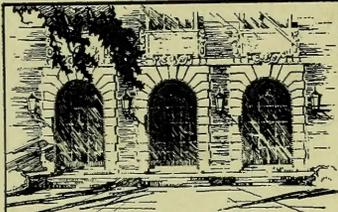




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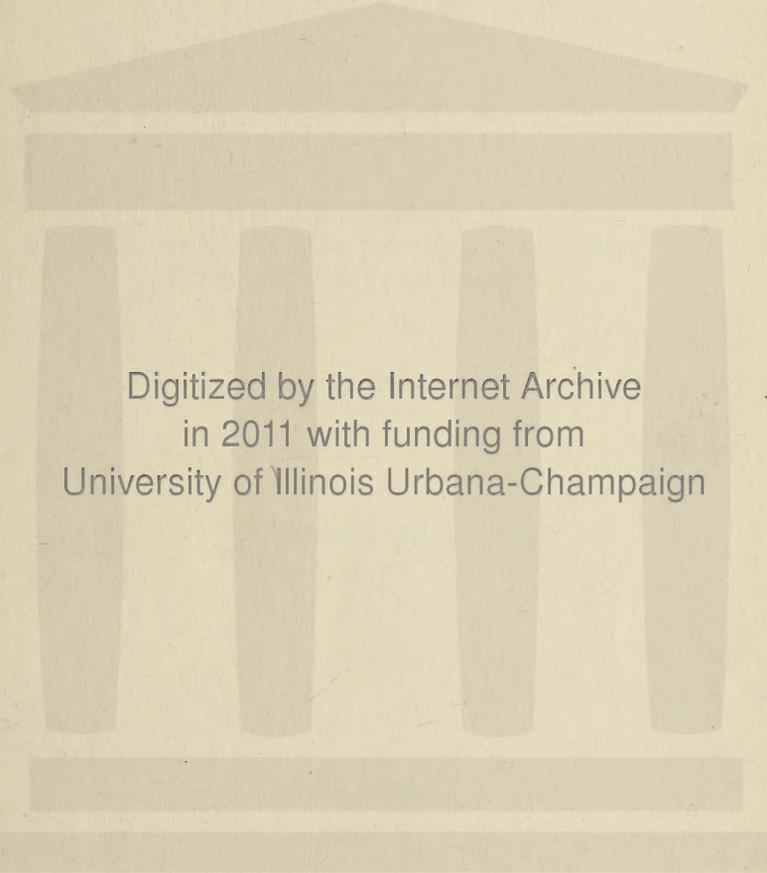
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VOLUME VIII

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Urbana, Illinois

1923

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TABLE OF CONTENTS

VOLUME VIII

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NUMBERS		PAGES
1.	The head-capsule of Coleoptera. By F. S. Stickney. With 26 plates....	1-104
2.	Comparative studies on certain features of Nematodes and their significance. By D. C. Hetherington. With 4 plates.....	105-166
3.	Parasitic fungi from British Guiana and Trinidad. By F. L. Stevens. With 19 plates.....	167-242
4.	The external Morphology and Postembryology of Noctuid Larvae. By L. B. Ripley. With 8 plates.....	243-344



# ILLINOIS BIOLOGICAL MONOGRAPHS

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PARASITIC FUNGI FROM BRITISH  
GUIANA AND TRINIDAD

WITH NINETEEN PLATES AND A MAP IN THE TEXT

BY  
FRANK LINCOLN STEVENS

Contribution from the  
Botanical Laboratories of the University of Illinois



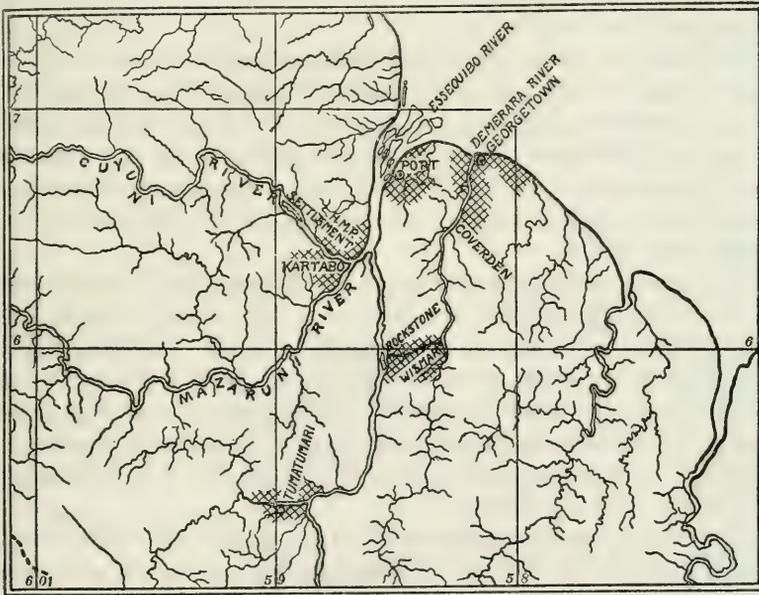
## TABLE OF CONTENTS

Introduction . . . . .	7
Polystomellaceae . . . . .	10
Parmulineae . . . . .	10
Hysterostromina . . . . .	10
Dothideaceae . . . . .	10
Coccoideae . . . . .	10
Coccostromopsis . . . . .	10
Nowellia . . . . .	11
Leveillelleae . . . . .	13
Leveillinopsis . . . . .	13
Dothideae . . . . .	13
Bagnisiopsis . . . . .	13
Amerodothis . . . . .	14
Uleodothis . . . . .	15
Achorella . . . . .	15
Phyllachoraceae . . . . .	16
Scirrhineae . . . . .	16
Anisochora . . . . .	16
Scolecodothopsis . . . . .	17
Phyllachorineae . . . . .	18
Phyllachora . . . . .	18
Endodothella . . . . .	24
Montagnellaceae . . . . .	25
Eu-Montagnelleae . . . . .	25
Haplothecium . . . . .	25
Hemisphaeriaceae . . . . .	25
Gymnopeltis . . . . .	25
Perisporiaceae . . . . .	26
Dimeriella . . . . .	26
Phaeodimeriella . . . . .	27
Meliolinopsis . . . . .	27
Hyalomeliolina . . . . .	27
Oplothecium . . . . .	28
Haraea . . . . .	29
Parodiopsis . . . . .	29
Dimerium . . . . .	31
Mycophaga . . . . .	31
Perisporiaceae Imperfecti . . . . .	32
Pycnodothis . . . . .	32
Capnodiaceae . . . . .	32
Polystomellopsis . . . . .	32
Clypeosphaeriaceae . . . . .	34
Stegastroma . . . . .	34
Anthostomella . . . . .	35
Explanation of plates . . . . .	37
Index to species . . . . .	75
Index to hosts . . . . .	76



## INTRODUCTION

The notes and descriptions presented herewith are based upon collections of parasitic fungi made by the author mainly in the jungle of British Guiana, during the summer of 1922. The collections are in no sense comprehensive since the period of time was brief and travel in the interior of the country was difficult and tedious which resulted only in a sampling of a small part of a very interesting territory. The collections were made from five centers in British Guiana; Georgetown, the Demerara-Essequibo railroad, Coverden, Tumatumari and Kartabo.



The region of Georgetown and extending for many miles inland is flat, but a few feet above sea level, and of rather monotonous flora including many grasses and littoral plants, with trees bordering the rivers.

The Demerara-Essequibo railroad,  $18\frac{1}{2}$  miles long, extending from Wismar, which is 65 mi. inland on the Demerara river, to Rockstone on the Essequibo crosses a sandy upland from which the original forest has been cut, but which gives considerable diversification of flora. Especially at Wismar and at Rockstone where the sand hill flora merges with that of the river bank is the collecting excellent.

Coverden on the bank of the Demerara about 20 mi. from the sea gives a few isolated sand hills covered with the original forest growth of great diversification which differs essentially from that found elsewhere.

Tumatumari on the Potaro River about 150 mi. inland is in the foothills surrounded by tropical jungle which may be traversed for many miles on foot by way of cut trails.

Kartabo, the temporary location of Dr. Beebe's laboratory, on the point formed by the junction of the Mazaruni and the Cayuni rivers, and only a few miles from the junction of the Essequibo is also in primitive jungle. All of these localities, except that of Georgetown, are without apparent influence of man on the flora, and its wilderness is evidenced by the sight at any moment of tapirs, peccaries, monkeys, deer, ant eaters, or possibly a boa constrictor.

The itinerary included also a few days collecting in Trinidad confined chiefly to the immediate vicinity of the Port of Spain, St. Augustine, Cumuto and The Long Stretch.

Practically no collections or records have previously been made of the parasitic fungi of British Guiana. Though my collections can be regarded only as a mere sampling they reveal a very rich fungous flora, especially rich in the Dothideales, Sooty Molds, Microthyriaceae and with a considerable abundance of rusts. The smuts are very scarce and the imperfect fungi, *Phyllosticta*, *Cercospora*, etc., are apparently less common than in the temperate region.

The summer's collection consisted of approximately a thousand numbers, only certain families of which are reported in this paper; the genus *Meliola*, the Microthyriaceae, most of the Hemisphaeriaceae, the Trichopeltaceae being reserved. The slides, notes, original drawings and specimens on which these studies are based are deposited in the herbarium of the University of Illinois and duplicate specimens in the New York Botanical Garden. The photographs reproduced in the plates were made by A. G. Eldredge; the line drawings by L. R. Tehon.

The arrangement and classification of the Dothideales followed in this article is adapted from that of Theissen and Sydow<sup>1</sup> and, in so far as concerns the genera herein reported, is shown in the table of contents.

The following is a list of the field numbers with places and dates of collection.

TRINIDAD		Date
Nos. 1 to 8	Port of Spain	June 28
BRITISH GUIANA		
Nos. 9 -18	Georgetown	July 2

<sup>1</sup>Theissen, F. and Sydow, H., *Die Dothideales*. *Ann. Myc.*, 13:149-746, 1915, and *Synoptische Tafeln*, *Ann. Myc.*, 15:389, 1917.

Nos. 18 -22	Georgetown	July 4
Nos. 22 -30	Peters Hall	July 5
Nos. 30 -69	Tumatumari	July 8
Nos. 69 -105	Tumatumari	July 9
Nos. 105-154	Tumatumari	July 10
Nos. 154-215	Tumatumari	July 11
Nos. 215-248	Tumatumari	July 12
Nos. 248-262	Rockstone	July 13
Nos. 262-329	Wismar	July 14
Nos. 329-418	Demerara-Rockstone R. R.	July 15
Nos. 418-444	Rockstone	July 16
Nos. 444-495	Rockstone	July 17
Nos. 495-520	Kartabo	July 21
Nos. 520-575	Kartabo	July 22
Nos. 575-642	Kartabo	July 23
Nos. 642-681	Kartabo	July 24
Nos. 681-684	Penal Settlement	July 25
Nos. 684-707	Botanical Garden, Georgetown	July 31
Nos. 707-719	Georgetown, Lemada Canal	August 2
Nos. 719-720	Vreden Hoor	August 1
Nos. 720-746	Coverden	August 4
Nos. 746-758	Coverden	August 5
No. 758	Georgetown	August 6
Nos. 759-819	Coverden	August 8
TRINIDAD		
Nos. 819-821	Port of Spain	August 12
Nos. 821-848	St. Augustine	August 13
Nos. 848-856	Long Stretch	August 13
Nos. 856-875	Port of Spain	August 14
Nos. 875-901	St. Clair	August 15
Nos. 901-969	Cumuto	August 16
No. 969	Guanapo	August 16
No. 970	Port of Spain	August 26

## POLYSTOMELLACEAE

## PARMULINEAE

## HYSTEROSTOMINA THEISS. AND SYD.

Ann. Myc., 13:228, 1915

## 1. HYSTEROSTOMINA PALMAE Stevens n. sp.

[Figures 1 to 4]

Spots discolored, yellowed, showing from both leaf sides, bordering the stromata by a band several millimeters wide. Stromata radiate, epiphyllous, roughly circular, nearly entire, black, 2 to 4 mm. in diameter, superficial, but firmly attached. No free mycelium. Hypothecium well developed, extending deep into the mesophyll, brown, attached to the stromata by the whole of its base. Perithecia linear, irregularly arranged,  $460\mu$  in length, about  $180\mu$  wide, 110 to  $145\mu$  deep. Cleft 70 to  $90\mu$  wide, covering layer 18 to  $25\mu$  thick. Asci 8-spored, numerous; spores dark, 1-septate, 18 to  $21 \times 7\mu$ , one cell darker and slightly larger than the other. Asci 43 to  $45 \times 18\mu$ , thickened at the apex. Paraphyses numerous, filiform.

On Palm.

British Guiana: Tumatumari, July 12, 1922, 199.

## DOTHIDEACEAE

## COCOIDEAE

## COCOSTROMOPSIS Plunkett n. gen.

Stroma prosenchymatic, without a definite covering layer, centrally attached, dothideoid. Loculi immersed, oval to spherical, equally distributed; asci clavate, 8-spored, paraphysate; spores continuous, elliptical, hyaline.

## 2. COCOSTROMOPSIS PALMIGENA Plunkett n. sp.

[Figures 5, 6]

Stroma superficial, raised in irregular tubercles, brownish black, formed of perpendicular hyphae and attached by a central foot which penetrates into the mesophyll. Loculi sunken, oval to spherical, ostiolate, large, 250 to  $400\mu$  in diameter, without a wall; asci clavate, slightly stalked, 8-spored, arising basally and laterally in the loculi; 72 to 90;  $\times 14$  to  $18\mu$ ; paraphyses hyaline, thin, filiform, 50 to  $100 \times 1.5$  to  $2\mu$ ; spores continuous, elliptical, hyaline, granular, inordinate, 18 to  $21 \times 5$  to  $7\mu$ .

On leaves of palm, species indet.

Trinidad: Cumuto, August 16, 1922, 1001.

The genus *Coccostromopsis* differs from *Coccostroma* by having paraphyses; and from *Auerswaldiella* by having hyaline spores. The species described is somewhat similar to *Coccostroma palmigenum* (Berk. and Curt.) Theissen and Sydow<sup>2</sup> except for the presence of paraphyses. In the description of *Botryosphaeria palmigena* Berk. and Curt. cited by Theissen and Sydow was a synonym of *Coccostroma palmigenum*, paraphyses are described as being present. If this is true that fungus should not have been placed in the genus *Coccostroma*. The present species differs from that described as *Botryosphaeria palmigena* Berk. and Curt. in the size of spores and asci and in the absence of 4 and 6-spored asci. The presence of the paraphyses prevents the present species from being placed in *Coccostroma* and the hyaline spores keep it out of *Auerswaldiella*. I am inclined to believe that the material is not the same as that described as *Coccostroma palmigenum* (Berk. and Curt.) Theiss. and Syd. and, therefore, erect the new genus *Coccostromopsis*.

#### NOWELLIA Stevens n. gen.

Stroma Dothideaceous, superficial, centrally fastened to the hypostroma. Perithecia globular on the stroma. Asci with numerous paraphyses. Spores hyaline, 1-septate. Named in honor of W. Nowell of Trinidad in recognition of his researches on fungi.

#### 3. NOWELLIA GUIANENSIS Stevens n. sp.

[Figures 7 to 14, 93.]

Superficial subiculum flat, thin, irregularly but distinctly radiate, without free mycelium, margin erose, 1 to 3 mm., sometimes larger, in diameter, amphigenous but more abundant below. Stroma thick, centrally fastened to the hypostroma. Perithecia about  $460\mu$  high and almost equal diameter, globular, surface smooth or slightly rough, astomous and irregularly cracked, few (3 to 10) to many (100) on one subicle. Asci 90 to 100 x  $11\mu$ , clavate. Paraphyses numerous, filiform, gelatinous. Spores hyaline, 1-septate, enclosed in a gelatinous envelope, 22 x  $55\mu$  exclusive of the gelatinous envelope, thickest in the middle and tapering slightly toward the ends.

On unknown plant of the Celastraceae.

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 357.

Study of this fungus of different ages shows that the hypostroma first develops quite extensively in the palisade and mesophyll, then breaks through the cuticle and grows outward forming a thin, flat, smooth, approximately circular disk of truly radiate, i. e. Microthyriaceous character. The edge of the subicular disk is quite unevenly erose (Figure 10)

<sup>2</sup> Ann. Myc., 13:272. l. c.

but central parts are regularly radiate. At first this disk is devoid of perithecia but they soon develop, one or two, later more as the subicle enlarges. Thus old colonies by both coalescence and enlargement may have well over a hundred perithecia and measure nearly a centimeter in diameter. As the perithecia develop the subicle under them thickens to true stromatic character, 80 to 150 $\mu$  thick. (Figure 14) In large colonies the radiate subicle enlarges to present a margin about a millimeter wide around the colony. In certain old colonies the radiate subicle is not in evidence due to the fact that it flakes off. The central foot is 80 to 90 $\mu$  thick and 150 $\mu$  long and is composed of cells of different shape, arrangement and staining reaction than that of the other cells of the stroma i. e. they are arranged parallel, lengthwise of the axis of the foot, and under Pianese stain are red, while the other stroma cells are irregularly arranged or preponderantly at right angles to the axis of the foot and do not stain as above stated (Figures 7, 11.) The wall surrounding the locules is black, about 36 $\mu$  thick and is lined by a hyaline layer also about 36 $\mu$  thick from which, in the basal portion, the asci arise (Figure 12). Frequently a large stroma is found attached to the hypostroma by several feet (Figure 14). Such may be regarded as composites of several individuals each with a central foot, rather than as one individual with many places of attachment.

The locules, stroma, foot, and hypostroma are typically Dothideaceous in character; the flat radiate subicle is typically Microthyriaceous. Disregarding the radiate subicle the fungus falls readily within the Dothideaceae and the centrally fastened stroma places it as typically of the Coccoideae and in rather close agreement with the genus *Microcyclus*.

Taking cognizance of the radiate, subicle, and attempting to place the fungus in the Microthyriaceae, it shows nearest relationship to the Polystomelleae with no genus of which does it agree. In the Meliolineae one is reminded of *Actinodothis* by the radiation and by the stromata but our fungus differs much from this genus in spores and mycelium.

