SURVEY OF EPIDEMIC DISEASES OF FOREST TREES IN TAIWAN III*

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(Received July 30, 1966)

Introduction

Studies on the tree diseases in Taiwan are one of the most neglected fields and deserve special attention from the economic as well as academic stand point of view. For this reason, survey of epidemic diseases in forest has been widely carried out under the research project entitled "Important epidemic diseases of forest trees" supported by PL 480 Foreign Agricultural Research Grant since July 15, 1963.

In the present paper, twenty fungal diseases are mentioned in addition to the collections and identifications made in the previous report (Bot. Bull. Acad. Sinica 6:74-92, 1965; Mem. Agr. Natl. Taiwan Univ. 8:67-85, 1966). Among the specimens identified, causal organisms of white spot of Taiwan laisianthus, anthracnose of Hongkong-glochidion, leaf brown blight of roxburgh sumac, leaf blight of Taiwan acacia, and leaf blight of Jambolan (Java-plum) are new species. Cercospora leaf spot of Fortune paulowina, Diplodia root rot of Mahogany, brown spot of Tungoil tree, and web-blight of Zolkova are described for the first time here in Taiwan.

1. Common machilus rust

Aecidium Machili P. Henn.

Ito, S.—Mycological flora Japan, 2:3, 366, 1950.

Ideta, A.—Supplement hand-book of plant diseases Japan 2:541, 1926.

Nambu, N.—Journal Plant Protection 8:80, 1921.

Saccard, P. A.—Syll. Fungi, 17:430, 1905.

Sawada, K.—D. C. F. F. 1:388, 1919; 2:99, 1922; 9:126, 1944.

Spoulding, P.—Foreign. Did. Forest Trees World Agr. Hand-book 197:18, 1961.

Sydow, H. et P.—Ann. Mycol. 2:111, 1914.

* Research was supported in part by USDA grant No. FG-Ta-103, Paper No. 10 Important Epidemic Diseases of Forest Trees in Taiwan Journal Series.

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Yoshinaga, T.—Bot. Mag. Tokyo 18:28, 217, 1904.

Yoshinaga, T. & Hiratsuk—Bot. Mag. Tokyo, 46:663, 1930.

Yoshino T.—Bot. Mag. Tokyo, 19:93, 1905.

Symptoms: Lesions on the upper side of leaves, at first are yellowish brown to raw sienna in color. At later stage, they turn dark brown with light mahogany red on the opposite side of the lesions. The lesions are more or less round, 0.6–1.7 mm. with a light yellowish orange halo. Usually, the affected parts are swelled, the healthy leaves, 255–375 μ thickness, and the diseased ones are 600–750 μ. On the surfaces of the lesions black dots (pycnia) are scattered. Numerous aecia form on the under side of the leaves.

Causal organism: Pycnia, 98.0–12.5×151.0–178.0 μ, lens-like, lustrous, black, scatter sparsely on the surface of leaves. The ostioles are sub-clavate; aecia, 476.0–600.0×270.0–299.5 μ, cup-shaped, greyish yellow to greyish red, scattered or coalescent, embeded in the lower surfaces of leaves, erumpent when matured; peridium, 30.0–41.0×24.0–3.40 μ, polygonal to irregular, thin-walled. Spores polygonal or elliptical, thin-walled, colorless to yellowish, with verrucose, at first hyaline, and become yellowish brown at later stage. Haustoria, 19.0–37.6×3.3–5.3 μ, filiform, hyaline, sometimes swell at the bases or at the tips.

Suscept: *Machilus thunbergie* S. et Z.

Specimen: Yang-ming-shan, Taipei. (460 M), 5/5/1965, C. C. Chen, & P. H. Yu

Distribution: China (Taiwan, mainland), Japan.

2. White spot of Taiwan Lasianthus

Cercospora lassianthi sp. nov. (pl. I. 1-3.)

Chupp, C.—Monogr. Gen. Cercospora pp. 493, 496, 498, 500, 1959.

Maculae, amphigenae, circulares vel subcirculares, primo pallide-bruneae, demum ampliatae, 3–4 mm. latae, denique albae, ad 5–6 mm. latae, medio albescente depresso 2–5 mm diam.; stromata amphigena brunneo-grisea demum obscuriter fulva; Conidiophoris in stromate vel in epidermide, caespitosis, brunneo-griseis, demum fulvis, 0–2 septatis, 14.3–38.1×2.4–3.6 μ; Conidia, filiformia, curvulata vel subcurvulae, hyalina vel exigue colorata, 5–9 septata 28.6–61.9×2.9–4.0 μ, Mycelia 2.1–3.3 μ.

Hab. in foliis Lasianthis microstachys Hay in Taiwan (China).

Symptoms: From several to a dogen of lesions are scattered on the leaves. At first, 1–2 mm in diameter, circular or sub-circular, pale yellowish brown, enlarge gradually to 3–4 mm. in diameter; lesions turn yellowish brown with distinct margin, and in indistinct halo around the lesions, the middle part of the lesions become whitish as the lesions reach 5–6 mm., black dots (stroma) scattered crack and shot-hole, 2–5 mm. in diameter at last.

Causal organism: Stroma yellowish brown to dark brown, pseudoparenchyma or plectenchyma in structure, partialy embeded in the tissue, less frequently appear on or bury in the tissues; conidiophores yellowish brown to brown, lighter toward the tips, 0–2 septate, 14.3–38.1×2.4–3.6 μ; born on the stroma, several to 30 in cluster or single, emerge from the epidermis; the later usually with a swollen, dark curved, 3.6–5.3 μ width, stalk cell. conidia filiform, slightly curved. hyaline, or light color, 5–9 septate, 28.6–61.9×2.9–4.0 μ; mycelia in the tissues 2.1–3.3 μ in width.

Suscept: *Lasinathus microstachys* Hay. =*Mephitidia microstachys* (Hay.) Nak.

Specimen: Lein-wha-tsi, Taichung. (640 M). 4/14/1966, C. C. Chen, & H. S. Chang.

Distribution: China (Taiwan).

3. Leaf spot of Subcostate Crape Myrtle

Cercospora lythracearum Heald et Wolf

Heald F. D. and F. A. Wolf—Myc. 3:18, 1911.

Chupp, C.—Monog. Fung. Gen. Cerospora p. 361, 1956.

Yamamoto W. and Maruyama—Sci. Rep. Hyogo. Univ. Agr. (Agr. Biol. Ser.) 2:31, 1956.

=*C. lagerstroemiae* H. et Sydow

Ann. Myc. 12:203, 1914.

Chupp, C.—Monog. Fung. Gen. Cercospora p. 361, 1953.

Yamamoto W. and Maruyama—Sci. Rep. Hyogo. Univ. Agr. (Agr. Biol. Ser.) 2:31, 1956.

=*C. lagerstroemiae-subcastotae* Saw.

