MYXOMYCETES OF TAIWAN IV: CORTICOLOUS MYXOMYCETES*

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Abstract: Thirty-one species of Myxomycetes that appear on the bark of living trees are reported. Nine of them are recorded for the first time on Taiwan: *Echinostelium minutum, Calomyxa metallica, Arcyria annulifera, A. carnea, Hemitrichia karstenii, Physarum leucopus, P. serpula, Clastoderma debaryanum*, and *Macbrideola cornea*. Other taxa listed are those included in the genera of: *Ceratiomyxa, Cribraria, Reticularia, Arcyria, Perichaena, Physarum, Didymium*, and *Stemonitis*. Their growth habit and microscopic characteristics are demonstrated by figures in eighteen plates. Four apparently undescribed taxa, one of *Cribraria* and three of *Physarum*, are described. The taxonomic certainty of them await further comparison and investigation. Boths field collections and moist chamber technique were adopted for the fructifications. All the specimens are deposited in the Mycology Herbarium, Department of Botany, National Taiwan University, Taipei, Taiwan, R. O. C., TAI.

INTRODUCTION

Myxomycetes (or true slime molds) can grow on almost any organic matter with sufficient moisture. The decaying wood is generally known to be their favorite substrates. Yet many of them have been found on substrates of other kinds (Davis & Butterfield, 1967; Gilbert & Martin, 1933; Härkönen, 1977, 1978a, 1978d; Keller 1974, 1978; Keller & Anderson, 1978; Keller & Braun 1977). And many new and rare taxa were thus found and reported (Brooks & Keller, 1977; Keller & Brooks, 1973, 1976, 1977a, 1977b; Härkönen, 1978b, 1978c). Bark of living trees and vines is now known to be an unique habitat with a distinctive myxomycete biota. Slime molds that grow and fruit on this special habitat are known as corticolous Myxomycetes.

In the field they are generally to appear in great profusion after lengthy rain shower in the warm days of spring and summer seasons. But many species which have minute fruiting bodies are usually overlooked. The laboratory cultivation in moist chamber and a microscopic detection of fruiting bodies generally increase the numbers of collection in terms of species diversity, and thus expand our knowledge of the geographic distribution of the members of this group of organisms.

The Myxomycetes found on bed logs of Shiitake mushroom, leaf litter and other plant debris have been reported (Liu, 1980, 1981, 1982). Whereas in this paper only the corticolous Myxomycetes are to be treated.

MATERIAL AND METHODS

Field collections were made in all seasons of the year. Places in the north (Taipei City

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and its vicinity, Tao-Yuan Hsien), central Taiwan (Nan-Tou Hsien, Chia-Yi Hsien, Tai-Chung Hsien), and in the south (Kao-Hsiung Hsien) were visited for searching the fructifications and plasmodia. When, in the field, the corticolous Myxomycetes are rare, then bark of trees were collected.

Bark specimens were cut from all sides of the main trunk axis at approximately 1.3–1.5 m high above the ground level and placed & tied in small plastic bags, one bag for each specimen, and were stored in the refrigerator (6±1°C) after being caried back to the laboratory for further cultivation in moist chambers.

In harvesting the fruiting bodies from cultivation, extra attentions should be taken to prevent them from drying too fast or becoming moldy. Aberrant fruiting bodies may be harvested if they are exposed to dry air before thoroughly matured (Gilbert and Martin, 1933). Filamentous fungi may also overgrow the fructifications if the cultures dry out too slowly after maturation in the moist chamber (Braun and Keller, 1977).

For species identification, Martin and Alexopoulos' system (1969) is followed. Several other references (Emoto, 1977; Farr, 1976; Lakhanpal & Mukerji, 1981; Lister, 1925) are also consulted for this purpose.

RESULTS

A total of thirty-one species distributing in nine families were identified and reported in this paper. Species that are new to Taiwan (Nakazawa, 1929, 1931; Emoto, 1942; Liu, 1980, 1981, 1982) are marked by asterisk. Description of species is not intended here, but only the characteristics of species that vary more or less from the descriptions in the references are discussed. Plates I-XVIII depict the fructifications in habit and their microscopic feature. Some cultures produce plasmodia that never fruit. In this case, part of the plasmodia were induced to form sclerotia which were then stored for further investigation about the initiation of sporulation.

LIST OF TAXA

CERATIOMYXACEAE

1. **Ceratiomyxa fruticulosa** (Mull.) Macbr., N. Am. Slime Moulds 18. 1899.

   Habitat: Bark of living tree. *Liquidambar formosana* Hance.
   Specimen examined: Taipei City: CHLB 168, Apr., 1982.

CRIBRARIACEAE

2. **Cribraria microcarpa** (Schrad.) Pers., Syn. Fung. 190. 1801. emend. Nann.-Brem. K. Ned. Akad. Wet. Proc. C. 69: 340. 1966. **(Plate I, 1–4; Plate XV, 1)**

   Habitat: Bark of living tree, from a moist chamber culture.
   Specimen examined: Tao-Yuan Hsien, Fu-Hsing Hsiang, La-La Mt.: CHLB 191, bark collected on Nov. 13, 1982.

   A collection typical of this species except for the microscopic characters of spores. Spores of out collection are rounded, nearly smooth but with 5–6 distinct warts along the margins under high dry lens. When viewed under oil lens, the spores are 6.4–7(–8) μ in diameter, minutely spinulose with distinct scattered warts (5–6 in one hemisphere). The spines are clearly shown and the large distinct warts are the aggregation of spines as viewed under SEM.

3. **C. minutissima** Schw., Trans. Am. Phil. Soc. II, 4: 260. 1832. **(Plate II, 1–3; Plate XV, 2)**

   Habitat: Bark of living tree, from a moist chamber culture.
   Specimen examined: Nan-T'ou Hsian, Hui-Sun Forest Station: CHLB 282, 1982.

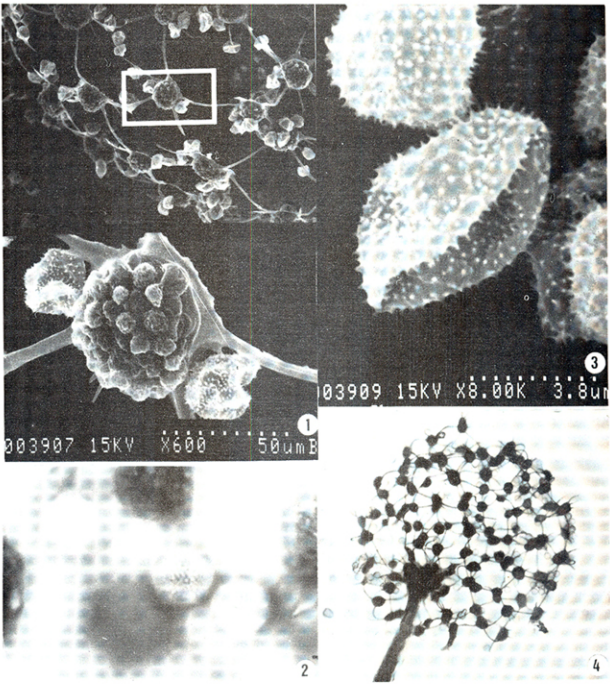


Plate I. *Cribraria microcarpa*

1. SEM picture of the net, showing the thickened node.
2. Spores, surface view, ×2010.
3. SEM picture of spores, showing the surface markings.
4. Sporangium, showing the node and the net, ×201.