The fungus thus shows kinship with the three groups and appears to be most closely related to the Dothideaceae in which family I place it. It evidently represents a transition form between the Microthyriaceae and the Dothids. The course of evolution appears to me probably to have been somewhat as follows: A primitive Microthyriaceous fungus with haustoria reaching into the epidermis developed an extensive hypostroma connected with the superficial mycelium at one central point. The habit of forming a radiating disk around the point of central fastening then appeared. So far in its history the fungus was Microthyriaceous. Now begins the evolution of the stroma by thickening of the central region of the radiate disk and the fungus becomes Dothideaceous. As the stroma-habit developed the radiate habit of the Microthyriaceae appears to have regressed as is evidenced by the irregularity of the radiation in the present form and by the

very slight development of the radiate subicle in proportion to the size of the colony. Perhaps its entire suppression resulted in some instances.

LEVEILLELLEAE

LEVEILLINOPSIS Stevens n. gen.

Stromata prosenchymatous, of parallel hyphae, superficial from a hypostroma within the mesophyll, attached by the whole basal portion. Spores 1-celled hyaline.

4 LEVEILLINOPSIS PALMICOLA Stevens n. sp.

[Figures 15, 16]

Stromata usually located in rows on the major or minor veins, amphigenous, adjacent region of the leaf diseased or dead. Spots often 1 to 2 cm. wide, 10 to 15 cm. long and of ashen color. Stromata about 1 mm. high and wide, irregularly shaped. Hypostroma of but slightly greater extent than the stromata, filling the epidermis, palisade cells and much of the mesophyll. Loculi few, large, 234 to 312 x 187 to 234 $\mu$ . Asci 8-spored, 56 to 74 x 10 to 14 $\mu$ , biserate. Spores elliptical, hyaline, obtuse, 14 x 17  $\mu$ , nonseptate, paraphyses filamentous, equal to length of asci or half again as long.

Of unknown species of palm.

British Guiana: Kartabo, July 24, 1922, 674.

This fungus is strictly Dothideaceous in character and clearly belongs to the Leveillelleae as given by Theissen and Sydow. A new genus is established for it since no genus of that group is given with 1-celled spores. The hypostroma is distinctly disease producing and large areas of the involved tissue are killed.

DOTHIDEAE

BAGNISIOPSIS Theiss. and Syd.

Ann. Myc., 13:291, 1915.

5. BAGNISIOPSIS PERIBEBUYENSIS (Speg.) Theiss and Syd.

*Phyllachora peribebuyensis* Speg., F. Guar.

*Phyllachora gibbosa* Winter, Revue Myc., 7:207, 1885;

*Phyllachora sellowii* P. Henn. Engl. bot. Jahrb., 17:525, 1883;

*Phyllachora peribebuyensis* Speg. var. *bullosa* Rehm: Hedw., 36: 358, 1897.

On unknown plant of the Melastomataceae.

British Guiana: Tumatumari, July 12, 1922, 223, 972.

This fungus appears, from the numerous collections and many references in literature, to be very widespread. In Stevens' Porto Rican collections it is represented by many numbers.<sup>3</sup> Notwithstanding these facts

<sup>3</sup> Garman, P. Some Porto Rican Parasitic Fungi. Myc., 7:337, 1915.

ascigerous material is found only once in Stevens' Trinidad or Guiana material, specimen No. 972. Specimen No. 223 has the general appearance of *Bagnisiopsis peribebuyensis* and in section the structure of the stroma agrees with that species. No asci, however, are found in any of the stromata, but instead, numerous cavities bearing filiform conidia are found. Similar conidia are in specimen No. 972. Search through literature has failed to reveal to us any evidences of previous mention of a conidial stage of this fungus. The presence of asci in the same stromata with the conidia is sufficient to establish the identity of this conidial form with *Bagnisiopsis peribebuyensis* and we therefore describe the conidial stage of it as follows:

Stroma as described for *B. peribebuyensis*.<sup>4</sup> Conidial locules 0.05 to 0.15 mm. in diameter. Conidia colorless, crooked, filiform, 21 to 29 x 1 to 1.5 $\mu$ .<sup>5</sup>

AMERODOTHIS Theiss. and Syd.

Ann. Myc., 13; 295, 1915.

6. AMERODOTHIS GUIANENSIS Stevens n. sp.

[Figures 17 to 19, 90.]

Spot irregular, pale, mycelium within the veins and producing loose stromata within the cortex which later become erumpent, superficial portion brown to black and of Dothideoid character. Stromata on the veins solitary or scattered, amphigenous, black, bearing few to several locules. Locules, ostiolate, papillate, 90 to 170 $\mu$  in diameter. Asci 61 to 94 x 7 $\mu$ , clavate, aparaphysate, spores 21 to 65 x 2 $\mu$ , hyaline, filiform, continuous, straight or slightly crooked, with a small knob at each end.

On unknown legume.

British Guiana: Rockstone, July 16, 1922, 424.

The spot is very variable in size and shape consisting of pale to yellow regions between the affected veins, often 2 cm. or more in extent. Recently affected veins are without stromata but are slightly discolored due to the mycelium within, and the adjacent parts of the lamina are pale and sickly. In older portions the stromata are crowded, in younger parts they occur singly. While the erumpent stromata are often clearly Dothideoid, i. e. of palisade cell arrangement and erumpent, this character is not so pronounced as is often the case, indeed at times the cell arrangement is quite irregular. Still it appears to me that the fungus should be placed in the Dothideae where it comes nearest to *Amerodothis* in which genus I place it. Four species are given by Theissen and Sydow all of which are very different from mine in spore dimensions and shape and especially do they disagree with the spores of my species as regards the knobbed ends. Each locule is surrounded by a definite wall and in young

<sup>4</sup> Ann. Myc., 13:292, 1915.

<sup>5</sup> Notes and description by Stevens and Manter.

specimens the stroma is but little developed; the fungus then appears to belong in the Sphaeriaceae. No genus in the Sphaeriaceae presents characters showing affinity with it. The grouping of the stromata near the veins is very characteristic, (Figures 17, 90). Most of them are immediately on the veins, others are in the leaf tissue near the vein. They may be located deep within the tissue or may originate merely subepidermally.

ULEODOTHIS Theiss. and Syd.

Ann. Myc., 13:305, 1915.

7. ULEODOTHIS PASPALI Stevens n. sp.

[Figures 20 to 23.]

Stromata occupying the whole region between the upper and lower epidermis, eventually erumpent, pseudo-parenchymatic. No clypeus on either surface. Perithecia 1 to 30 in a group on a single stroma, epiphyllous. Locules small, 62 to 108 $\mu$  in diameter, round or somewhat flattened, ostiolate, often somewhat rostrate. Asci numerous, 8-spored, linear, 60 to 72 x 7 $\mu$ , inordinate. Paraphyses filiform, equalling the asci in length. Spores 14 to 18 x 3.5 $\mu$ , fusiform, 1-septate, hyaline, guttulate.

On *Paspalum conjugatum*.

British Guiana: Coverden, August 8, 1922, 759.

The stromata are very characteristic, separating this from *Phyllachora* on the stroma character alone, consisting of compact masses of smoky pseudoparenchyma filling the space between the two leaf surfaces. (Figure 20.) On the upper surfaces of these, but subepidermal, develop the locular portions, eventually becoming erumpent and usually very numerous on each stroma. The absence of a clypeus is also distinctive. While the locules sometimes have a lining consisting of one or two rows of cells darker than the remainder of the stroma such a lining is not always present and I regard the fungus in the summation of its characters as Dothideaceous rather than Sphaeriaceous. It does not agree with any of the three species, all South American, given by Theissen and Sydow.

ACHORELLA Theiss. and Syd.

Ann. Myc., 13:340, 1915.

8. ACHORELLA GUIANENSIS Stevens n. sp.

[Figures 24 to 27, 91, 92.]

Stromata scattered over the leaf, numerous, amphigenous. Perithecia spherical, in clusters usually from 3 to 8, black, slightly rough. Locules spherical, 185 to 215 $\mu$  in diameter with no differentiated perithecial wall. Asci 8-spored, inordinate, 65 to 72 x 14 to 18 $\mu$ . Paraphyses numerous, hyaline, filiform, gelatinous, crooked. Spores oblong, 22 to 29 x 5 to 7 $\mu$ , septate, brown, constricted at the septum.

On *Mikania* sp. (?)

British Guiana: Coverden, August 8, 1922, 763 (type);  
Wismar, July 14, 1922, 294; Rockstone, July 16, 1922, 438;  
Kartabo, July 22, 1922, 563.

The general characters of this fungus are Dothideaceous and it agrees well with *Achorella*. The hypostroma is Dothideaceous in character and often the stroma is so too, the perithecia touching each other and fusing (Figure 24), thus the locules with undifferentiated walls appear in a stroma. In other instances spherical perithecia develop upon the stroma, only partially or not at all attached to their neighbors. In such cases the fungus appears to be Sphaeriaceous rather than Dothideaceous and it clearly represents a border-line form between two groups.

## PHYLLACHORACEAE

### SCIRRHINEAE

#### ANISOCHORA Theiss. and Syd.

Ann. Myc., 13:406, 1915.

#### 9. ANISOCHORA TABEBUIAE Stevens n. sp.

[Figures 28 to 31, 94.]

Spot large, 7 cm. or more, portion between veins pale yellow to brown. Stromata on the veins, strongly developed epiphyllous, very slightly hypophyllous, black, 0.7 to 2 mm. wide, of indeterminate length, frequently 7 cm. or more, rarely spreading over the leaf surface as a flat crust. Stromata developing as a thick (about 200 to 450 $\mu$ ) cushion of vertical, parallel (palisade-like) hyphae between the epidermis and the palisade tissue, covered by a black, epidermal clypeus. Phloem browned, due to mycelial invasion. Locules few, 1 to 4 in cross section of a stroma, subglobose, 275 to 460 $\mu$  broad, about 310 $\mu$  deep, ostiolate. Asci 8-spored, uniseriate or inordinate, 90 x 10 to 11 $\mu$ . Spores 11 to 13 x 5.5 to 7 $\mu$ , hyaline, unequally 1-septate, lower cell very small. Paraphyses few.

On *Tabebuia* sp.

Trinidad: St. Augustine, August 13, 1922, 847.

The stromata upon the veins form a very distinctive feature (Figure 94) and from their nature indicate the migration of the fungus through the veins which is also substantiated by the evidence of phloem infection found in cross sections. In some instances there are breaks, sometimes a centimeter long, in a stroma, though there are evidences in the color of the vein that it is diseased in the non-stromatic portion. The palisade stroma is nearly colorless and consists of very thin walled cells of remarkable thickness (about 18 $\mu$ ), (Figures 28 to 30). On the hypophyllous side of a vein there is a slight development of palisade stroma similar to that on the upper

side, but much less extensive and with but scant clypeus. Irregular locules occasionally develop bearing no asci, but numerous filamentous bodies, Septoria-like, which appear to be conidia. Only one species of *Anisochora* is given by Theissen and Sydow and that on *Ficus*. My species differs essentially from that and is on a very different host family.

SCOLECODOTHOPSIS Stevens n. gen.

Stromata in the leaf mesophyll, without clypeus, not prosenchymatic. Perithecia dothideaceous, isolated, deeply immersed and remaining so, opening by an ostiole to the surface. Ascospores filiform.

10. SCOLECODOTHOPSIS INGAE Stevens n. sp.

[Figures 32 to 34, 95.]

Spots large 1 to 3 cm. in diameter, roughly circular, yellow or tan-colored, border indefinite, shading into the normal leaf; occupied by numerous black regions, 1 to 2 mm. in diameter, appearing black from both sides of the leaf. Stromata in the mesophyll, dense, hyaline. Locules 1 to several in each stroma, about  $300\mu$  broad and  $100\mu$  deep. Ostiole protruding by a slight, dark papilla, often lateral or oblique. Asci 8-spored,  $94 \times 10\mu$ . Spores long, filiform, 18 to  $60 \times 3\mu$ , straight or slightly curved, often slightly thicker near the middle, several-septate.

On *Inga* sp.

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 406 (type); Tumatumari, July 8, 1922, 58; Kartabo, July 21, 1922, 510.

The contents of the cells of the upper epidermis in the region of the stromata are blackened and similar blackening appears between the palisade cells, though without any extensive development of mycelium in this region. On the lower surface however the epidermis and adjacent region are packed with a dense mycelial development. The taxonomic position of this fungus is uncertain. The large stromatic development in the mesophyll with the separate locules appear to warrant its inclusion in the Dothideales and the absence of a clypeus and of a palisade hyphal arrangement would place it here in the Eu-Montagnelleae of Theissen and Sydow. This group is on the boundary line between the Dothids and the Sphaeriaceae and distinction between these groups is difficult.

In the Eu-Montagnelleae the only genus given with filamentous spores in Ophiocarpella. Indeed filamentous spores either in the Dothids or in the Sphaeriales are rare. Comparison with the specimens of *O. tarda*,<sup>6</sup> as well as with the description, show the fungus to be generically quite different. Taking into consideration all of the characters, the fungus appears to me to be best placed in the Eu-Montagnelleae as a new genus.

<sup>6</sup> Ellis and Everhart, North American Fungi, no. 1585.

## PHYLLACHORINEAE

## PHYLLACHORA Nits.

In Fuckel Symb. Myc., 216, 1869.

## 11. PHYLLACHORA AEGIPHILAE Stevens, n. sp.

[Figure 35.]

Spots minute, 1 to 2 mm., consisting of a pale halo around the usually solitary stroma. Stromata punctiform, rough and black above; appearing only as raised places below, less than 1 mm. in diameter. Clypeus epiphyllous, epidermal. Stroma occupying the whole of the mesophyll with a dense pseudo-parenchyma. Locules few, usually 1 to 4, 180 to 216 $\mu$  in diameter by 180 $\mu$  deep. Asci 8-spored, 14 x 7.5 $\mu$ ; paraphyses filiform; spores fusiform, hyaline, continuous, 17 to 25 x 4.5 to 5.5 $\mu$ .

On *Aegiphila* sp.

British Guiana: Rockstone, July 17, 1922, 458.

Five species of *Phyllachora* are given by Theissen and Sydow as on members of the Verbenaceae but all disagree essentially with the one described above. The characteristic features are the epiphyllous, epidermal clypeus and the absence of a hypophyllous one. The ostiole develops through the clypeus i.e. on the upper surface.

## 12. PHYLLACHORA CHAETOCHLOAE Stevens n. sp.

[Figures 36 to 38, 97.]

Stromata black, shining, conspicuous from above, rarely visible below. Arranged in longitudinal groups from 3 to 12 cm. long. Single stromata small, punctiform but by coalescence often 1 x 10 mm. in size. Locules numerous, globular (about 125 $\mu$  in diameter) or flattened (310 $\mu$  in diameter, 110 $\mu$  thick), ostiolate, occupying the palisade region and upper portion of the mesophyll. Clypeus on the upper surface thick (45 to 60 $\mu$ ), epidermal. Asci 108 x 14 $\mu$ , spores inordinate, oblong, continuous, hyaline, 7 x 14 to 18 $\mu$ . Conidia are very commonly produced in young portions of the ascigerous stroma, in ostiolate, clypeate, locules like those bearing asci. Conidia cylindrical, hyaline, obtuse, straight or slightly crooked, guttulate, continuous or 1-septate, 12.5 to 23 x 2 to 3.6 $\mu$ . Filiform conidia produced as are the cylindrical. Conidia 22 to 29 x 1 $\mu$ , hyaline, usually flexuose, sometimes straight, usually slightly larger at one end than at the other.

On *Chaetochloa tenax*.<sup>7</sup>

Trinidad: Cumuto, August 15, 1922, 882.

No *Phyllachora* is given as on *Chaetochloa* by Theissen and Sydow; two are given as on *Setaria* both of which agree reasonably well in spore shape and size with our species, but disagree essentially with them in stroma characters and conidial forms.

<sup>7</sup> Determined by Mrs. Agnes Chase.

13. *PHYLLACHORA CONGRUENS* Rehm.

Leaflets Phillip, Bot., 6:2220, 1914.

On *Valota laxa*.

Trinidad: Cumuto, August 16, 1922, 894.

14. *PHYLLACHORA DIMORPHANDRAE* Stevens n. sp.

[Figures 39 to 41, 96]

Stromata black, shining above, dull below, very irregular in shape, 2 to 15 mm. across, arched above, the whole mesophyll occupied by a loose stroma; clypeus on each surface. Clypeus 18 to 36  $\mu$  thick, epidermal and subepidermal. Locules 30 per stroma, in one row, when young near the upper leaf surface, but developing to fill the leaf space and opening hypophyllous; very large and irregular, 390 to 520 x 179 to 310 $\mu$ . Asci 8-spored, 115 x 7 $\mu$ , long-stalked. Paraphyses filamentous, gelatinous. Spores uniseriate, hyaline, continuous, oblong, obtuse, 7 to 11 x 5 $\mu$ .

On *Dimorphandra* sp.

British Guiana: Wismar, July 14, 1922, 291; Demerara-Essequibo R.

R., July 15, 1922, 333 (type); Kartabo, July 22, 1922, 629.

More than fifty species of *Phyllachora* are listed by Theissen and Sydow on the Leguminosae but all of these differ from this species in one or more essential characters.

The mycelium between the two clypei is very fine, hyaline and loosely pervades the whole mesophyll region, somewhat darkening the host cells. Each locule is lined by a layer of mycelium about 10 $\mu$  thick thus constituting a very thin but no less actual perithecial wall (Figure 40). Notwithstanding this the fungus is truly Dothideaceous in summation of characters. The origin of the locules close to the upper part of the leaf seems constant. As they enlarge they soon come to press against the epiphylous clypeus and as they mature they develop a beak-like protuberance which presses through the mesophyll to the lower clypeus; breaks through this and becomes osteolar.

15. *PHYLLACHORA ENGLERI* Speg.

Guaranit. I. No. 267 On *Anthurium* sp.

British Guiana: Coverden, August 5, 1922.

This remarkably beautiful specimen agrees closely with the published descriptions.

16. *PHYLLACHORA GUIANENSIS* Stevens n. sp.

Stromata oval, small, about 1 mm. long, scattered, black, shining, surrounded by a zone of dead brown tissue forming an oval spot 2 to 4 mm. in size. Much more commonly conspicuous above than below. Loculi globular, few in each stroma, usually not more than six, located strictly in

the mesophyll, 125 to 170 $\mu$  in diameter. Clypeus on both leaf surfaces but much more extensive above, about 18 $\mu$  thick. Stroma of the mesophyll region of a loose network of mycelium. Asci cylindrical with filiform paraphyses. Spores uniseriate, hyaline, continuous, elliptical, 11 x 3.6 $\mu$ .

On *Paspalum virgatum*.