Sawada K.—Desc. Catal. Formosan Fungi 5:129, 1931.

Chupp, C.—Monog. Fung. Gen. Cercospora p. 361, 1951.

=*C. lagerstroemiicola* Saw.

Sawada, K.—Desc. Catal. Formosan Fungi part 8:112, 1951.

Chupp, C.—Monog. Fungi Gen. Cercospora p. 361, 1951.

Yamamoto W. and Maruyama—Sci. Rep. Hyogo. Univ. Agr. (Agr. Biol. Ser.) 2:31, 1956.

Symptoms: Lesions are on the leaves more or less rounded, becoming irregularly circular spots bounded by vein-lets gradually, veroma brown to snuff brown, paler wood brown on the underside, of the corresponding lesions 5–12 mm. At later stage, pale yellow to yellow rim appears around the lesion, and defoliation at last. Black dots amphigenously occur on the leaves.

Causal organism: Stroma rounded or ellipsoid, bury in the host tissues, 40.5–52.4×47.6–69.0 μ; conidiophore single, emerged through the epidermis or cluster on the stroma, non-branched, straight or slightly curved due to the

hilium, non to 1-septate, pale yellowish brown, lighter toward the tips, 13.1–38.1×2.9–5.2 μ; conidia filiform or ob-clavate, slender towards one end, obtuse head, base-truncate, slightly curved or curved, hyaline or pale yellowish grey, smooth, 3–7 septate, 57.1–88.1×3.1–5.2 μ; mycelia inside the host tissue pale yellowish grey, 3.3–5.2 μ width.

Suscept: *Lagerstromemia subcostata* Koehne.

Specimen: Wulai, Taipei (160 M) 6/6/1966, C. C. Chen.

Distribution: China (Taiwan), India, Philippines.

4. Cercospora leaf spot of Fortune paulowina

Cercospora paulownia Hori

Chupp, C.—Moncg. Fung. Gen. Cercospora p. 525, 1953.

Hori, S.—Jour. Plant Protection 2:79, 1915.

Sawada K.—Disc. Catal. Formosan. Fungi 11:223, 1959.

Symptoms: Leaf spots are scattered, round, dark brown to black at first, at later stage becoming brown to dark brown with no distinct margin, 35 mm. in diameter, circular to subcircular spots, blacken when humid.

Causal organism: Fruiting structures amphigenous, but chiefly hypophyllous, conidiophores cylindrical, 1–2 scars, yellowish grey to yellowish brown, fasciculate 2–7 septate, 57.1–133.3×3.8–5.7 μ; conidia straight or slightly curved, cylindrical, base truncate, tip obtuse, 4–11 septate, hyaline, 61.9–180.9×3.8–6.2 μ.

Suscept: *Paulownia funtune* Hemsl.

Specimen: Chitou, Nantou. (1200 M), 11/13/1965, C. C. Chen.

Distribution: China (Taiwan, mainland), Japan.

Notes: *P. funtune* is the host of the fungus first discovered. Formerly *P. imperiales* Sieb & Zucc. (Horis & Chupp), *P. kawakamii* Ito., and *P. tomentose* Strend & Sawada.

5. Black irregular spot of Chinese tallow tree

Cercospora stillingiae Ell et Ev.

Chupp, C.—Monog. Fung. Gen. Cercospora, p. 231, 1959.

Symptoms: Lesions are on leaves, irregular circular or circular, enlarge gradually and become greyish brown with dark brown margin, under-surface of the lesions appear dark brown, somewhat sunken, 2–6 mm.

Causal organism: Fruiting structures are amphigenous, primarily on the under-surface; mycelia in the tissues, pale yellowish grey to light yellow, 1.9–3.3 μ in width; stroma hypophyllous, elliptical, spherical, subspherical, flattened in shape, pale yellowish brown, 33.3–74.4×19.0–59.5 μ; conidiophores light yellowish grey to yellowish brown, lighter toward the tips, single, less

frequently branched, 0–1 septate, 14.3–40.5×1.9–3.1 μ with 2–3 scars; conidia filiform, tip obtuse, base obconic, mostly curved, hyaline to light yellowish brown, 3–6 septate, 19.0–64.3×1.9–3.6 μ.

Suscept: *Sapium* (*Stillingia*) *sebigerm* (L.) Roxb.

Specimen: Kan-kou, Taipei. (55 M). 8/27/1965, C. C. Chen, & P. H. Yu.

Distribution: China (Taiwan), U. S. A. (Louisiana)

Notes: In "D. C. F. F. 8:121–122, 1943", Sawada, K. described that *S. sebiferm* was affected by *C. sapii-sebiferi* Saw. and *C. micromera* Sydow. and in "Monog. Fungi Gen. Cercospora pp. 230 & 226, 1959", Chupp considered them as *Helminthosporium* rather than of *Cercospora*. So, it is not a synonym.

6. Japonese Evodia rust

Colecsporium evodiae Diet.

Dietel—Ann. Mycol. 7:355, 1909.

Hiratsuka, N. et Hashioka, Y.—Uredium collected in Formosa II Bot. Mag. 8:239, 1934.

Ito, S.—Japan Myc. Flora II. 2, 195, 1938.

Ideta, A.—Supplement to handbook of the plant diseases in Japan 2:436, 1926.

Sawada, K.—D. C. F. F. part 1:383, 1919.

Sawada, K.—D. C. F. F. part 9:112, 1934.

Saccardo, P. A.—Syll. Fungi 11:717, 1912.

Sydow, H. et P. Beitr.—Ann. Myc. 12:110, 1914.

Symptoms: Uredia appear on the underside of the leaves, whitish at first become yellowish orange and protubence flour-like gradually, corresponding upper side appeared whitish yellow to light yellowish brown lesions with unconspicuous margin; uredia round, 0.3–1.0 mm, scattered or coalesced. Although most of the young leaves are attacked, it is not serious.

Causal organism: Uredia are spherical, ovoid, elliptical or rarely oblongate-elliptical, with tuberculate thick wall, 1.7–3.3 μ, light orange yellow, 22.9–31.4×19.0–23.8 μ. Immatured uredospores are hyaline, verrucose, sphaerical; sporophore, 2.4–6.2 μ, hyaline, borne on stroma of prosoplectenchyma cells. The middle part of the prosoplectenchyma are thicker, 47.6–71.4 μ than of the margin. Mycelia, 3.3–7.9 μ may reach 11.9 μ width. Telia form around the uredia, scattered or 2–3 crowded, cylindrical or clavate, round head, smooth, yellowish brown to light brown, 20.9–297.6×13.4–195.0 μ, wall thick 2.4–7.1 μ. Mycelia under the telia are hyaline, 4.8–14.3 μ, broader than the mycelia inside the host tissue, which are 3.3–6.2 μ, smooth, hyaline, more or less curved.

