

Discomycetes on Decayed Tree Fern. (2) *Lachnum varians*
(REHM) SPOONER and *Lachnum sclerotii* (A. L. SMITH)
HAINES et DUMONT new to Japan¹

By

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Abstract *Lachnum varians* (Rehm) Spooner and *Lachnum sclerotii* (A. L. Smith) Haines et Dumont on decayed tree ferns, *Cyathea* spp., are recorded as species new to Japan. *Cyathea* sp. is new host for *L. sclerotii*.

Several species of pteridicolous Hyaloscyphaceae have been reported from the Australasia (Dennis, 1958; Spooner, 1987) and the Central and South America (Haines, 1980). In the southern part of Japan, several tree fern species are distributed (Iwatsuki, 1992). Recently *Lachnum pteridophyllum*, pteridicolous Hyaloscyphaceae, is reported for the first time on the rachis of decayed *Cyathea* spp. in Japan (Nagao & Doi, 1996). I examined the specimens of the cup fungi collected from Yaku-shima Island, Iriomote-jima Island and Amami-oshima Island. Among them I found two species of *Lachnum*, *L. varians* and *L. sclerotii*, which are new to Japan. The specimens cited are deposited in the herbarium of the National Science Museum, Tokyo (TNS).

1. *Lachnum varians* (Rehm) Spooner, Bibl. Mycol. 116: 466 (1987).

[Figs. 1, 2]

Dasyscypha varians Rehm, Hedwigia 39: 94 (1900).

Dasyscyphus flavidulus Rehm, Annales Mycologici 7: 542 (1909) *teste* Haines (1980).

Lachnum gleicheniae Cash, Mycologia 30: 105 (1938).

Lachnella gleicheniae (Cash) Seaver, North American Cup-fungi (Inoperculates): 266 (1951).

The following description is based on the Japanese collections.

Apothecia funnel-shaped, stipitate, 0.1–0.3 mm diam., gregarious. Disc concave, pale orange. Receptacle cupulate, densely covered with hairs containing pale yellow pigment and around the upper position of receptacle hairs particularly

¹ This study was carried out when Nagao was a Research Fellow in 1995 of the Department of Botany, National Science Museum, Tokyo.

bearing amber-colored particles. Stipe central, cylindric, usually longer than the disc diam., covered with hairs, $27\text{--}32 \times 3\text{ }\mu\text{m}$, cylindric, obtuse, not tapered at the apex. Hairs $35\text{--}50\text{ }\mu\text{m}$ long and $2.5\text{--}4\text{ }\mu\text{m}$ diam. in the middle, $3\text{ }\mu\text{m}$ at the apex around the receptacle, cylindric, slightly tapered at the apex, pale buff or pale yellow, septate, finely granulate entirely and bearing amber resinous exudate. This large amber-colored particles dissolved in Melzer's reagent. Asci $42\text{--}53 \times 2.5\text{--}4\text{ }\mu\text{m}$, 8-spored, cylindric-clavate, gradually narrowed to a short stipe, apex rounded, the pore stained blue in Melzer's reagent. Ascospores $9\text{--}14 \times 1\text{--}2\text{ }\mu\text{m}$ (average $11.9 \times 1.2\text{ }\mu\text{m}$), hyaline, fusoid, acutely rounded at the ends, straight or slightly curved, non-septate. Paraphyses narrowly lanceolate or subcylindric, hyaline, exceeding the asci level.

