

KEY TO THE SPECIES OF *MYCOCITRUS*

1. Stromata very large, 7–10 cm diam, globose, smooth; ascospores (6–)7.5–10(–11) × 3.5–4.5 μm, spinulose; on *Arundinaria* in Brazil *M. aurantium*
1. Stromata 5–9 mm long × 4–5 mm diam, elongate, tuberculate; ascospores 6.5–9 × 3.5–5.5 μm, hyaline, smooth to slightly roughened; on *Phyllostachys* in Japan . *M. phyllostachydis*

NOTES.— The type specimen of *Mycocitrus aurantium*, deposited either at B or HBG, was apparently destroyed. The detailed illustration accompanying the type description is considered the iconotype, with the Rick exsiccata herein designated as the epitype. In these and other specimens, the ascomata develop only at the surface of a very large stroma. In the illustrations by Möller (1901) and Müller & von Arx (1962), the perithecia are shown to be immersed at the surface and below it in several layers. However, in all the specimens examined, the ascomata were found to be irregularly arranged but developing only at the surface of the stroma. If the extensive stroma were sectioned obliquely, the ascomata might appear to be distributed as shown in these illustrations.

Mycocitrus phyllostachydis (Syd. & P. Syd.) Doi, Bull Natl. Sci. Mus. 10: 31. 1967.

≡ *Ustilaginoidea phyllostachydis* Syd. & P. Syd., Mem. Herb. Boiss. 4: 5. 1900.

≡ *Hypocreopsis phyllostachydis* (Syd. & P. Syd.) Miyake & Hara, Bot. Mag. (Tokyo) 24: 333. 1910.

≡ *Shiraiella phyllostachydis* (Syd. & P. Syd.) Hara, Bot. Mag. (Tokyo) 28: 402. 1914.

Anamorph: *Acremonium*-like.

Doi (1967a) provided a good description and illustrations of *M. phyllostachydis* including the anamorph.

NECTRIELLA Nitschke, in Fuckel, Jahrb. Nassauischen Vereins Naturk. 23–24: 175. 1869 [1870].

Lectotype, designated by Seaver (1909a): *N. fuckelii* Nitschke. Ascomata immersed to partially erumpent, scattered or in groups, non-stromatic, obpyriform, less often subglobose, 100–500 μm diam, white, pale yellow, pale red or pale brown, not changing color in KOH or lactic acid or rarely reacting weakly, ostiolate, collapsing vertically by lateral pinching or not collapsing. Ascomatal wall 10–30(–40) μm thick, often of two intergrading regions: outer region of thick-walled, angular to rounded cells; inner region of thin-walled, elongate cells. Ascomatal apex of parallel rows of vertically elongate cells, continuous with the inner wall region; cells increasingly narrow, merging with paraphyses at the interior, somewhat expanded or clavate at the exterior. Gelatinized remains of apical paraphyses sometimes seen. Asci clavate, apex usually with a ring, 8-spored,

ascospores usually biseriate in the middle, uniseriate above and below, occasionally entirely uniseriate. Ascospores navicular, ellipsoid or fusiform, 1-septate, rarely non-septate, hyaline, smooth, faintly spinulose, verrucose or longitudinally striate. Anamorph, where known, *Acremonium*-like or *Kutilakesa*. On dead woody and herbaceous substrata.

NOTES.— *Nectriella* was established for species of *Nectria* that are immersed in the substratum. Lowen (1991) circumscribed the genus based on a study of the type species; she provided descriptions and illustrations of over twenty species in *Nectriella*. *Nectriella* is distinguished from other hypocrealean genera by the non-stromatic, immersed, KOH–, ascomata with walls often composed of two regions. Species of *Nectriella* generally have small, pale yellow, inconspicuous ascomata and occur on dead wood, herbaceous debris, rarely on fungi or as plant parasites, as in *N. pironii* (Alfieri & Samuels, 1979). It is expected that many species have yet to be discovered. Because species of *Nectriella* are immersed in the substratum, they tend to lose characteristics of the ascomata that might be useful in placing them taxonomically, thus species now classified in *Nectriella* may not be closely related.

Nectriella fuckelii Nitschke, in Fuckel, Jahrb. Nassauischen Vereins Naturk. 23–24: 175. 1869 [1870]. — Plate 7, a–f.

≡ *Calonectria fuckelii* (Nitschke) Sacc., Michelia 1: 310. 1878.

Ascomata solitary or in groups of up to 10, immersed to partially erumpent with emergent papilla, difficult to remove from substratum, globose to obpyriform, 220–400 μm high × 200–410 μm diam, at first pale pink, then pale yellow, KOH–; papilla rounded to flattened, 88–168 μm high × 150–200 μm diam, of loosely joined hyphal elements, ca 3.5–4.5 μm wide, with rounded ends that extend to same height, scattered, very thick-walled, unbranched elements arising from and extending beyond the margin of the ascomata. Setae clavate, 24–64 μm long × 4–5 μm wide, tapering to 3 μm at the base, sparingly septate, hyaline, brittle, with round apex and 1.5–2 μm thick walls. Ascomatal wall 21–28 μm thick, of two regions: outer region 14–18 μm thick of thick-walled, rounded cells, 3–7 × 2–8 μm, with 2 μm thick walls, fusing and terminating

