

Fungi of the Marshall Islands, Central Pacific Ocean

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INTRODUCTION

DURING THE LATE SUMMER of 1946 a party from the Department of Botany of the University of Hawaii visited a number of islands of the Marshall group with the purpose of collecting the species which occur there. The party consisted of Dr. Harold St. John, professor and chairman of the department, Mr. Richard S. Cowan, graduate assistant, and the writer. Transportation and living and working quarters were provided by the United States Navy; the journey from Honolulu to Kwajalein, and thence to the more northern islands, was made on a naval vessel, and to the islands south of Kwajalein by seaplane.

Although only 10 of the 34 atolls and single islands making up the archipelago were visited, these lie in both the northern and southern parts of the group, and in both the Radak (eastern) and Ralik (western) chains of which it is composed; and earlier visits by Dr. St. John to other atolls indicate that the 10 visited show nearly all the diversity of climate, topography, and vegetation exhibited by the larger number. It is true that all the islands on which the party landed were inhabited, and it is possible that studies of some of the uninhabited islands would have given a somewhat different impression of the vegetation. This limitation, however, probably is of importance only for the collector of phanerogams; since stands of undisturbed native vegetation occurred on the inhabited islands also, it is unlikely that the

others would have proved much more favorable for mycological study.

Fungi were collected on eight atolls and a single island (Mejit); the localities are here listed, in order from north to south, with the dates on which they were visited.

ATOLL (or single island)	ISLAND	DATE (1946)
Utirik	Utirik	September 1-2
Mejit I.	September 3
Ailuk	Nankarai	August 31
	Marab	August 31
	Marme	August 31
	Ailuk	August 30
Likiep	Eniarmij	August 29
	Biebi	August 29
	Likiep	August 28
Wotje	Ormed	September 4-5
	Riri	September 5
Namu	Namu	August 16
	Leuen	August 16
Ailinglapalap	Ailinglapalap	August 20
Jaluit	Imrodj	August 20
Ebon	Ebon	September 9-12

Most of these names are those given on U. S. Hydrographic Office charts 5413 and 5414. The other localities are shown, but not always named, on advance proofs of H. O. charts 6007, 6018, 6020, and 6022. In Ailuk Atoll the ninth island north of Ailuk Island is called by the inhabitants of the atoll "Marab"; that name is used in this report, although the proofs of chart 6022 designate it by the apparently nipponized name "Marappu." The island immediately south of it (and eighth to the north of Ailuk), unnamed on the charts, is called "Marme" by the Marshallese. The thirteenth island of the series running north from Ailuk has the native name "Nankarai." In Likiep Atoll, Biebi is shown on H. O. chart 6020. The

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island next to Biebi on the northeast, and connected to it by a stretch of reef exposed at low tide, is unnamed on the charts; according to Marshallese informants it is called "Eniarmij." Riri in Wotje Atoll lies next to Ormed on the east; it is named on chart 6018. Imrodj in Jaluit Atoll is shown immediately above "N. E. Pass" on chart 5414, and named on 6007.

August and September fall within the rainy season for the Marshalls, and there had been recent rainfall, enough not only to moisten the soil but even to soak the fallen logs, on all the islands except Ebon; often there were showers or heavy rains during the collecting trips. On Ebon there had been no rain for some time, and the paddies devoted to the cultivation of *Cyrtosperma* contained mud but no standing water; nevertheless, soil and vegetable debris were damp and supported an abundant growth of fungi. On the evidence of the vegetation, as well as of published accounts, there is a considerable increase in rainfall in the archipelago as one goes from north to south; the vegetation of the northern islands is somewhat more open and poorer in species, and lichens and other epiphytes are distinctly less abundant, than in the islands south of Kwajalein. Mejit, in the northern part of the group and also considerably east of its nearest neighbors (Utirik, Ailuk, and Wotje), appears much wetter than they. Ebon, the southernmost atoll of the archipelago, alone of those visited supports the dense tangle of undergrowth and the abundant epiphytes that usually enter into the description of a jungle. Any further attempt to characterize the vegetation is beyond the scope of this report, and must be left for Dr. St. John's account of the vascular plants.

I have been able to discover few discussions of the fungi of the Marshalls. Ehrenberg (1820) described *Scaphophorum Agaricoides*, *Boletus Katui*, *B. sanguineus*, *Sphaeria fur*, and *S. profuga* from collections by Chamisso in the Radak chain; these

were reduced to synonymy (*S. Agaricoides* = *Schizophyllum commune*, *B. Katui* = *Polyporus xanthopus*, *B. sanguineus* = *P. sanguineus*) or redescribed, and validly published, by Fries (1821: 374, 504, 505; 1823: 431, 488); the two species of *Sphaeria* were transferred to *Metasphaeria* by Saccardo (1883: 182). Hennings (1897) listed or described from Jaluit 13 species, from collections by Schwabe and by Finsch: *Auricularia auricula-judae*, *Polystictus sanguineus*, *Schizophyllum Alneum*, *Fomes amboinensis*, *Polyporus Kamphoeveneri*, *Marasmius callopus* var. *jaluitensis* P. Henn., *M. Pandanicola* P. Henn., *Psathyrella disseminata*, *Psathyra Schwabeana* P. Henn., *Hypholoma jaluitensis* P. Henn., *Galera* sp. (*confertae* aff.), *Pleurotus Schwabeanus* P. Henn., and *Lachnea jaluitensis* P. Henn. Schumann and Lauterbach (1901: 37–63) combined Ehrenberg's and Hennings's lists, treating *Psathyra Schwabeana* under *Pratella* and *Pleurotus Schwabeanus* under *Agaricus*, and, for some incomprehensible reason, reporting *Metasphaeria fur* as "*Metasphaeria Jus.*" Volkens (1903: 84) listed only species already reported. No other reports have come to my attention. Thus, unless there are studies published during the Japanese occupation which have been overlooked, the recorded mycobiota of the Marshall Islands embraces 16 species. The University of Hawaii party brought back approximately 425 specimens of fungi, of which 126 specimens, representing 34 species (2 of them new), are here listed. The study of this material is continuing, and other reports will be published.

In the interests of brevity, in listing specimens only the atoll is given where but one island of the cluster furnished collections of fungi, and the date is omitted unless collections were made on an island on more than one day. Except where otherwise noted, the collector is D. P. Rogers and the numbers are "D. P. R. . . ." Portions of all Marshallese specimens have been deposited in the Bishop Museum (occasionally indicated by the sym-

bol BISH); portions of all collections of Myxomycetes except three (duplicated by other specimens from the Marshalls), and of all species of Heterobasidiomycetes, are in the herbarium of the University of Iowa (SUI); certain specimens cited are in the Farlow Herbarium (FH); portions of nearly all collections are in the writer's herbarium. Where material is sufficiently abundant, wider distribution has been or will be made. The synonymy given is not intended to be complete; for most species only a few of the more satisfactory and more readily available descriptions are cited.

I am indebted to the University of Hawaii, which through Dean Paul S. Bachman and its Pacific Islands Research Committee assumed the financial burden of the expedition; to Captain John C. Hammock, Commodore Benjamin F. Wyatt, Lieutenant H. B. Wessinger, and those other officers of the United States Navy who facilitated our journey to the Marshalls; to Professor G. W. Martin of the University of Iowa, who named a number of the Myxomycetes and made available extensive manuscript notes on *Auricularia*; to Professor J. N. Couch of the University of North Carolina, for notes on material of *Septobasidium*; to Miss Hilda Harris of the Farlow Library, who verified citations of works not available in Hawaii; and to Dr. St. John and Mr. Cowan, whose assistance and companionship made the journey an agreeable as well as a productive one.

