 123601. Fig. 238. *Phaeosphaeria lycopodiicola*, 183468(*a*) TYPE. Fig. 239. *Phaeosphaeria nardi*, 26324. Fig. 240. *Phaeosphaeria sylvatica*, 123547. Fig. 241. *Phaeosphaeria robusta*, 63427 TYPE. Fig. 242. *Phaeosphaeria fuckeloides*, 178431(*c*). Fig. 243. *Phaeosphaeria saxonica*, 195314(*a*) TYPE. Fig. 244. *Phaeosphaeria inclusa*, 189059(*a*) TYPE. Fig. 245. *Phaeosphaeria caricis*, 184049 TYPE. Fig. 246. *Phaeosphaeria michiganensis*, 140901 TYPE. Fig. 247. *Phaeosphaeria equiseti*, 147520. Fig. 248. *Phaeosphaeria sylvatica*, 183913 TYPE. Fig. 249. *Phaeosphaeria caricis*, 184052 TYPE of *Leptosphaeria punctillum*. Fig. 250. *Phaeosphaeria fuckelii*, 123601. Fig. 251. *Phaeosphaeria saxonica*, 195314(*a*), TYPE. Fig. 252. *Phaeosphaeria nardi*, 26324. Fig. 253. *Phaeosphaeria fuckeloides*, 178431(*c*). Fig. 254. *Phaeosphaeria fuckelii*, 123601. Fig. 255. *Phaeosphaeria nardi*, 26324. Fig. 265. *Phaeosphaeria caricis*, 184052 TYPE of *Leptosphaeria punctillum*.

not constricted at other septa, sixth cell from apex enlarged towards base, yellowish brown, without guttules, smooth.

HOST: *Equisetum variegatum* Schleicher.

COLLECTIONS EXAMINED: None; from Greenland and Iceland fide Leuchtmann (1984).

This species is probably like *Phaeosphaeria equiseti* (Karst.) L. & K. Holm in features of the ascoma and asci. However, the above description is drawn from the illustrations and the brief description given by Holm and Holm (1981), who described it as a variety, and data from Leuchtmann (1984), who raised the variety to species level.

The broad oblong ascospores with a strongly submedian first septum set this species apart from its congeners on *Equisetum*.

Phaeosphaeria lycopodiicola (Peck) n.comb.

Figs. 228, 238

≡*Leptosphaeria lycopodiicola* Peck, New York State Mus. Rep. 38: 105. 1884 (1885)

Ascocarps scattered to clustered, immersed but soon erumpent, subepidermal, globose to ellipsoidal, glabrous, 150–200 μm wide, 125–175 μm high. Beak central, terete, truncate-conical, 15–30 μm long, 40–50 μm wide, of 3–5 layers of brown polygonal 4–6 × 2–3 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–15 μm thick, of 2 or 3 layers of polygonal brown 5–8 × 2–4 μm pseudoparenchyma cells, thinner at base. Physes numerous, 2–4 μm wide, with thin septa at 15- to 25-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 70–80 × 10–12 μm, short-stalked, with 8 overlapping obliquely biseriate to tetraseriate ascospores. Ascospores narrowly fusiform, L/W 5.5, straight or slightly curved, 26–32 × 5–6 μm, 5- to 7-septate in sequence 3:4:2:5:3:1:2, first septum slightly constricted, submedian (0.59), not constricted at other septa, third cell from base enlarged towards base and shorter than wide, yellowish brown, without guttules, smooth, without a sheath.

HOSTS: (*1*) *Lycopodium clavatum* L., (*2*) *Scirpus atrovirens* Muhl.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 188917(*b*), on *2*, side road off Hay Twp., Concession 8–9, north of HWY 83, Huron County, M. Corlett 83(59), 6 July 1983. UNITED STATES OF AMERICA: NEW YORK: 183468(*a*), on *1*, Aiden Lain, Essex County, C. H. Peck, June 1884, ex Herb. Dearness 3648 as *Leptosphaeria lycopodiicola* Peck, part of type.

The part of the type specimen in the Dearness Herbarium bears four species. Two are obviously not the fungus Peck (1885) described and illustrated: *Leptosphaeria corallorhizae* Peck with small 3-septate ascospores, and *Phaeosphaeria erikssonii* Shoem. & Babc. with 6- to 7-septate ascospores and an enlarged supramedian cell. The latter species was noted as an oddity on *Lycopodium* from Norway by Holm and Holm (1981, p. 68). It probably was the species illustrated by Berlese from the original specimen sent to him by Peck, though the spores illustrated bear some resemblance to *Phaeosphaeria caricis* (Schroeter) Leuchtmann. The third species we encountered was *Phaeosphaeria caricis*, which occurs clustered at the nodes, is completely immersed with a small punctate ostiolar region, and has long ascospores that are regularly 5-septate. The species Peck described occurs scattered between the nodes and the ascocarps are erumpent through the split epidermis exactly as illustrated in Peck's Figs. 16 and 17. Holm (1957, p. 123) studied part of the type from NY and considered it as *Phaeosphaeria fuckelii*. Later, Holm and Holm (1981, p. 68) studied a less scanty collection and noted the possibility of "a particular form of the fuckelii complex infesting *Lycopodium*." The form has 6-septate ascospores with 4 septa above the first septum and 2 below with the formula 4:1:2. Typical *Phaeosphaeria fuckelii* has 3:1:2. Our examination of *Phaeosphaeria lycopodiicola* indicates that the mature spores are 5(4):1:2 and the name *Phaeosphaeria lycopodiicola* is used for this taxon at the species level.

Phaeosphaeria michiganensis n.sp. Figs. 229, 246

Ascomata dispersa, immersa, globosa, glabra, 140–190 μm lat., 120–170 μm alt. Rostrum erumpens, teres, 30–40 μm long., 45–55 μm lat., cellulis brunneis polygoniis, 5–7 × 4–6 μm compositum; ostiolum 15–20 μm diam., sine periphysibus. Paries ascomatis 12–16 μm lat., cellulis brunneis rhombiformiis, tenuitunicatis, 6–9 × 3–5 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 80–90 × 13–20 μm, 8-spori. Ascosporae triseriatae, fusiformes, 28–38 × 5–5.5 μm, 7-septatae, in ordinem 4:6:2:5:3:1:(7):3, septo primo submedio, (0.67), constricto, brunneae, eguttulatae, echinulatae, strato muco 1.5–2 μm omnino circumdato.

Hab. in culmis *Scirpi* sp., "UNITED STATES OF AMERICA: MICHIGAN: 140901, Wilderness Park, Mackinaw City, L. E. Wehmeyer, 13 June 1948, TYPE, ex Herb. Wehmeyer as *Leptosphaeria sp.*"

The epithet refers to the state of Michigan.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 140–190 μm wide, 120–170 μm high. Beak central, terete, truncate-conical, 30–40 μm long, 45–55 μm wide, of 4–6 layers of brown polygonal 5–7 × 4–6 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–16 μm thick, of 2–4 layers of rhomboidal brown 6–9 × 3–5 μm pseudoparenchyma cells, thinner at base. Physes numerous, 2–3 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 80–90 × 13–20 μm, short-stalked, with 8 overlapping linearly triseriate ascospores. Ascospores narrowly fusiform, L/W 6.0, straight or slightly curved, 28–38 × 5–5.5 μm, 7(8)-septate in sequence 4:6:2:5:3:1:(7):3, first septum slightly constricted, submedian (0.67), not constricted at other septa, second cell from apex enlarged towards base, yellowish brown, without guttules, echinulate, with a conspicuous sharply delimited sheath, 1.5–2 μm wide.

HOST: *Scirpus* sp.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: MICHIGAN: 140901, Wilderness Park, Mackinaw City, L. E. Wehmeyer, 13 June 1948, TYPE, ex Herb. Wehmeyer as *Leptosphaeria sp.*

This species occurs immersed in stems of *Scirpus*. The beak is barely evident in a brown circle. It is easily distinguished from *Phaeosphaeria fuckelii* (Niessl) L. Holm, which has the first septum higher at 0.55 and usually only 5 septa in the smooth ascospores. Wehmeyer made abundant notes on 140901 but assumed the widest cell was near the apex. He did not publish on it or determine it to species. It is close to *Phaeosphaeria lycopodiicola* (Peck) Shoem. & Babc. that has

slightly shorter smooth ascospores and closest to *Phaeosphaeria fuckeloides* Otani that differs in having smooth ascospores.

Phaeosphaeria nardi (Fries) L. Holm, Symb. Bot. Upsal. 14(3): 124. 1957 Figs. 225, 239, 252, 255

≡ *Sphaeria nardi* Fries, Summa Vegetabilium Scandinaviae 2, p. 394. 1849

≡ *Leptosphaeria nardi* (Fr.) Ces. & De Not., Comment. Soc. Critt. Ital. 1: 236. 1863

≡ *Pleospora nardi* (Fr.) Fuckel, Symb. Mycol., p. 137. 1870

Ascocarps scattered, immersed, subepidermal, laterally compressed, rarely globose, glabrous, 100–190 μm wide, 120–190 μm high. Beak central, terete, truncate-conical, 20–60 μm long, 30–60 μm wide, of 2–4 layers of brown polygonal 5–7 × 3–7 μm cells around a 10–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–20 μm thick, of 2–4 layers of polygonal to rectangular brown 4–12 × 4–9 μm pseudoparenchyma cells. Physes numerous, 2–4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–85 × 10–15 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.1, straight, 22–30 × 4–5.5 μm, 5-septate in sequence 3:2:3:1:2, first septum slightly constricted, submedian (0.61), not constricted at other septa, fourth cell from apex enlarged towards base and slightly longer than third cell and as long as the fifth cell, ends broadly rounded, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath 2–3 μm wide.

HOST: *Nardus stricta* L.

COLLECTIONS EXAMINED: FRANCE: 59122, ex J. B. Mougeot & C. Nestler, Stirpes Crypogamae, Vogeso-Rhenanae, Fasc. XI, 1081, as *Sphaeria duplex* b. *Nardi* Fries. GERMANY: 26324, Nassau, Fuckel, Autumno, ex Herb. Barbey-Boissier 380, ex Herbier Fuckel 1894, as *Leptosphaeria nardi*; 189900, Leipzig, Auerswald, 1867, ex Herb. Müller Arg., ex G. SWITZERLAND: GLARUS: 123634, Filzbach, alp Platten, E. Müller, 5 June 1949, ex ZT. GRAUBÜNDEN: 123641, Lü, E. Müller, 5 July 1949, ex ZT.

The ascocarps are immersed in the slender but firm stems and are often distorted by the tough host tissue so that the beak appears lateral. The Auerswald collection of *Phaeosphaeria nardi*, 189900, matches forma *meridionalis* of Holm (1957) and Eriksson (1967*b*) in that the wall is about 10 μm thick.

The species differs from *Phaeosphaeria fuckelii* (Niessl) L. Holm in the following: the proportions of the third, fourth, and fifth cells of the ascospores as described above; the broadly rounded ends of the pale ascospores and the shorter less tapered basal part; and the apparently strict host specialization to *Nardus*. The small ascocarps usually have a thin wall. Holm (1957, p. 124) and Leuchtmann (1984, p. 145) encountered a form with very thick walls (50–60 μm) and much larger ascocarps (circa 300 μm diameter). Müller and Magnuson (1987, p. 13) noted that the thicker walls are associated with boreal sites and high altitudes.

Phaeosphaeria robusta n.sp. Figs. 230, 241

Ascomata dispersa, immersa, globosa, 200–300 μm lat., 200–250 μm alt. Rostrum erumpens, teres, 40–50 μm long., 40–50 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 15–25 μm diam., sine periphysibus. Paries ascomatis 15–20 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 6–8 × 4–5 μm compositus. Physes 3–4 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 100–120 × 14–16 μm, 8-spori. Ascosporae biseriatae, fusiformes, 28–36 × 7–8 μm, 7-septatae, in ordinem 5:3:4:2:1:4:5, septo primo submedio, (0.58), constricto, brunneae, guttulatae, leves, sine muco.

Hab. in culmis *Arctagrostidis latifoliae*, "CANADA: NORTHWEST TERRITORIES: District of Franklin: 63427, Head of Clyde Inlet, Baffin I., P. Dansereau, 1 Aug. 1950, TYPE."

The epithet refers to the robust ascospores.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200–300 μm wide, 200–250 μm high. Beak central, terete, truncate-conical, 40–50 μm long, 40–50 μm wide, of 4–6 layers of brown polygonal 5–7 × 5–7 μm cells around a 15–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–20 μm thick, of 4 or 5 layers of polygonal brown 6–8 × 4–5 μm pseudoparenchyma cells. Physes numerous, 3–4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–120 × 14–16 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.3, straight or slightly curved, 28–36 × 7–8 μm, 7-septate in sequence 5:3:4:2:1:4:5, first septum slightly constricted, submedian (0.58), not constricted at other septa, fifth cell from apex enlarged towards base, yellowish brown, with numerous small guttules, smooth, without sheath.

HOST: *Arctagrostis latifolia* (R. Br.) Griseb.

COLLECTION EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 63427, Head of Clyde Inlet, Baffin I., P. Dansereau, 1 Aug. 1950, TYPE.

This unusual species was found on the phanerogamic collection by Dr. M. E. Barr. The ascocarps occur in the sheath and are relatively large among *Phaeosphaeria* species. The ascospores are 7-septate as in *Phaeosphaeria sylvatica* (Pass. in Rabenh.) Hedjaroude, but are wider, have bluntly rounded end cells, and lack a sheath. It is closest to *Phaeosphaeria lindii* (L. & K. Holm) Leuchtmann, which has a much lower first septum and a different proportionality between apical and basal parts.

Phaeosphaeria saxonica (Höhnel) n.comb. Figs. 233, 243, 251

≡ *Leptosphaeria saxonica* Höhnel, Ann. Mycol. 16: 84. 1918

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 250–350 μm wide, 250–350 μm high. Beak central, flush, terete, 20–25 μm long, 35–40 μm wide, of 4–6 layers of brown polygonal 3–5 × 2–4 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–27 μm thick of 6–8 layers of polygonal brown 4–7 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–115 × 17–20 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 7.4, straight or slightly curved, 35–40 × 5–6 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, submedian (0.59), not constricted at other septa, third

cell from apex enlarged towards base, pale yellowish brown, without guttules, smooth, without a sheath.

HOST: *Scirpus maritimus* L.

COLLECTION EXAMINED: GERMANY: 195314(*a*), Königstein, W. Krieger, 14 July 1904, Krieger, Fungi saxonici 2461, ex BPI, as *Leptosphaeria saxonica* Höhnel, ISOTYPE.

This fungus agrees with the original description. No sheath was noted on the ascospores, which float freely in water when discharged and do not adhere to glass slides.

Another species (195314(*b*)) with larger echinulate ascospores occurs on the material and has been segregated as *Massariosphaeria adrianii*. See excluded species.

Phaeosphaeria sylvatica (Passerini in Rabenhorst) Hedjaroude, Sydowia, 22: 91. 1968 Figs. 232, 240, 248
≡*Leptosphaeria sylvatica* Pass. in Rabenh. Fungi Europaei 2235. 1877, and Hedwigia 16: 118. (Aug.) 1877

Ascocarps scattered, immersed or erumpent from culm, subepidermal, globose to pyriform, glabrous, 120–300 μm wide, 100–220 μm high. Beak barely erumpent, central, terete, truncate-conical, 20–40 μm long, 30–45 μm wide, of 4–6 layers of brown polygonal 4–6 × 2–6 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–16 μm thick, of 2–4 layers of rhomboidal yellow to polygonal brown 4–8 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 60–70 × 8–12 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores narrowly fusiform, L/W 5.0, straight or slightly curved, 18–28 × 4.5–5.5 μm, 5 to 7-septate in sequence (5):4:3:2:1:3:(4), first septum slightly constricted, submedian (0.57), not constricted at other septa, fourth (fifth) cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a thin sheath, 1–4 μm wide.

HOSTS: (*1*) *Brachypodium sylvaticum* (Huds.) Beauv., (*2*) *Brachypodium* sp., (*3*) *Calamagrostis* sp., (*4*) *Deschampsia caespitosa* (L.) Beauv.

COLLECTIONS EXAMINED: ITALY: 183913, on *1*, Parma, G. Passerini, October 1876, Fungi europaei 2235, ex DAOM, as *Leptosphaeria sylvatica* Pass., isotype. SWITZERLAND: ZURICH: 123630(*c*), on *4*, Glattfelden, E. Müller, 15 May 1949, ex ZT, as *Leptosphaeria culmorum* Auersw.; 123619 and 184868, on *3*, Sihlbrugg, E. Müller, 26 May 1949, ex ZT, as *Leptosphaeria silvatica* Pass. ST. GALLEN: 123547, on *1*, Weite, E. Müller, 15 June 1949, ex ZT, as *Leptosphaeria silvatica* Pass. TURKEY: 195319, on *2*, Asia Minor: prope oppidum Bender Erekli (Heracleia veterum), Handell-Mazzetti 93, 2 July 1907, ex BPI, ex Herb. Bubák.

The part of the type collection in DAOM is in good condition and bears the species that recent authors refer to *Phaeosphaeria sylvatica*. In addition, there is some *Phaeosphaeria erikssonii* Shoem. & Babc. present.

Phaeosphaeria sylvatica has small ascocarps with a short but well-defined beak that has, at times, a ring of surface cells projecting inwards to the centre of the ostiole. The wall is thin and the asci are small, with tightly overlapping spores.

Leuchtmann (1984, p. 145) changed the spelling of the epithet to *silvatica*, but Article 73 (Voss 1983) recommends retention of the original orthography *sylvatica*. Leuchtmann sought type material at PAD and PARMA without success. However, the published exsiccatus, F. eur. 2235, with description is type.

SUBGENUS *Vagispora*

SUBGENUS ***Vagispora*** n.subg.
=Series *Vagans* Leuchtmann (1984, p. 95) nom. invalid. Art. 36

Ascosporae minimum 4-septatae, leves vel raro echinulatae, septo primo medio, aliquando septis verticalibus, strato muco omnino circumdato vel nullo.

TYPE: *Phaeosphaeria vagans* (Niessl) O. Eriksson.

The name of the subgenus is derived from vagus and spora, and refers to the variability in ascospore septation in the type species and within the subgenus.

Ascospores 4-septate or more, first septum median, smooth, (echinulate in two species), sheath uniform or absent, vertical septa present in some species.

Key to species in subgenus *Vagispora*

1. Ascospores 4-septate ..... *P. sequana*
1. Ascospores more than 4-septate 2

2. Ascospores 5-septate 3

3. Ascospores over 40 μm long 4

4. Ascospores 68–85 × 15–20 μm ..... *P. gessneri*
4. Ascospores less than 65 μm long 5

5. Ascospores 40–46 × 10–12 μm ..... *P. albopunctata*
5. Ascospores 43–60 × 13–15(18) μm ..... *P. insignis*

3. Ascospores less than 40 μm long 6

6. Ascospores slender, L/W 5.5 ..... *P. luctuosa*
6. Ascospores broad, L/W less than 4.0 7

7. Ascospores echinulate ..... *P. celata*
7. Ascospores smooth 8

8. Ascospores with some vertical septa 9

9. Ascospores 25–30 × 6–7.5 μm ..... *P. phragmiticola*
9. Ascospores 23–28 × 8–10 μm ..... *P. vagans*

8. Ascospores without vertical septa 10

10. Ascospores 32–45 × 8–14 μm ..... *P. neomaritima*
10. Ascospores smaller 11

11. Ascospores 35–40 × 9–11 μm ..... *P. spartinae*
11. Ascospores 20–27 × 7–9 μm ..... *P. larseniana*

2. Ascospores 6- to 9-septate 12

12. Ascospores 7- to 9-septate without vertical septa ..... *P. phragmitis*
12. Ascospores 6- to 8-septate without vertical septa 13

13. Ascospores verrucose 14

14. Ascospores 9–11 μm wide ..... *P. occidentalis*
14. Ascospores 5–7 μm wide ..... *P. berlesei*

13. Ascospores smooth 15

15. Ascospore sheath 2–3 μm wide ..... *P. subalpina*
15. Ascospores without sheath ..... *P. mounceae*

Phaeosphaeria albopunctata (Westendorp) n.comb.
Fig. 264

≡*Sphaeria albopunctata* Westendorp, Fl. Crypt. Flandres, 1: 355. 1876
≡*Leptosphaeria albopunctata* (Westendorp) Saccardo, Syll. Fung. 2: 76. 1882
≡*Leptosphaeria albopunctata* (Westendorp) Ellis & Everhart, North American Pyrenomycetes, p. 375. 1892
≡*Heptameria* (*Leptosphaeria*) *albopunctata* (Westendorp) Cooke, Grevillea 17: 32. 1889
=*Sphaeria incarcerata* Berkeley & Cooke in Berkeley, Grevillea, 4: 152. 1876 non *Sphaeria incarcerata* Desmazières 1846 fide Kohlmeyer & Kohlmeyer (1979)
≡*Heptameria* (*Leptosphaeria*) *incarcerata* (Berkeley & Cooke) Cooke, Grevillea, 17: 33. 1889
≡*Leptosphaeria incarcerata* (Berkeley & Cooke) Saccardo, Syll. Fung. 2: 86. 1883

Ascocarps aligned in several rows beneath white spots in the leaf epidermis darkened by intraepidermal mycelium, immersed, globose, but when dry inwardly collapsed with a flat base, glabrous, 320–350 μm wide, 320–350 μm high. Beak central, terete, flush, 50–60 μm long, 80–100 μm wide, of 1 or 2 outer layers of brown polygonal 4–5 × 4–5 μm cells with a band of hyaline inner cells around a 30–60 μm diameter ostiole, with hyaline periphyses 20–25 × 2.5–3.5 μm. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly of two layers: outer layer 10–13 μm thick, of 2 or 3 layers of polygonal brown 5–6 × 5–6 μm pseudoparenchyma cells; inner layer of 3 or 4 rows of hyaline rectangular cells 20–25 × 3–5 μm resembling physes. Physes numerous, 3–4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a basal hymenium, horizontal to vertical, cylindrical, (140) × 22 μm, short-stalked, with 8 overlapping obliquely uniseriate ascospores. Ascospores narrowly fusiform, L/W 3.5, straight or slightly curved, 40–46 × 10–12 μm, 5-septate, first septum supramedian (0.47), not constricted at septa, yellowish brown, without guttules, smooth.

HOST: *Phragmites communis* Trin., as *Arundo phragmites* L.

COLLECTION EXAMINED: BELGIUM: 196848, aux environs de Courtrai, Westendorp, ex BR, TYPE as *Sphaeria albopunctata* West.

The type has two large parts of a leaf showing the characteristic white spots in rows within dark brown areas of the host epidermis. A few spots have openings where ascomata have fallen away. The material is not fully mature. Small asci are present. There is present a small remnant of leaf tissue glued to the sheet, but the ascomata on it have been mostly dissected. There is a pencil sketch showing two free ascospores, two asci with obliquely uniseriate ascospores, and numerous physes. These sketches were redrawn at 10× for spores and 5× for asci. No dimensions were given in the original description. The asci found were about 22 μm wide. With this as a standard, the drawings were measured to get the data given in the description in brackets. This species is very distinctive. The wall alone separates it from any allies. The host symptoms are unusual. The abundant physes and periphyses are slightly thicker than in most other species.

We do not accept *Phaeosphaeria sticta* Ell. & Ev. as a synonym as suggested by Ellis and Everhart (1892, p. 375) and by later authors.

Phaeosphaeria berlesei (Larsen & Munk) Hedjaroude, Sydowia, 22: 87. 1968 Figs. 272, 282, 286
≡*Leptosphaeria berlesei* Larsen & Munk, Dan. Bot. Ark. 14(7): 23. 1952

Ascocarps scattered, immersed, subepidermal, globose, 200–300 μm wide, 200–300 μm high. Beak a simple central pore with surrounding clypeus-like mycelium in the epidermis, 20–25 μm wide, of 3–5 layers of brown prismatic 6–8 × 4–6 μm cells around a 60–70 μm diameter ostiole, not lined internally with periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–20 μm thick, of 2–4 layers of polygonal brown 7–10 × 4–6 μm pseudoparenchyma cells. Physes numerous, 3–4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 110–120 × 14–18 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores narrowly fusiform, L/W 4.7, straight or slightly curved, 33–45 × 5–7 μm, 7(11)-septate in sequence (5):(6):4:2:3:1:3:2:4:(6):(5), first septum slightly constricted, median (0.50), not constricted at other septa, rarely with a vertical septum in some cells, end cells longest, yellowish to

greyish brown, with guttules, smooth to finely echinulate, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Equisetum hiemale* L.

COLLECTIONS EXAMINED: CANADA: BRITISH COLUMBIA: 191239, Wreck Beach, University of British Columbia, Vancouver, S. A. Redhead 223, 20 January 1971. UNITED STATES OF AMERICA: MICHIGAN: 121635(*a*), Warren Dunes State Park, St. Joseph, L. E. Wehmeyer, 13 Sept. 1951, ex Herb. Wehmeyer 9292, as *Leptosphaeria equiseti*. DENMARK: 109454, Tagerød skov, Sj., Ø. Winge, 14 IV 1941, Fungi Danici, as *Leptosphaeria berlesei*. GERMANY: 189222, Brandenburg: bei Glindow bei Werder a. Havel, H. Sydow, 10.VII.1937, Mycotheca germanica 3109, as *Leptosphaeria equiseti*. HUNGARY: 151063, Mánfai völgy montium Mecsek hegység, A. Vass & S. Tóth, 16.V.1962, Flora Hungarica, as *Leptosphaeria berlesei*.

This species has very distinctive ascospores with end cells that are long and hemiellipsoidal. The septation is variable, 7–11, as Holm an Holm noted (1981, p. 115). Some collections are mainly 7-septate and others mostly 11-septate. In some collections a very fine echinulation was noted. After long exposure in water, a broad, two-parted sheath was observed on some spores. The fungus differed from *Phaeosphaeria equiseti* (Karsten) L. & K. Holm, which has ascospores with a broadly rounded apex and a tapered basal part and occurs on *E. variegatum* Schleich.

Phaeosphaeria celata n.sp. Figs. 262, 276, 287, 291

="*Leptosphaeria celata* Diehl" unpublished herbarium name

Ascomata dispersa, immersa, ellipsoidea, glabra, 600–1000 μm long., 400–700 μm lat., 300–400 μm alt. Rostrum teres, truncato-conicum 10–30 μm long., 60–100 μm lat., cellulis brunneis polygoniis, 6–8 × 6–8 μm compositum; ostiolum 50–80 μm diam., sine periphysibus. Paries ascomatis 25–30 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 6–9 × 6–9 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, mucosae. Asci copiosi, cylindrici, 120–140 × 24–31 μm, 8-spori. Ascosporae biseriatae, fusiformes, 32–38 × 10–13 μm, 5-septatae, in ordinem 3:2:1:2:3, septo primo submedio, (0.55), constricto, castaneae, eguttulatae, echinulatae, crassitunicatae, sine strato muco.