Suscept: *Evodia glauca* Migi. (=*E. fargesii* Dode) (=*E. meliaefolia* Benth)

Specimen: Lein-wha-tsi, Taichung (640 M), 4/14/1966, C. C. Chen, & H. S. Chang.

Distribution: China (Taiwan), Japan.

7. Anthracnose of Hongkong-glochidion

Colletotrichum glochidii sp. nov. (pl. Ⅲ. 19-20)

Maculae initio generaliter, in apice vel modio foliorum, amplificare, circulares vel subcirculares; primo obscuriter-fulvae et purpureo-tinctae, denique griseae et in margine conspicue, cruentae; Acervuli, amphigenes, pallide brunnei vel brunnei, primo epidermide tecti, demum rumpentes, 142.8–190.4× 16.7–23.8 μ; stromata cellularia, globae ex irregutaria, vel tubularia 2.4–7.1 μ; Conidiophora cylindrica, solitaria, hyalina recta vel leviter, curvata, 7.1–28.6× 3.3–5.2 μ conidia solitaria, hyalina, ellipsoidea vel oblonga, leviter curvata, 14.8–19.0×4.3–6.0 μ; setulae obscuriter fulvae, simplices erectae, cuspidatae; mycelia, hyalina, vel cremea, stricata vel leviler curvata, 2.6–5.2 μ.

Hab. in foliis Glochidion hongkongense Muell-Arg. in Taiwan (China)

Symptoms: Purplish dark brown lesions are starting from the tip, or round spots on the middle of the leaves, becoming whitish grey when the lesions reach 1–2 cm. in diameter, with a distinct violet margin. Small, brownish black pustules are densely produced on the lesions.

Causal organism: Acervuli at first subepidermal, erumpent at later, 142.8–190.4 μ in diameter 16.7–23.8 μ hight, light brown to brown color. Cells of the stroma are round to irregular or tubular in shape, 2.4–7.1 μ; conidiophores cylindric, single hyaline, straight or slightly curved, 7.1–28.6 μ (commomly 11.9–22.8)×3.3–5.2 μ. Conidia single, hyaline, elliptical or oblongate-elliptical, may be slightly curved or with narrow head, 14.8–19.0×4.3–6.0 μ. Setae are dark brown, swollen base, slender and paler toward the tip, usually with knops, 1–4 septate, 35.7–71.4×5.3–7.6 μ (base), 3.8–4.8 μ (tip); mycelia in the host tissue, hyaline to pale yellow, straight or slightly curved, not smooth, 2.6–5.2 μ width.

Suscept: *Glochidon hongkongense* Mull-Arg.

Specimens: Taipei, NTU, (10 M), 4/4/1966, 5/6/1966, C. C. Chen

Distribution: China (Taiwan)

8. Southern sclerotium rot of Mahogany

Corticium rolfsii (Sacc.) Cury.

Chen, C. C.—Lecture of Forest Pathology (in mimeograp) p. 132, 1958.

The disease as well as Diplodia rot of Mahogany, was first discovered in September, 1955, at Lugrey nursery, Chi-san. About 20–30% of the seedlings were destroyed.

Symptoms: Attacking the plant organs near the ground, form more or less round, reddish-brown to dark brown lesions around the stem. Some white, broad, cobweb-like mycelial threads intermixed with small brown to dark brown sclerotia are produced. Affected plants wilt and die in severe cases.

Causal organism: Mycelia on the stem were white at first, and then greyish-brown, 3.1–9.0 μ, mycelia in the host tissues, 3.0–5.5 μ; sclerotia sphaerical, with brownish surface, 0.5–1.0 mm. No fruiting structures were discovered.

Suscept: *Swietenia macrophylla* King. *Swietenia mahoganii* Jacq.

Specimens: Chiai chung pu (30 M) 7/28–65, C. C. Chen. Tainan Nanhsi (100 M) 7/29/65, C. C. Chen. Chiai Kousheng (60 M), 7/30/65, C. C. Chen.

Distribution: China (Taiwan)

Notes: The disease is first time described in Taiwan.

9. Southern sclerotium rot of Catting Fortune Paulownia

Corticium rolfsii (Sacc.) Curzi

Phytopath. Soc. Jap.: Common names of Economic plant diseases 3:120, 1965.

Hara, K.—Fruit tree disease pp. 174, 42, 1917.

=*C. centrifugum* Lev. Bros.

Bresad—Ann. Mycol. 1:96, 1953.

Ito, S.—Mycol. Flora in Japan, 2:110–111, 1955.

Sawada, K.—D. C. F. F. 11:100, 1959.

=*Sclerotium rolfsii* Sacc.

Saccardo—Ann. Mycol. 9:257, 1911.

Symptoms: The portion near the ground of a 10–15 cm hight seedling become browning, wilting and die. Loosely, lustrous mycelia and rhizomorphes creep over the surface. Several sclerotia form on the old lesions. The bark under the ground turn greyish brown in color.

Causal organism: Mycelia straight, smooth, not frequently branched, hyaline, 3.8–8.1 μ, commonly 5–7 μ in width, may reach 11.9 μ, containing vacuoles of various shape and size; rhizomorphe 416.5 μ in width. Sclerotia pale yellowish brown at first, become dark brown gradually, 0.3–1.5 mm in diameter; plectenchyma in the sclerotium hyaline to light brown, smooth, straight, 2.6–7.4 μ in diameter, occasional with knop, 8.6 μ in width of the hyphae. No perfect stage were found.

Suscept: *Paulownia fortunei* Hemsl.

Specimen: Hua-lein (20 m) 3/24/1966 C. R Ying (Taiwan Forestry Bureau)

Distribution: China (Taiwan), Japan, Philippine, India, North America, German, Franch. etc.

Notes: In D. C. F. F., Sawada (1919) described that among 115 kinds of the host of the furgus, only 4 were trees. *P. fortunei* is the host of the fungus first time described.

10. Diplodia root rot of Mahogany

Diplodia natalensis Evin

=*Physalospora rodina* Berk et Curt

Chen, C. C.—Lecture of Forest Pathology (in mimeograph) p. 133, 1958.

The seed of Mahogany were first imported from the United States in July 1955 and seeded at Lugrey nusery during July 18–28th. Germinational rate was 35% until the end of September; 20–30% seedling wilted gradually as reached 10–15 cm. hight. In the middle of October, investigation upon the undeterminated affected tissues gave the results as follows:

	Tunchang	Nan-son		Total	Frequency of occurence
	S. macro.	S. macro.	S. maho.		
Cultivation no.	20	40	20	80	
Diplodia	11	28	7	46	57.5%
Corticium	4	6	1	11	13.8%
Fusarium	1	1	5	7	8.8%
Trichoderma	0	2	3	5	6.3%
Rhizoctonia	2	2	0	4	5.0%
Phoma	0	0	2	2	2.5%
Unknown	2	2	1	5	6.3%
Non-growth	0	0	1	1	1.3%

During July 29th, 30th, 1965, at Goshin Nursery, Chia-i, the auther investigated that among the 30–50% affected Mahogany trees, 17–18% of them were attacked by Diplodia.