British Guiana: Tumatumari, July 9, 1922, 32; July 10, 1922, 142; Georgetown, Lamada canal, August 2, 1922, 712; Coverden, August 4, 1922, 730.

This Phyllachora is distinguished from *P. paspalicola* both by its thin spore and by the character of its spot.

#### 17. PHYLLACHORA PASPALICOLA P. Henn.

Hedw., 48:106, 1908.

On *Paspalum arenarum*.

British Guiana: Rockstone, July 16, 1922, 430.

On *Paspalum conjugatum*.

British Guiana: Rockstone, July 16, 1922, 419.

The stromata in specimen No. 419 are chiefly on the laminae.

Four species of Phyllachora are given by Theissen and Sydow as occurring on *Paspalum* viz, *P. acuminata* Starb., *P. infuscans* Wint., *P. paspalicola* P. Henn. and *P. winkleri* Syd. All but the last of these were collected in South America.

Specimen No. 430 agrees closely with *P. paspalicola* and differs markedly from each of the others. The stromata occur chiefly on the leaf sheaths, not on the blades.

#### 18. PHYLLACHORA PHASEOLI (P. Henn.) Theiss. and Syd.

Ann. Myc., 13:507, 1915.

*Physalospora phaseoli* P. Henn. Hedw., 43:368, 1904.

*Physalospora atroquinans* Rehm Hedw., 44:5, 1904.

*Hyponectria phaseoli* Stev. Bot. Gaz., 70:401, 1920.

On unknown Legume.

British Guiana: Kartabo, July 21, 1922, 517.

#### 19. PHYLLACHORA TABERNAEMONTANAE Stevens n. sp.

[Figures, 42, 43, 98.]

Stromata dull black, equally visible above and below, irregular in outline, large, 4 to 10mm., bearing numerous locules apparent externally from both above and below as small mounds, occupying the mesophyll with a loose, black, net work covered above and below by clypei which extend slightly beyond the stroma of the mesophyll. Locules flat, broad, 290 to 340 $\mu$ , 90 to 110 $\mu$  deep; wall about 70 to 80 $\mu$  thick, black. Asci 8-spored, 90

to  $97 \times 18\mu$ ; spores inordinate. Paraphyses numerous, filiform, gelatinous. Spores continuous, hyaline,  $11.14 \times 7\mu$ , elliptical, obtuse.

On *Tabernaemontana* sp.

British Guiana: Kartabo, July 22, 1922, 564.

20. *PHYLLACHORA TILIAE* Stevens n. sp.

[Figures 44 to 46.]

Spot irregularly circular, 2 to 10 mm. in diameter, tan-colored, bearing numerous, usually 10 to 20, stromata. Stromata epiphyllous, punctiform, circular, black, shining, 1 mm. in diameter, often coalescing, usually with a minute central papilla. Appearing below merely as swollen spots. Stromata usually unilocular, in the mesophyll, with thick clypeus above and below. Asci 8-spored, 70 to  $83 \times 7$  to  $10\mu$ . Paraphyses numerous, gelatinous. Spores 11 to  $14 \times 4\mu$ , hyaline; continuous, oblong.

On unknown species of the Tiliaceae.

British Guiana: Tumatumari, July 12, 1922, 227.

This differs from *P. paraguaza* Speg. in having more narrow spores; from *P. clypeata* Theiss. in the character of the clypeus; from *P. grewiae* in both spores and clypeus.

21. *PHYLLACHORA ULEI* Wint.

Grev., 15:90, 1886.

On *Dioscorea* sp.

British Guiana: Coverden, August 5, 1922, 746, and August 8, 1922, 801; Rockstone, July 17, 1922, 545.

The last number is on a species of *Dioscorea* different from that of the others and the locules are larger and fewer in number.

22. *PHYLLACHORA WISMARENSIS* Stevens, n. sp.

[Figures 47 to 50, 99.]

Stromata 1 to 3 mm. in diameter, circular or irregular, black, dull, raised, chiefly hypophyllous but occasionally showing from both sides of the leaf, locules usually 1 to 6 showing externally as slightly raised points; occupying the mesophyll and epidermis. Locules  $300\mu$  or more in diameter. Asci 126 to  $170 \times 11$  to  $14\mu$ . Spores 32 to  $36 \times 7$  to  $8\mu$ , hyaline, continuous, larger at one end, obtuse, tapering toward small end. Paraphyses numerous, filiform. Conidia filiform, continuous, hyaline, curved,  $14$  to  $23 \times 1\mu$ , occurring singly on conidiophores within the locules.

On *Ficus* sp.

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 397 (type) and 334.

Eight species of *Phyllachora* are recorded on *Ficus* by Theissen and Sydow. From *P. catervaria* (Berk.) Sacc. ours differs in size and location of stromata also essentially in shape and size of spores; from *P. pseudos* Rehm. in shape and size of spores; from *P. effigurata* Syd., a Brazilian

species, in the arrangement of the stromata and shape and size of spores; from *P. vinosa* Speg. from Brazil, in shape and size of spores; from *P. ficicola* All. and Henn. also Brazilian, in stroma characters and in spore shape and size; from *P. aspideoides* Sacc. and Berl. from Brazil, in stroma and spore size and shape; from *P. amaniensis* P. Henn. in spore size and shape; from *P. devriesei* Koord in stroma and spore size and shape.

The stromata are scattered over the leaf but are more common near veins though not on veins. The stromatic development is large resulting in much thickening in the occupied part such that a leaf normally  $230\mu$  thick is often  $700\mu$ . (Figure 47) The clypeus covering the loculi is often  $80\mu$  thick.

The conidial stage falls in the Sphaerioidaceae-Scolecosporea. Spores borne in the stromatic locules, and apparently singly on the conidiophores would bring it close to Septosporiella. However, spores of Septosporiella are colored.

The following six Phyllachoras are given by number only, with descriptions, because the host is unknown. It is quite probable that all are new species but in the absence of knowledge as to the identity of the host it is thought best to publish them thus without names.

### 23. PHYLLACHORA No. 1.

[Figure 51.]

Spot 3 to 8 mm. in diameter, yellow. Stromata 1 to 2 mm. in diameter, black from both leaf surfaces, surrounded by a pale zone about 3mm. wide, with a clypeus above and below. Locules 90 to  $320\mu$  wide, 90 to  $180\mu$  deep, ostiolate, uniseriate, Asci 8-spored,  $90 \times 7$  to  $9\mu$ . Paraphyses filiform, hyaline. Spores hyaline, continuous,  $11 \times 7\mu$ , oblong, obtuse.

On unknown host.

British Guiana: Tumatumari, July 10, 1922, 149; July 9, 1922, 41.  
The host is possibly Anonaceous, if so the species is new.

### 24. PHYLLACHORA No. 2.

[Figures 52 to 54, 100, 102.]

Stromata epiphyllous, very numerous, punctiform, black, about 1mm. in diameter, uniloculate, rarely biloculate, scattered evenly over large areas, in the epidermis and palisade region and extending about half way into the mesophyll. Clypeus epiphyllous. Locules 185 to  $380\mu$  wide, ostiolate. Paraphyses filamentous, gelatinous, crooked. Asci 8-spored,  $88 \times 11$  to  $14\mu$ , spores inordinate. Spores continuous, hyaline, oblong, obtuse,  $7$  to  $9 \times 12$  to  $18\mu$ . Pycnidial cavities similar to the perithecial; conidia filiform on linear conidiophores.

On unknown host.

British Guiana: Tumatumari, July 9, 1922, 89.

## 25. PHYLLACHORA No. 3.

Spot none, stromata small, punctiform, 1 to  $1.5\mu$  in diameter, black, shining, visible from both sides of the leaf, both surfaces arched, with few locules, usually 1 to 4. Clypei on both surfaces very thick and black, epidermal and sub-epidermal. Locules 230 to  $277\mu$  in diameter or by coalescence  $550\mu$ . Asci 8-spored, long, narrow,  $80 \times 5.5\mu$ , paraphyses hyaline, filiform, crooked, gelatinous; spores uniseriate or inordinate, 11 to  $12.5 \times 4$  to  $5\mu$ , continuous, hyaline, oblong.

On unknown dicotyledonous host.

British Guiana: Coverden, August 4, 1922, 981.

Associated with *Kusanoopsis* Stevens and Weedon.<sup>8</sup>

## 26. PHYLLACHORA No. 4.

[Figure 101.]

Spot pale, circular, constituting a zone 1 to 2 mm. wide around each stroma. Stromata punctiform, about 1 to 3 mm. in diameter, black, visible from both sides of the leaf, uniloculate. Clypeus epidermal, 30 to  $46\mu$  thick on both leaf surfaces. Locules about  $300\mu$  wide, 154 to  $185\mu$  deep. Asci long, narrow, 68 to  $7\mu$ . Paraphyses filiform, few. Spores uniseriate, hyaline, continuous, ovate, 9 to  $11 \times 7\mu$ .

On unknown dicotyledonous plant.

British Guiana: Wismar, July 14, 1922, 276.: Kartabo, July 23, 1922, 618.

## 27. PHYLLACHORA No. 5.

[Figure 55.]

Spot small, 5 to 8 mm., yellowish. Stromata scattered, visible from both sides of the leaf, usually unilocular, rarely bilocular, clypeus above and below and frequently extending into the mesophyll to surround the locule; about  $30\mu$  thick, dense, black. Locules globular,  $180 \times 108\mu$ . Asci 8-spored, long, narrow. Paraphyses filiform, numerous. Spores continuous hyaline, oval to elliptical,  $11 \times 7$  to  $8\mu$ .

On unknown Legume.

British Guiana: Coverden, August 8, 1922, 780: Tumatumari, July 8, 1922, 47: and July 10, 1922, 138.

The clypeus develops first in the upper and lower epidermis, black and dense, then often extends into the mesophyll completely surrounding the locule by a black stroma quite like the clypeus, both in thickness and character, (Figure 55).

The fungus is clearly a *Phyllachora* and the only feature of special interest is the manner in which the locule is enveloped.

<sup>8</sup> Stevens, F. L. and Weedon, A. G. Three new microthyriaceous fungi from South America. *Mycologia*, 15:197, 1923.

## 28. PHYLLACHORA No. 6.

[Figure 103.]

Spot pale yellow extending in a 2 to 3 mm. zone around the stromata. Stromata dull black, visible from both surfaces, 1 to 2 mm. in diameter, flat. Stromata occupying the whole of the mesophyll. Upper and lower clypeus epidermal, extending somewhat beyond the stroma of the mesophyll. Locules few, small,  $150\mu$  in diameter, each with a lining wall about  $15\mu$  thick, of character quite distinct from that of the stroma. Asci 8-spored, 60 to  $65 \times 7$  to  $11\mu$ . Paraphyses filiform. Spores oval, hyaline, obtuse,  $18 \times 5\mu$ , inordinate.

On unknown host.

British Guiana: Tumatumari, July 10, 1922, 139.

ENDODOTHELLA Theiss. and Syd.

Ann. Myc., 13:582, 1915.

## 29. ENDODOTHELLA ANACARDIACEARUM Stevens n. sp.

[Figure 56.]

Stromata scattered between the veins, 1 to 2 mm. in diameter, black below, brown above, causing hypertrophy of the leaf, doubling its thickness, consisting of a rather close pseudoparenchyma occupying the mesophyll throughout its thickness and with thin clypei above and below extending slightly beyond the stroma. Locules many, irregularly placed, subglobose, 50 to  $215\mu$  broad, 140 to  $300\mu$  deep. Asci 8-spored, 83 to  $90 \times 7\mu$ . Paraphyses filiform, crooked, gelatinous. Spores 1-septate, 11 to  $14 \times 3.6\mu$ .

On unknown species of the Anacardiaceae.

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 353: Tumatumari, July 8, 1922, 973.

The stromata develop very irregularly, deforming all tissues and producing the greatest hypertrophy below. (Figure 56).

## 30. ENDODOTHELLA TAPIRAE Stevens n. sp.

[Figures 57 to 59]

Stromata scattered, circular, about 1 mm. in diameter, showing black from one or both leaf surfaces; surrounded by a pale zone about 1 mm. in width. Stromata often raised to double the thickness of the leaf; located in the mesophyll, consisting of a rather compact, black, pseudoparenchyma with clypei on one or both surfaces; paraphyses many, filiform. Asci long, narrow,  $83 \times 7\mu$ , 8-spored. Spores  $11 \times 3.5\mu$ , ovate, 2-celled.

On *Tapira* sp.

British Guiana: Kartabo, July 22, 1922, 525. Specimen in packet filed under *Myriangnella tapirae* Stevens & Weedon.

The fungus is a typical *Phyllachora* except that the spores are two-celled. The stromata are quite uniform in size and in all sections studied showed either three locules on one side of a leaf, (Figure 57) or 3 on each

side (Figure 58). The spot surrounding the stroma is also uniform and since no mycelium could be found outside of the stroma it is probably due to chemical rather than mycelial invasion. The specimens bear also a *Myriangiella*.

## MONTAGNELLACEAE

### EU-MONTAGNELLEAE

#### HAPLOTHECIUM Theiss. and Syd.

Ann. Myc., 13:614, 1915.

#### 31. HAPLOTHECIUM GUIANENSE Stevens n. sp.

[Figures 60 to 62, 104.]

Stromata 1 to 2 mm. in diameter showing from above and below, black, subcircular, surrounded by a very narrow (0.5 mm.) brown line, this by a zone 1 to 2 mm. wide that is pink to rose which gradually shades off into healthy tissue. Stroma occupying the whole mesophyll, consisting of a very loosely woven mycelial network with a black clypeus in both upper and lower epidermis. Locules globular to pyriform, ostiolate, in two rows opening through the upper and lower epidermis, 170 to 260 $\mu$ . in diameter. Asci 8-spored, 100 x 18 $\mu$ , uniseriate or inordinate. Paraphyses filiform, gelatinous. Spores oval, 12 x 7 $\mu$ , hyaline, continuous.

On unknown lactiferous dicotyledonous leaf (*Simarubaceae?*).

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 376.

The stroma in the mesophyll consists only of a very loose hyphal network mainly occupying the intercellular spaces. In the palisade region the mycelium presses between the cells and kills them but no compact stroma develops. The epidermal cells, however, are compactly filled with mycelium thus forming a clypeus.

The loose hyphal character of the stroma clearly shows relationship to the Montagnelleae in which the fungus would fall in the section *Eumontagnellaceae* and in the genus *Haplothecium* Th. and Syd. where it would certainly be placed were it not for the presence of an epidermal clypeus. This clypeus would indicate that it should be placed in the *Phyllachoraceae* where it could only fall in the genus *Phyllachora*. Since the fungus all in all agrees more closely with *Haplothecium* than *Phyllachora* I place it as above indicated.

## HEMISPHAERIACEAE

### Gymnopeltineae Stevens and Guba mss.<sup>9</sup>

#### GYMNOPELTIS Stevens n. gen.

Ascoma like the *Thrausmatopeltineae* but red and with asci solitary, scattered: spores unequally 2-celled, hyaline.

<sup>9</sup> Publications of the Bishop Museum, *in press*.

## 32. GYMNOPELTIS TRINIDADENSIS Stevens n. sp.

[Figures 63 to 65.]

No free mycelium. Ascomata superficial, scattered, punctiform, red, 380 to 460 $\mu$  in diameter, thin, flat. Asci solitary, scattered, naked, subglobular, 8-spored, 22 to 25 x 18 $\mu$ , stipitate. Spores hyaline, unequally 2-celled, 11 x 3.5 $\mu$ , large at one end tapering to the other end, obtuse.

On *Mauritia*.

Trinidad: Cumuto, August 16, 1922, 979.

This fungus in its flat, non-radiate ascoma shows closest kin-ship to the Thrausmatopeltineae from which it is separated by the scattered, naked asci, a combination of characters that led Stevens and Guba to erect the group Gymnopeltineae to which the present fungus clearly belongs, though it differs in many ways from the genus, *Hexagonella*, the only other known member.

## PERISPORIACEAE

Key to genera involved.

Perithecium and mycelium superficial, mycelium without hyphopodia.

Setae present.

Perithecial setae simple

Spores hyaline ..... *Dimeriella* p. 26

Spores brown.....

2-celled.....

Aparaphysate..... *Phaeodimeriella* p. 27Paraphysate..... *Meliolinopsis* p. 274 to 6-celled..... *Hyalomeliolina* p. 27Perithecial setae forked..... *Oplothecium* p. 28

Setae absent or atypical

Perithecium setose ..... *Haraea* p. 29

Perithecium smooth, spores brown, 2-celled

Perithecium red..... *Parodiopsis* p. 29Perithecium black..... *Dimerium* p. 31Perithecium yellow..... *Mycophaga* p. 31Perisporiaceae imperfecti..... *Pycnodothis* p. 32

## DIMERIELLA Speg.

Fung. aliquot Paulistani p. 12 in Revista del Museo de La Plata 15: 1908.

## 33. DIMERIELLA ERIGERONICOLA Stevens.

Ill. Acad. Science 10:166 to 167, 1917.

On *Erigeron bonariensis*.

British Guiana: Tumatumari, July 11, 1922, 204.

This fungus agrees with *Dimeriella erigeronicola* found by Stevens in Porto Rico.

## 33a. DIMERIELLA CORDIAE (P. Henn.) Theiss.

Zur Revision der Gattung Dimerosporium, in Bot. Cent. Beihefte 29:67. 1912.

*Dimerosporium cordiae* P. Henn. Fungi. S. Paulenses IV. in Hedw., 48:4, 1908.

On *Cordia* sp.

Trinidad; Port of Spain, Aug. 14, 1922, 863: St. Augustine, Aug. 13, 1922, 824: St. Clair, Aug. 15, 1922, 892.

## PHAEODIMERIELLA Speg.

Fungi aliquot Paulistani.

## 34. PHAEODIMERIELLA ASTERINARUM (Speg.) Theiss.

*Dimerosporium asterinarum* Speg. F. Puigg., n. 216.

On unknown species of the Microthyriaceae, on unknown member of the Anonaceae.

British Guiana: Rockstone, July 16, 1922, 421.

## MELIOLINOPSIS Stevens n. gen.

Perisporiaceous, like *Meliolina* except that the spores are 1-septate.

## 35. MELIOLINOPSIS PALMICOLA Stevens n. sp.

[Figures. 66, 67.]