MYXOMYCETES

1. *ARCYRIA DENUDATA* (L.) Wettst.—Utirik, 1657; Mejit, 1492, 1642, 1660; Likiep: Likiep I., 1651; Jaluit, 1649; Ebon, 1631.

2. *ARCYRIA NUTANS* (Bull.) Grev.—Likiep: Biebi I., 1652.

3. *CERATIOMYXA FRUTICULOSA* (Muell.) Macbr.—Mejit, 1628; Wotje:

Ormed I., 1661, Riri I., 1629; Ebon, 1634.

4. *COMATRICHA TYPHOIDES*² (Bull.) Rost.—Mojit, 1643; Jaluit, 1647; Ebon, 1636.

5. *CRIBRARIA TENELLA* Schrad.—Jaluit, 1650, 1662.

6. *DICTYDIUM CANCELLATUM* (Batsch) Macbr.—Ailuk: Ailuk I., 1653.

7. *FULIGO SEPTICA* (L.) Wiggers—Ebon, 1627, 1638.

8. *HEMITRICHIA SERPULA* (Scop.) Rost.—Namu: Leuen I., 1648; Ebon, 1635.

9. *HEMITRICHIA STIPITATA* (Mass.) Macbr.—Ailuk: Ailuk I., 1654, 1706; Wotje: Ormed I., 1640; Ebon, 1632.

10. *HEMITRICHIA VESPARIUM* (Batsch) Macbr.—Ailuk: Ailuk I., 1710; Ebon, 1637.

11. *PERICHAENA DEPRESSA* Lib.—Ebon, 1630.

12. *PHYSARELLA OBLONGA* (Berk. and Curt.) Morg.—Ailuk: Ailuk I., 1708; Jaluit, 1646.

13. *PHYSARUM TENERUM* Rex—Mojit, 1641; Ailuk: Ailuk I., 1655.

14. *PHYSARUM VIRIDE* (Bull.) Pers.—Utirik, 1659.

15. *PHYSARUM WINGATENSE* Macbr.—Ailuk: Nankarai I., 1712; Wotje, Ormed I., 1645, Riri I., 1626, 1639.

16. *STEMONITIS FUSCA* Roth—Utirik, 1658; Ailuk: Ailuk I., 1656; Likiep: Likiep I., 1625.

17. *STEMONITIS SPLENDENS* Rost.—Likiep: Biebi I., 1644.

None of the Myxomycetes collected is sufficiently uncommon or unusual to be

² As in all other matters, I have attempted to follow the existing provisions of the International Rules with respect to orthography. Cf. Rec. XLIII, and the addition voted at Amsterdam.

worthy of comment. The circumscription and nomenclature are those of Macbride and Martin (1934).

PHYCOMYCETES

18. *GLAZIELLA AURANTIACA* (Berk. and Curt.) Cooke, *Grevillea* 11: 83, 1883; Lloyd, *Mycol. Writings* 7: 1203–1204, pl. 248, fig. 2484, 1923; Boedijn, *Buitenzorg Jard. Bot. Jour.* 3 ser. 11: 57–66, fig. 1–7, 1930. *Xylaria aurantiaca* Berk. and Curt., *Linn. Soc. [London] Jour. Bot.* 10: 382, 1868. *Glaziella vesiculosa* Berk., *Naturhist. For. Kjobenhavn Vidensk. Meddel.*, 1879–80: 31, 1879; Thaxter, *Amer. Acad. Arts and Sci. Proc.* 72: 334, pl. 4, fig. 88–94, 1922.

Fructifications tuberiform, bladderlike, approximately isodiametric or flattened, plicate, scarlet, growing paler toward the base, tough-membranous, hollow, opening by an irregular fissure either at the base or above, about 1.5–5 cm. in greatest diameter, early partly enveloped in a white byssoid veil, later free, the surface slightly roughened; hyphae of the veil 4.5–5 μ in diameter, their walls asperulate, about 0.5 μ thick, the lumen interrupted at intervals of 15–60 μ by thin septa; wall of fructification composed of compact outer layers of hyphae with inflated cells up to 10 μ in diameter; of medullary hyphae loosely interwoven, septate, 2–3 μ in diameter; and of embedded chlamydospores; chlamydospores ellipsoid, about 300 \times 200 μ , with a rigid wall 17–19 μ thick and an outer apparently gelatinized membrane 5–7 μ thick, enclosing fluid material with numerous oil globules.

On the surface, or under loose fragments, of well-decayed vegetation, chiefly leaves of *Cocos nucifera*. Ebon, R. S. Cowan and D. P. R. (*D. P. R.* 1343).

The fungus is characterized adequately for recognition merely as having hollow, red, membranous fructifications; the few microscopic details given are only for possible microscopic comparison with other material, for it is less than certain that the Ebon collection is conspecific with those reported from the American tropics. Thaxter writes of the "conspicuous orange yellow color" of *G. aurantiaca*; and the specific epithet seems

(except by Boedijn) to have been taken without challenge at its face value. The carrying of a copy of Ridgway to the humid tropics seemed too hazardous, and no color comparison could be made in the field; but the fructifications certainly were not orange. My recollection is that the deepest-colored would come close to Scarlet-Red,³ or at least Scarlet, and the paler basal portions were not yellowish, but a clear rosy pink. The collectors of Boedijn's specimens gave the color as "dunkel steinrot" and "orangerot." Presumably neither Thaxter nor Berkeley nor Curtis ever saw the fungus in living condition; and in 2 months the Marshalls collection has faded to various orange-yellow shades, and in both color and consistency could very well be taken for slightly defective dried peaches or apricots. Without knowledge of fresh American material it would be rash and useless, therefore, to attempt to distinguish the fungus from *G. aurantiaca* by its color. Boedijn, whose admirable account gives an excellent idea of the Ebon material (except that the living specimens here reported were not in the least gelatinous), found no obstacle to the treatment of his specimens under the early name. Mr. Cowan found the greater number of fructifications (11 were collected) in deep shade under a tangle of bushes in a dense grove of coco palms. The species is reported from half a dozen islands of the West Indies, from Brazil and Mexico, and from two islands in the Netherlands Indies. Lloyd (*loc. cit.*) described a second species from Nicobar Island, which in Thaxter's opinion (Stevenson and Cash, 1936: 3) may be identical. There are other synonyms.

BASIDIOMYCETES

19. *TULASNELLA ALLANTOSPORA* Wakef. and Pears., *Brit. Mycol. Soc. Trans.* 8: 220, fig. 7, 1923; Rogers, *Ann. Mycol.* 31: 190,

³ Color-names capitalized are used in the sense of Ridgway (1912).

pl. 6, fig. 5, 1933; Martin, Iowa Univ. Studies in Nat. Hist. 18 (3): 18, pl. 1, fig. 4, 1944.

On rotten, friable wood of *Artocarpus incisus*. Ebon, IX.10.46, 1366.

Like a number of European and American specimens, that from Ebon was a barely perceptible bloom when living, and dried is, except under the binocular, wholly invisible. It can readily be recognized in microscopic preparations by the four inflated epibasidia and the thick-allantoid spores. The latter in the collection cited are mostly $7-7.5 \times 3.5-4 \mu$, relatively stout, like the type, but very little tapered toward the ends, more like some Iowa material. Previously reported from western Europe and from the northeastern quarter of the United States, the southernmost station being in Missouri. Martin (1939: 242) has reported two other species of *Tulasnella* from the tropics: *T. violea*, a common species of western Europe, the northeastern states, and southeastern Canada, from Colombia; and *T. sphaerospora*, unknown elsewhere, from Panama. *Gloeotulasnella calospora* occurs in Hawaii.

