

NOTES ON NEW FORMOSAN FOREST FUNGI<sup>(2)</sup>

## II. Some Lignicolous Fungi

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**Abstract:** Eleven fungi having lignicolous habitats are reported for the first time from Taiwan. These fungi include four ascomycetes: *Nectria flammea* (Tulasne) Dingley, *Hyphoxylon semi-immersum* Nitschke, *Kretzschmaria botrytes* Lloyd, and *Scutellinia scutellata* (L. ex Amans) Lamb., and seven basidiomycetes: *Peniophora affinis* Burt., *Polyporus squamosus* (Huds. ex Fr.) Karst., *Trametes suaveolens* L. ex Fr., *Pleurotus cornucopiae* (Pers.) Roll., *Oudemansiella radicata* (Fr.) Sing., *Gymnopilus aeruginosus* (Peck) Sing., and *Pezizomyces peiziformis* (Lev.) Karst. Descriptive notes and an account of the economic importance of each is given.

## INTRODUCTION

This paper is a continuation of our study and reports on New Formosan forest fungi. In previous reports the organism causing the brown cubical-rot of *Chamaecyparis obtusa* var. *formosana* (Hay.) Rehd. was identified as *Veluticeps berkeleyi* (Berk. & Curt.) Cke. (Chen, 1973) and two black mildew fungi: *Phaeocryptopus nudus* (Peck) Petr. and *Dimeriella balsamicola* (Peck) Petr. were discovered inhabiting needles of *Abies kawakamii* (Hay.) Ito (Chen, 1974). In this paper eleven forest fungi recently discovered on our collecting trips are here reported for the first time.

## DESCRIPTION OF SPECIES

1. *Nectria flammea* (Tulasne) Dingley, Trans. R. Soc. N. Z. 79: 189. 1951.

Pl. I. figs. 1-5.

St. Conid.: *Fusarium coccophilum* (Desm.) Wollenw. and Reink., Die Fusarien: 34, 1935.

Perithecia formed on a stromatic cushion, and clustered round the base of a stilboid synnema, globose, with a small ostiolar papilla, almost smooth, red; on drying collapsing and becoming pomeform or cup-shaped, 240-400  $\mu$  across. Asci: clavate with a short stalk, 85-120  $\times$  13  $\mu$ , 4-spored. Ascospores: elliptical, 1-septate, hyaline, smooth, 17-21  $\times$  8-10  $\mu$ .

Synnema erupting from host bark, 1-2 mm long, 0.3-0.5 mm wide, swelling at the top, becoming subglobose on drying, the whole synnema appearing ventricose, spatulate, or clavate, orange-yellow to orange-red. On top of each erect hypha the synnema bears a phialide with *Fusarium*-like conidia. Conidium hyaline but pink when in mass, cylindrical, slightly curved at both ends, 86-100  $\times$  5-7  $\mu$ , 7-9 septate.

Distribution: **Africa:** Malawi, Tanzania, Uganda, Zambia, Saba. **Asia:** Ceylon, Taiwan. **Australasia:** New Guinea, New Zealand, Australia. **Americas:** Honduras.

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HUALIEN: Hualien, Z. C. Chew 2417 (NTU), Feb. 28, 1974. Collected on living *Paulownia* trees by Prof. C. C. Chen.

Notes: This fungus usually occurs first as a parasite on scale insects (Booth, 1971) and forming sporodochia over their host and later the fungal hyphae penetrates the bark of the host tree. Our collections from *Paulownia* showed many dead scale insects on the surface of the bark but none of the scale insects showed any evidence of infection by this fungus. The stilboid synnemata as well as stromatic cushion appeared to be on the bark with the characteristics of *Sphaerostilbe aurantiaca* Tulasse (Dennis, 1968). Macroscopically, our specimen is identical with *Nectria flammea* in the size and shape of its macroconidia, in their perfect state, therefore *Paulownia fortunei* Hemsl. is a new host species of this fungus, and Taiwan is considered to be the northern limit of its distribution.

Other Hosts: *Aecis* sp., *Brachyglottis repanda*, *Citrus decumana*, *C. grandis*, *C. medica* var. *limonium*, *Coffea arabica*, *Horonia dulcis*, *Melicytus ramiferus*, *Ribes nigrum*, and *Thea sinensis*.

2. *Hypoxylon semi-immersum* Nitschke, *Pyrenomycetes Germanici*, 50, 1867.

