NEW OSTROPALES FROM THE COLLECTIONS OF THE FARLOW HERBARIUM

MARTHA A. SHERWOOD[1]

ABSTRACT

Biostictis chroodiscoides, *Lillicoa thaxteri*, and *L. speciosa* from Trinidad, and *Schizoxylon spiraeae*, from New Hampshire, are described as new. The imperfect stages of *B. chroodiscoides* and *B. psychotriae*, the type species of *Biostictis*, are discussed, and *Erinella bicolor* is transferred to *Lillicoa*.

INTRODUCTION

In a survey of the unidentified discomycetes in the collections of the Farlow Herbarium, specimens were encountered which appeared to represent undescribed species of Ostropales. The four new taxa appeared unambiguously to belong to the genera *Biostictis*, *Lillicoa*, and *Schizoxylon*, genera described in more detail in an earlier paper (Sherwood, 1977), and are described under the appropriate generic headings below. The obvious association of an imperfect hyphomycete with the lesions induced by *Biostictis chroodiscoides* led to re-examination of the type of *B. rubiacearum* (= *B. psychotriae*). The type of *Erinella bicolor* was examined and found to be conspecific with *Lillicoa palicoureae*.

All observations were made on dried specimens rehydrated in water, imbedded in dilute mucilage, sectioned at 15μm on a freezing microtome, and mounted in Melzer's reagent. Illustrations are freehand renditions of individual specimens. Additional notes on methods and an explanation of the terminology can be found in a previous paper (Sherwood, 1977).

BIOSTICTIS PETRAK, SYDOWIA 4:357 (1950)

Biostictis chroodiscoides Sherwood, spec. nov. Figure 1

Ascocarpi gregatim hypophylli in phyllis viventibus, 0.2–0.8 mm diam.; discus ascocarpi pallide porphyreus, margine pruinoso lacerato, profunde modice immersus in phyllum. Margo in sectione transversali c. 50–80 μm crassus, siccus ab hymenio se abrumpens. Stratum crystallinum c. 50–80 μm crassum. Paraphyses filiformes, ramosae, 75 × 1.0 μm, in iodo non caerulescentes. Asci 61–70 × 6(-8) μm, apice 3 μm crassi, 8-spori. Sporae 23–33 × 2.0–3.0 μm, cellulis 6–8 μm longis.

Status imperfectus illo Rhinocladiellae similis. Conidiophora 25–35 × 3–4.5 μm, simplicia solitaria, percurrenter prolifera, conidia 18–35 × 1.5–3 μm hyalina blastica simplicia efferentia.

Etymology: From *Chroodiscus* (Müll. Arg.) Müll. Arg., a foliicolous lichen with similar gross morphology.