Mycelium amphigenous, superficial, aggregated in dense clumps around the perithecia and spreading in a loose network over the surrounding leaf surface; black in mass; single strands pale yellow by transmitted light, slightly crooked, non-hypophodiate. Perithecia in groups in the centers of the colonies, smooth, globose, non-ostiolate, about  $275\mu$  in diameter. Setae simple, black, crooked, almost uncinata, obtuse, very numerous around the perithecium, thicker and darker than the mycelium, 200 to  $300\mu$  long,  $4\mu$  thick. Asci not evanescent, usually 4-spored, surrounded by very numerous gelatinous, hyaline, filiform paraphyses which are crooked and longer than the asci. Spores dark brown, 2-celled, obtuse, strongly constricted, surrounded by a thin hyaline, gelatinous sheath,  $40$  to  $65 \times 20$  to  $25\mu$ .

On *Bactris* sp.

Trinidad: Cumuto, August 16, 1922, 1000.

This species agrees with *Meliolina* except for its 1-septate spores and for the very numerous gelatinous paraphyses. The spores in shape strongly resemble those of *Meliolina guaianensis* and these two forms together constitute interesting links connecting this one-septate *Meliolinopsis* with the genus *Meliola*.

## HYALOMELIOLINA Stevens n. gen.

Persporiaceous, perithecial setae long, simple, mycelium-like; asci persistent; spores 3 to 5-septate, brown, end cells pale to hyaline.

36. *HYALOMELIOLINA GUIANENSIS* Stevens n. sp.

[Figures 68 to 70, 105, 107.]

Colonies superficial, black, circular, 2 to 4 mm. in diameter, amphigenous but mostly hypophyllous. Mycelium black, smooth, non-hyphopodiate, uniform in diameter,  $4\mu$ , slightly crooked, very sparsely, branched. Perithecia few to many in each colony, buried in the mycelial tangle, globose, black, 180 to  $216\mu$  in diameter, slightly rough: bearing many black, simple setae, often over  $1000\mu$  long, mycelium-like. Paraphyses numerous, filiform, gelatinous. Asci persistent,  $94$  to  $115 \times 22$  to  $25\mu$ , 6 to 8-spored. Spores inordinate, dark, elliptical-fusiform,  $32$  to  $43 \times 9$  to  $11\mu$ , unequally 3-septate (sometimes 5-septate), strongly constricted at the central septum. Two end cells very small and much lighter in color than the others. Two-celled when young.

On *Licania* (?).

 British Guiana: Rockstone, July 17, 1922, 454 (type); Kartabo, July 24, 1922, 665.

 The mycelium forms a densely woolly colony and its filaments show a tendency to twist together in a ropy fashion that is quite characteristic. (Figure 69, 106). The spores with the strong constriction at the middle and with the two end cells small and pale are quite distinctive. In general appearance the fungus shows relationship with the genus *Meliolina*; in the abundant, black superficial mycelium without hyphopodia, and in the possession of setae. It differs from members of that genus in that its spores are not like typical *Meliola* spores but have the terminal cells pale to hyaline.

OPLOTHECIUM Syd.

Ann. Myc., 21: 97, 1923.

37. *OPLOTHECIUM PALMAE* Stevens n. sp.

Fungus superficial, hypophyllous. Perithecia globular, sometimes turbinate, about 50 to  $60\mu$  in diameter. Perithecial setae 1-11 per perithecium, short, about  $11\mu$  long, ending with 3-4 spikes each about  $8\mu$  long. Asci many with numerous filiform, hyaline paraphyses, about  $18 \times 3.6\mu$ , containing 16 hyaline, single-celled, ovate spores. Mycelium very fine, forming a tangled net-work.

On Palm.

British Guiana: Tumatumari, July 11, 1922, 134.

This exceedingly interesting fungus appears to agree closely with the descriptions and figures of Sydow drawn from material collected in the Philippine Islands with the exceptions that no mycelial setae are observed on our specimens while described as copious on Sydow's specimen. The perithecial setae on our material are somewhat shorter,  $11\mu$  as against 10 to  $18\mu$ , and their branches are also shorter,  $8\mu$  as against 10 to  $18\mu$ . Sydow

states that the fungus is questionably capnodiaceous; it appears, however, to me to be perisporiaceus, and I so place it.

HARAEA Sacc and Syd.

Ann. Myc., 11:312, 1913.

38. HARAEA MAURITIAE Stevens n. sp.

[Figures 71-76]

Mycelium superficial, smooth, brown,  $3.5\mu$  thick, freely anastomosing, bearing pseudohyphopodia either axillary to the branches or laterally. Perithecia globose, densely setose, astomate, 123 to  $154\mu$  in diameter. Perithecial setae 54 to  $154\mu$  long, obtuse, tapering,  $7\mu$  thick at the base,  $3\mu$  at apex. Asci 92 to  $123\mu$ , ovate, stipitate. Spores 50 to  $61 \times 10$  to  $11\mu$ , hyaline and 1-septate when young, constricted and readily separating, cylindrical, straight or slightly curved, ends rounded, usually slightly unequally divided, 3-septate and brown when mature.

On *Mauritia* sp.

Trinidad: Guanapo, August 16, 1922, 908.

The pseudohyphopodia are peculiar consisting of a stalk cell either short (to sessile) or long ( $10-25\mu$ ) and a head usually about  $27 \times 14\mu$  consisting of a tangle of cells (Figure 76). The function of these is unknown.

PARODIOPSIS Maub.

Bul. Soc. Myc. de France, 31:3, 1915.

This genus was established on the species *Parodiella melioloides* Wint. because this species possesses an abundant superficial mycelium which properly is not found in *Parodiella*. The genus is regarded by Theissen and Sydow<sup>10</sup> (1917) as belonging to the Perisporiaceae. Arnaud<sup>11</sup> places the genus in his tribe Parodiopsideae in his family Parodiellinaceae and unites with *Parodiopsis* the following genera: *Chrysomyces* Theiss and Syd., *Schistodes* Theiss., *Hypoplegma* Theiss and Syd. *Perisporiopsis* P. Henn. and *Piline* Theiss. Theissen and Sydow regard only one species of the genus as tenable while Arnaud recognizes five species as well established and six others tentatively so. Three of the tentative species of Arnaud have been placed by the other mycologists in other genera viz *Chrysomyces*, *Perisporiopsis* and *Piline*. In the following species determinations the conceptions of Arnaud as to the specific characters and limitations are followed.

39. PARODIOPSIS MELIOLOIDES (Wint.) Arn.

On *Alchornea cordata*.

British Guiana: Tumatumari, July 10, 1922, 153; July 8, 1922, 63.

This specimen agrees perfectly with the original description but the perithecia are not found in concentric rows as is so common on many other hosts.

<sup>10</sup> Theissen and Sydow l. c.

<sup>11</sup> Arnaud, G., Les Asterinées. T. 2. Ann. des Epiphyties, 7: 1921.

On unknown host.

British Guiana: Demerara-Essiquibo R. R., July 15, 1922, 331.

The material of this collection is scant but generic agreement seems certain. The asci measure  $126 \times 43\mu$ , spores  $32$  to  $36 \times 14$  to  $15\mu$ . The spores when mature are dark. Though the spores measure somewhat less than as given in the description this collection is provisionally referred to *P. melioloides*.

40. PARODIOPSIS VIRIDESCENS (Rehm) Arn.

Notes Myc., p. 23, 1915.

On *Banisteria ciliata*.

British Guiana: Coverden, July 8, 1922, 772.

Two species of *Parodiopsis* are listed by Arnaud as on Malpighiaceae. Our specimen agrees most nearly with the above named species, which was made the type of a new genus, *Hypoplegma*, by Theissen and Sydow, which however is rejected by Arnaud. The type of the species is on an undetermined species of the Malpighiaceae collected in Brazil (Ule No. 1378) with spore measurements given by the author as  $35$  to  $40 \times 10$  to  $11\mu$ , by Theissen and Sydow as  $45-55 \times 10-12\mu$ . The spores of our specimen measure  $32$  to  $36 \times 11\mu$ .

41. PARODIOPSIS INGARUM (P. Henn.) Arn.

Les Asterinees Ann. d. l' ecole nat. d. Agr., Montpellier, 1918.

*Parodiella viridescens* Rehm. var. *ingarum* P. Henn.

On *Inga* sp.

British Guiana: Coverden, August 8, 1922, 782, 802.

Our specimens agree well with the descriptions, especially so as to the color of the perithecia and the shape and size of the spores. The species of the *Inga* has not been determined but it is an unusual one with leaflets long and narrow, usually about  $80 \times 13$  mm.

Arnaud mentions the presence of numerous setae resembling in their tips geniculate conidiophores though no conidia were found. My specimen shows numerous, erect hyphae also resembling geniculate conidiophores. A *Heliminthosporium* parasitic on the *Parodiopsis* is also present and is described elsewhere.

Examination of the microtome sections shows tissue to considerable depth under parts of the colonies to be heavily occupied and killed by internal mycelium.

42. PARODIOPSIS sp. ind.

On Apocynaceae (?).

Trinidad: Guanapo, August 16, 1922, 976.

The specimens are clearly of *Parodiopsis* aspect and bear the perithecia in concentric rows but no asci could be found. Large dead spots are produced in the leaf.

## DIMERIUM Sacc. and Syd.

Syll. Fung., 16:410, 190.

## 43. DIMERIUM GUIANENSE Stevens n. sp.

[Figures 77, 107]

Spot irregular in shape showing from both sides of the leaf, to several millimeters in diameter, dead, brown or ashen as seen from above. Superficial mycelium pale straw colored, non-hyphopodiate, non-setose, hypophyllous, abundant. Colonies yellow when young black when old. Perithecia superficial, globular, black, 105 to 185 $\mu$  in diameter, smooth, surface cells agglutinated.

Asci 4-spored, clavate, hyaline, thick walled, 120 x 36 $\mu$ , evanescent, several in each perithecium, imbedded in a matrix composed of tangled, gelatinous, crooked, filiform paraphyses. Spores yellow to dark brown, long pyriform to elliptical, usually tapering toward one end, 1 to 2 septate, 36 to 50 x 14 to 18 $\mu$ , often truncate at one end.

On unknown rosaceous host.

British Guiana: Kartabo, July 24, 1922, 656.

According to the key of Theissen and Sydow<sup>12</sup> this would fall in the genus *Dimerium* if the spores be regarded as 2-celled; in *Perisporina* if three-celled but it would be excluded from *Perisporina* by the absence of mycelial setae also by the presence of paraphyses. It shows many similarities with *Perisporiopsis* P. Henn. as figured by Arnaud<sup>13</sup> but differs from that genus in possessing no mycelial setae or paraphyses. Though the spores are frequently 2-septate, I place the present species in the genus *Dimerium* as an aberrant form.

## MYCOPHAGA Stevens n. gen.

Fungus superficial, perisporiaceous, non-hyphopodiate, no setae on mycelium or perithecium; spores hyaline, 3-septate.

## 44. MYCOPHAGA GUIANENSIS Stevens n. sp.

Mycelium non-hyphopodiate, honey-yellow, forming a tangled network. Perithecia globular, non-ostiolate, 123 to 138 $\mu$ , no appendages, smooth. Asci 61 to 72 x 18 $\mu$ , conglobate; no paraphyses; spores 3-septate, hyaline, 32 to 40 x 3.5 $\mu$ , obtuse, slightly thicker at one end and tapering gradually.

Growing as a parasite on an undetermined, hyphopodiate mycelium on *Anacardium* (cashew).

British Guiana: Rockstone, July 13, 1922, 253; Tumtumari, July 8, 1922, 65.

This fungus in general characters is close to *Perisporina* from which it differs in spore color, septation and in mycelium. If regarded as being

<sup>12</sup> Theissen and Sydow l. c.

<sup>13</sup> Arnaud, G. Les Asterinées. Ann. de l'Ecole nat. d'Agric. de Montpellier. N. S. T., 16:1918.

of the Capnodiaceae it would be near *Limacinia* from which it differs essentially in the character of its mycelium.

### PERISPORIACEAE IMPERFECTI

#### PYCNODOTHIS Stevens n. gen.

Fungus superficial, penetrating the epidermis by haustoria. Pycnidia in stromata. Spores colored, 1-celled. Like *Haplosporella* Speg. but superficial.

#### 45. PYCNODOTHIS TETRACERAE Stevens n. sp.

[Figures 78, 79, 108]

Stromata superficial, hypophyllous, surrounded by a scant superficial mycelium. Stromata about 2 mm. in diameter, circular, flat, about  $35\mu$  thick, usually bearing the pycnidia in a circle around a sterile center. Pycnidia 30 to 40 or more on one stroma, black, globose, smooth, astomate, about 90 to  $108\mu$  in diameter, wall  $18\mu$  thick. Spores ovate, honey-yellow, continuous, 7 to  $10 \times 2\mu$ .

On *Tetracera* sp.

British Guiana: Demerara-Essequibo R. R., July 15, 1922, 408.

In its strictly superficial habit with small haustoria like those of *Meliola*, and spherical pycnidia with no ostioles this fungus has a typically perisporiaceus aspect and it doubtless is an imperfect form of such.

### CAPNODIACEAE

#### POLYSTOMELLOPSIS Stevens, n. gen.

Mycelium superficial, yellow, gelatinous. Stromata superficial, non-radiate, many-ostiolate, many-loculate, setose. Asci 8-spored. Spores dark.

#### 46. POLYSTOMELLOPSIS MIRABILIS Stevens n. sp.

[Figures 80 to 87, 109 to 113]

Stromata hypophyllous, superficial, irregular-oblong, 120 to  $400 \times 185$  to  $620\mu$  across, 65 to  $70\mu$  thick, bearing numerous setae especially around the edges. Setae black, 60 to  $184\mu$  long, straight or irregular, curved, obtuse. Ostioles numerous, 1 to 31, but usually about 10, about  $2\mu$  in diameter. Locules many, separated by a gelatinous matrix. Asci 8-spored. Paraphyses filamentous, thin, irregular, gelatinous; spores yellow to brown, oval, continuous, later muriform, 18 to  $21 \times 11\mu$ . Mycelium superficial, yellow to brown, non-hyphopodiate; mycelial setae few, black, 80 to  $180\mu$  long, 7 to  $11\mu$  thick at base, irregular in contour.

On *Hirtella* sp.

British Guiana: Kartabo, July 24, 1922, 647 (type); July 21, 1922, 484; July 23, 1922, 595; Trinidad: Cumuto, August 16, 1922, 943.

On *Coccoloba* sp.

British Guiana: Tumatumari, July 8, 1922, 40.

On unknown host.

British Guiana: Tumatumari, July 8, 1922, 45.

The colonies of this fungus are approximately circular, Fig. 109, the mycelium radiating from a central point of origin, which point is usually, perhaps always, occupied by a dense aggregate of mycelium (the umbo), (Figure 80), appearing somewhat like a stroma but always devoid of cavities or spores; though on crushing, the mass is seen to be filled with coarse amorphous grains not found elsewhere with the fungus. The mycelium reaches out from this point to a distance of 1 to 1.5 cm. and consists, near the center, of thick ropy strands composed of many agglutinated threads. Toward the edge of the colony these strands become smaller, ending in single filaments. (Figure 87). In the lacunae between the ropy strands many thin branches of this mycelium wander. The mycelium appears of somewhat gelatinous texture, particularly evident in the young thin threads and where adjacent strands adhere firmly.

Near the center of a colony are borne from few to several dozen stromata as described above. These always arise in the lacunae between the ropy strands and are produced by the massing of the fine gelatinous threads. The stroma in its very young stages appears to be nearly of its full, mature diameter though very thin and almost translucent and when very young it shows a full compliment of ostioles. Later development consists chiefly in the increase in thickness, color and in the growth of the numerous setae, together with internal development. On crushing the numerous asci and spores are found surrounded with quantities of gelatinous paraphyses. The central umbo lifts readily from the leaf surface and appears to be not at all, or at most very slightly connected with it. Under the umbo there is always a nectary gland, strictly circular, brown, about  $385\mu$  in diameter. (Figure 80). Several other species of fungi are found occupying these glands, but no other bore spores. It seems probable that the glands serve as necessary starting points for the growth of the colony. The same relation to glands was noted on the unknown host No. 45, also on the *Coccoloba*, No. 40.

While the fungus on *Coccoloba* in the microscopic structure appears to be identical with that on other hosts, microscopically it shows some differences in that the colonies are very much smaller, usually not more than 0.5 cm. in diameter and the number of stromata is less. Evidently the *Coccoloba* glands do not afford as good conditions regarding nutriment as does *Hirtella*. This fungus in its perithecium superficially resembles the genus *Polystomella* of Spegazzini but it cannot be regarded as even of close kinship with that fungus because its perithecium is not radiate; a character which is attributed to *Polystomella* by all who have worked with the genus (cf. Arnaud<sup>14</sup> Pl. 23 figs. A-K, Theissen,<sup>15</sup> Tab. 6 fig. 4, 13.) and

<sup>14</sup> Arnaud, G. *Les Asterinées*, Ann. de l'Ecole nat. d'Agric. de Montpellier, 1918.

<sup>15</sup> Theissen, F. *Über Polystomella, Microcyclus u. a.* Ann. Myc., 12:63, 1914.

is made distinctive of the Polystomellaceae by Theissen and Sydow<sup>16</sup>. Moreover the mode of origin of the perithecium by anastomosis of many fine mycelial threads is not characteristic of the Microthyriaceae or of the Dothideales.

The peculiar mycelial characters shown are also characteristic of neither of the above named groups. The stromata are Dothideaceous in character in that several locules occur in one stroma each locule without a definite individual perithecial wall; but the mycelium and the appearance of the fungus in general deny relation with the Dothids.

If uniloculate stroma were present there would be no hesitation in placing the fungus in the Capnodiaceae. Pluriloculate stromata in the Capnodiaceae seem somewhat anomalous but are not necessarily so. While this fungus typically has many locules, instances are seen with only one locule. The gelatinous mycelium and the abundant gelatinous paraphyses suggest kinship with the Capnodiaceae and it is in this group that I place it.

There is sufficient resemblance between this fungus and *Chaetoplaca memecycli* Syd.<sup>17</sup> to make it appear that the two may belong in the same family though they clearly do not belong to the same genus owing to the well defined locules in my fungus, such locules being absent in *Chaetoplaca*. There are also very essential differences in the spore structure. Sydow in his first publication placed his fungus in the Hemisphaeriaceae though latter Theissen and Sydow<sup>18</sup> suggest that it be regarded as a borderland form between the Hemisphaeriaceae and the Discomycetes though they are in doubt whether the whole ascogenous layer represents a disc or whether the structure should be regarded as representing numerous locules each with one ascus.

### CLYPEOSPHAERIACEAE

#### STEGASTROMA Sydow.

Ann. Myc., 14:81, 1916.

