

NEW PHACIDIALES AND OSTROPALES FROM THE COLLECTIONS OF THE FARLOW HERBARIUM

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SUMMARY

The following new species and varieties of Phacidiales and Ostropales are described: *Colpoma deusta*, from Oregon, *Schizoxylon juniperinum* var. *cylindrospermum*, from Turkmenian S.S.R., *Schizoxylon punctatum*, from India, *Stictis radiata* var. *aggregata*, from Chile, and *Stictis reticulata*, from Kirghiz S.S.R. Two western North American species of *Stictis* are reported for the first time from the eastern hemisphere.

Among unidentified collections deposited in the Farlow Herbarium, material sent for identification, and collections made by the staff, the following new species of Phacidiales and Ostropales were encountered. Among specimens sent by A. Raitviir (TAA) for identification were representatives of two distinctive species of *Stictis* previously reported only from North America; these are discussed below.

Methods and terminology employed in studying the Ostropales were outlined by Sherwood (1977a, b). This should be consulted for more information on the genera concerned. For a diagrammatic cross section and an explanation of the terminology and ontogeny of tissues in hysterothecial Rhytismataceae (Phacidiales), see Nannfeldt (1932), Powell (1974), or Sherwood (1977a).

COLPOMA Wallr., Fl. Cryptog. Germaniae 2:422. 1833.

Colpoma deusta Sherwood, sp. nov. FIGURE 1.

Hysterothecia atra, in ligno nigro immersa, dein erumpentia, carbonacea, linearia vel oblongo-linearia, rugosa, usque ad 4 mm longa, 0.7–1.0 mm lata, rima longitudinali periphysibus praedita aperta. Asci clavati, pedicellati, 140–175 × 8–9 μ m, in iodo non caerulescentes, 8-spori. Paraphyses filiformes, ramosae, circinatae. Sporae hyalinae, aciculares, simplices, 30–45 × 1.5–2 μ m, tunica gelatinosa inconspicua involutae.

Hab: In ligno decorticato coniferarum, Amer. Bor. Occident.

Holotypus: FH, reference stand 14, Wildcat Mountain, Cascade Mts., Linn Co., Oregon, USA, elev. 5200 ft. leg. M. A. Sherwood, L. H. Pike, G. C. Chrones.

Isotypi: OSC; BPI.

Etymology: *deusta* (L.), burnt, referring to the appearance of the wood on which the colonies occur.

Apothecia immersed in swarms beneath a common black stromatic crust on decorticated wood, becoming erumpent, 1.5–4 × 0.7–1.0 mm, elliptic to linear, black, shining, the thick margin rugose, with numerous longitudinal striae, generally elongate in the grain of the direction of the wood, rarely branched, 1 mm high, opening by a longitudinal slit, when wet with prominent pale grey lips and an immersed pale yellowish-grey disc. Stroma in cross section massive, the covering layer irregular in outline, with a black carbonized crust 20 μ m thick, and an internal matrix of brown hyphae ca. 2.0 μ m diam., the slit flanked by a dense fringe of colorless gelatinous branched hyphae 50 × 1–1.5 μ m diam.; basal stroma 0.5–0.7 mm thick, of disintegrating, carbonized hyphae and partially decomposed wood fragments. Subhymenium 30–40 μ m thick, colorless. Asci 140–175 × 8–9 μ m, clavate, long-stalked, J-, 8-spored. Paraphyses filiform, branched, circinate, barely enlarged to 1.5–2 μ m at the apex. Ascospores 30–45 × 1.5–2 μ m, nonseptate, acicular, narrowly sheathed.

On decorticated conifer wood, Oregon, U.S.A.