Hab. in caulibus *Equiseti hiemalis*, "UNITED STATES OF AMERICA: MARYLAND: 195216, Governor Run, Calvert Co., W. W. Diehl, June 1929, TYPE, ex BPI."

The epithet used by Diehl presumably refers to the immersed or hidden character of the ascomata.

Ascocarps scattered, immersed, subepidermal, ellipsoidal, glabrous, 600–1000 μm long, 400–700 μm wide, 300–400 μm high. Beak central, terete, truncate-conical, 10–30 μm long, 60–100 μm wide, of 4–6 layers of brown polygonal 6–8 × 6–8 μm cells around a 50–80 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25–30 μm thick, of 5–7 layers of polygonal brown 6–9 × 6–9 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 120–140 × 24–31 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 2.9, straight, 32–38 × 10–13 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, submedian (0.55), not constricted at other septa, second cell from apex enlarged, reddish brown except with pale end cells, without guttules, echinulate, thick walled, without a sheath.

HOST: *Equisetum hiemale* L.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: MARYLAND: 195216, Governor Run, Calvert Co., W. W. Diehl, June 1929, TYPE, ex BPI.

This species is certainly not like the majority of *Phaeosphaeria* species found on horsetails. It may not belong in this genus, but a better placement cannot be suggested at this time. The material is quite mature and the early stages were not seen. The method of beak formation is not known. Only a large gaping ostiole is evident in a very short beak that remains below the stem surface. The ascospores are closest to those of *Phaeosphaeria insignis* (Karst.) L. Holm.

Phaeosphaeria gessneri n.sp. Figs. 267, 283, 284, 290

Ascomata dispersa, immersa, globosa, lanata, 400–500 μm lat., 400–500 μm alt. Rostrum teres, truncato-conicum 80–120 μm long., 90–110 μm lat., cellulis brunneis polygoniis, 6–9 × 3–5 μm compositum; ostiolum 40–50 μm diam., sine periphysibus. Paries ascomatis 15–25 μm lat., cellulis brunneis prismaticis, tenuitunicatis, 6–11 × 2–5 μm compositus. Physes 1–1.5 μm lat., multiseptatae, eguttulatae, sine muco. Asci copiosi, cylindrici, 200–240 × 25–35 μm, 8-spori. Ascosporae tetraseriatae vel biseriatae, fusiformes, 68–85 × (10)15–20 μm, 5(7)-septatae, in ordinem 3:2:(4):1:(4):2:3, septo primo medio, (0.50), constricto, brunneae, guttulatae, leves, sine strato muco.

Hab. in culmis *Spartinae alterniflorae*, "UNITED STATES OF AMERICA: RHODE ISLAND: 147881, Point Judith Pond, R. Gessner, 19 Nov. 1973, TYPE."

The epithet refers to the collector, Dr. R. Gessner.

Ascocarps scattered, completely immersed, subepidermal, globose, coated with short hyaline mycelial strands, 400–500 μm wide, 400–500 μm high. Beak central, terete, truncate-conical, 80–120 μm long, 90–110 μm wide, centrally of 8–10 layers of brown polygonal 6–9 × 3–5 μm cells around a 40–50 μm diameter ostiole, not lined with periphyses, wider at base of beak and much narrowed to tip. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–25 μm thick, of 5–10 layers of prismatic to rectangular brown 6–11 × 2–5 μm pseudoparenchyma cells with several layers of pale yellow irregular hyphae on the outer surface. Physes numerous, 1–1.5 μm wide, with thin septa at 10- to 20-μm intervals, without guttules, without slime coating. Asci numerous, in a very broad peripheral hymenium, cylindrical, 200–240 × 25–35 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores fusiform, L/W 3.9, straight, 68–85 × (10)15–20 μm, 5(7)-septate in sequence 3:2:(4):1:(4):2:3, first septum slightly constricted, median (0.50), not constricted at other septa, third cell from apex enlarged towards base, central cells slightly longer than end cells, yellowish brown, with numerous guttules, smooth, without sheath or appendages.

HOST: *Spartina alterniflora* Loisel.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: RHODE ISLAND: 147881, Point Judith Pond, R. Gessner, 19 Nov. 1973, TYPE.

This very distinctive species has ascomata that are large, fully immersed, with a soft wall that collapses inward on drying. The 5-septate ascospores are larger than produced by *Amarenomyces ammophilae* (Lasch) O. Eriksson and lack the

distinctive sheath. The layered endotunica of the ascus characteristic of *Amarenomyces ammophilae* was not observed in this collection. The new species has larger ascospores than *Phaeosphaeria albopunctata* (West.) Shoem. & Babc., *Phaeosphaeria neomaritima* Gessner & Kohlmeyer, or *Phaeosphaeria spartinae* (Ell. & Ev.) Shoem. & Babc.

Phaeosphaeria insignis (Karsten) L. Holm, Symb. Bot. Upsal. 14(3): 120. 1957 Figs. 266, 281, 292

≡*Leptosphaeria insignis* Karsten, Oefvers. K. Sv. Vet.-akad. Förh. 2: 100. 1872

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 110–300 μm wide, 110–300 μm high. Beak central, terete, flush, intraepidermal, 50–60 μm long, 80–100 μm wide, of 3 or 4 layers of brown polygonal 5–7 × 5–7 μm cells around a 20–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–15 μm thick, of 2–4 layers of polygonal brown 5–8 × 5–8 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, clustered, cylindrical, 120–185 × 25–38 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.3, straight or slightly curved, 43–60 × 13–15(18) μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, with dots at ends of septa, third cell from apex enlarged towards base, central two cells long, yellowish brown, with guttules, smooth, with a sheath, 3–4 μm wide.

HOSTS: (*1*) *Alopecurus alpinus* J. E. Sm., (*2*) *Arctagrostis latifolia* (R. Br.) Griseb., (*3*) *Deschampsia brevifolia* R. Br., (*4*) *Dupontia fisheri* R. Br., (*5*) *Luzulua confusa* Lindeb., (*6*) *Phippsia concinna* (T. Fries) Lindeb., (*7*) *Pleuropogon sabinei* R. Br., (*8*) *Poa alpigena* (Fries) Lindm., (*9*) *Puccinellia angustata* (R. Br.) Rand & Redf., (*10*) *Saxifraga oppositifolia* L.

COLLECTIONS EXAMINED: CANADA: NORTHWEST TERRITORIES: District of Franklin: 75148, on *10*, 1.5 miles southwest of Isachsen, 78°46′N 103°37′W, Ellef Ringnes Island, D.B.O. Savile 4341B, 1 August 1960; 83288, on *1*, Christopher Peninsula, 78°58′N 101°35′W, Ellef Ringnes Island, D.B.O. Savile 4187B, 7–8 July 1960; 83289, on *1*, 3 miles south of Isachsen, 78°45′N 103°33′W, Ellef Ringnes Island, D.B.O. Savile 4359D, 2 August 1960; 83290, on *1*, 1 mile west of Isachsen, 78°47′N 103°35′W, Ellef Ringnes Island, D.B.O. Savile 4290A, 25 June 1960; 83291, on *2*, 3 miles, west northwest of Isachsen, 78°48′N 103°40′W, Ellef Ringnes Island, D.B.O. Savile 4370C, 4 August 1960; 83292, on *3*, Christopher Peninsula, 78°59′N 101°35′W, Ellef Ringnes Island, D.B.O. Savile 4195Ab, 7–8 July 1960; 83293, on *4*, 1.5 miles southwest of Isachsen, 78°40′N 103°37′W, Ellef Ringnes Island, D.B.O. Savile, 1 August 1960; 83294, on *4*, 2.5 miles south southwest of Isachsen, 78°45′N 103°34′W, D.B.O. Savile 4368C, 2 August 1960; 83295, on *6*, 1.5 miles west northwest of Isachsen, 78°47′N 103°35′W, D.B.O. Savile 4291B, 25 July 1960; 83296, on *7*, 1.5 miles southwest of Isachsen, 78°46′N 103°36′W, D.B.O. Savile 4247C, 15 July 1960; 83297, on *8*, Isachsen, 78°47′N 103°33′W, Ellef Ringnes Island, D.B.O. Savile 4380A, 8 August 1960; 83299, on *9*, Christopher Peninsula, 78°57′N 101°35′W, Ellef Ringnes Island, D.B.O. Savile 4191A, 7 July 1960; 83300, on *5*, Christopher Peninsula, 78°59′N 101°45′W, Ellef Ringnes Island, D.B.O. Savile 4200B. 7–8 July 1960; 88154, on *4*, Bray Island, 69°20′N 76°45′W, P. Dansereau, 10 August 1950; 91988, on *4*, Fox Basin, Prince Charles Island, southshore, W. K. W. Baldwin, 15–18 August 1949, ex ZT; 70474, on *4*, Base Camp, 72°04′N 94°10′W, Somerset Island, D.B.O. Savile 3821B, 13 August 1958; 70475, on *4*, Four Rivers Bay, 72°48′N 95°34′W, Somerset Island, D.B.O. Savile 3676A, 29 July 1958; 70473, on *4*, Cambridge Bay, Victoria Island, J. A. Calder 24192B, D.B.O. Savile and I. Kukkonen, 12 August 1959; 88151, on *1*, 72°30′N 106°12′W, Victoria Island, W. D. Stretton 226, 23 August 1960; 88152, on *2*, 72°30′N 106°12′W, Victoria Island, W. D. Stretton 227, 23 August 1960; 88153, on *2*, 72°36′N 113°49′W, Victoria Island, W. D. Stretton 210, 18 August 1960.

This species has very distinctive ascospores smaller than those of *Phaeosphaeria gessneri* Shoem. & Babc.

Phaeosphaeria larseniana (Munk in Larsen) n.comb. Figs. 261, 275, 289

≡*Leptosphaeria larseniana* Munk in Larsen, Dan. Bot. Ark. 14(7): 27. 1952

≡*Leptosphaeria elymi* P. Larsen in Rosenvinge & Warming, The Botany of Iceland 2(3): 474. 1932 non Atkinson, Bull. Cornell Univ. 3(1): 7. 1897

=*Phaeosphaeria japonica* Otani, Bull. Nat. Sci. Mus., Ser. B, 2(3): 91. 1976

Ascocarps scattered, immersed, subepidermal, globose with a flattened base, hairy, 300–400 μm wide, 300–400 μm high. Beak central, flush, appearing as a pinprick, terete, 30–40 μm long, 40–60 μm wide, of 4–8 layers of brown polygonal 6–8 × 3–4 μm cells around a 10–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–20 μm thick, of 3–6 layers of polygonal brown 6–8 × 4–5 μm pseudoparenchyma cells, slightly thinner at base, coated externally with short yellow hairs. Physes numerous, 2–3 μm wide, with thin septa at 20- to 30-μm intervals, anastomosed, without guttules, with copious slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–130(150) × 14–17 μm, short-stalked, with 8 uniseriate ascospores. Ascospores broadly fusiform, L/W 3.5, straight or slightly curved, 22–27 × 7–9 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.48), not constricted at other septa, third cell from apex enlarged towards base, cells subequal in length, yellowish brown, with guttules, smooth, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Spartina sp.*

COLLECTION EXAMINED: UNITED STATES OF AMERICA: NEW JERSEY: 191759, Atlantic City, J. B. Ellis, 28 July 1885, North American Fungi 2616 as *Leptosphaeria albopunctata* (*Leptosphaeria sticta* E. & E.).

The ascospores are arranged in one row, which is remarkable for the genus.

Ellis and Everhart (1892, p. 375) concluded that their species, *Leptosphaeria sticta*, was a synonym of *Phaeosphaeria albopunctata* (West.) Shoem. & Babc., but this is not so. Based on comparison of types, *Leptosphaeria sticta* Ell. & Ev. is treated as a synonym of *Phaeosphaeria spartinae* (Ell. & Ev.) Shoem. & Babc.

The fungus distributed as North American Fungi 2616 superficially resembles *Phaeosphaeria spartinae* but differs in

having much smaller asci and ascospores. We apply the name *Phaeosphaeria larseniana* to this collection on the basis of the original description and figure in the apparent absence of a type specimen.

The species was redescribed and illustrated again in a posthumous work ascribed to Larsen but compiled and edited by Munk (1952); he proposed the new name because of the prior *Leptosphaeria elymi* Atkinson. Munk studied Larsen's collections intensively, but did not indicate that he had found the original material on *Elymus arenarius* L. from Iceland. Instead, he cited collections from Jutland on *Phragmites australis* (Cav.) Trin. ex Steudel (as *Phragmites communis* Trin.), *Baldingera arundinacea* (L.) Dumort., and *Iris pseudacorus* L. Munk's illustration of this species differs in several ways from the original illustration.

Phaeosphaeria japonica Otani is a synonym of *Phaeosphaeria larseniana*. Collections of *Phaeosphaeria vagans* (Niessl) O. Eriksson, in which the ascospores lack vertical septa, may be difficult to distinguish from *Phaeosphaeria larseniana*. *Phaeosphaeria luctuosa* (Niessl in Sacc.) Otani & Mikawa differs in having narrow ascospores.

The anamorph has 7-septate, light yellowish brown, fusoid, straight or slightly curved, 27–33 × 5–6 μm conidia (Otani 1976).

Phaeosphaeria luctuosa (Niessl in Saccardo) Otani & Mikawa, Mem. Nat. Sci. Mus. Tokyo 4: 78. 1971 Figs. 260, 273

≡ *Leptosphaeria luctuosa* Niessl in Saccardo, Nuovo Giorn. Bot. Ital. 7: 321. 1875

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–200 μm wide, 100–200 μm high. Beak central, terete, flush, intraepidermal, 40–50 μm long, 50–60 μm wide, of 4–6 layers of brown polygonal 5–7 × 5–7 μm cells around a 20–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–14 μm thick, of 3–5 layers of polygonal to prismatic brown 6–9 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85–120 × 10–13 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.5, straight or slightly curved, 26–30 × 4.5–5 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, with small dots at ends of septa, septa thin, third cell from apex longer than wide and enlarged towards base or middle when old, pale yellowish brown, without guttules, smooth, with a thin sheath, 1 μm wide.

HOSTS: (*1*) *Bromus inermis* Leyss, (*2*) *Festuca nutans* Wahlenb., (*3*) *Poa pratensis* L. seed, (*4*) *Triticum aestivum* L.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 182905, on *2*, Grants Woods, Granton, Middlesex County, J. Dearness, 25 August 1895, ex Herb. Dearness 2354 = 2291, as *Leptosphaeria culmicola*. SASKATCHEWAN: 129793, on *1*, Forestry Farm, Saskatoon, J. Drew Smith, 18 March 1970, as *Leptosphaeria luctuosa*. ALBERTA: 540, on *4*, Claresholm, G. B. Sanford, 1928, as *Leptosphaeria herpotrichoides* de Not. UNITED STATES OF AMERICA: OREGON: 191555(*b*), on *3*, seed sample from Oregon, G. P. White, 14 January 1985.

There is no material of *Leptosphaeria luctuosa* Niessl in Niessl's herbarium at M (Eriksson 1967*b*, p. 430). The fungus was described by Saccardo (1875) and illustrated (Saccardo 1877–1886, Figure 502, 1879). However, when Berlese (1894) reexamined Saccardo's collection, he found a different species with much larger ascospores 35–40 × 10–12 μm and up to 7 septa. We adopt the concept, based on Saccardo's illustration and description, that conforms with the concept used by Müller (1950), Webster and Hudson (1957), Otani and Mikawa (1971), Dennis (1978), and Leuchtmann (1984).

This species often occurs in the sheath of grasses and has a slightly raised beak with white pseudoparenchyma in the centre. The distinctive features include the peculiar arrangement of the ascospores, i.e., six in two columns and two uniseriate spores near the base. The lower two spores are larger than the upper ones.

The ascospores are distinct from those of *Phaeosphaeria vagans* (Niessl) O. Eriksson (L/W 3.5), which sometimes lack vertical septa. Eriksson (1967*b*, p. 430) noted that collections of *Phaeosphaeria vagans* with spores lacking vertical septa have often been referred to *Phaeosphaeria luctuosa*. The anamorphs are quite distinct. The conidia of *Phaeosphaeria luctuosa* are longer and narrower.

The anamorph is a *Stagonospora* with 7(9)-septate brown conidia 50–75 × 3–3.5 μm (Leuchtmann 1984). The fungus is homothallic (Webster and Hudson 1957).

Phaeosphaeria mounceae n.sp. Figs. 269, 277

Ascomata dispersa, immersa, globosa, glabra, 180–250 μm lat., 180–250 μm alt. Rostrum inclusum vel erumpens, teres, 40–50 μm long., 70–80 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 25–45 μm diam., sine periphysibus. Paries ascomatis 12–15 μm lat., cellulis brunneis polygoniis, tenuitunicatis, 4–6 × 4–6 μm compositus. Physes non vidi. Asci copiosi, cylindrici, 100–120 × 10–14 μm, 8-spori. Ascosporae biseriatae, fusiformes, 25–30 × 6–7 μm, 7-septatae, in ordinem 3:2:3:1:3:2:3, septo primo submedio, (0.52), constricto, luteae, eguttulatae, leves, sine muco.

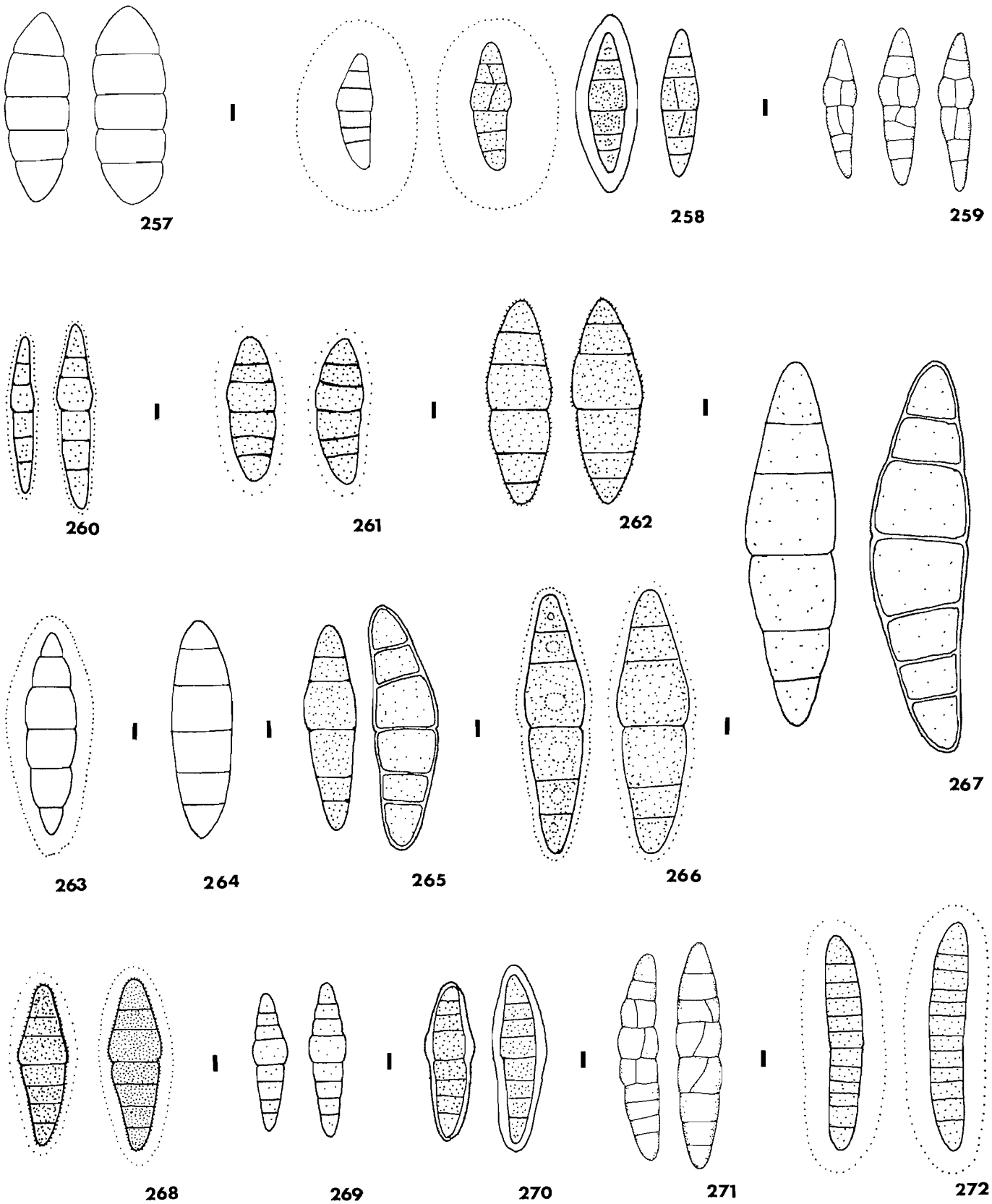
Hab. in culmis *Elymi arenarii*, "CANADA: NEW BRUNSWICK: 2568(*b*), Joe's Point, St. Andrews, Irene Mounce, 16 July 1934, TYPE, as *Leptosphaeria* (near) *culmicola*, det. W. W. Diehl."

The species is named after the late Dr. Irene Mounce, who collected the specimen.

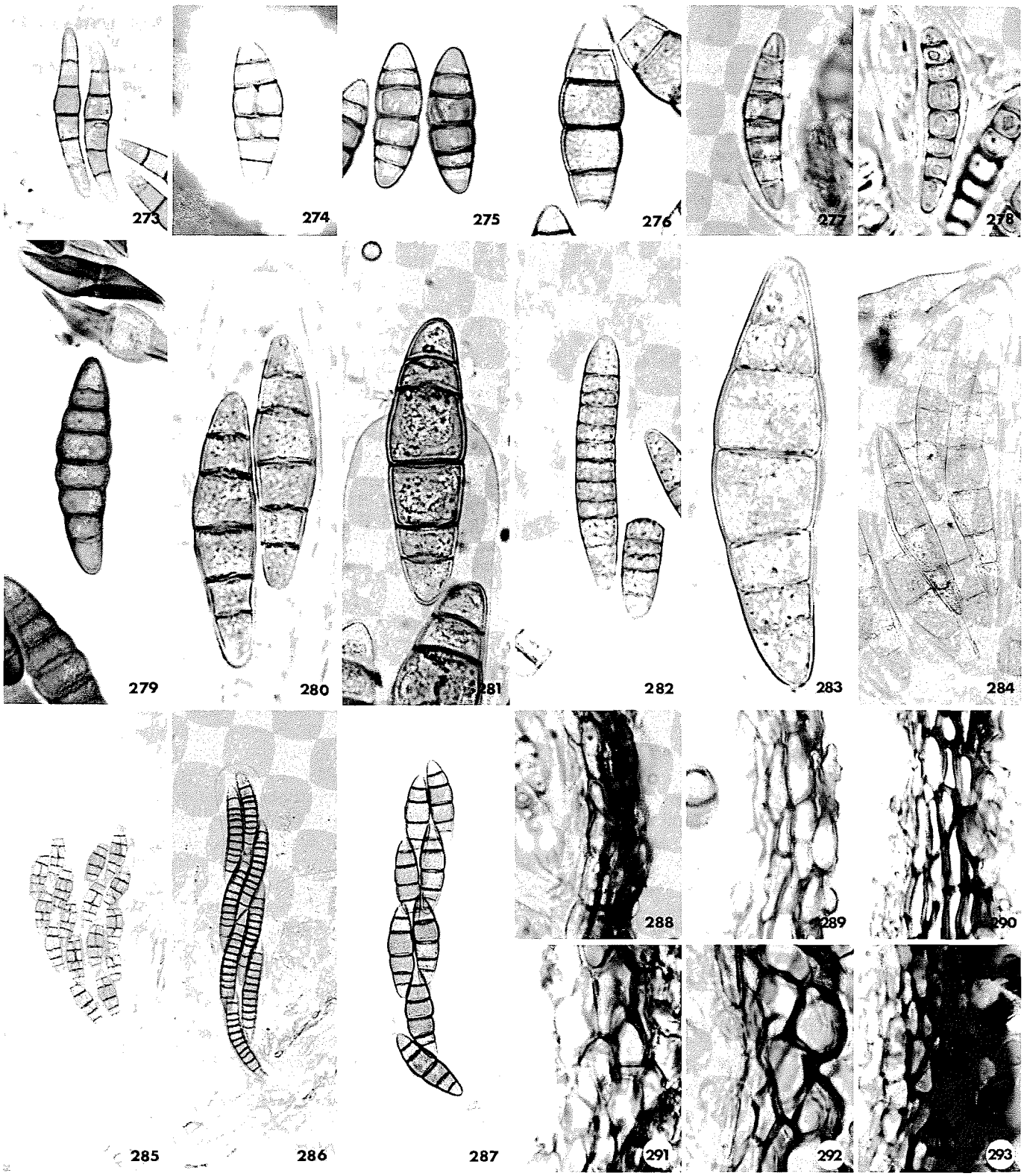
Ascocarps scattered, immersed, subepidermal, globose, glabrous, 180–250 μm wide, 180–250 μm high. Beak central, terete, flush to slightly erumpent, 40–50 μm long, 70–80 μm wide, of 3–5 layers of brown polygonal 5–7 × 5–7 μm cells around a 25–45 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12–15 μm thick, of 2 or 3 layers of polygonal brown 4–6 × 4–6 μm pseudoparenchyma cells. Physes not seen. Asci numerous, in a broad hymenium, cylindrical, 100–120 × 10–14 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 4.0, straight or slightly curved, 26–30 × 6–7 μm, 7-septate in sequence 3:2:3:1:3:2:3, first septum slightly constricted, submedian (0.52), slightly constricted at other septa, with dots at ends of septa, septa thin, fourth cell from apex shorter than wide, enlarged towards middle without a band, pale yellow, without guttules, smooth, without a sheath.

HOST: *Elymus arenarius* L.

COLLECTION EXAMINED: CANADA: NEW BRUNSWICK:



FIGS. 257–272. Ascospores. ×1000. Fig. 257. *Phaeosphaeria sequana*, (Guyot 1946, Fig. *f*). Fig. 258. *Phaeosphaeria vagans*, 189082, 189079, 193927 (two). Fig. 259. *Phaeosphaeria phragmiticola*, (Leuchtmann 1984, Fig. 10*c*). Fig. 260. *Phaeosphaeria luctuosa*, 540, 129793. Fig. 261. *Phaeosphaeria larseniana*, 191759. Fig. 262. *Phaeosphaeria celata*, 195216 TYPE. Fig. 263. *Phaeosphaeria neomaritima*, (Gessner and Kohlmeyer 1976, Fig. 4, drawn from photo). Fig. 264. *Phaeosphaeria albopunctata*, (redrawn ×10 from sketches with TYPE collection). Fig. 265. *Phaeosphaeria spartinae*, 196893 TYPE. Fig. 266. *Phaeosphaeria insignis*, 83294, 83293. Fig. 267. *Phaeosphaeria gessneri*, 147881 TYPE. Fig. 268. *Phaeosphaeria occidentalis*, 184018. Fig. 269. *Phaeosphaeria mounceae*, 2568(*a*). Fig. 270. *Phaeosphaeria* [illegible]43 TYPE. Fig. 271. *Phaeosphaeria phragmites*, (Leuchtmann 1984, Fig. 10*d*). Fig. 272. *Phaeosphaeria berlesei*, 121635.