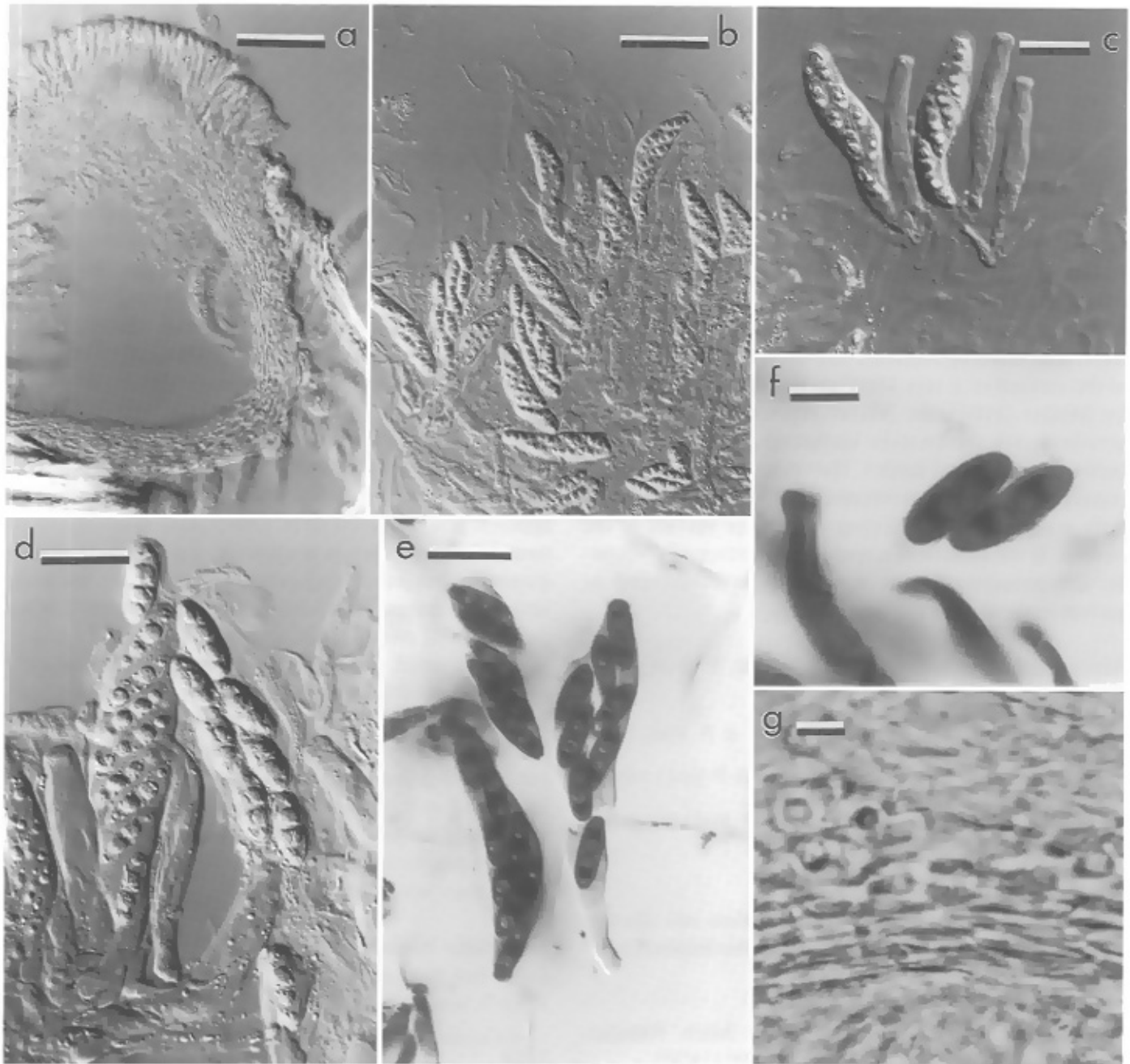


Plate 7. a–f. *Nectriella fuckelii*. a. Median section of ascoma. b. Asci with deliquescent apical paraphyses. c, d. Asci with ascospores. e. Asci with ascospores stained in cotton blue. f. Ascospores stained in cotton blue. g. *Nectriella utahensis*. Median section of ascomatal wall. a–f. Isolectotype – BPI. g. Holotype – NY. Scale bars: a, b = 50 μm ; c = 25 μm ; d, e = 20 μm ; f, g = 10 μm .

at the upper side of the papilla; inner region 8–10 μm thick, of elongate cells 3.5–10.5 \times 1–5 μm . Apical paraphyses visible among mature asci, narrowly filamentous. Asci clavate, 68–95 \times 12–19 μm , constricted at the base, apex rounded to truncate, with a ring; ascospores biseriata. Ascospores narrowly ellipsoid, (12–)16–19 \times (5.5–)6–7(–8) μm , 1-septate, at first hyaline, then slightly yellow, spinulose due to collapse of the narrow sheath.

HABITAT AND DISTRIBUTION.— Known only from the type collection.

TYPES.— GERMANY. Hessen (formerly Nassau): Rheingau, on dead but still hard wood of *Populus nigra*, spring, Fuckel, Herb. Boissier No. 915 as *Calonectria fuckelii* (FH, lectotype, designated by Rossman, 1979b; B, BPI, FH – Höhnle, S, isolectotypes).

TWENTY-ONE ADDITIONAL SPECIES are included in *Nectriella* based on Lowen (1991), three of which are described here as new species.

Nectriella alpina (G. Winter) Weese, Ann. Mycol. 12: 148. 1914.

≡ *Nectria alpina* G. Winter, Hedwigia 19: 175. 1880.

ANAMORPH.— None known.

Ascomata immersed, becoming erumpent, scattered or in groups of 5–6, obpyriform, 220–260 μm high \times 195–250 μm diam, at first orange-yellow, then yellow with brownish ostiole. KOH–; papilla truncate, 50 μm high \times 100–150 μm diam, apex of clavate, diverging, thin-walled hyphae, 10–17.5 \times 3–5 μm , 0–2 septate, ends free. Cells on surface consisting of intertwined hyphae. Ascum wall 10–12 μm thick, of two regions: outer region of intertwined hyphae with ellipsoid cells 5–9 \times 1.5–3.5 μm ; inner region of parallel hyphae, 0.5–1.5 μm wide. Asci clavate, 60–89 \times 9–12.5 μm ; apex rounded, with an inconspicuous apical ring, ascospores biserial. Ascospores ellipsoid, (12.5–) 13–17.5(–19) \times 3.5–5(–7) μm , 1-septate, sometimes slightly constricted, with upper cell often wider than lower cell, hyaline, spinulose.

HABITAT.— On basal leaves and stems of *Arabis* and *Saxifraga*.

DISTRIBUTION.— Austria, Switzerland.

LECTOTYPE, designated herein: SWITZERLAND. Grisons: Rhaetia, Albula near Hospiz, in wilted and dry leaves of *Arabis pumila* (*Brassicaceae*) associated with *Pleospora pyrenaica* Niessl, May 1880, G. Winter (NY).

ADDITIONAL SPECIMEN EXAMINED.— AUSTRIA. Steiermark: Eisenerzer Alpen, Reiting W von Trofaiach, NE-Abhang des Grieskogels, ca 2050 m, Caricetum firmae, on *Saxifraga paniculata*, 9 July 1984, J. Hafellner & A. Nogrsek (GZU 140–88).

NOTES.— The species was recollected and redescribed by Nogrsek (1990).

Nectriella balansiae R.H. Arnold, Mycologia 59: 248. 1967.

ANAMORPH: None known.

Ascomata immersed in stromata and occasionally in empty ascomata of *Balansia*, obpyriform, 110–128 μm high \times 70–120 μm diam, nearly white, KOH–; papilla 30–66 μm high \times 16–30 μm diam. Ascum wall 12 μm thick, of one region of elongate cells 6 \times 2 μm , with 1 μm thick walls; periphyses prominent. Asci clavate, 31.5–40 \times 5.5 μm ; apex truncate, with a ring; ascospores biserial. Ascospores irregularly ellipsoid-fusiform, 9.5–10.5 \times 2.5–3 μm , typically 1-septate, one cell often narrower, hyaline, smooth, two prominent guttules per cell.

HABITAT.— Fungicolous, on stromata of *Balansia*.

DISTRIBUTION.— Known only from the type collection.

LECTOTYPE, designated herein.— CENTRAL AFRICAN REPUBLIC ('French Congo'). Kouti Region [near Ndéle], journey II, immersed in the stromata of *Balansia volkensii* on high herbs [grass], 15 Nov 1891, J. Dybowski, Patouillard Herb. 597 (FH, as *Hyalodothis clavis*).

NOTES.— *Nectriopsis epichloë* (Speg.) Samuels also occurs on *Balansia* and produces similarly sized and shaped asci and ascospores, but differs from *Nectriella balansiae* by yellow, superficial ascomata and ascospores that lack prominent guttules.

Nectriella bloxamii (Berk. & Broome) Fuckel, Jahrb. Nassauischen Vereins Naturk. 29–30: 21. 1876–1877 [1877].

\equiv *Nectria bloxamii* Berk. & Broome, Ann. Mag. Nat. Hist., Ser. 2, 13: 467. 1854.

\equiv *Nectria umbelliferarum* P. Crouan & H. Crouan, Fl. Finistère, p. 37. 1867.

\equiv *Nectria heraclei* P. Crouan & H. Crouan, Fl. Finistère p. 38. 1867.

\equiv *Nectria fuscidula* Rehm, Hedwigia 21: 199. 1882.

\equiv *Nectria dacrymycelloides* Rehm, Hedwigia 42: 175. 1903.

[\equiv *Nectriella dacrymycelloides* (Rehm) Höhn. & Weese, Ann. Mycol. 8: 465. 1910, *comb. inval.*, Art. 33.1].

Ascomata immersed, becoming erumpent, scattered or in groups of up to 8, subglobose, 250–300 μm diam, pale at first, orange-brown, then tan. KOH–; collapsed vertically, nonsetose. Cells on surface of ascomata angular, ca 10 μm diam. Ascum wall 20 μm wide, of two regions: outer region 12 μm thick, of thick-walled, angular to rounded cells, 10 μm diam; inner region 8 μm thick, of thin-walled, elongate cells. Asci clavate, 40–70 \times 8–9(–12) μm ; apex truncate, with a ring; ascospores biserial. Ascospores ellipsoid, 16–24 \times 3–5 μm , 1-septate, often slightly constricted, hyaline, pale orange in mass when fresh, smooth to slightly roughened, often many guttules per cell.