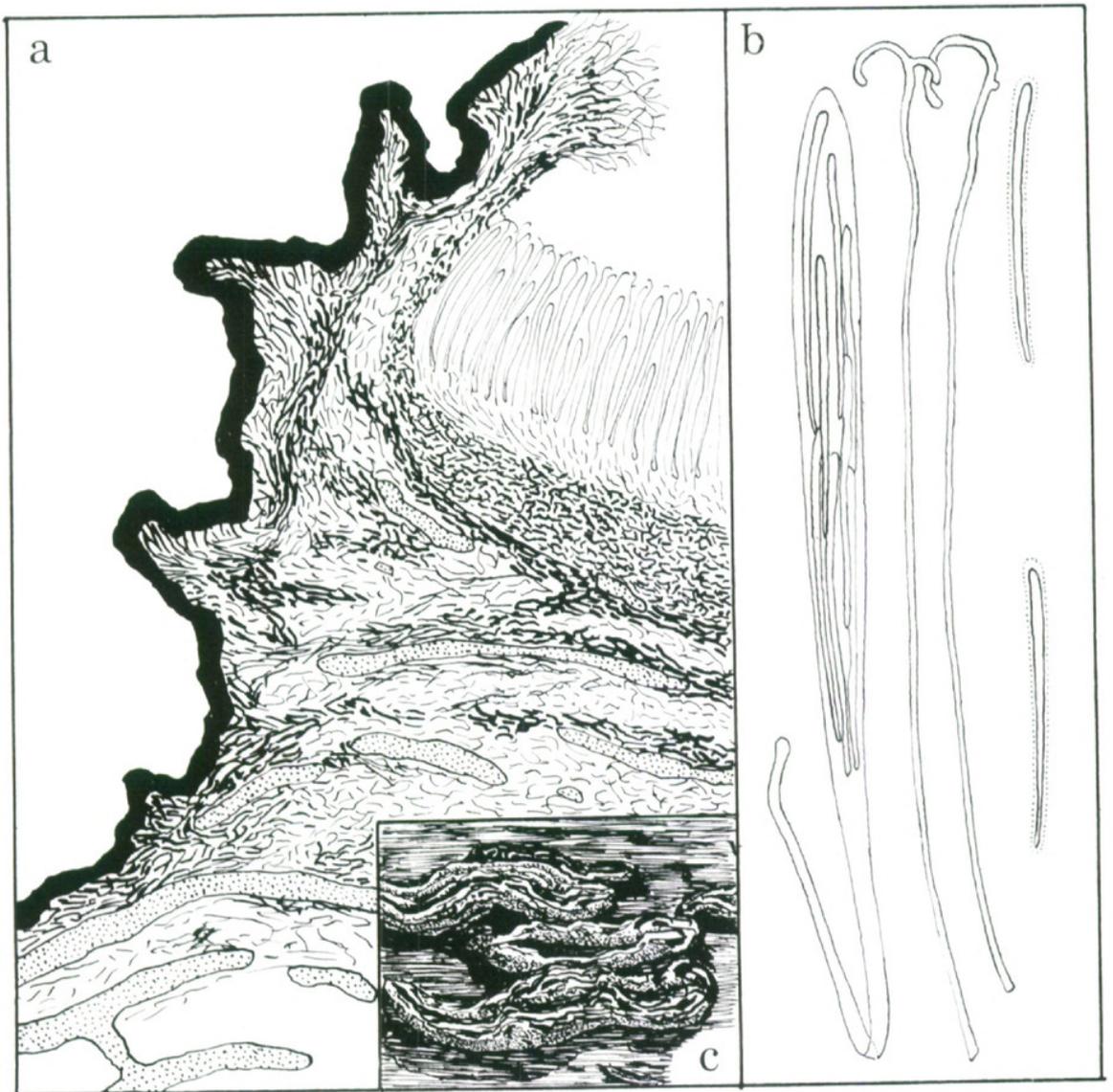


FIGURE 1. *Colpoma deusta*. a. Cross section of apothecial stroma, $\times 112.5$. b. Asci, paraphyses, and ascospores, $\times 750$. c. Habit sketch, $\times 7.5$. Drawn from the holotype.

Colpoma (Phacidiales: Rhytismataceae) is characterized by corticolous or lignicolous hysterothecial fruitbodies opening by a longitudinal slit, and by acicular to filiform ascospores. The genus is sometimes known as *Clithris* (Fr.) Rehm, a later synonym. The distinction between *Colpoma* and *Lophodermium* Chev. is accepted by most authors; the grounds for the distinction, however, are various, ranging from the absence of periphyses or lip cells (Tehon, 1939) to a massive basal stroma (Darker, 1967) or occurrence on wood (Korf, 1973). There is no recent comprehensive treatment of the genus, but *C. deustum* appears to be distinct from the species of *Colpoma* hitherto reported from North America. *Colpoma crispum* (Pers. ex Fr.) Sacc., *Clithris graphis* Rehm, *C. morbida* (Pk) Ell., and *C. sequoiae* Bonar, all reported on conifers from Western North America, have asci and ascospores

of similar dimensions, but usually occur on bark rather than on wood, do not occur beneath a common stromatic crust, and have much narrower ascocarps. The blackening of the host substrate mimics charred wood, but appears to be caused by the action of the fungus. *Coccomyces cembrae* Rehm and *Schizoxylon bipartitum* Kauffm. (not a *Schizoxylon*) are two additional Rhytismataceous fungi on wood which occur beneath a common stromatic crust; however, they open by teeth rather than by a longitudinal slit.

SPECIMENS EXAMINED (see also holotype, above): North America: USA: Oregon, Reference Stand 20, H. J. Andrews Experimental Forest, Blue River, Lane Co., Oregon, 8.VIII. 1978, leg. Sherwood (FH).

SCHIZOXYLON Pers., Ann. Wetterauische Ges. Gesamte Naturk.
2:11, 1810.