Pl. 1. figs. 6-8.

*Hypoxylon confusum* (Tode ex Fries) Cook, *Grevillea* 11: 129, 1893.

Ascocarps single or aggregate, frequently on the surface of decorticated wood, some are half immersed in the wood. Wood surface stained black with the very poorly developed stroma, fragile, black and around a small cluster of large protruding perithecia. Perithecia: subglobose, or ampalliform, black, up to 1 mm in diam., pore evident, apical, sometimes crowded with a blackish spore mass on its surface. Asci cylindrical, apical ring up to 3  $\mu$  in diam., distinct in Iodine solution, 155-160 $\times$ 16-12  $\mu$ , 8-spored, uniseriate. Ascospores elliptic-fusiform, with one flattened side, dark brown, furrow hyaline on one side, 19-22 $\times$ 7.5-11  $\mu$ . Paraphysis hyaline, filamentous, slightly swollen at the top, non-septate, 180-200 $\times$ 2-4  $\mu$ .

HUALIEN: Hualien, Z. C. Chew 2161 (N.T.U.) May 28, 1974. Collected on Red wood imported from Southeast Asia.

Notes: This specimen may easily be confused with *Rosellinia mammiiformis* (Pers. ex Fr.) Cesati & de Notaris. Macroscopically, it resembles it but microscopically, the latter species has a small but distinct beak at end of the ascospores. This fungus seems to cause a white-rot type of decay and forms a distinct black zoneline on its host.

3. *Kretzschmaria botrites* Lloyd, *Mycological Notes* 6: 995, 1920. Pl. 1. figs. 9-12.

Stroma erect, with slender stalks, dichotomously branched several times, black; up to 4.5 cm long, 2-2.5 mm wide, 1-1.5 mm thick. Flesh tough, solid, white. Crust thin, black, not shining, smooth. Upper branch of stalk frequently twisted when dry. Gall-like fertile clavate formed on one or both sides of the top or tip of sterile stromata. In aged branches, several galls fuse together forming clusters up to 15 mm diam. Ostioles minute but prominent under a lens. Perithecia globose or subglobose, up to 2 mm diam. Asci not seen. Ascospores bean-shaped or fusiform with one side flattened, brown, dark brown or black, smooth with a hyaline furrow under one side, containing 1-2 oil drops, 29-37 $\times$ 11.5-13  $\mu$ .

ILAN: Ilan, Z. C. Chew 1869 (N.T.U.) April 6, 1974. Collected on imported hardwoods from Southeast Asia.

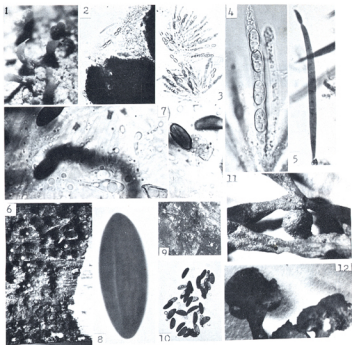


Plate 1 Figs. 1-5. *Nectria flavusca*. 1: stilboid synnemata (10 $\times$ ), 2: perithecia (100 $\times$ ), 3: asci and ascospores (100 $\times$ ), 4: asci and ascospores (400 $\times$ ), 5: conidia (400 $\times$ ); Figs. 6-8. *Hypoxylon semi-immersum*. 6: perithecia on the bark (4 $\times$ ), 7: asci and ascospores (500 $\times$ ), 8: ascospore (2,000 $\times$ ); Figs. 9-12. *Kretzschmaria botrytes*. 9: twig-like ascocarps on the host (1/3 $\times$ ), 10: ascospores (135 $\times$ ), 11: branched, slender stalks of stroma (4 $\times$ ), 12: fertile galls on the tip of stalks (4 $\times$ ).

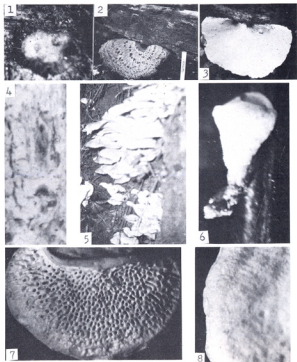


Plate 2. Fig. 1. an apothecium of *Scutellinia scutellata*. (20×), 2-3: *Polyporus squamosus* 2: upper surface of pileus (10×), 3: lower surface of pileus (14×), 4: hymenophore of *Peniophora affinis*. (6×), 5: fruitbodies of *Pleurotus cornucopiae*. (1/10×), 6: a fruitbody of *Trametes peziziformis*. (5×), 7-8: *Trametes suaveolens*. 7: lower surface of a basidiocarp, (4×), 8: upper surface of a basidiocarp (4×).

