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BOTANICAL CONTRIBUTIONS.

Mycological Studies. II.

By F. S. Earle.

1. New Species of West-American Fungi.

The following species were mostly collected by C. F. Baker in California and Nevada during 1901 and 1902. Many of them have been issued in his distributions of West-American plants. I am under obligations to him for full field-notes on the fleshy species, thus making it possible to study and describe them.

The types are deposited in the herbarium of the New York Botanical Garden.

Helotiaceae.

Lachnum atro-purpureum Durand, sp. nov.

Solitary or gregarious, stipitate, single or occasionally several (2–5) cups fascicled at the summit of each stem; disk concave, pale purple, externally dark purplish brown, paler toward the margin, clothed densely with hairs which are pale purple by transmitted light, cylindrical, smooth, closely septate, rather thick-walled, paler toward the tips, reaching 80 μ long, 5 μ thick; stem slender, as long as the diameter of the cup, hairy; asci clavate-cylindrical, 40–50 × 5–6 μ, not blue with iodine, apex rounded, scarcely narrowed; spores uniseriate, 8, hyaline, smooth, continuous, elliptical to elliptic-oblong, 6–8 × 2½–3 μ; paraphyses scarcely longer than the asci, narrowly lanceolate above, acute, 3–4 μ thick.

On dead *Eucalyptus* bark, Stanford University, Calif., Jan. 9, 1903. Collected by Copeland. Communicated by C. F. Baker as no. 2724.

A beautiful species peculiar in the often clustered cups, the purplish tint of every part, and the small spores. *Dasyscypha Eucalypti* (Berk.) Sacc., a purple species on *Eucalyptus* leaves in Tasmania, has larger (10–11 μ) spores and hairs in the form of teeth, belonging therefore in *Cyathicula*. The fascicled cups suggest the genus *Cordierites* and the color suggests *C. Sprucei* Berk., but the structure is in all other respects that of *Lachnum*. When dry the plant is purplish-black.

MOLLISIACEAE.

Mollisia papillata sp. nov.

Ascomata scattered, black, cup-shaped, rough-papillate, ½–1 mm., sessile, margin conspicuously elevated and in-rolled when dry, disc dark slate-color to nearly black, peridial cells polygonal, becoming elongated toward the margin where they end in crowded clavate papillae about 25 × 5 μ; asci crowded, cylindrical, about 50 × 4 μ; paraphyses thread-like; ascospores obliquely monostichous or subdistichous, hyaline, continuous, cylindrical, often somewhat curved, 8–10 × 2 μ.

On old, weathered chips, foot-hills near Stanford University, California, Jan. 1, 1902, C. F. Baker, no. 207.

This is somewhat closely related to forms that have been referred to *Mollisia melaleuca* (Fr.) Sacc., but it is cupulate, not patellate, the disc is nearly black and the exterior is much more conspicuously roughened.

TRYBLIDIACEAE.

Tryblidium Garryae sp. nov.

Ascocarps scattered, nearly or quite superficial, black, rough, patellate, margin obscure, about 1 mm. broad by 0.25 mm. thick; asci clavate, long-stipitate, about 120 × 8 μ; paraphyses thread-like, branched above; ascospores subdistichous, at first 1–4-septate and hyaline, at length dark brown, 10 or more septate and muriform, with numerous vertical divisions, usually somewhat curved, about 35 × 14 μ.

On decorticated, weathered twigs of *Garrya*, foot-hills near Stanford University, California, Jan. 1, 1902, C. F. Baker, no. 116*a*.

This species belongs to Saccardo's section *Tryblidaria*. In the Sylloge the name *Blitrydium* is used for this genus.

Dothideaceae.

Plowrightia Neo-Mexicana sp. nov.

Stromata at first buried, soon erumpent-superficial, black, rugulose, thin, crust-like, orbicular or often oval, about ½ mm. in diameter, usually aggregated and confluent in more or less elongated masses which reach 3 mm. or more in diameter; loculi several, 6 to 12 or more in each stroma, small, crowded, whitish within, slightly elevating the surface, ostiolum obscure; asci elliptic-oblong, short-pedicelled, aparaphysate, about 60 × 14 μ; ascospores distichous, hyaline, ovate, unequally uniseptate, strongly constricted, 20–22 × 7–10 μ, the smaller cell usually about 9 × 7 μ.

On dead, weathered stems of *Ampelopsis quinquefolia* (?), "The Gap," between San Ignacio and Las Vegas, New Mexico, July, 1902, T. D. A. Cockerell.

Sphaeriaceae.

Melanomma Sambuci sp. nov.

Perithecia gregarious, often crowded, at first buried, soon erumpent-superficial, black, globose, rough, not collapsing, about 300–350 μ, ostiolum obscurely papillate; asci clavate-cylindric, 90–110 × 9–10 μ; paraphyses abundant, thread-like; ascospores monostichous, fuscous, narrowly elliptical or narrowly ovate, 3-septate, slightly constricted, one medial cell often slightly enlarged, 20–25 × 7–8 μ.

On dead stems of *Sambucus*, Snow Valley Peak, Ormsby Co., Nevada, June 24, 1902, C. F. Baker, no. 1182 (in part).

Cucurbitariaceae.

Gibberidea Artemisiae sp. nov.

Perithecia clustered, two or three to six or eight on a scanty brownish stroma, or sometimes scattered, subglobose, at length slightly depressed, dark fuscous, nearly black,

subshining, about 500 μ, ostiolum minutely papillate; asci cylindrical, 100–120 × 8–10 μ; paraphyses thread-like; ascospores subdistichous, cylindrical, tinted or pale fuliginous, 3-septate, constricted, curved, 20–25 × 7 μ.

On shredded bark of *Artemisia tridentata*, King's Cañon, near Carson, Nevada, July 3, 1902, C. F. Baker, no. 1233*a*.

Amphisphaeriaceae.

Melomastia Shastensis sp. nov.