Schizoxylon juniperinum Sherw., Mycotaxon 5:126 (1977) var.
cylindrospermum Sherw., var. nov. FIGURE 2.

Ascocarpi primum immersi, haud erumpescentes, non profunde cupulati, 0.6–1.0 mm diam., margine integro, nigro, cinereo-pruinoso, disco cinereo-caerulescente. Margo in sectione transversali 20 μm crassus, siccus ab hymenio se non abrumpens, ex hyphis intertextis brunneis constans. Paraphyses filiformes, ramosae, 200 \times 1.5 μm , apice ad 3 μm incrassatae, brunneae, in iodo caerulescentes. Asci 150–200 \times 3–3.5 μm , cylindrici, 8-spori. Sporae 100–150 \times 3.0–3.5 μm , cellulis 5–7 μm longis, ad septa se disjurgentibus et articulos cylindricis simplices formantibus.

Hab: In ligno decorticato *Tamarici*, Turkmenian S.S.R.

Holotypus: TAA, on dead branches of *Tamarix* sp., Turkmenian S.S.R., central Kara-Kum desert, near Teze-Yel, 20.V.1967, leg. I. P. Prolov. Isotypus: FH.

Etymology: *cylindrospermum* (Gr.), with cylindrical propagules, since the variety is so distinguished from the type of the species which has spherical part-spores.

Apothecia immersed, at first visible as a white-pruinose dot on the surface of the substrate, becoming erumpent, orbicular or somewhat elongate with the grain of the substrate, 0.6–1.0 mm diam, with a raised black shining margin, externally grey-pruinose, and a concave, brown, greenish grey-pruinose disc. Margin in cross section 20 μm diam, of interwoven non-carbonized brown hyphae 2–3 μm diam., externally crystalliferous, not splitting away from the hymenium when dry. Subhymenium 30 μm thick, colorless, resting on a colorless subiculum of hyphae 2 μm diam. Parphyses filiform, 1.5 μm thick, much-branched and inflated to 3.0 μm at the apex, brown, J+ blue, forming an epithecium. Asci 150–200 \times 9–11 μm , without a visible apical cap when mature, 8-spored. Ascospores 100–150 \times 3–3.5 μm , the cells 5–7 μm long, breaking up into simple cylindrical part-spores.

On decorticated, bleached twigs of *Tamarix* sp., Turkemenian S.S.R. The taxon differs from typical *Schizoxylon juniperinum*, described from material on *Juniperus* from Pakistan, in having cylindrical rather than spherical part-spores. Since describing *S. juniperinum* I have seen an additional specimen of the typical variety from Pakistan. *Schizoxylon compositum* Ell. & Everhart, from North America, is similar to both, differing in having somewhat broader spores, a KOH+