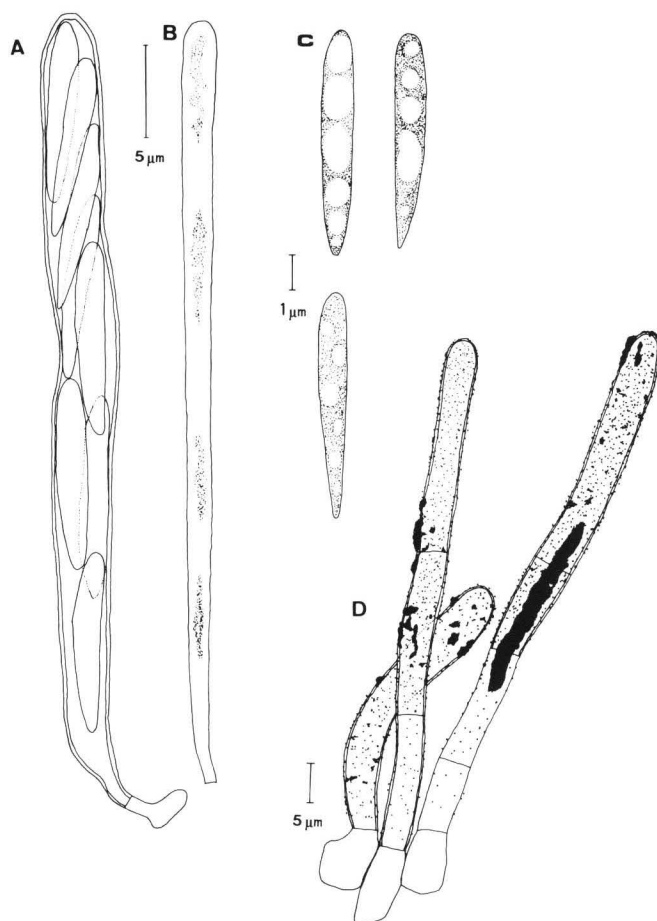


Fig. 1. *Lachnum varians* (Rehm) Spooner (TNS-F-180395). A. Ascus and ascospores. B. Paraphyses. C. Ascospores. D. Hairs.

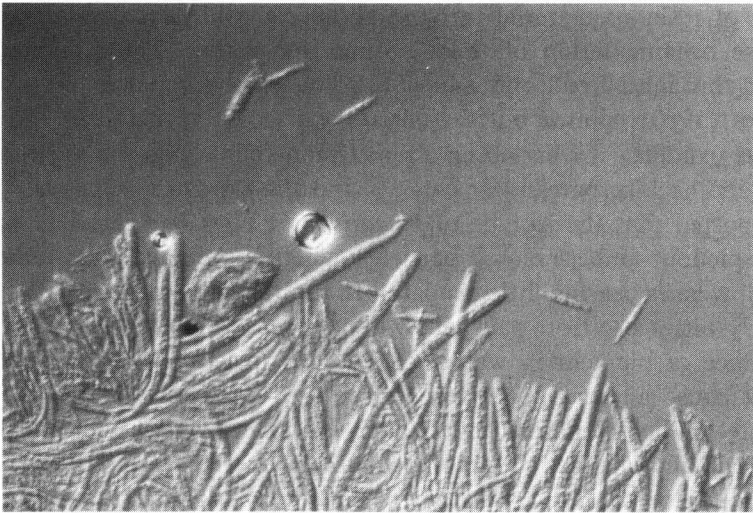


Fig. 2. Ascospores and asci of *Lachnum varians* (Rehm) Spooner (TNS-F-180395).

Hab. On the rachis of decayed tree fern, *Cyathea spinulosa*, in Isso, Yaku-shima Island, Kagoshima Pref., Oct. 27, 1995, *H. Nagao* (TNS-F-180395, TNS-F-180396); in Onoaida, Yaku-shima Island, Kagoshima Pref., Oct. 28, 1995, *H. Nagao* (TNS-F-180397) and on the rachis of decayed tree fern, *Cyathea lepifera*, in Komi, Iriomote-jima Island, Okinawa Pref., Nov. 18, 1995, *H. Nagao* (TNS-F-180398).

Distr. Venezuela, Colombia, Ecuador, Mexico, Panama, Puerto Rico, Australia, New Zealand, Papua New Guinea. New to Japan.

This species was characterized by the shape and length of ascospores ($10.5\text{--}15.0\text{ }\mu\text{m}$), pale yellow hairs and amber-colored resinous particles on the hairs. *Lachnum varians* is closely related to *L. pteridophyllum*. For example, Haines (1980) considered the latter as the variety of the former. Diagnostic characters for these two species are given in Table 1. The above materials agree with the morphology of ascospore and hair and the color of resinous materials of *L. varians*. Observing Japanese collections, the above collections have dense orna-

Table 1. Diagnostic characters of *Lachnum varians* and *L. pteridophyllum* (Spoonier, 1987)

	<i>L. varians</i>	<i>L. pteridophyllum</i>
Disc	concave	shaded disk by inrolled margin
Length of asci	$45\text{--}50 \times 5.5\text{ }\mu\text{m}$	$52\text{--}65 \times 4.5\text{--}5.5\text{ }\mu\text{m}$
Shape of ascospores	acute or acutely rounded at the ends	acute at the ends
Length of ascospores	$10.5\text{--}15.0 \times 1.5\text{--}2.0\text{ }\mu\text{m}$	$14.5\text{--}19.0 \times 1.2\text{--}1.8\text{ }\mu\text{m}$
Width of hairs	$4.0\text{--}5.5\text{ }\mu\text{m}$	$2.5\text{--}3.5\text{ }\mu\text{m}$
Color of resinous particles	amber	yellowish

mentation of resinous materials around apothecia, while *L. pteridophyllum* has very sparse ornamentation of them around apothecia. These differences are recognized through all collections in spite of the sampling place.