ANAMORPH.— None known.

HABITAT.— On dead stems of herbaceous dicotyledonous plants.

DISTRIBUTION.— Europe, New Zealand.

TYPE SPECIMENS.— UNITED KINGDOM. England: Leicestershire, Twycross, on Jerusalem artichoke (*Helianthus tuberosus* L., *Asteraceae*), 16 Nov 1855, Rev. A. Bloxam 781 (holotype of *N. bloxamii* K; isotypes: IMI 52290, slides; K, 3 collections; K, BM, PC, all as *Sphaeria* (*Nectria*) *bloxamii*); FRANCE. Brittany: Finistère, on dead stems of *Oenanthe crocata*, 20 June 1864, Crouan & Crouan (lectotype of *Nectria umbelliferarum*, designated herein, CO); on dead stems of *Urtica*, 18 June 1864, Crouan & Crouan (paratype of *Nectria umbelliferarum*, CO); on stem of *Umbelliferae* (*Apiaceae*), 30 Jan 1862, Crouan & Crouan (paratype of *Nectria umbelliferarum*, CO); on stems of *Heracleum sphondylium*, 27 Mar 1863, Crouan & Crouan (holotype of *Nectria heraclei*, CO).

NOTES.— *Nectriella bloxamii* can be confused with *N. luteola* in macroscopic appearance but is distinguished by longer ascospores, differences in substrata (herbaceous stems versus leaf veins and petioles) and the color of the ascomata. *Nectriella dacrymycella* has orange, translucent ascomata that usually remain under the epidermis of the substratum and have a more thickened

apex due to the globose, thick-walled cells of the outer region of the ascomatal wall.

Nectriella crouanii Lowen, *nom. nov.*

≡ *Nectria aurea* P. Crouan & H. Crouan, Fl. Finistère, p. 37, 1867 [non *Nectriella aurea* Sacc. & Speg. 1878].

Ascomata immersed, often becoming erumpent, scattered, subglobose, 100–200 µm diam, yellow; ascomatal apex red, becoming darker in KOH, papilla truncate. Ascomatal wall 21–23 µm thick, of two regions at the apex and sides, one at the base: outer region 9–13 µm thick; walls indistinct; inner region 10–12 µm thick, of thin-walled, elongate cells. Asci clavate, 44 × 4–5 µm; apex truncate, with a ring; ascospores biseri-ate. Ascospores ellipsoid to fusiform, 12 × 3 µm, 1-septate, not constricted, hyaline, smooth-walled, with two guttules per cell.

ANAMORPH.— None known.

HABITAT.— *Rubus* and 'moulin'.

DISTRIBUTION.— France, known only from the two Crouan collections.

HOLOTYPE.— FRANCE, Brittany: Tenfeld, on small branches of *Rubus*, 26 Feb 1863, Crouan & Crouan (CO).

ADDITIONAL SPECIMEN EXAMINED.— FRANCE, Brittany: Vallon, on white 'moulin', 8 March 1866, Crouan & Crouan (CO).

NOTES.— *Nectriella crouanii* and *N. exigua* are distinguished from other species of *Nectriella* by the ascomatal walls that have two regions at the apex and sides and by asci that average less than 45 µm long. *Nectriella crouanii* differs from *N. exigua* by the substratum and the ascomata that are red at the apex and yellowish on the sides and base.

Nectriella curtisii (Berk.) Lowen, *comb. nov.*

≡ *Nectria curtisii* Berk., Grevillea 4: 46, 1875.
= *Nectria lacustris* Kirschst., Ann. Mycol. 34: 186, 1936.
≡ *Nectriella lacustris* (Kirschst.) Magnes & Hafellner, Biblioth. Mycol. 139: 105, 1991.

NOTES.— Magnes & Hafellner (1991) provided a recent description and illustrations of this species as *N. lacustris*.

Nectriella dacrymycella (Nyl.) Rehm, Ascomyceten no. 232, 1874.

≡ *Sphaeria dacrymycella* Nyl., Flora 46: 332, 1863.

Ascomata immersed, scattered or in groups of up to 20, subglobose, 140–200 µm high × 180–230 µm diam, bright orange, remaining covered by host epidermis, KOH–. Cells on the surface of the ascomata angular, 6–10 µm diam. Ascomatal wall 10 µm thick, up to 20

µm at the apex as expanded outer region of rounded, thick-walled cells; inner region of elongate cells; ostiolar region of thick-walled, angular to rounded cells, outer cells merging with the substratum. Asci clavate, 50–75 × 9–10 µm, apex truncate, with a ring; ascospores biseri-ate. Ascospores fusiform–ellipsoid, 13–20 × 4–5.5 µm, 1-septate, sometimes slightly constricted, curved, at first hyaline, then pale brown, smooth to slightly roughened, sometimes with 2 guttules per cell.

ANAMORPH.— None known.

HABITAT.— On herbaceous stems.

DISTRIBUTION.— Europe.

HOLOTYPE.— FINLAND, Tavastia australis, Lempäälä, on stems of *Urtica*, 9 Sep 1860, P.A. Karsten (H 2236; isotypes, IMI 52313, slide; H 2237).

ADDITIONAL SPECIMENS EXAMINED.— CZECH REPUBLIC, Moravia: Mähr. Weißkirchen, on *Urtica dioica*, Oct 1926, F. Petrak (C; as *Nectria dacrymycella*). FRANCE, Brittany: on dead stems of *Urtica*, 22 Oct 1869, Crouan & Crouan (CO; as *Nectria dacrymycella*). UNITED KINGDOM, England: Bucks, on stems of *Iris pseudacorus* (IMI 96574); Isle of Lygha, E. Bay at Tabet, on *Iris pseudacorus*, 12 May 1981, R.W.G. Dennis (K; as *Nectria arenula*); Norfolk: King's Lynn, on stem of *Urtica dioica*, 26 June 1979, A. Moore (K; as *Nectria arenula*); Norfolk: Norwich, on stems of *Iris pseudacorus* (IMI 70195); Wales: Monmouthshire: Gwernesey, on stems of *Iris pseudacorus*, (IMI 49092); Powys, For- den, on nettle stems, 27 Sep 1934, Vize 37 (K).

ILLUSTRATION.— Ellis & Ellis (1985, Fig. 1541).

NOTES.— *Nectriella dacrymycella* and *Charonectria sceptri* both have ascomata that look like orange blisters under the epidermis of herbaceous stems. *Nectriella dacrymycella* usually has smaller, non-papillate ascomata with a narrower lateral wall, shorter asci and, unlike *C. sceptri*, does not have true paraphyses. Ascomata of *N. dacrymycella* are found on *Iris pseudacorus* and *Urtica dioica*, whereas those of *C. sceptri* are known on species of *Aconitum*, *Pedicularis sceptrum-carolinum*, and other dead herbaceous plants. *Nectriella dacrymycella* has ascospores that overlap in size and shape with those of *Nectriella bloxamii* and *N. luteola*, but it is distinguished from the latter two species by ascomata that have a wider wall at the ascomatal apex and the bright orange pigment. *Nectriella dacrymycella* is illustrated and briefly described by Ellis and Ellis (1985).

Nectriella dakotensis (Seaver) Lowen, *comb. nov.*

≡ *Hyponectria dakotensis* Seaver, Mycologia 1: 20, 1909.
= *Nectriella muelleri* Samuels, Rogerson, Rossman & J.D. Sm., Canad. J. Bot. 62: 1899, 1984.