Symptoms: The stems near the ground appear dark brown lesions at first, enlarge gradually to cover the whole base of the stem, with un-conspicuous margin. Yellowing and wilting of some lower leaves, newly developed leaves are attacked at later stage. In severe cases, affected plants become wilt and die. Cross sections of the stem, the affected tissues show a brown color distinct from the healthy tissues. No fruiting structures were found.

Causal organism: No fruiting structures were found on the host plants, therefore the artificial cultures were used. The pycnidiospore 20–32×12–16 μ with strailed bands even pathogenicity to the citrus fruits; all the characters were similar to *Diplodia natalensis* Evin. The fungus is one of the soil

borne pathogenic fungi and also a saprophyte. It may penetrate into the embryo of Mahogany seedlings.

Suscept: *Swietenia mahoganii* Jacq. *Swietenia macrophylla* King.

Specimens: Chiai chung pu, 7/28/65, C. C. Chen. Tainan Nanhsi 7/29/65, C. C. Chen, Chiai Chung pu, 7/30/65, C. C. Chen.

Distribution: China (Taiwan)

Notes: The disease is first time described in Taiwan.

11. Black mildew of Chinese Cryptocary

Meliola neolitseae Yam.

Sawada, K.—D. C. F. F. 7:29, 1942.

Yamamoto, W.—Transact. Nat. Hist. Soc. Formosa, 31:24, 1941.

Yamamoto, W.—Sci. Hyogo. Univ. Agr. Ser. Agr. Biol, 3:2, 58, 1958.

Yamamoto, W.—Coll. Agr., NTU. Spec. Publ. 10:216, 1961.

Symptoms: Lesions on leaves are amphigenously, mostly on the upper surface. In severe cases, a dogen of round to irregular circular, greyish black to black, flour-like, 2.0–13.0 mm colonies appeare on one blade of leaf.

Causal organism: Mycelia epigenous, branched, greyish brown to dark brown, slightly curved, unsmooth, 7.1–9.5 μ width; hyphopodia alternate or opposite, 1 septate, same color as hyphae, 17.9–20.0×10.5–12.4 μ; head cell globose or sub globose, 12.4–14.3×10.5–12.4 μ; stipe cell, short rod like, 4.8–7.6×7.2–9.5 μ; setae borne on the bottom of perithecia, seldom peritrichous, 267.9–630.0×9.5–11.4 (base) μ, black, tapering toward the tips. Perithecia scattered on the black colonies on the leaves, black, spherical, ellipsoid or oblongate-ellipsoid, 140.0–266.0×182.0–280.0 μ; asci light color, ovoid, sub-sphaerical or ellipsoid, with round or truncate head, 52.0–71.4× 28.6–38.0 μ; ascospores light yellowish brown to greyish brown, 4 septate, constricted 47.6–65.9×20.0–27.6 μ.

Suscept: *Cryptocarya chinenses* (Hance) Hemsl.

Specimen: Lein-wha-tsi, Taichung. (600–640 M). 4/14/1966, C. C. Chen, & H. S. Chang.

Distribution: China (Taiwan)

12. Black mildew of Box-leaf Eugenia

Meliolina cladotricha (Lev.) Syd.

Stevens—Ann. Myc. 25:419, 1927.

Sydow—Ann. Myc. 12:553, 1914.

Yamamoto, W.—Coll. Agr. N. T. U. Spec. pub. 10:222, 1961.

= *Meliolina octospora* (Cooke) V. Hohnel.

Saccardo—Syll. Fung. 9:417, 1891.

Yamamoto, W.—Sci. Rep. Hyogo Uni. Agr. Ser. Agr. Biol. 3:22, 1957.

Symptoms: Colonies are hypophyllous scattered orbicular or some-what irregular, velvety, black, 3–15 mm in diameter. Black dots (perithecia) appear between the mycelia.

Causal organism: Mycelium densely reticulate; straight branched, greyish brown to dark brown, 6.2–9.0 μ thick; hyphopodiolid or stomopodia scattered, some time opposite or alternate, subglobose or irregular, some time slightly lobed, 8.3–16.0×9.0–15.2 μ. Mycelial setae are numerous light color near the apex, 336–490 μ high, 9.0–12.4 μ thick at the base; perithecia scattered, depressed-globose, globose; perithecial setae, simple, straight or slightly curved, attenuate toward the apex, dark brown to black, 209.4–530.0×7.1–11.2 μ; asci fasciculate ellipsoid or elliptic-oblong, 8 spores, paraphysate 127.0–186.4×36.0–48.0 μ, paraphyses numerous filiform, hyaline, 74.0–156.0×54.0–71.4 μ; ascospores elliptic-oblong, rounded at ends, 3 septate, slightly constricted at the septa, yellowish brown to dark brown, 46.2–66.0×15.0–20.6 μ.

Suscept: *Eugenia microphylla* Abel.

Specimen: Lein-wha-tsi, Taichung. (600–640 M) 4/14/1966, C. C. Chen, H. S. Chang.

Distribution: China (Taiwan), Mauri.

13. Brown spot of Tungoil tree

Mycosphaerella aleuritides (Miyake) Ou.

Phytopath. Soc. Jap. Common names of Econ. Plant Diseases Japan 3:150, 1965.

=*Cercospora aleuritides* Miyake

Chupp, C.—Monog. Fungs Gen. Cercospora p. 212, 1959.

Miyake, I.—Bot. Mag. Tokyo 26:66, 1922.

Symptoms: Lesions on leaves are first round spot, scattered, than enlarge to form irregular circular or rectangular spot, 8 mm in diameter, brown to dark brown, with distinct margin.

Causal organism: Fruiting body amphigenous, non-fasciculated to dense fasicles, 9–32 in one cluster; stroma hemispherical or irregular in shape, dark brown to almost black, lighter towards the upper part, 28.6–83.3×14.3–33.3 μ; conidiophore fasciculate or single towards the tips, with 1–3 scars, 23.8–66.6×3.8–5.0 μ; conidia hyaline or sub-hyaline, whipe-like, ob-clavate, sometimes with sudden attenuation near the center, 4–9 septate, 19.0–61.9×4.5–6.2 μ; shorter type conidia, cylindrical or oblong in shape, with obtuse or sub-obtuse base, with straight or nearly straight tip; mycelia inside the leaf tissues, light yellowish grey to light yellowish brown, 3.3–5.7 μ width.

Suscept: *Aleurites fordii* Hemsl.

Specimen: Chitou, Nantou. (750 M), 11/18/1965, C. C. Chen.

Distribution: China (Taiwan), Japan.

Notes: The disease is first time described in Taiwan.

