MYCOTAXON

AN INTERNATIONAL JOURNAL DESIGNED TO EXPEDITE PUBLICATION OF RESEARCH ON TAXONOMY & NOMENCLATURE OF FUNGI & LICHENS

Volume XI July-September 1980 No. 2

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[MYCOTAXON for April-June 1980 (11: 1-408) was issued June 24, 1980]

ISSN 0093-4666 *MYXNAE 11(2) 409-513 (1980)*

Library of Congress Catalogue Card Number 74-7903

Published quarterly by MYCOTAXON, Ltd., P.O. Box 264, Ithaca NY 14850
For subscription details and availability in microform, see back cover

MYCOTAXON

VOLUME XI, 1980

COMPLETE IN TWO QUARTERLY ISSUES

CONSISTING OF iv + 513 PAGES

INCLUDING FIGURES

Published by

MYCOTAXON, LTD., P.O. BOX 264, ITHACA, NY 14850, USA

Printed in the United States of America

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MYCOTAXON

Vol. XI, No. 2, pp. 409-419 July-September 1980

THE FRUITING AND DEVELOPMENT OF *RHODOTUS PALMATUS* IN CULTURE

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SUMMARY

Rhodotus palmatus (Bull. ex Fr.) R. Maire was fruited in culture and the phenotypic responses of the fruiting body to varying light conditions studied. Fruiting occurs in green, yellow or red light above 500 nm but only in the absence of blue light below 500 nm. However, pileus pigment color and size as well as stipe length and size are altered by the light quality and percent transmission through the test filters. A very plastic species, such as this, also exhibits a broad phenotypic response in nature to the changes in light quality and other abiotic factors. The implications of properly evaluating phenotypic variation in systematic mycology are discussed.

INTRODUCTION

Rhodotus palmatus (Bull. ex Fr.) R. Maire is known to occur in Europe, North Africa and in eastern North America.

It is a pleurotoid agaric with creamy pink spores. It grows commonly on the limbs and branches of hardwoods, differs sharply from other agarics by possession of an unusual reticulate ridged cap cuticle, tuberculate warted spores (Miller, 1979) and unusual cultural characters (Miller, 1971). The distinctive network of ridges on the pileus (Miller, 1979, pl. 89) makes it easily identified on sight. Singer (1975) places the monotypic species in Tribus *Rhodoteae* Imai in the Tricholomataceae Roze of the Agaricales.

Field collecting by the senior author and herbarium collections by others indicate that it fruits sporadically throughout eastern North America during the summer and fall. Over its known range the species varies considerably in its size, pigmentation of the pileus and length of the stipe. In Michigan, for example, fruiting bodies collected in August, 1961, were pinkish orange, "buff pink", "light salmon orange" to "Grenadine pink" of Ridgway (1912); while in Maryland the pileus color of fruiting bodies collected in mid-October, 1969, was more orange to orange-pink, "orange pink" to "light salmon orange". The Maryland specimens were smaller and had a more variable stipe length than those in Michigan. The host in Maryland was tulip tree (*Liriodendron tulipifera* L.). Elm (*Ulmus americana* L.), basswood (*Tilia americana* L.), and red maple (*Acer rubrum* L.) were hosts in Michigan. In Europe, *Aesculus hippocastanum* L. the horse-chestnut, is one of the hosts. This species clearly has a wide host range.

In order to explore the range of pigment development and the phenotypic response of the fruiting body, a study of *R. palmatus* in culture was initiated. The objectives were to explore the effects of light intensity and light quality on the development and maturation of the fruiting body as well as the fungal mycelium.

METHODS

A polysporous isolate of *R. palmatus* (OKM 8237) was obtained from sporocarps growing on hardwood logs near Chesapeake Bay, Anne Arundel County, MD. The equipment and methods were those used to study *Panus fragilis* O. K. Miller by Miller and Palmer (1977) including the same temperatures, light and dark periods, and media. All 4 mm diameter inoculum plugs of mycelium and agar were cut from the advancing edge of a one-week-old colony grown at 16°C in the dark. Each plug was inverted so that mycelium was in

TABLE I SPOROCARP DEVELOPEMENT IN *RHODOTUS PALMATUS* EXPOSED TO DIFFERENT LIGHT INTENSITIES AND COLORS (400-750 nm).

FILTER		* PERCENT	FILTER TRANSMISSION	MAXIMUM
NUMBER	COLOR		400nm, 500nm, 600nm, 700nm	STAGE OF DEVELOPEMENT
	CLEAR	100		MYCELIUM
ES 849	PALE BLUE	60		MYCELIUM
ES 804	TINTED YELLOW	93		MYCELIUM
	CLEAR	100		MYCELIUM
RH 2424	BLUE	4		MYCELIUM
ES 837	MEDIUM MAGENTA	22		MYCELIUM
ES 866	DARK BLUE	2		PILEUS, MINUTE & STERILE
ES 821	LIGHT RED	16		PILEUS, FERTILE
RH 2092	GREEN	21		PILEUS, FERTILE
ES 809	STRAW	80		PILEUS, FERTILE
RH 2208	YELLOW	85		PILEUS, FERTILE
RH 2422	AMBER	61		PILEUS with long stipe, FER
RH 2423	RED	10		PILEUS, FERTILE
	NO LIGHT	0		LONG INITIALS

* PERCENT TRANSMISSION

▒ = TRANSMISSION < 0.5 K (K=1,000 microwatts/cm^2)

■ = TRANSMISSION 0.5 K OR > 0.5 K

contact with the fresh agar in the center of a plastic 90 mm Petri plate, which was immediately placed in the growth chamber. Two runs with two Petri plates each were made under each of eleven filters plus clear plexiglass (Table 1). Temperature was adjusted to 22°C. Transmissions of light within the growth chamber are presented for six filters that are significant (Figs. 1-6). Miller and Palmer (1977, Figs. 2-6) included similar scans of both monochromatic light and light transmitted within the growth chamber for each filter reported in Table 1. To insure constant darkness as a control, Petri plates were covered in three ways: black cloth, aluminum foil, and black cloth plus aluminum foil. Otherwise, conditions were identical to those for uncovered plates. To study the effect of increased nutrient base on the size of the sporocarp and the time required for mature sporocarps to develop, the fungus was grown in 2800 ml wide-bottom flasks each of which contained one liter of the malt-agar medium. Flasks received light through a yellow (RH 2208) filter or were kept in the dark.

RESULTS

Generative mycelium was white and soon became woolly around the inoculum plug. The mycelium grew at the rate of 2.6 cm in diameter per week, and a 90 mm Petri plate was covered in 24 days. A series of orange droplets usually developed on the mycelial mat about 5 to 25 mm from the edge of the plate in about 30 days. Within a day or two, minute white initials formed under the drops. This occurred in the dark or in the absence of high levels of blue light up to 500 nm and usually above 1.0 K. In the presence of light above 500 nm, one initial per plate enlarged, became orange, and expanded into a mature sporocarp with pileus, lamellae, and stipe (Fig. 8). Under most conditions the sporocarp has the orange to orange-pink reticulate or netted pileus, tuberculate spores, and other normal features of the fungus. The entire process from inoculation to sporocarp maturation takes about 45 days.

The stipe does not require light for initiation. Long stalks (initials) are produced in darkness (Fig. 7), but no mature or immature pilei develop (Table 1). Small amounts of light below 500 nm suppress development when mixed with larger amounts at 600 nm or higher (Table 1). This phenomenon is dramatically illustrated by the use of filter ES 866 (Fig. 3). Sporocarps with minute pilei (Fig. 10) on very short stipes were produced under this filter in very little

light (2% transmission) that was largely in the blue range with some in the red (Table 1). Lamellae, but no basidiospores, were observed on these sporocarps and the same phenomenon occurred on sporocarps grown in low amounts of unfiltered light. In addition, small amounts of light at 600 nm do not offset more intense blue light (410-440 nm) (Table 1, Fig. 3).