Perithecia scattered or gregarious, the base sunk in the wood-fibers and often somewhat compressed by them, black, collapsing, 0.3–0.5 mm., ostiole depressed-perforate; asci cylindrical, 70–80 × 10–12 μ; paraphyses thread-like; ascospores subdistichous, irregularly oblong or narrowly ovate, hyaline, 3–4-septate, not constricted, one medial cell often slightly enlarged, about 25 × 5–6 μ.

On decorticated whitened wood of *Abies Shastensis*, Mt. Shasta, Calif., 7,500 ft., July, 1903, Copeland. Communicated by C. F. Baker as no. 3584.

Mycosphaerellaceae.

Mycosphaerella Balsamorrhizae sp. nov.

Perithecia thickly scattered over large areas, buried, black, lenticular, not collapsing, 200–225 μ, of rather loose cellular tissue, cells large, 10–12 μ, ostiolum minutely perforate; asci narrowly elliptical, short-stipitate, 60–70 × 14 μ; paraphyses none; ascospores distichous, narrowly ovate, unequally uniseptate, somewhat constricted, 18–20 × 7–8 μ.

On dead stems of *Balsamorrhiza* sp., King's Cañon, near Carson, Nevada, July 3, 1902, C. F. Baker, no. 1230.

Mycosphaerella Vagnerae sp. nov.

Perithecia thickly scattered over large whitened areas, minute, black, prominent, not collapsing, 100–150 μ in diameter, ostiolum inconspicuous; asci elliptical or often irregularly spindle-shape, 60–70 × 20 μ; paraphyses none; ascospores inordinate, elliptical, ends obtuse, uniseptate, hyaline, 16–18 × 6–7 μ.

On dead stems of *Vagnera* sp., King's Cañon, near Carson, Nevada, July 3, 1902, C. F. Baker, no. 1225.

Phaeosphaerella scirpicola sp. nov.

Perithecia scattered over the weather-bleached leaf-surfaces, subsuperficial, minute, black, membranous, about 25 μ; asci elliptical, 40–50 × 18 μ; paraphyses none; ascospores fascicled, cylindrical, about equally uniseptate, not constricted, hyaline till full maturity, then brown, with four prominent vacuoles in each cell, 30–35 × 4 μ.

On dead leaves of *Scirpus* sp., foot-hills near Stanford University, California, Jan. 1, 1902, C. F. Baker, no. 212.

PLEOSPORACEAE.

Didymella Delphinii sp. nov.

Perithecia abundantly scattered over large whitened areas, buried, at length partially exposed, black, subspherical, prominent, not collapsing, 250–300 μ in diameter, ostiolum minutely papillate; asci clavate, short-stipitate, 80–90 × 12–14 μ; paraphyses scanty, thread-like, delicate, inconspicuous; ascospores distichous, hyaline, narrowly ovate, or subellipsoid, somewhat unequally uniseptate, constricted, the larger cell often subacute, the smaller one obtuse, 20–25 × 7–8 μ.

On dead stems of *Delphinium* sp., head of Fall Creek, Ormsby Co., Nevada, July 15, 1902, C. F. Baker, no. 1331.

Pocosphaeria Dendromeconis sp. nov.

Perithecia gregarious in lines, buried, at length exposed by the breaking away of the host tissues, clothed with short brown hairs when young, becoming subglabrate with age and exposure, black, hard, subcarbonaceous, not collapsing, 250–350 μ, ostiolum inconspicuous; asci cylindrical, 100–120 × 9–10 μ; paraphyses abundant, thread-like; ascospores monostichous, light fuscous or yellowish, 3-septate, constricted at each septum, one medial cell slightly enlarged, one end cell conical and acute, the other rounded, 18–20 × 7–8 μ.

On dead stems of *Dendromecon* sp., foot-hills near Stanford University, California, Jan. 1, 1902, LeRoy Abrams, communicated by C. F. Baker as no. 224.

Metasphaeria Yuccae sp. nov.

Perithecia scattered, black, prominent, long, covered by the epidermis, at length suberumpent, about 200 μ, ostiolum

inconspicuous, subpapillate; asci elliptical, about 75 × 12 μ; paraphyses abundant, thread-like; ascospores distichous, hyaline, narrowly ovate, ends acute, 4-septate, strongly constricted at the second septum, about 20 × 6 μ.

On dead leaves of *Yucca* sp., Stanford University, California, Nov. 26, 1901, C. F. Baker, no. 17.

Pyrenophora Tetraneuridis sp. nov.

Perithecia scattered, buried, then erumbent, dark brown, not collapsing, about 200 μ, ostiolum short-papillate, surrounded by a few stiff, brown, bristles; asci subcylindrical, about 175 × 35 μ; paraphyses thread-like; ascospores distichous, brown, elliptical, obtuse, 7-septate, not constricted, each cell 1–3 times vertically divided, about 40 × 18 μ.

On dead leaves of *Tetraneuris* sp., King's Cañon, near Carson, Nevada, June 14, 1902, C. F. Baker, no. 1068.

Pleospora Silenes sp. nov.

Perithecia gregarious on small blackened areas, prominent, soon free by the rupture of the thin cuticle, black, collapsing, about 200 μ in diameter, ostiolum minutely papillate, inconspicuous; asci cylindrical or narrowly elliptical, short-stipitate, thick-walled, about 140 × 30 μ; paraphyses thread-like, rather scanty; ascospores distichous, ovate or elliptical, compressed, dark brown, 3-septate, one or both of the medial cells once vertically divided, slightly constricted at all the septa, ends obtuse, about 30–35 × 18 μ by 14 μ thick.

On dead stems of *Silene* sp., Clear Creek Cañon, near Carson, Nevada, July 5, 1902, C. F. Baker, no. 1255.

On some of the stems there is also a *Diplodia* with spores 14 × 9 μ. This may represent the pycnidial stage of the fungus.

VALSACEAE.

Thyridium Sambuci sp. nov.

Perithecia thickly covering large areas, buried in groups of 6–8 or scattered, black, carbonaceous, not collapsing, 300–400 μ in diameter, ostiolum erumpent, minutely papillate, free (not valsiform); asci cylindrical, stipitate, 150–200 × 17–20 μ; paraphyses abundant, thread-like; ascospores monostichous, fuscous, elliptical, often slightly curved, 5-septate, constricted at the middle septum, one or more of the medial cells vertically divided, 30–35 × 10–14 μ.