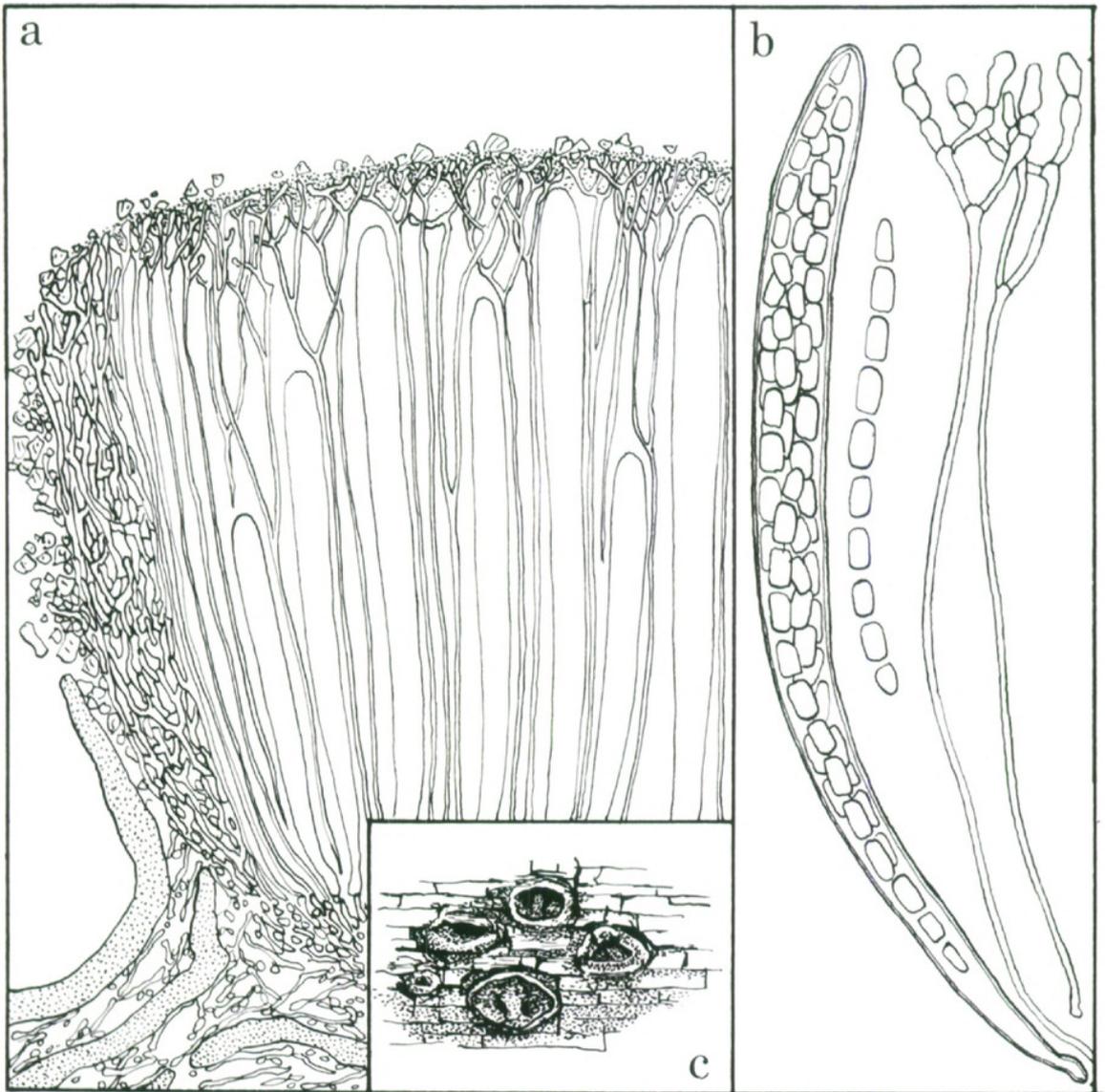


FIGURE 2. *Schizoxylon juniperinum* var. *cylindrospermum*. a. Cross section of apothecium, $\times 375$. b. Ascus, paraphyses, and part-spores, $\times 750$. c. Habit sketch, $\times 7.5$. Drawn from the holotype of the variety.

yellow reaction of the margin, and larger, more erumpent, often compound ascocarps.

SPECIMENS EXAMINED (see also holotype, above): Asia: USSR: on *Tamarix*, Turkmenian S.S.R., central Kara-Kum desert, near Musy, 20.V.1967, leg. I. P. Prolov (TAA; FH).

***Schizoxylon punctatum* Sherw., spec. nov. FIGURE 3**

Ascocarpi primum immersi, non erumpentes, non profunde cupulati, 0.3–0.5 mm diam, margine nullo, disco pallide brunneo. Paraphyses filiformes, simplices vel ramosae, leniter circinatae, brunneae, in iodo non caerulescentes. Ascii 250–300 \times 8–9 (–12) μm , apice 2.5 μm crassi, 8-sporei. Sporae 200 \times 2.5–3.0 μm , cellulis 3–5 μm longis, ad septa se disjungentibus et articulos simplices formantibus.

Hab: in ramulis *Cassiae*, India.

Holotypus: FH, on *Cassia spectabilis*, J. N. Agricultural University Campus, Jabalpur, Madhya Prov., India, 1.III.1978, leg. N. D. Sharma (#2).