#### 47. STEGASTROMA GUIANENSE Stevens s. p.

[Figures 88, 89]

Spots small, often on the base of the leaflets, pale yellow, bearing several scattered perithecia. Clypeus only in the upper surface, about 30 to 145 $\mu$  thick and only about 100 to 200 $\mu$  across. Locules 150 to 260 $\mu$  in diameter, 170 $\mu$  deep, ostiole through the clypeus, (7 $\mu$ ). Asci 8-spored, 87 x 25 $\mu$ . Paraphyses few, filiform. Spores inordinate, pale and continuous

<sup>16</sup> Die Dothideales. Ann. Myc., 13:149, 1915.

<sup>17</sup> Sydow, H. & P. Beitrag zur Kenntnis der Pilzeflora der Philippinen-Inseln. Ann. Myc., 15:232, 1917.

<sup>18</sup> Theissen and Sydow, Syn. Taf. I. c.

when young, 11 to 14 x 7 $\mu$ , black, 1-septate with a pale band across each cell when mature. One end slightly larger than the other.

On a mimosa-like Legume.

British Guiana: Tumatumari, July 11, 1922, 164.

The clypeus is strikingly beautiful, being very thick and dark (Fig. 88). and very small in diameter. The perithecial wall and lack of stroma deny relationship with the Dothideales and clearly establish relationship with the Clypeosphaeriaceae and apparently with the genus above named in which there was only one species viz. *S. theissenii* Syd. on *Pithecolobium* from which ours differs in ostiole, paraphyses, and spore shape.

#### ANTHOSTOMELLA Sacc.

Consp. Gen Pyren, Ital. System etc. Atti Soc. Ven. Trent, in Padova, 4:1, 1875.

#### 48. ANTHOSTOMELLA RHIZOMORPHAE (Kunze) B. and V.

On *Rhizophora mangle*.

British Guiana: Kartabo, July 25, 1922, 643.

This fungus was originally described as on coriaceous leaves collected in Suriname and has since been collected by the writer in Porto Rico.<sup>19</sup>

#### 49. ANTHOSTOMELLA CECROPIAE (Rehm) v. Höhn

Ann. Myc. 13:300, 1915.

*Auerswaldia cecropiae* P. Henn. Hedw., 23:253, 1904.

*Physalospora cecropiae* Rehm, Hedw., 40:112, 1901.

On *Cecropia* sps.

British Guiana: Tumatumari, July 12, 1922, 223; Demerara-Essequibo R. R., July 15, 1922. 397, 403, 118.

<sup>19</sup> Bot. Gaz., 70. 399, 1920.



1

PLATE I

## EXPLANATION OF PLATES

## PLATE I

Figs. 1-4 *Hysterostromina palmae*.

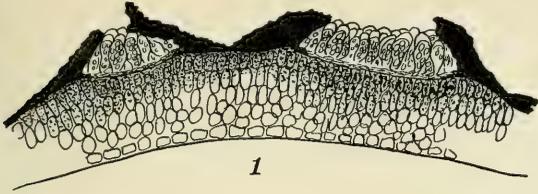
- Fig. 1. Two perithecia in section showing location and relation to the tissues.  
Fig. 2. Edge of a perithecium showing radiate character and absence of free mycelium.  
Fig. 3. Edge of perithecium showing more detail, also 3-ascospores.  
Fig. 4. Two asci with spores.

Figs. 5, 6 *Coccostromopsis palmigena*.

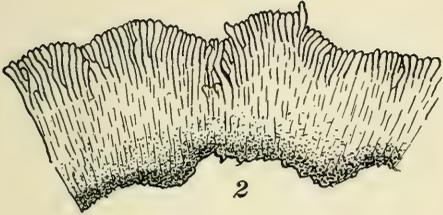
- Fig. 5. A stroma in section showing locules and central attachment.  
Fig. 6. An ascus with spores.

Figs. 7-14 *Nowellia guianensis*.

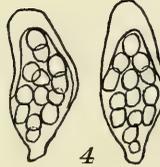
- Fig. 7. Drawing of a stroma in section showing foot and two locules.



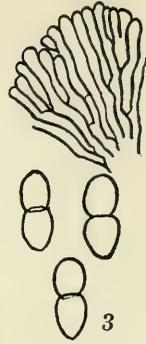
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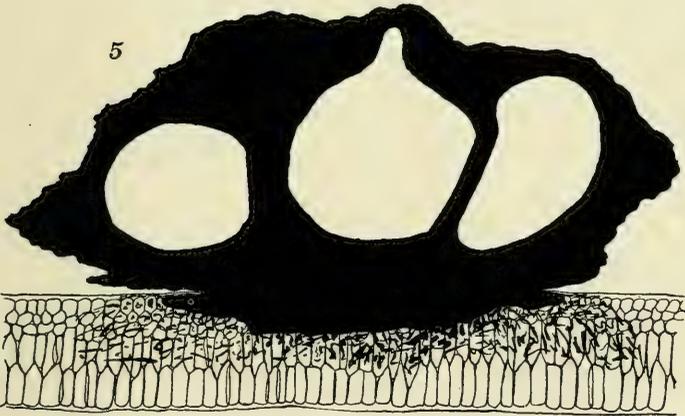
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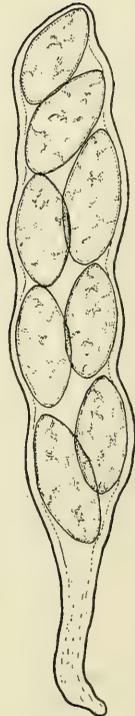
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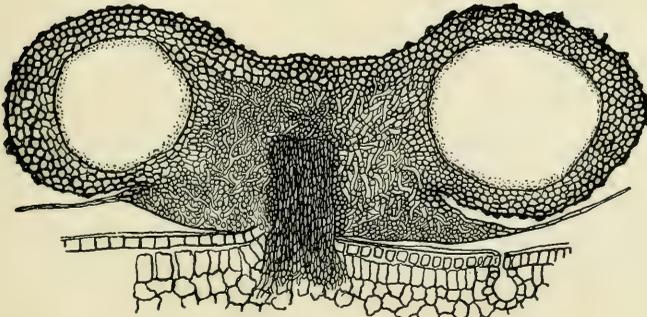
3



5



6



7



PLATE II

## PLATE II

- Fig. 8. Drawing of an ascus and spores.  
Fig. 9. Two spores showing the gelatinous envelope.  
Fig. 10. Edge of colony showing irregular radiation and erose margin.  
Fig. 11. Detail of cell structure of foot and adjacent stroma.  
Fig. 12. Detail of covering of the loculi showing dark, thick-walled outer layer and pale hymenial layer.  
Fig. 13. Diagram showing three stromata close together.  
Fig. 14. Diagram showing two stromata fused.  
Figs. 15, 16 *Leveillinopsis palmicola*  
Fig. 15. Section of a stroma showing its superficial character.  
Fig. 16. An ascus and spores.  
Figs. 17-19 *Amerodopsis guianensis*.  
Fig. 17. Diagram of stromata in section showing the locules and the variation in the position of the stromata.  
Fig. 18. An ascus and spores.

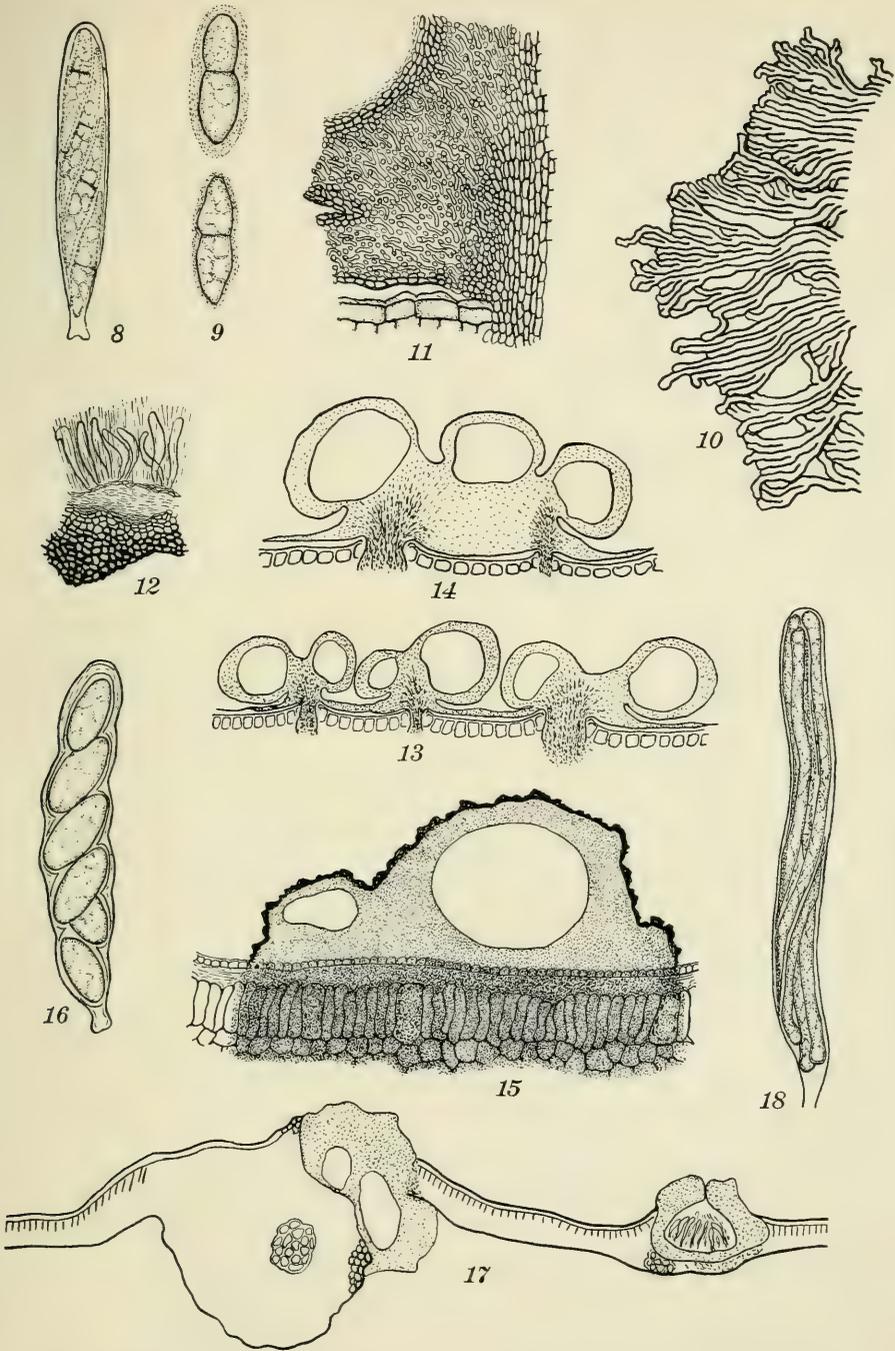




PLATE III

## PLATE III

Fig. 19. Spores.

Figs. 20-23 *Uleodothis paspali*.

Fig. 20. Section of a stroma showing four locules and the irregular stroma extending to the lower epidermis.

Fig. 21. Section of a uniloculate stroma.

Fig. 22. An ascus.

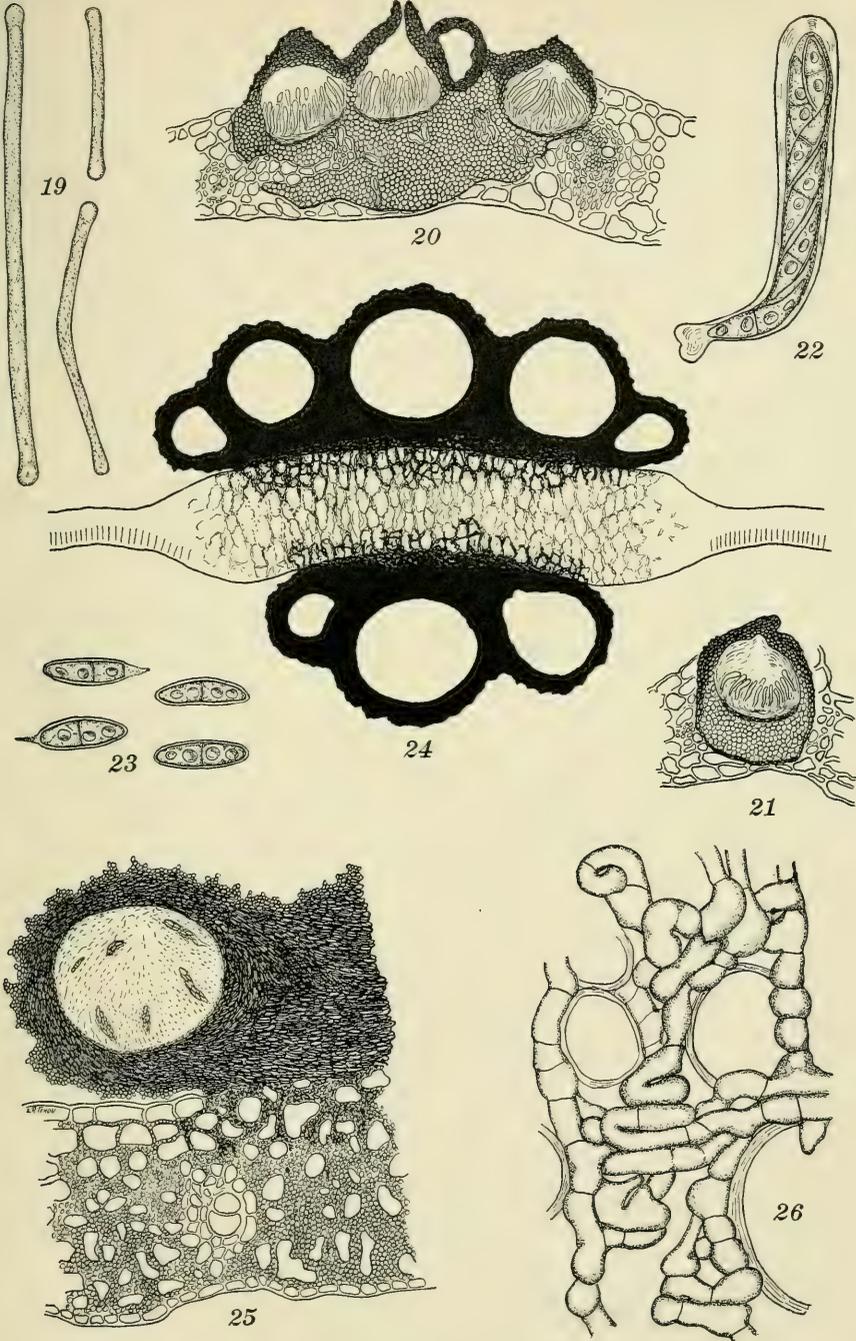
Fig. 23. Ascospores.

Figs. 24-27 *Achorella guianensis*.

Fig. 24. Diagram to show the relation of the locules to the stroma and the hypostroma.

Fig. 25. A locule in stromatic tissue showing the dothideoid character.

Fig. 26. Detail of hypostroma as it occurs in the mesophyll.





## PLATE IV

## PLATE IV

Fig. 27. An ascus, paraphyses and spores.

Figs. 28-31 *Anisochora tabebuiae*.

Fig. 28. Cross section of a leaf showing palisade stroma, epidermal clypeus, infected phloem, a locule with ostiole.

Fig. 29. Diagram of a section of a stroma showing three locules.

Fig. 30. Detail of a portion of stroma and clypeus showing the hyphal nature of the stroma.

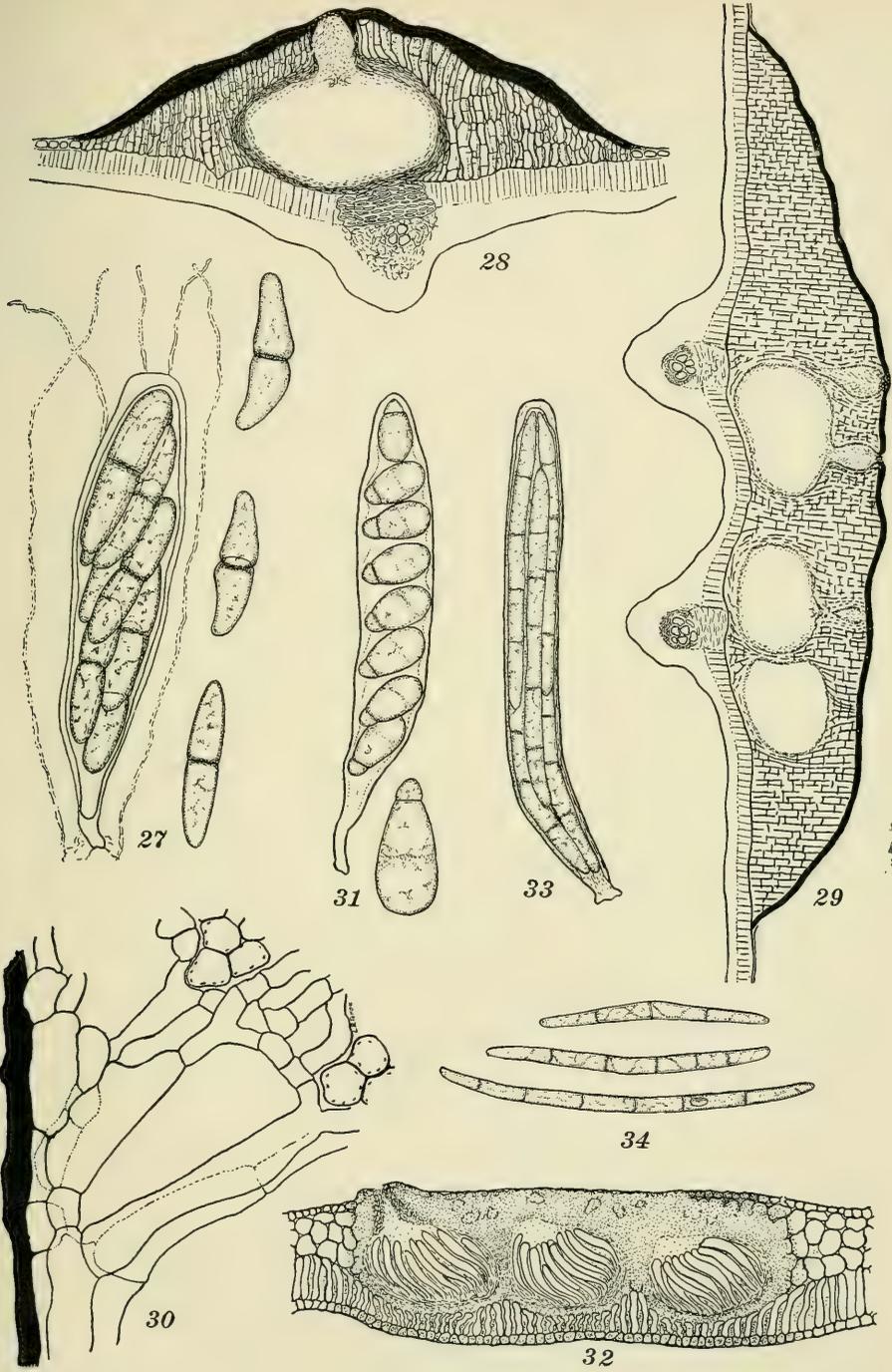
Fig. 31. An ascus with spores, and a single spore.