On dead stems of *Sambucus*, Snow Valley Peak, Ormsby Co., Nevada, June 14, 1902, C. F. Baker, no. 1165.

Diatrypaceae.

Diatrype Baccharidis sp. nov.

Stromata thickly scattered, somewhat prominent, bordered by the wood-fibers, at length naked, black, rough, stromatic material scanty, tawny yellowish-brown within, about 1 mm. in diameter, often subconfluent; perithecia 3 or 4 to 6 or 8 in a stroma, large, 300–500 μ, subangular, black within, ostioles roughening the surface, compressed or obscurely bisulcate (subhysterioid) necks short; asci clavate, about 70 × 7 μ; ascospores curved, cylindric, yellowish, 12–14 × 2–3 μ.

On dead, weathered stems of *Baccharis* sp., Stanford University, California, Dec. 1, 1901, C. F. Baker, no. 182.

Sphaeropsidaceae.

Coniothyrium Sambuci sp. nov.

Pycnidia scattered or somewhat gregarious, buried, at length fully or partially erumpent, black, globose, not collapsing, 300–350 μ in diameter, of firm cellular tissue, the cells small, regular, about 7–10 μ, ostiolum papillate; sporules dark fuscous, subglobose, about 8 × 7 μ; sporophores none or inconspicuous.

On dead, decorticated stems of *Sambucus*, Snow Valley Peak, Ormsby Co., Nevada, June 24, 1902, C. F. Baker, no. 1182 (in part).

What seems to be the same thing was collected at Chambers Lake, Colo., on *Sambucus*, Aug. 1, 1896, by the same collector and was issued as no. 412 under the name of *Coniothyrium olivaceum* Bon.; but it is not that species.

Diplodia Leptodactyli sp. nov.

Pycnidia scattered, buried, then erumpent, black, subglobose, not collapsing, 200–225 μ, of soft membranous tissue, cells regular, 8–10 μ, ostiolum inconspicuous; sporules brown, elliptical, uniseptate, somewhat constricted, ends obtusely rounded, about 14 × 8 μ.

On dead stems of *Leptodactylon squarrosum*, Clear Creek Cañon, near Carson, Nevada, July 11, 1902, C. F. Baker, no. 1308.

Diplodia Veratri sp. nov.

Pycnidia scattered over large areas, buried, often at length exposed, black, subglobose, not collapsing, 300–400 μ, wall tissue thick, opaque, of cells 8–12 μ in diameter, ostiolum minutely papillate; sporules subcylindrical, at length fuscous, 1-septate, little or not constricted, about 14 × 7 μ; sporophores not seen.

On dead stems of *Veratrum*, King's Cañon, near Carson, Nevada, June 2, 1902, C. F. Baker, no. 963.

Rhabdospora Datiscae sp. nov.

Pycnidia thickly scattered over extensive whitened areas, under the epidermis or at length erumpent, brownish-black, membranous, subglobose but slightly flattened, about 100–120 μ in diameter, with a perforate ostiolum; sporules acicular, straight, 35–50 × 15 μ.

On stems of *Datisca glomerata*, Stanford University, California, Nov. 11, 1902, Copeland. Communicated by C. F. Baker, no. 2648.

Rhabdospora Heraclei sp. nov.

Pycnidia thickly scattered over large whitened areas, black or dark brown, buried with the ostiolum erumpent, or exposed by the shredding of the host tissues, subglobose, not collapsing, about 400 μ in diameter, of thick firm cellular tissue, the cells rather larger, 8–10 μ, ostiolum prominently papillate, rather thick; sporules acicular, straight, multiguttulate, 30–40 × 2 μ.

On dead stems of *Heracleum lanatum*, Snow Valley Peak, Ormsby Co., Nevada, June 24, 1902, C. F. Baker, no. 1167.

LEPTOSTROMACEAE.

Leptostromella (?) Eriogoni sp. nov.

Pycnidia scattered or gregarious in small groups, elongated, hysterioid, black, buried, becoming prominent, opening by a slit, 1–1.5 × .5 mm.; sporophores short, inconspicuous, about 7 × 2 μ; sporules cylindrical, hyaline, 3-septate, constricted at the septa, the cells at length separating, 18–20 × 3–4 μ.

On dead stems of *Eriogonum* sp., Little Valley, Ormsby Co., Nevada, Aug. 14, 1902, C. F. Baker, no. 1468.

This departs from the usual characters of *Leptostromella* in the constricted spores that finally separate at the septa.

MELANCONIACEAE.

Cylindrosporium Californicum sp. nov.

Occupying indeterminate brownish areas often involving half or more of the leaf-surface; ascervuli epiphyllous, abundant, covered by flesh-colored waxy masses of exuded conidia, 0.5 mm. in diameter; conidia cylindrical, usually irregularly curved, 35–40 × 3–4 μ.

On living leaves of *Fraxinus Oregana*, Stanford University, California, Oct., 1902, Abrams. Communicated by C. F. Baker, no. 2771.

This same fungus has been distributed by McClatchie, no. 895, under the name of *Cylindrosporium minor* E. & K. It differs from that species in the much larger indefinite spots and in the conidia which are about the same length but twice the diameter.

BOLETACEAE.

Boletus flaviporus sp. nov.

Among decaying oak leaves; pileus 6–9 cm., rather thin, convex to expanded, shining chestnut-brown, smooth, viscid, but not glutinous; hymenium plane, usually deeply depressed around the stipe but decurrent for nearly 1 cm. in anastomosing lines, bright lemon-yellow when young becoming a deep dark yellow or flavid with age (retaining this color in the dried specimen), pores angular, small (1 mm.), walls thin; spores yellow, narrowly elliptical, about 15 × 6 μ; stipe exannulate, 6–9 cm. × 18 mm., subequal or slightly ventricose, yellowish and smooth or marked with glutinous granules above, tomentose and white stained with brick-red below, solid; flesh whitish to brownish, unchanging, mild.