This species was described and illustrated by Samuels *et al.* (1984) as *N. muelleri*, including the *Acremonium*-like anamorph.

Nectriella exigua Dennis, *Revista Biol. (Lisbon)* 12: 22. 1983.

This species was described and illustrated by Dennis (1983).

Nectriella funicola (Berk. & Broome) Petch, *Naturalist* 970: 281. 1937.

≡ *Sphaeria funicola* Berk. & Broome, *Ann. Mag. Nat. Hist.*, Ser. 2, 7: 188. 1851.

= *Nectria charticola* Fuckel, *Fungi rhenani* no. 990. 1864.

≡ *Nectriella charticola* (Fuckel) Fuckel, *Jahrb. Nassauischen Vereins Naturk.* 23–24: 176. 1869 [1870].

= *Nectria fibricola* Plowr., in *Sacc.*, *Michelia* 2: 152. 1880.

This species was described and illustrated by Booth (1959) and Ellis & Ellis (1985).

Nectriella galii (Plowr. & Harkn.) Lowen, *comb. nov.*

≡ *Nectria galii* Plowr. & Harkn., *Bull. Calif. Acad. Sci.* 1: 26. 1884.

Ascomata immersed, raising the epidermis of the stem, scattered, subglobose, 160 μm high \times 220–240 μm diam, pale pink, KOH–; collapsing vertically, setae flexuous, septate, to 200 μm long. Ascumatal wall 10 μm thick, of two regions: outer region 8 μm thick, of thick-walled, angular to rounded cells; inner region 2 μm thick, of thin-walled, elongate cells. Asci cylindrical, 40–60 \times 4–8 μm , apex truncate, simple, thin-walled, deliquescing early; ascospores overlapping, uniseriate. Ascospores ellipsoid, 10–12 \times 4–6 μm , 1-septate, hyaline, smooth to slightly roughened, one guttule per cell, ascospores occurring in great numbers, filling the centrum.

ANAMORPH.— None known.

HABITAT.— On stems of *Galium*.

DISTRIBUTION.— Known only from the type collection.

HOLOTYPE.— UNITED STATES. California: on *Galium trifolium* (*Rubiaceae*), H.W. Harkness 3070 (K).

NOTES.— *Nectriella galii* has ascomata with an enlarged apical region typical of the genus *Nectriella*. *Nectriella galii* is similar to *N. bloxamii* and *N. luteola*, two other species that have subglobose ascomata. The ascomata of *N. galii* could be mistaken for pycnidia because the fragile asci rupture easily in a squash mount liberating great numbers of ascospores into the centrum.

Nectriella guttulata Lowen, *Mem. New York Bot. Gard.* 49: 244. 1989.

This species is described and illustrated by Lowen (1989).

Nectriella halonata Lowen, *nom. nov.*

≡ *Charonectria umbelliferarum* Höhn., *Hedwigia* 42: 187. 1903 [non *Nectriella umbelliferarum* P. Crouan & H. Crouan 1867].

Ascomata immersed, scattered or in groups of 20 or more, obpyriform, 300–400 μm high \times 180–420 μm diam, pale yellow, KOH–, papilla truncate, 60–170 μm high \times 80–140 μm diam, collapsing vertically with the papilla retaining its shape; setae forming a circle around the ostiole, clavate, 10–80 \times 2–5 μm , widening to 6 μm at the apex, wall 1 μm thick, apex rounded, thin-walled, base sometimes uneven, 0–2-septate, hyaline. Ascumatal wall 14–16 μm wide, of one region of thin-walled, elongate cells. Asci clavate, 40–80 \times 6–10 μm ; apex thickened, with a ring; ascospores biseriate. Ascospores ellipsoid-fusiform, often slightly curved, (10–)15–20(–22) \times 4–5.5 μm , 1-septate, at first hyaline, then brownish yellow, distinctly verrucose when mature, with 1–2 guttules per cell.

ANAMORPH.— None known.

ETYMOLOGY.— *Halonata*, referring to the halo of setae on the papilla.

HABITAT.— In herbaceous stems of dicotyledonous plants.

DISTRIBUTION.— Known from temperate regions, Europe, and U.S.A. (Colorado).

HOLOTYPE.— AUSTRIA. Tirol: Ötztal, Tumpener See, on dry stems of umbellifer, 8/99, 27 Aug 1902, Höhnel (FH, FH – Höhnel, slide).

ADDITIONAL SPECIMENS EXAMINED.— FRANCE. Côte-d'Or: Morvan plateau, edge of pond of Ste. Isabelle, on *Angelica sylvestris*, Aug 1891, F. Fautrey, Roumeguère Fungi Sel. Exs. 6049 (K, NY, as *Nectria umbelliferarum*). GERMANY. Bavaria: Hochvogel, Bärgeunde-Alpe, (Allgäuer Hochalpen), on dry stems of umbellifer, ca 1300 m, 1909, Rehm, *Ascomyceten* 1867 (FH, K, NY as *Charonectria umbelliferarum*); Bavaria: München, Kiesgrube near Fürstenried, on dry stems of umbellifer, Oct 1902, Rehm, *Ascomyceten* no. 1466 (IMI 104344; K; as *Calonectria bloxamii*). SWEDEN. Uppland: Dalby par., roadside ca 125 m W of Jerusalem, on *Carlina vulgaris* (*Asteraceae*), overwintered stems and leaves, 28 June 1988, K. & L. Holm 4941a (NY). UNITED KINGDOM. England: Suffolk: Dunwich Forest, on *Angelica sylvestris*, 21 Sep 1979, M.B. & P. Ellis (IMI 241564); Yorkshire: Pickering marshes, on *Urtica dioica*, 21 June 1956, W.G. Bramley (K; as *Lasionectria*). UNITED STATES. Colorado: location unknown, in herbaceous stems, 1910, Seaver & Bethel (NY; as *Nectriella fuckelii*).

NOTES.— *Nectriella halonata* is similar to *N. dakotensis* in having ascomata ornamented with setae encircling the ostioles and collapsing vertically with the papillae retaining their shapes. *Nectriella halonata* has larger asci and ascospores than *N. dakotensis*. Although no ascomata remain in the holotype collection, there is a slide in the Höhnel herbarium that serves as the type.

The description herein is based primarily on Rehm, *Ascomyceten* 1867.

Nectriella jucunda (Durieu & Mont.) Sacc., *Michelia* 1: 278. 1878.

≡ *Sphaeria jucunda* Durieu & Mont., in Durieu, *Explor. sci. Algérie, Bot.* 1: 478. 1849.

≡ *Nectria jucunda* (Durieu & Mont.) Mont., *Syll. Gen. Sp. Crypt.*, p. 225. 1856.

≡ *Hyponectria jucunda* (Durieu & Mont.) Weese, in Höhnel & Weese, *Ann. Mycol.* 8: 466. 1910.

= *Nectriella cacti* Ellis & Everh., *J. Mycol.* 8: 66. 1902.

≡ *Hyponectria cacti* (Ellis & Everh.) Seaver, *Mycologia* 1: 20. 1909.

Ascomata immersed, scattered or in groups of up to 20, nonstromatic, subglobose, 360 µm high × 250–300 µm diam, pale red or orange to yellow, KOH–, apex truncate, ostiolar area sometimes darker. Surface cells of the ascomata epidermoid to angular, 5–10 µm in the longest dimension. Asci clavate, 42–70 × 3–4 µm, apex truncate, simple; ascospores irregularly uniseriate to biseriate in the middle, uniseriate above and below, filling the upper two thirds of the ascus. Ascospores cylindrical to allantoid, ca 5.5 × 1.5 µm, unicellular, hyaline, smooth-walled.

ANAMORPH.— *Leptodermella opuntiae* Dodge (circumstantial).

HABITAT.— In stems of *Opuntia*.