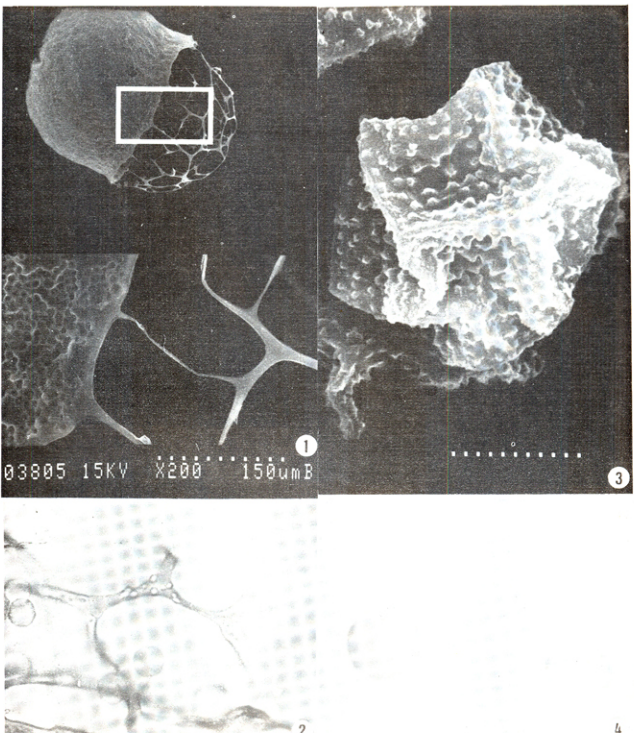


Plate II. *Cribraria minutissima*

1. SEM picture of the sporangium, showing the flat node.
2. Node of the net, showing the dictydine granules, ×2010.
3. Spore, ×10,000.
4. Spores, marginal view, ×2010.

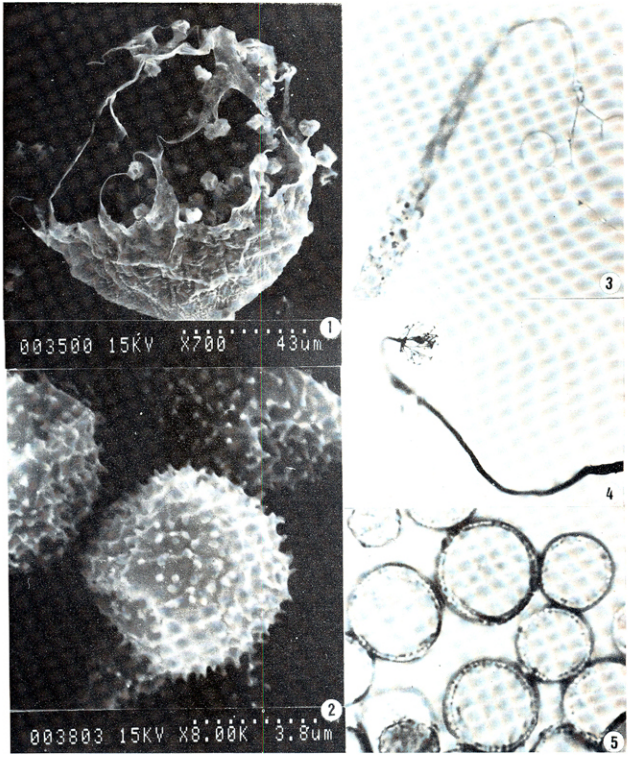


Plate III. 1-2. *Cribraria violaceae*, 4-5. *Clastoderma debaryanum*

1. SEM picture of the sporangium; 2. SEM picture of spore; 3. Capillitium and spores of *Echinostelium minutum*, ×804; 4. Opened sporangium, showing the capillitium, ×75. 5. Spores, ×2010.

Plate IV. 1–4. *Hemitrichia karstenii*, 5. *Arcyria carnea*

1. SEM picture of spores; 2. A section of the capillitial thread; 3. Capillitium, showing the large rounded expansions, ×402; 4. Outside surface of peridium as seen under SEM; 5. Capillitium, ×804.

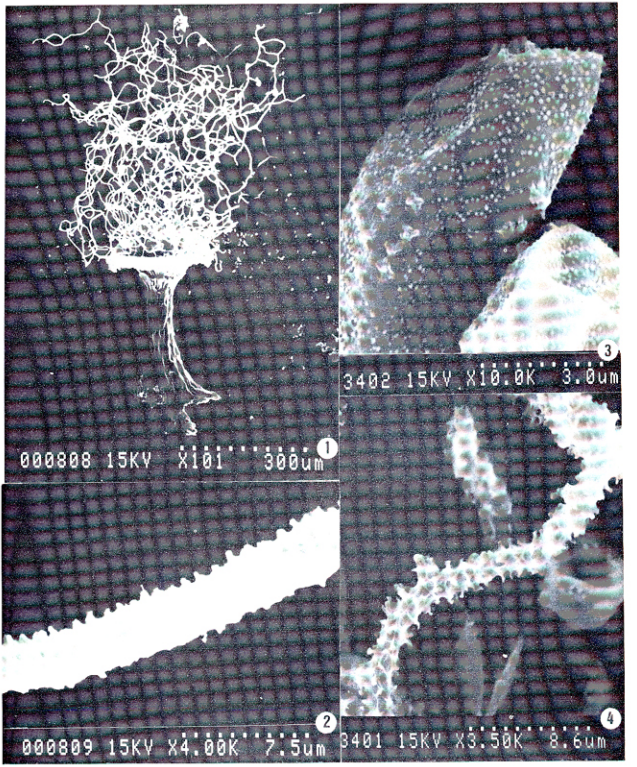


Plate V. 1-2. *Arcyria annulifera*, 3-4. *A. cinerea*

1. SEM picture of the sporangium after dehiscence; 2. A section of the capillitial threads; 3. Spore, showing the surface markings; 4. Capillitial thread.