14. Leaf brown blight of Roxburgh Sumac

Mycosphaerella rhois (Saw. et Katsuki) comp. nov. (pl. II, 13–14, pl. III, 15–18.)
=*Cerocospora rhois* Saw. et Katsuki

Sawada, K.—D. C. F. F. 11:225, 1959.

Perithecia, amphigena, sparsa, frequenter at epiphylla, primo epidermide tecta, demum rumpentia, ampulliformia, ellipsoidea vel subglobosa, gilva vel bruneo-fulva 76.2–161.8 × 61.9–135.7 μ; Ascis, clavatis, hyalinis, subcurvatis, 47.6–59.5×7.1–9.5 μ, uniserialiter continentibus 8 sporas; Ascosporis, fusiformibus, hyalinis vel raro gilvis brunneisve rectis vel subcurvulatis, 1 septatis, subconstrictis, 17.6–23.3×2.9–3.8 μ.

Hab. in foliis Rhus semialata Murr. var roxurghii D. C., in Taiwan (China)

Symptoms: The spots are at first brown, circular, 1–2 mm, on the under side of the leaves; on the upperside, no corresponding lesions or distinct spots appear. Lesions eventually enlarge and become greyish brown to brown, circular or irregular circular with distinct border, sometimes bound by the veinlet to form rectencular and irregular spots, 8 mm. in diameter; 2 to 3 spots may coalesced together. Middle part of the old lesions become greyish white to greyish brown; black dots (perithecia) scattered on it.

Causal organism: Fruiting structures amphigenous, less frequently on the upper surface; stroma at first bury in the tissues, about 1/3–2/3 crumpent later, yellowish brown to dark brown, sphaerical or ellipsoid, 59.5–238.0× 42.8–285.6 μ; cells of the stroma round to irregular in shape, 3.3–8.6×4.8–9.5 μ; conidiophores fasciculate, more than 30 in cluster on the stroma, or single, emerge from epidermis, light brown to light yellowish brown, hyaline toward the tips, 3–7 septate, 57.1–142.8×43.8–53.0 μ; conidia filiform, straight or slightly curved, hyaline to light color, 50.0–95.2×3.3–7.1 μ, 3–8 septate; perithecia sparsely scattered on the under sureface, 26.2–73.8 μ first in the tissue, ostioles erumpent at later, flask-like, ellipsoid, or subglobose, 76.2–161.8×61.9–135.7 μ, yellowish brown to dark brown; perithecia wall at the base 11.9–42.8 μ and at side wall 11.9–28.6 μ in thickness; the cavity of the perithecia, globose to ellipsoid, 28.6–102.3 μ a layer of hymenium 9.5–21.4 μ hight; Asci clavate, obtuse head, tapering toward the base, hyaline, slightly curved, 47.6–59.5×7.1–9.5 μ, containing 8 spores in one row; ascospores fusiform, hyaline, rarely light yellowish brown, straight or slightly curved, 1 septate when matured, constricted, 17.6–23.3×2.9–3.8 μ; mycelia in the host

tissues hyaline to yellowish brown, smooth or not, 2.4–5.3 μ in width. Conidiophores may bear on the ostioles of the perithecia.

Suscept: *Rhus semialata* Mun. var. *roxurghii* DC =*R. iavania* L. var. *roxurghi* (DC) Rehd et Wil.

Specimen: Lein-wha-tsi, Taichung. (640 M), 4/14/1966, C. C. Chen & H. S. Chang.

Distribution: China (Taiwan)

15. Powdery mildew of Common paper malberry

Ovulariopsis broussonetia-papyriferae Saw.

Sawada, K.—D. C. F. F. 6:86, 1930.

Symptoms: The sign of the pathogen shows their white flour-like masses on the under surface of the leaves. The white powdery masses are first thin and small, become denser and larger at later stage, and the coalesced throughout the whole leaves. The upper surface of the affected leaves show a more or less yellowish discoloration followed by necrosis and defoliation.

Causal organism: Epiphytic mycelia creep on the under surface of leaves, hyaline, seldom septate and branched, 4.3–7.1 width. Endophtic mycelia, single, penetrate through the stomata and spread in to the intercellular space of the spongy tissues beneath the epidermal cells. Haustoria ovoid like, smooth, 15–20×8–9 μ; conidiophores, hyaline, thin walled emerged vertically from aerial mycelia masses, single to 3 clustered, clavate, 250–385.6×3.8–4.8 μ broader toward the terminal, 7.2–9.5 μ. 1–4 septate; conidia solitary, hyaline, fusiform to clavate-ellipsodial, 48.8–69.0×20.9–30.0 μ.

Suscept: *Broussonetia papyrifera* (L.) L' Hrrex et Nent.

Specimen: Agr. Exp. Station, Taiwan. Taipei 6/30/1965, C. C. Chen.

Distribution: China (Taiwan)

16. Web-blight of Zolkova

Pellicularia filamentosa (Pat.) Rogers

=*Rhizoctonia solani* Kuhn

Symptoms: Patches of hyphal masses occur on densely branched plant. The leaves or branches near the ground are firstly affected, soon spread over the entire plant, become greyish brown, water soaked, wilting, drying, epinasty and defoliation at last.

Causal organism: Aerical hyphae spread over the affected areas, loosely cob-web-like, hyaline at first, but later become slightly brownish in color, 6.7–10.9 μ. in width, branched at rignt angle. Sclerotia form between the patches of hyphal masses hemi-spherical, sub-globose, or irregular in shape, 1–2 mm.

in diameter, brownish when matured. The perfect stage of the fungus were not found.

Suscept: *Zelkova serrata* (Thunb) Makino. =*Z. formosana* Hay.

Specimen: Nancy nursery, Chia-i. (130 M). 7/30/1965, C. C. Chen.

Distribution: China (Taiwan)

Notes: The disease is first time described in Taiwan.

17. Leaf blight of Taiwan Acacia

Phomopsis acaciae sp. nov.)pl. II. 9-12)

Maculae, generatiter ab foliorum apicibus, primo, cano-fulvae ad fulvae, denique griseae, et in conspectu manifestae; Pycnidia hypophylla sparsa, raro epiphylla, globosa, vel ellipsoidea 107.1–197.5×166.6–397.5 μ; Pycnidiophora, solitaria, hyalina, recta vel subcurvulita, filiformia, 3.8–11.9×1.0–1.9 μ; Pycniosporae fusiformes, solitariae, hyalinae, 6.2–7.9×2.1–3.1 μ; stylosporae filiformes, hyalinae, generaliter curvulatae, 19.0–28.6×1.9–2.9 μ; Mycelia intercellularis vel intracellularia, 3.3–6.2 μ.

Hab. in foliis Acacia confusa Merr. in Taipei, Taiwan (China).

Symptoms: Lesions on leaves are water-soaked dark brownish to light greyish color, initially from leaf tip, extending through the whole leaf gradually. On the under surface of the lesions appear little indistinct warts (pycnidia). Spore ooze exudates in humid condition.