DISTRIBUTION.— Algeria, U.S.A. (Alabama), Spain.

TYPES.— ALGERIA. Hill over Bab-Azoun, in stems of *Opuntia*, 22 Feb 1840, M.C. Durieu de Maisonneuve (lectotype, designated herein of *Sphaeria jucunda*, PC, filed as *Hypocrea jucunda*, two isotypes at PC filed as *Sphaeria jucunda*). UNITED STATES. Alabama: Tuskegee, on *Opuntia ficus-indica*, Carver 584 (holotype of *Nectriella cacti* NY).

ADDITIONAL SPECIMEN EXAMINED.— SPAIN. Los Retacos, Almeria, on *Opuntia*, June 1997, J. Checa, det. A. Rossman (BPI 744973).

NOTES.— Pink pycnidia of *Leptodermella opuntiae* were present on the type of *Nectriella cacti* but the anamorph association with *N. jucunda* is not proven.

Nectriella luteola (Desm.) Weese, *Ann. Mycol.* 12: 131. 1914.

≡ *Sphaeria luteola* Desm., *Pl. Crypt France*, Ed. 1, Sér. 1, Fasc. 42: 2078. 1850.

≡ *Calonectria luteola* (Desm.) Sacc., *Michelia* 1: 315. 1878.

≡ *Charonectria luteola* (Desm.) Höhn., *Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1*, 115: 1193. 1906.

Ascomata immersed–erumpent, scattered, on veins or petioles of leaves, subglobose, 300 µm diam, orange-

brown, translucent, KOH–, collapsing vertically. Ascumatal wall 20–30 µm thick, of two regions: outer region 10–15 µm thick, of thick-walled, angular to rounded cells, 6 µm diam; inner region of thin-walled, elongate cells. Asci clavate, 44–60 × 8–12 µm; apex truncate, with a ring; ascospores biseriate. Ascospores naviculate–ellipsoid, 11–16 × 3–5(–6) µm, 1-septate, often slightly constricted, slightly roughened, several small guttules per cell.

ANAMORPH.— None known.

HABITAT.— In leaf veins and petioles of deciduous trees.

DISTRIBUTION.— Europe.

LECTOTYPE, DESIGNATED HEREIN.— FRANCE. In leaves and petioles of *Populus* and *Fraxinus*, summer, no collector, Pl. Crypt. France 2078 (PC; isolectotypes, BPI; FH – Höhnel; H; K; NY).

ADDITIONAL SPECIMENS EXAMINED.— LUXEMBOURG. On petiole of *Fraxinus*, Apr 1902, J. Feltgen (FH–A2899; as *Charonectria luteola*). SWITZERLAND. Valais: Aletschwaldreservat, Reidialz, on fallen leaves of *Alnus viridis*, 9 Sep 1970, R.W. Dennis (K; as *Nectria arenula*;). UNITED KINGDOM. England: Devon, Slapton Ley Nature Reserve, on stem of *Rubus*, 10 Oct 1979, M.C. Clark (IMI 24778; K).

NOTES.— *Nectriella luteola* is similar to *N. bloxamii*, separated by host and ascumatal color.

Nectriella minuta Lowen, *sp. nov.* — Plate 2, f.

Ascomata obpyriformia, 160–200 × 130–175 µm, immersa, gregaria; apex luteus; setae nullae; parietes 14–20 µm crassi, bistratosi. Asci clavati, 40–70 × 6–8 µm, annulo praediti. Ascospores biseriatae, ellipsoideae, 10–12 × 2–3 µm, 1-, demum 3-septatae, hyalinae, laeves, guttulateae. Anamorphosis: *Acremonium* sp.

Ascomata immersed with only the papilla emerging, or appearing superficial if epidermis erodes, then seated on the mycelium in dense groups. Ascomata obpyriform, smooth, 160–200 µm high × 130–175 µm diam, nearly white, KOH–, apex yellow, papilla truncate to acute, 40–50 µm diam, smooth, collapsing by lateral pinching. Ascumatal wall 14(–20) µm thick, of two regions: outer region of thick-walled, angular to rounded cells, ca 4 × 4 µm diam; inner region of thin-walled cells. Asci clavate, 40–70 × 6–8(–14) µm; with an apical ring, ascospores biseriate. Ascospores narrowly ellipsoid, one end occasionally tapered, (9–)10–12(–14) × 2–3(–4) µm, 1-septate, becoming 3-septate, slightly constricted, hyaline, smooth to spinulose.

CHARACTERISTICS IN CULTURE.— Conidiophores arising from aerial hyphae and from agar surface, solitary; terminating in a single phialide; phialides (10–)15–38 × 1.5–3 µm at the base, narrowing to 1–1.5 µm at the apex. Conidia oblong to ellipsoid, 3–5(–12) × 1–1.5(–2) µm, unicellular, smooth, hyaline; basal ab-

scission scar protuberant and flattened on ellipsoid conidia, not seen on oblong conidia; conidia held in hyaline liquid.

HABITAT AND DISTRIBUTION.— Known only from the type collection.

TYPE.— VENEZUELA. Edo. Mérida, La Montaña, El Teleférico above Mérida, on dead culms of bamboo, 30 July 1971, K.P. Dumont VE 3435 & G.J. Samuels, culture C.T.R. 71-347 (NY, holotype).

ETYMOLOGY.— Referring to the small, inconspicuous ascomata.

NOTES.— *Nectriella minuta* is distinguished from other species of *Nectriella* by the tropical distribution, occurrence on bamboo, nearly white ascomata, and *Acremonium*-like anamorph. The species was grown in culture from single ascospores.

Nectriella paludosa Fuckel, *Jahrb. Nassauischen Vereins Naturk.* 23–24: 176. 1869 [1870].

[= *Nectria paludosa* (Fuckel) Sacc., *Michelia* 1: 289. 1898, non *Nectria paludosa* H. Crouan & P. Crouan 1876].

[= *Nectriella diaphana* Fuckel & Nitschke, in Fuckel, *Jahrb. Nassauischen Vereins Naturk.* 23–24: 176. 1869 [1870], name invalid, Art. 34.1, not accepted by author]

Ascomata often remaining immersed, sometimes erumpent, scattered or in groups of up to 5, often only the papilla showing through the epidermis, obpyriform, 190–290 μm high \times 230–430 μm diam, at first pale pink, then yellow, KOH–, with truncate papilla, collapsing vertically or not collapsing. Setae on papilla, clavate, 8 \times 2 μm , 2-septate, sparse. Ascomatal wall 20–24 μm thick, of two regions: outer region of thick-walled, angular to rounded cells, surface cells ca 8 μm diam; inner region of thin-walled, rectangular cells. Asci clavate, 68–85 \times 7.5–10 μm , apex truncate, with a ring; ascospores biserial. Ascospores ellipsoid, (12–)14–23 \times 4–5 μm , 1-septate, often slightly constricted, hyaline, pale pink in mass, echinulate, with 2 guttules per cell.

ANAMORPH.— None known.

HABITAT.— In stems of *Typha* and *Iris*.

DISTRIBUTION.— Europe, United States.

Plate 8. a. *Nectriella rubricapitula*, median section of ascoma and ascus. **b.** *Nectriella utahensis*, median section of ascoma, ascus, ascospores, and conidiophore. **c.** *Pronectria robergei*, ascomatal wall cells, ascus apex, and ascospores. **d.** *Pronectria echinulata*, ascomatal wall cells, ascus, and ascospores. **e.** *Pronectria pertusariicola*, median section of ascoma, asci and ascospores. a. Isotype – NY. b. Holotype – NY. c. Lectotype of *Cryptodiscus lichenicola* – BPI. d. Holotype – IMI. e. Holotype – UPS. Scale bars: a. for ascoma = 50 μm , for ascus = 10 μm , upper b, upper e = 100 μm ; lower b, c, d, and lower e = 10 μm .