Figs. 32-34 *Scolecodothopsis ingae*.

Fig. 32. Section of a stroma showing three locules with asci.

Fig. 33. An ascus with spores.

Fig. 34. Three spores showing shape and septation.



STEVENS

PARASITIC FUNGI

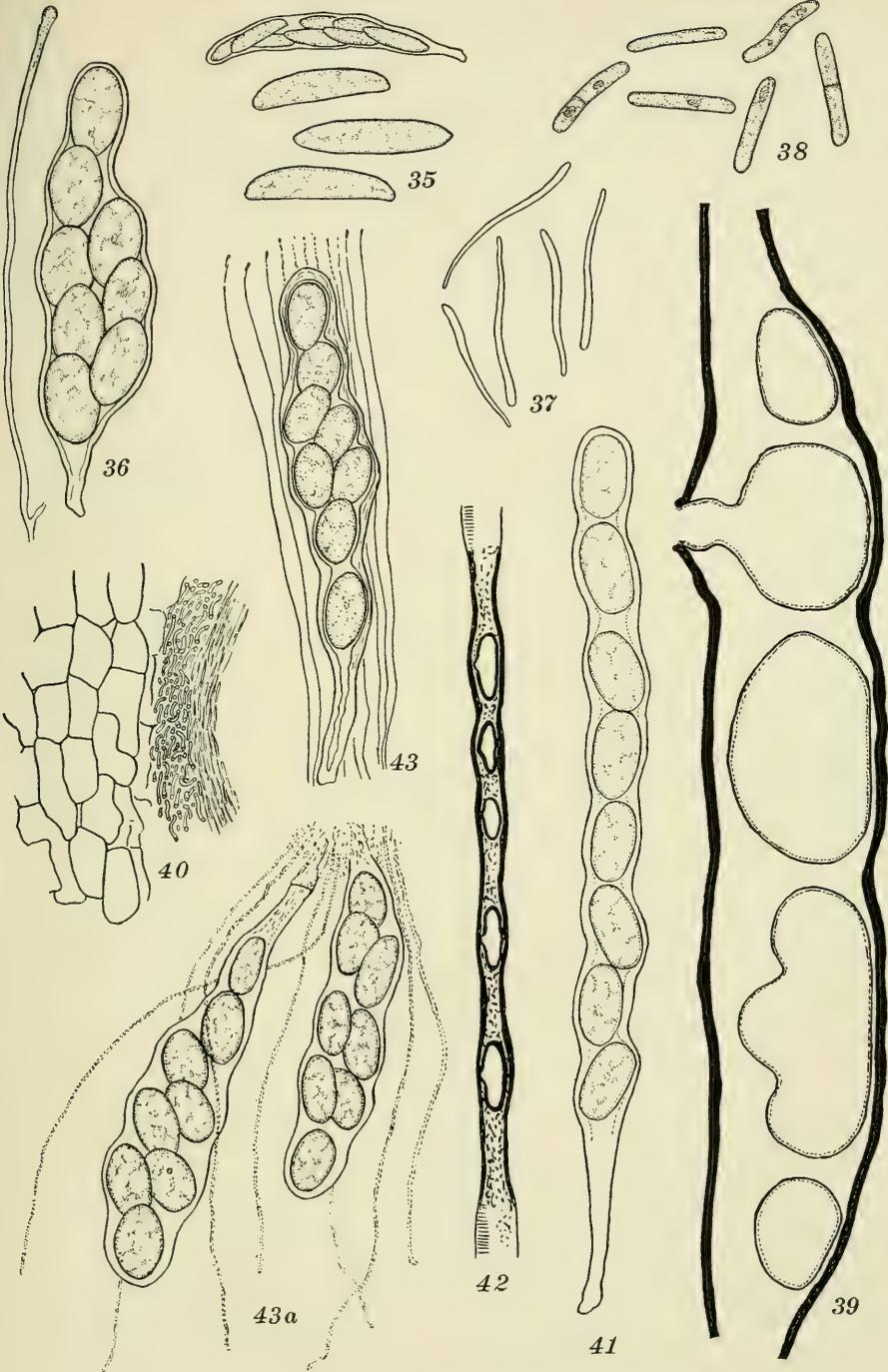
PLATE IV



PLATE V

## PLATE V

- Fig. 35. *Phyllachora aegiphilae*. An ascus with spores, also three spores.  
Figs. 36-38 *Phyllachora chaetochloae*.
- Fig. 36. An ascus with spores and paraphyses.
- Fig. 37. Filiform conidia.
- Fig. 38. Five of the oblong conidia.  
Figs. 39-41 *Phyllachora dimorphandrae*.
- Fig. 39. Diagrammatic drawing to show position and shape of locules in the stroma.
- Fig. 40. Detail of a portion of a locule showing the lining membrane.
- Fig. 41. Ascus and spores.  
Figs. 42-43 *Phyllachora tabernaemontanae*
- Fig. 42. Diagram showing position of the locules in the leaf.
- Fig. 43, 43a. Asci paraphyses and spores.



STEVENS

PARASITIC FUNGI

PLATE V



PLATE VI

## PLATE VI

Figs. 44-46 *Phyllachora tiliae*.

- Fig. 44. A stroma with two locules.  
Fig. 45. An ascus with spores.  
Fig. 46. Two spores.

Figs. 47-50 *Phyllachora wisnarensis*.

- Fig. 47. A stroma showing three locules.  
Fig. 48. An ascus and spores.  
Fig. 49. Two spores.  
Fig. 50. Filiform conidia.  
Fig. 51. *Phyllachora* No. 1, Diagram of stroma and locules.  
Figs. 52-54 *Phyllachora* No. 2.  
Fig. 52. A perithecium showing clypeus.  
Fig. 53. A pycnidium showing conidia.  
Fig. 54. A stroma with two locules.

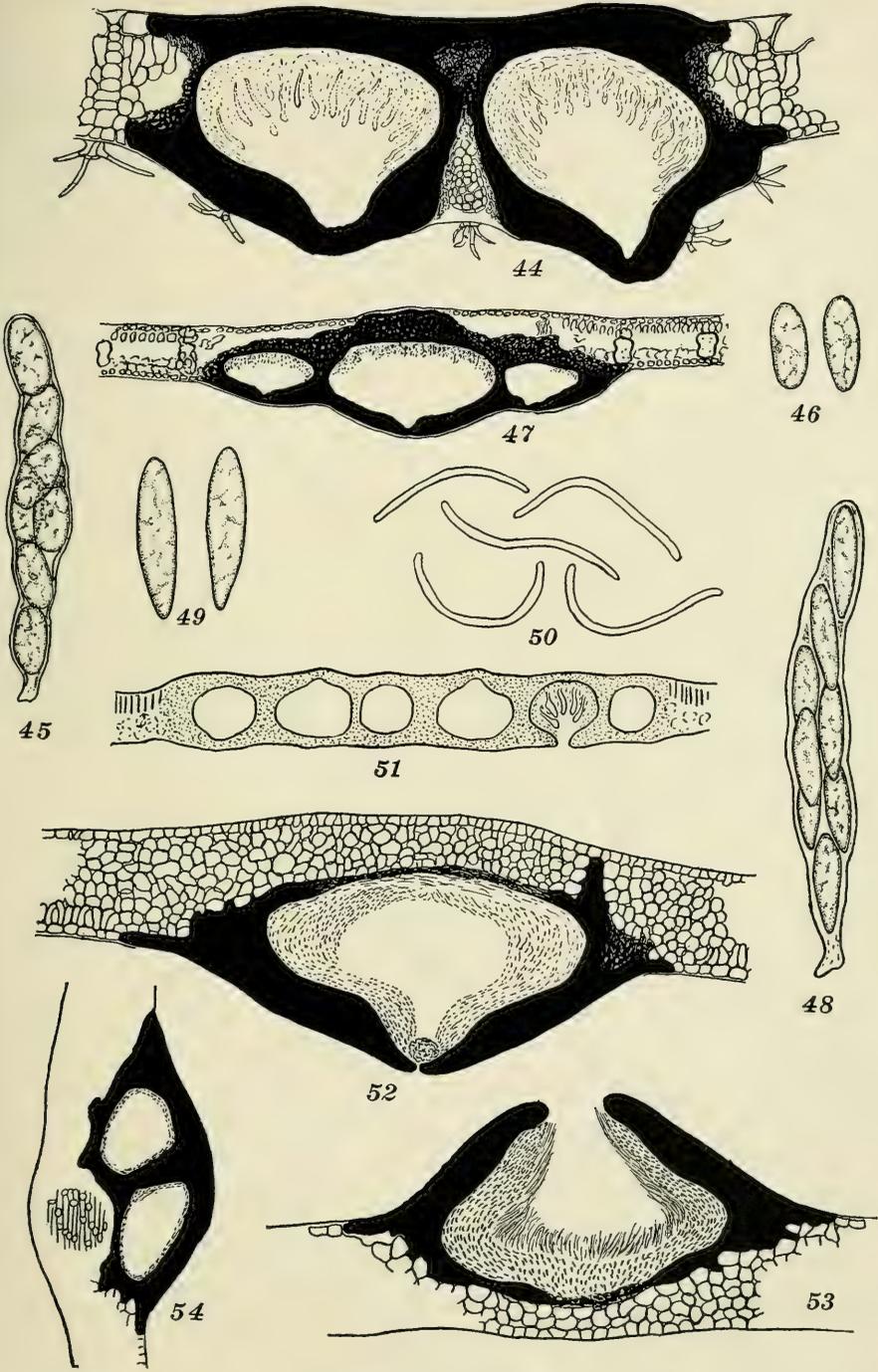
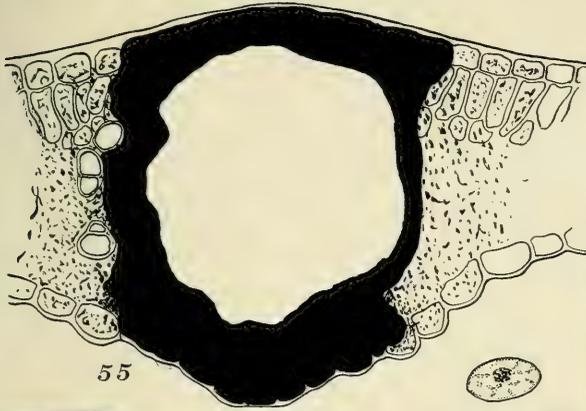




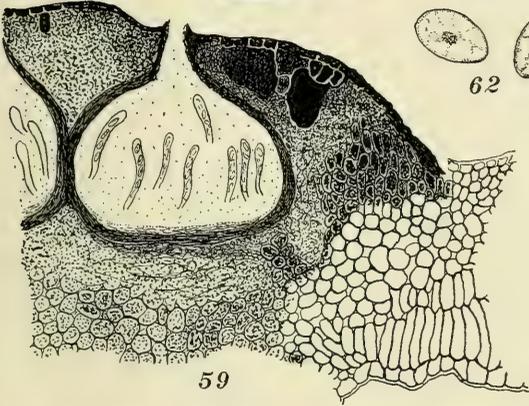
PLATE VII

## PLATE VII

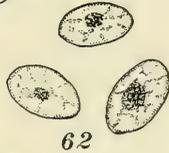
- Fig. 55. *Phyllachora* No. 5, Stroma in section showing the upper and lower clypeus and the way it envelops the locule.
- Fig. 56. *Endothenella anacardiacearum*. Section of stroma showing position of the locules.  
Figs. 57-59 *Endothenella tapirae*.
- Fig. 57. A stroma occupying one side of the leaf only.
- Fig. 58. A stroma occupying both sides of the leaf with much increase in thickness.
- Fig. 59. Detail of a portion of the stroma shown in fig. 58 showing character of the stroma and deformation of the host tissue.  
Figs. 60-62 *Haplothecium guianense*.
- Fig. 60. Section of a stroma showing six locules, the upper and lower clypeus, the diseased palisade cells and the position of the loose stroma in the mesophyll.
- Fig. 61. An ascus.
- Fig. 62. Spores.



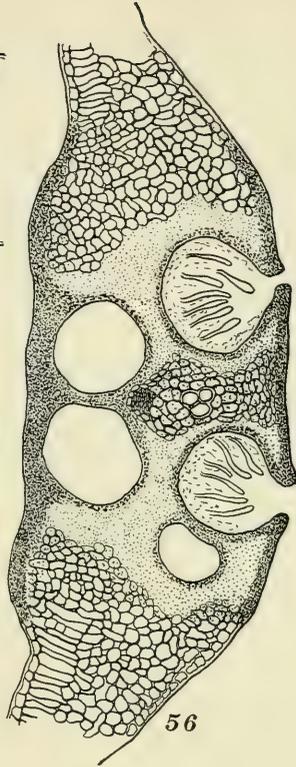
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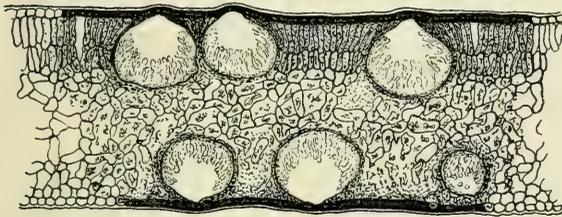
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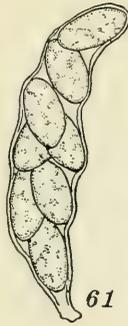
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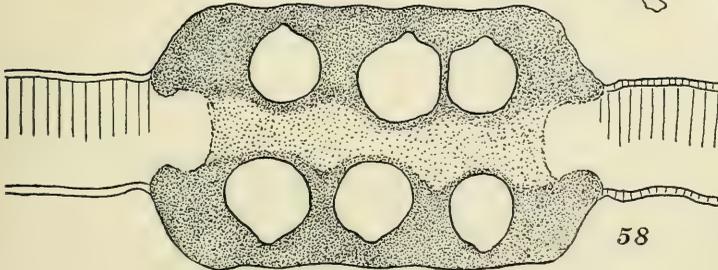
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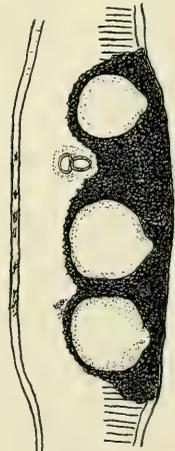
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61



58



57



PLATE VIII

## PLATE VIII

Figs. 63-65 *Gymnopeltis trinidadensis*.

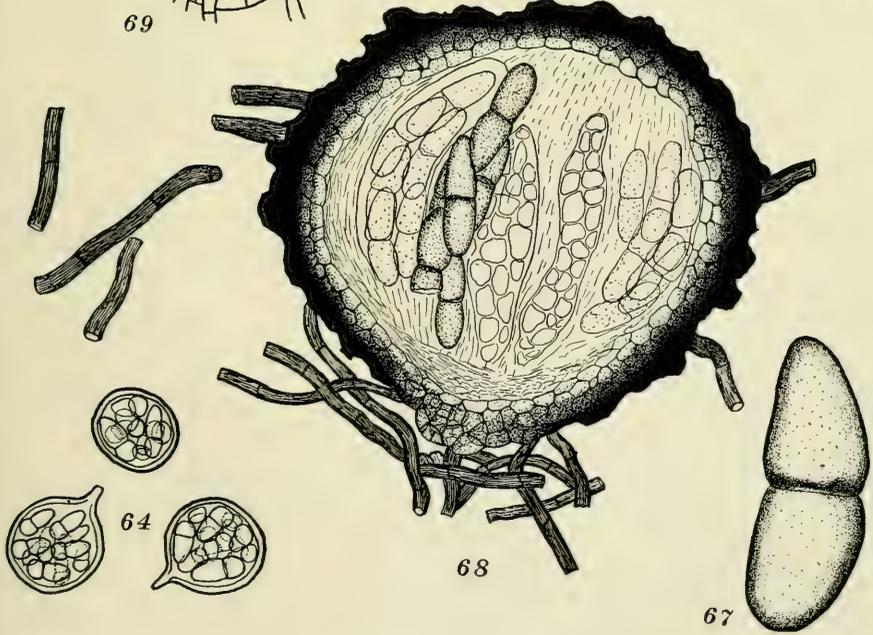
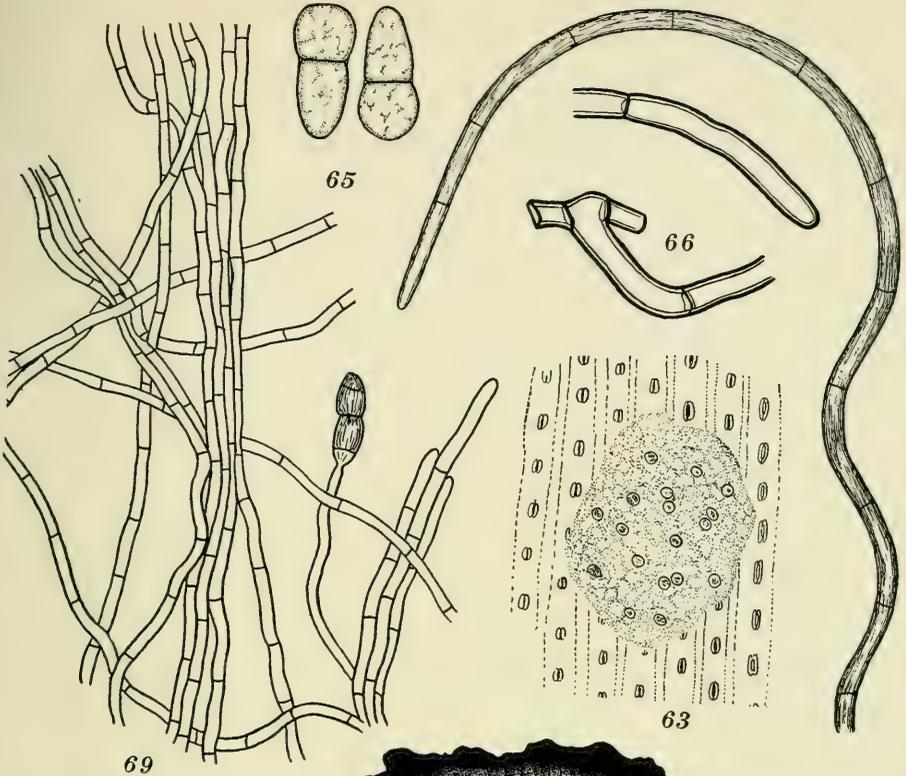
- Fig. 63. An ascoma on the leaf surface showing scattered naked asci.  
Fig. 64. Three asci.  
Fig. 65. Two asco-spores.