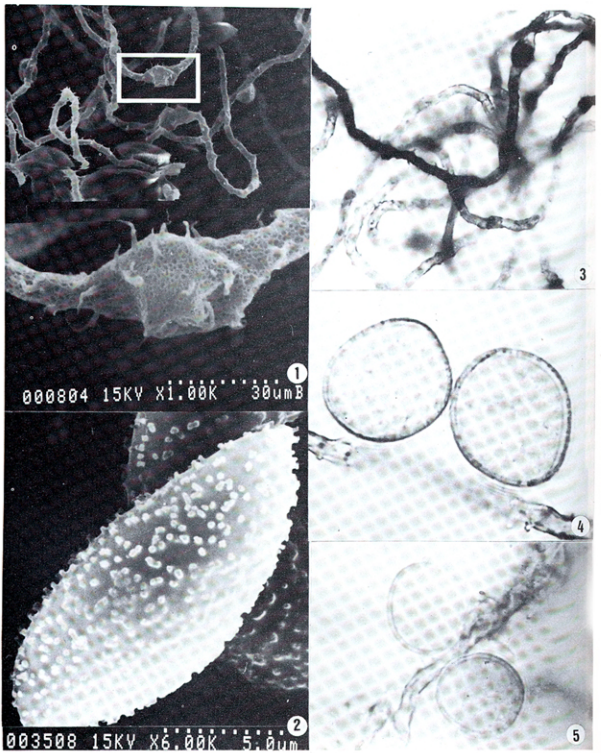


Plate VI. 1-4. *Perichaena corticolis*, 5. *Perichaena chrysosperma*
1. Capillitum, viewed under SEM; 2. Spore, showing the surface markings; 3. Capillitium, one section of the thread is dark, ×804; 4. Spores, marginal view, ×2010; 5. *P. chrysosperma*, marginal view of spores, ×2010.

The species is distinctive in the sporangial head. The calyculus at the lower half is always present and slightly constricted at the margin where it separates from the net of the upper half of the sporangium. Spores (6.5–9.0″–9.5″ μ) of our collection are globose or somewhat 6-angled by the margin as seen under light microscope. SEM picture shows the spore surface is densely covered by minute warts, the surface is divided into 5 large meshes by distinctly raised ridges which appear quite rigid.

4. **C. violaceae** Rex, Proc. Acad. Phila. 43: 393. 1891. **(Plate III, 1–2; Plate XV, 3)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 207a, Apr. 11, 1983.

Our specimen is the minute form of this species. The pruple sporangium is 0.06–0.15 mm in diameter, erected on straight stalk of about three-fourth (or a little longer) of the total height. The tallest fruitification reaches only 0.62 mm. Spores of our collection are also smaller, 6.0–6.5 μ in diameter.

5. **C. sp.** **(Plate XIII, 1–2)**

Sporangia scattered, stalked, minute, 0.075–0.10 mm in diameter, globose or short ovoid (0.075–0.10×0.10–0.12 mm); total height 0.35–0375 mm; stalk brown, pale at the tapered apex, 0.25–0.27 mm long, transparent, filled with irregular granular matter or fiber; calyculus lacking; meshes of net somewhat rectangular, large (17 μ in diameter), the node large, angular, flat, bearing pale granules, the connecting threads pale or colorless by transmitted light, with no free ends; spores minute, 5.6–6.0 μ in diameter, 6-angled, minutely warted, pale by transmitted light, brownish orange in mass, usually forming a tight spore ball in the net.

Habitat: Bark of living tree, from a moist chamber culture.

Specimen examined: Tai-Chung Hsien, Wu-Ling Farms: CHLB 289, bark collected on Apr. 15, 1983.

This specimen resembles *C. minutissima* in: the flat nodes and nets, the shape and markings of spores. But the fructification is much smaller than the latter, about half or even smaller than half of our collection, *C. minutissima* (CHLB 282). The spores is much smaller too. The distinct calyculus of CHLB 282 is completely lacking in this specimen. Apparently it is a species identical with none of the known taxa.

RETICULARIACEAE

6. **Reticularia lycoperdon** Bull., Hist. Champ. Fr. 95. 1791.

Habitat: Bark of *Melaleuca leucadendra* (L.) Linn.

Specimen examined: Taipei City: CHLB 288, June, 1983.

ECHINOSTELIACEAE

*7. **Echinostelium minutum** de Bary, in Rost., Mon. 215. 1874. **(Plate III, 3)**

Habitat: Bark of *Garcinia subelliptica* Merr., in a moist chamber.

Specimen examined: Kao-Hsiung Hsien, Ken-Ting National Park: CHLB 178c, bark collected on Apr. 8, 1982.

A very minute specimen with a globose head 25–62 μ in diameter, and is found and described for the first time on Taiwan. The characteristics of our specimen agree well to the descriptions for this species from Europe, North America and India. However, the circular patches on the smooth spore surface is not observed in our corticolous specimen, neither in the other collection on the dead wood from the field.

DIANEMACEAE

*8. **Calomyxa metallica** (Berk.) Nieuwl., Am. Midl. Nat. 4: 335 1916. **(Plate VIII, 3-4; Plate XVI, 6)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 86b, CHLB 87d, June 14, 1982.

Our collections agree well enough to the characteristics of this taxon described in the references except for the size of spores. Spores of our collections are in the shade between cream buff and deep olive buff in mass, palid (yellowish) by transmitted light, distinctly warted and 7-8 (−8.5) μ in diameter. Martin and Alexopoulos (1969) discussed that a variety reported as *Margarita metallica* var. *microspora* by Meylan (Bull. Soc. Vaud. Sci. Nat. 53: 462. 1920) as having small spores, 7-8 μ in diameter. But Meylan's variety was re-examined by Kowalski (1975) and has been considered as a synonym of *Dianema depressum* A. Lister. SEM picture of the long capillitial threads reveals the surface marked by scattered spinules which appear not in a spiral manner. Apparently our collection is a variety new to this species.

TRICHIACEAE

9. **Arcyria cinerea** (Bull.) Pers., Syn. Fung. 184. 1801. **(Plate V, 3-4)**

Habitat: Bark of *Acacia confusa* Merr., *Pinus luchuensis* Mayr, moist chamber cultures.

Specimen examined: Taipei Hsien, Grass Mt.: CHLB 271, Sept. 26, 1982; Taipei Hsien, Ch'i-Hsin Mt.: CHLB 32, Jan. 19, 1982.

The stalk (blue green or darker above) is about the same length as (or shorter than) the sporangium (0.64-0.88 mm in length). The capillitial threads (2 μ in diameter, but those close to the basal part smoother and larger, up to 2.7 μ in diameter) are densely covered by long blunt warts connected by transverse bands. Spores 5.5-6.0 μ in diameter, are pale. The scattered warts on the spore surface when viewed under SEM are clusters of large tubercles, and the smooth area are actually densely covered by fine spinules or warts.

*10. **A. annulifera** Torrend, Broteria 7: 102. 1908. **(Plate V, 1-2; Plate XVI, 2)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 123, June 14, 1982.

The capillitial thread of our specimen is larger, 3 μ in diameter.

*11. **A. carnea** (G. Lister) G. Lister, Jour. Bot. 59: 92. 1921. **(Plate IV, 5; Plate XVI, 1)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 105, June 14, 1982.