HOLOTYPE.— GERMANY. Hessen: Near Budenheim, on rotting leaves of *Typha angustifolia*, floating in swamp water, spring, Fuckel & Nitschke, *Fungi rhenani* 2048, Fasc. 6. 1867 (G; isotypes, Herb. Barb. Boiss., as *N. diaphana* FH, IMI, K).

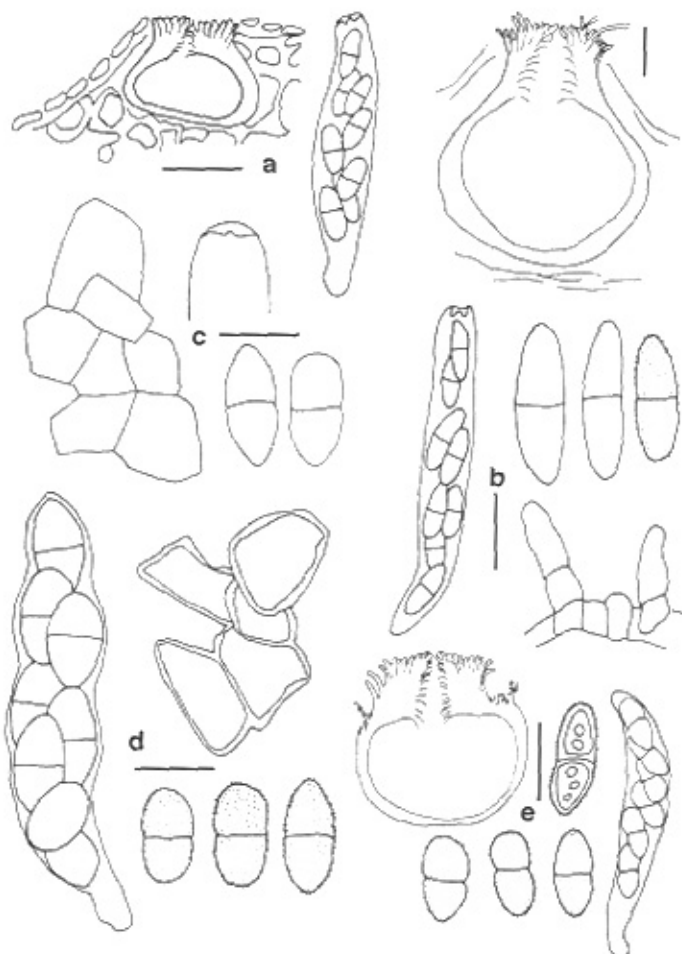
ADDITIONAL SPECIMENS EXAMINED.— CZECH REPUBLIC. Moravia: Mähr.-Weißkirchen, Thein, on *Typha latifolia*, Sep 1927, F. Petrak (C, IMI); Lipnik, Thrin, on *T. latifolia* (IMI 9446). GERMANY. On *Iris pseudacorus*, Aug 1904, Krieger, *Fungi Sax.* 1769 (FH, K); on *T. latifolia*, Petrak 456 (K); Petrak 2488 (K); (IMI 202253; as *N. dacrymycella*). UNITED KINGDOM. England: West Sussex, Loder Valley Nature Reserve, on *T. latifolia*, 26 Oct 1986, R. Lowen 232 (IMI 348647). UNITED STATES. Maine: Sagadahoc County, Merrymeeting Bay, ca 6 mi N of Woolwich, highway 128, across road from R.P.T. Coffin Wild flower Sanctuary, 44°01' N, 69°48' W, on damp, dead stems of *T. latifolia*, 19 Sep 1987, C.T. Rogerson & R. Lowen 356–87 (NY).

NOTES.— The papilla of *Nectriella paludosa* sometimes appears dark due to the presence of algae on the surface of the substratum. In the cultures produced from single ascospores no anamorph formed. Ascomata developed from single ascospores, thus the species is homothallic.

Nectriella pironii Alfieri & Samuels, *Mycologia* 71: 1181. 1979 [1980].

ANAMORPH: *Kutilakesa pironii* Alfieri, *Mycotaxon* 10: 217. 1979.

This species was described and illustrated by Alfieri & Samuels (1979).



Nectriella rubricapitula Lowen, *sp. nov.* — Plate 8, a.

Ascomata obpyriformia, 80 × 100 µm, immersa, solitaria vel gregaria; apex ruber; setae nullae; parietes 14 µm crassi, e strato unico compositi. Asci clavati, 35–45 × 4.5–5.5 µm, annulo praediti. Ascospores biseriatae, ellipsoideae, 6–7.5 × 2 µm, 1-septatae, hyalinae, laeves, guttulate. Anamorphosis ignota.

Ascomata obpyriform, 80 µm high × 100 µm diam, immersed, scattered or in groups of up to 10, strongly adherent to the substratum, red at ascomatal apex, immersed part of the wall pale yellow, KOH–; papilla truncate, 50 µm diam, smooth. Ascomatal wall 14 µm thick, of one region, thick-walled, elongate. Asci clavate, (29–)35–45 × 4.5–5.5(–6.5) µm; apex truncate, with a ring, ascospores biseriate. Ascospores ellipsoid, 6–7.5 × 2 µm, 1-septate, often slightly constricted, hyaline, smooth, inconspicuously guttulate. Anamorph unknown. HABITAT AND DISTRIBUTION.— Known only from the type collection.

HOLOTYPE.— BRAZIL. Amazonas: Plateau of Serra Araca, N side of N Mountain, 1250 m, 00° 57' N, 63° 21' W, cloud forest, on twig, 17–22 Feb 1984, G.J. Samuels 481a, G.T. Prance & J. Pipoly (INPA; NY, isotype).

ETYMOLOGY.— Referring to the red apex of the ascomata.

NOTES.— *Nectriella rubricapitula* is distinguished from other species of *Nectriella* by the adherence of the ascomata to the woody substratum and the red ascomatal apex.

Nectriella sambuci (Höhn.) Weese, *Ann. Mycol.* 12: 150, 1914.

≡ *Charonectria sambuci* Höhn., *Hedwigia* 42: 187, 1903.

Ascomata immersed, sometimes erumpent, scattered or in groups of up to 30, some contiguous, obpyriform, 100–300 µm high × 220 µm diam, at first reddish yellow, then yellow, KOH–; papilla truncate, 60–140 µm high × 120–160 µm diam; sometimes collapsing vertically, setae clavate, 40 × 4 µm (not seen in type). Cells on surface of ascomata angular, 5–10 µm diam. Ascomatal wall 20–30 µm thick, of two regions: outer region of rectangular to ellipsoid cells, 6–10 × 2–3 µm, with 2 µm thick walls; cells of the inner region having 1 µm thick walls. Asci clavate when young, mature asci in type not seen, 50–68 × 6–8 µm, apex truncate, with a ring, deliquescing at maturity; ascospores biseriate. Ascospores ellipsoid, 14–16 × 3–4(–6) µm, typically 1-septate, occasionally 3-septate, often slightly constricted, many curved, at first hyaline, then slightly brown, smooth, often several guttules per cell.

ANAMORPH.— None known.

HABITAT.— On stems of woody plants.

DISTRIBUTION.— Europe.

HOLOTYPE.— YUGOSLAVIA. Herzegovina, Jablanica, on thin, dry stems of *Sambucus nigra*, Apr 1903, Höhnel (FH). ADDITIONAL SPECIMENS EXAMINED.— UNITED KINGDOM. England: N. Yorkshire, Levisham, Hagg Wood Marsh NR, BW. C-73-4, on *Filipendula ulmaria* [Rosaceae], 1 July 1973, collector unknown (IMI 177564).