Holotypus: FH—On leaves, Maraval Valley, Port of Spain, Trinidad,

[1]Present address: Farlow Herbarium, Harvard University, Cambridge, MA 02138

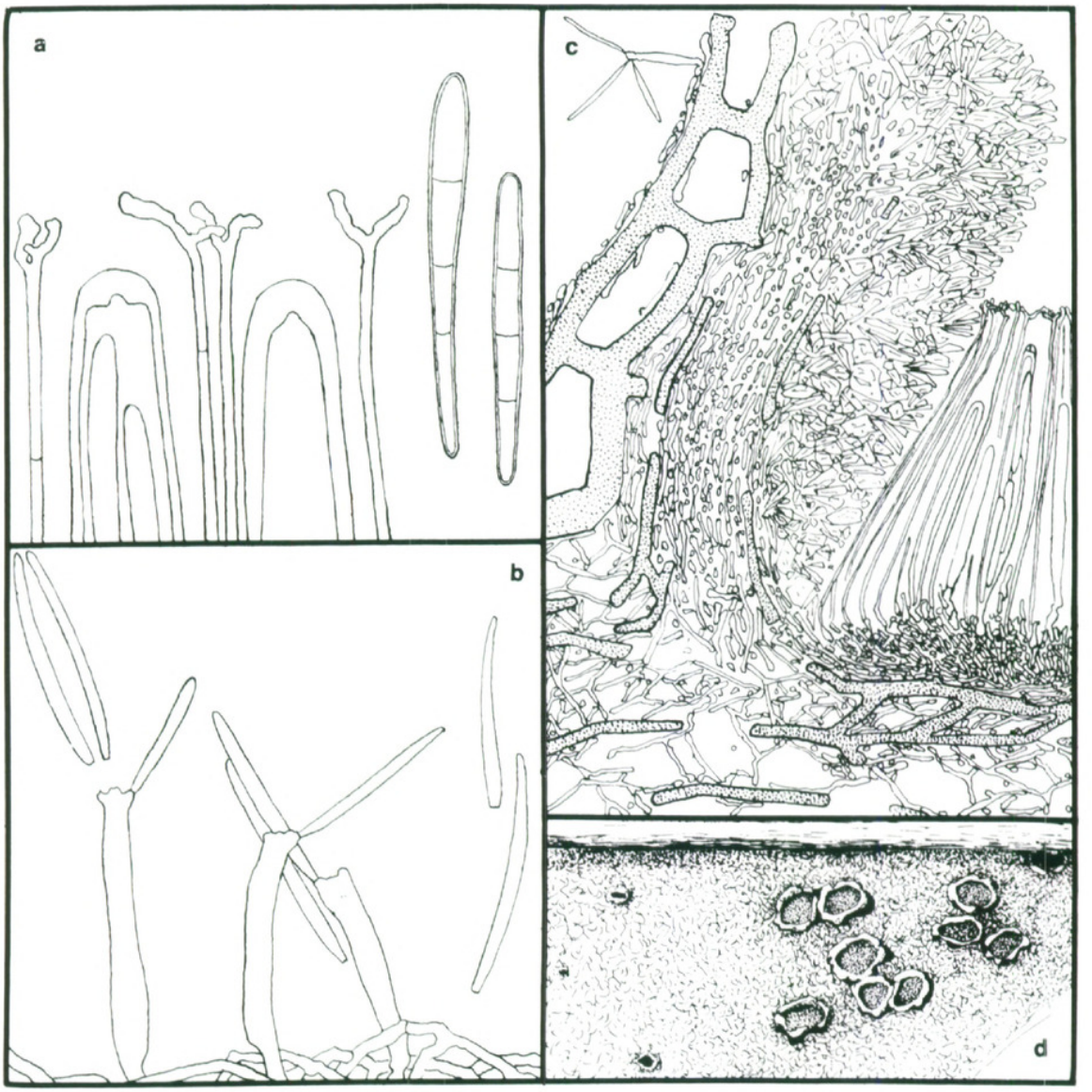

FIG. 1. *Biostictis chroodiscoides*. **a.** Detail of apices of asci, paraphyses, and spores, x1500. **b.** Imperfect stage, x750. **c.** Cross section of margin, x375. **d.** Habit sketch, x7.5. Drawn from the holotype.

British West Indies, R. Thaxter, n.d. *Isotypi:* C, NY, CUP, UC, DAOM, BUCM, GB.

Colonies hypophyllous on living leaves, 1–5 cm diam., at first causing a yellowish discoloration, the center reddening and becoming necrotic. Mycelium endophyllous and hypophyllous, forming a conspicuous white mat on the lower surface of the lesion.

Apothecia hypophyllous, gregarious, at first immersed, subepidermal, opening by splitting the overlying substrate into 3–6 irregular lobes, the margin reflexed, stellate, white-pruinose, the disc moderately deeply immersed, at first pale reddish brown, darkening with age, the color due to discoloration of the underlying substrate. Margin consisting almost entirely of colorless rosettiform crystals. Thalline margin prominent, consisting of epidermal cells filled with hyphae.

Subhymenium colorless, 25–30 μm thick. Asci 61–70 × 6 (-8) μm, the cap 3 μm thick, indented. Ascospores 8, irregularly 4-seriate, 23–33 × 2.0–3.0 μm, 3-septate. Paraphyses colorless but secreting a brown amorphous substance at their apices, 1 μm broad, propoloid, not blueing in iodine.