The sporangia resemble *A. insignis* in size. But the flesh-colored (carrot red) spore mass and the characteristics of the capillitial threads (the prominences appearing notched, square, or hammer-headed in profile) make it identified as such.

12. **A. globosa** Schw., Schr. Nat. Ges. Leipzig I: 64. 1882.

Habitat: Bark of *Cryptomeria japonica* (L. f.) D. Don, from a moist chamber culture.

Plate VII. *Macbrideola cornea*

1. Dehiscent sporangium, showing the forked columella, ×201.
2. Base of stalk, showing the fibrous appearance, ×801.
3. Branching columella and forking capillitium, ×804.
4. Terminal end of capillitium, ×804.
5. Spores, surface view, ×2010.

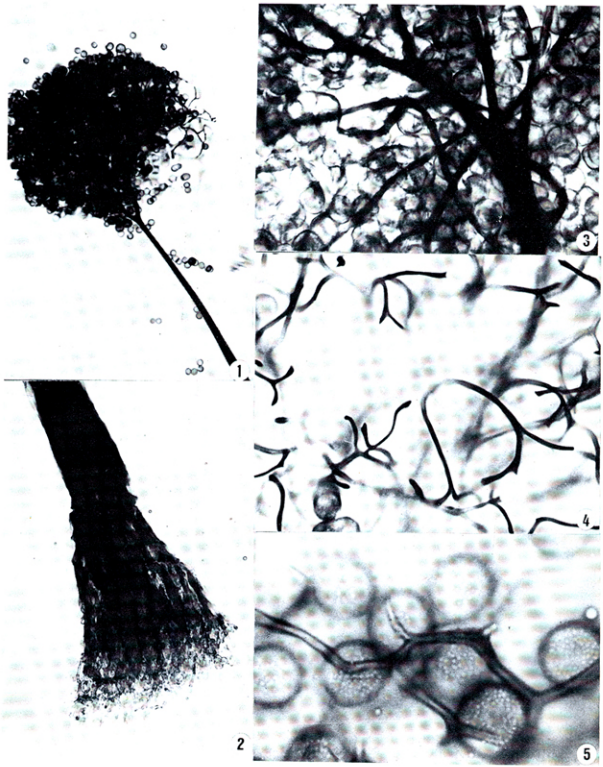


Plate VII

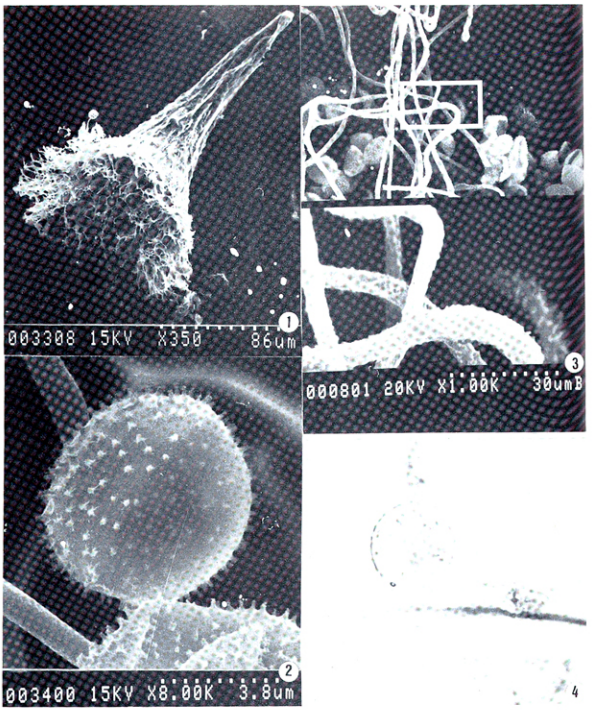


Plate VIII. 1-2. *Macbrideola cornea*, 3-4. *Calomyxa metallica*

1. Base of stalk, viewed from the bottom end.
2. Spore.
3. Capillitium.
4. Spore and capillitial thread, ×2010.

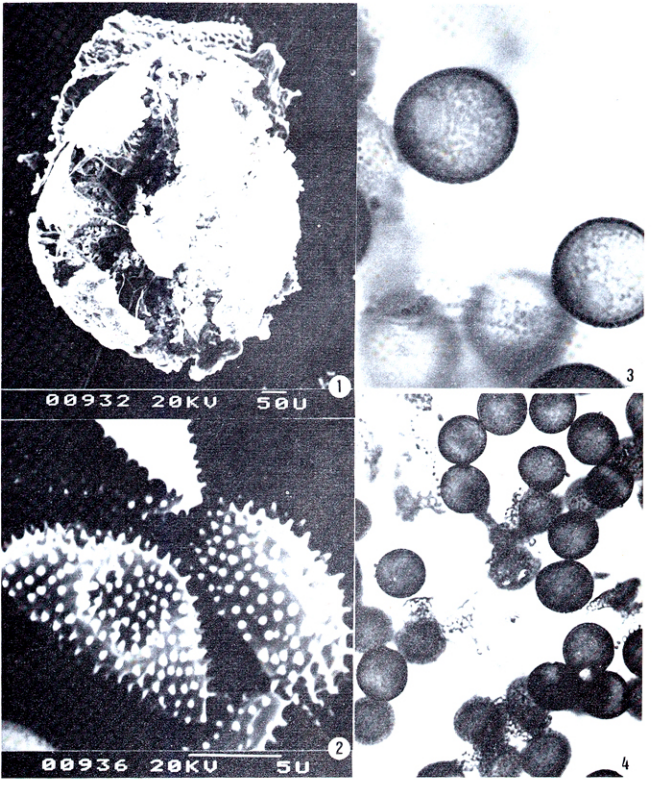


Plate IX. 1-3. *Physarum crateriforme*, 4. *P. leucopus*

1. Sporangium, top view.
2. Spores, showing the surface markings.
3. Spores, marginal and surface view, ×2010.
4. Spores and capillitial thread, showing the angular lime node, ×804.

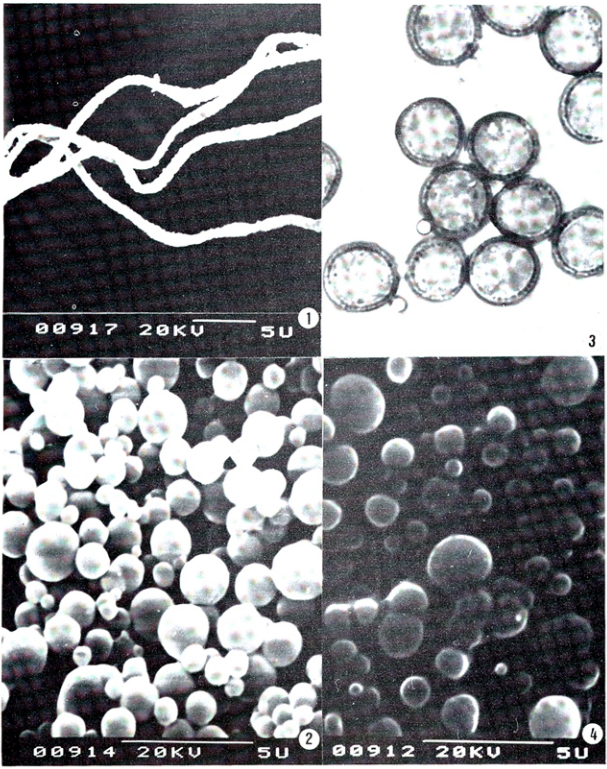


Plate X. *Diderma effusum*

1. Capillitial threads.
2. Lime granules on the peridium.
3. Spores, marginal view, ×2010.
4. Surface view of the glass-like layer.