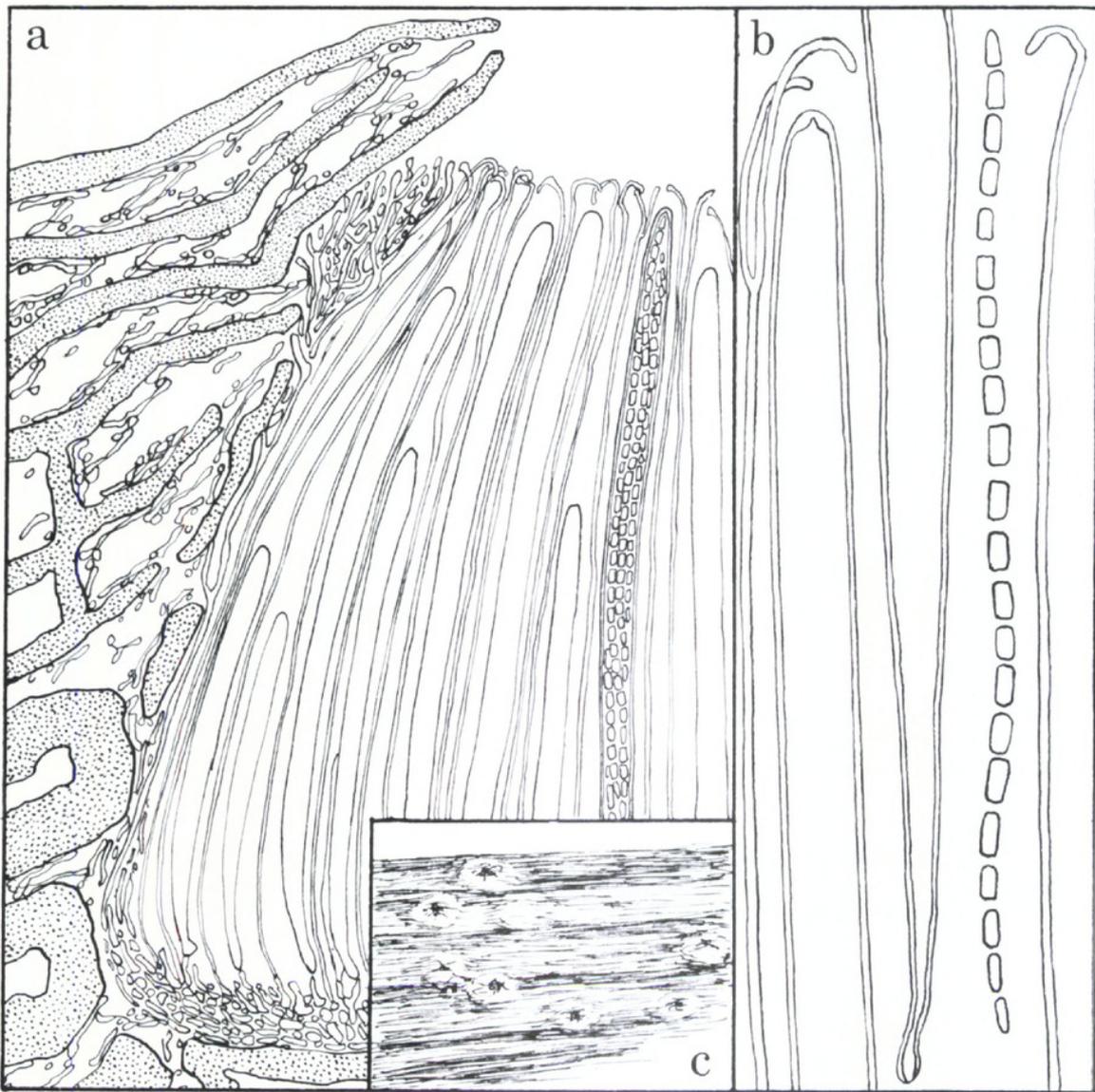


FIGURE 3. *Schizoxylon punctatum*. a. Cross section of apothecium, $\times 300$. b. Ascus paraphyses, and part-spores, $\times 750$. c. Habit sketch, $\times 7.5$. Drawn from the holotype.

Etymology: *punctatum* (L.), spotted, referring to the tiny apothecia, which appear as a swarm of black dots on the substrate when rehydrated. This epithet was chosen rather than the more appropriate *punctiformis* (having the aspect of dots), because the latter epithet has been used in the allied genus *Stictis*.

Apothecia immersed, minute, very inconspicuous, raising the substrate into pustules 0.3–0.5 mm diam, not bordered by crystals, without a visible margin, the disc pale brown, sunken when dry, visible as a tiny translucent brown disc on the surface of the substrate when wet. Margin essentially obsolete, marked by a few more richly-branched paraphyses at the junction of the apothecium and the surrounding host tissue. Subhymenium colorless, 20 μm thick. Paraphyses filiform, a little longer than the asci, sometimes branched, weakly circinate, 2.0 μm diam, faintly brown above, J-. Asci 250–300 \times 8–9 (–12) μm , the cap 2.5 μm thick, not well-defined, 8-spored; ascospores 200 \times 2.5–3.0 μm , soon breaking up into unicellular cylindrical part-spores 3–5 μm long.

On small pithy twigs of *Cassia spectabilis*, Madhya Province, India. This is clearly quite different from the only other species of *Schizoxylon*

reported from India, *S. lantanae* (Tilak & Nanir) Sherw., which has a thick black margin and non-disarticulating spores. *Schizoxylon punctatum* is closer morphologically to *S. floridanum* Sherw., but the apothecia are much smaller and there is no crystalline margin.

The material sent for identification consisted of four small packets with the same collection data, labelled 1, 2, 3, and 4. According to N. Sharma (personal communication) portions of these collections are also deposited at IMI.

STICTIS Pers., Obs. Mycol. 2:73. 1799.