Imperfect stage hypophyllous, hyphomycetous, accompanying the apothecial stage, resembling *Rhinocladiella.* Condiophores arising singly or in small clusters from the superficial mycelium, simple, colorless, 25–35 × 3–4 μm, cylindrical, proliferating percurrently. Conidia blastic, simple, colorless, 18–30 × 1.5–3 μm, budded off successively from the apex of the conidiophore.

On living leaves, causing an obvious disease, Trinidad, British West Indies. According to Dr. R. Howard of the Arnold Arboretum the host may well be Rubiaceous, although the material is too fragmentary to determine with certainty. *Biostictis chroodiscoides* differs from the other species in the genus in having shorter, 4-seriate, 3-septate ascospores.

Since the imperfect stage associated with *Biostictis chroodiscoides* resembled descriptions of *Fusidium violaceum* Pat., alleged by Patouillard and Lagerheim (1895) and Petrak (1950) to be the imperfect stage of *Stictis rubiacearum* Pat. (= *B. psychotriae* (Mont.) Sherw.), I re-examined the type specimens of both *F. violaceum* and *S. rubiacearum* (FH-Patouillard 5036, San Jorge, Lagerheim, 1892). The superficial fungus described by Patouillard as *F. violaceum* is remarkably similar to the imperfect stage of *B. chroodiscoides*, differing primarily in having longer, narrower conidia 30–40 × 1.5–2.0 μm. The additional evidence presented here suggests that *F. violaceum* is indeed the imperfect stage of *B. psychotriae,* contrary to the opinion expressed earlier (Sherwood, 1977), although this was by no means obvious from the original material. If the fruitbodies of *B. psychotriae* are long-lived in nature, as are those of many Ostropalean fungi, this would account for the variable development of the imperfect stage among natural collections, since the superficial phase would be more suceptible to environmental conditions than the immersed phase.

LILLICOA SHERWOOD, MYCOTAXON 5:57 (1977)

Among specimens collected on living leaves by R. Thaxter in Trinidad were several belonging to the genus *Lillicoa,* including two apparently undescribed species. In all cases the apothecia were superficial and were associated neither with obvious disease symptoms nor with the mycelium of other fungi. Leaves of Leguminosae colonized by *L. speciosa* were also attacked by scale insects and supported

numerous other fungi, including Meliolineae and *Aschersonia*, as well as a number of foliicolous lichens. Leaves of *Casearia* (?) colonized by *L. thaxteri* likewise supported a diverse flora, but no resident insects. *Lillicoa* spp. evidently occur under conditions favorable to epiphyllous fungi. The occurrence of three morphologically distinct species on unrelated hosts within a small area in Trinidad suggests that the species are host specific.

Lillicoa thaxteri Sherwood, spec. nov. Figure 2

Apothecia hypophylla, sessilia, parva, cylindrica, 0.2–0.4 mm diam., margine integro, albo, disco pallide ochraceo. Margo in sectione transversali 45 μm crassus, siccus ab hymenio se non abrumpens, hypharum pariete 1.5 μm diam., achromo. Stratum crystallinum internum abest. Periphysoidea 15 × 1.5 μm, non ramosa. Paraphyses filiformes, simplices vel ramosae, 300 × 1.0–1.5 μm, in iodo non caerulescentes. Asci 250–300 × 10–13 μm, apice 7–9 μm crassi, 8-spori. Sporae 225–275 × 4–4.5 μm, cellulis 4–5 μm longis.

Etymology: After R. Thaxter, the collector and former curator of the Farlow Herbarium.