FIGS. 273–284. Ascospores. ×1000. FIGS. 285–287. Asci. ×430. FIGS. 288–293. Wall structure. ×1000. Fig. 273. *Phaeosphaeria luctuosa*, 182905. Fig. 274. *Phaeosphaeria vagans*, 189084. Fig. 275. *Phaeosphaeria larseniana*, 191759. Fig. 276. *Phaeosphaeria celata*, 195216 TYPE. Fig. 277. *Phaeosphaeria mounceae*, 2568(*b*) TYPE. Fig. 278. *Phaeosphaeria subalpina*, 195443 TYPE. Fig. 279. *Phaeosphaeria occidentalis*, 36842. Fig. 280. *Phaeosphaeria spartinae*, 196893 TYPE. Fig. 281. *Phaeosphaeria insignis*, 83288. Fig. 282. *Phaeosphaeria berlesei*, 109454. Fig. 283. *Phaeosphaeria gessneri*, 147881 TYPE. Fig. 284. *Phaeosphaeria gessneri*, 147881 TYPE. Fig. 285. *Phaeosphaeria vagans*, 189084. Fig. 286. *Phaeosphaeria berlesei*, 151063. Fig. 287. *Phaeosphaeria celata*, 195216 TYPE. Fig. 288. *Phaeosphaeria subalpina*, 195443 TYPE. Fig. 289. *Phaeosphaeria larseniana*, 191759 TYPE. Fig. 290. *Phaeosphaeria gessneri*, 147881 TYPE. Fig. 291. *Phaeosphaeria celata*, 195216. Fig. 292. *Phaeosphaeria insignis*, 83288. Fig. 293. *Phaeosphaeria spartinae*, 196893 TYPE.

2568(*b*), Joe's Point, St. Andrews, Irene Mounce, 16 July 1934, TYPE, as *Leptosphaeria* (near) *culmicola*, det. W. W. Diehl.

This species is rather anomalous. It matches the description of Eriksson's form 4*b* of *Phaeosphaeria herpotrichoides* s.l. However, the first septum is submedian and the enlarged cell is not delimited by the second septum, as is usual in spores of species in subgenus *Sicispora*. The spores have a superficial resemblance to those of *Massariosphaeria roumegueri* (Saccardo) Leuchtmann (1984) that are, however, colorless, guttulate, constricted at all septa, and lack a sheath.

The type specimen is rather overmature. The ascomata are thin-walled with a flush or slightly erumpent beak that is very short, filled with a white substance and rimmed by a few rows of darker cells.

Phaeosphaeria neomaritima (Gessner & Kohlmeyer) n.comb. Fig. 263

≡ *Leptosphaeria neomaritima* Gessner & Kohlmeyer, Can. J. Bot. 54: 2032. 1976

≡ *Sphaeria maritima* Cooke & Plowright in Cooke, Grevillea, 5: 120. 1877, non *Sphaeria maritima* Crouan & Crouan, Florule du Finestère, Paris, p. 27. 1867

≡ *Leptosphaeria maritima* (Cooke & Plowright) Saccardo, Syll. Fung. 2: 73. 1883, non *Leptosphaeria maritima* Hollos, Ann. Mus. Nat. Hung. 5: 46. 1907

Ascocarps scattered, immersed to later erumpent, globose to ellipsoidal, glabrous, 115−250 μm wide, 100−185 μm high. Beak central, terete, short, erumpent, papillate, ostiolate. Wall in longitudinal section laterally uniformly 15 μm thick, of 5 layers of polygonal brown pseudoparenchyma cells. Physes numerous, filiform, filling the ostiolar canal. Asci clavate or cylindrical, 90−145 × (9)14−30 μm, short-stalked, with 8 biseriate ascospores. Ascospores fusiform to elongate, ellipsoidal, L/W 3.9, straight or slightly curved, (30)32−45 × (6)8−14 μm, 3- to 5-septate in sequence 3:2:1:2:3, first septum constricted, supramedian (0.47), slightly constricted at other septa, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 3−4 μm wide.

HOSTS: *Juncus maritimus* Lam., *Juncus roemerianus* Scheele, *Spartina alterniflora* Loisel., *Spartina townsendii* H. & J. Groves, *Spartina* sp.

COLLECTIONS EXAMINED: None; data from Gessner and Kohlmeyer (1976).

The description is very close to *Phaeosphaeria spartinae* (Ell. & Ev.) Shoem. & Babc.

Phaeosphaeria occidentalis (Ellis & Everhart) n.comb. Figs. 268, 279

≡ *Leptosphaeria occidentalis* Ell. & Ev. Erythea, 2: 20. 1894

Ascocarps scattered, immersed, subepidermal, globose with a flattened base, glabrous, 250−350 μm wide, 150−220 μm high. Beak central, terete, truncate-conical, 20−65 μm long, 60−100 μm wide, of 3 or 4 layers of brown polygonal 3−5 × 3−4 μm cells around a 30−40 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 18−25 μm thick, of 4 or 5 layers of polygonal brown 5−9 × 3−5 μm scleroplectenchyma cells. Physes numerous, 1.5−2 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100−140 × 17−24 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.6, straight, 28−33 × 9−11 μm, 6- to 7(8)-septate in sequence 4:3:2:1:2:3:4:(5), first septum slightly constricted, median (0.50), not constricted at other septa, third (fourth) cell from apex enlarged towards base and slightly longer than adjacent cells, reddish brown, without guttules, finally verrucose, with a conspicuous sharply delimited sheath 1.5−2 μm wide.

HOST: *Echinochloa crus-galii* (L.) Beauv. = *Panicum crus-galii* L.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: KANSAS: 184018, E. Bartholomew, 26 Dec. 1895, Kansas Fungi 119, ex Herb. Dearness 1576; 36842, Rockport, E. Bartholomew, April 1983.

This material on *Echinochloa crus-galii* (L.) Beauv. bears an abundance of diatoms and appears to have come from the edge of a pond. The fungus has affinities with *Leptosphaeria palustris* E. Müller on *Typha* but has smaller ascospores. The specimen resembles Eriksson's form 8*b* of *Phaeosphaeria herpotrichoides* s.l., but form 8*b* is the extreme of that species complex and we prefer to recognize the fungus as *Phaeosphaeria occidentalis*. It is more closely aligned with the aquatic species. The median first septum and the elongated enlarged cell in the ascospores place this species in the subgenus *Vagispora*, whereas most of the *Phaeosphaeria herpotrichoides* complex is disposed in subgenus *Sicispora*.

Phaeosphaeria phragmiticola Leuchtmann, Sydowia, 37: 138−139. 1984 Fig. 259

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200−270 μm wide, 200−270 μm high. Beak central, terete, papillate, short, undifferentiated. Wall in longitudinal section laterally uniformly 20 μm thick, of 4 layers of rectangular brown 8−12 × 4−6 μm pseudoparenchyma cells. Physes numerous, thread-like, septate. Asci numerous, broadly cylindrical, 85−115 × 9.5−10.5 μm, short-stalked, with 8 overlapping linearly uniseriate to biseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, straight or slightly curved, 25−30 × 6−7.5 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.48), not constricted at other septa, with a vertical septum in midcells, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a uniform thin sheath.

HOST: *Phragmites communis* Trin.

COLLECTIONS EXAMINED: None; from Switzerland fide Leuchtmann (1984).

In culture, this fungus produced only the *Stagonospora* anamorph with 3-septate conidia 18−25 × 3.5−4 μm with globose appendages at both ends (Leuchtmann 1984).

This species, *Phaeosphaeria phragmitis* (Hollos) Leuchtmann, and *Phaeosphaeria vagans* (Niessl) O. Eriksson are the only species with vertical septa in the ascospores included in the genus.

Phaeosphaeria phragmitis (Hollos) Leuchtmann, Sydowia, 37: 139−140. 1984 Fig. 271

≡ *Pleospora phragmitis* Hollos, Ann. Hist.-Nat. Mus. Natl. Hung. 8: 10. 1910

Ascocarps in leaf sheath scattered, immersed, subepidermal, globose, in culm in rows with stroma, erumpent through

epidermis, ellipsoidal, 300–600 μm wide. Beak central, terete, papillate, undifferentiated. Wall in longitudinal section laterally uniformly 25–30 μm thick. Physes numerous, thread-like, septate. Asci numerous, broadly cylindrical, 110–160 × 15–20 μm, short-stalked, with 8 overlapping biseriate ascospores. Ascospores narrowly fusiform, L/W 4.6, slightly curved, 28–48 × 7–10 μm, (5)7(9)-septate in sequence 4:3:2:1:(5):2:3:(5):4, first septum slightly constricted, median (0.50), not constricted at other septa, with a vertical septum in 1–4 central cells, fourth cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a uniform broad sheath.

HOST: *Phragmites communis* Trin.

COLLECTIONS EXAMINED: None; from Switzerland fide Leuchtmann (1984).

In culture this fungus produced only the *Stagonospora* anamorph with 7- to 10-septate conidia 35–75 × 3–4 μm with a globose appendage at apex and with a reduced appendage at base (Leuchtmann 1984).

Phaeosphaeria sequana (Guyot) n.comb. Fig. 257

≡*Leptosphaeria sequana* Guyot, Rev. Mycol., N.S. 9: 68. 1946

Ascocarps scattered, immersed, subepidermal to erumpent, globose, glabrous, 190–320 μm wide, 190–320 μm high. Beak central, terete, short, papillate. Physes filiform. Asci numerous, in a broad hymenium, cylindrical–clavate, 150–275 × 21–29 μm, short-stalked, with 8 biseriate ascospores. Ascospores elongate-ellipsoid to cylindrical, L/W 3.0, straight or slightly curved, 30–38 × 10–15 μm, 4-septate in sequence 2:1:2:3, first septum slightly constricted, supramedian (0.47), slightly constricted at other septa, second cell from apex enlarged, yellowish brown, without guttules, smooth.

HOST: *Phleum boehmeri* Wibel.

COLLECTIONS EXAMINED: None; data from Guyot.

Phaeosphaeria spartinae (Ellis & Everhart) n.comb. Figs. 265, 280, 293

≡*Leptosphaeria spartinae* Ellis & Everhart, J. Mycol. 1: 43. 1885

=*Leptosphaeria sticta* Ellis & Everhart, J. Mycol. 1: 43. 1885

=*Phaeosphaeria hierochloes* (Oudemann) O. Eriksson, Ark. Bot. 6: 424. 1967

≡*Leptosphaeria hierochloes* Oudemann, Versl. Meded. Afd. Natuurk. K. Akad. Wet. 3(2): 155. 1885

Ascocarps scattered, immersed, subepidermal and sometimes raising epidermis, globose, covered with short brown hyphae 2–3 μm wide, 250–400 μm wide, 250–400 μm high. Beak central, terete, flush with a white surround or slightly erumpent, truncate-conical, 50–110 μm long, 80–110 μm wide, of 5–9 layers of brown polygonal 5–10 × 3–8 μm cells around a 25–50 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–22 μm thick, of 4–6 layers of rectangular brown 6–10 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 125–170 × 18–22(25) μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.5, straight or slightly curved, 35–40(52) × 9–11(14) μm, 5-septate in sequence 3:2:1:2:3, first septum constricted, median (0.50), slightly constricted at other septa, with dots at ends of septa, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth, without a sheath.

HOST: *Spartina* sp.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: NEW JERSEY: 196893, Cape May, Caroline Treat, summer 1884, TYPE, as *Leptosphaeria asperula* E. & E., *tuberculosa* and finally *spartinae* E. & E., ex NY; 196892, as preceding but labelled *Leptosphaeria sticta* E. & E., TYPE, NY.

On the label of the type of *Phaeosphaeria spartinae* the spore dimensions were given first as 40 × 10 μm but revised to 35–45 × 9–11 μm. With the specimen is a brief description: "Mature asci are 150–190 × 12–15 μm; spores biseriate, fusoid, yellow brown, 5-septate, slightly curved, 30–40 × 10–12 μm, ends rather obtuse. When mature, slightly constricted at the septa. *Leptosphaeria tuberculosa* E. & E. which is I think the mature form of *Leptosphaeria sticta* E. & E." The asci and spores were described in the publication as 115–120 × 12–15 and 35–45 × 8–10 μm. Lucas and Webster (1967, p. 115) found them to be 140–150 × 22–24 and 38–50 × 11–13 μm. On the type, some asci had less than eight spores with consequently larger spores. We made measurements mostly from 8-spored asci and give exceptional sizes in parentheses.

The type of *Leptosphaeria sticta* is an overmature collection with broken beaks that appear as a brown rim around a large ostiole without some white exposed host tissue. There are few young robust asci, but most of the material is old with collapsed spores. In the description, the spores were given as 34–40 × 7–9 μm and this is representative of the spores we found. However, they were old and at times collapsed. We think it is not distinct from *Phaeosphaeria spartinae*. The beak features seem to be the result of age or wear of the exposed beaks. The ascoma wall features, including the short brown surface mycelial strands, are the same for both specimens. Within the type packet of *Leptosphaeria sticta* is a smaller packet labelled "*Leptosphaeria sticta* E. & E. ? same fruit but ostioles prominent, perhaps deciduous." We place *Leptosphaeria sticta* as a synonym.

This species resembles *Phaeosphaeria gessneri* Shoem. & Babc., but has smaller ascomata, asci and ascospores.

Phaeosphaeria subalpina (Bubák) n.comb. Figs. 270, 278, 288

≡*Leptosphaeria subalpina* Bubák, Bot. Koezlem, 1915, p. 59

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 180–220 μm wide, 180–200 μm high. Beak central, flush, terete, 20–35 μm long, 50–65 μm wide, of 4–6 layers of brown polygonal 3–5 × 3–5 μm cells around a 10–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 7–12 μm thick, of 2–4 layers of rectangular brown 4–8 × 2–4 μm pseudoparenchyma cells. Physes numerous, 2–2.5 μm wide, with thin septa at 10–20 μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 80–90 × 15–18 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.8, straight or slightly curved, 28–34 × 6–8 μm, 7-septate in sequence 4:3:2:1:2:3:4, first septum slightly constricted, median (0.50), not con-

stricted at other septa, fourth cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 2−3 μm wide.

HOST: *Phragmites communis* L.

COLLECTION EXAMINED: YUGOSLAVIA: 195443, Barno Jezera, Zabljak, Durmitorensis Montenegro ca. 1500 m, F. Bubák, 20 Aug. 1904, ex Herb. Bubák, ex BPI, as *Leptosphaeria subalpina* Bubák, n.sp. TYPE.

The specimen contains Bubák's, notes for the description and is clearly type. Many of the ascomata are empty. Some good material was found and segregated in a small envelope. The fungus approaches *Massariosphaeria* but the ascoma wall cells are thin-walled, the beak lacks periphyses, and the ascospores are smooth. Leuchtmann (1984) admitted some species with smooth spores into *Massariosphaeria*, but this particular species seems to have more points in accord with *Phaeosphaeria*.

Phaeosphaeria vagans (Niessl) O. Eriksson, Ark. Bot. 6: 430. 1967 Figs. 258, 274, 285

≡*Pleospora vagans* Niessl, Verh. Naturf. Ver. Brünn 14: 174. 1876 non *Leptosphaeria vagans* Karst., Oefvers. K. Sv. Vet.-Akad. Förh. 2: 101. 1872

=*Leptosphaeria typhiseda* Saccardo & Berlese, Rev. Mycol. 1886, p. 39

≡*Leptosphaeria praeclara* Karsten var. *typhiseda* (Saccardo & Berlese) Berlese, Icon. Fung. 1: 75. 1894

=*Pleospora donacina* Niessl forma *epigeios* Lambotte in Roumeguère, Fungi Selecti No. 7067. 1896

Ascocarps scattered to aligned in short rows, immersed, subepidermal, broadly ellipsoidal to globose, glabrous with more or less extensive brown mycelium ramifying in the host tissue, 250−350 μm long, 200−300 μm wide, 130−180 μm high. Beak central, terete, flush to papillate, intraepidermal, 15−30 μm long, 25−50 μm wide, of 2−6 layers of brown polygonal 4−7 × 3−6 μm cells around a 10−50 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 12−18 μm thick, of 3−6 layers of prismatic brown 6−11 × 3−5 μm pseudoparenchyma cells, thicker above of smaller darker cells. Physes numerous, 1−3 μm wide, with thin septa at 10- to 30-μm intervals, without guttules, with copious slime coating. Asci numerous, in a broad hymenium, cylindrical, 60−110 × 12−20 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.0, straight or slightly curved, 23−28 × 8−10 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, submedian (0.55), not constricted at other septa, with dots at ends of septa, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 2−8 μm wide.

HOSTS: (*1*) *Agropyron repens* (L.) Beauv., (*2*) *Agrostis capillaris* L., (*3*) *Agrostis gigantea* Roth, (*4*) *Agrostis stolonifera* L., (*5*) ?*Agrostis* sp., (*6*) *Alopecurus geniculatus* L., (*7*) *Ammophila* sp., (*8*) *Arundo epigeios* L., (*9*) *Bromus inermis* Leyss., (*10*) *Calamagrostis canadensis* (Michx.) Nutt., (11) *Calamagrostis epigejos* (L.) Roth, (*12*) *Calamagrostis pickeringii* Gray, (*13*) *Carex hirta* L., (*14*) *Dactylis glomerata* L., (*15*) *Deschampsia caespitosa* (L.) Beauv., (*16*) *Elymus canadensis* L., (*17*) *Juncus effusus* L., (*18*) *Juncus* sp., (*19*) ?*Nardus* sp., (*20*) *Phleum pratense* L., (*21*) *Phleum* sp., (*22*) *Poa eminens* C. B. Prel., (*23*) *Poa* sp., (*24*) *Scirpus atrovirens* Muhl., (*25*) grass.

COLLECTIONS EXAMINED: CANADA: NOVA SCOTIA: 188996, on *20*; 189078, on *10*, 189079, on *14*, Midway Lake, near Centerville, Digby County, R. A. Shoemaker, 27 June 1982; 189006, on *21*, French Mountain, Cape Breton Highlands National Park, Cape Breton, R. A. Shoemaker, 17 June 1982; 189080, on *1*; 189081, on *16*; 189082, on *6*, Weymouth, Digby County, R. A. Shoemaker, 27 June 1982; 188990, on *5*, Bog Trail, Cape Breton Highlands National Park, Cape Breton, R. A. Shoemaker, 23 June 1982; 188992, on *3*, Cap Rouge, Cape Breton, R. A. Shoemaker, 23 June 1982; 188993 on *18*, and 189077, on *2*, New Haven, Cape Breton, R. A. Shoemaker, 23 June 1982; 189000, on *20*, 14 June 1982; 189004, on *19*, 16 June; 189084, on *4*, Middle Head Trail, Keltic Lodge, Cape Breton, R. A. Shoemaker. NEW BRUNSWICK: 136370, on *7*, Wolfe Point, Fundy National Park, D. Malloch, 2 June 1967. QUEBEC: 193927, on *22*, Poste-de-la Baleine (Great Whale River), S. Brisson et P. Forest, Flore du Nouveau-Québec 20815, QFA 110267. ONTARIO: 188917(*c*), on *24*, side road Hay Township, Concession 8−9, north of HWY 83, Huron County, M. Corlett 83(59), 6 July 1983. MANITOBA: 180641, on *25*, Deep Lake, Riding Mountain National Park, R. A. Shoemaker, 16 July 1979; 182751, on *16*, 1.8 km south of HWY 19 on Fire Tower Road, Riding Mountain National Park, R. A. Shoemaker et al., 19 July 1979. SASKATCHEWAN: 184121(*a*), on *9*, Saskatoon, R. C. Russell 117, Spring 1925, ex Herb. Dearness 7626, near *Leptosphaeria straminis* (Cke. & Hark.)−*Leptosphaeria culmifraga* (Fr.) Ces. & DeNot. UNITED STATES OF AMERICA: NEW YORK: 184120, on *12*, Lake Danford, Essex County, H. D. House, 15 August 1924, ex Herb. Dearness 7626, as a form of ?*Leptosphaeria straminis* Cke. & Hark. DENMARK: 90305, on *11*, Vendsyssel, Tolne Bakker, J. Lind, 21 July 1901, as *Pleospora vagans* Niessl. FRANCE: 196665(*a*), on *8*, Fautrey, June 1896, Roum. F. sel. 7067, ex FH, as *Pleospora donacina* Niessl forma *epigeios* Lambotte in Roumeguère. SWEDEN: 123705(*b*), on *15*, Skurdalshöjden, Storlien, L. E. Wehmeyer, ex Herb. Wehmeyer 9282, as *Leptosphaeria* sp.; 196585, on *23*, Gotland, Wisby, Magnus, ex DAOM, ex Sacc. Herb. PAD, as *Pleospora deflectens* Karst.

Phaeosphaeria vagans has been a source of confusion because of the variability in the presence or absence of vertical septa. Eriksson found a substantial number of collections that lacked vertical septa (1967*b*, p. 430), but found even more that had vertical septa (1967*a*, pp. 372−373), and, by and large, there is no consistency in the presence or absence of vertical septa. This is perplexing because the presence of vertical septa traditionally influences the generic placement. Eriksson (1967*b*) and Leuchtmann (1984) concluded that despite the vertical septa in the ascospores, this species does not belong in *Pleospora* but belongs in *Phaeosphaeria*. Leuchtmann found the ascoma structure to be like *Phaeosphaeria*. The anamorph was not unlike those of other *Phaeosphaeria* species whose ascospores have only transverse septa. He included two more species with vertical septa in the ascospores: *Phaeosphaeria phragmiticola* Leuchtmann and *Phaeosphaeria phragmitis* (Hollos) Leuchtmann. Both had anamorphs similar to those found in other *Phaeosphaeria* species.

There was considerable confusion about *Pleospora deflectens* Karsten and *Phaeosphaeria vagans* (Niessl) O. Eriksson. Eriksson (1967*a*) sorted out most of the problem. Wehmeyer (1961) had placed *Pleospora deflectens* as a synonym of *Phaeosphaeria vagans* but had overlooked the fact that *Pleospora deflectens* is based on the older epithet. Wehmeyer's

slide collection has two slides labelled *Pleospora deflectens* Karst. with the word type on each. One slide bears his number 997, Sacc. Herb., Poa, Gotland, Wisby, Magnus. It is not the type of *Pleospora deflectens* Karsten, but is the only collection Wehmeyer cited. The fungus is *Phaeosphaeria vagans*. The other slide is *Clathrospora deflectens* (Karsten) O. Eriksson and bears the information: *Poa calpoda*, Liefdebay, 3 IX.1868, presumably from PAD, and certainly part of the type of *Pleospora deflectens* that is discussed more fully under the name *Clathrospora deflectens* in the excluded species.

Niessl described the species more or less as follows: Ascocarps scattered to seriate, immersed, depressed globose, glabrous, 150–180 μm wide. Beak central, terete, papillate, punctiform. Ascocarp wall atrofuscous, submembranous. Asci clavate to oblong clavate, 60–80 × 18–20 μm, with 8 biseriate ascospores. Ascospores oblong fusoid to subclavate, L/W 2.6, inequilateral to slightly curved, 22–24 × 9 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, with vertical septa in only 1 or 2 cells of some spores, third cell from apex enlarged, yellowish to honey colored. He found it on the following hosts: (*1*) *Calamagrostis varia* (Schroder) Host as *C. silvatica*, (*2*) *Deschampsia caespitosa* (L.) Beauv. as *Aira caespitosa*, (*3*) *Leymus arenaria* (L.) Hochst. as *Elymus arenarius* L. Niessl recognized three subspecific taxa but did not clearly indicate the taxonomic level. These are: (*i*) *arenaria* on *3* from Berlin; (*ii*) *pusilla* on *1* from Graz and Berlin; and (*iii*) *airae* on *2*, from Leipzig, collected by Winter as *Leptosphaeria culmorum*. Niessl considered (*i*) to differ most from (*ii*) and (*iii*). He seems to have designated the collections on *Calamagrostis* as typical, but perhaps he meant only typical of variants (*ii*) and (*iii*). We took the description of *pusilla* and its illustration 1*b* as representative and used it as the basis of the species concept. The asci are short, 60–80 × 18–20 μm, the spores are 22–24 × 8–9 μm, 5-septate with longitudinal septa in only 1 or 2 cells but absent in many spores. However, Niessl always found vertical septa in hyaline or light colored spores in every ascoma. The description for *arenaria* gives larger ascomata as 250–270 μm, longer asci, 105–120 × 21–23 μm, and ascospores as 27–30 × 9–10 μm, with vertical septa occurring consistently in up to four of the central cells, and physes numerous, septate, branched, and exceeding the asci.

From the data of Saccardo and Berlese, and from Berlese's redescription and illustration (1894), *Leptosphaeria typhiseda* Sacc. & Berl. is a synonym.

On the basis of collection 196665(*a*), *Pleospora donacina* Niessl forma *epigeios* Lamb. in Roum. is a synonym.

The anamorph is a *Stagonospora* with 7- to 9-septate brown conidia 40–53 × 4.5–5.5 μm (Leuchtmann 1984) for which Webster (1955) suggested that *Hendersonia crastophila* Saccardo might apply, but no type was available for study. Webster established that the fungus is homothallic.