Causal organism: Pycnidia hypophyllous rarely epiphyllous, globose, sub-globose to ellipsoid, 107.1–197.5×166.6–397.5 μ; formed under the epidermis of the host; pycnidiophores non-septate, hyaline, straight or slightly curved, thread-like, 3.8–11.9×1.0–1.9 μ, densely borne on the inner wall of the pycnidia; pycniosphore fusiform, single cell, hyaline, 6.2–7.9×2.1–3.1 μ; stylospore, filiform, hyaline, non-septate, straight or slightly curved, 19.4–28.6×1.9–2.9 μ; mycelia in the tissues hyaline, to light brown or light yellowish brown, 3.3–6.2 μ in width.

Suscept: *Acacia confusa* Merr.

Specimen: Yang-ming-shan, Taipei. (460 M). 3/21/1966, C. C. Chen.

Distribution: China (Taiwan).

18. Leaf blight of Jambolan (Java-plum)

Phyllosticta eugeniae sp. nov. (pl. I. 4–8.)

Sacc. P. A.—Syll. Fung. 3:9, 1184. 10:110, 1892.

Maculae, amphigenae, initio in foliorum apicibus vel marginibus, primo brunneae, denique, purpureo-fulvae, et in conspectu manifestae; pycnidia amphigena, sparsa, frequenter epiphylla, ampulliformia vel ellipsoidea, brunnea vel fusco-brunnea, 166.0–228.5×119.0–192.8 μ; conidiophora cylinderica, erecta

cuspidata simplicia hyalina 7.1–11.9×2.4–5.2 μ; conidia simplicia, hyalina, mostly ellipsoidea, 12.4–14.8×4.3–7.1 μ; mycelia intercellularia vel intracellularia, hyalina vel pallide-brunnea, curvulata 3.9–7.1 μ.

Hab. in foliis *Eugenia cumini* (L.) Druce Hay. in Taiwan (China).

Symptoms: Lesions on leaves start from the tip or margin of the leaves. The spots are brown with 5 mm conspicuous violet brown border distinct from the healthy tissues. Lesions are more or less zonated, turn greyish brown on old ones, and scattered with black dots on the surface.

Causal organism: Pycnidia amphigenous, less frequently on the under surface, flask-like to ellipsoid, brown to dark brown, 166.0–288.5×119.0–192.8 μ; 11.9–26.2 in thickness at the base, and 11.9–21.4 μ at the side wall; cavity of pycnidia subglobose, globose or ellipsoid, 95.2–138.0×100.0–135.7 μ; ostioles, 61.8–66.6×25.0–30.0 μ; cells of the peridium irregular, 7.1–10.0×3.3–9.5 μ; conidiophores cylindrical or rod shape, slender toward tips, hyaline, no septate, 7.1–11.9×2.4–5.2 μ; spores unicellular, hyaline, elliptical or fusiform or cylindrical with acuate head in shape, 12.4–14.8×4.3–7.1 μ; mycelia in the host tissues, hyaline to light yellowish brown, smooth, curved, 2.9–7.1 μ in width.

Suscept: *Eugenia cumini* (L.) Druce
= *Myrtus cumini* L. = *Syzzgium cumini* (L.) Skeels.

Specimens: NTU, Taipei. (10 M). 2/25/1966, C. C. Chen. NTU, Taipei, (10 M). 4/2/1966, C. C. Chen, & P. H. Yu. NTU, Taipei. (10 M). 4/9/1966, C. C. Chen & P. H. Yu.

Distribution: China (Taiwan)

Notes: 1. *Eugenia* sp. is also attacked by *Phyllosticta myrticola* Speg. P. and *Phyllosticta nutiales* Thumf, but their spores and pycnidia are quite small, may differ from *Phyllosticta eugeniae.*

2. The disease is quite severe in Taiwan, most leaves of affected tree appear symptoms.

3. On the lesions, *Pestalotia* sp. are also found.

19. Brown spot of Hongkong Glochidion

Phyllosticta glochidions Saw.

Sawada, K.—D. C. F. F. I : 526, 1919.

Sgmptioms: Lesions start from the tip of the leaves, light brown, round, oval or elliptical in shape at first, enlarge to irregular, 0.2–2.0 cm, gradually turn grey, even shot-hole at later stage. Numerous dots scatter on the both sides of the lesions.

Causal organism: Pycnidia amphigenous, mostly on the upper surface, spherical or sub-spherical at early stage, with an ostiole at the apex, yellowish brown to dark brown, 92.0–134.5×81.4–150.2 μ; ostiole round in shape, 8.4–16.2 μ in

diameter; conidiophore hyaline, aseptate, 4.4–8.0×2.3–3.1 μ; conidia hyaline, single, oval, elliptical, smooth, 6.8–11.2×4.2–5.8 μ.

Suscept: *Glochidion hongkongense* Mull-Arg.

Specimen: Kon-kwan, Taipei. (10.7 M), 12/28/1965, C. C. Chen.

Distribution: China (Taiwan)

20. Plaster disease of Short-tailod leaf tanoak

Septobasidium bogoriense Patouillard.

Ito, S.—Mycological flora of Japan 2:4, 11–12, 1955.

Saccard, P. A.—Syll. Fungi 16:184, 1902.

Sawada, K.—D. C. F. F. 11:97, 1959.

Yamamoto, W.—Plant Protection Japan 10:3, 110–112, 1956. 10:9, 367–369, 1956.

Yamamoto, W.—Ann. Phyto. Soc. Jap. 21:4, 11, 1956.

=*S. pedicellatum* (Schw.) Pat.

Sawada, K.—Bot. Mag. Tokyo, 26:307, 1912.

Sawada, K.—D. C. F. F. 1:416–422, 1919.

Sawada, K.—D. C. F. F. 2:104, 1922.

Saccard. P. A.—Syll. Fung. 23:558, 1925.

Symptoms: Densely packed mycelia creep over the trunks, twigs, and leaves of the host. Lesions are round, 6.0–29.0 cm. in diameter on the twig of 3–18 mm. in diameter, 3–5 mm. from the margin of the lesions appear greyish white, 2–6 cm. inside, greyish brown and the center of it appear light brown or brownish violet; cracked, scale-like at later stage.

Causal organism: The patches of mycelia are consist of three layer; subiculum compact, plaster-like, 28.6–107.0 μ in thickness, hyphae 3.3–4.8 μ in width; mediculamcells in different shape, densely woven, cob-web like, 42.8–618.8 μ in thickness; hyphae straight, light brown to yellowish brown, 3.8–5.2 μ in width; occasionally, died scale insect embeded in the interspaces; epiculum hyaline, 14.3–130.0 μ in thickness, hyphae 2.9–4.3 μ in width, consist numerous probasidia; probasidia hyaline, globose to subglobose; basidia borne on top of the probasidia, 21.4–33.3×4.8–8.1 μ, sausage-like, slightly curvedor curved, 3 septate; sterigma, 7.1–14.3 μ borne at the septa, basidiospores ellipsoid to elongate-ellipsoid, slightly curved or curved, hyaline, smooth, 14.3–16.7×4.3–5.2 μ.