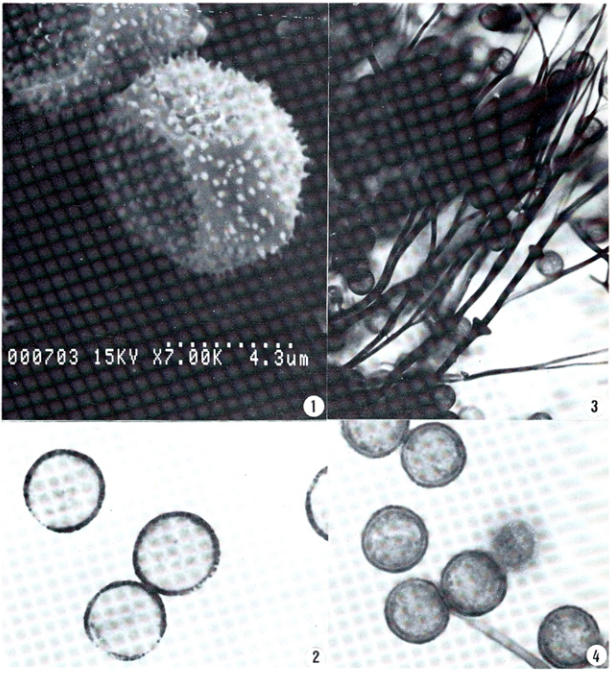


Plate XI. 1-2. *Diderma platycarpum*, 3-4. *Didymium clavus*

1. Spores, seen under SEM.
2. Spores, marginal view, ×2010.
3. Capillitium, ×804.
4. Spores, marginal view, ×2010.

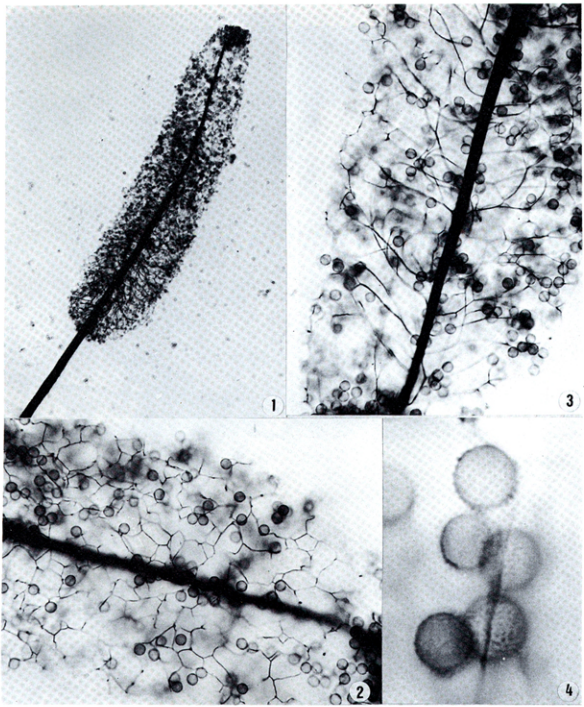


Plate XII. *Stemonitis virginiensis*

1. Sporangium with spores mostly dehiscent, ×75.
2. Surface net of the capillium, ×300.
3. Part of sporangium, magnified from fig. 1, showing the main branches of capillitium arising from colla, ×300.
4. Spores, marginal view, ×2010.

Specimen examined: Chia-Yi Hsien, Mt. Ali: CHLB 141, Feb. 15, 1982.

The sporangia of our collection are the small type (0.24–0.4 mm in diameter, up to 0.72 mm in total height). But the warted capillitial threads and spores (8.0–8.5 μ) are typical and distinct characteristics of this taxon.

13. **A. insignis** Kalchbr. & Cooke, in Kalchbr., Brevillea 10: 143. 1882.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 120, CHLB 121, June 14, 1982.

*14. **Hemitrichia Karstenii** (Rost.) A. Lister, Mycet. 178. 1894. **(Plate IV, 1–4)**

Sporangia sessile, globose or elongated, scattered; peridium brownish, opaque with deposition of amorphous matter; capillitium an elastic network of brownish yellow threads, 2–3 μ in diameter, surrounded by 2–3 spiral bands, scattered along the threads with many large rounded expansions (up to 17 μ in diameter); spores yellow in mass, pale (yellowish) by transmitted light, minutely warted, 7.5–8.0 μ in diameter.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 102c. June 14, 1982.

Spores of our specimen are much smaller than as described in the references (Lister, 1925; Martin & Alexopoulos 1969). Nevertheless the characteristics of capillitium: a network, loosely and irregularly surrounded by spiral bands, with many rounded swollen bodies, are distinct to be assigned to this species.

15. **Perichaena chrysosperma** (Currey) A. Lister, Myce. 196. 1894.
(Plate VI, 5; Plate XVI, 3)

The various fructifications of our collections bear spores of 7.2–9.0 (—9.5) μ in diameter. The spores are yellow to dull yellow in mass, subglobose, or oblong and angled more or less. The capillitial threads are prominent with long spines (up to 3.5 μ in length) and scattering elliptical swollen bodies (6–8 μ in diameter) along the length.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 87b$_2$, CHLB 94b, June 14, 1982; CHLB 216, Apr. 11, 1983.

16. **Perichaena corticalis** (Batsch) Rost., Mon. 293. 1875. **(Plate VI, 1–4; Plate XVI, 4)**

The light colored (yellow) reticulate line is the inner layer of peridium, the outer layer opaque, prussian red (Ridgway, 1912). The spores are large, 10–12 μ, minutely warted. The slender capillitial threads (2–2.5 μ in diameter) are scarcely branched, spinulate, and scattered with some elliptical swellings (6–10 μ in diameter), resembling the capillitial threads of our specimens of *P. chrysosperma* in this respect. The capillitial threads when viewed under SEM, are densely pitted, the spines are long.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 107b, June 14, 1982; CHLB 207a, Apr. 11, 1983.