NOTES.— *Nectriella sambuci* has papillate ascomata with scattered hairs and a wall with two regions. Like the related species, *N. fuckelii* and *N. paludosa*, the ascomata have scattered secretory setae and do not usually collapse when dry.

Nectriella silenes-acaulis Nogrsek, *Biblioth. Mycol.* 133: 69, 1990.

This species was described and illustrated by Nogrsek (1990).

Nectriella utahensis Lowen & Rogerson, *sp. nov.* — Plate 7, g; Plate 9, b.

Ascomata obpyriformia, 238–500 × 255–400 µm, immersa, solitaria vel gregaria, luteo-aurantiaca; setae cylindricae, 7–30 × 3.5–5 µm, parum septatae; parietes 18–35 µm crassi, bistratosi. Asci clavati, 40–60 × 5.5–12 µm, annulo praediti. Ascospores biseriatae, ellipsoideo-fusiformes, 14–20 × 4–6.5 µm, 1-septatae, hyalinae, demum leviter coloratae, spinulosae, guttulis compluribus. Anamorphosis ignota.

Ascomata obpyriform, 238–500 µm high × 255–400 µm diam, immersed to erumpent, scattered or in groups up to 10, yellow-orange, KOH–; papilla truncate, 62–100 µm high × 123–176 µm diam; collapsing by lateral or vertical pinching of ascomatal base. Setae around the ostiole, 7–30 × 3.5–5 µm, tapering to the rounded apex, septate, walls slightly thickened. Ascomatal wall 18–35 µm thick, of two regions: outer region 7–18 µm thick, of ellipsoid cells, 3.5–7 × 1.5–4.5 µm; inner region 11–18 µm thick, of thin-walled cells 7–15 × 0.5–2 µm. Asci clavate, 40–60 × 5.5–12 µm, apex truncate, with a ring, ring often pushed to one side in mature asci, ascospores biseriate. Ascospores ellipsoid-fusiform, 14–20 × 4–6.5 µm, 1-septate, pale orange in mass, spinulose when mature, with several orange guttules per cell. Anamorph unknown.

HABITAT.— On dead leaves of *Swertia radiata* (Gentianaceae) and possibly larkspur.

DISTRIBUTION.— United States (Colorado, Utah).

HOLOTYPE.— UNITED STATES. Utah: Weber County: north of N. Ogden Divide, Wasatch Crest trail, on decaying leaves of *Swertia radiata*, 19 Aug 1987, C.T. Rogerson (NY).

ADDITIONAL SPECIMEN EXAMINED.— UNITED STATES. Colorado: Mesa County, Grand Mesa Nat. Forest, S.E. of Mesa Lake, on stems of larkspur?, 14 July 1930, R.W. Davidson 646 (BPI, as *Nectriella pedicularis*).

ETYMOLOGY.— Named for the location of the type collection, a favorite locale of the collector.

Nectriella verrucosa Urries, An. Jard. Bot. Madrid 1: 67. 1941.

Ascomata immersed, scattered or in groups of up to 20, obpyriform, 313–387 μm high \times 176–317 μm diam, at first reddish, then yellow, KOH–; papilla truncate, 282–310 μm high \times 132–308 μm diam, setae broken, the largest ones 66 \times 5 μm , base tapered to 2 μm , hyaline, septate, with *ca* 1 μm thick wall. Ascromatal wall 20–35 μm thick, of two regions: outer region 12–26 μm thick, of thick-walled cells; inner region 7–9 μm thick, of thin-walled, parallel, densely packed cells. Asci clavate, (70–)80–135 \times 10–20 μm ; apex angular; simple; ascospores biseriate in the middle; base clavate, lower quarter occasionally empty. Ascospores narrowly

ellipsoid, one side often curved, the other side straight, (20.5–)22–28(–30) \times (5–)6–8(–9) μm , 1-septate, septum inconspicuous in mature ascospores, hyaline, verrucose at maturity, often many guttules per cell, tending to disappear at maturity.

HABITAT.— On rotting paper.

DISTRIBUTION.— Known only from the type collection.

HOLOTYPE.— SPAIN. Near Madrid, on rotting paper, 14 Jan 1940, Urries (MA).

NOTES.— *Nectriella verrucosa* is related to *N. funicola* but distinguished by the larger, more ornamented ascospores, more elongate, thin ascromatal wall cells and an angular apex of the ascus. The two taxa are represented by only a few collections.

KEY TO THE SPECIES OF *NECTRIELLA*

1. In empty ascomata of *Balansia*; ascospores ellipsoid-fusiform, 9.5–10.5 \times 2.5–3 μm , smooth-walled *N. balansiae*
1. On living or decorticated, rotting wood or twigs, decaying herbaceous stems, leaves or petioles, or rotting rope or paper 2
- 2 (1). Ascospores generally less than 10 μm long, non- to 1-septate, smooth-walled 3
2. Ascospores generally more than 10 μm long, 1-septate, smooth or ornamented 6
- 3 (2). Ascospores non-septate, cylindrical to allantoid, 5–6 \times 1.5 μm , hyaline; ascomata pale yellow to orange; on *Opuntia* *N. jucunda*
3. Ascospores 1-septate, ellipsoid or naviculate to ellipsoid-fusiform 4
- 4 (3). Ascomata yellow with red apical region; ascospores ellipsoid, 6–7.5 \times 2 μm ; on woody twigs *N. rubricapitula*
4. Ascomata concolorous, pale pink, yellow, orange to yellow-brown; ascospores ellipsoid or naviculate to ellipsoid-fusiform; on herbaceous substrata 5
- 5 (4). Ascomata pale pink, non-setose; ascospores ellipsoid, 8–10 \times 2–3 μm , on decaying leaves of *Ammophila* *N. exigua*
5. Ascomata yellow to orange or yellow-brown, with clavate setae up to 60 μm long surrounding the ostiole; ascospores naviculate to ellipsoid-fusiform, 7–10 \times 2–3 μm ; on dead herbaceous dicotyledonous stems *N. dakotensis*
- 6 (2). Ascomata with long, straight setae, or flexuous hyphae or hairs, often in a circle around the ostiole, globose to obpyriform, generally papillate 7
6. Ascomata lacking setae, hyphae or hairs in the ostiolar region, subglobose to globose, often with a flattened apex 18
- 7 (6). Associated with galls and cankers on living stems and leaves of woody plants; ascomata pale yellow to yellow, with clavate, thick-walled hairs up to 20 μm long surrounding the ostiole; ascospores ellipsoid-fusiform, 12.5–26 \times 2.5–4.5 μm , finely striate; anamorph *Kutilakesa* *N. pironii*
7. On non-living, herbaceous or woody substrata or on rotting paper or rope; anamorph, where known, *Acremonium*-like 8