Notes: A part of this specimen was sent to Dr. R. W. G. Dennis, Royal Botanical Gardens, Kew, England, who identified it for us as *Kretzschmaria botritis*.

4. *Scutellinia scutellata* (Linnaeus ex st. Amans) Lambotte, Mém. Soc. Roy. Sciences de Liege II, 14: 299. 1887. Pl. 2. fig. 1.

*Peziza scutellata* L. Sp. Pl. 1181. 1753.

*Elvela ciliata* Schaeff. Fung. in Bavar. 4: 112. 1774.

*Patella ciliata* Wever; Wiggers, Fl. Holz. 106. 1780.

*Peziza aurantiaca* in Bull. Herb. Fr. Pl. 10. 1780.

*Octospora scutellata* Hedw. Descr. 2: 10. 1788.

*Peziza ciliata* Hoffm. Veg. Crypt. 2: 25. 1790.

*Humaria scutellata* Fockel, Sym. Myc. 321. 1809.

*Lochmea scutellata* Gill. Champ. Fr. Discom. 75. 1879.

*Scutellinia scutellata* Kuntze, Rev. Gen. Pl. 2: 869. 1891.

*Humariella scutellata* Schrot. Krypt. Fl. Schles. 32: 37. 1893.

*Patella scutellata* (L.) Morgan, in Jour. Myc. 8: 187. 1902.

*Ciliaria scutellata* Boud. Hist. Class. Discom. Eu. 61. 1907.

Apothecia gregarious or scattered, at first globose, closed and covered with brown hairs, expanding and becoming shallow cup-shaped and scutellate at maturity, sessile, margin usually distinct, 0.5–0.9 mm in diameter, hymenium slightly concave or nearly flat, waxy, dull-orange fading in dried specimens to pale-yellow; margin or outer surface covered with brown stiff hairs. Hairs up 800  $\mu$  long with simple or forked bases rooting in the flesh (excipulum); swollen at the basal part and gradually tapering to a point, 20–38  $\mu$  thick at the swollen portion, thick-walled, up to 7  $\mu$  in thickness; multiseptate (up to 22 septa) with some short hairs 150–400  $\times$  20–30  $\mu$ , one-septate, intermixed with subulate, long dark-brown hairs. Ectal excipulum 200–400  $\mu$  thick, texture angular composed of 3–4 layers of globular or elongated larger cells, 15–50  $\times$  50–80  $\mu$  in size, pseudoparenchymateous, of loose arrangement. Medullary excipulum about 400–1500  $\mu$  thick, composed of many hyphae 4–7  $\mu$  thick, tightly packed in parallel lines with the surface, and easily distinguishable from the ectal one. Subhymenium thin, composed with 2–3 layers of small, angular cells, sometimes indistinguishable from the medullary excipulum. Hymenium layer about 400  $\mu$  thick, asci cylindrical or subcylindrical, narrowing gradually towards the base, round above, not giving a blue reaction in Melzer's reagent, 200–300  $\times$  12–18  $\mu$ , containing 8 uniseriate ascospores. Spores ellipsoid, or subovoid, smooth when young, later, becoming thickwalled with minute warts, one gutulate, sometimes with a distinct colorless furrow down one side, 17–26  $\times$  11–15  $\mu$ . Paraphysis clavate, forked at the base, enlarged at the tip, about 7–13  $\mu$  thick, densely packed with small oil drops, and tightly packed above the asci, forming an epithecium layer, about 50  $\mu$  thick.

TAICHUNG: Hsuehshan, Z. C. Chen 1825 (N. T. U.) Sept. 1, 1973. On rotten hardwood bark at Station 369.

Notes: The description of *Patella cubensis* (Berk. & Curt.) Seaver from tropical Cuba fits our present specimens except that ours have slightly larger ascospores and apothecia, and our specimen came from a sub-alpine zone (3000 m alt.) rather than a tropical region.

5. *Peniophora affinis* Burt. in Mo. Bot. Gard. Ann. 12: 266. 1926.

Pl. 2. fig. 4; Pl. 3. A-C

*Peniophora laevis* Burt., in Peck, Bull. N.Y. St. Mus. 54: 954, 1902; Burt., in Ann. Mo. Bot. Gard. 12: 257, 1926.