20. CERATOBASIDIUM CORNIGERUM (Bourd.) Rogers, Iowa Univ. Studies in Nat. Hist. 17: 5, pl. 1, fig. 2, 1935; Martin, *ibid.* 18 (3): 14, pl. 1, fig. 1, 1944.

On decorticate wood of *Artocarpus incisus*. Likiep: Likiep I., 1501.

A grayish-pruinose growth showing under the microscope repent mycelium; obovate, aseptate hypobasidia bearing (usually) four tubular epibasidia like those of a tremella; and oblong-ellipsoid spores. The shape of the spores reaches the extreme of elongation known in this species, quite like Figure 2(g) of the Iowa paper. Hitherto reported from the Austrian Tyrol and central France in Europe, and in the Western Hemisphere from southern Canada and the northern states. In comparing the Likiep specimen with mainland material, I observed, in *D. P. R.* 144

from Iowa, basidia with five well-developed epibasidia. More than four epibasidia or spores apparently are developed elsewhere in the Tremellales only in *Gloeotulasnella*.

21. SEBACINA CINEREA Bres., Fung. Trid. 2: 99, pl. 210, fig. 2, 1892; Rogers, Iowa Univ. Studies in Nat. Hist. 15 (3): 12, pl. 1, fig. 4-6, 1933; McGuire, Lloydia 4: 37, pl. 5, fig. 91-94, 1944; Martin, Iowa Univ. Studies in Nat. Hist. 18 (3): 39, 1944. *Exidiopsis cerina* Möll., Protobas. 85, 167, 1895. *Thelephora cinerea* (Bres.) Sacc. and Syd., Syll. Fung. 16: 183, 1902; nec Pers. ex Fr., Syst. Mycol. 1: 453, 1821.

On rotten, friable wood of *Artocarpus incisus*. Jaluit, 1580.

A thin cinereous-buff crust, under the microscope showing irregularly linear gloeocystidia with often yellow-granulose content, ellipsoid cruciate-septate basidia, and obtuse cylindrical spores. The fructification cited is young, and thinner than is usual for the species. Its spores, which have the form characteristic of *S. cinerea*, are smaller than in most collections ($7.5-8.5 (-10) \times 4-4.5 (-5) \mu$), and near the lower limit of size published for the species. The form of the basidia and the degree of compactness of the hymenium, both significant characters in the subgenus *Bourdodia* to which the species belongs, are typical.

The two synonyms given are an addition to those cited in previous discussions. The comparison of Möller's descriptions with good material of *S. cinerea* leaves little need for hesitation in equating his *Exidiopsis* to the present species. Acceptance of that synonymy extends the range of *S. cinerea* to southern Brazil; its known range already stretches from Ontario to Panama, from Massachusetts to Oregon, and in Europe from Finland to Italy.

22. SEBACINA DUBIA (Bourd. and Galz.) Bourd.; Rogers, Iowa Univ. Studies in Nat. Hist. 15 (3): 11, pl. 1, fig. 1-3, 1933;

McGuire, *Lloydia* 4: 31, pl. 4, fig. 73–74, 1941; Martin, *Iowa Univ. Studies in Nat. Hist.* 18 (3): 37, 1944. *Heterochaetella dubia* (Bourd. and Galz.) Bourd. and Galz., *Hym. Fr.* 51, fig. 30 [1928].

On dead wood of *Cocos nucifera*. Ebon, IX.9.46, 1391.

The fructification is distinctly cretaceous and, unlike that in most specimens of the species, clearly visible to the naked eye—and about as conspicuous as a thin dab of white-wash. Under the lens it is seen to consist of numerous more or less separated whitish conical spicules; under the microscope each of these may be seen to be composed of a number of parallel cystidia, surrounded and conglutinate by a film of indistinct hyphae which ascend for fully two thirds of the height of the spicule and bear on their surface cruciate-septate basidia with four very short epibasidia continued in long, subulate sterigmata. The cystidia of the Ebon specimen differ somewhat from those developed in other collections; but as noted elsewhere, the same may be said of almost any specimen: they are a variable lot. The cystidia, rather than being straight, thick-walled and with a narrow lumen at the base, and thin-walled and with a dilated lumen at the summit, as often in *Peniophora* sect. *Tubuliferae*, are contorted, often several times septate, constricted at some septa or for the entire length of some of the segments, and with the wall only slightly thickened. They show considerable resemblance to those of *Peniophora pallidula*. Some, however, approach the regularity of more typical *Sebacina dubia*. Known from widely separated localities in temperate Europe and North America; reported by Martin (*loc. cit.*) from Brazil.

23. *Sebacina farinacea* sp. nov. Fig. 1.

Fructificatio viva alba, farinaceo-ceracea, margine attenuato, zona peripherica sub lente e granulis albis distinctis (cystidiis) composita, exoleta pallide griseo-pruinosa, sicca cretacea vel leviter sordida; hyphae nodoso-septatae, 1.5–3 μ diam.;

paraphyses sparsi, tenues, ramosi; cystidia e corporibus cylindraceis 3–4 μ diam., valde granulis calcareis incrustatis, composita, stipitata, subfusiformia, 20–33 \times 7.5–10 μ ; gloeocystidia linearia, irregularia, matura suco luteo granuloso suffulta, 17–50 \times 5–6 μ ; basidia cruciato-septata, ellipsoidea vel oblonga, 14–16.5 (–18) \times 8.5–11.5 μ , epibasidia quattuor 2–2.5 μ diam., long. ad 16 μ , gerentia; spora oblongo-ellipsoidea vel obovatae, 8–9.5 \times 6–7 μ , per repetitionem germinantes.

Fructification when fresh pure white, becoming slightly creamy (a little lighter than Cartridge Buff), adnate, separable in small bits, farinaceous-waxy, under the binocular with minutely farinaceous surface, thinning out at the margin to a peripheral zone composed of minute white granules (cystidia) arising out of a thin transparent waxy film; old specimens grayish-pruinose; when dry chalky white to barely cream (paler than Ivory Yellow) or in older fructifications nearly as dark as Cartridge Buff; hyphae distinct, with clamps throughout, 1.5–3 μ ; paraphyses scattered, reaching the surface, mostly inconspicuous, the stalk linear, 2–3 μ in diameter, with peg-like or contorted branches 1 μ in diameter; cystidia arising at the margin and later engulfed by the hymenium and lying at its base, composed of a subcylindric, thin-walled cell 3–4 μ in diameter and heavy coarse mineral incrustation, at maturity subfusiform, obtuse, stalked, 20–33 \times 7.5–10 μ ; gloeocystidia arising near the base of the fructification, somewhat sinuous, irregularly inflated or constricted, thin-walled, the content early hyaline and homogeneous, later yellow, granular, refractive, resinoid, 17–50 \times 5–6 μ ; basidia subtended by a proliferative clamp, ellipsoid, becoming oblong and truncate, 14–16.5 (–18) \times 8.5–11.5 μ , longitudinally cruciate-septate, bearing 4 epibasidia 2–2.5 μ in diameter and up to 16 μ or more in length; spores oblong-ellipsoid to obovate, 8–9.5 \times 6–7 μ , germinating by repetition.

On dead fibrous leaf sheaths, leaf bases, and husks of *Cocos nucifera*.

HAWAII: Oahu: University of Hawaii campus, Manoa, II.12.46, I. A. Abbott and D. P. R. (*D. P. R.* 655); II.17.46, 1132; III.20.46, I. A. Abbott and D. P. R. (*D. P. R.* 1175), and 1176; III.31.46, 1243; VI.21.46, 1327, 1328; X.29.46, 1884, type (in herb. D. P. R., BISH, SU1); X.30.46, 1888; XII.4.46, 1931.

MARSHALL ISLANDS: Ebon, IX.10.46, 1388.