Stanford University, California, November 11, 1901, C. F. Baker, no. 131.

This striking species evidently belongs to the section *Viscipelles* although differing from the usual sectional characters in the deeply depressed hymenium and the reticulation at the apex of the stipe. It is remarkable for retaining so well the intense yellow color of the pores in the dried specimens.

Boletus tomentipes sp. nov.

Among decaying oak leaves; pileus fleshy, 3 cm. thick, 9–13 cm. in diameter, convex to expanded, clear brown (umbrinous), dry, at first minutely velvety-tomentose, becoming glabrate; hymenium ventricose, deeply and broadly sinuate-depressed, but with a decurrent margin that marks the apex of the stipe, sordid yellow, becoming brick-red when bruised or in drying, pores small, rounded (less than 1 mm. in the dried specimens); spores brownish, elliptical, about 14 × 7 μ; stipe exannulate, 8–13 × 2.5–3.5 cm., cylindrical, densely but minutely velvety-pubescent, at length sometimes subglabrate above, brick-red, flecked with brown below, solid; flesh whitish or brownish-white, changing to blue when injured.

Stanford University, California, November 30, 1901, C. F. Baker, no. 132.

This species should be referred to the section *Subtomentosi* although in some of its characters it approaches the *Edules*. It is well marked by the double change of color when injured, the pores becoming brick-red while the flesh changes to blue. The specimens discolor badly in drying.

AGARICACEAE.

Collybia fimicola sp. nov.

On decaying horse manure in pastures; pileus thin, 2–5 cm., convex to expanded or somewhat depressed, subumbonate, sordid cinereous-brown, the center darker, smooth, shining, not striate; lamellae thin, rounded behind, slightly adnexed, interveined, heterophyllous, distant, ventricose, pale cinereous-brown; spores white, elliptical, 6×4 μ; stipe 3–5 cm. × 3–5 mm., equal or slightly enlarged above, subglabrous above, densely hirsute-tomentose below, base brownish, apex nearly white (discolored in the dried specimens), cartilaginous, hollow; flesh thin, white, unchanging, mild.

Stanford University, California, November 30, 1901, C. F. Baker, no. 153.

Entoloma plumbeum sp. nov.

In old pastures, subgregarious; pileus 4–7 cm., irregular, often asymmetrical, expanded or at length depressed, pale

lead-color, often with a brownish tinge, center usually darker, smooth, not hygrophanous, margin irregular, not striate; lamellae narrowly sinuate, crowded, strongly heterophyllous, rather narrow, plane or subventricose, cream-color becoming tinted with salmon; spores pale salmon, elliptical, smooth, often with a large central vacuole, about 7 × 5 μ; stipe 2–3 cm. × 6–7 mm., equal, nearly smooth or subfibrillate, subconcolorous, sordid, solid, fleshy-fibrous; flesh white or cream-colored, unchanging, taste and odor mild.

Foot-hills near Palo Alto, California, March 11, 1902, C. F. Baker, no. 378.

Locellina Californica sp. nov.

In old pastures, solitary; pileus thin, 5–9 cm., becoming broadly expanded, pale tan-color, the center somewhat darker, slightly viscid when young but dry and smooth with age, margin entire; lamellae free, becoming remote with age, subcrowded, broad, plane or subventricose, pale brownish-salmon, then light cinnamon; spores rusty brown, irregularly elliptical, often with a minute oblique apiculus, large, 17–18 × 8–9 μ; stipe 6–12 cm. × 5–10 mm., subequal, apex discoid, base slightly thickened, minutely tomentulose, especially above, cream-color becoming light brownish on drying, solid, fleshy-fibrous; volva persisting as a thin, fragile, usually three-lobed, basal cup about 1 cm. high; flesh thin, white, unchanging, taste and odor mild.

Foot-hills near Palo Alto, California, March 11, 1902, C. F. Baker, no. 382.

This seems to be the first authentic species of this genus to be reported from North America. *Locellina Starnesii* Peck, Bull Torrey Club, **29**: 72, 1902, has a veil and annulus and should therefore be excluded.

Cortinarius speciosus sp. nov.

Among rotting oak leaves; pileus about 8 cm., convex to expanded, obtuse, pale yellow, disc darker, verging toward cinnamon, smooth, viscid, margin even; lamellae sinuate-decurrent, crowded, strongly heterophyllous, subventricose, at first sordid white then purplish, at maturity cinnamon; spores cinnamon, irregularly elliptical, ends subacute, 8–9 × 6 μ; cortina of reddish-brown fibrils attached to the margin of the bulb; stipe 5–6 cm. × 1–1.5 cm., strongly and abruptly

bulbous, the bulb 2.5–3.5 cm. thick, smooth above, fibrillose below from the fragments of the cortina, apex cream-color, base reddish-brown, solid; flesh whitish, unchanging, taste and odor mild.

Stanford University, California, December 4, 1901, C. F. Baker, no. 141.

This handsome, well-marked species belongs to the subgenus *Phlegmacium*, section *Scauri*.

Inocybe brunnescens sp. nov.

Pileus 3–7 cm., at first campanulate and subgibbous then obtusely expanded, bright shining-brown verging toward chestnut on the margin, the center paler, surface radiately fibrous, subglabrous but with a few minute floccose scales on the disc, margin even, occasionally splitting, at length revolute; lamellae subsinuate with a slightly decurrent tooth, subcrowded, broad, ventricose, edge erose, dark ochraceous-brown, edge often whitish; spores smooth, elliptical, about 10 × 5 μ; stipe 5–7 cm. × 8–12 mm., equal, smooth or with a few loose fibers, white, tinged with brown below, solid; flesh white, unchanging, taste and odor mild.

Among decaying oak leaves, Stanford University, California, November 30, 1901, C. F. Baker, no. 144.

This species belongs to the Section *Rimosae*. In color it closely resembles the dried oak leaves among which it grows.

Tubaria Eucalypti sp. nov.