Holotypus: FH—On leaves of Flacourteaceae (*Casearia*?), Port of Spain,

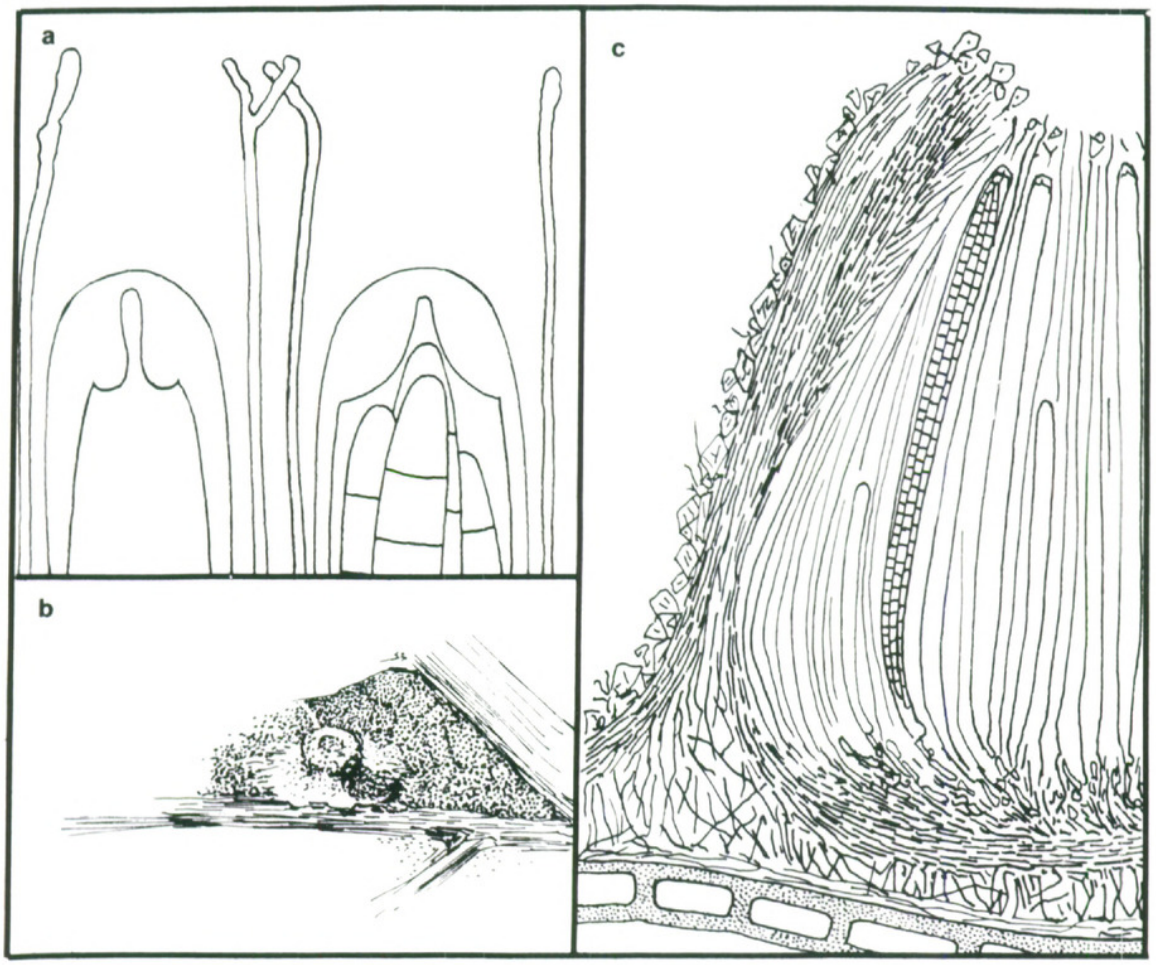

FIG. 2. *Lillicoa thaxteri*. **a.** Detail of apices of asci, paraphyses, and spores, x1500. **b.** Habit sketch, x15. **c.** Cross section of margin, x225. Drawn from the holotype.

Trinidad, British West Indies, Roland Thaxter, n.d. *Isotypi:* C, NY, CUP, UC, DAOM, BUCM, GB.