- 8 (7). On decorticated wood of *Populus*; ascospores narrowly ellipsoid, $16\text{--}19 \times 4\text{--}7 \mu\text{m}$, spinulose *N. fuckelii*
8. On rotting herbaceous leaves and stems, paper or rope 9
- 9 (8). On rotting paper and rope 10
9. On herbaceous stems, leaves or petioles 11
- 10 (9). Ascospores ellipsoid, $16\text{--}24 \times 4\text{--}8 \mu\text{m}$, spinulose to verrucose; on rotting paper and rope, known throughout Europe *N. funicola*
10. Ascospores narrowly ellipsoid, $(20\text{--})22\text{--}28(\text{--}30) \times 5\text{--}9 \mu\text{m}$, verrucose; on rotting paper; known only from Spain *N. verrucosa*
- 11 (9). On decaying leaves including petioles 12
11. On herbaceous stems 13
- 12 (11). On decaying leaves of *Swertia* in western United States; ascomata yellow-orange with cylindrical, straight setae; ascospores ellipsoid-fusiform, $14\text{--}17.5 \times 4\text{--}6.5 \mu\text{m}$, spinulose *N. utahensis*
12. On petioles of *Gunnera* in Chile; ascomata bright orange with cylindrical, recurved setae; ascospores ellipsoid-fusiform, $17\text{--}20 \times 3.5\text{--}5.5 \mu\text{m}$, minutely spinulose *N. guttulata*
- 13 (11). On *Iris* and *Typha*; ascospores ellipsoid, $14\text{--}23 \times 4\text{--}5 \mu\text{m}$, spinulose ... *N. paludosa*
13. On dicotyledonous herbaceous stems; ascospores smooth, spinulose, verrucose or finely striate 14
- 14 (13). On *Silene*; ascospores finely striate, ellipsoid-fusiform, $12.5\text{--}16 \times 2.5\text{--}4.5 \mu\text{m}$ *N. silenes-acaulis*
14. On herbaceous stems other than *Silene*; ascospores smooth or verrucose 15
- 15 (14). Ascomata subglobose, pale pink; ascospores $10\text{--}12 \times 4\text{--}6 \mu\text{m}$, ellipsoid, smooth to slightly roughened; on *Galium* *N. galii*
15. Ascomata obpyriform, yellow; ascospores more than $12 \mu\text{m}$ long 16
- 16 (15). Ascospores ellipsoid, $14\text{--}16 \times 3\text{--}4 \mu\text{m}$, smooth-walled *N. sambuci*
16. Ascospores ellipsoid or ellipsoid-fusiform, spinulose or verrucose 17
- 17 (16). Ascospores ellipsoid, $13\text{--}18 \times 3.5\text{--}5 \mu\text{m}$, spinulose; on *Arabis* or *Saxifraga* *N. alpina*
17. Ascospores ellipsoid-fusiform, $15\text{--}20 \times 4\text{--}5.5 \mu\text{m}$, verrucose; on *Apiaceae*, *Asteraceae* or unknown herbaceous stems *N. halonata*
- 18 (6). Ascomata yellow with a red apical region, subglobose to globose; ascospores ellipsoid to fusiform, $12 \times 3 \mu\text{m}$, smooth-walled; on *Rubus* *N. crouanii*
18. Ascomata concolorous 19
- 19 (18). On decaying monocotyledonous plant parts, either on *Typha* and *Poaceae*; ascomata pale yellow 20
19. On decaying woody twigs, leaves, petioles or herbaceous stems of dicotyledonous plants; ascomata bright orange to orange-brown or tan 0 21
- 20 (19). On dead leaves of *Typha* or grasses; ascomata subglobose; ascospores ellipsoid, $15\text{--}25 \times 4\text{--}5.5 \mu\text{m}$, spinulose *N. curtisii*

20. On bamboo; ascomata obpyriform; ascospores narrowly ellipsoid, (9–)10–12(–14) × 2–3(–4) μm, smooth to spinulose *N. minuta*
- 21 (19). Ascospores 11–16 × 3–5(–6) μm, ellipsoid–naviculate, spinulose; ascomata orange-brown; on decaying leaves including petioles of deciduous trees and stems of *Rubus* *N. luteola*
21. Ascospores averaging longer than 16 μm, ellipsoid to ellipsoid–fusiform, smooth to spinulose; ascomata bright orange to orange-brown or tan; on various herbaceous stems 22
- 22 (21). Ascomata orange-brown to tan; ascospores ellipsoid, 16–24 × 3–5 μm; on herbaceous stems especially of *Apiaceae* and *Asteraceae* *N. bloxamii*
22. Ascomata bright orange; ascospores ellipsoid–fusiform, 13–20 × 4–5.5 μm; on herbaceous stems, known from *Iris* and *Urtica* *N. dacrymycella*

NECTRIOPSIS Maire, Ann. Mycol. 9: 323. 1911, nom. cons. prop.

Lectotype, designated by Weese (1913): *N. violacea* (Fr.) Maire (= *Sphaeria violacea* Fr.).

= *Dasyphthora* Clem., Gen. Fungi p. 45. 1909, nom. rej. prop. — Type: *D. lasioderma* (Ellis) Clem. (= *Nectria lasioderma* Ellis), recognized as *Nectriopsis lasioderma* (Ellis) Samuels.

= *Peloronectriella* Doi, Bull. Natl. Sci. Mus. Tokyo 11: 179. 1968. — Type: *P. sasae* Doi, recognized as *Nectriopsis sasae* (Doi) Rossman & Samuels.

Ascomata superficial or immersed in substratum, generally not conspicuously stromatic, generally less than 200 μm diam, nearly white to pale yellow or orange, rarely violet or purple, KOH–. Ascomatal wall less than 20 μm thick, usually of a single region of small, thin-walled, non-descript cells; wall cells at surface forming a *textura epidermoidea*. Anamorph, where known, *Acremonium*, *Gliocladium*-like, or *Verticillium*-like. On free-living fungi, lichens, and myxomycetes, less frequently on herbaceous substrata.

NOTES.— *Nectriopsis* was established with four species of hypocrealean fungi having ascomata in a byssoid stroma and considered intermediate between *Nectria* and *Hypomyces*. Samuels (1988) presented a thorough account of the genus including 43 species each of which was described and illustrated. In the present work, the species that occur on *Meliola* have been removed to the genus *Dimerosporiella*. Thus, 39 species, including two additional species described below, are recognized in *Nectriopsis*. Clements (1909) placed *Dasyphthora* in the *Hypocreaceae* with only one species, *D. lasioderma*, that was included in *Nectriopsis* (Samuels, 1988). Although *Dasyphthora* provides an earlier name, *Nectriopsis* has been proposed for conservation (Rossman & Samuels, 1998). The unispecific genus *Peloronectriella* was described for a species on bamboo having an elon-

gate, tuberculate stroma with *Nectria*-like ascomata and 1-septate ascospores. The type specimen of *Peloronectriella sasae* was examined and found to be a *Nectriopsis* growing on the surface of overmature stromata of *Shiraia bambusicola* Henn. Thus *Peloronectriella sasae* belongs in the genus *Nectriopsis* and *Peloronectriella* is a synonym of *Nectriopsis*.

Nectriopsis violacea (Fr.) Maire, Ann. Mycol. 9: 323. 1911.

= *Sphaeria violacea* Fr., Summa Veg. Scand. 2(2): 441. 1823.

= *Nectria violacea* (Fr.) Fr., Summa Veg. Scand. 2: 388. 1849.

= *Hypomyces violaceus* (Fr.) Tul., Ann. Sci. Nat. Bot. ser. 4, 13: 14. 1860.

= *Peckiella violacea* (Fr.) Sacc., Syll. Fung. 9: 945. 1899.

= *Hypolyssus violaceus* (Fr.) O. Kuntze, Revis. Gen. Plant. 3 (2): 488. 1898.

= *Byssonectria violacea* (Fr.) Seaver, Mycologia 2: 65. 1910.

= *Hyphonectria violacea* (Fr.) Petch, J. Bot. 75: 222. 1937.

ANAMORPH.— *Acremonium fungicola* (Sacc.) Samuels, Mycologia 65: 404. 1973

= *Diplosporium album* var. *fungicola* Sacc., Syll. Fung. 4: 178. 1886.

Mycelium white, becoming violet immediately surrounding each perithecium, dense, covering the surface of the host aethalia. Ascomata immersed in mycelium, becoming collabent when dry, broadly pyriform, (116–)240–275(–390) μm high × (150–)240–260(–310) μm diam, or globose, (170–)240–260(–340) μm diam, violet to purple; surface cells thin-walled, angular, 7–10 μm diam; papilla acute, of thick-walled, septate, unbranched hyphae; hyphae extending outwardly as hairs, 10–50 μm long, 5 μm wide at the rounded apices, forming a fringe around the papilla; periphyses ca 15 μm long, 2 μm wide at the base, rounded apices