To the naked eye *Sebacina farinacea* presents the appearance of one of the innumerable small white Thelephoraceae—perhaps

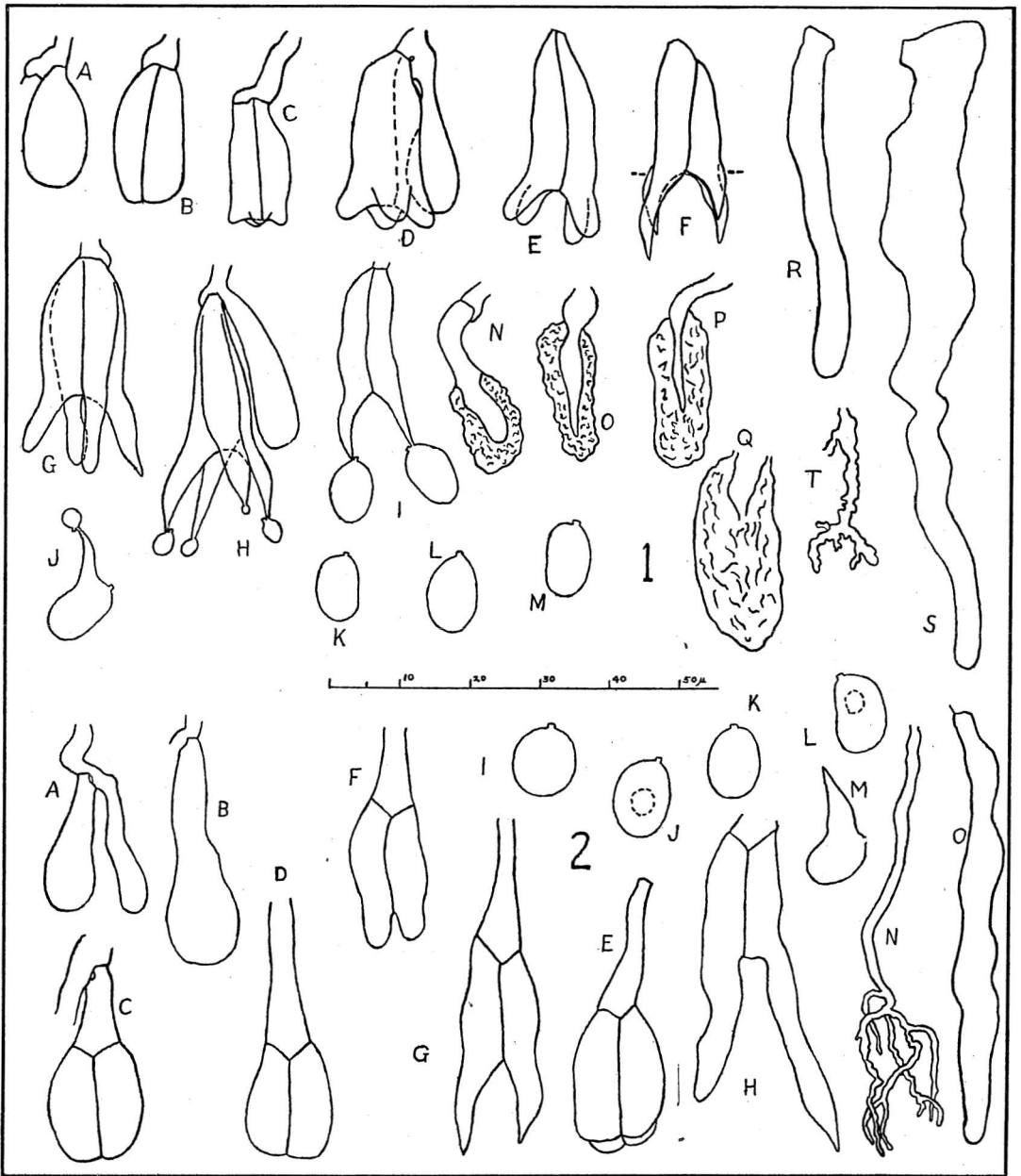


FIG. 1. *Sebacina farinea*: A-I, basidia; J-M, spores; N-Q, cystidia; R-S, gloeocystidia; T, paraphysis. C, F, I, K, M, N, O, Q, S = *D.P.R.* 1888; A, B, D, E, G, H, J, L, P, R, T = *D.P.R.* 1931.

FIG. 2. *Sebacina petiolata*: A-H, basidia; I-M, spores; N, paraphysis; O, gloeocystidium. All *D.P.R.* 1475.

All drawings were made with camera lucida under oil-immersion objective and 10 \times ocular at 1675 \times , and reduced in reproduction to approximately 1000 \times . Fig. 1 B and I and 2 C, D, and F-H are incomplete (optical section) and do not represent two-celled basidia.

a thin growth of *Corticium suecicum* or *Peniophora Sambuci*. In structure it is most nearly allied to those species of *Sebacina* subgenus *Bourdotia* with well-developed paraphyses, such as *S. Galzinii*; its gloeocystidia are similar, as are the arrangement of the basidia and their frequent elongate form. It is, however, much less gelatinous, and more resistant to separation of the hymenial elements under the cover-glass. On the other hand, its possession of paraphyses and commonly elongate basidia separate it from the group of more arid species of which *S. caesio-cinerea*, for example, is a member, and it does not show the sheath of empty basidia surrounding the fertile hypha that is so characteristic of those species. The heavily encrusted cystidia, resembling those of *Peniophora pubera*, are apparently unique in *Sebacina*. In fact, their place of formation—in a peripheral zone, where they mature before any other hymenial elements are developed—seems to be unique in the whole known range of the Basidiomycetes.

The subgenus *Heterochaetella* is defined by the possession of cystidia. *Sebacina farinacea* shows no indication of affinity to the species of *Heterochaetella* other than its cystidia; and even that exists only because the term "cystidium" is employed for a number of very different structures. The affinities of *S. farinacea* being rather with *S. Galzinii*, it is assigned to the subgenus *Bourdotia*.

Since the available keys to *Sebacina* all make use of the dichotomy "gloeocystidia present : cystidia present" in one form or another (Bourdot and Galzin, 1928: 17; Rogers, 1935: 37; McGuire, 1941: 11; Martin, 1944: 35), *S. farinacea* can be included most readily by the insertion of an additional choice:

"Both gloeocystidia and encrusted cystidia present.....*S. farinacea*."

Sebacina farinacea can be found after almost any prolonged rainy period on the dead sheaths of leaves attached to young coco

palms. Probably it could be collected more abundantly if the bases of the leaves of mature trees were less inaccessible. The Ebon specimen is the only one found elsewhere—on the rotting husk of a coconut. It is quite old and poor, but recognizable.

24. *Sebacina petiolata* sp. nov. Fig. 2.

Fructificatio viva gelatinosa, opalea vel hyalina, luteo-, roseo-, vel cyaneo-tincta, 0.5–3 mm. crassit., sicca hyalino- vel ochraceo-vernicaosa; hyphae plerumque distinctae, nodoso-septatae, 2–2.5 μ diam., sub basidiis ad 5 μ expansae; paraphyses filiformes, apicem versus furcatae vel fruticulosae, raro nodoso-septatae, 1–3 μ in diam.; gloeocystidia primo hyalina, homogena, serius luteo-granulosa, irregulariter subcylindracea vel subfusiformia, obtusa, 39–150 \times 4–7 μ ; probasidia primo clavata, hypobasidia matura obpyriformio-clavata, cruciatim septata, 21–32 \times 9–12.5 μ , ad apicem lobata, epibasidia 4 crassa, 10–50 \times 3–5.5 μ gerentia, basidiorum stipitibus ab hypobasidio separatis a septis eisdem verticalibus parietem versus curvatis; spores hyalinae, ellipsoideo-oblongae vel ellipsoideo-subglobose, 7–11 \times 6–8 μ , per repetitionem germinantes.