***Stictis radiata* Pers., l.c. var *aggregata* Sherw., var. nov. FIGURE 4.**

Ascocarpi primum immersi, profunde cupulati, 0.5–1.0 mm diam, margine lacerato, albo, disco pallide ochraceo. Margo in sectione transversali 100 μm crassus, siccus ab hymenio se abrumpens, hypharum pariete 1.5 μm diam, achromo. Stratum crystallinum 70 μm crassum. Periphysioidea 30 \times 1.5 μm , ramosa. Paraphyses filiformes, non ramosae, achromae, in iodo caerulescentes. Asci 250–300 \times 9–11 μm , apice 5–6 μm crassi, 8-spori. Sporae 150 \times 4.5–5.5 μm , vagina gelatinosa inconspicua involutae, cellulis 3–4 μm longis.

Hab: In ramis *Piri*(?), Chile.

Holotypus: FH-on dead, corticate stems of *Pyrus*-like tree, Corral, Chile, Roland Thaxter, December, 1905. Isotypi: UC, CUP.

Etymology: *aggregatus* (L.), referring to the densely clustered apothecia.

Apothecia abundant, gregarious, 0.5–1.0 mm diam, at first immersed, raising the overlying substrate into small pustules and eventually becoming suberumpent, the margin prominent, lacerate, white-pruinose, the disc deeply immersed, pale ochraceous, splitting away from the margin when dry. Margin in cross section 3-layered, colorless, the wall up to 40 μm thick, of colorless, slightly gelatinous hyphae 1.5 μm diam, the crystalline layer prominent, up to 70 μm thick, composed of colorless, heterogeneous, non-rosetiform crystals; periphysoids ca. 30 \times 1.5 μm , abundantly branched, forming a compact layer adjacent to the hymenium. Asci 250–300 \times 9–11 μm , the cap 5–6 μm thick, with a distinct pore, 8-spored. Ascospores ca. 150 \times 4.5–5.5 μm , in two irregular bundles in the ascus, obscurely sheathed in a mucilaginous matrix, septate, constricted at the septa, the cells 4–5 μm long. Paraphyses filiform, not markedly enlarged at the apex, generally unbranched, J+ blue.

On bark of branches of a *Pyrus*-like tree, Corral, Chile. *Stictis radiata* var. *aggregata* is identical in all respects except the dimensions of the asci and ascospores to typical *S. radiata*. It differs from other broad-spored species of *Stictis* with colorless margins (*S. brachyspora* Sacc. & Berl.; *S. hawaiiensis* Cash) in having long branched periphysoids and a generally broader, stellate margin. The present taxon does not correspond to any reported from Chile by Spegazzini (1910), but may be what Spegazzini (1887) referred to when he reported *S. radiata* forma "a," with spores 3–4 μm broad, from Tierra del Fuego.