Haines (1980) pointed out the variation of color of the hairs and amount of resinous exudate. In his observation, lemon-yellow pigment on or in hairs in young apothecia progressively darkens and the exudates increases. Spooner (1987) reported that the isotype of *L. varians* at Kew has pale buff hairs and fairly conspicuous amber-colored particles, whereas the Australian material has lemon-yellow hairs bearing little exudate. In the Japanese specimens the color of hairs widely varies also from pale yellow to dark red. Haines (1980) observed the disappearance of pigment in water soaked specimens and supposed that these color shift cause an array of differently colored apothecia on the same piece of substrate. When the dried apothecium was placed on wet cotton, the color of hairs gradually changed from yellow to dark-green within a day. Effect of moisture condition to the coloration of the hairs is suggested.

Lachnum varians is the most common and widespread on the remains of tropical tree ferns. In the known localities, Yaku-shima Island is the northern end of the distribution for this fungi.

2. *Lachnum sclerotii* (A. L. Smith) Haines et Dumont, Mycotaxon 19: 17 (1984). [Figs. 3, 4]

Belonidium sclerotii A. L. Smith, J. Linn. Soc. Bot. 35: 14 (1901).

Erinella subcorticalis Patouillard in Duss, Enumération méthodique des champignons recueillis à la Guadeloupe et à la Martinique: 67 (1903).

Ericoscypha subcorticalis (Patouillard in Duss) Kirschstein, Annales Mycologici 36: 384 (1938).

Dasyscyphus subcorticalis (Patouillard in Duss) Dennis, Kew Bulletin 9: 299 (1954).

Erinella subcervina Bresadola in Rick, Annales Mycologici 4: 390 (1906) *teste* Haines et Dumont (1984.)

The following description is based on the Japanese collection.

Apothecia 0.5–1 mm diam., gregarious, short-stipitate. Disc concave, pale orange, pale hairs with margin. Receptacle shallow cupulate, clothed with pale hairs. Stipe central, cylindric, usually shorter than the disc diam., darkly pigmented around the base. Hairs 50–52.5 μm long and 2.5 μm diam., hyaline, cylindric, obtuse, septate, finely granulate entirely and bearing resinous granules. Asci 71–85 $\times$ 5–7 μm (average 77.2 $\times$ 6 μm), 8-spored, cylindric-clavate, gradually narrowed to a short stipe, apex conical, the pore stained blue in Melzer's reagent. Ascospores 12–31 $\times$ 1.5–3 μm (average 24.5 $\times$ 2.1 μm), hyaline, narrowly fusoid, 1–3 septate, straight or slightly curved, middle cell of ascospore broad, irregularly arranged in 2 or 3 series. Paraphyses subcylindric, hyaline. Medullary

excipulum composed of interwoven hyphae in the receptacle. Ectal excipulum composed of prismatic cells.

Hab. On the bark of trunk of decayed tree fern, *Cyathea* sp., in Kinsakubaru, Naze-city, Amami-oshima Island, Kagoshima Pref., Nov. 27, 1988, Y. Doi (TNS-F-232547).

Distr. Brazil, Colombia, Venezuela, Ecuador, Peru, Panama, Guadeloupe, Martinique, Cuba, Jamaica, Dominica, Puerto Rico, Florida, Australia, New Zealand, Papua New Guinea, India. New to Japan.