Figs. 66-67 *Meliolinopsis palmicola*.

- Fig. 66. A bit of mycelium; a setum and tip of a setum.  
Fig. 67. A spore.

Figs. 68-70 *Hyalomeliolina guianensis*.

- Fig. 68. A perithecium in section.  
Fig. 69. Mycelium showing the tendency to mass together in ropes.





## PLATE IX

## PLATE IX

Fig. 70. Spores showing septation and germination.

Figs. 71-76 *Haraea mauritiae*.

Fig. 71. A perithecium with setae.

Fig. 72. An ascus with spores.

Fig. 73. Two spores; 1-septate and 2-septate.

Fig. 74. Perithecial setae.

Fig. 75. Mycelium.

Fig. 76. Three pseudohyphopodia.

Fig. 77. *Dimerium guianense*. Three spores.

Figs. 78-79 *Pycnodolhis tetracerae*.

Fig. 78. A stroma showing locules.

Fig. 79. Diagram showing position of the locules in a stroma.

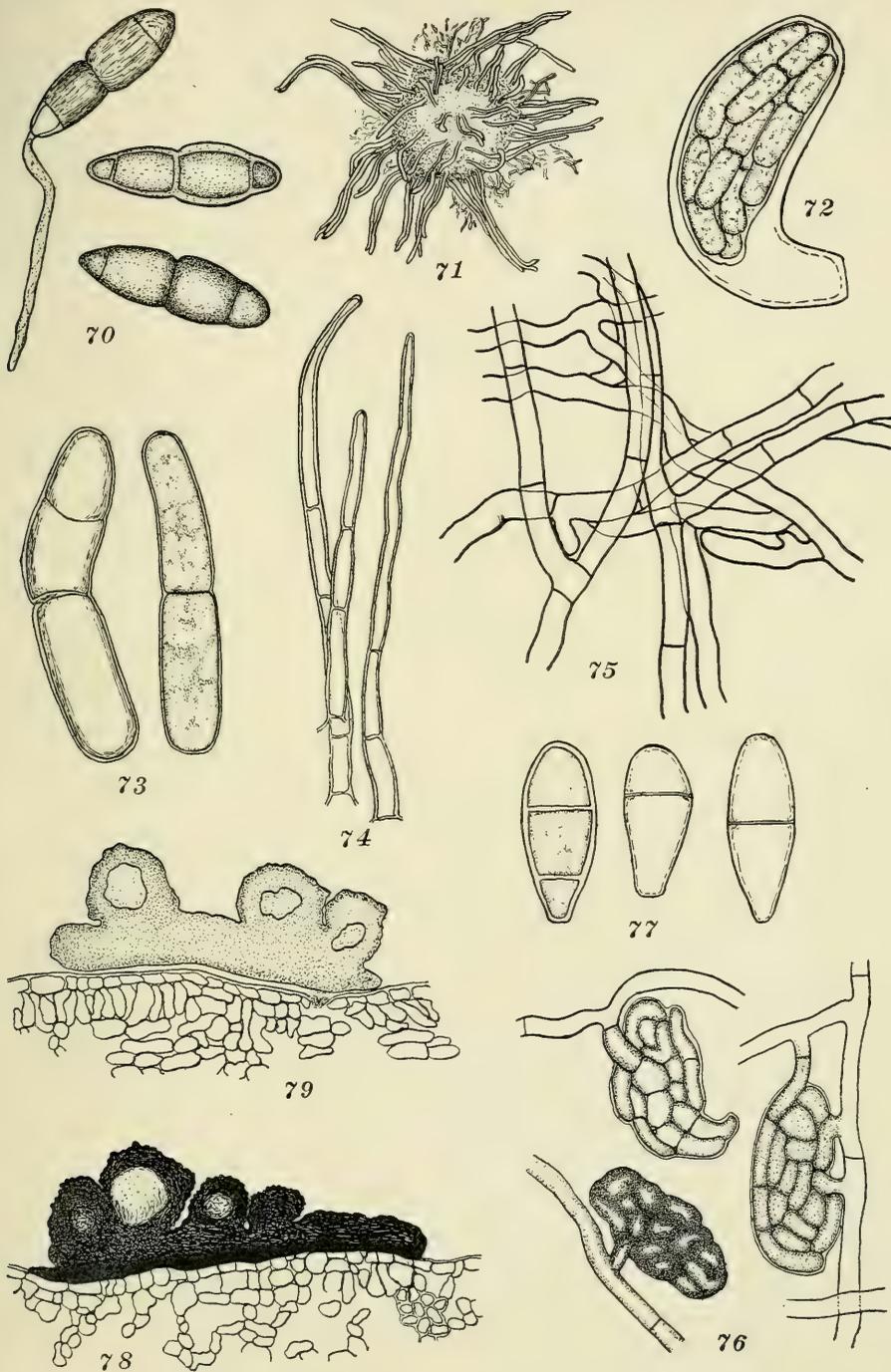


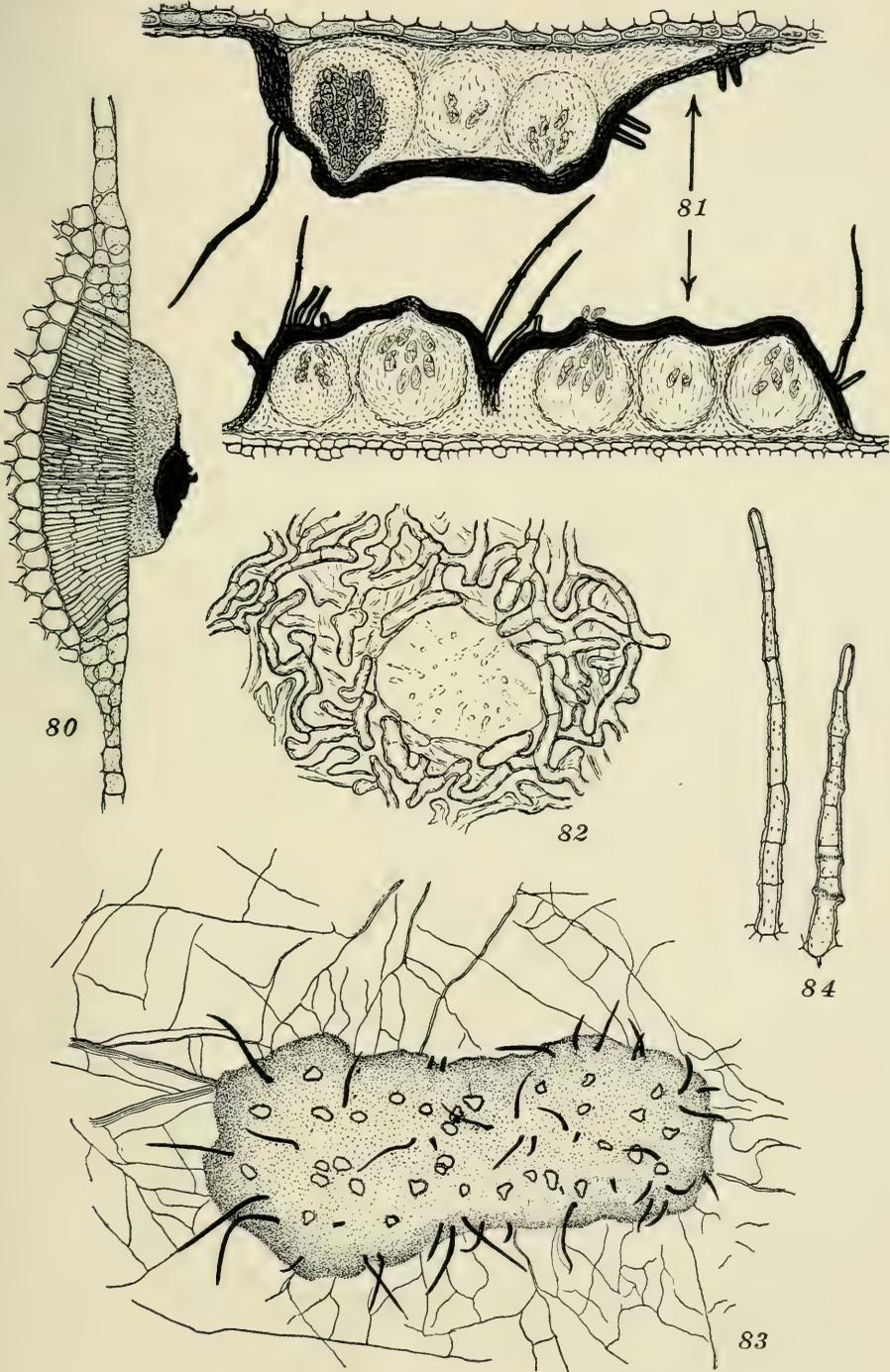


PLATE X

## PLATE X

Figs. 80-87 *Polystomellopsis mirabilis*.

- Fig. 80. Section of a nectary gland showing the umbo resting on it. The black represents the region occupied by the fungus.
- Fig. 81. Sections of stromata showing dark cover, setae, locules resting in a gelatinous matrix.
- Fig. 82. Detail of ostiole and mesh of surface cover showing that it is non-radiate.
- Fig. 83. Diagram of a stroma viewed from above showing mycelium, setae and ostioles.
- Fig. 84. Two perithecial setae.





## PLATE XI

## PLATE XI

Fig. 85. Setae showing attachment to mycelium.

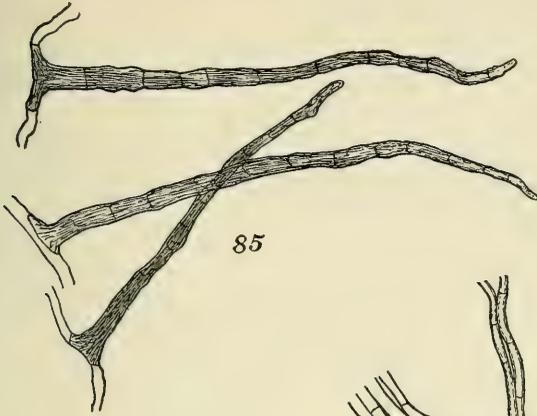
Fig. 86. Spores.

Fig. 87. Mycelial ropes, also mycelium in less dense aggregations.

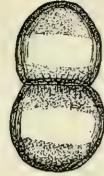
Figs. 88-89 *Stegastroma guianense*.

Fig. 88. Section of two perithecia showing the cavity, the epiphyllous clypeus and the perithecial wall.

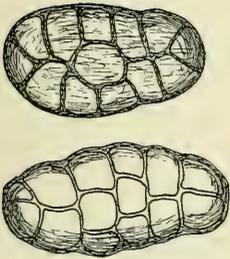
Fig. 89. A spore.



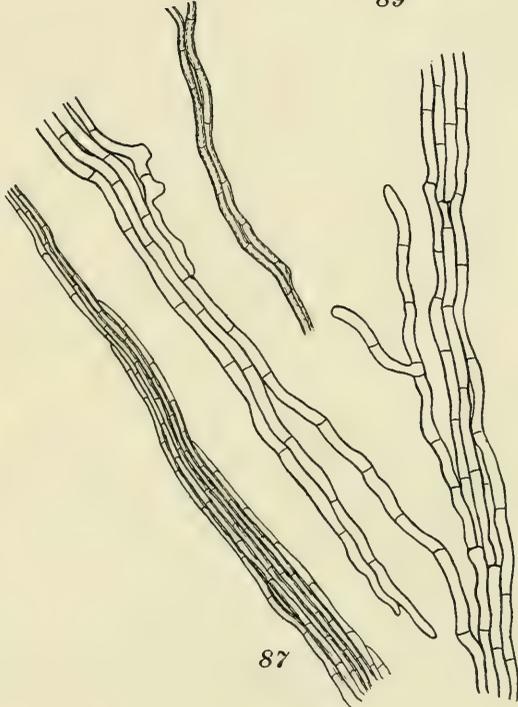
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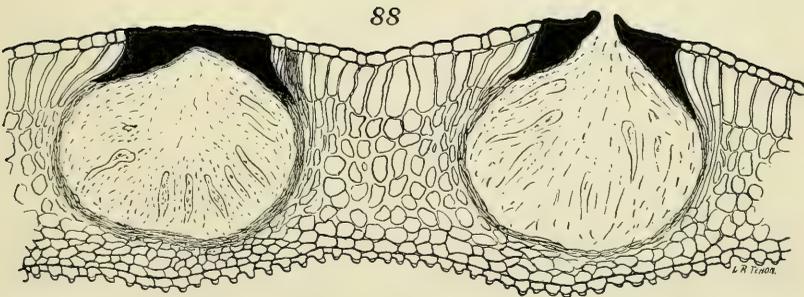
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86



87



88



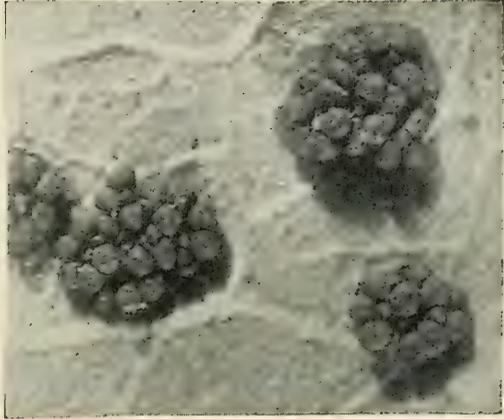
PLATE XII

## PLATE XII

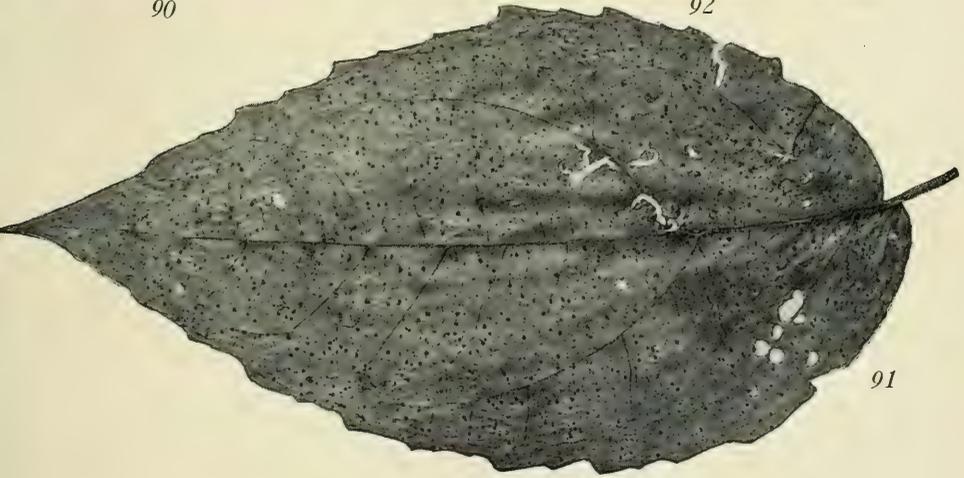
- Fig. 90. *Amerodolhis guianensis*. Photograph of a leaf spot from above, enlarged showing stromata on the veins.
- Figs. 91-92 *Achorella guianensis*.
- Fig. 91. Photograph of a leaf showing numerous groups of perithecia. Actual length of leaf as shown 21 cm.
- Fig. 92. Photograph of groups of perithecia on a stroma.



90



92



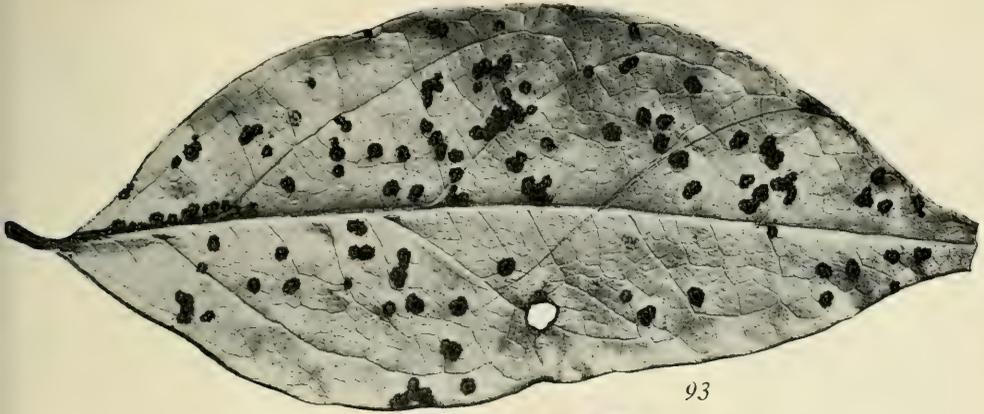
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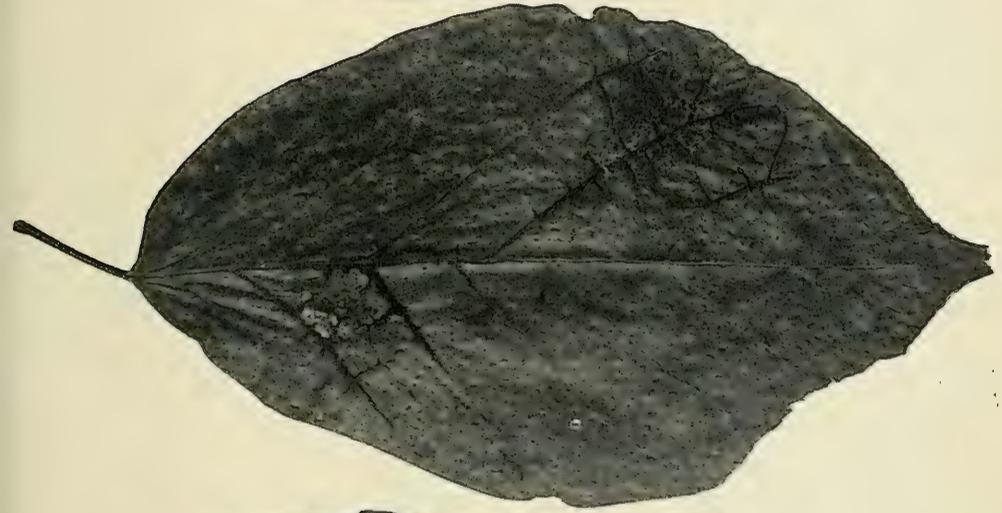
PLATE XIII

## PLATE XIII

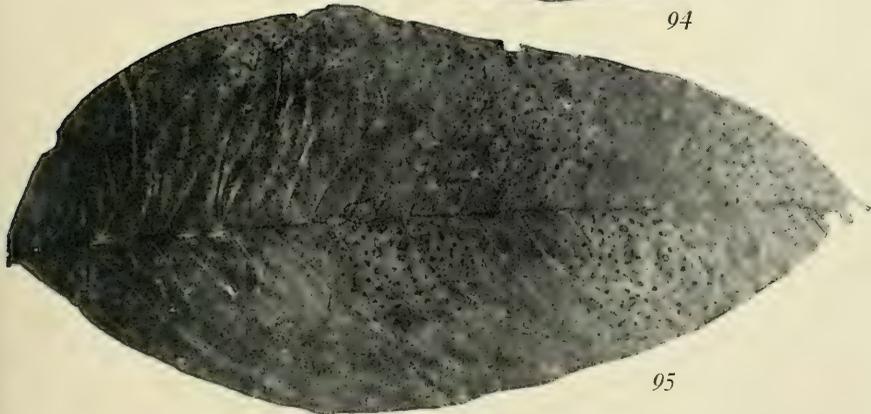
- Fig. 93. *Nowellia guianensis*. Photograph of a leaf showing general distribution and appearance of the stromata. Actual length of leaf as shown 9.5 cm.
- Fig. 94. *Anisochora tabebuiae*. Photograph of a leaf showing two spots and the stromata following the veins. Actual length of leaf as shown 15 cm.
- Fig. 95. *Scolecodothopsis ingae*. Photograph showing spots and stromata. Actual size of leaf as shown 17.8 cm.