PHYSARACEAE

17. **Physarum crateriforme** Petch, Ann. Bot. Gard. Peradeniya 4: 304. 1909.
(Plate IX, 1–3; Plate XVII, 2)

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 91, CHLB 92, CHLB 93b, CHLB 99, CHLB 101, CHLB 102a, CHLB 107a, June 14, 1982.

The cylindrical columella attaining the apex, the somewhat obpyriform, scalely limy sporangia on the black-brown short stalk are the distinct characters of this species. The spores of our specimens are prominently spiny, 10–10.5 μ in diameter.

*18. **P. leucopus** Link, Ges. Nat. Freunde Berlin Mag. 3: 27. 1809.
(Plate IX, 4; Plate XVII, 3)

The sporangia depressed globose, 0.28–0.35 mm in diameter, 0.2 mm thick, white lime granules in scale-like patches densely covering the sporangium; stalk up to 1.0 mm long, limy all through; hypothallus conspicuous, limy as stalk, or lime-less and membranous; nodes of capillitium angular, large, the connecting thread short; columella lacking; spores large, globose, subglobose, minutely warted, 10–12 μ, dark in mass.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 89a, June 14, 1982.

19. **P. melleum** (Berk. & Br.) Massee, Mon. 278. 1892.

Habitat: Bark of *Ficus microcarpa* (Indian laurel fig).

Specimen examined: Taipei City: CHLB 113, June 14, 1982.

*20. **P. serpula** Morgan, Jour. Cinc. Soc. Nat. Hist. 19: 29. 1898. **(Plate XVII, 4)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 85a, CHLB 86a, CHLB 87a, CHLB 93a, CHLB 102b, June 14, 1982.

Spores of our collection are smaller, (8.5—) 9–10 μ in diameter.

21. **P.** sp. A **(Plate XIII, 3–5; Plate XVIII, 5)**

Sporangia depressed globose, 0.4–0.5 mm in diameter, usually nodding, white lime granules gathered in the form of lime scales densely covering the sporangium; stalk attenuated, limy or frosted, lime-less, and black brown and sometimes quite expanded at the basal end, 0.6–1.0 mm long; columella lacking; capillitial threads colorless, branched in wide angles, the lime node short, somewhat rounded, or in fusiform; spores 7.2–8.0 (—9) μ in diameter, minutely warted.

Habitat: bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 85b, CHLB 103, CHLB 106, June 14, 1982.

The lenticular, nodding, and limy sporangium on a long white limy or frosted stalk, and the wide-angled branched capillitial threads are the distinct characters of this species. It resembles none of the known taxa. The taxonomic position of it is await for further comparison and investigation.

22. **P.** sp. B **(Plate XIV, 4–5; Plate XVII, 6)**

The whole fruiting body (stalked sporangia) is proportionately smaller than *P.* sp. A. Besides, these two spp. are very close in the outer appearance and spore characters. The sporangia, however, are not quite alike, flat above but convex below in sp. B, a radar-like in form.

Habitat: Bark of *Bischofia javanica* Blume.

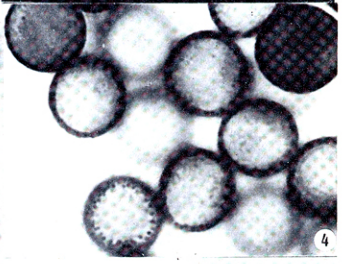
Specimen examined: Taipei City: CHLB 85c, CHLB 87b, CHLB 95, June 14, 1982.

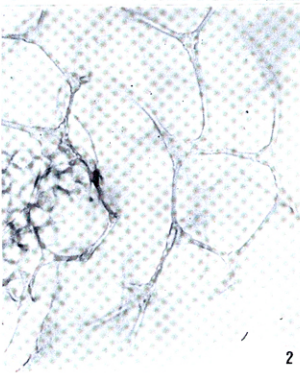
23. **P.** sp. C **(Plate XIV, 1–3)**

Sporangia globose, depressed-globose, or rod-shaped, 0.5 mm in diameter, 0.3–0.4 mm high, white; stalk limy except at the basal end, 0.5 mm long; columella lacking, pseudocolumella white, flat or stellate, conspicuous; capillitial threads forking, lime nodes angular,

Plate XIII. 1–2. *Cribraria* sp. (CHLB 289), 3–5. *Physarum* A. (CHLB 106)
1. Sporangium.
2. Net, showing the flat node, ×804.
3. Capillitium, showing the large angular node.
4–5. Spores, ×2010; 4. Marginal view, 5. Surface view.

1





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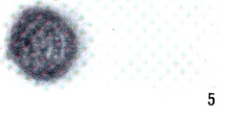

5

Plate XIII

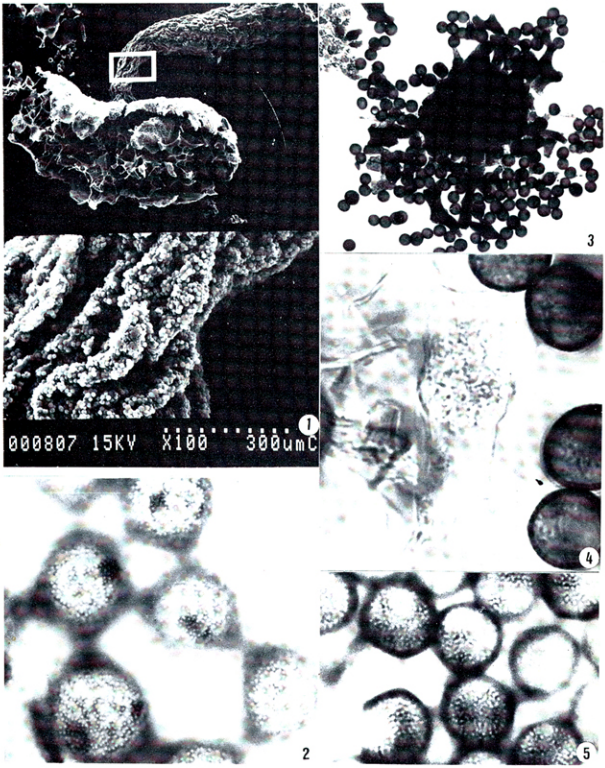

Plate XIV

large, white; spores black brown in mass, large, (10—) 10.4–13.6 μ in diameter, conspicuously spinulate, the spines often in dense clusters scattering on the surface.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City; CHLB 108, June 14, 1982.

A specimen very close to *P. limonium* Nann.-Brem., K. Ned. Akad. Wet. Proc. C. 69: 357. 1966, in having pseudocolumella, capillitium, and stipitate form of sporangia. But it differs from the latter in the color of sporangia and lime nodes, and in limy stalk. It also resembles *P. oblatum* in spores which are all large, conspicuously spinulose and bear clusters of denser spines. *P. oblatum* has, however, yellow sporangia and lime-less stalk. Apparently our specimen is quite distinct in having characters not identifical with any known taxa.