Fructification gelatinous, hyaline or yellowish-, pinkish-, bluish-, or plumbeous-opalescent, 0.5–3 mm. thick, the margin attenuate or abrupt and ciliate, when dry hyaline- or ochraceous-vernicaosa; hyphae mostly distinct, with clamps throughout, 2–2.5 μ in diameter, broadened up to 5 μ just below the basidia; paraphyses filiform, near the tips forked to bushy, occasionally nodose-septate, the basal portion 1.5–3 μ in diameter, the tips contorted, nodulose, unencrusted, about 1 μ in diameter, finally obscure; gloeocystidia with hyaline homogeneous content, becoming coarsely yellow-granular, irregularly subfiliform, subcylindric to fusiform or clavate, obtuse, 39–150 \times 4–7 μ ; basidia arising as clavate bodies, becoming obpyriform-clavate, the hypobasidia cruciate-septate, lobed at the summit, the inflated terminal portion 16–24 \times 9–12.5 μ , the stalk 20–27 \times 3–4.5 μ , separated from the fertile summit by the longitudinal walls, which curve away from their line of intersection to meet the outer wall, the epibasidia very thick near their bases, 10–50 \times 3–5.5 μ ; spores hyaline, evenly oblong to ellipsoid-oblong, 9–11 \times 6–7.5 μ , or ellipsoid-subglobose, 7–9 \times 6–8 μ , germinating by repetition.

Growing over bark of a dead branch (unidentified), over an old fungus, and on wood of *Acacia Koa*, *Aleurites moluccana*, *Artocarpus incisus*, *Hibiscus Arnottianus*, *Messerschmidia argentea*, *Psidium Guayava*, *Samanea Saman* (= *Pithecolobium Saman*),

Pandanus sp., and bark and wood of *Cocos nucifera*.

CUBA: Blanco's Woods, Soledad, Cienfuegos, VII.1.41, *W. L. White* 596; San Blas, Santa Clara Prov., VI.20-21.41, *W. L. White* 407, 427 (all in FH).

HAWAII: Oahu: east slope Manoa Valley (500-900 ft.), XI.18.45, 1218; Tantalus Trail, Pauoa, VII.21.46, 1331; S. branch of N. fork of Ekehanui Gulch (1,800-2,400 ft.), Honouliuli, III.17.46, 1169; Kupehau Gulch above pipe-line trail (2,000 ft.), Honouliuli, X.13.46, *R. S. Cowan* 179.

MARSHALL ISLANDS: Utirik, IX.1.46, 1525, 1548; Mejit, 1436, 1441, 1450, 1513, 1514, 1545; Ailuk: Marab I., 1571, Ailuk I., 1665, 1701; Likiep: Likiep I., on log of *Cocos*, VIII.28.46, 1475, **type** (in herb. D. P. R., BISH, SUI, FH); Wotje: Ormed I., IX.4.46, 1385, Riri I., 1500; Namu: Leuen I., 1403, 1431; Jaluit, 1617; Ebon, IX.9.46, 1393.

A continuous, usually thick gelatinous layer, composed (under the microscope) of branched paraphyses, gloeocystidia, and cruciate-septate basidia whose fertile distal part is separated from the stalk-like basal part by the intersecting vertical walls, which turn out to meet the outer wall of the hypobasidium. The apparent color varies considerably, according to the thickness, the color of the substratum which shows through the clear or opalescent basidiocarp, and probably other factors. The collection from Kupehau when fresh was pinkish—Pallid Mouse Gray to Pale Vinaceous-Fawn, whereas the one from Ekehanui, not far away, was in part Pale Olive-Gray and in part colorless and merely pruinose; others were noted in the field as being yellowish-opalescent, bluish-opalescent, blue-white, lavender-gray, light neutral gray, and deep blue-gray. In texture and presence of gloeocystidia and paraphyses *S. petiolata* is related to *S. Galzinii* and *S. umbrina*, from both of which it differs in the manner of branching of the

paraphyses, in clavate basidia, and in spores. The presence of the stout stalk separated by the vertical septa from the fertile portion is the clearest recognition-character. The new species may be accommodated in Martin's, McGuire's, or Rogers's keys (earlier cited under *Sebacina farinacea*) by the addition of a third choice to the dichotomy separating *S. umbrina* and *S. Galzinii* (or *S. Pululabuana*):

"Gloeocystidia similar to those of *S. Galzinii* (*Pululabuana*); spores oblong, ellipsoid-oblong, or ellipsoid-subglobose, 7-11 \times 6-8 μ ; basidia subclavate, the stalk separated by the vertical walls from the fertile summit*S. petiolata*"

25. STYPELLA MINOR Möll., Protobas. 77, 166, pl. 4, fig. 7, 1895; Martin, Iowa Acad. Sci. Proc. 36: 128 [1930]; Iowa Univ. Studies in Nat. Hist. 16 (2): 147, fig. 2, pl. 6, 1934; *ibid.* 18 (3): 34, 1944.

On dead rhachis and charred wood of *Cocos nucifera*, bark and wood of *Pandanus* sp., dead wood of *Artocarpus incisus*, bark and wood of *Carica Papaya*, and decorticate log of unidentified species. Ailuk: Marab I., 1572, Ailuk I., 1699; Mejit, 1454; Wotje: Riri I., 1760; Jaluit, 1585, 1587, 1606, 1610, 1614; Ebon, IX.10.46, 1799.

When young, and about the margins when mature, formed of distinct minute gelatinous pustules, which later are confluent into a reticular or apparently continuous, uneven-surfaced layer. This inconspicuous but characteristic fungus, originally described from southern Brazil, has since been reported as occurring more generally in tropical America and in the eastern and central states at least as far north as Wisconsin and Massachusetts. It certainly occurs and has been reported (under other names) in western Europe, and has several times been collected in Hawaii.

Four of the specimens here listed are in all respects quite typical, and are not distinguishable from Iowa material. The five

collections made on Jaluit, however, show in varying degrees a more luxuriant growth; the separate lenticular or tuberculiform basidiocarps are confluent to form not merely a reticulate aggregation, or the thin film which seems to be the most homogeneous fructification developed in temperate lands, but a tough, separable membrane, held together by a dense subicular layer, almost cartilaginous in consistency, of conglutinate hyphae. In some of the specimens this layer on drying has remained intact, forming a hyaline, translucent pellicle, glistening (under the binocular) from light reflected from the sides of the minute polygonal areoles which represent the originally separate basidiocarps, and from their very short narrowed stipe-like bases, which remain separate even in the older parts of the fructification, and which can be made out through the continuous surface. The spores and basidia of the Jaluit material also average somewhat larger than those of most other specimens. There is, however, considerable overlapping in these as in other respects; the best developed of the Jaluit specimens is well matched by one from Hawaii, while the more delicate specimens or areas are not distinguishable from some of the Hawaiian and North American ones. It is certain that conditions of temperature and humidity on Jaluit at the time of collection were extremely favorable for the development of tremellaceous fungi, and to the weather may be ascribed the extreme forms here noted.

26. *GUEPINIA SPATHULARIA* (Schw.) Fries; Coker, Elisha Mitchell Sci. Soc. Jour. 25: 177, pl. 23, fig. 14; 51; 64, fig. 5, 6, 9, 1920; Brasfield, Amer. Midland Nat. 20: 221, pl. 3, fig. 64-66, 1938; Lloydia 1: 155, 1938; Martin, Iowa Univ. Studies in Nat. Hist. 18 (3): 30, 1944. *Merulius Spathularia* Schw., Naturf. Gesell. zu Leipzig Schr. 1: 92, pl. 2, fig. 1-3, 1822.