93



94



95



## PLATE XIV

## PLATE XIV

- Fig. 96. *Phyllachora dimorphandrae*. Photograph of a leaflet showing stromata and leaf shape. Actual length of leaflet as shown 28 cm.
- Fig. 97. *Phyllachora chaetochloae*. Photograph showing stromata.
- Fig. 98. *Phyllachora tabernaemontanae*. A leaf showing stromata. Actual length of leaf as shown 20.3 cm.



96



97



98

STEVENS

PARASITIC FUNGI

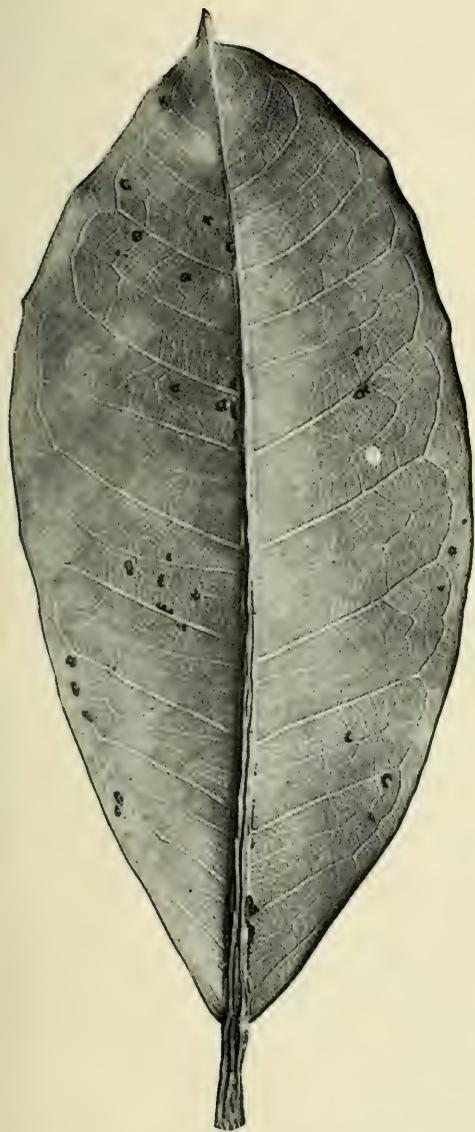
PLATE XIV



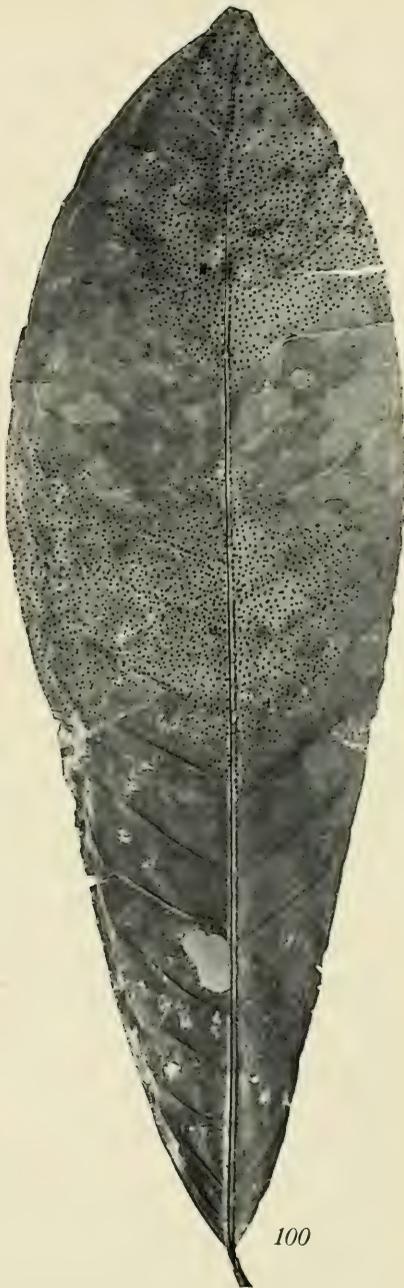
## PLATE XV

## PLATE XV

- Fig. 99. *Phyllachora wismarensis*. Photograph of leaf showing stromata. Actual length of leaf as shown 17.6 cm.
- Fig. 100. *Phyllachora* No. 2. Photograph of leaf showing stromata. Actual length of leaf as shown 30.5 cm.



99



100

STEVENS

PARASITIC FUNGI

PLATE XV



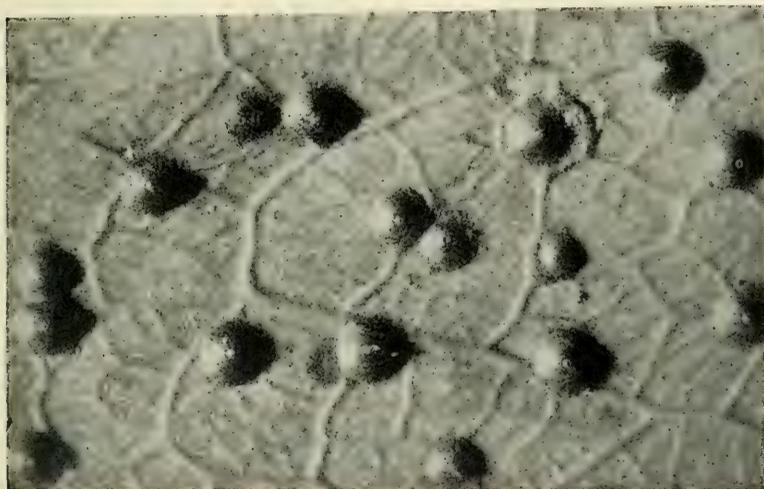
## PLATE XVI

## PLATE XVI

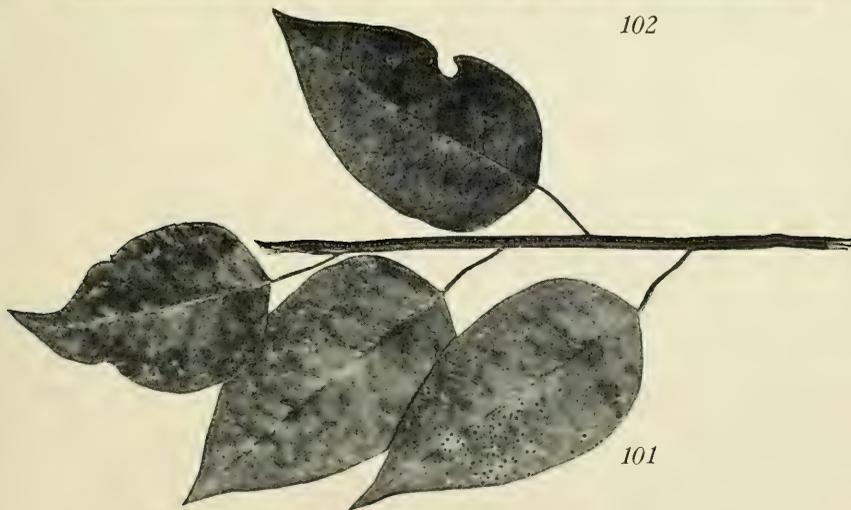
- Fig. 101. *Phyllachora* No. 4. Photograph of leaves showing character of the spot, stromata and of the host. Actual length of stem as shown 9. cm.
- Fig. 102. A portion of the leaf shown in fig. 100 enlarged to show the stromata.
- Fig. 103. *Phyllachora* No. 6 showing stromata and host. Actual length of stem shown 9 cm.



103



102



101



PLATE XVII

## PLATE XVII

- Fig. 104. *Haplothecium guianense*. Photograph of leaflet showing stromata, also four  
Meliola colonies. Actual length of leaf as shown 13.3 cm.  
Figs. 105-106 *Hyalomeliolina guianensis*.
- Fig. 105. A leaf showing several colonies. Actual length of leaf 12.3 cm.
- Fig. 106. A colony magnified and showing the character of the mycelium.
- Fig. 107. *Dimerium guianense*. Photograph showing colonies. Length of leaf 10.5 cm.

106



104



107



105

STEVENS

PARASITIC FUNGI

PLATE XVII



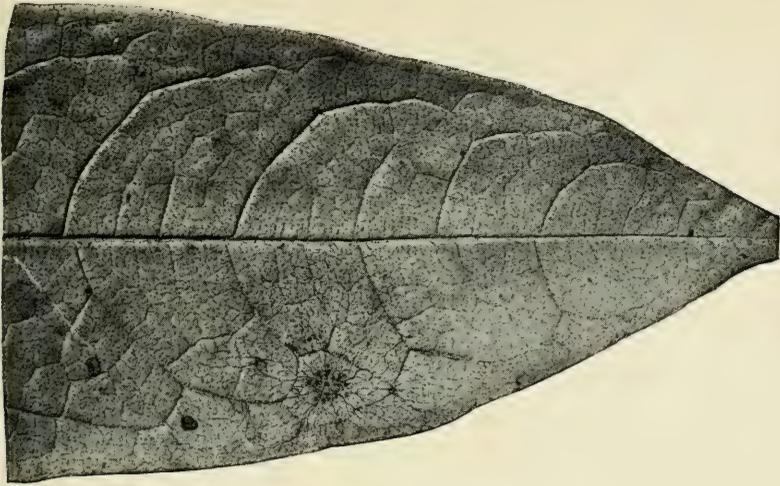
PLATE XVIII

## PLATE XVIII

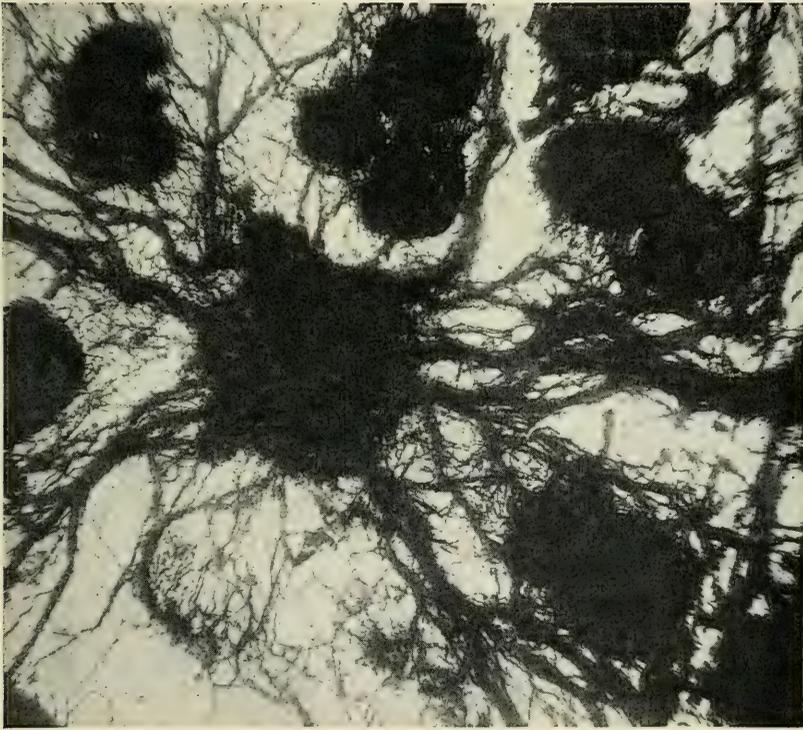
Figs. 109-113 *Polystomellopsis mirabilis*.

Fig. 109. Photograph of a leaf showing colony.

Fig. 110. Photomicrograph giving a general view of the center of a colony showing the central umbo, the radiating ropy mycelium and several stromata.



109



110



PLATE XIX

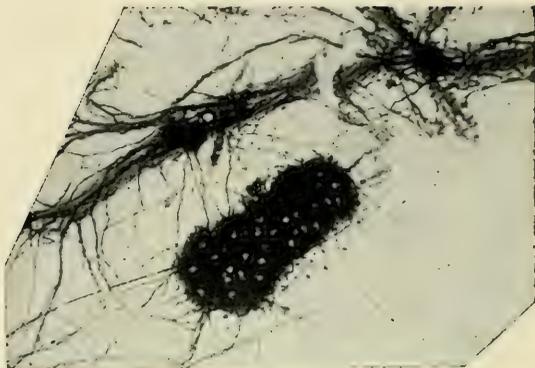
## PLATE XIX

- Fig. 111. Photomicrograph of an umbo with radiating mycelium and one young stroma.  
Fig. 112. Photomicrograph showing mycelium and several stromata.  
Fig. 113. Photomicrograph of a single stroma showing numerous ostioles.  
Fig. 108. *Pycnodolhis tetracerae*. Enlarged view of stromata.

108



113



111



112



## INDEX TO SPECIES

<i>Achorella guianensis</i> .....	15	<i>Parodiopsis melioloides</i> .....	29
<i>Amerodothis guianensis</i> .....	14	<i>Parodiopsis sp. ind.</i> .....	30
<i>Anisochora tabebuiae</i> .....	16	<i>Parodiopsis viridescens</i> .....	30
<i>Anthostomella cecropiae</i> .....	35	<i>Phaeodimeriella asterinarum</i> .....	27
<i>Anthostomella rhizomorphae</i> .....	35	<i>Phyllachora aegiphilae</i> .....	18
<i>Bagnisiopsis peribebuyensis</i> .....	13	<i>Phyllachora chaetochloae</i> .....	18
<i>Coccostromopsis palmigena</i> .....	10	<i>Phyllachora congruens</i> .....	19
<i>Dimeriella cordiae</i> .....	27	<i>Phyllachora dimorphandrae</i> .....	19
<i>Dimeriella erigeronicola</i> .....	26	<i>Phyllachora engleri</i> .....	19
<i>Dimerium guianense</i> .....	31	<i>Phyllachora guianensis</i> .....	19
<i>Endodothella anacardiacearum</i> .....	24	<i>Phyllachora Nos. 1-6</i> .....	22-24
<i>Endodothella tapirae</i> .....	24	<i>Phyllachora paspalicola</i> .....	20
<i>Gymnopeltis trinidadensis</i> .....	26	<i>Phyllachora phaseoli</i> .....	20
<i>Haplothecium guianense</i> .....	25	<i>Phyllachora tabernaemontanae</i> .....	20
<i>Haraea mauritiae</i> .....	29	<i>Phyllachora tiliiae</i> .....	21
<i>Hyalomeliolina guianensis</i> .....	28	<i>Phyllachora rulei</i> .....	21
<i>Hysterostomina palmae</i> .....	10	<i>Phyllachora wismarensis</i> .....	21
<i>Leveillinopsis palmicola</i> .....	13	<i>Polystomellopsis mirabilis</i> .....	32
<i>Meliolinopsis palmicola</i> .....	27	<i>Pycnodothis tetracerae</i> .....	32
<i>Mycophaga guianensis</i> .....	31	<i>Scolecodothopsis ingae</i> .....	17
<i>Nowellia guianensis</i> .....	11	<i>Stegastroma guianense</i> .....	34
<i>Oplothecium palmae</i> .....	28	<i>Uleodothis paspali</i> .....	15
<i>Parodiopsis ingarum</i> .....	30		

## INDEX TO HOSTS

Aegiphila.....	18	Legume.....	20, 23, 35
Alchornea cordata.....	29	Licania.....	28
Anacardiaceae.....	24	Mauritia.....	29
Anacardium.....	31	Melastomataceae.....	13
Anonaceae.....	27	Microthyriaceae.....	27
Anthurium.....	19	Mikania (?).....	16
Apocynaceae.....	30	Palm.....	10, 11, 13, 28
Bactris.....	27	Paspalum arenarum.....	20
Banisteria ciliata.....	30	Paspalum conjugatum.....	15, 20
Cecropia.....	35	Paspalum virgatum.....	20
Celastraceae.....	11	Rhizophora mangle.....	35
Chaetochloa tenax.....	18	Rosaceae.....	52
Coccoloba.....	32	Tabebuia.....	16
Cordia.....	27	Tabernaemontana.....	20
Dimorphandra.....	19	Tapira.....	24
Dioscorea.....	21	Tetracera.....	32
Erigeron bonariensis.....	26	Tiliaceae.....	21
Ficus.....	21	Unknown host.....	22, 23, 24, 25
Hirtella.....	32	Valota laxa.....	19
Inga.....	17, 30		















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