Vegetative growth was also reduced in blue light. During both experiments, mycelium exposed under the clear filter to high light intensity and ES 849 (60% transmission) failed to grow over the entire plate. Under the other filters at lower levels of blue light (ES 804, ES 837, RH 2424 and clear low intensity), however, vegetative growth completely covered the plates. In only one case were initials produced in light from 400 to 450 nm at or above 0.6 K (ES 866, Table 1).

Normal sporocarps and basidia with basidiospores develop when blue light was excluded or reduced to a very low level as in ES 821 (Table 1). Light in the green, yellow, or red range was equally effective for the production of a mature fruiting body, and in fact the spectrum transmitted through RH 2092 does not overlap with that through RH 2423 (Figs. 4 and 6). However, the lifeform and pigmentation of the pileus cuticle vary. Under green light (RH 2092) the pileus was usually about 10 mm broad at maturity, pale orange in color, with well developed ridges and pits (Fig. 8). The stipe was straight and 18-22 mm high. Under amber light (RH 2422) the pileus was also about 5-10 mm broad, with very obscure reticulations and a bright orange color. The stipe, however, was very long (50-65 mm) and flexuous (Fig. 9). Those produced under yellow (RH 2208 and ES 809) filters had orange-pink pilei, 8-15 mm in diameter with well developed ridges and pits. The stipe was straight and ranged between 10-22 mm in length.

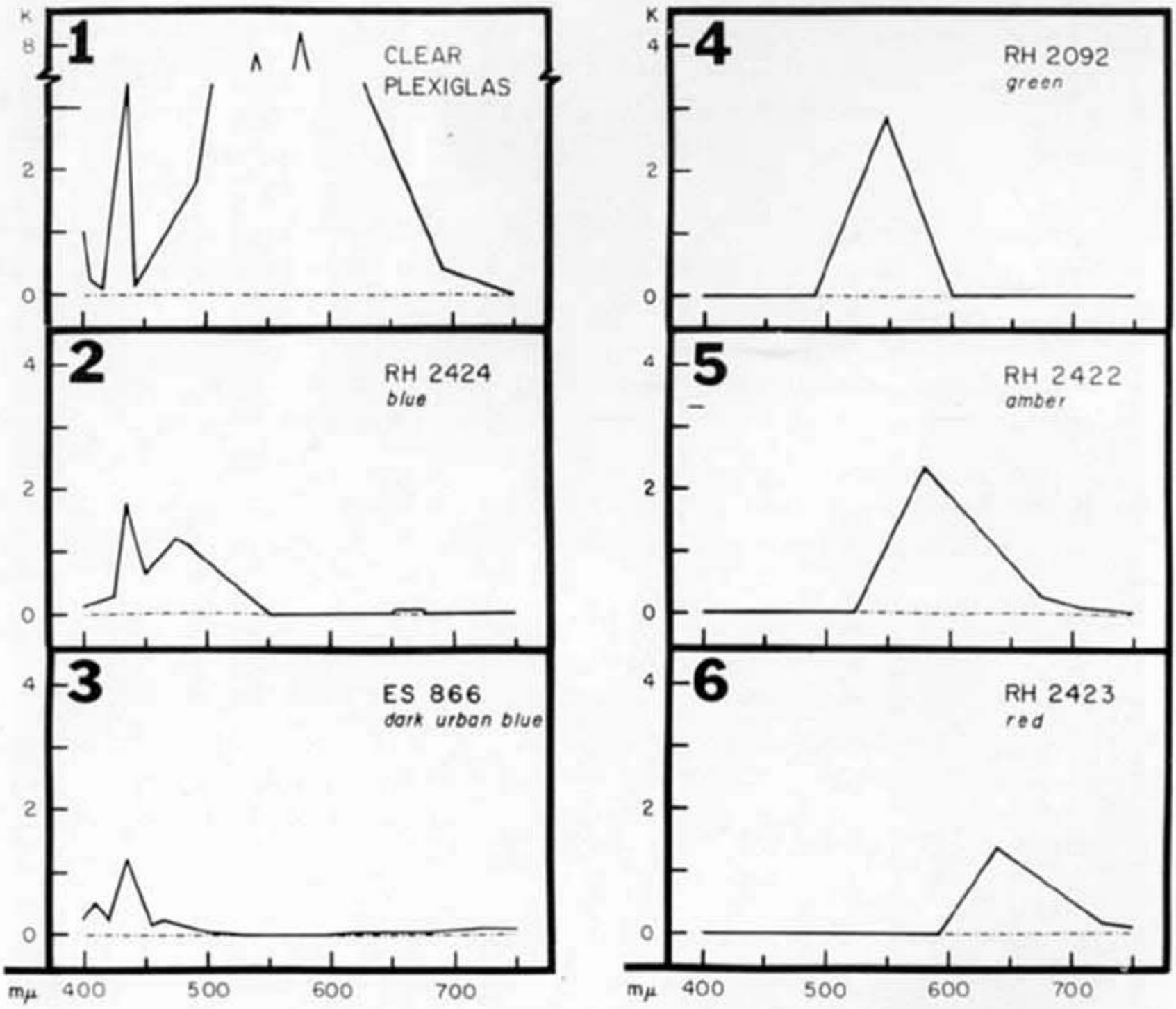
Sporocarps grown in the large flasks under yellow light (RH 2208) resemble in size, statue, form, and color those encountered in nature. The stipe was longer (60-90 mm), but the diameter about the same as those found in nature, 5-7 (-10) mm. Mature caps were consistently 18-22 mm in diameter which is within the lower size range of those found in nature.

DISCUSSION

Phenotypic responses of *Rhodotus palmatus* to different wavelengths of visible light result in substantial modifications of form and color of the fruiting body. For example, amber light (Filter RH 2422, Table 1) resulted in the development of a fruiting body with an elongated, flexuous stipe (Fig. 3) and a bright orange, small pileus with obscure reticulations. Under green light (Filter RH 2092, Table 1) on the other hand, the fruiting body had a short, straight stipe (Fig. 2), and a pale orange, large pileus with well developed ridges and pits. Under both conditions, normal basidia and spores were produced. The Michigan fruiting bodies, noted earlier, collected under a canopy of green leaves, had soft pinkish-orange colors in the pileus similar to those associated with the green filter while those fruiting in October in Maryland, after the leaves had fallen, were more orange to orange-pink in color. Since relatively high light intensities prevailed at the field sites, no particular differences in stipe length were noted.

Light at the blue end of the spectrum has been commonly associated with light-induced phenotypic responses in Basidiomycetes. Bulat (1954) investigated the production of pigment in cultures of *Dacrymyces ellisii* Coker. Coloration in sporocarps under field conditions varied from yellow to deep orange. A color range from white to buff to orange-buff and finally deep orange was produced in mycelium in culture at both 50 and 100 foot candles. It required at least 3 to 4 days to reach the maximum color intensity under both light intensities tested. The pigment did not form in the dark but once formed in the light it was not lost or modified by darkness. Both *Polyporus brumalis* Pers. ex Fr. and *Collybia (Flammulina) velutipes* (Fr.) Kummer "require light for normal cap development" (Plunkett, 1958). However, *P. brumalis* attained larger cap diameters as light intensities increased but the stipes were often considerably longer than usual in low light levels. Of interest is the fact

Figs. 1-6. Quantities of light (K = 1,000 microwatts/cm^2) between 390 and 750 nm radiated from cool white fluorescent lamps and transmitted through six pigmented filters (RH = pigment in plexiglass; ES = pigment in cellulose acetate supported by clear plexiglass).