On bare wood, or growing out through fissures in the bark, of *Pandanus* sp. Utirik,

1554; Ailuk: Marme I., 1750; Mejit, 1440, 1453, 1508.

Guepinia Spathularia as here treated includes all those fungi with fructifications cartilaginous-gelatinous in consistency, orange or brownish-orange in color, flabelliform or incised-flabelliform, tomentose on the compressed stipe and one surface of the expanded summit, with forked basidia and one-septate spores. All of the Marshallese collections have the basidiocarps less obtuse at the distal margin, more translucent, brighter (and redder) in color, and less tomentose on the sterile surface, than any material at hand from temperate regions, and than any shown in the illustrations cited. Microscopically, although the spores may be slightly more slender, no significant differences appear to exist. A considerable number of species have been described from the tropics, most of them differing little from *G. Spathularia*. Several recent authors have indicated doubt of the autonomy of certain or all of these species; and it seems neither necessary nor prudent, in the absence of any considerable amount of tropical material for comparison, to attempt at present a decision on the distinctness of these segregates or of the Marshall Islands material.

27. *AURICULARIA AMPLA* Pers. in Gaudichaud, Bot. Freycinet Voyage autour du Monde . . . Uranie et . . . Physicienne 177, 1827. *Exidia ampla* (Pers.) Lév., Ann. Sci. Nat. Bot. 3 ser. 5: 159, 1846. *Hirneola ampla* (Pers.) Fries, K. Vetensk. Akad. Handl., 1848: 146, 1849.

Fructifications when fresh thin, flexible, leathery-gelatinous, the dorsal surface uniformly pilose, cinereous-gray, -pink, or -buff, or in old specimens fuscous, glabrescent, the hymenial surface more or less pruinose, dull flesh-color, purplish-rosy, dull purplish, or in older specimens blackish; solitary or gregarious to densely imbricate-caespitose, eccentrically peltate or sessile by a narrowed posterior margin or produced into a short stipe-like sterile base, up to 5 (rarely -20) cm. in breadth, convex and even or slightly plicate above, cupulate and even or in larger specimens shallowly venulose below; when dry thin, flexible, quite fragile, trans-

lucent, pallid-cinereous to buffy-cinereous above or in old specimens sometimes dark and nearly glabrous, below purplish-black to slaty-black, contracted and usually considerably wrinkled; in section composed of a hymenial layer about $70\ \mu$ thick, a medullary layer about $700\ \mu$ thick, and a compact dorsal layer about $20\ \mu$ thick underlying the tomentum; hymenial layer consisting of densely compacted basidia, of paraphyses $1.5\text{--}2\ \mu$ in diameter with brownish branching indistinct tips exceeding the basidia and forming a dense continuous superficial layer, and of slender contorted subhymenial hyphae; medullary layer of rather loosely arranged hyphae with irregular often open clamps and confluent, highly gelatinized walls, apparently $2\text{--}3\ \mu$ in diameter but much thicker if the limits of the walls could be observed, mostly parallel to the surface in the middle and perpendicular in the upper and lower quarter; dorsal layer consisting of an inner colorless half of heavily stainable hyphae $1\ \mu$ in diameter, densely compacted, perpendicular to the surface, and with little gelatinized wall material between, and an outer pigmented layer abundantly penetrated by the bases of the surface hairs; hairs up to $225 \times 4.5\text{--}7\ \mu$, thick-walled and aggregated in conical tufts; basidia linear or slightly clavate, $40\text{--}50 \times 4.5\text{--}5\ \mu$, 3-septate; spores allantoid, $15.5\text{--}17 \times 4.5\text{--}5.5\ \mu$.

In the Marshalls usually on wood of *Cocos nucifera*, with one collection on *Artocarpus incisus*. Wotje: Ormed I., 1353, 1354, 1379, 1383; Namu: Namu I., 1404, 1414, 1434; Ebon, 1338.

A thin, leathery, often ear-like basidiocarp, pilose and ashy to nearly glabrous and brownish-black above, and rosy to purplish-black below. The most abundant growth was encountered on Ormed, where large clusters had developed on standing dead trunks of coco palms, many of which had been topped by the blockaded Japanese garrison for their edible terminal buds, while others had been cut by artillery fire or bomb-blast. The Marshallese name, "lajiling kiji-lik" (rat's ear), is applied without much discrimination to many bracket- or ear-like or even stipitate Basidiomycetes—polypores, *Pleurotus*, and others—but there was some suggestion that this species is the true rat's ear, and on Ormed the name was given only to this *Auricularia*. Strangely enough, it is not eaten in the Marshalls, whereas in

Hawaii the same species, under the name "pepeiaoakua" (ghost ear) is regarded, not mistakenly, as good food.

Persoon's description (*loc. cit.*) reads as follows:

A[uricularia] magna resupinata substipitata, inferne pubescens lutescente-grisea, superne laevis nigricans. Pers.

In insulis Mariannis inque Moluccis.

Pour la configuration et la couleur, cette espèce ressemble beaucoup à l'*auricularia sambuci* [i.e., *A. auricularis* (S. F. Gray) Martin, Amer. Midland Nat. 30: 81, 1943]; mais elle s'en distingue par sa partie fertile, qui n'est presque pas veineuse, et parce qu'elle pousse en-dessous une sorte de stipes ou appendice long de quelques lignes. A ces caractères, il faut ajouter l'*habitat*, qui pourtant ne doit pas avoir influé sur la forme et la dimension? P.

In this there is, first of all, an obvious error: the description has the basidiocarp inverted; it is not pubescent below, but above. (It may be noted that Fries and succeeding generations of mycologists made the same mistake for all species which, like this, were placed in the genus *Hirneola*. See Fries [*loc. cit.*], p. 144; and 1825: 93.) The presence of a stipe, furthermore, is here no more than fortuitous; it is not a discrete structure, but an indistinct prolongation of the basidiocarp, and probably no more than an occasional response to the position of the latter, or to such an external condition as development through a fissure in the bark. The same development occurs in northern specimens of *A. auricularis*. Neither is the configuration of the hymenium a constant character; among the numerous collections at hand some are quite smooth, and others as venulose, and as ear-like in their convolutions, as any specimen of *A. auricularis*. The word "resupinata" need not be misleading if it be noted that Persoon (1822: 97) uses the same adjective in describing the familiar northern *A. auricularis*. What is left, then, of Persoon's account is a description of a large species of *Auricularia*, yellowish-gray-pubescent above, blackish below, greatly resembling *A. auricularis*, and occurring from

the Marianas to the Moluccas. The size of the Marshalls specimens is not remarkable, nor does the largest specimen at hand, a Hawaiian basidiocarp 20×12 cm., significantly exceed the maximum given by Martin (1944: 65) for *A. auricularis*—which, as it happens, is also described by Persoon as "sat magna"; but the typical development of the tropical fungus seems to be a larger one. The yellow-ashy dorsal surface and blackish hymenium are characteristic of mature specimens, grown in strong light, of the form under discussion, which is probably the one *Auricularia* of the Pacific islands resembling *A. auricularis*. Whether the two are distinct has been doubted; probably reports of *A. auricula-judae* from Oceania, such as Hennings's, cited earlier, and Patouillard's, refer to the fungus here called *A. ampla*. By its more strongly pilose basidiocarps, conspicuously rosy young hymenia, and somewhat larger spores it is at least readily distinguishable, and one inclined to question the distinctness of the Pacific form should note that the differences are much greater in living than in preserved material. Unsatisfactory as it is, Persoon's account gives as sound a basis for the identification of his fungus as do those of later authors whose names have been more commonly adopted. Briefly, that basis is an abbreviated description which, allowance being made for obvious error, is quite applicable, as far as it goes, to the fungus at hand, and with that description a geographical limitation which seems to confine the application to the one species. Reference to the original valid descriptions of accepted species of *Auricularia* will show that they are no better founded. It is at least highly probable that the form under consideration is *A. ampla*, and that name should be superseded only if reason appears to doubt the correctness of its application, or if an earlier name, likewise probably applicable, exists.⁴