Apothecia scattered, hypophyllous, completely superficial, sessile on circular mats of hyphae and crystals c. 1 mm diam. merging into a fine hyaline subiculum at the margin, 0.2–0.4 mm diam., a little taller than broad, cylindrical, white-pruinose without, with a plane or slightly depressed pale ochraceous disc which does not split away from the margin when dry. Ascocarp initals developing beneath the mat of hyphae and crystals, becoming erumpent early in development. Margin in cross section 3-layered, the outermost layer continuous with the mycelial mat surrounding the apothecium, crystalliferous, the middle layer consisting entirely of colorless hyphae 1.5 μm diam. continous with the hyphae below the mat and ascocarp, the innermost layer of sparse periphysoids 15 × 1.5 μm, at least toward the summit of the margin, apparently continuous with subhymenial elements. The overall structure of the ascocarp resembles a perithecium.

Asci 250–300 × 10–13 μm, the cap 7–9 μm thick, with an obvious pore. Paraphyses filiform, 1.0 μm broad below, barely enlarged above, simple or branched, J-. Ascospores 8, nearly as long as the asci, 4–4.5 μm broad, the cells 4–5 μm long, showing a slight tendency to disarticulate at the septa.

On living leaves of Flacourteaceae (*Casearia*?), Trinidad, British West Indies. The species differs from *L. bicolor* and *L. speciosa* (below) in having much larger asci and spores, and in growing on an unrelated host. It is completely superficial and causes no visible symptoms.

ADDITIONAL SPECIMENS EXAMINED: FH—Port of Spain, Trinidad, B.W.I., R. Thaxter, n.d. (evidently not a duplicate of the holotype); FH-*Thaxter 7482*, Maraval Valley, Port of Spain, 1912–1913.

Lillicoa speciosa Sherwood, spec. nov. Figure 3

Apothecia hypophylla, superficialia, sessilia, parva, cyclindrica, 0.1–0.2 mm diam., margine integro, albo, disco pallide ochraceo. Margo in sectione transversali 20–30 μm crassus, siccus ab hymenio se non abrumpens, hypharum pariete 1.5–3 μm diam., achromo. Stratum crystallinum internum abest. Periphysoidea nulla. Paraphyses filiformes, ramosae, leniter circinatae, 230–250 × 1.0 μm, in iodo non caerulescentes. Asci 220–235 × 5.5–6 (-8) μm, apice 4.5 μm crassi, 8-spori. Sporae 200–220 × 1.5 μm, cellulis 6–10 μm longis.

Etymology: From Latin, *speciosus*, pretty or sightly, a rough translation of Thaxter's field note: "nice white disco".

Holotypus: FH—On leaves of Leguminosae (*Inga*), Maraval Valley, Port of Spain, Trinidad, British West Indies, R. Thaxter, n.d.

Apothecia scattered, hypophyllous, completely superficial, not seated on a crystalline mat but surrounded by a faint subiculum, small, cylindric-turbinate, 0.1–0.2 mm diam., 0.25–0.3 mm tall, white-pruinose without, the disc deeply immersed, pale ochraceous, visible from