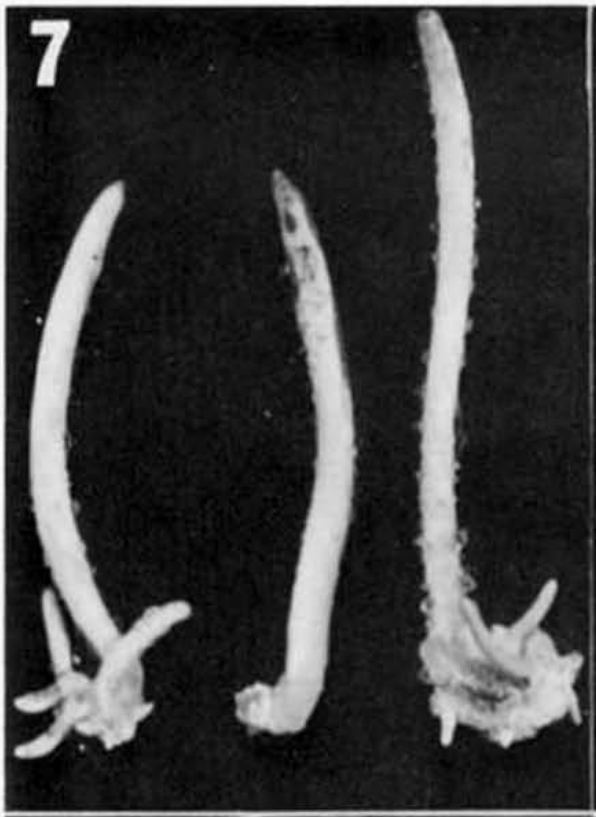

K
8
1
CLEAR
PLEXIGLAS
2
0
4
2
RH 2424
blue
0
4
3
ES 866
dark urban blue
2
0
mμ 400 500 600 700
K
4
4
RH 2092
green
2
0
4
5
RH 2422
amber
2
0
4
6
RH 2423
red
2
0
mμ 400 500 600 700

that similar responses may be induced by other factors, e.g. *Collybia velutipes* had elongated stipes and reduced cap sizes in response not to light but to "as little as 1.8% of carbon dioxide". Sporocarp initiation and/or development, subsequent maturation of the hymenium, and the production of fertile spores are other responses generally occurring in the presence of blue light (Alasoadura, 1963; Borriss, 1934; Aschan-Aberg, 1960; Ingold and Nawaz, 1967; Barnett and Lilly, 1952: and Miller and Palmer, 1977). Blue light, according to Borriss (1934), induces phototropism in *Coprinus lagopus* (Fr.) Fr.

By contrast, *Rhodotus palmatus* responds at the red end of the spectrum. The maturation of the sporocarp and development of the spores take place when there is light only at the red end of the spectrum, i.e. above 490 nm (Table 1). In addition, the phenotypic characteristics, e.g. color, stipe length, and pileus size, vary considerably with changes in the red end of the spectrum (Table 1). Consequently, when screening isolates for the induction of fruiting bodies with fertile hymenia but unknown requirements, it is necessary to use the red as well as the blue end of the spectrum. There also appears to be a necessity to have a rather high level of light over extended periods of each day. No attempt was made to define the necessary quantity of light nor the amount required per day. However, it can be seen from Table 1 that successful fruiting of *Rhodotus palmatus* was attained using a day length of 12 hours with 1.2 to 3.5 K (1000 microwatts per cm^2) of light.

In summary, in order to properly interpret the variation in the characteristics of a given fungus species, the range in phenotypic responses must be studied. In the absence of this type of investigation, the change in the shape, size, and pileus color of *Rhodotus palmatus* might be assumed to be species specific differences. In fact,

Figs. 7-10. Fruiting responses of *Rhodotus palmatus* in dark and light: Fig. 7. Initials formed in dark. Fig. 8. Mature sporocarps having lamellae with basidiospore-bearing hymenia produced in green light (Filter RH 2092). Fig. 9. Fruiting bodies with elongated stipes developed in amber light (Filter RH 2422). Fig. 10. Infertile sporocarps with small pilei and short stipes produced at low quantities of blue and red light (Filter ES 866).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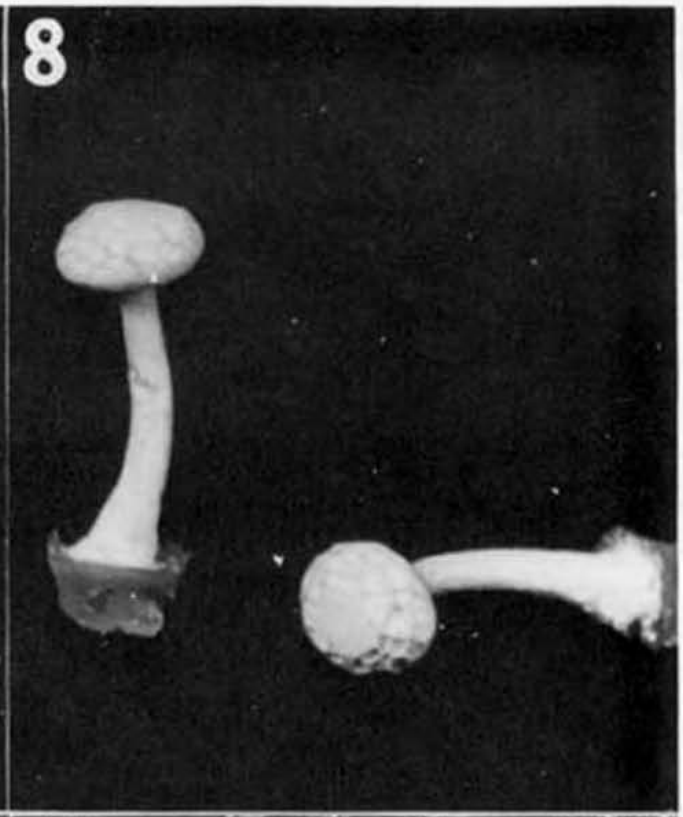
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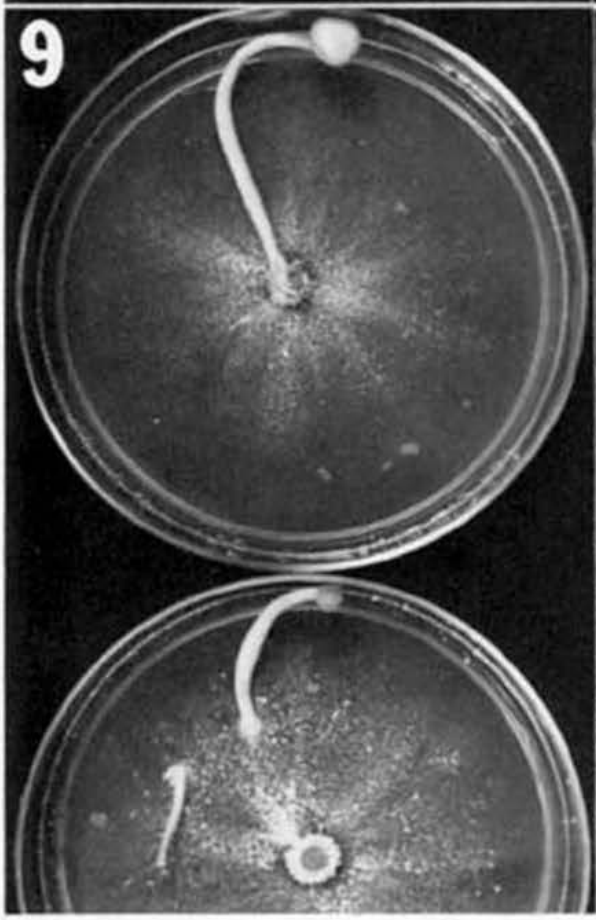
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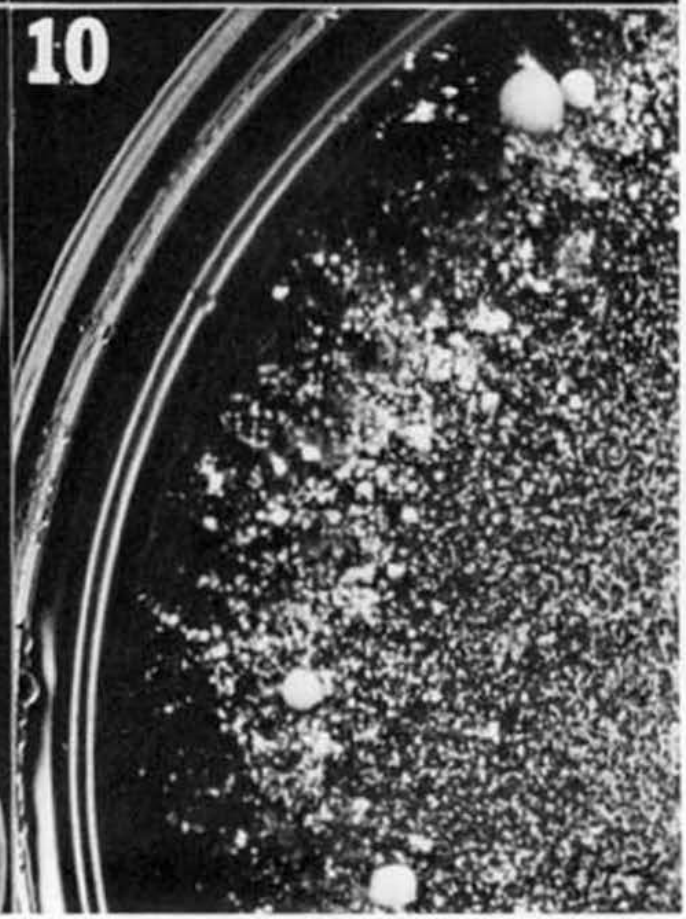
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however, very plastic species under different abiotic influences will exhibit wide variation in their phenotype as reported by Miller (1971) for *Lentinellus cochleatus* (Pers. ex Fr.) Karst., in contrast to more conservative responses of other taxa. Lastly, any attempt to induce Homobasidiomycetes to fruit in culture must take into account the fruiting response reported here in the presence of red light rather than the usual fruiting requirement for blue light.