*Membraniscium affinis* (Burt.) Erikss., Symb. Bot. Ups. 16(1): 116, 1958.

*Phanerochaete affinis* (Burt.) Donk, Persoonia 2(2): 223, 1962.

Fruitbodies widely effused, adnate, white to cream, yellowish to tan when old, membranous, often cracked showing substrate, margins paler, sub-pruinose to pruinose, surface smooth, in section, hyaline, 50–70  $\mu$  thick. Hyphae arranged rather compactly, thin-walled, incrustated, simple or rarely nodose-septate, smooth, 3–6  $\mu$ . Cystidia abundant, cylindrical to hyphal, cell-wall thicker than the context hyphae heavily incrustated, non-septate; not dissolved in 10–15% KOH, 30–50  $\mu$  long, 5–8  $\mu$  wide, projecting up to 15–20  $\mu$ . Basidia clavate, 18–25  $\times$  5–7  $\mu$ . Spores hyaline, smooth, non-amyloid, cylindrical, flattened on one side, apiculate, 6–9  $\times$  2.5–4  $\mu$ .

Distribution: North America, Europe, New Zealand, Japan, Taiwan.

TAIPEI: Taipei, Z. C. Chen 264 (N. T. U.), Sept. 20, 1973. Collected on the fallen twigs of Angiosperms.

Note: This fungi is associated with a white rot of *Quercus* and *Castanopsis*.

6. *Polyporus squamosus* Fr., in Syst. Myc. 1: 343, 1821.

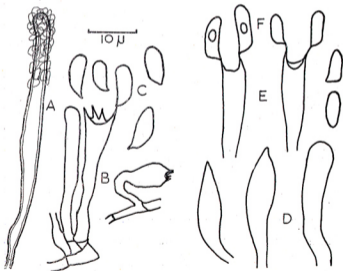


Plate 3. Microstructures of *Peniophora affinis* Burt., and *Pleurotus cornucopie* (Pers.) Rolland. A–C, *P. affinis*, A: cystidium, B: basidia, C: spores; D–F, *P. cornucopie*. D: cystidia; E: basidia, F: spores.

*Polyporellus squamosus* (Huds. ex Fr.) Karst., Hattsv. 2: 30, 1882.

Sporophore short-stipitate or almost sessile, single, watery when fresh, rigid when dry. Pileus: fleshy-tough when fresh, drying hard and brittle, 15–25 cm. broad, 0.5–3.5 cm. thick, dimidiate to flabelliform, plane to somewhat centrally depressed, surface ochraceous-tawny at maturity, smooth with large appressed, cinnamon-brown, scale-like spots, concentrically arranged, glabrous; margin thin, acute, fertile below, often tightly curled under toward the tubes. Stipe: lateral, short to rudimentary, black at the base, whitish or yellowish above; 1.5–2 cm. long, 3 cm. wide. Context: of pileus and stipe, homoiomerous, white, soft and spongy when fresh, drying spongy-friable to corky-fragile, cream to light-yellow, homogenous, 0.5–3.5 cm. thick, cuticle thin, not separable from context, hyphal system dimitic, with thin-walled, nodose-septate, generative hyphae, up to  $12\ \mu$  in diameter ( $\sim 17\ \mu$  in some swollen parts of hyphae), 2–4  $\mu$  in trama, rarely with simple septate hyphae; binding hyphae thick-walled, rarely branched, 2–4  $\mu$  in diameter, rarely present in trama; between context and tubes, with a thin layer, transparent zone 0.5 mm thick, when drying becoming a narrow dark olive line, distinguishing the context from the hymenophore. Tubes: decurrent, white when fresh, becoming cream to straw-yellow, darker on drying, distinct from context, 1–3 mm long, mouth concolorous, angular, 2–3/mm, the edge very thin, entire to toothed, cystidia none; basidia 10–11  $\mu$  broad. Spore: hyaline, smooth, non-amyloid (IKI-), pyriform, cylindrical to cylindrical-ellipsoid to subfusiform, apiculate, guttulate, 8–12 $\times$ 5–6  $\mu$ .

Distribution: Europe, North and South America, Australia, Philippines, Japan, mainland China and Taiwan.

TAIPEI: Taipei, Z. C. Chen 2148 (NTU), June 10, 1974. Collected on the fallen logs of a Flamboyant Tree, *Delonix regia* (Boj.) Raf. Usually found on living or dead hardwoods.