DIDYMIACEAE

24. **Diderma platycarpum** Nann.-Brem., K. Ned. Akad. Wet. Proc. C. 69: 359. **(Plate XI, 1–2; Plate XVIII, 1)**

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 87c, CHLB 110, CHLB 111a, June 14, 1982.

25. **D. effusum** (Schw.) Morgan, Jour. Cinc. Soc. Nat. Hist. 16: 155. 1894.

The fructification is very thin and flat with perforations. The outer peridium is a white, fragile crust, smooth in appearance, dehiscent from the preformed irregular fissures, the inner layer glass-like shinning. Spores are miuntely warted on the surface, 6–8 μ in diameter. The capillitial threads radiate from peridium, transparent, and slender, sparcely branched. Columella are not found.

Habitat: bark of living trees, from a moist chamber culture.

Specimen examined: Taipei Hsien, Wu-Lai Hsiang: CHLB 155, Feb. 25, 1982.

26. **Didymium clavus** (Alb. & Schw.) Rab., Deuts. Krypt.-Fl. 1: 280. 1844. **(Plate XI, 3–4; Plate XVIII, 3)**

The stipitate sporangia are discoid, 0.5–0.7 mm in diameter. Spores are 7–7.5 μ, very minutely warted.

Habitat: Bark of *Bischofia javanica* Blume.

Specimen examined: Taipei City: CHLB 94a, June 14, 1982.

27. **D. iridis** (Ditmar) Fries, Syst. Myc. 3: 120. 1829.

Habitat: Bark of *Garcinia subelliptia* Merr., from a moist chamber culture.

Specimen examined: Kao-Hsiung Hsien, Ken-Ting National Park: CHLB 23, Aug. 25, 1981.

STEMONITACEAE

28. **Stemonitis splendens** Rost., Mon. 195, 1874.

Habitat: Bark of *Melaleuca leucadendra* (L.) Linn.

Specimen examined: Taipei City: CHLB 276, May 27, 1983.

Plate XIV. 1-3. *Physarum* sp. C, 4-5 *P.* sp. B

1. Fruiting body (above) and part of the stalk (below).
2. Spore, surface view, ×2010.
3. Pesudocolumella at the center (dark), angular lime nodes and spores, ×201.
4. Spores and lime node, ×2010.
5. Spores, surface view, ×2010.

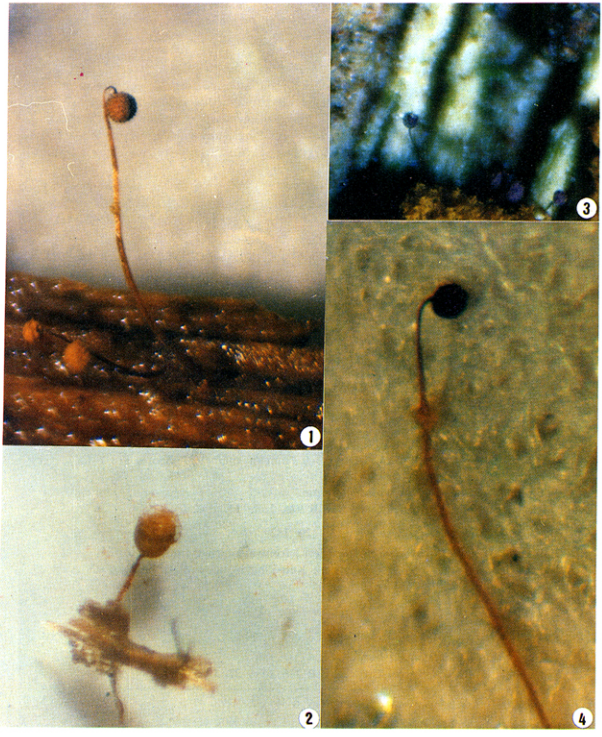

Plate XV. 1. *Cribraria microcarpa*, ×32.
2. *C. minutissima*, ×52.
3. *C. violaceae*, ×32.
4. *Clastoderma debaryanum*, ×80.

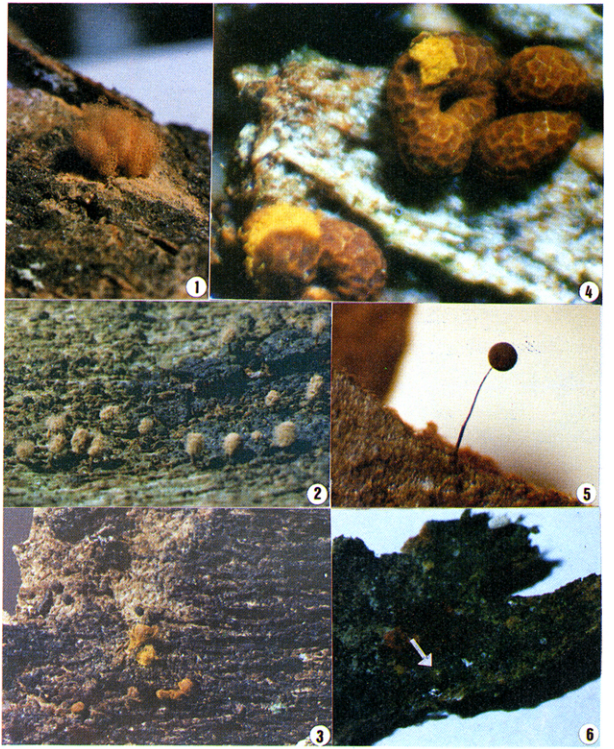

Plate XVI

1. *Arcyria carnea*, ×8.
2. *A. annulifera*, ×8.
3. *Perichaena cyrysosperma*, ×8.
4. *P. corticalis*, ×32.
5. *Macbrideola cornea*, ×21.
6. *Calomyxa metallica*, ×8.

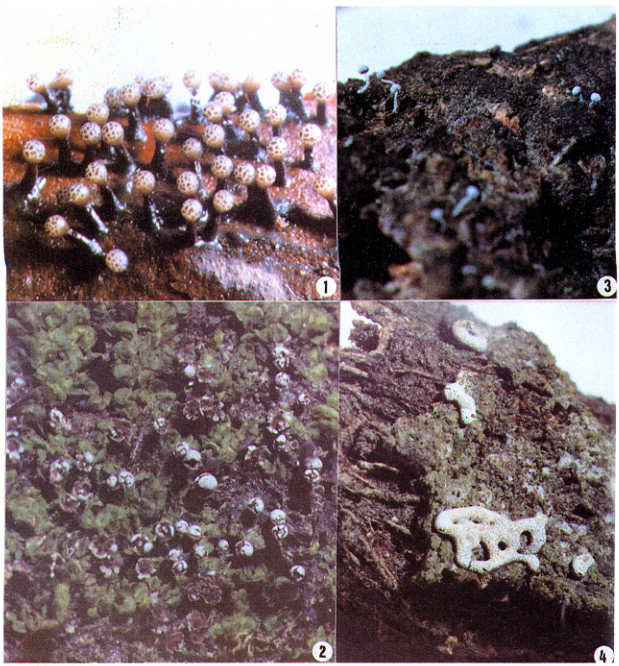

Plate XVII. 1. *Trichia botrytis*, ×8.
2. *Physarum carteriforme*, ×8.
3. *P. leucopus*, ×8.
4. *P. serpula*, ×8.