On decaying fruits of *Eucalyptus*; pileus fleshy, 16–24 mm., broadly convex to expanded, ochraceous-brown, becoming paler on the disc with age, dry, minutely tomentulose especially on the margin when young, becoming glabrate, margin even, somewhat irregular; lamellae slightly decurrent, somewhat crowded, rather broad, plane, dark cinnamon, edge white; spores ferruginous, elliptical, 6–7 × 3–4 μ; stipe 2–4 cm. × 2–5 mm., equal or somewhat enlarged above, silky, fibrillate below, base white mycelioid, pale brownish, cartilaginous, hollow; flesh thin, white, unchanging, taste and odor mild.

Stanford University, California, November 22, 1901, C. F. Baker, no. 157.

This interesting little species seems to be confined to the one peculiar habitat.

Psilocybe Californica sp. nov.

In lawns and grassy places; pileus thin-convex to expanded and somewhat depressed, 1½–2½ cm., dark watery-brown when moist, pallid when dry, smooth or the disc somewhat wrinkled, moist, hygrophanous, margin even, lamellae somewhat decurrent, rather distant, interveined, subventricose, pale brown to fuscous; spores fuscous, subpellucid, elliptical, 6–7 × 3–4 μ; stipe 3–5 cm. × 2–3 mm., equal or slightly enlarged above, smooth, dark brown, cartilaginous, hollow; flesh very thin and watery, whitish, unchanging, taste and odor mild.

Stanford University, California, November 30, 1901, C. F. Baker, no. 152.

This species resembles *Psilocybe foenisecii*, which grows in similar situations in the Eastern States and in Europe, but the pileus is not at first campanulate, the lamellae are subdecurrent and interveined and the spores are much smaller.

2. New Tropical Fungi Mostly from Porto Rico.

The following undescribed species of fungi are mostly from an interesting collection of leaf-parasites made in Porto Rico by Mr. A. A. Heller, during December, 1902, and January, 1903. A few species are included from other localities. The types are in the herbarium of the New York Botanical Garden.

HYSTERIACEAE.

Lembosia Coccolobae sp. nov.

On living leaves of *Coccoloba uvifera;* epiphyllous, spots brown, at first often stellate, then orbicular, 4–6 mm., or confluent and somewhat effused; mycelium sparse, fuscous, rather widely effused, hyphae continuous or sparingly septate, occasionaly forking and anastomosing, slender, 3–4 μ thick; hyphopodia sessile, ovoid, dark fuscous, small, about 7 × 5 μ; ascomata scattered, discrete, black, linear, straight or slightly curved, ends obtuse, 300–600 × 100 μ; subiculum scanty, of

short parallel threads resembling those of the mycelium, 15–40 μ long; asci elliptical, 35 × 20 μ; ascospores inordinate, curved, unequally uniseptate, hyaline, 16 × 7 μ.

Porto Rico, Heller, no. 6375.

The spores do not seem to be fully matured. At full maturity they will doubtless be brownish and somewhat larger than indicated above. A sterile *Asterina* also occurs on some of the leaves. There is a specimen in the Ellis Herbarium labeled *Lembosia tenella* Lév., U. S. North Pacific Ex. Exped. C. Wright, 1853–56, that is evidently this species. Neither host nor locality is given and there is only a fragment of a leaf, but this is quite certainly *Coccoloba*. *Lembosia tenella* was described by Léveillé (Ann. Sci. Nat. III. 3: 58. 1845) on leaves of Myrtaceae from Tahiti. His description calls for a black radiating mycelium, forming round black spots 2–4 mm. in diameter. This is evidently different from our plant, where the mycelium is scanty and of such fine threads as to be invisible without high magnification.

Perisporiaceae.

Antennularia (?) tenuis sp. nov.

Epiphyllous: mycelium widely effused, forming a thin olive-brown pellicle, mycelial hyphae much interwoven, delicate, thin-walled, subhyaline, about 4 μ in diameter, frequently septate, the cells 12–18 μ long, at intervals forming *Torula*-like chains of oval cells, 8–10 × 5–6 μ; perithecia abundant, scattered, seated on the mycelium, black, globose, collapsing, of uniform rounded cells 8–10 μ in diameter, astomous, about 200 μ; asci elliptical, thin-walled, about 80 × 25 μ; paraphyses abundant, delicate, thread-like, ascospores inordinate, elliptical, obtuse, hyaline, 4–8 septate, the cells vertically divided, about 30 × 12 μ.

On leaves of *Musa* sp. (banana), apparently following plant lice. Porto Rico, Heller, no. 6352. Also on *Inga vera*. Porto Rico, Heller, no. 6353.

The generic position of this interesting fungus is somewhat doubtful. Its spore-characters do not accord with those usually given for *Antennularia* (*Antennaria*), but its biological habit is the same and it seems unwise to multiply

genera in this group of "honey dew" inhabiting fungi until their characters are better understood. *Triposporium*-like conidia are found on the same leaves and are probably connected with this fungus. The species is well characterized by the thin delicate mycelium and by the abundance of ascus-bearing perithecia.

Dimerosporium appendiculatum sp. nov.

Parasitic on the mycelium of an *Asterina*; mycelium scanty, of pale agglutinated threads 3 μ in diameter; perithecia globose, 70–100 μ, of soft, cellular texture, cells 6–8 μ, armed with 12–20 curved, dark fuscous, opaque, obtuse, appendages or setae which are 30–40×4 μ; asci fascicled, broadly clavate or narrowly obovate, stipitate, 8-spored, 35–50× 10–12 μ; ascospores inordinate, pale fuscous, cylindrical, about equally uniseptate, scarcely constricted, 14–16 × 4 μ.

Parasitic on *Asterina Sidae* sp. nov.,* on leaves of *Sida carpinifolia*, Porto Rico, Heller, no. 6333 (type) and Jamaica, Earle, no. 363.

Meliola Andirae sp. nov.