Excluded species

Amarenomyces ammophilae (Lasch) O. Eriksson, Opera Botanica, 60: 124. 1981 Figs. 321, 357, 390
≡ *Sphaeria ammophilae* Lasch, Flora, Jena, 8: 282. 1850, Bot. Z. 8: 438–440. 1850; Klotzsch-Rabenhorst, Herb. Mycol. 1, No. 1340. 1850
≡ *Leptosphaeria ammophilae* (Lasch) Cesati & De Notaris, Comment. Soc. Critt. Ital. 1: 236. 1863
≡ *Phaeosphaeria ammophilae* (Lasch) J. & E. Kohlmeyer, Icones Fungorum Maris, 1(3): Tabula 55. 1965
= *Leptosphaeria littoralis* Saccardo, Michelia, 1: 38. 1877
≡ *Phaeosphaeria littoralis* (Saccardo) L. Holm, Symb. Bot. Upsal. 14(3): 121. 1957
= *Sphaeria sabuletorum* Berkeley & Broome, Ann. Mag. Nat. Hist., Ser. 2, 9: 382. 1852, nom. conf. fide Holm (1957)
≡ *Leptosphaeria sabuletorum* (Berk. & Br.) von Höhnel, Hedwigia, 60: 141. 1918
≡ *Metasphaeria sabuletorum* (Berk. & Br.) Saccardo, Syll. Fung. 2: 180. 1883

Ascocarps scattered, immersed, subepidermal, flask-shaped to globose, glabrous, 125–500 μm wide, 125–500 μm high. Beak central, terete, flush, internal, 50–85 μm long, 50–100 μm wide, of 3 or 4 layers of brown polygonal 5–7 × 5–7 μm cells around a 25–70 μm diameter ostiole, with hyaline periphyses 10–15 × 2–3 μm. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 17–22 μm thick of 3 or 4 layers of polygonal brown 8–12 × 5–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad basal hymenium, cylindrical, 125–175 × 25–35 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores broadly fusiform, L/W 3.2, straight, 41–52 × 12–15 μm, 7-septate in sequence 3:4:2:1:3:2:3, first septum slightly constricted, submedian (0.55), not constricted at other septa, without dots at ends of septa, fourth cell from apex enlarged towards middle or base, thick-walled, yellowish brown, without guttules, smooth, with a conspicuous sharply delimited sheath, 2–4 μm wide with a bell-shaped depression at each end.

HOSTS: (*1*) *Ammophila arenaria* (L.) Link, (*2*) *Elytrigia juncea* (L.) Nevski as *Triticum junceum* L.

COLLECTIONS EXAMINED: DENMARK: 36836, on *1*, Sjaell: Hombrek., Rostrup, 7.10.1893, as *Phaeosphaeria littoralis*. GERMANY: 184894, ex S and 196240, ex FH, on *1*, Bergdorf bei Hamburg, Krieger, 8.1877, Rehm, Ascomyceten 691, as *Leptosphaeria ammophilae* (Lasch) Ces. NETHERLANDS: 196239, on *2*, Scheveningen, P. Magnus, 14 August 1885, ex FH, Rabenhorst, Fungi europ. 3451, as *Leptosphaeria ammophilae*; 185015, auf dürren Dünen-Grässern, bei Scheveningen, Dr. Magnus, 8/1885, Rehm, Ascomyceten 691(*b*), ex S, as *Leptosphaeria littoralis*. SOVIET UNION: LATVIA: 121610, on *1*, Lettland, Liepaja, K. Starcs 25, 25.9.1931.

Eriksson (1981) described the genus *Amarenomyces* based on this species but Leuchtmann (1984) followed Kohlmeyer and Kohlmeyer (1964–1969(1965)) and placed it in *Phaeosphaeria*. The ascomata vary in size but are always immersed with a short to long flush beak. The ostiole is at times quite broad. The sheath is not always visible on old spores. The spores have a resemblance to those of *Phaeosphaeria insignis* (Karst.) L. Holm.

There is a mild difference of opinion on the nature of the type of this species. Holm (1957) thought that the brief description of the spores as triseptate must refer to *Phaeosphaeria marram* (Cooke) O. Eriksson. Kohlmeyer and Kohlmeyer (1965) examined the type and concluded that the word triseptate applied to immature spores. Eriksson (1967*b*) was sceptical of their conclusion because three-septate spores are very rare in *Amarenomyces ammophilae*. He seemed to favor *Sphaeria sabuletorum* Berk. & Broome as the type. He

definitely excluded *Sphaeria perforans* Rob. in Desm. as based on pycnidial *Tiarospora perforans* (Rob. in Desm.) Höhnel.

Clathrospora deflectens (Karsten) O. Eriksson, Arkiv för Botanik, ser. 2, 6: 352. 1967 Fig. 315
≡*Pleospora deflectens* Karsten, Oefvers. K. Vet.-Akad. Förh. 2: 99. 1872
=*Pleospora deflectens* Karsten var. *triseti* Karsten, Oefvers. K. Vet.-Akad. Förh. 2: 99. 1872
=?*Pleospora magnusiana* Berlese, Icones Fungorum, 2(1): 15. 1895

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 180–220 μm wide, 180–220 μm high. Beak central, terete, flush, intraepidermal, 20–25 μm long, 60–70 μm wide, of 3 or 4 layers of brown polygonal to rectangular 5–6 × 3–5 μm cells around a 15–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick of 2 or 3 layers of polygonal brown 5–6 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 75–100 × 18–25 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores clathrate, L/W 2.3, straight or slightly curved, 23–27 × 10–12 × 6–8 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.47), not constricted at other septa, without dots at ends of septa, third cell from apex enlarged towards base, reddish brown, without guttules, echinulate, with a conspicuous sharply delimited sheath divided initially at the first septum.

HOST: *Poa pratensis* L. complex as *Poa colpodea* Fries.

COLLECTION EXAMINED: NORWAY: SPITZBERGEN: 196594, Liefdebay, 3.IX.1868, (T. Fries), (ex PAD), ex Herb. Wehmeyer, as *Pleospora deflectens* Karst. TYPE.

The material examined was a slide of numerous ascomata made by Wehmeyer from part of the type, most probably from PAD. The label does not have an indication of the original herbarium. However, it was filed next to another collection labelled *Pleospora deflectens* from PAD. These are the only two slides under the name *Pleospora deflectens* in the Wehmeyer slide collection. Wehmeyer (1961) used the second slide and cited it 997 in his monograph. The fungus is clearly *Phaeosphaeria vagans* from Visby in Sweden. It is discussed more fully under that species.

The type of *Pleospora deflectens* is a *Clathrospora* as discussed by Eriksson (1967*a*). He correctly noted that one oblique septum can form in the end cells leading to 7-septate spores on occasion.

Didymella oxyspora (J. J. Davis) n.comb. Figs. 295, 338, 369
≡*Leptosphaeria folliculata* Ell. & Ev. var. *oxyspora* J. J. Davis, Trans. Wis. Acad. Sci. 18(1): 87. 1915

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 140–170 μm wide, 120–140 μm high. Beak central, terete. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 5–7 μm thick of 2–4 layers of polygonal brown 4–6 × 1–3 μm pseudoparenchyma cells. Physes numerous, 2–2.5 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 40–50 × 6–8 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 4.6, straight or slightly curved, 16–19 × 3.5–4.5 μm, 1-septate, septum slightly constricted, median (0.50), upper cell enlarged towards base, hyaline to yellow, with 2–4 guttules, smooth, without a sheath.

HOST: *Carex gracillima* Schwein.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: WISCONSIN: 195217, Camp Merrill near Phillips, Price County, J. J. Davis, 9 Sept. 1911, TYPE, ex WIS, ex BPI.

This collection is a *Didymella* and quite different from *Leptosphaeria folliculata* Ell. & Ev., which is a synonym of *Paraphaeosphaeria michotii* (Shoemaker and Eriksson 1967, p. 1605).

Didymella taiwanensis (Yen & Chi) n.comb. Figs. 329, 356, 370, 385
≡*Leptosphaeria taiwanensis* Yen & Chi, J. Sugarcane Research Taiwan, 6: 213. 1952

Ascocarps scattered, hypophyllous, immersed, subepidermal to partly intraepidermal near beak, globose, glabrous, 140–200 μm wide, 140–200 μm high. Beak central, flush, terete, 10–15 μm long, 30–35 μm wide, of 4–6 layers of brown polygonal 5–7 × 3–4 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–14 μm thick of 2 or 3 layers of polygonal brown 5–8 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 90–140 × 35–40 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 4.5, straight or slightly curved, 44–56 × 11–13 μm, 1-septate, septum slightly constricted, submedian (0.53), upper cell enlarged towards base, hyaline, without guttules, smooth, without a sheath, at times appearing 3-septate from separation of protoplasts but with only one full septum.

HOST: *Saccharum officinarum* L.

COLLECTION EXAMINED: TAIWAN: 195316, Taichung, W. Y. Yen, 4 Feb. 1953, TYPE, ex BPI, as *Leptosphaeria taiwanensis*.

This fungus was described as the teleomorph of *Cercospora taiwanensis* Mats. & Yam. A later description by the authors reproduced in Rev. Appl. Mycol. 35: 634–635 gave these features: perithecia amphigenous, spherical to ovoid, (89)114–162(179) × (81)97–114(146); asci hyaline, straight or slightly curved (62)76–79(115) × (21)23–30(33); ascospores oblong-fusiform, slightly curved, 3(rarely 4)-septate, constricted at septa, brown, (39)41–44(46) × 7(11.5)–12.5(12.5) μm.

Hseih (1979) described *Stagonospora tainanensis* Heath as the anamorph of *Leptosphaeria taiwanensis* Yen & Chi and disputed the contention that the anamorph of *Leptosphaeria taiwanenesis* is *Cercospora taiwanenesis*. Unfortunately, from the clear photomicrographs of the teleomorphs of *Stagonospora tainanensis* Hseih (1979, Figs. 13 and 14), it is highly probable that this fungus is not the same as *Leptosphaeria taiwanensis*. In the cited figures, the ascospores are overlapping biseriate, guttulate, and too small for *Leptosphaeria taiwanenesis*. The asci are too long and narrow, about 125 × 15 μm. Sivanesan (1984, p. 480) briefly reviewed the situation

and accepted Hseih's findings. We feel there is need to investigate the identity of the teleomorph of *Stagonospora tainanensis* because of the lack of agreement with the type of *Leptosphaeria taiwanensis*.

Eudarluca caricis (Fries) O. Eriksson, Bot. Not. 119(1): 35. 1966 Fig. 299

=*Leptosphaeria nigrificans* Bubák & Wróblewski in Bubák, Hedwigia: 57: 329. 1916

ANAMORPH: *Sphaerellopsis filum* (Biv.-Bern.: Fr.) B. Sutton, Mycol. Pap. 141: 1977 (Sivanesan, 1984).

HOST: *Carex leporina* L.

COLLECTION EXAMINED: POLAND: GALICIA: 195444, Werbiaz Nižny, A. Wróblewski, Oct. 1912, TYPE, ex Herb. Bubák, ex BPI, as *Leptosphaeria nigrificans* Bubák n.sp.

From his examination of the isotype in S, Eriksson (1966, pp. 49–50) reported that *Leptosphaeria nigrificans* Bub. & Wrób. in Bub. is a synonym of *Eudarluca caricis*. The type with original notes in BPI was examined and Eriksson's conclusion is fully supported.

Hysterium clavisporum Cooke & Peck, Bull. Buffalo Soc. Nat. Sci. 3: 34. 1875, Ann. Rep. New York State Museum, 28: 69. (1874) 1876 Figs. 324, 359, 378, 392

≡*Phaeosphaeria clavispora* (Cooke & Peck) Barr in Barr et alia, Bull. New York State Museum, 459: 14–15. 1986

≡*Dothidea clavispora* (Cooke & Peck) Peck, Ann. Rep. New York State Museum, 29: 63. (1875) 1878

≡*Rhopographus clavisporum* (Cooke & Peck) Saccardo, Syll. Fung. 2: 648. 1883

≡*Bruneaudia clavispora* (Cooke & Peck) O. Kuntze, Rev. Gen. Pl. 3: 447. 1898

≡*Calospora clavispora* (Cooke & Peck) Theissen & Sydow, Ann. Mycol. 13: 428. 1915

=*Leptosphaeria clavicarpa* Ellis & Everhart, J. Mycol. 1: 43. 1885 fide Barr et alia (1986)

≡*Heptameria clavicarpa* (Ellis & Everhart) Cooke, Grevillea, 18: 32. 1889

Ascocarps immersed–erumpent, subepidermal, ellipsoidal to linear, glabrous, 400–1000 μm long, 200–300 μm wide, 125–250 μm high. Beak none, opening by a long thin slit margined by 3 or 4 layers of brown polygonal 5–7 × 5–7 μm cells, without periphyses. Wall in longitudinal section laterally 20–44 μm thick of 4–7 layers of polygonal brown 5–10 × 5–10 μm pseudoparenchyma cells, up to 60 μm thick at lower sides, thinner at base. Physes numerous, 1–1.5 μm wide, with thin septa at 10- to 30-μm intervals, without guttules, with copious slime coating. Asci numerous, in a broad hymenium from locule base, clavate, 90–130 × 19–28 μm, short-stalked, base foot-shaped, with 8 overlapping linearly to obliquely biseriate to tetraseriate ascospores. Ascospores clavate, L/W 3.9, straight or slightly curved, 28–39 × 9–11 μm, 9-septate in sequence 4:2:3:1:3:2:3:2:4, first septum slightly constricted, supramedian (0.31), slightly constricted at other septa, without dots at ends of septa, fourth cell from apex enlarged towards base, yellowish brown to dark reddish brown, with large guttules, thick walled, smooth, with a sheath 2–4 μm wide and narrowed to the base.

HOST: *Phragmites australis* (Cav.) Trin. as *Phragmites communis* Trin.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: IOWA: 196894, Spirit Lake, J. C. Arthur, (No. 120 partly), Jan. 1884, ex NY, ex Herb. Ellis, as *Rhopographus clavisporus* C. & P., *Leptosphaeria clavispora* E. & E., *Leptosphaeria clavicarpa* Ellis & Everh., HOLOTYPE, with description and illustration. A part of the same collection Arthur 120 labelled Holotype but lacking the description and illustration is of another fungus that is overmature and not determinable. NEW YORK: 196667, Tyre, Seneca County, C. H. Peck, September 1871, ex Herb. Dearness 4682, as *Rhopographus clavisporus* (C. & P.), *Hysterium clavisporum* C. & P., TYPE; 196666, Watkins, C. H. Peck, ex Herb. Dearness 4682, in inner packet of 196667 (TYPE).

The fungus was first described as *Hysterium clavisporum* Cooke & Peck because of the slit-like opening. The slit is not prominent on the type of *Hysterium clavisporum* that is reasonably mature but without evidence of much spore discharge. The slit is detectable in serial sections as a thin area at the apex filled with the tips of physes. The opening appears to take place by a gradual fracture of the few cells at the apex. There is not a prominent differentiation with periphyses. Recently Barr et al. (1986) redescribed the fungus and transferred it to *Phaeosphaeria*. The ascomata were considered to be multiloculate with a short apical pore.

The type of *Leptosphaeria clavicarpa* Ellis & Everhart bears the annotation probably by Ellis: "This is genuine *Rhopographus*. Cells uniseriate, distinct or subconfluent, asci 80 × 20, spor. 25–30 × 7–10 [μm]" as well as an accurate illustration of one ascospore. The other part of the same collection (Arthur 120) is a different fungus with elliptical ascomata with 2–5 circular ostioles. This fungus has empty ascomata and is not determinable. The fungus that conforms with most aspects of the original description is *Hysterium*-like, with long fruitbodies and a poorly defined slit. In the original description, the mention of a series of ostioles probably was based on the second fungus present that has fairly evident circular flush ostioles but no spores.

House (1917 (1918) p. 56) reported this fungus on *Phragmitis australis* (Cav.) Trin. (as *P. phragmitis* (L.) Karst.) from Bergen Swamp, Genesee county, H. D. House, 14 Aug. 1916. The part of this collection in Herb. Dearness is not referrable to this fungus and the record is not confirmed. The reference to Tyre, Sept. 1871, and Watkins, N.Y., based on Peck collections is confirmed by examination of material in Herb. Dearness. Peck (1874 (1876), p. 69) recorded it from Buffalo, N.Y., Clinton. We have not seen the collection from Buffalo.

Leptosphaerella ellongata K. Hara, Diseases of the Rice Plant (Japan), p. 146. 1918 as *Leptosphaerella* (*Phaeosphaeria*) *ellongata* Fig. 303

Perithecia scattered or gregarious, punctiform, spherical or subglobose, 80–150 μm in diameter, first covered by the epidermis, then erumpent, mouth papilliform, membranaceous, (cell 5–10 μm diam.) dark brown; ascus oblong or cylindrical, rounded at the top, stipitate, 60–75 × 15–18 μm; spore 3-rows, oblong or fusiform, rounded at each end, 3-septate, constricted at the septum or not, yellowish brown, 22–23.5 × 5–6 μm.

HOST: *Oryza sativa* L.

COLLECTION EXAMINED: None; data from original diagnosis and illustration.

Although the type was not seen, the species is excluded on the basis of the description and the original illustrations. The generic name, *Leptosphaerella* (Saccardo) K. Hara (1918), is

antedated by *Leptosphaerella* Spegazzini, Anals Mus. Nac. Hist. Nat., Buenos Aires, 23: 56. 1912 (29 Apr.), and cannot be employed.

Leptosphaeria arvensis Spegazzini, Michelia, 1: 459. 1879

Ascocarps scattered, immersed in rows, subepidermal, subglobose, 100–150 μm wide, 100–150 μm high. Beak central, terete, slightly exserted, papillate. Wall densely pseudoparenchymatic. Physes numerous, with slime coating. Asci cylindrical to cylindrico-clavate, 90–120 × 7–11 μm, short-stalked, with 8 overlapping obliquely uniseriate to biseriate ascospores. Ascospores elongate fusoid, L/W 5.5, straight or slightly curved, 30–35 × 5–6.5 μm, 3- to 5-septate, yellowish brown, with guttules, smooth.

HOST: *Equisetum arvense* L.

COLLECTIONS EXAMINED: None; data from Spegazzini (1879).

Leptosphaeria caricina Schroeter in Cohn, Krypt. Fl. Schlesien, 3(2): 361. 1894

According to Holm (1952), the type of *Leptosphaeria caricina* was destroyed, but Holm's reference was to the publication of *Leptosphaeria caricis*. There is some confusion about two similar epithets: *caricina* and *caricis*. *Leptosphaeria caricina* Schroeter in Cohn 1894 was published later than *Leptosphaeria caricis* and might belong in the subgenus *Phaeosphaeria*, but is excluded for lack of information. See comments under *Phaeosphaeria caricis* (Schroeter) Leuchtmann.

Leptosphaeria corallorhizae Peck, Ann. Rep. New York State Mus. Nat. History, 38: 105. 1884 (1885)

≡ *Phaeosphaeria corallorhizae* (Peck) Barr in Barr et al., New York State Museum Bull. 459. p. 16. 1986

This species seems better placed in *Leptosphaeria* (Shoemaker 1984*a*, p. 2698).

Leptosphaeria dennisiana (Leuchtmann) n.comb. Fig. 331

≡ *Phaeosphaeria dennisiana* Leuchtmann, Sydowia, 37: 155–156. 1984

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 110–160 μm wide, 110–160 μm high. Beak lacking. Ostiole not differentiated. Wall in longitudinal section laterally uniformly 14–20 μm thick of 2 or 3 layers of brown flattened somewhat thick-walled cells. Physes rare. Asci few, ellipsoidal to broadly cylindrical, 70–83 × 22–27 μm, short-stalked, with 8 overlapping linearly triseriate ascospores. Ascospores clavate to fusiform, L/W 3.2, straight or slightly curved, 33–43 × 9.5–12 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.55), slightly constricted at other septa, second cell from apex enlarged towards base and longer than third cell, yellowish brown, without guttules, smooth, with a broad sheath.

HOST: *Minuartia sedoides* (L.) Hiern.

COLLECTIONS EXAMINED: None; from Scotland and Switzerland fide Leuchtmann (1984).

The fungus produces the teleomorph in culture, but no anamorph was observed (Leuchtmann 1984).

The species is close to *Leptosphaeria silenes-acaulis*, *Leptosphaeria salebricola*, and *Leptosphaeria stellariae*. The ascoma wall in all four species is made up of cells with thickened walls. They should be referred to *Leptosphaeria*.

Leptosphaeria hyparrheniae Hansford, Proc. Linn. Soc. London, 153: 24. 1941

Ascocarps scattered, immersed, globose, 100–130 μm wide, 100–130 μm high. Beak erumpent, central, terete, conical. Wall thin, pseudoparenchymatic. Physes filiform. Asci cylindrical, 80–100 × 12–14 μm, short-stalked, with 8 biseriate ascospores. Ascospores fusoid, L/W 6.4, straight or slightly curved, 32–39 × 5–6 μm, 3-septate, acute at ends, olivaceous.

HOST: *Hyparrhenia* sp.

COLLECTIONS EXAMINED: None; data from Hansford (1941).

The ascospores are not brown and the species is excluded from *Phaeosphaeria*.

Leptosphaeria lassenensis n.sp. Figs. 311, 352, 374, 388

Ascomata dispersa, immersa, globosa, basaliter villosa, 300–400 μm lat., 300–400 μm alt. Rostrum inclusum, teres, 10–20 μm long., 30–50 μm lat., cellulis brunneis polygoniis, 5–7 × 5–7 μm compositum; ostiolum 20–30 μm diam., sine periphysibus. Paries ascomatis 20–30 μm lat., cellulis brunneis polygoniis vel prismaticis, tenuitunicatis, 8–12 × 5–7 μm compositus. Physes 2–3 μm lat., multiseptatae, eguttulatae, sine muco. Asci copiosi, cylindrici, 100–135 × 10–13 μm, 8-spori. Ascosporae tetraseriatae, rectae vel lunatae, fusiformes, 40–48 × 5–6 μm, 3-septatae, in ordinem 2:1:2, septo primo medio constricto, flavae, eguttulatae, leves, pulvillo terminalis 2–3 μm lat. instructo.

Hab. in caulibus *Allii validi*, "UNITED STATES OF AMERICA: CALIFORNIA: 121648, Lassen Volcanic National Park, Spring Area between King Creek and Summit Lake, W. B. & V. G. Cooke 26663, 1 July 1950, TYPE, ex Herb. Wehmeyer, as *Leptosphaeria niessleana* Rab."

The epithet refers to the collection site.

Ascocarps scattered, immersed, globose, hairy below, 300–400 μm wide, 300–400 μm high. Beak central, terete, flush, 10–20 μm long, 30–50 μm wide, of 4–6 layers of brown polygonal 5–7 × 5–7 μm cells around a 20–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–30 μm thick of polygonal to prismatic brown 8–12 × 5–7 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–135 × 10–13 μm, short-stalked, with 8 linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 7.5, straight or slightly curved, 40–48 × 5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, with dots at ends of septa, septa thin, second cell from apex not so long as others and enlarged towards middle, pale yellowish brown, without guttules, smooth, with terminal cushionlike appendages 2–3 μm wide.

HOST: *Allium validum* S. Wats.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: CALIFORNIA: 121648, Lassen Volcanic National Park, Spring Area between King Creek and Summit Lake, W. B. & V. G. Cooke 26663, 1 July 1950, TYPE, ex Herb. Wehmeyer, as *Leptosphaeria niessleana* Rab.

An unusual feature is the small cushionlike appendages at the ends of the ascospores. The species does not belong in *Nodulosphaeria* because beak hairs are lacking and the enlarged cell of the ascospores is not nodose. It occurs on a monocot, but is not congeneric with *Phaeosphaeria* species.

Leptosphaeria muhlenbergiae Rehm, Ann. Mycol. 13: 5. 1915 Figs. 300, 342, 371

Ascocarps scattered, immersed to erumpent, subepidermal,

conoid to globose, hairy below, 200–250 μm wide, 180–220 μm high. Beak central, terete, flush, intraepidermal, 40–80 μm long, 70–100 μm wide, of 3–6 layers of brown polygonal 5–7 × 5–7 μm thick-walled cells around a 20–40 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25–35 μm thick of 4–6 layers of polygonal brown 5–8 × 5–8 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100–120 × 16–18 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 3.5, straight or slightly curved, 23–27 × 6–8 μm, 2-septate in sequence 2:1, first septum constricted, submedian (0.62), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, hyaline, with guttules, smooth, after discharge brown and finely echinulate, with a sheath, 1 μm wide.

HOST: *Muhlenbergia racemosa* (Michx.) B.S.P.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: 195679, near Kulm, North Dakota, J. F. Brenckle, Nov. 1913, ex BPI.

This collection may be part of the type, but the designated collection site is not that given with the diagnosis. The collection is of mainly old, nearly empty ascomata of *Phaeosphaeria erikssonii* Shoem. & Babc. clustered near the nodes. Some of the ascomata are inhabited by a fungus with mainly hyaline ascospores with two septa. The young spores appear apiosporous, but the second septum develops regularly. The hyaline spores match the description of young spores given by Rehm. The mature discharged spores differ from Rehm's description of the mature spores: brown, 3-septate, 30–35 × 6–7 μm, with one guttule per cell and the cells equal in length. We exclude it from *Phaeosphaeria* because of the hyaline, 2-septate ascospores. The spores resemble those of *Eudarluca caricis* (Fr.) O. Eriksson but are larger and lack the terminal appendages characteristic of that species. The apparent fungicolous habit suggests that it might belong in the genus *Eudarluca*. However, we did not study the type from Rehm's herbarium in S. Study of this material might resolve the problem.

Leptosphaeria norvegica Rostrup, Vidensk. Salskab. Skrifter, I. Math.-Naturv. Kl., Christiania, 1904 (4): 24. 1904

Ascocarps scattered. Asci clavate, 75 × 10 μm with triseriate to biseriate ascospores. Ascospores elongate, L/W 5.8, 28–30 × 5 μm, 5-septate, second cell from apex enlarged.

HOST: *Braya alpina* Sternb. & Hoppe.

COLLECTIONS EXAMINED: None; data from Saccardo (1905).

Wehmeyer (1952, p. 627–628) applied this name to some collections from western North America without seeing the type. The original collection was on Brassicaceae and not likely to belong in *Phaeosphaeria*.

Leptosphaeria obiones (Crouan & Crouan) Saccardo, Syll. Fung. 2: 24. 1883

≡*Pleospora obiones* Crouan & Crouan, Florule du Finestère, Paris, p. 22. 1867, as *P. obionei*

=*Didymosphaeria spartinae* Grove, J. Bot. (London), 71: 259. 1933

=*Leptosphaeria discors* Saccardo & Ellis in Saccardo, Michelia 2, 567. 1882

=*Metasphaeria discors* (Saccardo & Ellis in Saccardo) Saccardo, Syll. Fung. 2: 173. 1883

≡*Passeriniella discors* (Saccardo & Ellis in Saccardo) Apinis & Chesters, Trans., Brit. Mycol. Soc. 47: 432. 1964

=*Passeriniella incarcerata* Berlese, Icones Fungorum 1: 51. 1892, as *P. incarcerata* (Berkeley & Cooke) Berlese

See Shoemaker (1984*a*) for description as *Passeriniella discors*.