ACKNOWLEDGMENT

Support from the Research Corporation, Brown-Hazen Fund, Atlanta, GA to the senior author is gratefully acknowledged. The manuscript was critically reviewed by Dr. Ronald Petersen, University of Tennessee and Dr. Walter J. Sundberg, Southern Illinois University. The laboratory assistance of Carolyn Kendall was appreciated.

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Vol. XI, No. 2, pp. 420-422 July-September 1980

NEW COLLECTION AND NEW LOCALITY IN CHILE FOR CHLAMYDOPUS MEYENIANUS (KLOTZSCH) LLOYD (GASTEROMYCETES)

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Rodulfo A. Philippi collected samples of Gasteromycetes in northern Chile (1853-54) that he classified as *Tulostoma deserticola*. These samples were collected between Cachinal de la Sierra and Agua de Profeta (24°54' S and 69°07' W), elevation 9000 ft. I am not aware where the original Philippi samples were located. In this note I report a new collection of *T. deserticola* in northern Chile.

The specimen (Fig. 1) was collected by Luis Robres in December 1972, in Quebrada del Inca, between Ollagüe and Amincha (21°12' S and 68°17' W), Prov. El Loa, in a bare non-saline south-facing site. The sample collected by Robres corresponds to *Chlamydopus meyenianus* (number 10997, Herbarium Manuel Mahú). The irregular lacerations of the dehiscence of the endoperidium (Fig. 2) is not observed in Philippi's original drawing of *T. deserticola* (Synonym of *Ch. meyenianus*) where the dehiscence is circular and flat. Other characteristics such as colour, texture, stipe furrowing and size of spores (5-6 µ) agree with the characteristics given for the species. The capillitium is expanded at the bifurcations (Fig. 3).

Figure 1. Herbarium sample (Mahú 10997, original) of *Ch. meyenianus*. The size in the picture is natural.
Figure 2. Upper view of endoperidium of *Ch. meyenianus* showing the dehiscence of the ostiole. (x 2.5, Mahú 10997, original).
Figure 3. Spores and capillitium of *Ch. meyenianus* (x 400, Mahú 10997, original).

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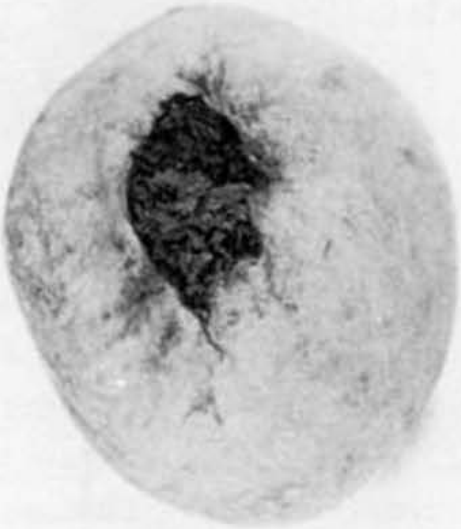

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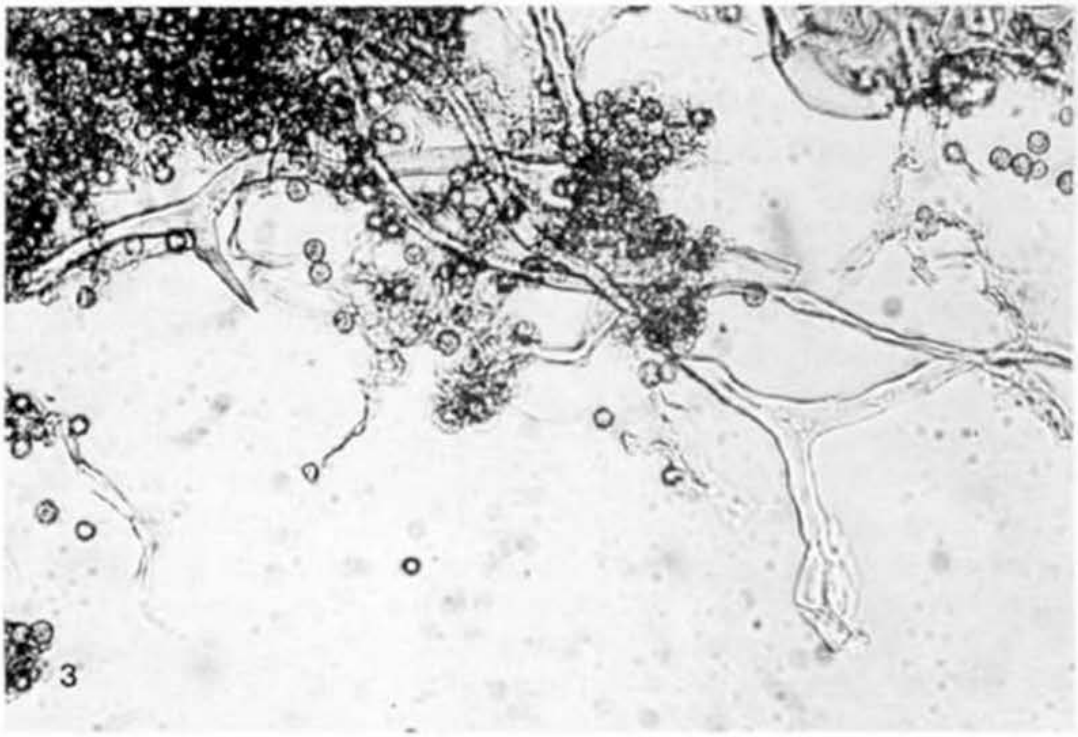

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The habitat of this species is dry or semiarid, sandy, volcanic soil gypsum flats (Spegazzini, 1899; Long and Stouffer, 1946 and Guzmán and Herrera, 1969). This fungus grows solitary in an open land, with little vegetation. Our sample was also found in a place with these characte - ristics.

I wish to thank Prof. Waldo Lazo and Dr. Luis Corcuera for revising an earlier draft to the manuscript.