Mostly epiphyllous, forming a widely effused brownish coating; mycelium of long, straight, seldom branching threads 7 μ in diameter, the cells usually 30–35 μ long; capitate hyphopodia small, opposite, distant, one pair to each cell, narrowly obovoid or subcylindric, 12–14 × 8–10 μ, the basal cell very short, only 2–3 μ; mucronate hyphopodia mostly opposite, densely crowded on certain threads, bottle-shaped, the neck often excentric and curved, 16–18 μ long; setae usually sparingly scattered, often more abundant near the perithecia, 200–250 × 7 μ, base tuberculate, tapering to a subacute point, apex usually strongly curved, pellucid; perithecia small, 150–200 μ, smooth, at length collapsing, of small, 6–10 μ, subprominent cells, ostiole none; asci 2–4-spored, soon evanescent; ascospores 4-septate, fuliginous, slightly constricted, obtuse, subcompressed, 35–40 × 9–12 μ.

On leaves of *Andira inermis*, Porto Rico, Heller, no. 6448.

This species is remarkable for the very long, straight mycelial threads, the small, opposite, very short-stalked, capitate hyphopodia and for the densely crowded mucronate

* See page 310.

hyphopodia which occur only on certain mycelial threads. The setae are sometimes straight but the great majority of them are strongly curved near the summit.

MELIOLA BICORNIS Wint. ?

Heller, no. 6259, on some unknown plant of the Leguminosae, Porto Rico.

This seems to be the same as Ule's Brazilian specimens issued under this name as no. 3545 of Rabenhorst-Winter, Fungi Europaei. These specimens are included under this species by Gaillard, Le Genre Meliola 99, but as the type of the species is from the island of St. Thomas off the coast of Africa the determination seems somewhat doubtful. No African specimens of the species have been seen.

Meliola Chamaecristae sp. nov.

Amphigenous and caulicolous, effused, forming a thin black coating; mycelial threads bright fuscous, uneven and wavy, 7–8 μ thick, cells 30–35 μ long; capitate hyphopodia alternate or scattered, irregular subcylindric, usually curved or circinate, 16–25 × 9–10 μ; mucronate hyphopodia not seen; setae infrequent, scattered, 200–250 × 7 μ, straight, tapering upward but obtuse, apex pale, pellucid; perithecia numerous, scattered, globose, small, 120–150 μ, thin-walled, subpellucid, slightly roughened by the convex uniform cells which are 10–12 μ in diameter; asci elliptical, mostly 4-spored; ascospores 4-septate, pale fuliginous, cylindrical, much constricted, obtuse, small, about 30 × 10–11 μ.

On leaves and stems of *Chamaecrista glandulosa*, Porto Rico, Heller, no. 6371.

This resembles *M. microspora* Pat. & Gaill. in the unusally small spores but differs in the larger capitate hyphopodia, the absence of mucronate hyphopodia, and the narrower and paler setae.

Meliola circinans sp. nov.

Forming irregular black velvety patches 5–10 mm. in diameter or widely confluent and effused, easily separating from the leaf; mycelium abundant, dark fuscous, branching anastomosing at wide angles, not agglutinated, somewhat

nodular and uneven, 6–7 μ thick, cells 16–20 μ long; capitate hyphopodia abundant, at first cylindrical, straight, even or irregularly lobed, 16–20 × 8 μ, then the apical cell becomes bent to one side and at length in some cases is completely coiled upon itself, in this condition being about 16 × 16 μ; mucronate hyphopodia infrequent, bottle-shaped, 16–20 × 6 μ; mycelial setae abundant, black, opaque, straight, simple, tapering to a point, 400–600 × 8–9 μ; perithecial setae 6–8 or more, scattered, dark fuscous, opaque, curved, rather obtuse, about 130 × 6 μ; perithecia globose, small, 120–150 μ, ostiolum not seen; asci soon evanescent, not seen; ascospores cylindrical, ends subapiculate, pale fuscous, translucent, 4-septate, constricted, 40–45 × 12 μ.

On leaves of *Rynchospora aurea*, Porto Rico, Heller, no. 6384.

I would include here Heller's no. 252 from Porto Rico, Sturgis' specimen from Grasmere, Fla., on *Cyperus* sp., Nash's no. 1803 from Eustis, Fla., on *Rynchospora dodecandra*, and Underwood's no. 1664, Fla., on "saw-grass." These have all been determined as *Meliola Cyperi* Patouillard, a species described from the Congo river, Africa. A portion of the type collection of this species is in the Ellis Herbarium. The American material certainly resembles it closely in having both mycelial and perithecial setae, a very unusual character, and in having more or less lobed and irregular capitate hyphopodia. It is clearly distinct however in the ultimate bending and coiling of the apical cell of the hyphopodia, which suggests the specific name. Both kinds of hyphopodia are much smaller than in *M. Cyperi*, the mycelial setae are shorter and thinner and the spores are subapiculate not obtuse. The most marked difference however is in the mycelium. In *M. Cyperi* the threads are 8–9 μ thick and are densely branched, the branches lying parallel and becoming partially agglutinated into a kind of crust. In *M. circinans* the threads average 2 μ smaller, and the branches are strongly divergent and not at all agglutinated.

Heller's no. 2249, from the Hawaiian Islands, distributed as *M. Cyperi*, is probably not that species, though it agrees with

it in the agglutinated crust-like mycelium. It certainly has no connection with the present species.

I would also include here Tracy's nos. 4079 and 7158 on *Cladium effusum*, Ocean Springs, Miss., and Braidentown, Fla. These have been distributed as *M. Amphitricha* Fr.

Meliola compacta sp. nov.

Amphigenous, forming compact, black, crusts 1–2 mm. in diameter; mycelial threads dark fuscous, 7 μ thick, densely crowded and agglutinated; mycelial setae none; capitate hyphopodia numerous, crowded, 18 μ long, the basal cell 8 μ long, the head cell globular, 10 μ in diameter; mucronate hyphopodia not seen; perithecial setae scattered, 70–100 × 6 μ, uniform in size, obtuse, often abruptly bent about 20 μ below the tip, the upper portion nearly hyaline; perithecia globose, 200–225 μ; asci elliptical, 4-spored; ascospores compressed, cylindrical, obtuse, 4-septate, constricted, dark fuscous, 40–45 × 14 × 10 μ.

On leaves of *Crossopetalum pallens*, Porto Rico, Heller, no. 6217.