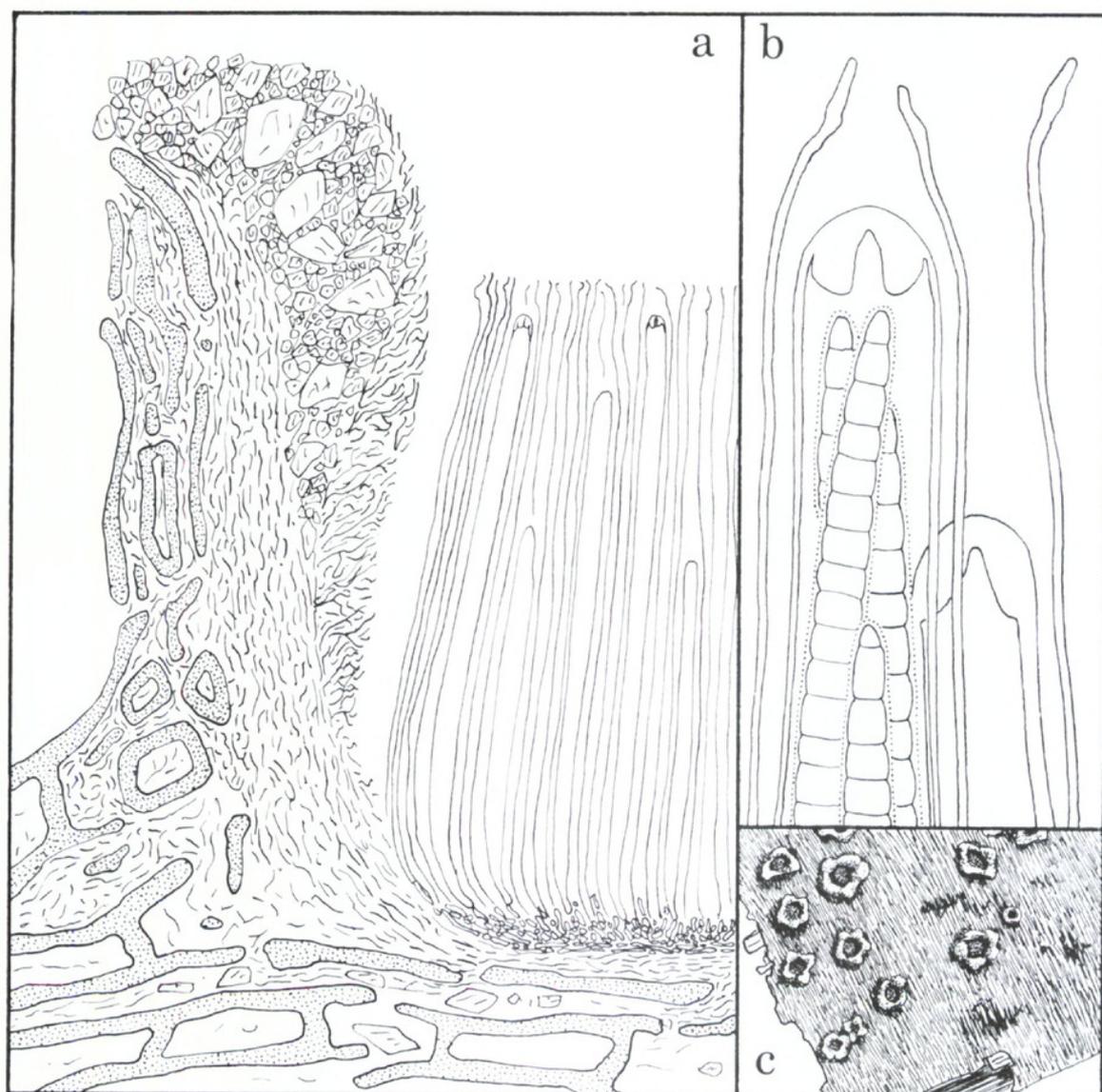


FIGURE 4. *Stictis radiata* var. *aggregata*. a. Cross section of apothecium, $\times 225$. b. Detail of apices of asci, paraphyses, and spores, $\times 1500$. c. Habit sketch, $\times 7.5$. Drawn from the holotype of the variety.

***Stictis reticulata* Sherwood, spec. nov. FIGURE 5.**

Ascocarpi primo immersi, erumpentes, profunde cupulati, 0.6–1.0 mm diam, margine lacerato, dilute flavido-roseo, albo-pruinoso, disco pallide ochraceo. Margo in sectione transversali 200 μm crassus, siccus ab hymenio se abrumpens, hypharum pariete 2.5 μm diam, achromo. Stratum crystallinum internum abest. Periphysoidea 200 \times 2.5–4 μm , ramosa, reticulata. Paraphyses filiformes, simplices vel ramosae, circinatae, apice non incrassatae, in iodo non caerulescentes. Asci 150–175 \times 4.5–5.0 μm , cylindrici, apice 2.5–3 μm crassi, 8-sporei. Sporae 120–150 \times 1.0 μm , cellulis 5–8 μm longis.

Hab: In culmis dejectis *Ferulae*, Kirghiz S.S.R.

Holotypus: TAA 60109, on *Ferula*, Tian-Shan, Sary-Tschelek Reserve, Kirghiz S.S.R., 24.V.1968, leg. A. Raitviir. Isotypus: FH.

Etymology: *reticulata* (L.) netted, referring to the appearance of the periphysoids.

Ascocarps at first immersed in swarms on slightly discolored herbaceous stems, becoming erumpent, 0.6–1.0 mm diam, the margin thick, lacerate, pale pinkish-flesh