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MYCOTAXON

Vol. XI, No. 2, pp. 423-424 July-September 1980

ON THE CORRECT AUTHOR CITATIONS FOR CERTAIN SPECIES OF *PHAEOPHYSCIA*

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It was an unfortunate coincidence that during the year 1978, three different authors published several of the same new combinations in the genus *Phaeophyscia*. Esslinger (1978) and Moberg (1978), both transferred *Physcia hispidula* (Ach.) Frey, *Physcia hirsuta* Mereschk. and *Physcia rubropulchra* (Degel.) Moberg into *Phaeophyscia*, and Awasthi (1978) transferred *Physcia hispidula* into that genus. The apparent approximate dates of publication of all these new combinations are very close, and I have therefore made further inquiries to more accurately fix the actual date of effective publication for each of the papers involved.

Effective publication in the nomenclatural sense is dated not from the time of printing, but from the actual date of distribution to the public (Art. 29 of the I.C.B.N.). The date that appears on some journals when first distributed, is in reality the approximate date of printing, and the actual date of distribution may vary rather greatly from this. In the case of the *Phaeophyscia* combinations presently under consideration, the date of effective publication for those appearing in the July-September issue of Mycotaxon (Esslinger, 1978) is actually very close to July 13th (the official issue date for that number as published on the next issue of the journal). This apparently represents the actual date of mailing, because I received my personal copy on the 17th of July. Other American subscribers undoubtedly received their copies within a few days of July 17th as well. The issue of Botaniska Notiser which contains Moberg's new combinations

(Moberg, 1978) bears the date of June 30th. Information from the editor of that journal, however, indicates that although vol. 131, #2 was printed at the end of June (in Lund), it was not bound and distributed (from Stockholm) until the middle of August. The library at the Botanical Museum in Lund received their copy on August 25th, which is therefore probably the earliest possible date for effective publication of that issue. I have received official word from the editors of the Indian Journal of Forestry that the actual date of distribution for vol. 1, #2 containing Awasthi's new combination for *Ph. hispidula*, was the 25th of July. The new combinations made by me in Mycotaxon therefore predate those of both Moberg and Awasthi.

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MYCOTAXON

Vol. XI, No. 2, pp. 425-429 July-September 1980

TRICHOLOMA TITANS, A NEW SPECIES FROM FLORIDA

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SUMMARY

A number of collections of a mushroom with extremely large basidiocarps has been found largely on disturbed land sites in Florida. It was determined to be a new species of *Tricholoma* which we are naming *T. titans*.

Within the past decade several collections of an extremely large agaric have been found in central and north-central Florida. Because of the large size (up to 75 cm) and peculiar habitat (disturbed land sites) of this agaric, it has aroused the interest and curiosity of mycologists in the area (Eilers et al., 1980). These workers concluded that the giant mushrooms were a species of *Tricholoma*, perhaps representing a new species. General macroscopic and minor microscopic features were described and several aspects of the habitat and distribution of the species were discussed. Further observations of microscopic and microchemical properties of several collections confirm that the agaric is an undescribed species of *Tricholoma*. We propose the following new species:

Tricholoma titans Bigelow & Kimbrough, sp. nov. Figs. 1-3

Pileus (2.5-)12.5-48(-75) cm latus, convexus tandem planus; margine demum irregularis in vetustae; discus demum depressus; superficies uda vel sicca sed haud hygrophana; saepe maculata vel squamulosa super disco, pallide bubalinae vel cremeae; contextus crassus ad discus, albidus, firmus sed lentus. Odore et sapore mitis. Lamellae sinuatae vel emarginatae, confertae, angustae tum sublatae, albidae vel eburneae, interdum fucatae. Stipes 7-20 cm longus; apices 1.7-3.2 cm latae; basis 2.5-12.5 cm crassus, clavatus vel bulbosus vel turbinatus; superficies lanuginosae sursum, deorsum squamulosae vel scabrosae, albidae tum sordido-bubalinae; solidus, albidus intra. Sporae (5-)6-7(-8) x 4-5(-5.5) µm, in cumulo albidae. Pleurocystidia plerumque rostrati. Hyphis fibulatis.

Holotypus legit Tavares, Lake Co., Florida, on sandy soil beneath oaks, Jackson A. Haddox, August 14, 1978, FLAS F 51990.

Fig. 1. *Tricholoma titans*, X 1/4.

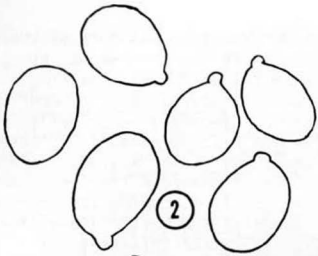
Pileus (2.5-)12.5-48(-75) cm broad; obtuse to hemispheric at first but soon becoming convex or broadly convex, finally plane; margin incurved and inrolled at first, remaining narrowly inrolled for some time, undulate and/or lobate, uplifted in age, not striate; disc becoming depressed in age; surface moist or dry but not hygrophanous, dull, often with a few watery spots or small appressed scales on disc, glabrous elsewhere; color pale buff to cream ("cream color"[1] near margin to "cream buff" on disc), darkening slightly in age; context thick on disc, tapering gradually to the margin, white, firm but pliable. Odor mild (pleasant and fungoid). Taste mild or nutty.

Lamellae sinuate or sharply notched with a tooth, seceding, close or crowded, narrow at first then moderately broad (3-12 mm), whitish to ivory color (dingy "ivory yellow"), with brownish stains at times, edges somewhat undulate, brittle in age.

Stipe 7-20 cm long, apex 1.7-3.2 cm broad, base 2.5-12.5 cm thick, clavate to bulbous or napiform; surface woolly at the apex, appressed in age, squamulose or with concentric scabrous rings below, whitish at first then dingy buff with age and bruising; solid, white within, cortical region firmer than interior but not differing in color. Veils absent.

Spores (5-)6-7(-8) x 4-5(-5.5) μm, broadly ellipsoid or ellipsoid, smooth, often uniguttulate, walls acyanophilic but contents often cyanophilic, inamyloid, walls slightly thickened at times; deposit white. Basidia 25-28 x 5-7 (-8.5) μm, usually 4-spored, occasionally also 1- or 2-spored, sterigmata prominent (up to 6.5 μm long), siderophilous granules absent. Pleurocystidia broadly fusoid to distinctly rostrate, 28-46 μm long, 7-18 μm broad in widest portion, beak 2-2.5 μm broad, protruding 20-35 μm beyond basidia, hyaline, thin walled; cheilocystidia like pleurocystidia when present. Pileus: epicutis of interwoven hyphae, 2-4(-6) μm broad, often branched, cells short (ca. 20-50 μm long), walls thin or slightly thickened, rarely finely encrusted on disc; context hyphae cylindric, 2-8 μm diam near pileus margin, cylindric or slightly inflated at disc, 8-19 μm diam, walls usually thin, oleiferous hyphae present but very scattered. Clamp connections present. Hymenophoral trama of parallel hyphae, cylindric to inflated, 2-15 μm diam, mediostratum conspicuous only in broad lamellae, walls thin, subhymenium appearing ± cellular. Caulocystidia absent.

[1]Ridgway, R. 1912. Color standards and color nomenclature. Publ. by the author, Washington, D.C.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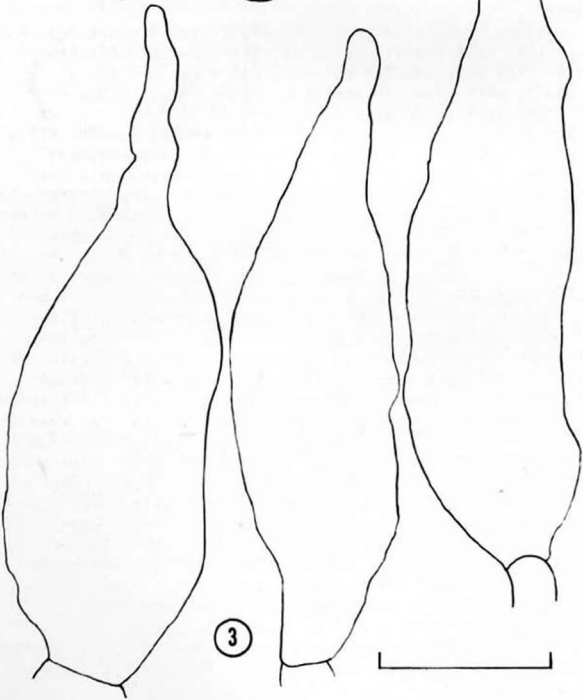
3

Solitary or cespitose. On sandy soil attached to buried roots and wood, in the open on grassy sites or in low herbaceous growth. August and September.