Leptosphaeria orae-maris Linder in Barghoorn & Linder, Farlowia, 1: 413. 1944 Fig. 304

Ascocarps solitary or gregarious, partly or totally immersed, subglobose to ellipsoidal, 135–310(372) μm wide, 125–240 μm high. Beak central, terete, papillate or flush, with periphyses. Wall in longitudinal section laterally uniformly 15–20 μm thick of 6–8 layers of elongate or irregular polygonal brown scleroplenctenchyma cells. Physes numerous, 1–1.5 μm wide, septate, branched, anastomosed. Asci from the centrum base, cylindrical or subclavate, (80)96–141 × 8–12 μm, short-stalked, with 8 biseriate ascospores. Ascospores narrowly fusiform, L/W 3.6, straight or slightly curved, 17–29(32) × (4)5–8 μm, 1- or 3-septate in sequence 2:1:2, first septum strongly constricted, median (0.50), slightly constricted at other septa, second cell from apex enlarged towards base, pale brown, without guttules, smooth, sheath unknown.

HOSTS: *Arundo donax* L., *Glaux maritima* L., *Spartina alterniflora* Loisel, *Spartina townsendii* H. & J. Groves.

COLLECTIONS EXAMINED: None; data from Barghoorn and Linder (1944) and Kohlmeyer and Kohlmeyer (1979).

Leptosphaeria pelagica E. B. G. Jones, Trans. Br. Mycol. Soc. 45: 105. 1962 Fig. 309

Ascocarps solitary, superficial or immersed, globose to ellipsoidal, glabrous, 152–280 μm wide, 115–201 μm high. Beak central, terete, papillate, 62–103 μm long, 49–74 μm wide, lighter colored at apex. Physes 1.6–2.4 μm wide, simple or sparingly branched. Asci subclavate to cylindrical, 100–149 × 14.5–24 μm, short-stalked, with 8 ascospores. Ascospores fusiform to subclavate, L/W 3.3, straight or slightly curved, 28–36(40) × 8–12 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), constricted at other septa, second cell from apex enlarged towards base, hyaline, without guttules, smooth, sheath unknown.

HOSTS: *Agropyron junceiforme* (A. & D. Love) A. & D. Love, *Agropyron pungens* (Pers.) Roemer & Schultes, *Puccinellia maritima* (Hudson) Parl., *Spartina alterniflora* Loisel, *Spartina townsendii* H. & J. Groves, *Spartina* sp.

COLLECTIONS EXAMINED: None; data from Jones (1962) and Kohlmeyer and Kohlmeyer (1979).

The hyaline ascospores exclude this species from *Phaeosphaeria*.

Leptosphaeria "*rehmiana* Mouton" Figs. 319, 347

Collection 184985 was seen from S under this apparently unpublished name. The material is scanty. The fungus is similar to *Phaeosphaeria vagans* but has darker ascospores with thicker walls that may be finely echinulate. It was clearly labelled *Leptosphaeria rehmiana* Mout. The other specimen in S under the same name was from the Tyrol, collected in 1904. It had a drawing similar to the one on the 1884 collection and the spore measurements given were 22–25 × 8 μm. Insofar as we have been able to trace, there is no *Leptosphaeria rehmiana* published by Mouton. There is a *Leptosphaeria rehmii* Mouton, Bull. Soc. Bot. Belg. 39: 44. 1900, described as a

second fungus found on Mouton's set of Rehm Ascomyceten 836, *Sphaerella tassiana* De Not. issued in 1885 and cited in Hedwigia 24: 240. 1885. Rammeloo (1978) reported concerning *Leptosphaeria rehmii* "no material found in BR". There is a *Leptosphaeria rehmiana* Voss, Mycol. carniol. 3: 167. 1891, but it is quite a different species with 3-septate ascospores on *Drypis spinosa* L. (Caryophyllaceae). The existence of the earlier homonym may have prompted the use of the epithet *rehmii*.

Leptosphaeria rehmii Mouton, Bull. Soc. Bot. Belg. 39: 44. 1900

See discussion under *Leptosphaeria "rehmiana."*

Leptosphaeria salebricola Bommer, Rousseau & Saccardo in Saccardo, Syll. Fung. 9: 783. 1891 Figs. 306, 343, 368

≡ *Phaeosphaeria salebricola* (Bomm., Rouss. & Sacc.) Leuchtmann, Sydowia, 37: 156–157. 1984

Ascocarps scattered, immersed, subepidermal, globose to pear-shaped, glabrous, 100–150 μm wide, 100–150 μm high. Beak central, terete, flush, intraepidermal, 30–40 μm long, 25–50 μm wide, of 2 or 3 layers of brown polygonal 5–7 × 4–6 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis with smaller darker cells around beak area. Wall in longitudinal section laterally uniformly 8–10 μm thick of 3 layers of rectangular light brown 6–10 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, ovoid to broadly cylindrical, 45–50 × 15–17 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores broadly fusiform, L/W 4.6, straight to slightly curved, 22–30 × 5.5–6.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.45), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, pale yellow, without guttules, cytoplasm finely granular, smooth, without a sheath.

HOST: *Stellaria graminea* L.

COLLECTION EXAMINED: GERMANY: 196620, Duhnen bei Cuxhaven, Hamburg, A. Ludwig, 8.1927, Petrak, Mycotheca Generalis 314, ex DAOM, as *Leptosphaeria salebricola* Bomm. Rouss. Sacc.

Leuchtmann (1984) reported this species from Germany, Greenland, and Switzerland. He placed this species close to *Phaeosphaeria stellariae* (Rostrup) Leuchtmann. He found both species on the type of *Leptosphaeria stellariae*. *Leptosphaeria stellariae* differs in smaller asci (50–63 × 9 μm), smaller darker colored, and finely warted ascospores 16–20 × 4.5–5 μm. *Leptosphaeria salebricola* is distinguished by large, lighter colored, smooth ascospores with an elongated third cell.

In our view this species is better placed in *Leptosphaeria* because of the thick-walled cells in the ascoma wall reported by Leuchtmann (1984). We did not, however, see thick-walled cells in the collection examined.

Leptosphaeria setosa (Leuchtmann) n.comb. Fig. 312

≡ *Phaeosphaeria setosa* Leuchtmann, Sydowia, 37: 159–160. 1984 (1985)

Ascocarps scattered, immersed, subepidermal, globose, glabrous below, 100–150 μm wide, 100–150 μm high. Beak central, terete, erumpent, truncate-conical, 40–45 μm long, 40–50 μm wide, of 3–5 layers of brown polygonal 4–8 μm cells around a 15–20 μm diameter ostiole, filled with hyaline pseudoparenchyma, without periphyses, with tapered dark brown setae 70–140 μm long, 6–8 μm wide at base, 2–4 μm wide near apex, septate at 20–25 μm intervals. Wall in longitudinal section laterally uniformly 10–15 μm thick of 3 layers of polygonal brown 7–10 × 3–4 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 5- to 8-μm intervals. Asci numerous, in a broad hymenium, broadly cylindrical, 50–75 × 9–10.5 μm, short-stalked, with 8 overlapping linearly triseriate to biseriate ascospores. Ascospores fusiform, L/W 3.6, slightly curved, 18–22 × 5–5.5 μm, 4(5)-septate in sequence (4):2:1:2:3, first septum slightly constricted, supramedian (0.45), not constricted at other septa, without dots at ends of septa, second (third) cell from apex enlarged towards base, yellowish brown, without guttules, smooth, with a very thin sheath.

HOST: *Yucca elephantipes* Hort. ex Regel.

COLLECTIONS EXAMINED: None; from Mexico fide Leuchtmann (1984).

This species produces a *Phoma* anamorph in culture with the teleomorph. In culture the ascospores are mainly 5-septate whereas in nature they are mainly 4-septate. This species is unlike the others in *Phaeosphaeria* because of the conspicuous beak setae. It is excluded from *Phaeosphaeria*. The placement in *Leptosphaeria* is not ideal. A new genus might be warranted.

Leptosphaeria viridella (Peck) Saccardo, Sylloge Fungorum, 2: 18. 1883

≡ *Sphaeria viridella* Peck, Report New York State Museum Nat. Hist. 30: 66. 1878

≡ *Phaeosphaeria viridella* (Peck) Leuchtmann, Sydowia, 37: 108–109. 1984 (1985)

This species seems better placed in *Leptosphaeria* (Shoemaker 1984, pp. 2715–2718).

Lophiostoma sp. Fig. 297

Ascocarps scattered, superficial, globose, glabrous, 300–500 μm wide, 350–400 μm high. Beak central, flattened, 80–100 μm long, 120–150 μm wide; slit 15–20 μm wide, without periphyses. Asci numerous, in a broad hymenium, cylindrical, 90–110 × 9–11 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.3, straight or slightly curved, 25–30 × 5–6 μm, 1-septate, first septum slightly constricted, supramedian (0.48), not constricted at other septa, without dots at ends of septa, upper cell from apex enlarged towards base, hyaline, with guttules, smooth, with a sheath 1 μm wide but longer at ends.

HOST: *Iris pseudacorus* L.

COLLECTION EXAMINED: GERMANY: 196595, Jungfernheim bei Berlin, P. Sydow, 10.1888, Sydow, Myc. March. 2352, ex FH, as *Leptosphaeria parvula* Niessl.

This is a *Lophiostoma* and clearly not allied with *Phaeosphaeria parvula* (Niessl) Leuchtmann.

Lophiotrema grandispora (Saccardo) n.comb. Fig. 327

≡ *Leptosphaeria grandispora* Saccardo, Michelia, 1: 341. 1878

≡ *Metasphaeria grandispora* (Saccardo) Saccardo, Syll. Fung. 2: 181. 1883

≡ *Massariosphaeria grandispora* (Saccardo) Leuchtmann, Sydowia, 37: 172. 1984

=*Lophiotrema microthecum* Vestergren, Bot. Not., p. 158. 1899

Ascocarps scattered to clustered, immersed to erumpent, globose, glabrous, 200–450 μm wide, 200–450 μm high. Beak central, terete to slit like, erumpent. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15 μm thick, outer cells scleroplectenchyma, inner cells flattened pseudoparenchyma. Physes numerous, 1 μm wide, branched. Asci numerous, clavate to cylindrical, 75–110 × 12–20 μm, short-stalked, with 8 biseriate ascospores. Ascospores fusoid, L/W 6.1, straight or slightly curved, 30–45 × 4–6(9) μm, 9- to 12-septate, first septum slightly constricted, supramedian (0.45), constricted at other septa, fifth cell from apex enlarged, hyaline, with one guttule per cell, smooth, with a sheath, 2 μm wide.

HOSTS: *Aconitum lobelianum* Richb., *Agrostis stolonifera* L., *Ammophila arenaria* (L.) Link, *Arrhenatherum elatius* (L.) J.u.C. Presl, *Festuca arundinacea* Schreb., *Molinia coerulea* (L.) Moench, *Phragmites communis* Trin., *Typha latifolia* L.

COLLECTIONS EXAMINED: None; data from Saccardo (1878), Eriksson (1967*b*), and Leuchtmann (1984).

The ascospores were originally described as hyaline from a collection on *Typha*. The type is not available from PAD (Leuchtmann 1984). Berlese, who had access to Saccardo's collections, described the beak as slit-like. The fungus has more affinity to *Lophiotrema* than to *Massariosphaeria* and the new combination is proposed to reflect this opinion.

Massarina arundinacea (Sow.: Fr.) Leuchtmann, Sydowia, 37: 179. 1984 (1985) Figs. 298, 350

≡*Sphaeria arundinacea* Sowerby, Engl. Fungi 3. 1801, Fries, Systema Mycol. 2: 429. 1823

≡*Pleospora arundinacea* (Sow.) Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 137. 1869 (1870)

≡*Melogramma arundinacea* (Sow.) Niessl, Hedwigia, 13: 185. 1874

≡*Leptosphaeria arundinacea* (Sow.) Saccardo, Nuovo Giorn. Bot. Ital. 7: 320. 1875

≡*Phaeosphaeria arundinacea* (Sow.) Hedjaroude, Sydowia, 22: 78. 1968

=*Leptosphaeria nigrans* (Desm.) Ces. & De Not. forma *arundinis* Roumeguère, Fungi Selecti Exsiccati 4265. 1887

Ascocarps scattered, immersed, intraepidermal, appearing superficial, depressed globose, glabrous, 180–220 μm wide, 160–180 μm high. Beak not protruding, central, terete, flush, intraepidermal, 50–60 μm wide, of 6–8 layers of brown polygonal 4–6 × 4–6 μm cells around a 20–30 μm diameter ostiole, without periphyses, with a clypeus 20–25 μm thick of cells like those of the beak extending 100–120 μm. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 18–22 μm thick of 4 or 5 layers of rectangular brown 10–14 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 75–85 × 12–16 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 6.8, straight or slightly curved, 32–36 × 4.5–5 μm, 1- or 2-septate in sequence (2):1, first septum median (0.50), enlarged above the first septum, constricted at midpoint of upper cell, hyaline, with faint guttules, smooth, with an ill-defined uniform sheath 1 μm wide over most of spore and a sharply defined basal sheath 2–3 μm wide.

HOST: *Phragmites communis* Trin. as *Arundo phragmites*.

COLLECTIONS EXAMINED: FRANCE: RHONE: 196539, Parc de la Tête d'Or, Lyon, J. Therry, mai, Roumeguère, Fungi Selecti Exsiccati 4265, ex FH, as *Leptosphaeria nigrans* (Desm.) Ces. & De Not. f. *Arundinis*. GREAT BRITAIN: 196582, C. B. Plowright, January 1873, ex FH, Sphaeriacei Britannici 61, as *Sphaeria arundinacea*.

The fungus matches the description given by Leuchtmann (1984), whose synonymy is accepted and to which forma *arundinis* is added. The unusual features noted include the thick clypeus that grows in and under the epidermis and extends gradually from the beak area and covers about 2/3 of the ascoma. The ascoma wall is distinct from the clypeus, uniform in thickness, and composed of large rectangular cells. The unusual ascospores with the peculiar basal sheath were well described and illustrated by Leuchtmann.

Massarina waikanaensis (G. S. Ridley) n.comb. Figs. 302, 341

≡*Phaeosphaeria waikanaensis* G. S. Ridley, N.Z. J. Bot. 26: 417. 1988

Ascocarps scattered, superficial, depressed ellipsoidal, glabrous, 200–250 μm long, 150–200 μm wide, 100–125 μm high. Beak central, terete, 25–35 μm long, 45–55 μm wide, of 5 or 6 layers of brown polygonal 4–6 × 4–6 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–12 μm thick of 3 or 4 layers of polygonal brown 6–8 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 50–60 × 10–12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, L/W 4.2, straight or slightly curved, 20–24 × 5–5.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, with dots at ends of septa, second cell from apex enlarged towards base, hyaline, greenish to pale yellowish, with guttules, smooth, with a sheath, 2.5–4 μm wide.

HOST: Decorticated wood.

COLLECTION EXAMINED: NEW ZEALAND: WELLINGTON: 198172, Waikanae, Waikanae River estuary, G. S. Ridley, 11 Feb. 1982, HOLOTYPE, *Phaeosphaeria wakanae*, PDD 50261.

The ascospores are mainly colorless and resemble those of *Massarina microspora* Pass. but are consistently longer. The new combination is proposed to reflect this affinity.

Massariosphaeria adrianii n.sp. Figs. 323, 353, 377

Ascomata dispersa, immersa, globosa, glabra, 200–300 μm lat., 200–300 μm alt. Rostrum teretum. Physes copiosae, 2–3 μm lat., multiseptatae, eguttulatae, sine strato muco. Asci copiosi, cylindrici, 120–140 × 20–29 μm, 8-spori. Ascosporae biseriatae, fusiforme, rectae vel leniter curvatae, 30–37 × 8–10 μm, 6- to 7(8)-septatae in ordinem (4):3:2:1:2:4:3(4), septo primo supramedio (0.43), constricto, brunneae, eguttulatae, echinulatae, strato muco 2–3 μm circumdato.

Hab. in culmis *Scirpi maritimi*, "GERMANY: 195314(*b*), Königstein, W. Krieger, 14 July 1904, Krieger, Fungi sax-

onici 2461, part of TYPE of *Leptosphaeria saxonica* Höhnel, ex BPI."

The epithet refers to Dr. Adrian Leuchtmann, a student of this group.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 200–300 μm wide, 200–300 μm high. Beak central, terete. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 120–140 × 20–29 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, straight or slightly curved, 30–37 × 8–10 μm, 6- to 7(8)-septate in sequence (4):3:2:1:2:4:3:(4), first septum slightly constricted, supramedian (0.43), not constricted at other septa, third (fourth) cell from apex enlarged towards middle, yellowish brown, without guttules, echinulate, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Scirpus maritimus* L.

COLLECTION EXAMINED: GERMANY: 195314(*b*), Königstein, W. Krieger, 14 July 1904, Krieger, Fungi saxonici 2461, part of TYPE of *Leptosphaeria saxonica* Höhnel, ex BPI.

This species does not match the description of *Leptosphaeria saxonica*, but belongs in *Massariosphaeria* near *M. mosana* (Mouton) Leuchtmann.

Massariosphaeria clavata (Guyot) n.comb. Fig. 317
≡*Leptosphaeria clavata* Guyot, Rev. Mycol., N.S., 11: 62. 1946

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 150–350 μm wide, 150–350 μm high. Beak central, terete, erumpent, intraepidermal, truncate-conical, 40–85 μm long. Physes not recorded. Asci numerous, cylindrical–clavate, 80–120 × 12–16 μm, short-stalked, with 8 overlapping obliquely uniseriate ascospores. Ascospores clavate, L/W 3.5, straight or slightly curved, 21–28 × 6–8 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.44), not or slightly constricted at other septa, third cell from apex enlarged towards base, yellowish brown, without guttules, smooth.

HOSTS: *Koeleria albescens* DC, *Koeleria gracilis* Pers.

COLLECTIONS EXAMINED: None; data from Guyot (1946).

Massariosphaeria melicae (Bubák) n.comb.
Figs. 328, 361, 372, 387
≡*Leptosphaeria melicae* Bubák, Ann. Naturh. Hofmus. Wien, 28: 198. 1914

Ascocarps scattered, immersed in sheath, subepidermal, depressed globose, hairy below, 200–300 μm wide, 200–300 μm high. Beak central, terete, flush, 70–90 μm long, 100–120 μm wide, of 4–9 layers of reddish brown polygonal 8–10 × 8–10 μm cells around a 30–50 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 25–30 μm thick of 4–6 layers of polygonal to rectangular reddish brown 8–10 × 5–7 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 12-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, clavate to cylindrical, 120–140 × 24–28 μm, short-stalked, with 8 overlapping linearly tetraseriate ascospores. Ascospores narrowly fusiform, L/W 4.7, straight or curved, 42–52 × 9–11 μm, 8-septate in sequence 3:2:1:4:2:4:3:4, first septum slightly constricted, supramedian (0.34), not constricted at other septa, third cell from apex enlarged towards base, reddish brown, with guttules, echinulate, with a conspicuous sharply delimited sheath, 3–4 μm wide.

HOST: *Melica inaequiglumis* Boiss.

COLLECTION EXAMINED: KURDISTAN: 195676, Taurus Armenius, in monte Meleto (Meretug), Dagh, Bitlis, 2900–3100 m, Handel-Mazzetti 2748, 11 Aug. 1910, Herb. Bubák, ex BPI, as *Leptosphaeria melicae*, TYPE.

This species is close to *Massariosphaeria phaeospora* (E. Müller) Crivelli, but distinct in having the first septum at 0.34 and in the consistently 8-septate ascospores.

Massariosphaeria mosana (Mouton) Leuchtmann, Sydowia, 37: 170. 1984 (1985) Figs. 322, 358, 373, 386
≡*Leptosphaeria mosana* Mouton, Bull. Soc. Roy. Bot. Belg. 39: 45. 1900

Ascocarps scattered, immersed, subepidermal, globose, 250–350 μm wide, 250–350 μm high with smooth, brown hairs 50–100 × 4–5 μm, septate at 20- to 30-μm intervals. Beak central, terete, flush, 0–15 μm long, 40–50 μm wide. Ascocarp wall surface of dark polygonal zones separated by fingerlike radiating cells. Wall in longitudinal section laterally uniformly 25–35 μm thick of 8–12 layers of rectangular brown 8–15 × 4–6 μm pseudoparenchyma cells. Physes not numerous, 1.5–2 μm wide, with thin septa at 10- to 20-μm intervals, without guttules. Asci numerous, in a broad hymenium, cylindrical, 125–165 × 18–25 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores fusiform, L/W 4.0, straight, 35–40 × 8–11 μm, 7-septate in sequence 4:3:2:1:2:3:4, first septum slightly constricted, median (0.50), slightly constricted at other septa, without dots at ends of septa, septa thin, fourth cell from apex slightly enlarged towards middle, reddish brown, with guttules, echinulate, with a sheath 2–3 μm wide.

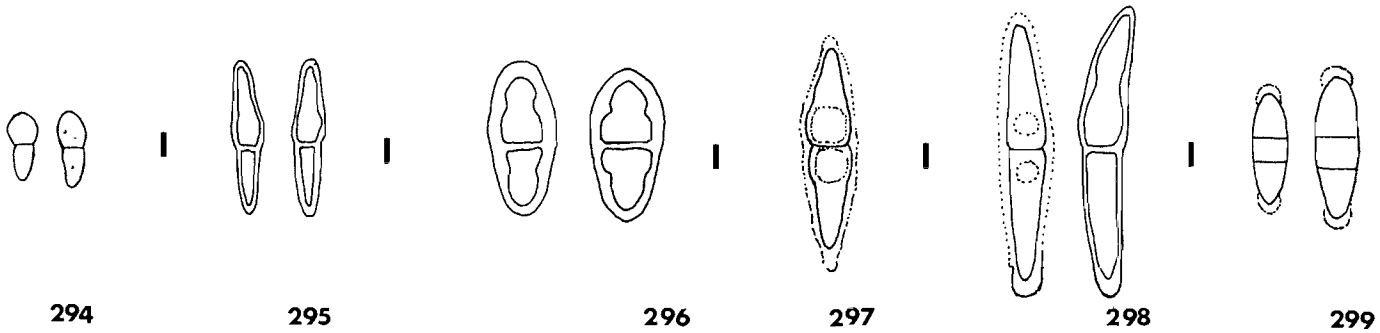
HOST: *Phalaris arundinacea* L.

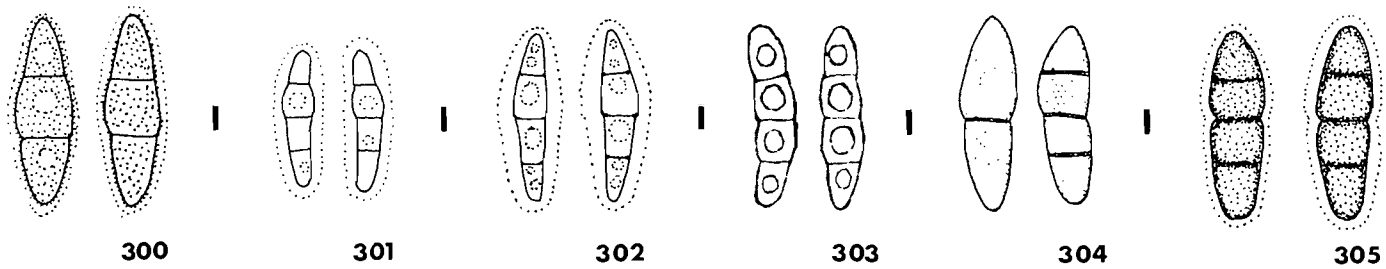
COLLECTION EXAMINED: GREAT BRITAIN: 140150(*b*), Yorkshire, W. G. Bramley, 6 June 1948, Herb. I.M.I. 34222, ex Herb. CMI, as *Leptosphaeria graminis*.

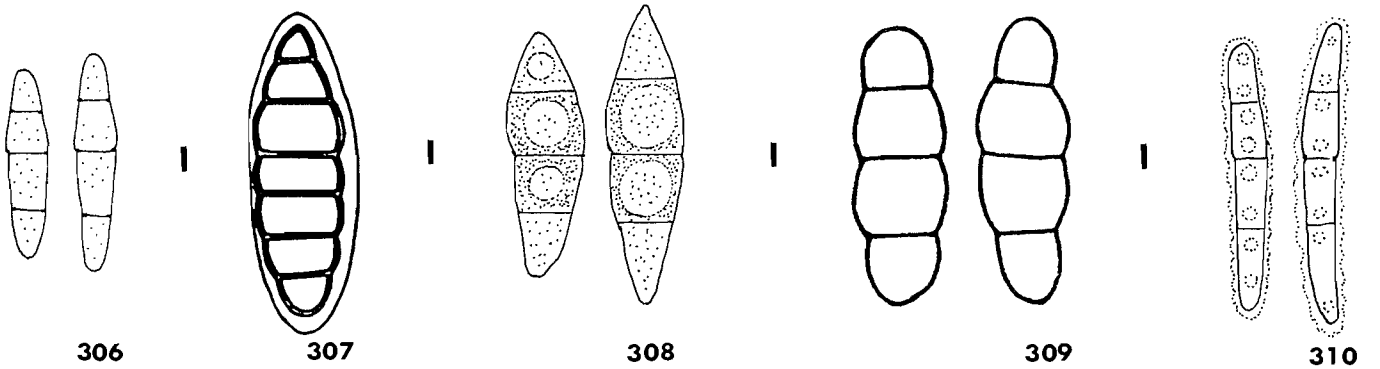
This species was found rarely on the type of *Phaeosphaeria parvograminis* Shoem. & Babc.