Suscept: *Pasania brevicaudata* (Skan.) Schott.
=*Synaedrys brevicaudata* (Skan.) Kaidz.

Specimen: Lein-wha-tsi, Taichung. (640 M). 4/15/1966, C. C. Chen, & H. S. Chang.

Distribution: China (Taiwan), U. S. A., India, Cuba, Australia, New Zealand etc.

Notes: *P. brevicaudata* is a new host of the fungus been described.

臺灣之森林傳染性病害調查(第三報)

陳 其 昌

菌類區系之調查工作爲對農作物防疫上或經濟上不可忽略的資料，尤其臺灣的森林病害，一向未曾有系統的研究調查。由民國52年6月起承美國農部（U. S. D. A.）補助，已查悉重要病害20種第一報發表於中央研究院植物研究所報告第六卷第一號，第二報亦20種發表於國立臺灣大學農學院研究報告第八卷三期。而後繼續調查之一部份又有20種，茲列記其病原菌名如下：

紅楠腫銹病菌（Aecidium machili p. Henn.），薄葉鷄屎樹白斑病（Cercospora losionthi sp. nov.），九芎角斑病（C. lythracearum Heald et. Walf.），泡桐黑斑病（C. paulownia Hori.），瓊仔樹（烏桕）角斑病（C. stillingiae Ell. et. Ev.），賊仔樹銹病（Coleosporium evodiae Diet.），大紅心炭疽病（Colletotrichum glochidii sp. nov.），桃花心木白絹病（Corticium rolfsii (Sacc) Cury.），泡桐插苗白絹病（Corticium rolfsii (Sacc) Cury.），桃花心木苗根腐病（Diplodia natalensis Evin.），厚殼桂小煤煙病（Meliola nealitseae Yam.），小葉赤蘭小煤煙病（Meliolina clodotricha (Lev) Syd.），油桐褐斑病（Mycosphaerella aleuritides (Miyake) Ou.），山鹽青褐斑病（Mycosphaerella rhois (Saw. et kats.) Comp. nov.），鹿仔樹背白粉病（Ovulariopsis broussonetia-papyriperae Saw.），臺灣櫸苗蛛絲病（Pellicularia filamentosa (Pat.) Rogers.），想思樹葉枯病（Phmopsis acaciae sp. nov.），菫寶蓮葉枯病（Phyllosticta eugeniae sp. nov.），大紅心樹褐斑病（Phyllosticta glochidionis Saw.），油葉杜灰色膏藥病（紋羽病）（Septobasidium bogoriense Pat.），等。其中山鹽青褐斑病菌爲訂正其學名，薄葉鷄屎樹白斑病，大紅心炭疽病，想思樹葉枯病及菫寶蓮葉枯病均爲新種，桃花心木白絹病，泡桐插苗白絹病，桃花心木苗根腐病，臺灣櫸苗蛛絲病均係新記錄。

PLATE I

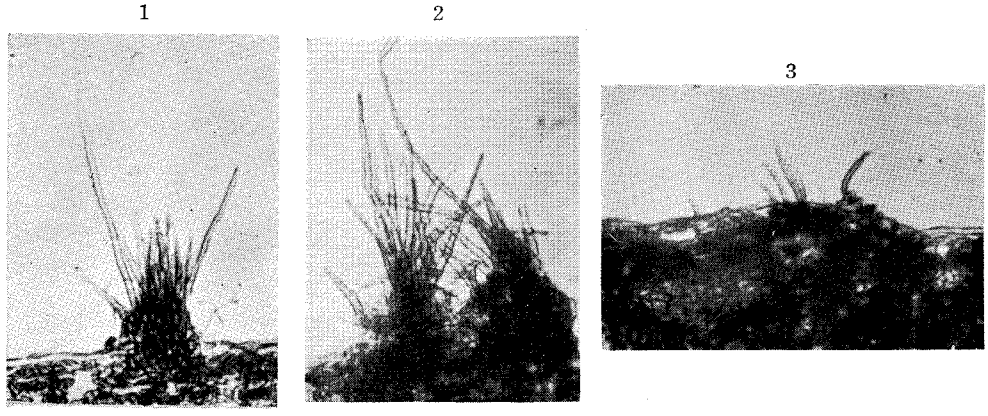


Fig. 1-3 Cercospora lassiathi sp. nov. (1-2 Firuit body; 3 Single Conidiophares.)

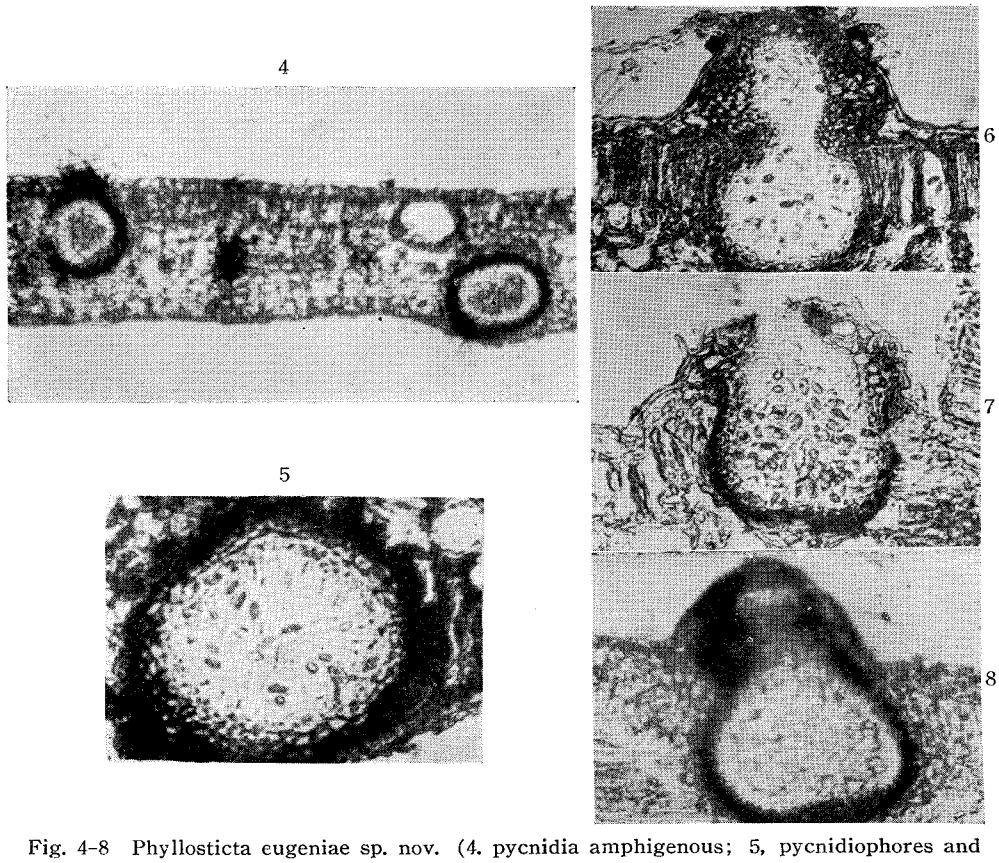
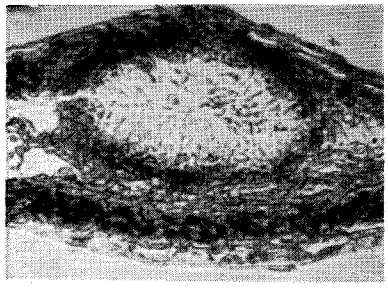