Note: Sawada (1919–1959) did not record *P. squamosus* from Taiwan. But Ito (1955) in his Mycological Flora of Japan, II (4), pages 319–320, described the distribution of this fungus in Taiwan based on Sawada's Descriptive Catalogue of Formosan Fungi V, page 72, 1931. The present author, rechecked the Sawada's original report and found that Ito (1955) mistook *Polyporus sulphureus* (Bull.) Fr. for *P. squamosus*. The author hereby corrects this error. Hou (1971) recorded the discovery of *P. squamosus* from Taiwan for the first time, however, he did not save the specimens for further verification. In this paper, the flamboyant tree, *Delonix regia* (Boj.) Raf., is reported as a new host of *P. squamosus* in Taiwan. The fruit-bodies of this fungus are edible and are being currently cultivated commercially on the saw-dust medium in Taiwan. The fungus studied, however, causes white rot of the host and its sporophores grow well during the summer season in Taipei.

**7. *Trametes suaveolens* L. ex Er., Epicr. Myc. 491. 1838.**

*Boletus suaveolens* L. Sp. Pl. 2: 1177, 1753.

*Polyporus suaveolens* Fr., Syst. Myc. 1: 366, 1821.

*Polyporus itoi* Lloyd, Myc. Writ. 7: 1274, 1924.

Sporophores: sessile, aplanate or with a rudimental stipe, conchate or flabelliform, 1.0–1.6 $\times$ 1.4–1.8 cm; surface white to ivory-yellow, glabrous, azonate; margin acute to obtuse, sterile below. Context: white, corky, 0.2–0.4 cm. thick, hyphal system, trimitic; generative hyphae nodose-septate, thin to slightly thick-walled, 2–3  $\mu$  in

diameter; skeletal hyphae non-septated, rarely branched, thick-walled, 3-6  $\mu$  in diameter; binding hyphae frequently branched, thick-walled, 2-3  $\mu$  in diameter. Tubes: concolorous, pore 2-3 mm, round to angular, rarely daedaloid, pore surface white; the edge thick, entire, tubes, 0.2-0.4 mm long, very shallow, trama, similar to context; cystidia none; basidia 7-8  $\mu$  in diameter. Spores: hyaline, smooth, cylindrical to cylindrical-ellipsoid, 9-11 $\times$ 3-4  $\mu$ .

Distribution: North America, Europe, Philippines, Japan, mainland China and Taiwan.

ILAN: Lo-tong, Z. C. Chen 1595 (NTU), April 7, 1974. On a dead branch of a living willow trees.

Note: The specimens collected were the younger conks with rather immature hymenophores and spores.

8. *Pleurotus cornucopiae* (Paul. ex Pers.) Rolland, Atlas Champ. 45, f. 95, 1910.

*Pleurotus cornucopioides* (Fr.) Gill, Hymen. Fr. 345, 1874.

*P. sapidus* (Schlzer) Sacc., Syll. Fung. V. 348, 1887.

Fruitbodies densely aggregate, several basidiocarps arise from a common stipe, or many stipes attached to a common axis. Pileus 5-12 cm diam., shapes vary from the oyster type as seen in typical *Pleurotus ostreatus* (Fr.) Quel., to a depressed type, surface smooth, sulphur-yellow to grayish-white, flesh thick, up to 10 mm, white. Gills white, broad, up to 8 mm wide, thin about 170-300  $\mu$ , decurrent, edge simple, acute. Stipes, central or excentric, rarely lateral or sessile, varies from rudimental to the well developed, branched coralloid type, up to 10 $\times$ 1.5 cm., white, with indistinct veins on its surface, solid inside. Context: hyphae thin-walled, 3-7  $\mu$  diam., nodose-septated. Cheilo-, or pleurocystidia clavate to obclavate, thin-walled, 18-25 $\times$ 5-7.5  $\mu$ , rarely incrusted. Metuloid none. Basidium cylindrical, 15-20 $\times$ 4-5  $\mu$ , sterigmata 2-4, 3-4  $\mu$  long. Spore print whitish-pink. Basidiospores elliptical to cylindrical, smooth, non-amyloid, 6-9.5 $\times$ 2.5-3.5  $\mu$ .

Distribution: Temperate region of the Northern hemisphere: Europe, Siberia, North America, Central Asia, Japan, China, Taiwan.