This species is well characterized by the compact agglutinated mycelium, the peculiar perithecial setae and the compressed spores.

Meliola Compositarum sp. nov.

Epiphyllous; mycelium forming small, 1–2 mm., black or dark brown spots, scattered or sparingly confluent, threads 7 μ thick, cells 20–30 μ long; capitate hyphopodia alternate, 25–30 μ long, basal cell about 8 μ long, head cell irregularly lobed, 15–20 μ wide, occasionally elongate and uniseptate; mucronate hyphopodia usually opposite, bottle-shaped, crooked; setae none; perithecia globose, about 200 μ, with a group of 6–12 chitinized appendages near the apex, which are pale fuscous, 80–100 × 20 μ, the tip obtuse, abruptly uncinate and darker; asci usually two-spored, soon evanescent; ascospores cylindrical or narrowly elliptical, fuliginous, 4-septate, constricted, obtuse, about 45 × 14–16 μ.

Type, Heller's no. 6385 on *Willughbaea* sp., from Porto Rico. I place here also Heller's nos. 141 and 6185 on *Eupatorium* sp. from Porto Rico, my own no. 45 on *Eupatorium* sp. from Jamaica, and the specimens on some unknown com-

posite from Brazil collected by Ule and distributed as no. 3543 of Rabenhorst-Winter, Fungi Europaei, under the name of *Meliola inermis* Kalchbr. & Cooke. The latter was described on leaves of *Buddleya* from South Africa. Our species agrees with it in having peculiar chitinized uncinate perithecial appendages but in ours they are much larger, the spores are larger and the characters of the mycelium and hyphopodia are different.

Meliola Helleri sp. nov.

Amphigenous, mostly fruiting below, forming thin poorly defined black patches 3–6 mm. in diameter, often more or less confluent and effused, mycelium of somewhat interwoven, pale fuscous threads, 7 μ thick, cells 15–18 μ long; capitate hyphopodia alternate or unilateral, regular, oblong, 16–18 × 8 μ, basal cell short, about 5 μ, head cell cylindrical; mucronate hyphopodia infrequent, opposite, or scattered, subconic to subampulliform, often irregular, truncate, 18–20 μ; setae not abundant, 350–450 × 8 μ, opaque, straight, tapering upward, tip bifid for 4–6 μ or with two or more acute teeth; perithecia globose, 150–200 μ, smooth, of uniform subequal cells 8–10 μ in diameter; asci evanescent, not seen; ascospores 4-septate, dark fuscous, cylindrical, strongly constricted, obtuse, 35–40 × 11–13 μ.

On leaves of some unknown woody plant perhaps belonging to the Myrtaceae, Porto Rico, Heller, no. 6251.

This species seems to be nearly related to *M. bicornis* Wint., but differs in the characters of the hyphodia. From *M. bidentata* Cooke it can be distinguished by the more slender mycelial threads, smaller hyphopodia, smooth not verrucose perithecia and slightly smaller spores.

Meliola Mangiferae sp. nov.

Amphigenous, forming black, densely velvety, orbicular patches 6–10 μ in diameter or becoming widely confluent; mycelial threads numerous, much interwoven, dark fuscous, opaque, 10 μ thick, the cells 25–30 μ long; capitate hyphopodia irregularly clavate-oblong, alternate, 25 × 12–14 μ, basal cell 6–7 μ long, head cell irregularly cylindric, subflexuous; mucronate hyphopodia infrequent, subconical,

obtuse, often flexed and irregular, 25 μ long; setae very abundant, 600–700 × 11 μ, dark, opaque, tapering above to an obtuse tip that is usually divided into 2–5 short blunt teeth; perithecia globose, about 200 μ, somewhat roughened by irregular prominences composed of specially grouped cells (as in *M. Cookeana*); asci usually 2-spored, evanescent; ascospores 4-septate, constricted, broadly cylindrical, obtuse, dark fuscous, 50–55 × 18–22 μ.

On leaves of the Mango, *Mangifera Indica*, Castleton Gardens, Jamaica, Earle, no. 272. Also Porto Rico, Heller, no. 6393.

It forms conspicuous black velvety patches, and is well marked by the thick opaque mycelial threads, the abundant, long, densely opaque, slightly forked setae, the peculiar roughening of the surface of the perithecium and the large dark spores.

Meliola Psychotriae sp. nov.

Amphigenous but mostly epiphyllous, forming small black orbicular patches 1–3 μ in diameter; mycelium abundant, threads fuscous, 7–8 μ thick, cells 25–35 μ long; capitate hyphopodia alternate, usually closely appressed to the mycelial thread, about 25 × 10–11 μ, basal cell 7–8 μ long, head cell regularly elliptical; mucronate hyphopodia opposite, 16–20 μ long, subconical or the base slightly swollen, often curved, apex truncate; setae frequent, erect, 250–300 × 8 μ, tapering upward but obtuse, apex paler; perithecia small, 125–150 μ, subcollapsing, of small, compact irregular cells 7–8 μ in diameter; asci elliptical, 2-spored; ascospores 4-septate, elliptical, constricted, pale fuscous, ends narrowed but obtuse, about 35 × 13–14 μ.

On leaves of *Psychotria* sp., Porto Rico, Heller, no. 6252. Also on *Erithelis fruticosa*, Porto Rico, Heller, no. 6430.

This is perhaps nearest to *M. ambigua* Pat. & Gaill., but differs in the more slender mycelium and setae, the much smaller perithecia and the different characters of the hyphopodia and the broader more elliptical spores.

Meliola Thouiniae sp. nov.

Epiphyllous, forming thin blackish patches 3–6 mm. in diameter, often effused and indeterminate; mycelial threads

7 μ in diameter, frequently septate, the cells 12–16μ long; capitate hyphopodia numerous, alternate or occasionally opposite, regular, subcylindrical, 14–16 × 8–9 μ, basal cell very short, 3–4 μ, head cell elliptical, obtuse; mucronate hyphopodia numerous, opposite, usually nearly straight, narrowly conical to subampulliform, obtuse, about 20 × 7 μ; setae infrequent, 300–400 × 8 μ, straight, simple, opaque, abruptly tapering to an acute point; perithecia abundant, scattered, collapsing, ostiolate, small, 110–150 μ, smooth, of closely compacted cells about 8 μ in diameter; asci 2–3-spored, ovate, short stipitate, 40–50 × 25 μ; ascospores 4 septate, cylindrical, slightly constricted, obtuse, dark fuscous, 35–40 × 12–14 μ.