Fig. 4-8 Phyllosticta eugeniae sp. nov. (4. pycnidia amphigenous; 5, pycnidiophores and pycnidiospores; 6-8 type of pycnipia)

PLATE II

9



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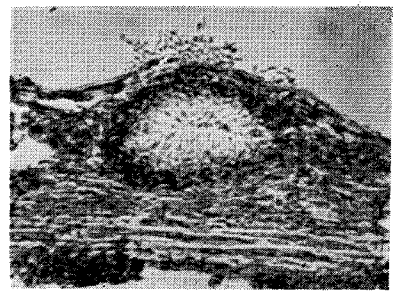


11

12

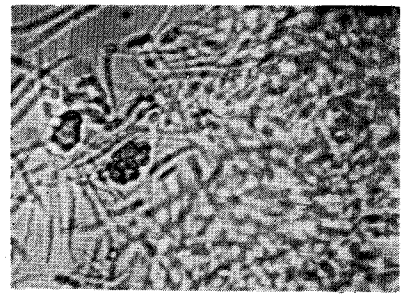
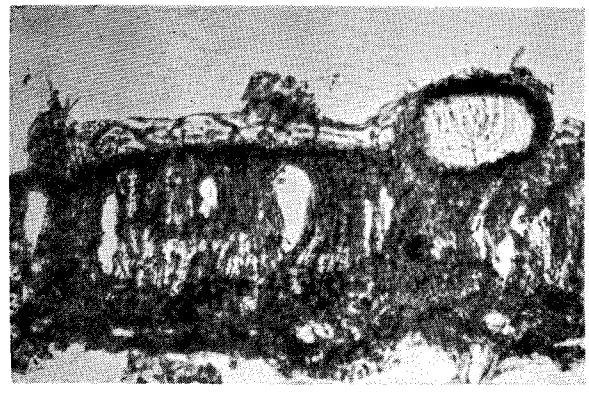


Fig. 9-12 Phomopsis acaciae sp nov. (9, 11. pycnidia; 10. pycnidium and pycniospores; 12. Stylospores.)

14



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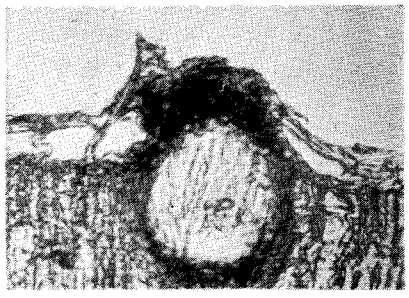
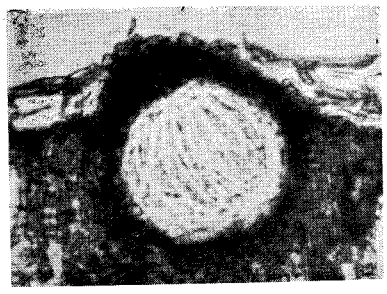


Fig. 13-14 Mycosphaerella rhois (Saw. et Katsuki) Comp. nov. (13. perithecium and Asci; 14. perithecium and conidiophores.)

PLATE III

15



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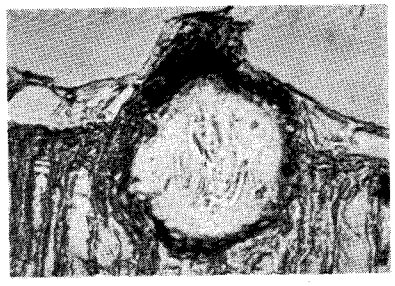
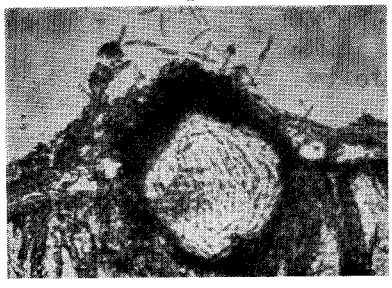


17



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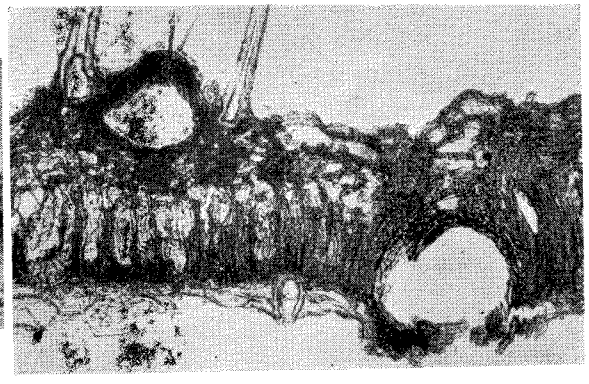
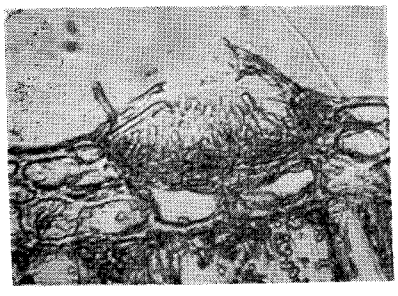


Fig. 15-18 Mycosphaerella rhois (Saw. et Kats.) Comp nov. (15. Aici filling in the perithecium; 16. Typical perithecium; 17. perithecium and Ascospores; 18. Amphigenous of perithecia.

19



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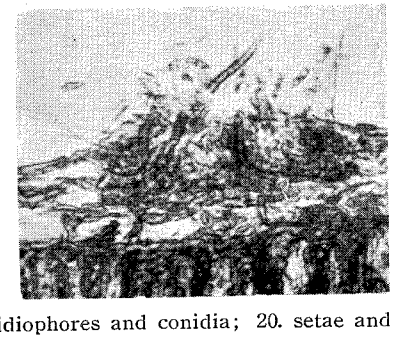

Fig. 19-20 Colletotrichum glochidii sp nov. (19. conidiophores and conidia; 20. setae and conidia.)