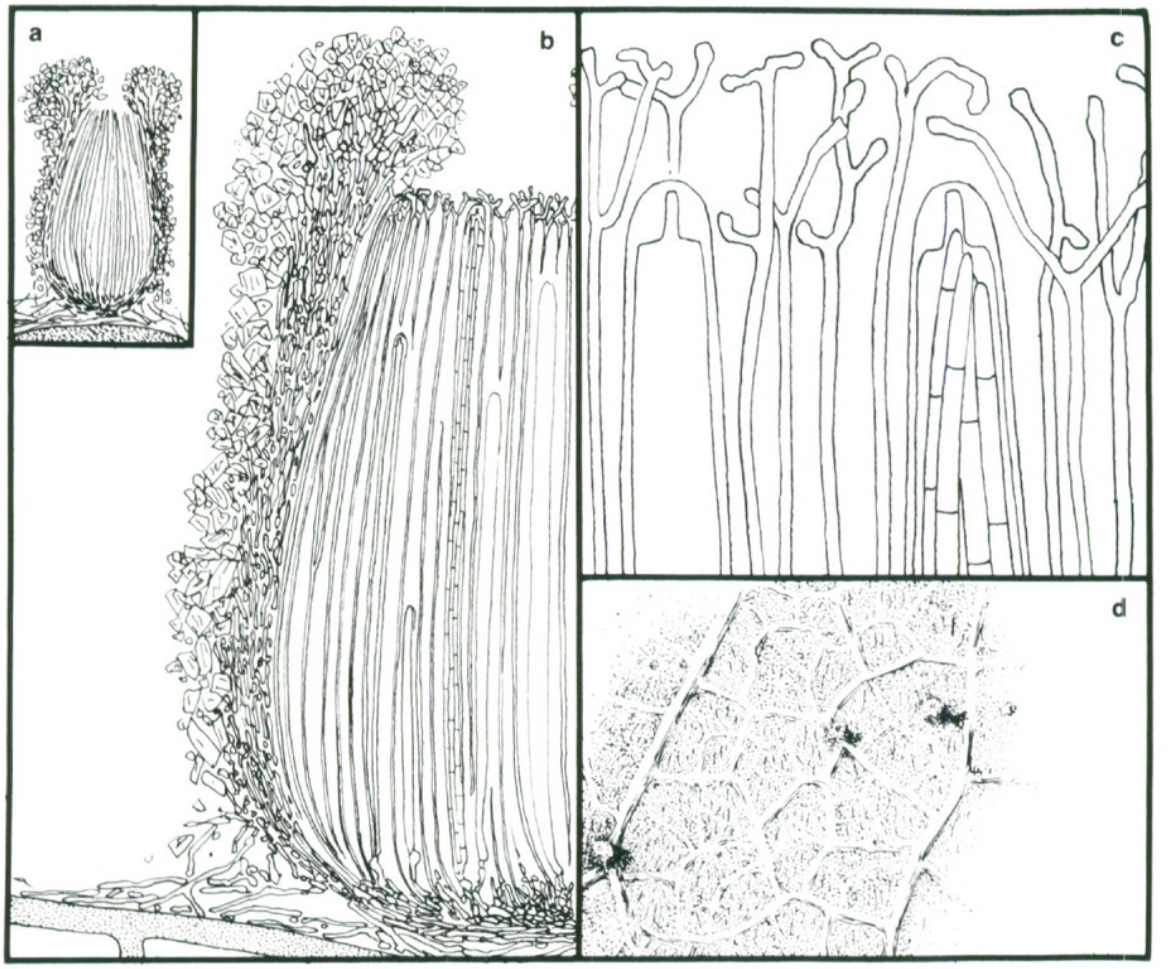

FIG. 3. *Lillicoa speciosa.* **a.** Cross section of entire ascocarp, x75. **b.** Cross section of margin, x300. **c.** Detail of apices of asci, paraphyses, and spores, x1500. **d.** Habit sketch, x7.5. Drawn from the holotype.

above as a minute punctiform ostiole when dry. Margin in cross section 20–30 μm thick, of interwoven colorless hyphae 1.5–2.0 μm diam., expanded to 3.0 μm diam. above, externally crystalliferous but devoid of internal differentiation. Periphysoids absent. Subhymenium colorless, c. 25 μm thick, small-celled, resting on a subiculum of hyphae 2.0 μm diam. Paraphyses numerous, filiform, 1.0 μm diam. below, scarcely enlarged above, branched and circinate, J-. Asci 220–235 x 5.5–6 (-8) μm, the cap 4.5 μm thick, with a distinct pore. Ascospores 8, nearly as long as the asci, 1.5 μm broad, not sheathed or coiling, the cells 6–10 μm long.

On living leaves of Leguminosae, Trinidad, British West Indies. The species differs from *L. bicolor* in having a different host, lacking a prominent orange disc, and having longer asci, more abundantly branched paraphyses, and more distantly septate spores.

Lillicoa bicolor (Pat.) Sherwood, comb. nov.