Material examined: Florida: Bigelow 18059 (MASS); Hansens F 49622 (FLAS); Woodruff F 49623 (FLAS); Winchester F 51796 (FLAS); Little F 52109 (FLAS); Benny F 52110 (FLAS); May F 52111 (FLAS); Haddox F 51990 (FLAS-TYPE).

The species with which *Tricholoma titans* is most likely to be confused is *Clitocybe gigantea* (Fries) Quélet (= *Leucopaxillus* ss. Singer et al.), but this has distinctly decurrent lamellae, an infundibuliform pileus when mature, and spores which have amyloid walls. Cystidia are absent on the lamellae as well.

Due to the fleshiness and broad lamellae of *T. titans*, it is often difficult to make good hand sections. The changes in structure due to the expansion of elements can also provide problems in observation and interpretation. When relatively small basidiocarps are examined, the pleurocystidia are numerous and protrude beyond the basidia in a very conspicuous fashion, but in large specimens the pleurocystidia are scattered and mostly embedded. Apparently the elongation of basidioles and the increase in diameter of hyphal elements in the hymenophoral trama are responsible for this phenomenon. The occurrence of cheilocystidia also can be confusing. In basidiocarps with narrow lamellae, cheilocystidia of the same type as the pleurocystidia can be found intermixed with basidioles, but as the lamellae increase in width the hymenial elements are greatly dispersed at the edge by the outgrowth of tramal hyphae. This results in the broader lamellae having peculiar and varied hyphal ends in the place of most basidia and cystidia. The hyphal ends have no specific type of end cell and they may assume various contorted and irregular shapes. Adding to the difficulty of interpreting the microscopic structures of the lamellae are the presence of immature pleurocystidia and basidioles which have not attained the characteristic shape.

LITERATURE CITED

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Figs. 2, 3. *Tricholoma titans*. 2. Spores. 3. Pleurocystidia. Standard line = 10 μm.

MYCOTAXON

Vol. XI, No. 2, pp. 430-434 July-September 1980

NOTES ON CORTICIACEAE (BASIDIOMYCETES) VII.

A synopsis of the genus Amylocorticium Pouz.

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SUMMARY

Eight species of Amylocorticium are listed alphabetically with brief comments on microscopical characteristics. A key to known species is presented. The generic description is based on Eriksson and Ryvarden, 1973.

AMYLOCORTICIUM Pouz., Česká Mykol. 13(1):11, 1959.

Type species: Peniophora subsulphurea (Karst.) Höhn.& Litsch. - Xerocarpus subsulphureus Karst.

Pouzar recognized five species and in his opinion the genus could be divided into two groups with A. subsulphureum and A. subincarnatum in the first and A. cebennense, A. rhodoleucum, and Peniophora mollis in the second group. Since then three species have been incorporated or described, viz.: A. canadense, A. indicum, and A. suaveolens, which are similar to the first group. Furthermore, Corticium laceratum was recollected in N. Europe and found by Hjortstam and Ryvarden (1979) to have amyloid spores and they therefore referred it to the genus.
Pouzar did not make any formal combination for P. mollis and Corticium rhodoleucum but the latter was adopted by Eriksson and Ryvarden in 1976. P. mollis still lacks a suitable generic name in the modern system as it was not accepted in Leucogyrophana by Ginns (1978).

Generic description.

The genus Amylocorticium is characterized by smooth, distinctly amyloid spores. Cystidia occur in some species but are only slightly differentiated, almost hyphalike. The basidia are clavate, more or less constricted and bear four sterigmata. The hyphal system is monomitic with distinct, loosely interwoven hyphae with clamps at all septa, except in one species; hyphal branches occur mainly from the clamps.

Young fruitbodies have a slight tendency to be athelioid. The spores are either narrowly ellipsoid or subcylindrical-allantoid, usually not more than 2.5 um broad.

Special literature: Pouzar (1959), Eriksson and Ryvarden (1973), Rattan (1977), and Weresub (1974, 1976, and 1977).

Key to the species:

1. Cystidia present 2
1. Cystidia absent 4

2. Spores ellipsoid, normally 4.5 - 5.5 um long A. subincarnatum
2. Spores subcylindrical to narrowly ellipsoid, (5.5-) 6 - 8(-10) um long 3

3. Spores 5 - 6(-7) um long, fruitbody yellowish or slightly reddish, with a pleasant scent A. suaveolens
3. Spores generally 7.5 - 8 um, fruitbody normal yellowish, without a pleasant scent A. subsulphureum

4. Hyphae without or with few clamps, but with numerous hooks, rare species A. rhodoleucum
4. Hyphae with clamps at all septa 5

5. Fruitbody thin, separable in small pieces, basidia stalked, hyphae narrow, 1.5 - 2.5 um broad A. laceratum
5. Fruitbody thicker, basidia not stalked, hyphae 2.5 - 4 um broad 6

6. Spores subcylindrical to allantoid, usually 1.5 - 1.75 (-2) um broad, fruitbody whitish A. cebennense
6. Spores subcylindrical to narrowly ellipsoid, 2 - 2.25 um broad, fruitbody yellowish or brown 7

7. Spores 4.5 - 5.5 um long, at first amyloid then becoming dextrinoid A. indicum
7. Spores generally 6 - 7 um long, no dextrinoid reaction observed A. canadense

A. CANADENSE (Burt) Eriksson & Weres., Fungi Canadenses No. 45, 1974. - Corticium canadense Burt, Ann. Miss. Bot. Gard. 13:290, 1926. - Fig. A.

Rather well separated from other species in the genus in lacking cystidia, but compare A. indicum.
The spores are narrowly ellipsoid, generally 6 - 7(8) x 2 - 2.25 um, ratio of length/width 3.3:1.
In some specimens of A. subsulphureum it may be difficult to find cystidia and such collections are similar to and hardly separated from A. canadense.

A. CEBENNENSE (Bourd.) Pouz., Česká Mykol. 13(1):11, 1959. - Corticium cebennense Bourd., Rev. Sci. Bourb. Centr. France, 23:7, 1910. - Fig. F-H.

Fruitbody more membranaceous than in other species of the genus, hymenium creamish or becoming light yellow when dry. It is rather uniform in the morphology of hyphae and basidia but the spores vary considerably. In some specimens they are short and narrow, 5 - 5.5 x 1.5 - 1.75 um, in others more normal, 6 - 7.5 x 1.75 - 2(-2.25) um, and in e.g. Ryv. 14994 from Spain up to 8 - 9(-10) x 1.75 - 2 um. At present it seems to be convenient to allow the species a wide interpretation.

A. INDICUM Thind & Rattan, Trans. Brit. Mycol. Soc. 59:125, 1972. - Fig. D.

The species is recognized by lacking cystidia and in having more or less ellipsoid spores, 4.5 - 5.5 x 2 - 2.25 um, ratio length/width 2.2 - 2.4:1. According to Thind and Rattan the hymenium is yellow when fresh, fading to cream - yellow on drying.
Notable is my observation of the dextrinoid spore reaction in Rattan's collection 5348. The spores are at first distinctly amyloid, then become more or less dextrinoid. It is similar to A. canadense but seems to be rather well distinguished by shorter spores. As far as known not collected outside India.

A. LACERATUM (Litsch.) Hjortst. & Ryv., Mycotaxon 10:206, 1979. - Corticium laceratum Litsch., Ann. Mycol. 39: 118-119, 1941. - Fig. I.

The morphology of the basidia is unlike those of other species in the genus. As pointed out by Eriksson and Ryvarden (1973) the basidia are stalked and furthermore resemble those of the genus Athelopsis. The spore walls are, however, amyloid, which hitherto has been used as an important character for generic separation. This was the main reason why Hjortstam and Ryvarden incorporated the species in Amylocorticium. Further studies of this rare species may alter the position.