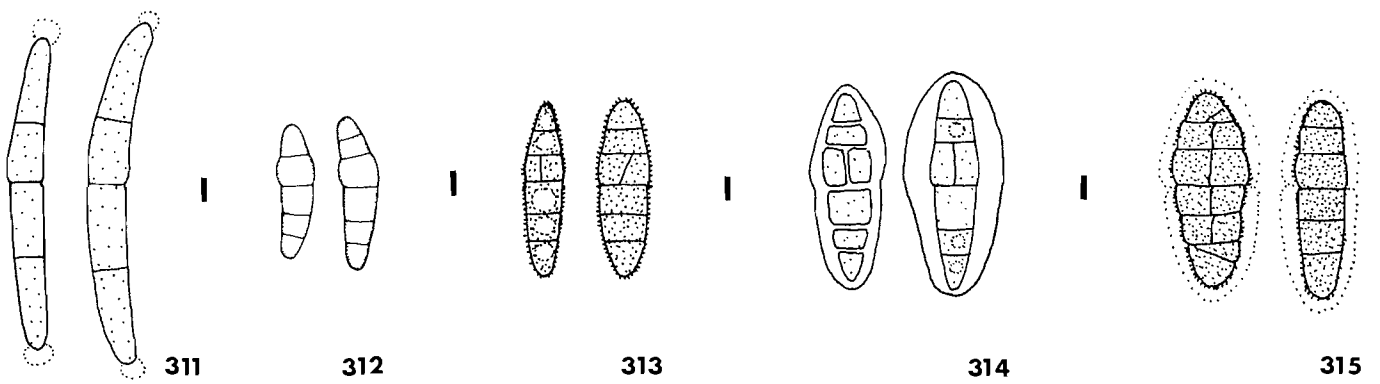
Massariosphaeria palustris (E. Müller) Leuchtmann, Sydowia, 37: 171. 1984 (1985) Fig. 307
≡*Leptosphaeria palustris* E. Müller, Sydowia, 4: 207–208. 1950

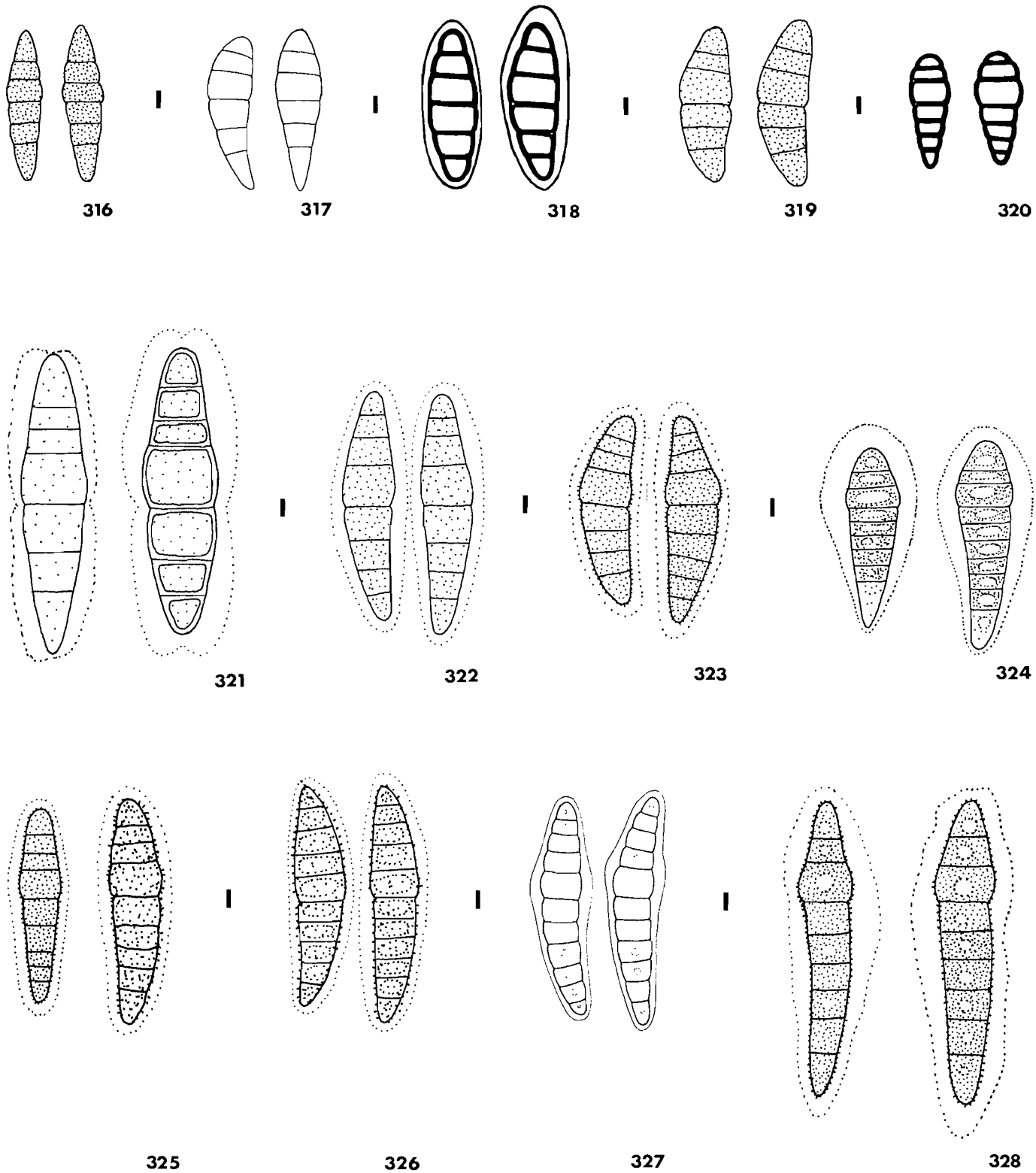
FIGS. 294–315. Ascospores. ×1000. Fig. 294. *Phaeosphaerella oryzae*, (Hara 1918, Plate III, Fig. 16). Fig. 295. *Didymella oxyspora*, 195217 TYPE. Fig. 296. *Wettsteinina lacustris*, 196562. Fig. 297. *Lophistoma* sp., 196595. Fig. 298. *Massarina arundinacea*, 196539. Fig. 299. *Eudarluca caricis*, 195444 TYPE of *Leptosphaeria nigrificans*. Fig. 300. *Leptosphaeria muhlenbergiae*, 195679. Fig. 301. *Metasphaeria maydis*, 196551. Fig. 302. *Massarina waikanaensis*, 198172 TYPE. Fig. 303. *Leptosphaerella ellongata*, (Hara 1918, Fig. 6). Fig. 304. *Leptosphaeria orae-maris*, (Barghoorn and Linder 1944, Fig. 10). Fig. 305. *Scleropleella personata*, 195448. Fig. 306. *Leptosphaeria salebricola*, 196620. Fig. 307. *Massariosphaeria palustris*, (Müller 1950, Abb. 9*b*). Fig. 308. *Trematosphaeria heterospora*, 196584. Fig. 309. *Leptosphaeria pelagica*, (Jones 1952, Fig. 6). Fig. 310. *Sphaerulina acori*, 184920, 198222 TYPE. Fig. 311. *Leptosphaeria lassenensis*, 121648 TYPE. Fig. 312. *Leptosphaeria setosa*, (Leuchtmann 1984, Abb. 6*e*, as *Phaeosphaeria setosa*). Fig. 313. *Pleospora findens*, 198898. Fig. 314. *Pleospora harknessii*, 195317. Fig. 315. *Clathrospora deflectens*, 196594 TYPE (dorsal and lateral view).



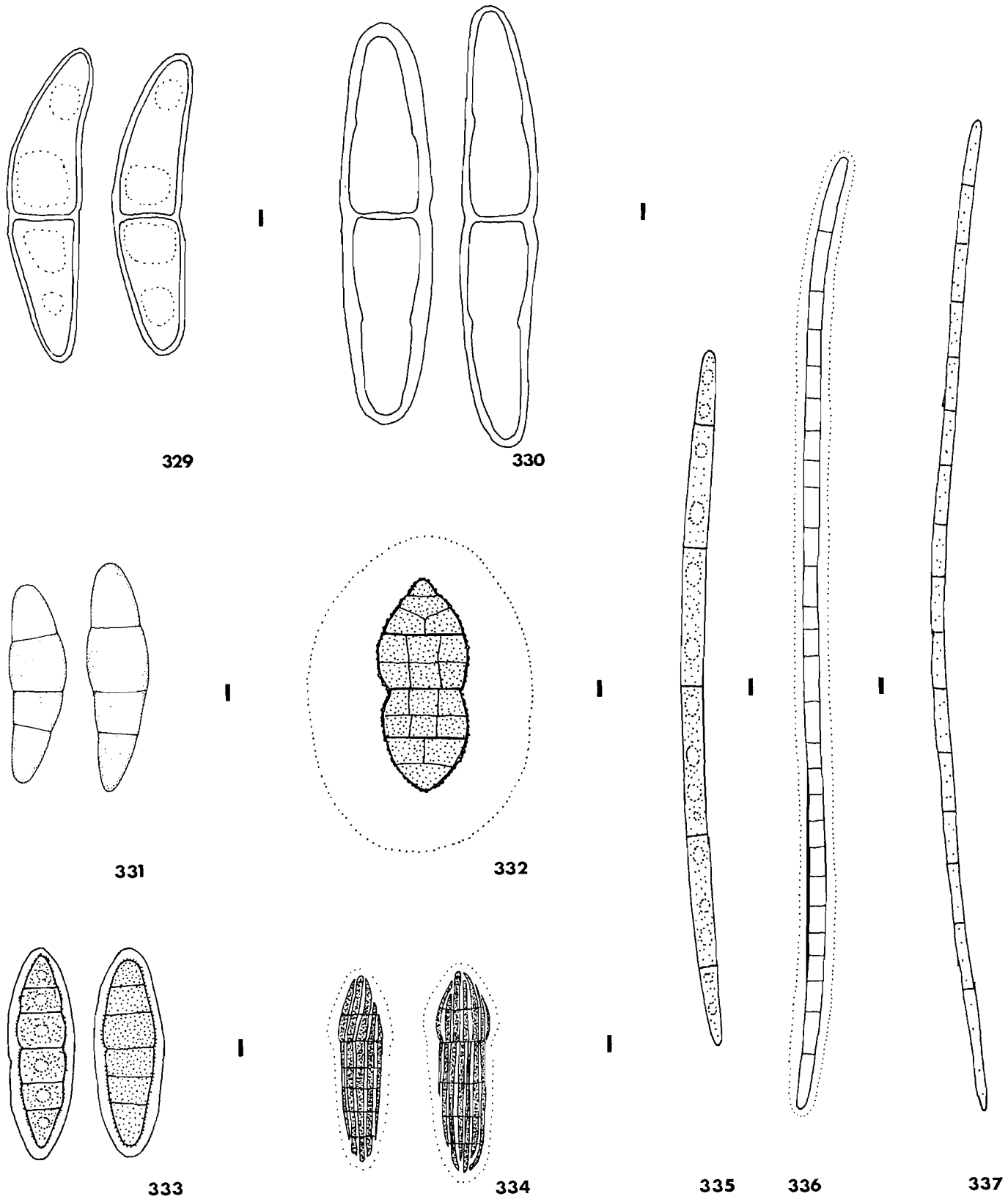




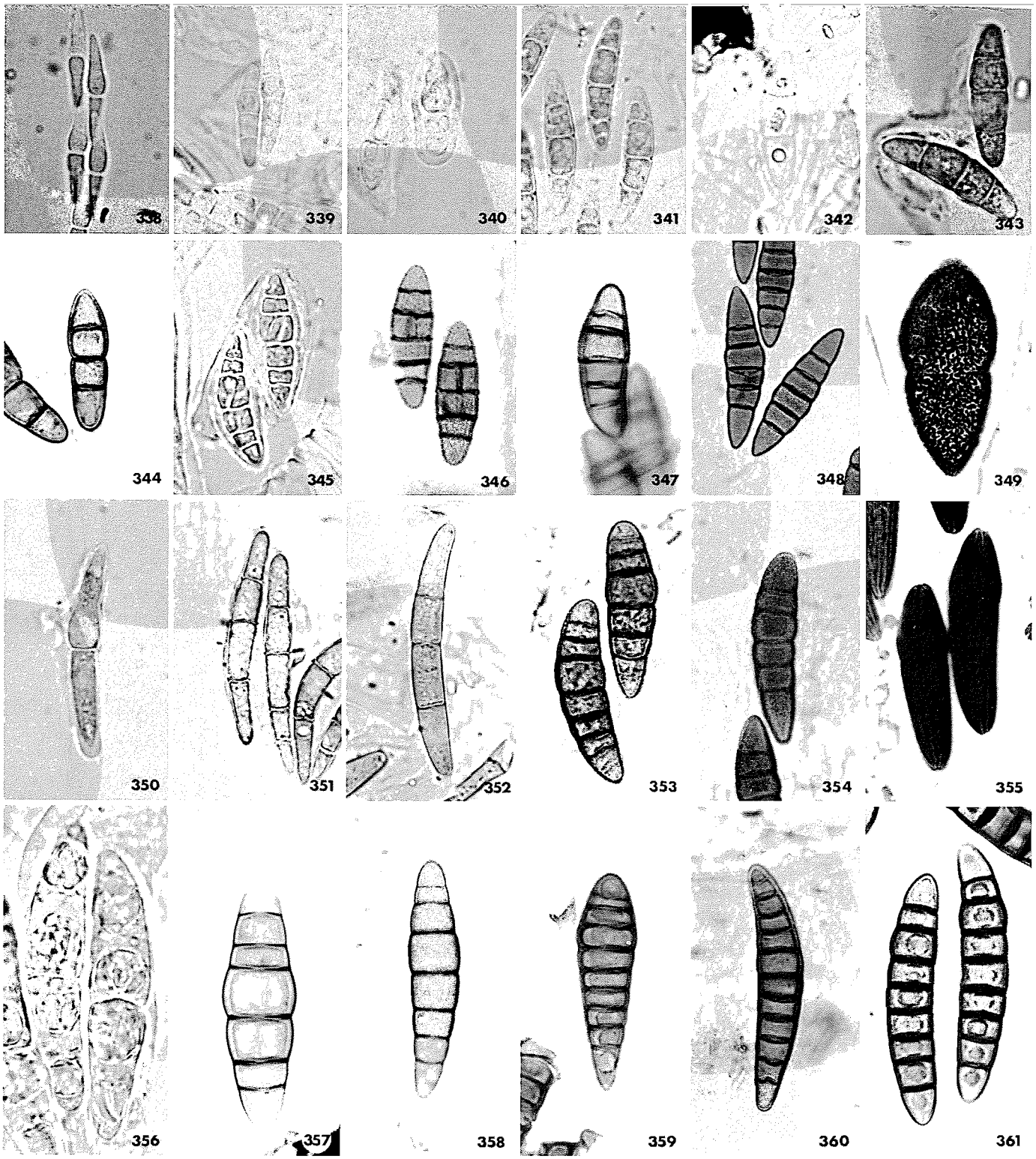




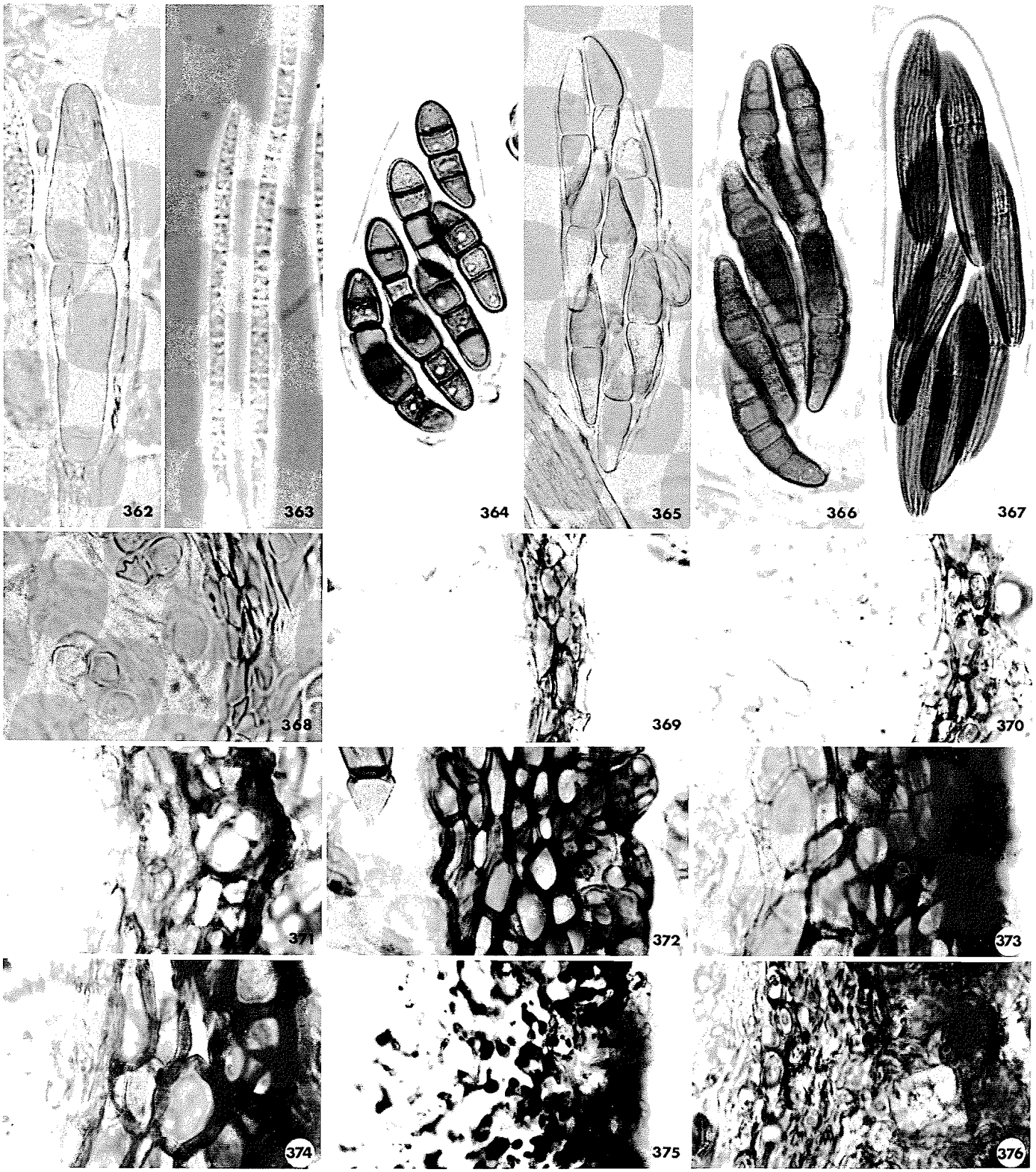
FIGS. 316–328. Ascospores. ×1000. Fig. 316. *Montagnula subsuperficialis*, 193080. Fig. 317. *Massariosphaeria clavata*, (Guyot 1946, Fig. D). Fig. 318. *Massariosphaeria scirpina*, (Müller 1950, Abb. 31*f*). Fig. 319. *Leptosphaeria "rehmiana"*, 184985. Fig. 320. *Massariosphaeria thurgoviensis*, (Müller 1950, Abb. 31*m*). Fig. 321. *Amarenomyces ammophilae*, 121610. Fig. 322. *Massariosphaeria mosana*, 140150(*b*). Fig. 323. *Massariosphaeria adrianii*, 195314(*b*). Fig. 324. *Hysterium clavisporium*, 196667 TYPE, 196666. Fig. 325. *Massariosphaeria typhicola*, 123582(*b*). 171020. Fig. 326. *Montagnula anthostomoides*, 123610. Fig. 327. *Lophiotrema grandispora*, (Leuchtmann 1984, Fig. 18*f*, as *Massariosphaeria grandispora*). Fig. 328. *Massariosphaeria melicae*, 195676.



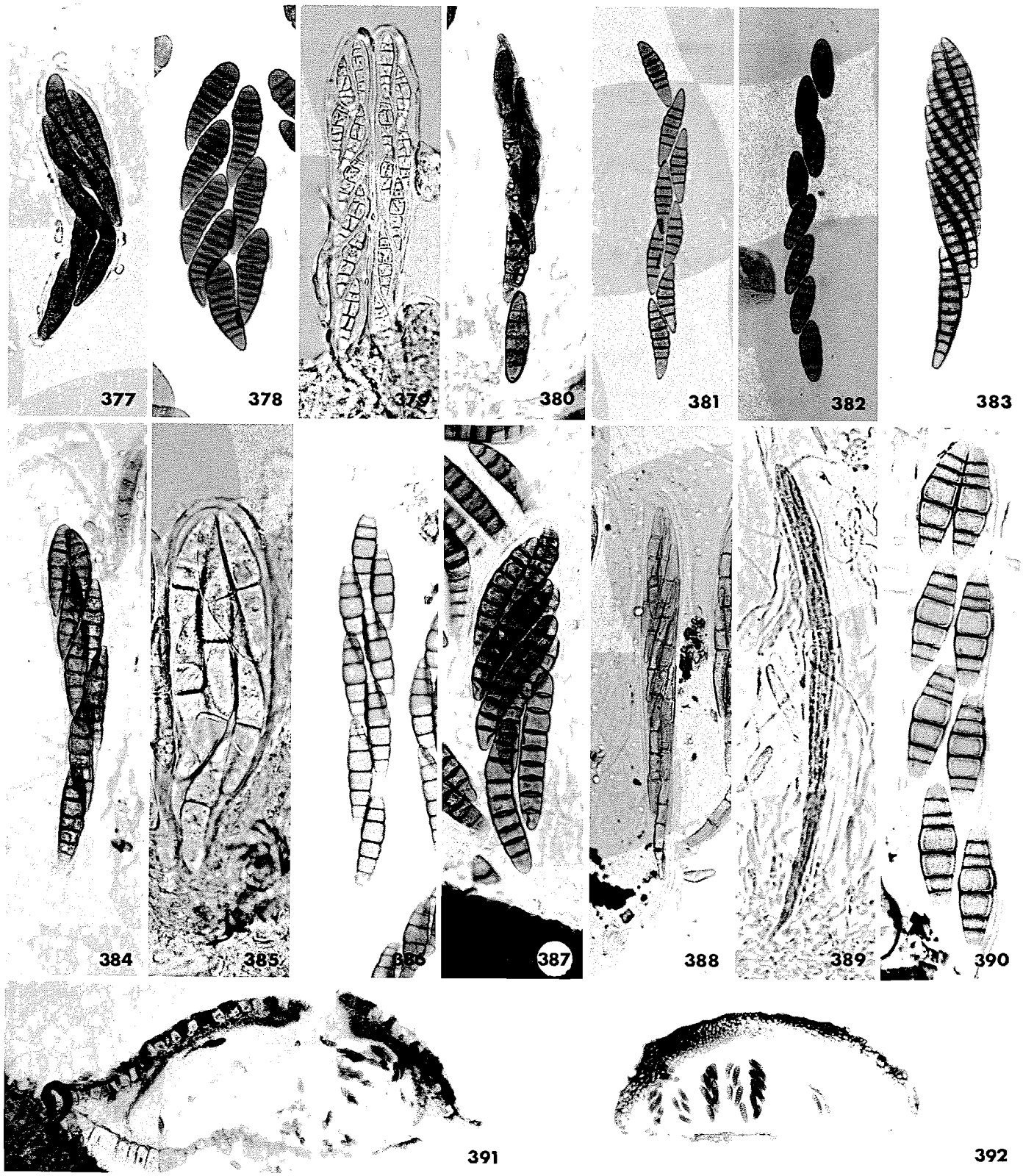
FIGS. 329–337. Ascospores. ×1000. Fig. 329. *Didymella taiwanensis*, 195316 TYPE. Fig. 330. *Wettsteinina marina*, 196891(*a*). Fig. 331. *Leptosphaeria dennisiana*, (Leuchtmann 1984, Abb, 14*e*). Fig. 332. *Pleospora opaca*, 189179(*b*). Fig. 333. *Massariosphaeria scabrispora*, 195315. Fig. 334. *Sulcispora pleurospora*, 123600. Fig. 335. *Ophiosphaerella korrae*, 190957. Fig. 336. *Ophiosphaerella sasaecola*, 198167. Fig. 337. *Ophiosphaerella herpotricha*, 198175.



FIGS. 338–361. Ascospores. ×1000. Fig. 338. *Didymella oxyspora*, 195217 TYPE. Fig. 339. *Metasphaeria maydis*, 196551. Fig. 340. *Wettsteinina lacustris*, 196562 TYPE. Fig. 341. *Massarina waikanaensis*, 198172 TYPE. Fig. 342. *Leptosphaeria muhlenburgiae*, 195679. Fig. 343. *Leptosphaeria salebricola*, 196620. Fig. 344. *Scleropleella personata*, 195448. Fig. 345. *Pleospora harknessii*, 195317 TYPE. Fig. 346. *Pleospora findens*, 198898 TYPE. Fig. 347. *Leptosphaeria* "*rehmiana*", 184985. Fig. 348. *Montagnula subsuperficialis*, 193580 TYPE of *Leptosphaeria melanommoides*. Fig. 349 *Pleospora opaca*, 189179(*b*). Fig. 350. *Massarina arundinacea*, 196539. Fig. 351. *Sphaerulina acori*, 184920. Fig. 352. *Leptosphaeria lassenensis*, 121648 TYPE. Fig. 353. *Massariosphaeria adrianii*, 195314(*b*) TYPE. Fig. 354. *Massariosphaeria typhicola*, 123582(*b*). Fig. 355. *Sulcispora pleurospora*, 91991. Fig. 356. *Didymella taiwanensis*, 195316 TYPE. Fig. 357. *Amarenomyces ammophilae*, 121610. Fig. 358. *Massariosphaeria mosana*, 140150(*b*). Fig. 359. *Hysterium clavisporum*, 196894 TYPE. Fig. 360. *Montagnula anthostomoides*, 123610. Fig. 361. *Massariosphaeria melicae*, 195676 TYPE.



FIGS. 362–363. Ascospores. ×1000. FIGS. 364–367. Asci. ×1000. FIGS. 368–376. Wall structure. ×1000. Fig. 362. *Wettsteinina marina*, 196891(*a*) TYPE. Fig. 363. *Ophiosphaerella sasaecola*, portion of ascospores showing sheath, 198167 TYPE. Fig. 364. *Scleropleella personata*, 195448. Fig. 365. *Wettsteinina marina*, 196891(*a*) TYPE. Fig. 366. *Massariosphaeria typhicola*, 123582(*b*). Fig. 367. *Sulcispora pleurospora*, 123551. Fig. 368. *Leptosphaeria salebricola*, 196620. Fig. 369. *Didymella oxyspora*, 195217 TYPE. Fig. 370. *Didymella taiwanensis*, 195316 TYPE. Fig. 371. *Leptosphaeria muhlenbergiae*, 195679. Fig. 372. *Massariosphaeria melicae*, 195676 TYPE. Fig. 373. *Massariosphaeria mosana*, 140150(*b*). Fig. 374. *Leptosphaeria lassenensis*, 121648 TYPE. Fig. 375. *Wettsteinina marina*, 196891(*a*) TYPE. Fig. 376. *Massariosphaeria scabrispora*, 195315 TYPE.



FIGS. 377–390. Asci. ×520. FIGS. 391–392. Sections. ×140. Fig. 377. *Massariosphaeria adrianii*, 195314(*b*) TYPE. Fig. 378. *Hysterium clavisporum*, 196666. Fig. 379. *Pleospora harknessii*, 195317 TYPE. Fig. 380. *Massariosphaeria scabrispora*, 195315 TYPE. Fig. 381. *Montagnula subsuperficialis*, 193580 TYPE of *Leptosphaeria melanommoides*. Fig. 382. *Pleospora findens*, 198898 TYPE. Fig. 383. *Montagnula anthostomoides*, 123610. Fig. 384. *Massariosphaeria typhicola*, 196415. Fig. 385. *Didymella taiwanensis*, 195316 TYPE. Fig. 386. *Massariosphaeria mosana*, 140150(*b*). Fig. 387. *Massariosphaeria melicae*, 195676 TYPE. Fig. 388. *Leptosphaeria lassenensis*, 121648 TYPE. Fig. 389. *Ophiosphaerella herpotricha*, 198175. Fig. 390. *Amarenomyces ammophilae*, 121610. Fig. 391. *Massariosphaeria scabrispora*, 195315 TYPE. Fig. 392. *Hysterium clavisporum*, 196666.