≡ *Erinella bicolor* Pat., Bull. Herb. Boissier **3**: 65 (1895)

= *Lillicoa palicoureae* (Seaver & Whetzel) Sherw., Mycotaxon **5**: 59 (1977)

The type specimen of *Erinella bicolor* (FH-Patouillard 5339, San Jorge, Ecuador, Juill. 1892, Lagerheim), on dead or dying leaves tentatively identified by Mr. Sandwith (K) as *Sloanea* (Tiliaceae), is fragmentary and contains two minute apothecia. Neither Dennis's (1954) redescription of the species nor its external appearance presents any character to separate *E. bicolor* from *L. palicoureae.* Since Patouillard's epithet is older I propose the above combination for the species.

ADDITIONAL SPECIMENS EXAMINED: FH—three specimens on undetermined hosts, Maraval Valley, Port of Spain, Trinidad, 1912–13; FH—I.M. Johnston, 11.I.1946, San Jose Island, Panama.

SCHIZOXYLON PERS., ANN. WETTERAUISCHE GES. GESSAMTE NATURK. **2**: 11 (1810)

Schizoxylon spiraeae Sherwood, spec. nov. Figure 4

Ascocarpi primum immersi, erumpescentes, non profunde cupulati, 0.3–0.6 mm diam., margine integro, nigro, disco nigro. Margo in sectione transversali 85 μm crassus, siccus ab hymenio se non abrumpens, ex hyphis intertextis achromis et brunneis constans. Paraphyses filiformes, ramosae, 450–480 × 1.0 μm diam., apice ad 2.5 μm incrassatae, brunneae, in iodo caerulescentes. Asci 375–450 × 7 (-10) μm, apice 3.0 μm crassi, 8-spori. Sporae 300–425 × 2.5 μm, cellulis 4–6 μm longis.

Etymology: Named after the host.

Holotypus: FH—On *Spiraea salicifolia,* Chocorua, New Hampshire, W. G. Farlow, July 20, 1909.

Apothecia at first immersed, becoming erumpent, 0.3–0.6 mm diam., the margin entire, black, shining, not pruinose, sometimes covered by adhering bits of host tissue, the disc plane, black, shining. Margin in cross section c. 85 μm thick, of interwoven colorless hyphae 2.0 μm diam. within, becoming pigmented without, not notably gelatinous, with a few scattered crystalline inclusions but not externally pruinose. Subhymenium 60–70 μm thick, colorless, resting directly on disintegrating host tissue. Asci 375–450 x 7 (-10) μm, the cap 3 μm thick, indistinct. Paraphyses filiform, abundantly branched apically, thickened to 2.5 μm above, brown, J+ blue apically. Ascospores 8, nearly as long as the asci, 2.5 μm broad, the cells 4–6 μm long, not disarticulating at the septa.

On small dead stems of *Spiraea,* New Hampshire, U.S.A. The substrate on which the *Schizoxylon* is growing is covered with small black pseudoparenchymatous pycnidia-like structures which contain

FIG. 4. *Schizoxylon spiraeae*. **a.** Detail of apices of asci, paraphyses, and spores, x1500. **b.** Habit sketch, x7.5. **c.** Cross section of margin, x150. Drawn from the holotype.

no spores. The structure is unlike that of *Schizoxylon;* I suspect they are an unconnected fungus. The species differs from *S. alboatrum* Rehm in the smaller apothecia, black, non-pruinose margin, slightly broader spores, and strong J+ blue reaction of the epithecium, and from *S. lantanae* (Tilak & Nanir) Sherw. in the non-gelatinous margin and in occurring in the eastern U.S. rather than in India.

ACKNOWLEDGEMENTS

The author wishes to thank Dr. R. Howard (A) for identifying hosts, and Dr. E. Shaw (GH) for assisting in preparing the Latin diagnoses.

LITERATURE CITED

DENNIS, R. W. G. 1954. Some inoperculate discomycetes from tropical America. Kew Bull. **1954**: 289–348.

PATOUILLARD, N. AND G. DE LAGERHEIM. 1895. Champignons de l'Equateur. Pugillus V. Bull. Soc. Mycol. France **11**: 205–234.

PETRAK, F. 1950. Biostictis, n. gen., eine neue Discomyzettengattung aus Ekuador. Sydowia **4**: 357–360.

SHERWOOD, M. 1977. The Ostropalean fungi. Mycotaxon **5**: 1–277.