Dried mature specimens from the Marshalls mostly show on the dorsal surface a

color that cannot be exactly matched in Ridgway—more tawny, and less greenish, than Olive-Buff or Deep Olive-Buff; the grayer specimens are Pale Olive-Gray to Mouse Gray; the hymenium is Light Quaker Drab to Blackish Plumbeous. A specimen soaked for spore-printing (and still alive) showed the hirsute surface Pallid Mouse Gray and Light Mouse Gray to a tawny color like that of the dried material, and the hymenium Light Heliotrope-Gray to Dark Purple-Drab, Dark Vinaceous-Gray, and Heliotrope-Slate; certainly young specimens were redder when first collected. Freshly collected Hawaiian specimens have the dorsal surface Tilleul Buff and Vinaceous-Buff to Sorghum Brown, Drab-Gray, and Drab, and the hymenium Russet-Vinaceous to Sorghum Brown. The colors of the very brightest young hymenia have not been recorded; according to my recollection they

⁴Through the great kindness of Dr. A. J. Lam and R. A. Maas Geesteranus of the Rijksherbarium, Leiden, I have recently (II.18.47) been permitted to study adequate fragments of the type of *A. ampla* and a photograph of the entire type collection. The two fructifications there present measure respectively 4.5×3.5 and 8×7 cm.; the dorsal surface is evenly pilose, and Cinnamon Brown to Prout's Brown (Mr. Maas Geesteranus writes that the smaller specimen is glabrescent); the ventral surface is nearly smooth (only a few low folds appearing in the photograph), not pruinose, and Plumbeous Black or Black. The layers shown in section are the same as those here described in the Marshalls material except that for about 75μ above the basidia the medullary layer includes a continuous mass of colorless, amorphous, refractive material not seen in any Marshalls specimen sectioned. Persoon's type and the Hawaiian and Marshall Islands specimens agree very closely, and their identity may be considered to be established. The name *A. ampla* which heads this note cannot, however, be retained; it is antedated by *Exidia cornea* (Ehreb.) ex Fries, Syst. Mycol. 2: 222, 1822 (*Auricularia cornea* Ehreb., Hor. Phys. Berol. 91, pl. 19, fig. 9, 1820), a name applied to the same fungus collected on Oahu by Chamisso. The valid name is then *Auricularia cornea* ([Ehreb.] ex Fries) Ehreb. ex—. I have been unable to find that this binomial has been validly published; it seems unlikely that a still earlier name will be discovered.

The type of *A. ornata* is now lacking at Leiden.

would be at least as red as Purplish Vinaceous.

28. *AURICULARIA ORNATA* Pers. in Gaudichaud, Bot. Freycinet Voyage autour du Monde . . . Uranie et . . . Physicienne 177, pl. 2; fig. 4, 1827. *A. adnata* Lyon in Rock, Hawaii Coll. Publ. Bul. 4: 33, 1916.

Fructification when fresh tough fleshy- to cartilaginous-gelatinous, adnate over much of its area or centrally peltate-rooting, disciform, lobed-disciform, or by confluence elongate, 0.5-7.5 cm. in diameter, the margins at first closely appressed, later often reflexed to 0.5 cm., the lower (hymenial) surface pruinose, soft brown (Pale Brownish Drab to Natal Brown), in young specimens smooth to slightly rugose, in older with strong, irregularly forking, vein-like thickenings more or less radially arranged, the upper surface where free coarsely pilose, zonate, the zones alternately of long and of short hairs, mostly dark brown (Snuff Brown to Bister), but interspersed with light bands (about Pinkish Buff), in young specimens with appressed margins the pilosity shown only as a narrow buffy margin; when dry hard, in consistency like dried cartilage, the hymenium strongly pruinose, plumbeous (Cinereous to Dark Plumbeous), with younger portions lighter and browner (Drab-Gray); in section composed of a hymenial layer about 85 μ thick, a medullary layer about 1000 μ thick, and an abhymenial layer about 30 μ thick; the hymenial layer consisting of a pigmented superficial portion about 15 μ thick composed of the indistinct, branching ends of paraphyses 1-1.5 μ in diameter, and a basidial portion; the medullary layer consisting of hyphae 3-9 μ in diameter with irregular, often open clamp connections and greatly gelatinized walls, densely compacted and perpendicular to the surface in the lower and upper 100 μ , looser and more or less parallel to the surface in the middle; the abhymenial layer brown, nearly opaque, compact and (in the free parts of the basidiocarp) supporting a pilose layer about 70-300 μ thick (according to the surface zonation) of free brown hyphae; basidia linear or often narrowly claviform or basally ventricose, 3-septate, 52-70 \times 5.5-7 (rarely -8.5) μ ; spores thick-allantoid, with stout truncate apiculus, 12.5-15.5 (-17) \times 5.5-6.5 μ .

On bark and decorticate wood of *Messerschmidia argentea*.

LINE ISLANDS (Pacific): Palmyra I., VIII.20.24, H. F. Bergman [A], [B], det. by Lyon as *A. adnata*.

MARSHALL ISLANDS: Utirik, 1549; Ailuk: Marab I., 1568, Ailuk I., 1518; Wotje: Riri I., 1372; Namu: Leuen I., 1408.

A leathery growth, brown above and below when moist and active, apparently limited to the single substratum *Messerschmidia* (= *Tournefortia*) *argentea*, and to hard, elevated, little decayed branches of that species. The earliest of the Marshalls collections was made in a soaking rain, and the fungus was at first taken to be a somewhat thicker and softer relative of *Stereum hirsutum*. The highly characteristic brown color disappears from the hymenium on drying, and is replaced by a pruinose slate not too different from the appearance of other species of *Auricularia*. Since *A. ornata* is one of the far too numerous lost species, the original description is here reproduced:

[*Auricularia*] pileo dimidiato reflexo tomentoso, zonis fuscis pallidisque variegato, inferne venoso nigricante. Pers.

In insulis Mariannis.

Cette plante est l'une des plus jolies espèces du genre. Elle a par sa partie supérieure quelque similitude avec l'*auricularia mesenterica*, Pers. Mycol. Europ. 1, p. 97. Mais sa surface inférieure est garnie de veines comme dans l'*auricularia sambuci* (*tremella auricula*, Linn.). P.

The illustration shows a dimidiate basidiocarp with prominent zonation on the dorsal surface, more like a sketch of *Coriolus versicolor* than like any *Auricularia*, and certainly not remotely like the almost resupinate fungus on *Messerschmidia*. But having soaked a dried specimen to secure a spore-print, I happened to pick away a few marginal bits of the bark to which it was attached, in order to discover how much of the dorsal surface was free from the substratum. The surface revealed was zonate not merely because of the varying lengths of the hairs which covered it, but "variegated by fuscous and pallid bands," exactly as described and illustrated by Persoon. It seems likely that the material from which the description was drawn up either had been removed from its substratum by the collector or had been pried away, as was mine, to discover the character of the dorsal surface. The resemblance noted to *Auricularia mesenterica* may possibly ac-

count for some of the reports of that species from Pacific lands. Fries (1838: 555) lists *A. ornata* as a possible synonym of *A. mesenterica*, with the note, "sec. Montagn. non differt" (Montagne having, it would appear, studied Persoon's specimens). Material at hand of *A. mesenterica* shows a much thicker and more deeply pilose basidiocarp, with the hyphae of the medullary layer much more highly gelatinized and more widely spaced, and with an ochraceous, rather than chiefly brown, dorsal surface. The two species are undoubtedly closely related; on the basis of available specimens, I should consider them amply distinct. There seem to be no zonate species described in the genus other than *A. mesenterica* and *A. ornata*; the latter is as well characterized as any member of *Auricularia*, and there can be little doubt that the collections here cited belong to Persoon's species.