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 100–150 μm wide, 100–150 μm high. Beak central, terete, intraepidermal, truncate-conical, 40–50 μm long, 50–60 μm wide, of 6–8 layers of brown polygonal 4–6 × 4–6 μm cells around a 15–20 μm diameter ostiole, with hyaline pseudoparenchyma. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 16–20 μm thick, of 2 or 3 layers of polygonal brown 8–10 × 8–10 μm pseudoparenchyma cells. Physes numerous. Asci not numerous, clustered, obovate, 90–110 × 25–35 μm, short-stalked, with 8 overlapping linearly tetraseriate to biseriate ascospores. Ascospores fusiform, L/W 3.2, straight, 33–42 × 10–13 μm, 5- to 7-septate in sequence (4):3:2:1:2:3:(4), first septum slightly constricted, supramedian (0.44), not constricted at other septa, fourth cell from apex enlarged, brown, without guttules, smooth, with a sheath, 1.5–3 μm wide.

HOST: *Typha latifolia* L.

COLLECTIONS EXAMINED: None; data from Müller (1950).

Massariosphaeria scabrispora (Teng) n.comb. Figs. 333, 376, 380, 391

≡*Leptosphaeria scabrispora* Teng, Sinensia, 4(12): 378. 1934

Ascocarps scattered, immersed, subepidermal, hemispherical, glabrous, 400–500 μm wide, 200–250 μm high. Beak central, flush, terete, 0 μm long, 50–70 μm wide, of 3 or 4 layers of brown polygonal 5–7 × 3–5 μm cells around a 30–40 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–18 μm thick of 3 or 4 layers of polygonal brown 5–7 × 3–5 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, peripheral, in a broad hymenium, cylindrical, 100–140 × 14–17 μm, long-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.6, straight or slightly curved, 30–35 × 8–11 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), slightly constricted at other septa, third cell from apex enlarged towards base, penultimate cells shortest, reddish brown, with or without guttules, echinulate in partial rows, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: Bambuseae (bamboo culm).

COLLECTION EXAMINED: PEOPLES REPUBLIC OF CHINA: 195315, I-hsin, Kiangsu, S. C. Teng 2024, 6 June 1933, part of the presumed TYPE, ex BPI, with a duplicate, MO 73280, as *Leptosphaeria scabrispora*.

This material is well matured. The thick protective host epidermis is heavily colonized by fungus mycelium. The upper wall of the ascoma just beneath the epidermis is slightly thinner than the lateral wall. The wall at the base becomes very thin. The pore is unremarkable and filled with tips of physes. The asci are unusual in the peripheral arrangement and the long stalks. The species is better placed in *Massariosphaeria* than in *Phaeosphaeria*.

Massariosphaeria scirpina (Winter) Leuchtmann, Sydowia, 37: 174. 1984 Fig. 318

≡*Leptosphaeria scirpina* Winter, Hedwigia, 11: 146. 1872

≡*Metasphaeria scirpina* (Winter) Saccardo, Syll. Fung. 2: 182. 1883

≡*Trichometasphaeria scirpina* (Winter) Holm, Symb. Bot. Upsal. 14(3): 142. 1957

=*Metasphaeria starbaeckii* Vesterg., Bot. Not., p. 168. 1899

Ascocarps scattered, immersed, subepidermal, globose, 180–250 μm wide, 180–250 μm high with smooth, brown hairs 50–100 × 3–4 μm, septate at 20- to 30-μm intervals. Beak central, terete, erumpent, truncate-conical, 20–30 μm long, 40–60 μm wide. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–20 μm thick of 5 or 6 layers of prismatic brown 8–11 × 4–6 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 85–120 × 14–15 μm, short-stalked, with (4)8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.6, straight or slightly curved, 32–38 × 5.5–7 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, submedian (0.55), not constricted at other septa, without dots at ends of septa, septa thin, third cell from apex shorter than wide, slightly enlarged towards base, pale yellow, without guttules, smooth, sheath not seen.

HOST: *Scirpus maritimus* L.

COLLECTIONS EXAMINED: GERMANY: 184923, bei Königstein, W. Krieger, 14 Juli 1904, ex Herb. Rehm, ex S, as *Leptosphaeria dubiosa* Mout.

This collection is referred here despite the color of the ascospores that otherwise match the ample description given by Leuchtmann (1984).

Massariosphaeria thurgoviensis (E. Müller) n.comb. Fig. 320

≡*Leptosphaeria thurgoviensis* E. Müller, Sydowia, 4: 280–281. 1950

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 150–200 μm wide, 150–200 μm high. Beak central to eccentric, terete, flush, intraepidermal, 5–10 μm long, 16–20 μm wide, of 2 or 3 layers of brown polygonal 6–8 × 4–6 μm cells around a 15–20 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10 μm thick, of 2 or 3 layers of polygonal brown 6–8 × 4–6 μm pseudoparenchyma cells. Physes numerous, 1.5–2 μm wide, with thin septa. Asci numerous, in a broad hymenium, clavate, 75–100 × 10–12 μm, short-stalked, with 8 overlapping linearly triseriate to biseriate ascospores. Ascospores clavate, L/W 3.6, straight or slightly curved, 18–23 × 6–7.5 μm, 6-septate in sequence 3:2:1:4:3:4, first septum slightly constricted, supramedian (0.45), slightly constricted at other septa, third cell from apex enlarged towards base, brown, without guttules, smooth.

HOST: grass.

COLLECTIONS EXAMINED: None; data from Müller (1950).

This species is remarkable in having clavate, 6-septate ascospores.

Massariosphaeria typhicola (Karsten) Leuchtmann, Sydowia 37: 168. 1984 (1985) Figs. 325, 354, 366, 384

≡*Leptosphaeria typhicola* Karsten, Mycol. Fenn. 2: 100. 1873

≡*Phaeosphaeria typhicola* (Karsten) Hedjaroude, Sydowia 22: 86. 1968

=*Leptosphaeria baldingerae* Fautrey & Lambotte, Rev. Mycol. (Toulouse), 19: 3. 1897
≡*Phaeosphaeria baldingerae* (Fautrey & Lambotte) Hedjaroude, Sydowia, 22: 87. 1968
=*Leptosphaeria cladii* Cruchet, Bull. Soc. Vaud. Sci. Nat. 55: 161. 1923

Ascocarps scattered, immersed, subepidermal, globose, glabrous. Ascocarp wall surface a radiating textura prismatica. Physes numerous, 3−4 μm wide, with thin septa at 8- to 12-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 80−100 × 10−14 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.0, straight or slightly curved, 27−32 × 5−7 μm, 7- to 8(9)-septate in sequence 4:3:2:1:4:2:4:3:(5), first septum slightly constricted, supramedian (0.45), not constricted at other septa, without dots at ends of septa, third or fourth cell from apex enlarged towards base, yellowish brown, without guttules, echinulate, with a conspicuous sharply delimited sheath, 2−3 μm wide.

HOSTS: (*1*) *Juncus* sp., (*2*) *Phalaris arundinacea* L., (*3*) *Typha latifolia* L.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 171020, on *3*, Dow's Lake, Ottawa, S. A. Redhead, 18 April 1979, as *Leptosphaeria cladii*. CZECHOSLOVAKIA: 196415, on *2*, Mähr-Weisskirchen, Skalicka, Dr. F. Petrak, 28 September 1923, ex FH, Fl. Boh. et Mor. Lfg 38, Nr. 1852, as *Leptosphaeria baldingerae*. SWITZERLAND: 123582(*b*), on *1*, Katzensee, E. Müller, 24 April 1949, ex ZT, as *Leptosphaeria petkovicensis*.

The spore form is very variable as illustrated by Leuchtmann (1984). The clavate form is evident even in young spores and the first septum is slightly supramedian at 0.45. This is Eriksson's form 8*b* of *Phaeosphaeria herpotrichoides* s.l. (Eriksson 1967*b*). Leuchtmann previously referred form 8 to this species, but did not comment on the distinctions of forms 8*a* and 8*b*.

Metasphaeria anarithma (Berkeley & Broome) Saccardo, Syll. Fung. 2: 175. 1883
≡*Sphaeria anarithma* Berkeley & Broome, Ann. & Mag. Nat. Hist. Ser. 3, 3: 20. 1859
≡*Leptosphaeria anarithma* (Berkeley & Broome) Saccardo, Fung. Ital. tab. 400. 1878
≡*Sphaerella anarithma* (Berkeley & Broome) Saccardo, Syll. Fung. 1: 526. 1882

This species is excluded because of the hyaline ascospores.

Metasphaeria anarithmoides (Saccardo & Spegazzini in Saccardo) Saccardo, Syll. Fung. 2: 172. 1883
≡*Leptosphaeria anarithmoides* Saccardo & Spegazzini, Michelia, 1: 395. 1878

This species is excluded because of the hyaline ascospores.

Metasphaeria cumana (Saccardo & Spegazzini in Saccardo) Saccardo, Syll. Fung. 2: 177. 1883
≡*Leptosphaeria cumana* Saccardo & Spegazzini in Saccardo, Michelia, 1: 394−395. 1879 (1878)

This species occurs on *Carex* and has hyaline 20−22 × 5 μm, 3-septate ascospores. It is excluded from *Phaeosphaeria*.

Metasphaeria graminum (Saccardo) Saccardo, Syll. Fung. 2: 174. 1883
≡*Leptosphaeria graminum* Saccardo, Fung. Ital. 483. 1879

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 165 μm wide, 165 μm high. Beak central, terete, flush, intraepidermal, papillate. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20 μm thick. Physes numerous, 1.5−2 μm wide. Asci cylindrical, 50−60 × 12−15 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores broadly fusiform, L/W 3.8, straight, 15−16 × 4 μm, 3-septate in sequence 2:1:2, first septum not constricted, median (0.50), not constricted at other septa, second cell from apex slightly enlarged, hyaline, with rectangular cell lumen, smooth.

HOST: *Ammophila arenaria* (L.) Link as *Calamagrostis arenaria* Roth.

COLLECTIONS EXAMINED: None; data from Saccardo (1879).

This species has hyaline spores and is excluded from *Phaeosphaeria*.

Metasphaeria hyalospora (Saccardo) Saccardo, Syll. Fung. 2: 179. 1883
≡*Leptosphaeria hyalospora* Saccardo, Nuovo Giorn. Bot. Ital. 7(4): 323. 1878

This species is excluded because of the hyaline ascospores.

Metasphaeria maydis (Hennings) Höhnel, Nachgel. Schriften, 6: 7. 1929 Figs. 301, 339
≡*Sphaerulina maydis* Hennings, Hedwigia, 41: 302. 1902
≡*Phaeosphaeria maydis* (Hennings) Rane, Payak & Renfro, Bull. Ind. Phytopath. Soc. 3: 9. 1966
=*Leptosphaeria zeicola* Saccas, Rev. Path., Vég. et d'Entomol. Agr. 30: 176. 1951

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 125−140 μm wide, 80−90 μm high. Beak central, terete, flush, intraepidermal, 20−25 μm long, 50−60 μm wide, of 2−4 layers of brown polygonal 3−4 × 3−4 μm cells around a 10−15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8−10 μm thick of 2 or 3 layers of rectangular brown 6−8 × 2−4 μm pseudoparenchyma cells. Physes numerous, 2−4 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 40−50 × 10−12 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.2, straight or slightly curved, 16−18 × 3.5−4.5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, hyaline, sometimes with guttules, smooth, with a sheath, 1 μm wide.

HOST: *Zea mays* L.

COLLECTION EXAMINED: BRAZIL: 196551, São Paulo, F. Noack, April 1898, Rehm Asco. 1739, ex FH, as *Sphaerulina maydis* P. Henn.

This collection is not type but is from the locus classicus and was among several cited by Leuchtmann (1984). The peculiarities of the fungus include the hyaline spores with a more or less well developed sheath and some guttules.

Metasphaeria puccinioides (Spegazzini) Saccardo, Syll. Fung. 2: 182. 1883
≡*Leptosphaeria puccinioides* Spegazzini, Michelia, 1: 459. 1879

This species is excluded because of the hyaline ascospores.

Montagnula anthostomoides (Rehm) Leuchtmann, Sydowia, 37: 175. 1984 (1985) Figs. 326, 360, 383

≡*Leptosphaeria anthostomoides* Rehm, Ascomyceten No. 339. 1876

=*Leptosphaeria phacae* E. Müller, Sydowia, 5: 49. 1951

This species is appropriately placed in *Montagnula*.

Montagnula rhodophaea (Bizzozero) Leuchtmann, Sydowia, 37: 176. 1984 (1985)

≡*Leptosphaeria rhodophaea* Bizzozero, Atti. Ist. Veneto Sc. Lett. ed Arti, Ser. 6, 3: 303. 1885

This species is appropriately placed in *Montagnula*.

Montagnula subsuperficialis (Saccardo & Sydow) n.comb. Figs. 316, 348, 381

≡*Leptosphaeria subsuperficialis* Sacc. & Syd., Syll. Fung. 16: 516. 1902

=*Leptosphaeria melanommoides* Speg., An. Mus. Buenos Aires, 6: 282. 26 Dec. 1898 non Berlese, Ic. Fung. 1: 54. (1890) 1894

Ascocarps scattered, immersed, subepidermal, lenticular to globose, glabrous, 250−400 μm wide, 200−300 μm high. Beak central, terete, truncate-conical, 75−100 μm long, 120−150 μm wide, of 8−12 layers of brown prismatic 4−9 × 4−9 μm cells around a 10−20 μm diameter ostiole, with 30−35 × 1−1.5 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 40−50 μm thick of 16−20 layers of polygonal to prismatic brown 4−7 × 3−6 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 1.5−2 μm wide, with thin septa at 30- to 40-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 100−140 × 10−12 μm, short-stalked, with 8 overlapping linearly biseriate to uniseriate ascospores. Ascospores narrowly fusiform, L/W 3.8, straight or slightly curved, 21−25 × 5−7 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, submedian (0.53), not constricted at other septa, third cell from apex enlarged towards base, four central cells shorter than end cells, reddish brown, mostly without guttules, smooth, without a sheath.

HOST: *Panicum grumosum* Nees.

COLLECTION EXAMINED: ARGENTINA: 193580, Esta Santiago, La Plata, Mar. 1892, ex Herb. Spegazzini 2394, ex FH, as *Leptosphaeria melanommoides*, TYPE.

This specimen is in good condition with numerous unbroken protruberant terete beaks lined with hyaline perpiphyses. The species belongs in *Montagnula*, close to *M. rhodophaea* (Bizz.) Leuchtmann, but has a more prominent beak. The placement of the septa in the ascospores of *Montagula subsuperficialis* results in short central cells unlike those illustrated for *M. rhodophaea* by Leuchtmann (1984, Fig. 20*b*) who examined its type. There are some characters that are reminiscent of *Lophiostoma*. However, all the beaks seen were terete. The new species name, *Leptosphaeria subsuperficialis*, was proposed probably because of the earlier *Leptosphaeria melanommoides* Berl., although this reason was not specifically mentioned when the new name was proposed.

Ophiosphaerella herpotricha (Fries) J. Walker, Mycotaxon, 11: 74. 1980 Figs. 337, 389

≡*Leptosphaeria herpotricha* Fries, Syst. Mycol. 2: 504. 1823

≡*Ophiobolus herpotrichus* (Fries) Sacc. in Roum. & Sacc., Rev. Mycol. 3: 45. 1881

≡*Phaeosphaeria herpotricha* (Fries) Holm, Symb. Bot. Upsal. 14(3): 119. 1957

Ascocarps scattered, erumpent, pyriforme, 400−500 μm wide, 400−500 μm high, with brown hairs 100−300 × 5−7 μm septate at 20−30 μm. Beak central, terete, truncate-conical, 300−400 μm long, 200−250 μm wide, of 20−30 layers of brown polygonal 4−8 × 4−8 μm cells around a 90−110 μm diameter ostiole, lined with hyaline 30−50 × 2−3 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 50−70 μm thick of polygonal to rectangular brown 6−12 × 4−8 μm pseudoparenchyma. Physes numerous, 1.0 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, thickened above and without apical apparatus (bitunicate), cylindrical, 120−200 × 6−8 μm, short-stalked, with 8 linearly fasciculate ascospores. Ascospores thread-like, L/W 75.0, straight or slightly curved, 140−200 × 2−2.5 μm, about 20-septate, not constricted at septa, with dots at ends of some septa, lacking enlarged cells, yellow, with guttules, smooth, without sheath or appendages.

HOST: *Cynodon dactylon* (L.) Pers.

COLLECTION EXAMINED: UNITED STATES OF AMERICA: KANSAS: 198175, Manhattan, N. A. Tisserat, March 1988.

This species was redescribed and illustrated from Canadian material (Shoemaker 1976) under the name *Ophiobolus herpotrichus* (Fr.) Sacc. in Roum. & Sacc. Walker (1980) placed the species in *Ophiosphaerella*. He adopted a very strict concept of the genus *Ophiobolus* that, in his view, would be restricted to the type and one other species that have peculiar part spores that separate in the middle and have inflated cells. While we do not completely accept the narrow generic concept of *Ophiobolus*, the disposition of the present species in *Ophiosphaerella* represents a more natural arrangement. Walker fully discussed the synonymy.

Ophiosphaerella korrae (J. Walker & A. M. Smith) n.comb. Fig. 335

≡*Leptosphaeria korrae* J. Walker & A. M. Smith, Trans. Br. Mycol. Soc. 58(3): 461. 1972

Ascocarps scattered, erumpent, pyriforme, glabrous, 370−500 μm wide, 300−370 μm high. Beak central, terete, truncate-conical, 140−160 μm long, 160−200 μm wide, of 12−15 layers of brown polygonal 7−10 × 5−7 μm cells around a 60−70 μm diameter ostiole, lined with red 15−25 × 1.5−2 μm periphyses, red at tip when young. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 60−80 μm thick of three zones, inner zone of prismatic brown to dark brown pseudoparenchyma cells 12−15 × 4−5 μm, midzone of hyaline pseudoparenchyma, outer zone of dark brown pseudoparenchyma cells. Physes numerous, 1.5−2.5 μm wide, with thin septa at 20- to 30-μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 120−170 × 14−17 μm, short-stalked, with 8 linearly fasciculate ascospores. Ascospores cylindrical, L/W 24.0, straight or slightly curved, 100−140 × 4−6 μm, 7-septate in sequence 3:2:3:1:3:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, lacking enlarged cells, yellowish brown, with guttules, smooth, without sheath or appendages.

HOSTS: (*1*) *Agrostis* spp., (*2*) *Cynodon dactylon* (L.) Pers., (*3*) *Festuca ovina* L., (*4*) *Festuca rubra* L., (*5*) *Lolium perenne* L., (*6*) *Poa annua* L., (*7*) *Poa pratensis* L.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: RHODE ISLAND: 190950, on *1*; 190953 on *2*; 190955 on *3*, *4*;

190951 on *4*; 190954 on *5*; 190949, on *6*; 190948, on *7*, all Kingston, N. Jackson, June 1984. NEW YORK: 190957, on *7*, Skaneatales, R. W. Smiley 21, Oct. 1981; 190956 on *7*, Long Island, N. Jackson, May 1984; 190947, on *7*, N. Jackson, June 1983.

This species is not apt to be confused with *Phaeosphaeria* species because of the long scolecospores. It does occur on turf grasses and deserves mention in passing because *Phaeosphaeria* species are parasitic on many grasses.

This species has a peculiar beak that is red at the tip when young and red internally when mature. The broad beak is further enlarged near the juncture with the body. The ascocarp wall has three conspicuous zones, but lacks scleroplectenchyma found in many *Leptosphaeria* species. The scolecospores without enlarged cells, appendages, or sheath, strongly resemble those of *Ophiosphaerella* Speg. as revised by Walker (1980) and a new combination is proposed herein.

Ophiosphaerella sasaecola (Nagasawa & Otani) n.comb. Figs. 336, 363

≡*Phaeosphaeria sasaecola* Nagasawa & Otani, Rept. Tottori Mycol. Inst. 15: 39–41. 1977

Ascocarps scattered, immersed, subepidermal, depressed globose, glabrous, 500–600 μm wide, 500–600 μm high. Beak central, terete, flush, 10–20 μm long, 70–100 μm wide, of 20–30 layers of brown polygonal 3–5 × 3–5 μm cells around a 40–60 μm diameter ostiole, with 15–20 × 1–1.5 μm hyaline periphyses. Wall in longitudinal section laterally uniformly 100–125 μm thick of 20–30 layers of polygonal brown 3–5 × 3–5 μm pseudoparenchyma cells, slightly thinner at base. Physes numerous, 1–1.5 μm wide, without septa, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 175–200 × 10–13 μm, short-stalked, with 8 fasciculate ascospores. Ascospores thread like, straight or slightly curved, 150–200 × 4–4.5 μm, 28- to 36-septate, not constricted, disarticulating into segments 5–8 μm long, pale yellow, with guttules, smooth, with a sheath 1–1.5 μm wide.

HOSTS: (*1*) *Sasa senanensis* (Franch. & Sav.) Rehder, (*2*) *Sasa* sp.

COLLECTIONS EXAMINED: JAPAN: HOKKAIDO: 198166, on *1*, Nopporo, Ebetsu-city, E. Nagasawa, 15 May 1972, HOLOTYPE, ex TMI-3176, as *Phaeosphaeria sasaecola*; 198167, on *2*, Kiyoto, Sapporo, E. Nagasawa, 28 May 1972, Paratype, ex TMI-3177, as *Phaeosphaeria sasaecola*; 198168, on *2*, Kitamura, Kawabara-cho, Yazu-gun, Tottori Pref., E. Nagasawa, 26 May 1980, ex TMI, as *Phaeosphaeria sasaecola*.

This very distinctive species is more appropriately placed in the genus *Ophiospaerella*. The fragmenting ascospores are suggestive of *Plejobolus* (Eriksson 1967*b*), but the ascocarp structure is quite different.

Paraphaeosphaeria michotii (Westendorp) O. Eriksson, Ark. Bot. 6(9): 406. 1967*b*

=*Pleospora monilispora* (Fuckel) Fuckel, Jahrb. Nassau. Ver. Naturk. 23, 24: 138. 1869 (1870)

≡*Sphaeria monilispora* Fuckel, Fungi rhenani 1777. 1866

≡*Leptosphaeria monilispora* (Fuckel) Saccardo, Syll. Fung. 2: 79. 1883

=*Leptosphaeria zeae* Stout, Mycologia, 22: 277. 1930

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 120 μm wide, 80 μm high. Beak central, terete, truncate-conical, 20 μm long, 30 μm wide. Physes numerous, 2–3 μm wide, with thick almost guttulate septa at 10–15 μm intervals, without guttules, without slime coating. Asci numerous, in a broad hymenium, cylindrical, 65–75 × 4–6 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.8, 16–20 × 5–6 μm, 2-septate in sequence 2:1, first septum slightly constricted, submedian (0.65), not constricted at other septum, second cell from apex enlarged towards base and slightly shorter than adjacent cells, reddish brown, uniguttulate, verrucose, with a conspicuous sharply delimited sheath.

HOST: *Juncus lamprocarpus* Ehrh. ex Hoffm.

COLLECTION EXAMINED: GERMANY: 189855, [Oestricher Wald, Fuckel] ex G, Fungi rhen. 1777, as *Pleospora monilispora*, TYPE.

The type of *Pleospora monilispora* Fuckel in G has three pieces of culm. Some areas bear sterile ascocarps resembling those of *Mycosphaerella tassiana*, others bear *Paraphaeosphaeria michotii* (Westendorp) O. Eriksson. Berlese (1894, p. 88, lines 21–22) indicated that the type is sterile and the species is doubtful. He applied the name *Leptosphaeria moniliformis* (Fuckel) Saccardo. As mentioned previously (Shoemaker and Babcock 1985, p. 1286), it seems probable that Fuckel saw 4 or 5 of the two-septate ascospores of *Paraphaeosphaeria michotii* aligned in a row in the ascus and interpreted the material as monilisporous with 8–10 septa. Consequently, we treated *P. monilispora* as a synonym of *Paraphaeosphaeria michotii*. Attention is drawn here to the disposition of *Pleospora monilispora* Fuckel, which, from its description, might have been considered as a species of *Phaeosphaeria*. There is a description with illustrations by Shoemaker and Eriksson (1967).

Phaeosphaerella oryzae K. Hara, Diseases of the Rice Plant (Japan), p. 140. 1918 Fig. 294

Perithecia punctiform, scattered or gregarious, globose or subspherical, 60–90 μm diam., first covered by the epidermis, then erumpent, ostiola absent?, membranaceous, dark brown. Ascus cylindrical or clavate, 8-spored, 35–40 × 5–6 μm. Spore biseriate or obliquely biseriate, oval–oblong, uniseptate, more or less constricted at the septum, lower cell acute, brown, 10–12 × 3–3.5 μm.

HOST: *Oryza sativa* L.

Type not seen. The species is excluded on the basis of the original English description given above. Its affinity with *Phaeosphaerella* Karsten, Meddeland Soc. Fauna Fl. Fenn. 16: 28. 1888 is doubtful.

Pleospora findens Ellis & Everhart, Am. Nat. 31: 342. 1897 Figs. 313, 346, 382

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 350–400 μm wide, 350–400 μm high. Beak not seen. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 15–18 μm thick of 4 or 5 layers of polygonal 5–8 × 4–6 μm pseudoparenchyma cells. Physes not seen. Asci numerous, in a broad hymenium, cylindrical, 120–130 × 10–12 μm, short-stalked, with 8 overlapping linearly uniseriate ascospores. Ascospores narrowly fusiform, L/W 4.0, straight or slightly curved, 21–24 × 5–6 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, supramedian (0.50), not constricted at other septa, with dots at ends of septa, third cell from apex enlarged towards base, yellowish brown, with guttules (in water), echinulate, sheath not seen.

HOST: *Andropogon virginicum* L. as *A. virginica*.

COLLECTION EXAMINED: UNITED STATES OF AMERICA:

NEW JERSEY: 198898, Newfield, J. B. Ellis and B. M. Everhart, October 1896, TYPE, ex NY, Ellis Collection, ex Herb. Wehmeyer 31, as *Pleospora findens* E. & E.

This collection was referred to *Phaeosphaeria vagans* (Niessl) O. Eriksson as a synonym with some reservations by Wehmeyer (1961). However, the fungus does not belong with *Phaeosphaeria vagans*. It has some resemblance to *Phaeosphaeria phragmiticola* Leuchtmann, but it has echinulate ascospores. It does not belong in *Phaeosphaeria* and the *Pleospora* name is accepted at present.