Plate XVIII. 1. *Diderma platycarpum*, ×20.
2. *D. effusum*, ×8.
3. *Didymium clavus*, ×8,
4. *Stemonitis virginiensis*, ×8.
5. *Physarum* sp. A, ×8.
6. *P.* sp. B, ×32.

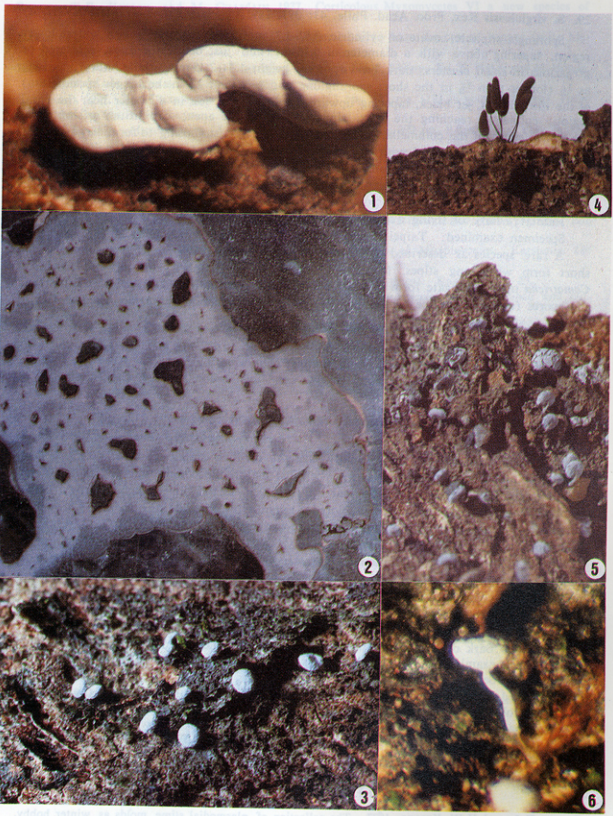

Plate XVIII

29. **S. virginiensis** Rex, Proc. Acad. Phila. 43: 391. 1891. **(Plate XII, 1-4; Plate XVIII, 4)**

Sporangia stipitate, ovate or cylindric, 0.52-1.35 mm long, 0.32 mm at the widest lower region, tapering above with a diameter of 0.15-0.19 mm just below the apex, scattered or gregarious in small clusters, dark brown; total height 1.34-2.45 mm; stalk hollow, as long as ⅓ (longer than ½ in the short sporangium, and less than ⅓ in the longer sporangium) of the total height, jet black, tapering upward, about 25 μ or less in diameter near the basal region; columella reaching the apex, sinuate close to the apex; capillitium arising from the entire length of the columella, branching sparsely & anastomosing to form large meshes, the ultimate branches united with the small-meshed surface net; spores olive brown (dark brown) in mass, violaceous by transmitted light, globose, 6-6.5 (−7) μ in diameter, marked by reticulation of narrow bands connecting prominent warts, by L. M. the spores minutely spinulate.

Habitat: Bark of living trees, from a moist chamber culture.

Specimen examined: Taipei Hsien, Wu-Lai Hsiang: CHLB 182, Feb. 25, 1982.

A rare species as described by Martin & Alexopoulos (1969). Our specimen is the short form with long stipes, harvested from a moist chamber culture, and resembles *Comatricha* of the elongate form in outer appearance. The hollow stalk, the capillitium and the spores (size and surface ornamentation) make our collection being identified as such.

*30. **Clastoderma debaryanum** Blytt, Bot. Zeit. 38: 343. 1880. **(Plate III, 4-5)**

Spores of our specimen are globose and various in size, 7-13 μ in diameter.

Habitat: Bark of living trees, from a moist chamber culture.

Speciemn examined: Kao-Hsiung Hsien, Ken-Ting National Park: CHLB 160, Apr. 8, 1982.

*31. **Macbrideola cornea** (G. Lister and Cran) Alexop. Mycologia 59: 112. 1967. **(Plate VIII, 1-2; Plate XVI, 5)**

Sporangia scattered, minute, usually straight on long stalks, globose, (0.15—) 0.18-0.32 mm in diameter, cinnamon to tawny when just matured, becoming darker (olive brown); stalk straight, long, subulate in a pointed tip, (0.3) 0.56-1.2 mm long, blackish brown below, composed of interlacing strands (dark-colored); hypothallus discoid, translucent and brownish; columella firm, attaining ⅓ the height of the sporangium & divided in 2-, 3- or 4- branches, or dichotomously branched at the base, brown (bright); capillitium dichotomously branched (3-5 times) from the tip of columella, sparsely anastomosing, brown, the final free ends short, forking in large angles (90° or larger), bulbous in some but always ended in acute points, rigid, colorless or nearly so; collar lacking; peridium evanescent; spores dark (fuscous-fuscous black) in mass, pale brown by transmitted light, globose, minutely warted, (5—) 6-7.5 (−8) μ in diameter.

Habitat: Bark of *Pinus luchuensis* Mayr., from moist chamber cultures.

Specimen examined: Taipei Hsien, Grass Mt.: CHLB 266, CHLB 267, CHLB 268, CHLB 270a, Sept. 26, 1982.

Collected from moist chamber cultures. The globose, minute sporangia, the characteristics of columella and capillitium, and the interlacing strands of the stalk base are the primary characteristics based for this identification. The collar is, however, never observed in all our 3 collections. Spores of our specimens are never over 8 μ in diameter, a size smaller than as described (in the references) for this species.

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臺灣黏菌(四)

劉錦惠

摘要

本文報告三十一種生長在活樹之樹皮上的黏菌，其中九種是臺灣的新紀錄種，其學名如下：*Echinostelium minutum*，*Calomyxa metallica*，*Arcyria annulifera*，*A. carnea*，*Hemitrichia karstenii*，*Physarum leucopus*，*P. serpula*，*Clastoderma debaryanum* 和 *Macbrideola cornea*。其餘種類分屬於下列各屬：*Ceratiomyxa*，*Cribraria*，*Reticularia*，*Arcyria*，*Perichaena*，*Physarum*，*Diderma*，*Didymium* 和 *Stemonitis*。並以十八個圖版明示其子實體的生長習性和顯微特性。有四個顯然尚未爲人發表的種類其分類特性和種名的確定正有待一步的比較研究，其中一種是 *Cribraria*，另外三種屬於 *Physarum*。採用野外直接採集和潮濕培養法採收黏菌子實體，所有的標本皆存放於國立臺灣大學植物系菌類標本室。