HSINCHU: Tapachienshan, 1,800 m altitude, Z. C. Chen 2243 (NTU), Aug. 20, 1974. On stump of hardwoods (*Helicia* sp.)

Notes: The spore size of this species differ according to various reports, i.e., 7.5-11 $\times$ 3.5-5  $\mu$  by Imazeki and Hongo (1957), 8-19 $\times$ 4-4.5  $\mu$  by Kawamura (1954). Evidently it ranges from 7-19 $\times$ 3.5-5  $\mu$ , more or less, close to those of *P. ostreatus*, 7.5-12 $\times$ 3-5  $\mu$ . Thus, Singer (1951) considered this species as a synonym of *P. ostreatus*. It is distinct from that species by having the following characteristics: the coralloid stipe of the fruitbody, yellowish pileus, shape of cystidia, and surface of stipe. Therefore, it is considered here as a separate species. This species is like the oyster fungi, in being edible and having a delicious taste. It is currently being widely cultivated on Taiwan. The fruitbodies of this species are being canned and sold as an excellent substitute for the oyster mushrooms. It was formerly believed that this species had been introduced from Japan but the collection of living specimens of this species from the dead stump of hardwoods during a fungal collecting trip to Mt. Ta-pa-chien-shan (about 3,400 m altitude), which is the highest peak in Northern Taiwan, proves the native origin of this species.



**9. *Oudemansiella radicata* (Fr.) Sing. in Ann. Mycol. 34: 333. 1936.**

*Collybia radicata* (Fr.) Quéf. Champ. Jura Vosg. 1, in Mém. Soc. D'Emul. Month. 2 ser. 5: 92. 1872.

Fruitbody emerging from soil; single and scattered. Pileus bullate at maturity, 5-7 cm diam., surface light-brown to grayish-brown, mucideous when wet, glabrous when dry, dark brown, wrinkles radiating from the center of the pileus. Flesh thin, white or cream. Gills adnate, rather wide, thin. Stipe radicate, 5-10×0.4-0.8 cm (above ground), bulbous at ground level, then penetrating the ground with a narrow long root originating from the woody substrate in the soil. Flesh of stipe white, inside hollow, upper surface white, powdery; lower surface concolorous with the pileus and striate. Basidium clavate, 40-50×12-15  $\mu$ , 2-4 sterigmata, 5-8  $\mu$  long. Spore print white to cream colored. Basidiospores broadly ellipsoid or subglobose, smooth, non-amyloid, 11-13×10-12  $\mu$ , one gutulate. Pleurocystidia elliptical to ventricose, smooth, thin-walled, 50-65×25-30  $\mu$ , extending above the hymenium 25-33  $\mu$ . Cheilocystidia ventricose or subulate, thin-walled, smooth, 48-65×10-21  $\mu$ . Trama hyphae thin-walled, nodose septate, 6-15  $\mu$  wide.

Distribution: Very common in temperate regions: North America, Europe, South Africa, Central Asia, Australia, Japan, mainland China, Taiwan.

TAIPEI: Taipei, Z. C. Chen 2295 (NTU), Oct. 19, 1974. On the ground but embedded in wood substrates such as twigs, logs or decaying roots below the ground.

Notes: This fungus has a wide range of spore size, i. e., 13-15×9-11  $\mu$  as reported by Kawamura (1955), 14.5-24×9.5-17.5  $\mu$  as reported by Imazeki and Hongo (1957). The pileus of this species is edible and an excellent substitute for *Flammulina velutipes* (Fr.) Sing., which is another edible mushroom in the Orient.

**10. *Gymnopilus aeruginosus* (Peck) Sing. Ann. Mycol. 34: 333. 1936.**

*Pholiota aeruginosa* Peck, 43rd Ann Rep. N. Y. State Mus. 81(35), 1890.