The fungus is quite as certainly Lyon's *Auricularia adnata*. The type of that species, collected "on *Tournefortia* trees" on Palmyra Island, 1,100 miles south of Oahu, is not at hand; but Dr. H. L. Lyon has recently confirmed Bergman's identification of the two later Palmyra collections (from the same substratum), indicating that the specimen now marked "A" is the more typical. These are indistinguishable from the Marshall Islands material. Other adnate species have been described in *Auricularia*; of these only *A. peltata* Lloyd seems well enough characterized to be recognizable without special study. Material at hand of this species shows uniformly smaller and more strongly venulose basidiocarps attached over nearly all the dorsal surface by the uniformly pallid tomentum; it is quite a different fungus from *A. ornata*. It is at least odd, if not significant of relationship, that Lloyd's type, as well as one of the specimens more adequately described by Ahmad (1945: 242) grew on *Cordia "myxa"*—like *Messerschmidia*, an arborescent member of the Boraginaceae.

29. *SEPTOBASIDIUM* sp. (*BOGORIENSIS* affn.); cf. Boedijn and Steinmann, *Buitenzorg Jard. Bot. Jour.* 3 ser. 11: 205, fig. 25, 26; pl. 18 (b), (c), 1931; Couch, *Genus Septobasidium* 213, pl. 61, fig. 3-10; 103, fig. 4-7; 104, fig. 10-12, 1938.

On living prop roots, and more rarely on bark of living trunks, of *Pandanus pulposus* and *Pandanus* spp. Namu: Namu I., 1421, Leuen I., 1417; Ailinglapalap, 1480; Jaluit, 1474, 1577, 1578; Ebon, IX.9.46, 1335, 1336, 1389.

This fungus formed conspicuous lichen-like encrusting patches, light gray or lilaceous-gray, on a considerable part of the *Pandanus* trees on the islands where it occurred; the quantity of material collected was limited only by the time that could be profitably spent cutting it off the trunks, and the space available for drying. Although superficially resembling the grayish lichens which occurred abundantly in the same places, the *Septobasidium* could readily be recognized as a member of that genus by the irregular discontinuous development of its margin, by the evident elevation of its surface on short brownish pillars (whereas the lichens clung closely to the bark), and by the brown centers of the older fructifications. It occurred on all the islands visited south of Kwajalein; whether it is found there also is not known, since the two islets of Kwajalein Atoll on which the party landed were almost completely denuded of native vegetation. Although a careful search for the *Septobasidium* was everywhere made, none was discovered north of Kwajalein. On the drier atolls, such as Ailuk and Wotje, where the lichen incrustation was also sparse or wanting, this lack was to be expected; but although on Mejit the vegetation and lichens indicated a climate fully as favorable for the growth of fungi as that of Namu, the *Septobasidium*, it seems safe to say, does not occur there. Some reported hosts of *S. bogoriense*, such as *Citrus* and *Hibiscus*, grow on islands where

Septobasidium was abundant on *Pandanus*, but the fungus was found on none but the latter plant. Parts of all collections have been sent to Dr. J. N. Couch, who will discuss the fungus in a future publication of his.

30. *PELLICULARIA ISABELLINA* (Fries) Rogers, *Farlowia* 1: 99, 1943. *Hypochnus isabellinus* (Fries) Fries; Burt, *Mo. Bot. Gard. Ann.* 3: 222, fig. 12, 1916. *Tomentella isabellina* (Fries) Höhn. and Litsch.; Bourd. and Galz., *Hym. Fr.* 482, fig. 121 [1928]. *Botryobasidium isabellinum* (Fries) Rogers, *Iowa Univ. Studies in Nat. Hist.* 17: 11, pl. 2, fig. 5, 1935.

On wood, husks, and dead leaf-sheaths of *Cocos nucifera*, and on old polypore. Ailuk: Ailuk I., 1758; Mejit, 1443, 1512; Likiep: Eniarmij I., 1690; Namu: Leuen I., 1419; Jaluit, 1604.

A delicate ochraceous tomentose growth, under the lens minutely tufted, under the microscope composed of stout, short-celled hyphae branching at right angles, of rough-walled subglobose spores, and of obpyriform basidia. The mature spores are thin-walled when abstricted; but in the Namu specimen, and to a slighter extent in others also, the wall soon becomes considerably thickened. I have seen one other similar tropical collection.

31. *PELLICULARIA LEMBOSPORA* Rogers, *Farlowia* 1: 109, fig. 8, 1943.

On bark of rotten log of *Ochrosia parviflora*. Likiep: Biebi I., 1672.

A cream-colored, very slight and loose, hypochnoid growth; distinguishable under the microscope by its small navicular spores mostly $7-8 \times 3 \mu$. The collection consists of a few minute pallid patches of this, the perfect stage, scattered among the much more robust, tawny; imperfect fructification of the same fungus. See under *Oidium tomentosum*, below. Previously reported from British Guiana and Cuba, and present also

in Hawaii; a tropical relative of the more nearly ubiquitous *P. vaga*.

32. *PELLICULARIA VAGA* (Berk. and Curt.) Rogers, *Farlowia* 1: 110, fig. 9, 1943. *Corticium botryosum* Bres.; Bourd. and Galz., *Hym. Fr.*, 241 [1928].

On bark, wood, and husks of *Cocos nucifera*, and wood of *Pandanus* sp., *Artocarpus incisus*, and an undetermined dicot. Utirik, 1459, 1801; Ailuk: Ailuk I., 1703, 1746, 1757; Mejit, 1447, 1448, 1510, 1515, 1520; Likiep: Likiep I., 1477; Wotje: Ormed I., 1370, 1543; Jaluit, 1615.

A pallid or buff hypochnoid growth with the characteristic very wide mycelium of the genus and naviculiform spores (fusoid, depressed on one side) mostly $10-12 \times 4.5 \mu$. The commonest member of the genus in the Marshalls, as on the northeastern and northwestern coasts of the American mainland and, apparently, in western Europe.

FUNGI IMPERFECTI

33. *HELICOMYCES ROSEUS* Link; Linder, *Mo. Bot. Gard. Ann.* 16: 271, pl. 12, fig. 5-7, 1929.

On husks of *Cocos nucifera*. Ebon, IX.10.46, 1805 (with 1338).

A grayish bloom, imperceptible except under considerable magnification, composed of hyaline linear conidia coiled like a watchspring, and very short hyaline conidiophores. The fungus was discovered only when the specimen earlier cited of *Sebacina farinacea* was being examined under the binocular. It is less conspicuous macroscopically than the quite inconspicuous Iowa specimens, determined by Linder, with which it was compared, but agrees in all other respects.

34. *ODIDIUM TOMENTOSUM* (Berk. and Curt.) Linder, *Lloydia* 5: 204, pl. 5, fig. E, 1942.

On bark of rotten log of *Ochrosia parviflora* and unidentified dicot wood. Likiep: Biebi I., 1672, 1674.

Pilose, loose, reddish-tawny; composed, as are all species of *Pellicularia*, of very thick, short-celled hyphae branching at right angles; fruiting by globose conidia borne on short peg-like lateral teeth. As in Hawaiian collections, this imperfect stage is much better developed than the perfect stage, *Pellicularia lembospora*. Reported from the Bahamas and Cuba.

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