A. RHODOLEUCUM (Bourd.) Erikss. & Ryv., Norw. Journ. Bot. 23:61, 1976. - Corticium rhodoleucum Bourd. Rév. Scient. Bourb. 1922, 1:14, 1922.

Eriksson and Ryvarden (1976) gave a good illustration and description of this obviously rare species. As far as I know, the fungus has only been collected in France and additional specimens are needed for a better knowledge of the relationship to A. cebennense and other species in the genus.
Reid (1965) selected Bourdot 12363 (P) as lectotype.

A. SUAVEOLENS Parm., Consp. Syst. Cort. 197 - 198, 1968. - Fig. E.

This species may be separated from A. subsulphureum by slightly shorter spores. Cystidia occur but are rather few

in the type collection. The spores measure 5 - 6(-7) x 2 (-2.25) um, ratio of length/width 2.5 - 3:1.
I have not been able to observe the pleasant scent which was described by Parmasto.

A. SUBINCARNATUM (Peck) Pouz., Česká Mykol. 13(1):11, 1959. - Corticium subincarnatum Peck, N.Y. St. Mus. Ann. Rep. 41: 124, 1889. - Fig. C.

Spores ellipsoid, (4-)4.5 - 5.5(-6) x 2.25 - 2.5(-3) um, ratio of length/width 2.2 - 2.5:1.
In some specimens seen the spores are at first distinctly amyloid, then become more or less brownish, but not dextrinoid as in A.indicum. Rather well separated from A. subsulphureum by smaller spores and by a yellowish-reddish hymenium.

A. SUBSULPHUREUM (Karst.) Pouz., Česká Mykol. 13(1):11, 1959. - Corticium subsulphureum Karst., Medd. Soc. Fauna Fl. Fenn. 6:12, 1881. - Fig. B.

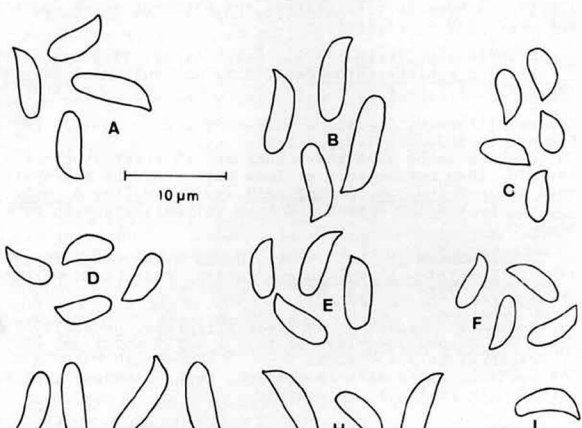
Spores subcylindrical to narrowly ellipsoid, generally 7.5 - 8 x 2 - 2.25 um, sometimes up to 8.5 - 9.5 x 2.5 um, ratio of length/width 3.4 - 3.6:1.
The cystidia are easily recognized, hypha-like and septate, always with clamp at the septum.

CORTICIUM SULPHUREO - MARGINATUM Litsch., Ann. Mycol. 32: 52, 1933.

According to Eriksson and Weresub (1974) this species probably is a synonym of A. canadense.

Specimens used for drawings:

Fig. A. A. canadense. U.S.A. Connecticut, Salisbury, on Pinus strobus. 1931-10-13. P. Spaulding, det. H.S.Jackson. (GB).
Fig. B. A. subsulphureum. Norway. Nordland, Rana, Reinforshei, ab. 10 km N of Rana in Dunderlandsdalen, on Picea abies. 1976-09-12. Leif Ryvarden 13813. (O).
Fig. C. A. subincarnatum. Sweden. Småland, Rumskulla par., N.Kvill Nat. Park, on fallen trunk of Picea abies. 1966-09-10. Berit & John Eriksson 7337. (GB).
Fig. D. A. indicum. India. Bagi, Mahasu, Himachal Pradesh, on a log of Abies pindrow. 1967-10-13. S.S. Rattan 5348. Paratype. (K).
Fig. E. A. suaveolens. R.P.S.S.A. Komi, Graddor, on Picea obovata. 1957-08-06. E. Parmasto 8264. Part of holotype. (GB).
Fig. F. A. cebennense. Norway. Hedmark, Løten, near Koietjern, on coniferous wood. 1978-09-03. Even Høgholen 851/78.
G. Spain. Huesca Prov., 11 km N of Hecho in Abies forest, 1100 m, on Pinus sp.1977-11-10. Leif Ryvarden 14994. H. Norway. Hedmark, Rendal, Mistereggen, on Picea abies. Leif Ryvarden 7050. All specimens in (O).
Fig. I. A. laceratum. Sweden. Bromma, Stockholm, on decayed conifer wood. 1918-04-21. Lars Romell 3990. Holotype. (S).



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Rattan,S.S.1977: The resupinate Aphyllophorales of the North Western Himalayas.J.Cramer. 1-427.

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Weresub,L.1976 and 1977: Fungi Canadenses No.87 and 91. Ottawa.

MYCOTAXON

Vol. XI, No. 2, pp. 435-442 July-September 1980

ADDITIONS AND CORRECTIONS TO THE ANNOTATED INDEX TO FUNGI DESCRIBED BY N. PATOUILLARD

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Harvard University, Cambridge, Massachusetts 02138

Since the publication of the Annotated Index to Fungi Described by N. Patouillard (Pfister, Contrib. Reed Herb. 25: iii-v, 1-211. 1977), I have had the opportunity to continue work on the Patouillard herbarium at the Farlow Herbarium in Cambridge and to visit the Laboratoire de Cryptogamie at the Muséum National d'Histoire Naturelle in Paris where other Patouillard specimens are deposited. With these additions probably most of the extant type material is accounted for. Many specimens for which material has not been located date from Patouillard's early work. The most notable of the missing specimens are those which were described in the Tabulae analyticae fungorum 1883-1889. These exist neither in the Patouillard herbarium (FH) nor in the general mycological herbarium at PC.

A few generalizations may now be made. The material collected by DeCary in Madagascar and studied by Patouillard is at PC. Most of the specimens are accompanied by field drawings and notes. Many of the drawings are accurately prepared and are diagnostic. There are specimens or duplicate specimens at PC of material jointly described by Hariot and Patouillard. Most of the collections from Maroc published in Pitard (1931) are also to be found in PC. Many duplicates of Gaillard collections from Venezuela are present in PC. I was not able to locate Duss collections from Guadeloupe or Martinique.

PC specimens were sought under the basionym and obvious synonyms, still specimens might have been overlooked. Those requesting PC specimens should give complete synonymy. Another explanation for some of the missing specimens might lie in Patouillard's use of manuscript and herbarium names. These are difficult or impossible to trace particularly in light of the number of taxa Patouillard described. In cataloging the material at FH, a number

of such herbarium names were encountered.

My work at PC was made possible by a grant from the Clark Fund, Harvard College, and the American Philosophical Society. Without these funds the work would not have been possible.