Fruitbodies gregarious or rarely single. Pileus 1-3.5 cm diam., convex to subumbonate, becoming appanate, surface dark-purple, livid-purple to dark-livid when young, gradually becoming yellow from the pileus margin, intermixed with blue stains, then turning greenish-blue on old pilei. Dark squarrose, densely distributed in the young pileus, becoming thin, appressed toward the margin following the expansion. Margin acute, fertile below, frequently attached with golden-yellow remnants of the cortina. Flesh white or slightly pinkish upon exposure to the air, then turning to light green. Gills golden-yellow to rusty, adnexed or adnate, seceding at maturity, up to 3 mm wide, thin, edge simple or indistinctly fimbriate. Stipes central, concolorous with pileus, 1.5-2.5×0.2-0.4 cm, slightly swollen on the lower part. Ring superior, rusty to golden, concolorous with gills, powdery to membranous. Surface of stipe, striate below the ring but smooth and white above the ring. Context hyphae nodose septate, thin-walled, 2.5-20  $\mu$  wide. Cheilocystidia abundant, clavate, lageniform, or ampulliform, thin-walled, smooth, 18-22×6-8  $\mu$ . Basidia clavate to cylindric, 15-18×5-6  $\mu$ , 2-, rarely 4 sterigmata, 3-5  $\mu$  long. Spore print ochraceous-orange, ochraceous-tawny, hazel, cinnamon, to orange-cinnamon. Basidiospores subglobose, short ellipsoid to obovate, echinulate to verrucose, slightly apiculate, hilar on the one side, one gutulate, non-amyloid, 6-8×4-5.5  $\mu$ .

Distribution: North America, Japan, Taiwan.

TAIPEI: Taipei, Z. C. Chen 2302 (NTU), Oct. 25, 1974. On the electric poles made of *Cryptomeria japonica*.

Habitat: On coniferous woods during summer and fall.

11. *Femsjonina peziziformis* (Léveille) Karsten, Bidr. Finl. Nat. Folk. 31: 352. 1876. Pl. 4.

*Exidia peziziformis* Lev., Ann. Sci. Nat. Bot. III, 9: 127. 1848.

*Femsjonina luteoalba* Fr., Summa Veg. Scand. 2: 341. 1849.

*Ditiola conformis* P. Karst., Notul. Sällsk. Faun. Fenn. Forh. 11: 223. 1871.

*Ditiola luteoalba* (Fr.) Quel., Ench. Fung. 227. 1886.

*Guepinia femsjoniana* Johan-Olsen in Bref., Unters. Gesamtgeb. Mykol. 2: 161. 1888.

*Dacrymyces mesentericus* P. Karst., Finl. Basidsv. 450. 1889.

*Dacrymyces radicellatus* P. Karst., Hedwigia 29: 178. 1890.

*Guepinia luteoalba* (Fr.) Lloyd., Mycol. Notes 64: 990. 1920.

*Ditiola radicata* f. *conformis* (P. Karst.) Killerm., Denkschr. Bayer. Bot. Ges. 15: 126. 1922

*Dacrymyces conformis* (P. Karst.) Neuh., Ark. Bot. 28 A, (1): 44. 1936.



Plate 4. *Femsjonina peziziformis* (Lev.) Karst. A: hair on the outer surface of basidiocarps. B: paraphyses, C: probasidium, D: matured basidia, E: basidiospores, F: thin-walled context hyphae, G: slightly thick-walled context hyphae.

Basidiocarps gregarious, pezizoid at maturity, sessile or short stipitate, surface white to cream, covered with minute hairs appearing tomentose. Entire carp 6–11 mm diam., 7–10 mm high, firm-gelatinous. Hymenium superior, orange-yellow when fresh, drying orange-red. Hairs long, thick-walled, smooth, 4–7  $\mu$  wide, simple or rarely branched, with conspicuous clamp connections at all septae. Context hyphae 2.5–5  $\mu$  diam., hyaline, nodose-septate, thin to slightly thick-walled. Probasidia cylindrical to cylindrical-subclavate, with basal clamp-connections, 75–115  $\times$  5–7  $\mu$ , becoming bifurcate with epibasidia, 20–25  $\times$  5–7  $\mu$ . Paraphyses clavate, simple, or rarely dikaryophyses, minutely echinulate at the apical portion, 90–100  $\times$  2.5–3  $\mu$ . Basidiospores ovoid, broadly elliptical, apiculate, 24–28  $\times$  8–10  $\mu$ , 4–13 septa.

Distribution: The temperate region of the Northern Hemisphere—British Isles, France, German, Finland, Sweden, U. S. S. R., Czechoslovakia, U. S. A., Canada, Japan, mainland China, and Taiwan.

ILAN: Taipingshan, 2500 m altitude, Z. C. Chen 1995 (NTU), Nov. 15, 1973. On *Cryptomeria japonica*.

Habitat: On Angiosperm or rarely on gymnosperm wood (McNabb 1965). In Taiwan on the bark of fallen logs of *Cryptomeria japonica*.

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