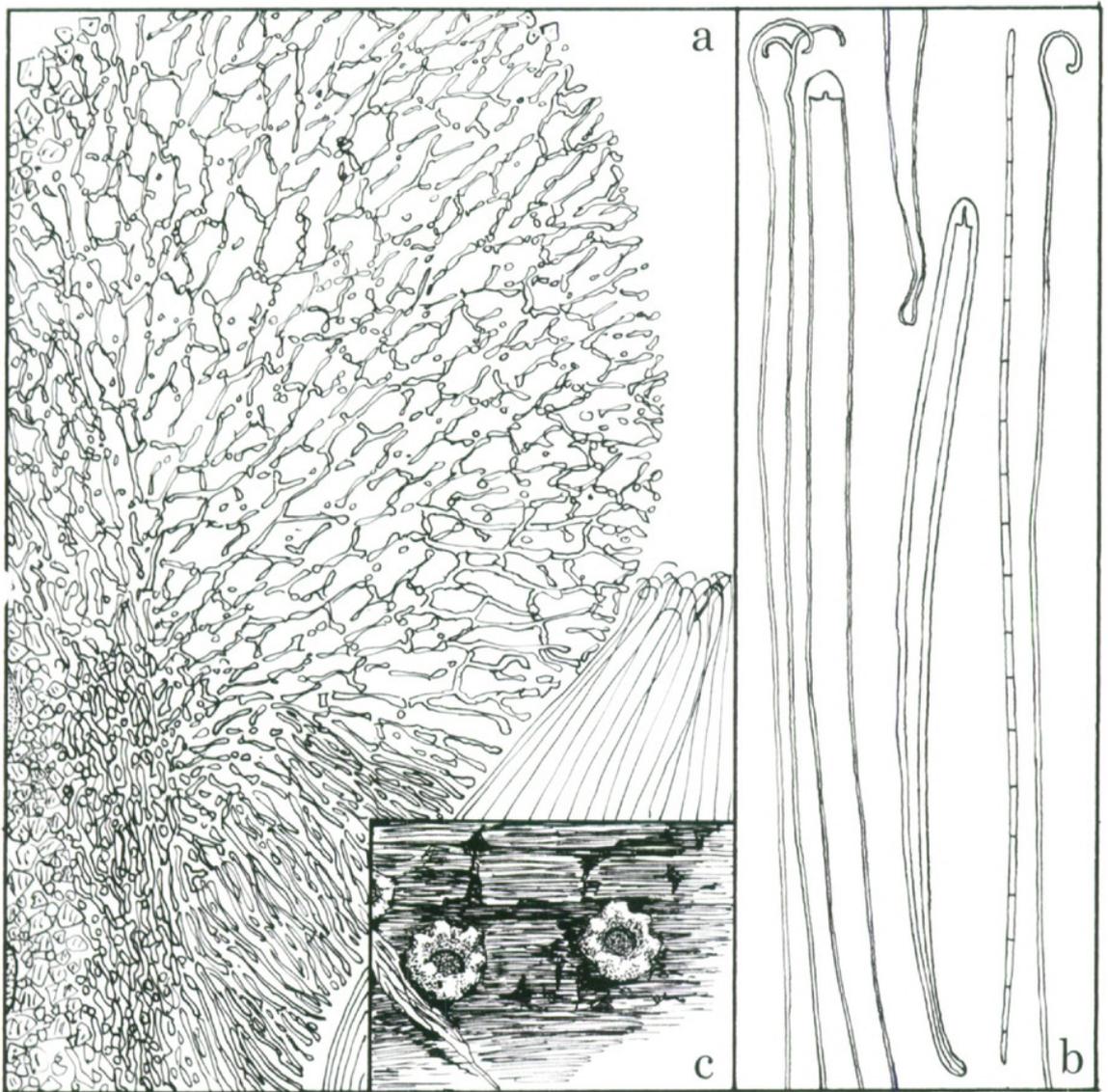


FIGURE 5. *Stictis reticulata*. a. Cross section of upper portion of margin, $\times 375$. b. Asci, paraphyses, and ascospore, $\times 750$. c. Habit sketch, $\times 7.5$. Drawn from the holotype.

colored, white-pruinose, the disc deeply immersed, pale ochraceous. Margin in cross section $200\ \mu\text{m}$ thick, splitting away from the hymenium when dry, the wall colorless, of interwoven hyphae $2.5\ \mu\text{m}$ diam, continuing beneath the subhymenium. Internal crystalline layer absent; numerous crystals produced externally. Periphysoids simple to sparingly branched below, merging above into a layer $200\ \mu\text{m}$ thick of branched and netlike interwoven periphysoids $2.5\text{--}4\ \mu\text{m}$ diam, widely spaced in a gel. Paraphyses filiform, J-, sometimes branched, circinate, not enlarged above. Asci $150\text{--}175 \times 4.5\text{--}5.0\ \mu\text{m}$, the cap $2.5\text{--}3\ \mu\text{m}$ thick, 8-spored. Ascospores $120\text{--}150 \times 1.0\ \mu\text{m}$, the cells $5\text{--}8\ \mu\text{m}$ long.

On *Ferula* sp., Kirghiz S.S.R. The hymenial elements are like those of *S. hydrangeae*, but with shorter asci. The very thick margin with ornate, netlike periphysoids is not found in any other species of *Stictis* with a colorless margin.

The following two species of *Stictis* were encountered among collections from asiatic U.S.S.R., and represent significant range

extensions. The morphology of both agrees exactly with that of specimens from North America.

***Stictis bicolor* Ell. & Ev.**

This species was previously known only from Colorado.

On *Betula*, western Pamir, Vantsch Mts., Tadzhikistan, 8.VI.1978, leg. A. Raitviir; Tadzhikistan, Hissar, Kondara, Raitviir 26.V.1978 (TAA).

***Stictis conotremoides* Sherw.**

This species was previously known only from the type locality in northern Alaska. Its occurrence in eastern Siberia is not surprising.

On *Betula fruticosa*, Magadan distr., Severo-Evenski, Kegali R., 6.VIII.1976, leg. L. Vasiljeva (TAA).

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