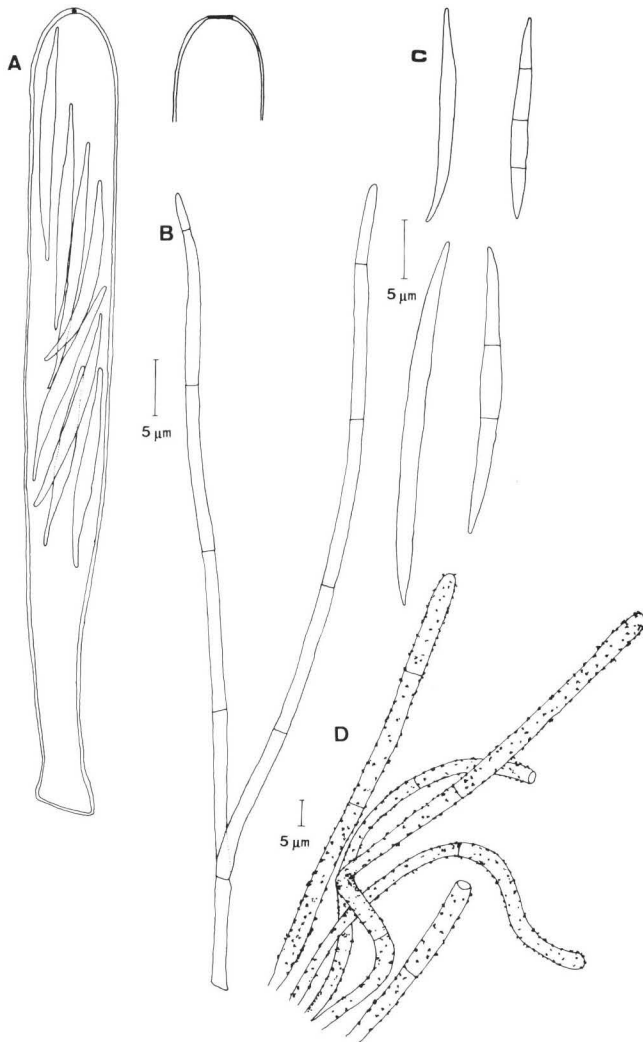


Fig. 3. *Lachnum sclerotii* (A. L. Smith) Haines et Dumont (TNS-F-232547). A. Ascus and ascospores. B. Paraphyses. C. Ascospores. D. Hairs.

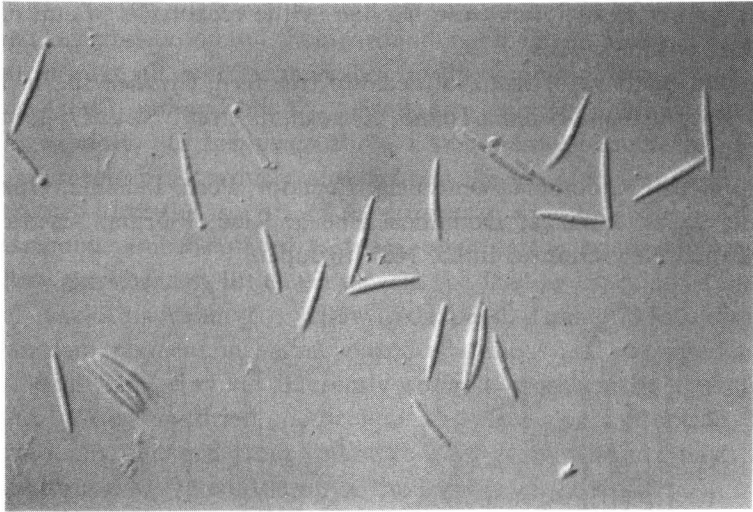


Fig. 4. Ascospores of *Lachnum sclerotii* (A. L. Smith) Haines et Dumont (TNS-F-232547).

Lachnum sclerotii is characterized by the presence of hyaline to amber-colored lumps on the hairs, the blackened base to the stipe and the fusiform and 3-septate ascospores. The above collection agrees well in all respects with the description of *L. sclerotii* (Haines & Dumont, 1984). The original description was mostly made with the observations of collections from tropical regions of the Central and South America. Spooner (1987) noted that the Australian material collected in Brisbane agreed with the description of *L. sclerotii* except the resinous granules on the hairs, and he used lacking the resinous granules on the hairs as one of the characters of *L. sclerotii* in the key to Australasian species of *Lachnum*. The above material collected in Amami-oshima Island has the resinous granules on the hairs. Further more collections are needed to verify the taxonomic significance of the resinous granules on the hairs.

This species is pantropical and is known as saprophyte on wood and bark of various trees, occasionally on vines and rarely on herbaceous stems. Haines & Dumont (1984) recorded three host species of *L. sclerotii*, *Symplocos martinicensis*, *Richeria grandis*, and *Xanthoxylon fagara*. *Cyathea* sp. is new host for *L. sclerotii*. Pteridicolous discomycetes usually colonize on the rachis and pinnae of decayed tree fern, but this species colonized on a trunk of decayed tree fern.

In Australasia region, *L. sclerotii* was reported from Australia (Spooner, 1987) and Papua New Guinea (Otani, 1975). In the known localities, Amami-oshima Island is the northern end of the distribution of this fungus.

References

- Dennis, R. W., 1958. Critical notes on some Australian Helotiales and Ostropales. *Kew Bull.* 13: 321–358.
- Haines, J. H., 1980. Studies in the Hyaloscyphaceae I: some species of *Dasyscyphus* on tropical ferns. *Mycotaxon* 11: 189–216.
- Haines, J. H. & K. P. Dumont, 1984. The long-spored, lignicolous species of *Lachnum*. *Mycotaxon* 19: 1–39.
- Iwatsuki, K., 1992. Ferns and fern allies of Japan. 1st ed. 311 pp., 196 pls. Heibonsha, Tokyo. (In Japanese)
- Otani, Y., 1975. Some Discomycetes collected in Papua New Guinea. In Y. Otani (comp.), Reports on the Cryptogams in Papua New Guinea, pp. 5–41. National Science Museum, Tokyo.
- Spooner, B. M., 1987. Helotiales of Australasia: Geoglossaceae, Orbiliaceae, Sclerotiniaceae, Hyaloscyphaceae. *Bibl. Mycol.* 116: 470–474.