Pleospora harknessii Berlese & Voglino, Add. Syll. Fung. 1–4: 174. 1886, non Saccardo & Spegazzini in Saccardo, Michelia, 1: 407. 1879 (1878) Figs. 314, 345, 379
≡*Leptosphaeria straminis* Cooke & Harkness, Grevillea, 14: 10. 1885

Ascocarps scattered in culms, erumpent, subepidermal at first, depressed ellipsoidal, glabrous, 350–700 μm long, 250–400 μm wide, 250–400 μm high. Beak central, terete, truncate-conical, 0–30 μm long, 60–110 μm wide, of many layers of brown polygonal 3–5 × 3–5 μm cells around a 20–40 μm diameter ostiole, with brown periphyses 25–30 × 2–3 μm. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 30–50 μm thick of many (10–20) layers of rectangular brown 4–7 × 3–5 μm pseudoparenchyma cells. Physes numerous, 2–3 μm wide, with thin septa at 10- to 15-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 110–140 × 12–17 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 4.1, straight or slightly curved, 22–29 × 5.5–7 μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not constricted at other septa, third cell from apex enlarged towards base, central cells with one vertical septum, yellowish brown, with or without guttules, smooth, with a conspicuous sharply delimited sheath, 3–4 μm wide.

HOSTS: (*1*) *Avena sativa* L., (2) culms of decaying straw.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: CALIFORNIA: 195317, on *1*, San Francisco, Golden Gate Park, Harkness, April 1881, ex BPI, ex Harkness Collection 2408, as *Leptosphaeria straminis*, TYPE, 195318, on 2, Cemetery, San Francisco, Harkness 2337, April 1881, ex BPI, as *Leptosphaeria straminis* (two of three original collections cited with the description).

The thick wall of the ascomata and the numerous beak hairs lining the ostiole set this species apart. Wehmeyer (1961, pp. 62–63) forced the species into *Pleospora vagans* while noting the presence of beak hairs and suggesting other affinities. It clearly does not belong in *Phaeosphaeria*. The beak hairs are like those of *Keissleriella* (=*Trichometasphaeria*).

These two collections are original collections cited with the description. The third collection, Harkness 2376 is present at BPI but was not examined by us. It had the label information: Culms of dead grass stems, G. G. Park (Golden Gate Park), S.F. (San Francisco) Harkness 2376, April 1881.

Harkness 2337 and 2408 are very good matches. In BPI, only 2408 is marked type. It is probably more important what material Cooke used if there should be any dispute about typification. What we saw was sufficient to exclude the species from *Phaeosphaeria*.

Pleospora opaca Wegelin, Mitt. Naturf. Ges. Thurgau, 12: 9. 1896 Figs. 332, 349
=*Pleospora scabra* Mouton, Bull. Soc. Roy. Bot. Belg. 39: 48. 1900
=*Phorcys eriophori* Feltgen, Vorst. Pilz. Luxemb., Nachtr. 3: 162. 1903
≡*Pleospora feltgeni* Saccardo & Sydow var. *eriophori* Feltgen, Vorst. Pilz. Luxemb., Nachtr. 3: 103. 1903
≡*Massariella eriophori* (Feltgen) Saccardo, Syll. Fung. 17: 683. 1905

Ascocarps scattered, immersed, subepidermal, globose, glabrous above but hairy below, 280–320 μm wide, 280–320 μm high. Beak central, terete, erumpent, truncate-conical, 160–200 μm long, 140–160 μm wide, of 10–12 layers of brown polygonal 5–7 × 5–7 μm cells around a 30–35 μm diameter ostiole, with hyaline 15–20 × 2–3 μm periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 20–25 μm thick of 4–6 layers of rectangular brown 8–12 × 3–5 μm pseudoparenchyma cells. Physes numerous, 3–4 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 180–200 × 50–60 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores fusiform, pointed at apex, L/W 2.5, straight, 33–38 × 14–17 μm, transversely 8(9)-septate in sequence 4:3:2:3:1:3:2:3:(4), first septum slightly constricted, submedian (0.54), not constricted at other septa, with 1 or 2 vertical septa in central cells, without dots at ends of septa, fourth cell from apex enlarged towards base, reddish brown, with guttules, warted, later appearing cracked around warts, with a conspicuous sharply delimited sheath, 5–15 μm wide.

HOST: Grass culm.

COLLECTIONS EXAMINED: CANADA: ONTARIO: 189179(*b*), Hay Township, concession 6–7, M. Corlett 83(67), 6 July 1983.

This collection matches the redescription given by Wehmeyer (1956) based on several collections, including the type of the name and synonyms, and is close to Müller's redescription of the type (Müller 1951) that gave slightly larger dimensions for the ascospores. The spores are 7–9-septate, often 8-septate from an additional septum at the prominent apical beak. The spore wall is so dark at maturity that some authors overlooked all but the first septum and considered the spores to be two-celled and placed the species in the genus *Phorcys*. The young spores are bright yellow and prominently guttulate. Wehmeyer placed this species in subgenus *Montagnula* (Berlese) Wehmeyer (p. 263), but *Pleospora opaca* does not have stromatic ascocarps. Its main affinity with the other species placed in subgenus *Montagnula* is the warted nature of the spore wall. It has affinity with the *Massariosphaeria* as well, but is left in *Pleospora*.

Scleropleella personata (Niessl) Höhnel, Ann. Mycol. 16: 158. 1918 Figs. 305, 344, 364
≡*Leptosphaeria personata* Niessl in Rabenhorst, F. Eur. 1933. 1875
≡*Mycotodea personata* (Niessl) Kirschstein, Kryptogamenflora Brandenb. 7(3): 433. 1938
≡*Leptosphaerulina personata* (Niessl) Barr, Contrib. Univ. Mich. Herb. 9: 542. 1972

Ascocarps scattered, immersed in culm, subepidermal, long elliptical, glabrous, 250–300 μm long, 100–140 μm wide, 70–90 μm high. Beak central, terete, truncate-conical, 10–50 μm long, 50–70 μm wide, of 5–7 layers of brown poly-

gonal 3–4 × 2–3 μm cells around a 20–30 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 10–14 μm thick of 3–5 layers of polygonal brown 4–6 × 4–6 μm pseudoparenchyma cells, lacking at base. Physes numerous, 2–3 μm wide, with thin septa at 5- to 10-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, ovoid, 50–70 × 24–31 μm, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores clavate, L/W 6.5, straight, 20–27 × 4–5 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, second cell from apex enlarged towards apex, yellowish brown, with guttules, smooth, with a conspicuous sharply delimited sheath, 2–3 μm wide.

HOST: *Aira caespitosa* L.

COLLECTIONS EXAMINED: GERMANY: 195448, (? Lafer) Hafer, Salisb., Niessl, Septbr. ex Herb. Bubák, ex BPI, as *Leptosphaeria personata* Niessl f. *graminis* c(um) *Trochila hysterioides* Desm.

We consider this species better placed in *Scleropleella* than in *Leptosphaerulina*.

Sphaerulina acori Dearness & House in House, New York State Mus. Bull. 243–244: 79. 1921 Figs. 310, 351

=*Leptosphaeria densa* Bresadola nom. invalid.

=*Leptosphaeria acori* Karsten (ad interim), Hedwigia, 22(12): 179. 1883

=*Phaeosphaeria acori* H. C. Greene, Am. Midl. Nat. 41: 751. 1949

Ascocarps scattered, immersed, subepidermal, globose, glabrous, 80–110 μm wide, 70–110 μm high. Beak central, flush, terete, up to 15 μm long, 25–30 μm wide, of 3 or 4 layers of brown polygonal 2–4 × 2–4 μm cells around a 10–15 μm diameter ostiole, without periphyses. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–15 μm thick, of 2–4 layers of polygonal to rectangular brown 3–7 × 3–5 μm pseudoparenchyma cells soon collapsed to 5–7 × 2–3 μm. Physes absent. Asci not numerous, clustered, ovoid, 40–65 × 10–18 μm, short-stalked, with 8 overlapping linearly fasciculate ascospores. Ascospores narrowly fusiform, L/W 7.6, straight or slightly curved, 26–40 × 4.5–6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, supramedian (0.43), not constricted at other septa, with dots at ends of septa, septa thin, second cell from apex enlarged towards base possibly with a band around the upper part of the cell, central cells no longer than end cells, yellowish brown, with two guttules per cell, smooth, with a thin convoluted sheath, 1–2 μm wide.

HOST: *Acorus calamus* L. (Araceae).

COLLECTIONS EXAMINED: CANADA: ONTARIO: McMaster University, Hamilton, Lulu Gaiser, 13 Jan. 1933, ex Herb. Dearness 4789, as *Sphaerulina acori*. GERMANY: 184920, Königstein, W. Kreiger, Juli 1891, Aug. 1892, ex Herb. Bresadola 106, ex S, as *Leptosphaeria densa* Bres. n.sp. TYPE. UNITED STATES OF AMERICA: NEW YORK: 198222, Glenmount, H. D. House, 25 Aug. 1919, TYPE, *Sphaerulina acori*, ex Herb. Dearness 4789. WISCONSIN: 198432, Dunn's Marsh, Madison, Dane County, H. C. Greene, 24 August 1948, TYPE, *Phaeosphaeria acori* H. C. Greene, ex WIS.

This fungus has a dark ring around the flush beak. The most notable feature is the convoluted sheath and the biguttulate cells of the ascospores. The absence of physes supports the placement of the species in *Sphaerulina*.

The name *Leptosphaeria densa* was not published, so far as we have been able to determine. The epithet chosen by Bresadola might refer ot the numerous ascomata.

Phaeosphaeria acori H. C. Greene (1949, p. 751) was described as having greenish ascospores 25–35 × 4 μm and is the same species.

There is also a name *Leptosphaeria microscopica* Karsten subspecies *acori* Karsten, but from the description it scarcely differs from *Phaeosphaeria microscopica* (Karst.) O. Eriksson.

Sulcispora n.gen.

Ascomata dispersa, immersa dein superficialis, globosa vel pyriformis, glabra. Rostrum cellulis brunneis, rectangularis compositum; ostiolum sine periphysibus. Paries ascomatis cellulis brunneis, rectangularis, tenui-tunicatis compositus. Pseudoparaphyses hyalinae, glabrae, multiseptatae, mucosae. Asci bitunicati, pauci, ovoidei vel cylindrici, octospori. Ascosporae tetraseriatae, fusiformes, rectae, 5-vel 6-septatae, septo medio constricto; castaneae; strato muco circumdato.

TYPE: *Leptosphaeria pleurospora* Niessl.

The generic name is derived from sulcus, a furrow, referring to the numerous slits in the ascospore wall.

Ascomata immersed, later exposed, pyriform to globose, smooth. Beak of brown rectangular cells; ostiole without periphyses. Ascoma wall of brown thin-walled rectangular cells. Pseudoparaphyses hyaline, smooth, multiseptate, with slime. Asci bitunicate, few, 8-spored cylindric. Ascospores tetraseriate, fusiforme, straight, 5- to 6-septate, reddish brown, constricted at first septum, with a sheath.

Sulcispora pleurospora (Niessl) n.comb. Figs. 334, 355, 367

≡*Leptosphaeria pleurospora* Niessl in Rehm, Hedwigia, 27: 172. 1888

≡*Phaeosphaeria pleurospora* (Niessl) Leuchtmann, Sydowia, 37: 162–163. 1984

=*Leptosphaeria striolata* Pass., Atti Reale Accad. Lincei, Mem. Cl. Sci. Fis., Ser. 4, 6: 461. 1890

≡*Mycotodea striolata* (Pass.) Kirchst., Krypt.-Fl. Brandenb. 7(3): 434. 1938

Ascocarps scattered, immersed becoming superficial, subepidermal, pyriform to ellipsoidal, slightly hairy, 80–120 μm wide, 90–180 μm high. Beak central, terete, flush, intraepidermal, 25–60 μm long, 40–70 μm wide, of 3 or 4 layers of brown rectangular 3–5 × 3–5 μm cells around a 25–40 μm diameter ostiole, with hyaline periphyses 10–15 × 2–3 μm. Ascocarp wall surface a textura angularis. Wall in longitudinal section laterally uniformly 8–10 μm thick of 2 layers of polygonal brown 6–8 × 3–4 μm pseudoparenchyma cells. Physes numerous, 1–3 μm wide, with thin septa at 10- to 15-μm intervals, with guttules, with slime coating. Asci few, clustered, ovoid to cylindrical, 65–80 × 18–22 μm, short-stalked, with 8 overlapping linearly tetraseriate to fascicled ascospores. Ascospores narrowly fusiform, L/W 4.0, straight, 23–32 × 7–8 μm, (5)6-septate in sequence (3):2:1:3:2:3, first septum slightly constricted, supramedian (0.43), not constricted at other septa, without dots at ends of septa, third (second) cell from apex enlarged towards base, reddish brown, without guttules, with about six furrows on upper surface, with a sheath, 1.5–2 μm wide.

HOSTS: (*1*) *Aira caespitosa* L., (*2*) *Carex firma* Mygind, (*3*) *Sesleria calcarea* (Pers.) Opiz, (*4*) *Tofieldia calyculata* (L.) Wahlenb.

COLLECTIONS EXAMINED: AUSTRIA: 196419, on *1*, Lofer,

Salzburg, Niessl, 8.1886, Rehm, Ascomyceten 937, ex FH, as *Leptosphaeria pleurospora* Niessl, isotype. SWITZERLAND: GLARUS: 123600, on *3*, Alp Platten, Filzbach, E. Müller, 5.6.1949. ex ZT, ex Herb. Wehmeyer. GRAUBÜNDEN: 123551, on *2*, Davos, Ducantal, E. Müller, 31.7.1949, ex ZT, ex Herb. Wehmeyer; 184877, on *2*, Davos, Zügenschlucht, A. Leuchtmann, 28.8.1980; 123552, on *3*, Lü, E. Müller, 6.7.1949, ex ZT, ex Herb. Wehmeyer; 91991, on *3*, Albula, E. Müller, 26 July 1956, ex ZT; 123650(*b*), on *4*, Summan, Val Naisas, E. Müller, 15.8.1967. All as *Leptosphaeria pleurospora*.

This species does not fit well in *Phaeosphaeria* or any of its allies. A new genus is described for it and named for the remarkable spores with longitudinal furrows in the wall.

Leuchtmann (1984) noted variation in ascospore septation between certain collections. This difference was constant in derived ascomata formed in culture. We have not attempted to segregate these variants but simply accept the 5- and 6-septate ascospores as part of the variation in the species.

Trematosphaerella bambusae (Miyake & Hara) Tai, Syll. Fung. Sinensis. p. 330. 1979
≡*Phaeosphaeria bambusae* Miyake & Hara, Bot. Mag. Tokyo, 24: 340. 1910.
HOST: *Bambusa* sp.
Neither the type nor original description seen. The species is excluded.

Trematosphaerella cattanei (Thümen) Padwick, Manual of Rice Diseases. p. 153. 1950
≡*Leptosphaeria cattanei* Thümen, Die Pilze der Reispflanze. p. 5. 1889
≡*Phaeosphaeria cattanei* (Thümen) Miyake, J. Coll. Agric. Imp. Univ. Tokyo, 2(4): 247. 1910 (July)
≡*Leptosphaerella cattanei* (Thümen) K. Hara, A Monograph of Rice Diseases (ed. 3). p. 53. 1959. nom. invalid. Art. 32
HOST: *Oryza sativa* L.
Type not seen. The species is excluded.

Trematosphaerella eriobotryae (Miyake) Tai, Sylloge Fungorum Sinensis. p. 330. 1979
≡*Phaeosphaeria eriobotryae* Miyake, Bot. Mag. Tokyo, 27: 42. 1913
HOST: *Eriobotrya japonica* (Thunb.) Lindl. (Rosaceae).
The occurrence on Rosaceae excludes this fungus from *Phaeosphaeria*.

Trematosphaeria heterospora (De Notaris) Winter in Rabenhorst, Kryptogamenflora, 2 Aufl., 1 (2): 277. 1885 Fig. 308
≡*Sphaeria heterospora* De Notaris, Sferiacei italici, p. 65. 1863
≡*Leptosphaeria heterospora* (De Notaris) Niessl, Verh. Naturf. Vereins Brünn, 10: 173. 1872
≡*Byssothecium heterospora* (De Notaris) Niessl in Thümen, Mycotheca universalis, 1361. 1879
≡*Phaeosphaeria heterospora* (De Notaris) Boise, Mycologia, 77: 236. 1985
Ascocarps scattered, superficial, globose, glabrous, 200–300 μm wide, 200–300 μm high. Beak central, flattened, 60–70 μm long, 100–120 μm wide, of brown polygonal cells around a slit-like ostiole. Ascocarp wall surface of polygonal zones. Wall in longitudinal section laterally uniformly 25–30 μm thick of heavily pigmented brown pseudoparenchyma cells. Physes numerous. Asci numerous, in a broad hymenium, cylindrical, short-stalked, with 8 overlapping linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 3.3, straight or slightly curved, 32–40 × 10–12 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, median (0.50), not constricted at other septa, without dots at ends of septa, second cell from apex enlarged towards base, reddish brown but end cells pale, with guttules, smooth, sheath not seen.
HOST: *Iris* sp.
COLLECTION EXAMINED: ITALY: 196584, Padova, G. Bizzozero, Estate 1883, Erb. Critt. Ital. ser. II, 1370, ex FH, as *Leptosphaeria heterospora*.
This collection has clearly flattened beaks typical of Lophiostomataceae. The ascoma wall is peculiar with angular patches visible from the exterior and thick-walled heavily pigmented cells making up the wall. It is not a *Phaeosphaeria* and shows some affinities with *Lophiostoma*, a group under revision by Holm. The collection examined is not the type.

Trematosphaeria pachycarpa (Saccardo & El. Marchal) n.comb.
≡*Leptosphaeria pachycarpa* Saccardo & El. Marchal, Rev. Mycol. 7(27): 145. 1885
=*Leptosphaeria hazslinszkyana* Berlese, Icon. Fung. 1: 78. 1894. as *Hanzslinszkyana*.
Ascocarps clustered, immersed, subepidermal, globose, glabrous, 330 μm wide, 330 μm high. Beak central, terete, flush, intraepidermal, 50–60 μm long, 70–80 μm wide with an ostiole 30 μm wide. Wall in longitudinal section laterally uniformly 15–20 μm thick. Physes not recorded. Asci cylindrical, 110 × 140 × 14–18 μm, short-stalked, with 8 linearly biseriate ascospores. Ascospores narrowly fusiform, L/W 5.5, straight or slightly curved, 38–42 × 7–8(10) μm, 5-septate in sequence 3:2:1:2:3, first septum slightly constricted, median (0.50), not or slightly constricted at other septa, third cell from apex enlarged towards base, brown but end cells pale, without guttules, smooth.
HOST: Poaceae, large grass.
COLLECTIONS EXAMINED None; data from Berlese (1894).
Berlese noted some similarity to the Lophiostomataceae in the beak structure. The nature of the ascospores support this suggestion.

Wettsteinina lacustris (Fuckel) n.comb. Figs. 296, 340
≡*Sphaeria lacustris* Fuckel, Jahrb. Nassau. Ver. Naturk. 27, 28: 22. 1873 & 1874
≡*Metasphaeria lacustris* (Fuckel) Saccardo, Syll. Fung. 2: 173. 1883
≡*Leptosphaeria lacustris* (Fuckel) Winter in Rabenhorst, Krypt.-Fl. 1(2): 451. 1887
≡*Massarina lacustris* (Fuckel) Leuchtmann, Sydowia, 37: 181. 1984
Ascocarps scattered, immersed, subepidermal, ellipsoidal, glabrous, 150–160 μm wide, 200–300 μm long, 150–160 μm high. Beak central, terete, flush, intraepidermal, 0 μm long, 25–35 μm wide, of 6–8 layers of brown interwoven thick-walled 6–12 × 3–5 μm cells around a 20–25 μm diameter ostiole, without periphyses. Ascocarp wall surface irregular. Wall in longitudinal section laterally uniformly 10–12 μm thick of 3 or 4 layers of prismatic brown 6–8 × 3–4 μm pseudoparenchyma cells. Physes numerous, 1 μm wide, with thin septa at 30- to 40-μm intervals, without guttules, with slime coating. Asci numerous, in a broad

hymenium, cylindrical, 50−70 × 10−13 μm, short-stalked, with 8 overlapping obliquely biseriate ascospores. Ascospores broadly fusiform, L/W 2.6, straight, 14−17 × 5−6 μm, 3-septate in sequence 2:1:2, first septum slightly constricted, submedian (0.53), constricted at sites of other septa, without dots at ends of septa, second cell from apex enlarged towards base, hyaline, with few guttules, smooth, with a conspicuous sharply delimited sheath, 1.5−2.5 μm wide.

HOST: *Typha angustifolia* L.

COLLECTION EXAMINED: GERMANY: 196562, Budenheim, autumno, Fungi rhenani 2436, ex FH, as *Sphaeria lacustris* n.sp., ISOTYPE.

The fungus on the FH isotype had ascospores 14−17 × 5−6 μm. Leuchtmann (1984) recorded them from the G isotype as 14−17 × 4−4.5 μm and considered them to be immature. On other collections that he referred to this species, he found them 19−31 × 4.5−6.5 μm. His illustration of the larger spores differs from those of the isotype from FH, which have features of *Wettsteinina* more so than of *Massarina*. The collection is excluded as *Wettsteinina lacustris*. The ascomata are unusual with a thick upper wall composed of dark brown thick-walled cells that are somewhat interwoven. The lateral and basal wall is thin and ill defined. The surface pattern is not a recognizable textura and is nondescript. We consider that the large-spored fungus that Leuchtmann illustrated and studied from a number of collections (excluding the isotype from G) is a good *Massarina*, but not conspecific with *Wettsteinina lacustris*.

Wettsteinina marina (Ellis & Everhart) n.comb.
Figs. 330, 362, 365, 375

≡*Leptosphaeria marina* Ellis & Everhart, J. Mycol. 1: 43. 1885 non Rostrup, Bot. Tidskr. 17: 234. 1889

≡*Heptameria marina* (Ellis & Everhart) Cooke, Grevillea 18: 32. 1889

≡*Metasphaeria marina* (Ellis & Everhart) Berlese, Icon. Fung. 1: 140. 1894

=*Leptosphaeria treatiana* Saccardo, Syll. Fung. 10: 923 footnote. 1892 superfluous name

Ascocarps scattered, immersed, intra- and sub-epidermal, but appearing superficial, ellipsoidal, lens-shaped laterally, glabrous, 300−400 μm wide, 350−500 μm long, 300−350 μm high, often in areas darkened by mycelial growth. Beak central, terete, flush, intraepidermal, centrally white with a shining black surround, 20−30 μm long, 80−100 μm wide, of 20−25 layers of dark brown irregular 2−5 × 2−5 μm thick-walled cells around a 50−70 μm diameter ostiole, without periphyses but filled with tips of physes. Ascocarp wall surface ill defined and incorporating many dark colored rectangular epidermal cells. Wall in longitudinal section laterally uniformly 30−45 μm thick of two tissue types, internally of 5−7 layers of compressed rectangular hyaline 6−10 × 2−4 μm pseudoparenchyma cells, externally of 8−12 layers of smaller irregular thick-walled dark brown cells like those of the beak. Physes numerous, 1.5−2 μm wide, with thin septa at 15- to 20-μm intervals, without guttules, with slime coating. Asci numerous, in a broad hymenium, cylindrical, 180−210 × 35−45 μm, short-stalked, with 8 overlapping linearly biseriate to triseriate ascospores. Ascospores narrowly fusiform, L/W 4.6, straight or slightly curved, 50−65(70) × 10−14 μm, 1- to 3-septate in sequence (2):1:(2), first septum constricted, median (0.50), not constricted at ringlike septa, without dots at ends of septa, second cell from apex enlarged towards base, hyaline, with guttules, smooth, with a sheath 1 μm wide or slightly thickened wall.

HOST: *Spartina* sp.

COLLECTIONS EXAMINED: UNITED STATES OF AMERICA: NEW JERSEY: 196891(*a*), Cape May, Caroline Treat, summer 1884, TYPE, ex NY.

The type has hyaline ascospores that are variable in shape, long and slender and 1-septate when young, later broader and tardily appearing 3-septate forming ringlike septa. The first septum is usually median but the position varies. The cytoplasm is densely and finely granular, obscuring the large guttules that are present but indistinct. At times there appears to be a very thin uniform sheath, but it may be only a slight thickening of the wall. No hygroscopic gelatinous sheath was observed.

Berlese (1894) illustrated what he thought was this fungus from original material sent by Ellis. The ascospores had 1, 3, or sometimes 5 septa and measured 58−65 × 10−12 μm. The original description gave the ascospores as 50−60 × 10−12 μm and 1- to 3-septate (mostly 1-septate). Because of the nearly hyaline color of the spores he included the species in *Metasphaeria*. However, it seems probable that the fungus Berlese illustrated is *Phaeosphaeria neomaritima* Gessner & Kohlmeyer.

On the type we found a second species, *Leptosphaeria obiones* (Crouan & Crouan) Sacc., 196891(*b*), which is common on *Spartina*, but could not be confused with *Wettsteinina marina*.

Acknowledgments

The help of curators at the various herbaria mentioned in the text is greatly appreciated, as are the constructive reviews made by Dr. J. D. Bissett, Dr. M. P. Corlett, and Dr. S. J. Hughes.

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Epithet index

Abbreviations of names of genera:

A, *Amarenomyces*; *C*, *Clathrospora*; *Did*, *Didymella*; *E*, *Eudarluca*; *H*, *Hysterium*; *K*, *Keissleriella*; *L*, *Leptosphaeria*; *Le*, *Leptosphaerella*; *Ls*, *Lophiostoma*; *Lt*, *Lophiotrema*; *M*, *Massarina*; *Mla*, *Massariella*; *Ms*, *Massariosphaeria*; *Me*, *Metasphaeria*; *Mo*, *Montagnula*; *My*, *Mycosphaerella*; *Ob*, *Ophiobolus*; *O*, *Ophiosphaerella*; *Par*, *Paraphaeosphaeria*; *Pas*, *Passerinella*; *P*, *Phaeosphaeria*; *Pe*, *Phaeosphaerella*; *Pl*, *Pleospora*; *S*, *Sphaeria*; *Scl*, *Scleropleella*; *Sph*, *Sphaerulina*; *Sul*, *Sulcispora*; *T*, *Trematosphaerella*; *Ti*, *Trematosphaeria*; *W*, *Wettsteinina*.

Abbreviations of names of subgenera of *Phaeosphaeria*:

(*F*), *Fusispora* p. 1501; (*O*), *Ovispora* p. 1509; (*P*), *Phaeosphaeria* p. 1520; (*Si*), *Sicispora* p. 1537; (*Sp*), *Spathispora* p. 1557; (*V*), *Vagispora* p. 1565.

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