On leaves of *Thouinia striata*, Porto Rico, Heller, no. 6435.

This species is nearest to *M. stenospora* Wint., but differs in the straight, not lobed or bent, capitate hyphopodia, in the larger, straight and more abundant mucronate hyphopodia and in the broader, more obtuse spores.

Pseudomeliola (?) collapsa sp. nov.

Parasitic on the mycelium of a *Meliola;* mycelium of slender agglutinated colorless hyphae, 2½–3 μ thick; perithecia densely aggregated, complete, at first lenticular, soon collapsing to saucer-shape, 100–120 μ, conspicuously ostiolate, of radiating agglutinated hyphae that are at length closely septate forming a tissue of rectangular cells 4–5 μ in diameter, ostiolum with the opening 8 μ in diameter with a slightly raised border which is provided with a circle of thread-like, closely appressed, radiating appendages which slightly exceed the margin of the perithecium; asci obovate, short-stipitate, 30–35 × 12 μ; paraphyses not seen; ascospores inordinate, cylindrical or subclavate, hyaline, conspicuously 3-guttate, 12–14 × 3 μ.

On the mycelium of *Meliola torulosa* Wint. on leaves of *Piper peltatum*, Porto Rico, Heller, no. 6400 (type), also Heller, no. 6401, on *Meliola* sp. on *Mesosphaerium capitatum*.

This peculiar species is referred to the above genus with much doubt. The radiating prosenchymatous tissue of the perithecium and its conspicuous ostiolum point to a relationship with the Microthyriaceae rather than to the Perisporiaceae

where *Pseudomeliola* has been placed. On the other hand, the perithecium is evidently complete, the upper and lower walls being both fully developed, in which it agrees with the Perisporiaceae. The spores are shorter than in the type of *Pseudomeliola* and it is possible that they ultimately become 2-septate.

MICROTHYRIACEAE.

Asterina Sidae sp. nov.

Mostly epiphyllous, forming poorly defined, thin, blackish patches 2–4 mm. in diameter; mycelium scanty, of zigzag radiating threads about 4 μ thick; hyphopodia sessile, irregular and conspicuously three- or four-lobed, 7–8 μ; perithecia numerous, scattered, 80–100 μ, convex-applanate, of dark, opaque, closely agglutinated, radiating hyphae, subostiolate, splitting stellately; asci subglobose, 8-spored, 20–25 μ; ascospores inordinate, ovate, somewhat unequally uniseptate, strongly constricted, fuliginous, 14 × 8 μ.

On living leaves of *Sida carpinifolia*, Jamaica, Earle, no. 366 (type); Porto Rico, Heller, no. 6333.

Parasitized by *Dimerosporium appendiculatum* sp. nov.* The parasite is much more abundant on the Porto Rican specimens.

Asterina triloba sp. nov.

Epiphyllous, forming black patches 2–4 mm. in diameter or often confluent; mycelium rather scanty, of dark fuscous threads, about 4 μ in diameter, hyphopodia scattered, sessile, irregular, but usually three-lobed, about 7–8 μ; perithecia abundant, shield-shape, consisting of radiating threads, some of which exceed the margin, forming an irregular *Lembosia*-like subiculum, 30–50 μ wide, rupturing stellately, 90–120 μ in diameter; asci broadly ovate to suborbicular, about 25–30 μ, ascospores hyaline to full maturity, then dark brown, about equally uniseptate, constricted, elliptical, ends obtuse, about 20–25 × 8–9 μ.

On living leaves of *Croton discolor*. Limestone hills, along the coast west of Ponce, Porto Rico, Heller, no. 6216.

This differs from *Asterina crotonicola* Pat. in the three-lobed hyphopodia and smaller spores. The specimens also show abundant dark brown, opaque, obovate conidia, about

* See page 303.

18 × 12 μ, borne at the ends of delicate hyaline hyphae, about 12 × 3 μ. What connection, if any, these have with the *Asterina* could not be determined.

Micropeltis longispora sp. nov.

Epiphyllous; perithecia scattered, easily separating, dark brown, slightly roughened, 300–400 μ, hemispheric-applanate, umbilicate, the ostiolum slightly sunken, of prosenchymatous tissue composed of fine interwoven threads, which extend beyond the fertile portion, forming a flat, sterile subiculum 100–200 μ wide; asci elliptical, aparaphysate, 70–80 × 25–30 μ; spores cylindrical, often curved, hyaline, multiseptate, granular, ends obtuse, 50–70 × 8 μ.

On living leaves of *Coffea Arabica*, Porto Rico, Heller, no. 6349.

The leaves are also overrun by the sterile mycelium of some *Apiosporium*.

This differs from *Micropeltis Tonduzii* Speg. in the larger, much more frequently septate spores which have the cells all equal, not one or two of them enlarged as in that species.

DIATRYPACEAE.

Diatrypella Lantanae sp. nov.

Stromata scattered, prominent, bordered by the epidermis, black without and within, stromatic material scanty, usually elliptical, about 1 × 0.75 mm.; perithecia four or five to ten or twelve in each stroma, black, globose, 400–500 μ, ostiolum short, smooth, umbilicate; asci broadly clavate, crowded with spores, short-stipitate, 70–80 × 10–12 μ; ascospores very numerous in each ascus, allantoid, yellow, about 7 × 1.5 μ.

On dead stems of *Lantana camara*, Hog Island, Florida, April 18, 1900, S. M. Tracy, no. 6773.

XYLARIACEAE.

Kretzschmaria rugosa sp. nov.

Stromata reaching 1 cm., irregularly globose or subdepressed, short-stipitate or subsessile, surface dull black, rough, substance spongy-fibrous, white, stipe 2–8 × 1–2 mm.;