Specimens in PC are noted below. A plus sign (+) indicates additional comments from FH collections.

acris Pat.	Boletus	with drawing
adenocarpi Pat.	Diplodia	
aframomi Har. & Pat.	Uredo	
agavectonum Pat. & Har.	Dimerosporium	
albipes Pat.	Boletus	with drawing
alliiodora Pat.	Amanita	
andromedae Pat.	Meliola	
annamensis Pat.	Favolus	
f. annamitica Pat.	Ungulina dochmia	
annamiticus Pat.	Spongipellis	
asperulus Har. & Pat.	Leucoporus	
atrospora Pat.	Anixia	
auricomus Pat.	Coprinus	
avellaneus Pat.	Cantharellus	with drawing
baccharidis Pat.	Polyporus	+Also in Höhnel Herb.
baguirmiensis Har. & Pat.	Lentinus	
balansae Max Cornu ex Pat.	Aecidium	
bambusinus Pat.	Polyporus	
barlae Boud. & Pat.	Helvella	
baudonii Pat.	Polyporus	
bicolor Pat.	Cordyceps	
bolaris Pat.	Phellinus	
brevipes Pat.	Melanopus	under M. hemicapnodes
brunneolum Pat.	Helotium	under Lambertella
bryophilus Pat.	Xanthochrous	

buissonii Pat.	Ganoderma	
caesariatus Pat.	Lentinus	
caledonicus Pat.	Hypomyces	with extensive notes by Patouillard but collection data not clear
calospora Pat. & Gail.	Erinella	
calospora Pat.	Zignoella	
chaperi Pat.	Ganoderma	
chevalieri Har. & Pat.	Tylostoma	
chevalleri Har. & Pat.	Amanita	
chudaei Har. & Pat.	Lentinus	
cinerella Pat.	Russula	
cinereoalbus Pat. & Gail.	Pleurotus	
conigeum Pat.	Caeoma (Peridermium)	
corrugata Pat. & Har.	Daldinia	
corticola Pat.	Amphisphaeria	
cubensis Har. & Pat.	Zignoella	
daemiae Har. & Pat.	Aecidium	
decaryi Pat.	Boletus	with drawing
decaryi Pat.	Geaster	
decaryi Pat.	Leptoporus	
decaryi Pat.	Physalacria	
decaryi Pat.	Pterula	
decaryi Pat.	Stropharia	
decaryi Pat.	Sarcosoma	
discipes Pat.	Calocera	with drawing and notes
doassansii Pat.	Cordyceps	
elastica Pat. & Gail.	Phaeopezia	
eryngii Pat.	Didymosphaeria	with drawings and notes
erythrophylla Pat.	Lepiota	

fibula Pat.	Sarcosoma	
ficicola Pat.	Phyllosticta	
flosterrae Pat.	Mylitta	
frondosum Pat.	Ganoderma	
furcata Pat.	Asterina	
fuscoatra Pat.	Laschia	
fuscobrunneum Pat. & Gail.	Helotium	
gaillardi Boud. & Pat.	Lilliputia	PC Herb. Boudier
glomerata Pat.	Fracchiaea	
granulata Pat.	Pistillaria	
graveolens Pat.	Boletus	with drawing
helianthemi Pat.	Ascochyta	
heribaudii Har. & Pat.	Nidularia	
hololeucum Pat.	Hydnum	
holothejus Pat.	Boletus	with drawing
hyphaenes Har. & Pat.	Pilacre	
hypochaeridis Pat.	Septoria	
hyphophylli Pat.	Phyllosticta	
var. incisum Pat.	Schizophyllum mexicanum	
inverseconicus Pat.	Lentinus	with drawings by Patouillard of microscopic features
iocephala Pat.	Daedalea	
iodoformica Pat.	Psilocybe	
iridicola Pat.	Ascochyta	
irpicina Pat.	Dictyophora	
isabellinus Pat. & Gail.	Polyporus	+Also in Höhnel Herb.
lacroixii Har. & Pat.	Cordyceps	
lanosa Pat.	Meliola	

latiporus	Melanopus	
lefebvrei Pat.	Phaeangium	PC Herb. Boudier
leptopodium Pat. & Har.	Scleroderma	
leucoceras Pat.	Lachnocladium	spec. from Guadeloupe collected by Bory de St. Vincent
leveillei Pat.	Asterina	
lignicola Pat.	Endogone	spec. from Guadeloupe collected by Duss
lignosum Pat.	Ganoderma	
lilliputianus Pat.	Boletus	with drawing
limoniastri Pat.	Pleospora	
lutea Pat.	Podoscypha	
macropus Pat.	Xanthochrous	
maculata Pat.	Phlyctospora	
madagascariensis Pat.	Cantharellus	
var. madagascariensis Pat.	Leucoporus rhizophilus	
var. madagascariensis Pat.	Leucoporus tricholoma	
madagascariensis Pat.	Xerotus	
magydaridis Pat. & Trab.	Puccinia	
maromandiae Pat.	Boletus	with drawing
melanocephalus Har. & Pat.	Xanthochrous	
menieri Pat.	Tomentella	
var. merismoidea Pat.	Podoscypha affinis	
microloma Pat. & Heim	Lentinus	
microspora Pat. & Gail.	Meliola	isotype in PC
minutula Pat.	Lepiota	
minutum Pat.	Caeoma	
minutus Pat.	Favolus	

mirbekii Pat.	Phoma	
murinacea Pat.	Amanita	
muscorum Roum. & Pat.	Ozonium	
mycenoides Pat.	Polyporus	
necator Pat. & Har.	Cordyceps	
neglectum Pat.	Ganoderma	
nitidula Pat. & Gail.	Phyllachora	
nummiforme Pat.	Helotium	with notes and drawings
obesa Pat.	Ungulina	+Also in Höhnel Herb.
ochroflavum Pat.	Hydnum	
oleae Pat.	Gloniella	
orientalis Pat.	Pheopezia [sic]	
orinocensis Pat. & Gail.	Erinella	
orinocensis Pat. & Gail.	Polyporus	
palmarum Pat.	Bagnisiella	
pancheri Pat.	Polyporus	under Melanopus
parthenii Pat. & Har.	Aecidium	
pavonius Pat.	Xanthochrous	
pelargonii Pat.	Sphaeropsis	Patouillard notes and drawings
pepli Pat.	Rhabdospora	
pernanum Pat.	Ganoderma	with drawing
perraldieri Pat. ex Pat.	Podaxon	
pezizoidea Pat.	Gibbera	
pleurocolla Pat. & Gail.	Cytospora	
var. pleuropodium Pat.	Ganoderma pullatum	
plorans Pat.	Xanthochrous	+Also in Höhnel Herb.

poilanei Pat.	Melanopus	two specimens
poilanei Pat.	Xerotus	
polygoni-sachalinensis Pat. & Har.	Puccinia	
praetervisum Pat.	Ganoderma	
pulchella Pat. & Har.	Clavariopsis	
pusillum Har. & Pat.	Polysaccum	
radicata Pat.	Podoscypha	
reticeps Pat.	Polyporus	
var. rhizophilus Pat.	Leucoporus arcularius	
rigida Pat.	Plicatura	
roseoalba Pat.	Lepiota	
roseobrunnea Pat.	Lepiota	
roseoisabellinus Pat. & Gail.	Polyporus	+Also in Höhnel Herb.
rubidus Pat. & Heim	Crinipellis	two specimens
rubiginosus Pat.	Crinipellis	with drawing
rubricosus Pat.	Polyporus	
rudis Pat.	Cyathus	
rufo-ochraceus Pat.	Polyporus	
rugosa Pat.	Pyronema	PC Herb. Boudier
salmoneus Pat.	Aleurodiscus	
schizoderma Pat.	Russula	with drawing
similis Boud. & Pat.	Clavaria	authentic spec. only
var. sphaerosporus Pat.	Agaricus variabilis	
stramineus Pat.	Spongipellis	
strychnicola Pat.	Amphisphaeria	
subcarcharias Pat.	Lepiota	with drawing
sulcatipes Pat.	Marasmius	
tetraspora Pat. & Gail.	Sphaerostilbe	

thejoleuca Pat.	Amanita	with drawing
tingitana Pat.	Torula	
tricholomum Pat.	Hyaloderma	
turbinatus Pat. & Har.	Leucoporus	
varians Pat.	Phylacteria	
violascens Pat.	Phellinus	
virescens Pat.	Lepiota	
waterloti Pat.	Hyalopsora	
waterloti Pat.	Xanthochrous	
zamurensis Pat. & Gail.	Humaria	
zizyphina Pat.	Phoma	
zollikoferiae Pat.	Sphaeropsis	with drawing and Patouillard notes

MYCOTAXON

Vol. XI, No. 2, pp. 443-445 July-September 1980

NOTES ON HYPHOMYCETES. XXXVI
A NEW SPECIES OF *CUSTINGOPHORA*.

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ABSTRACT

Custingophora suidafrikana Morgan-Jones and Sinclair is described and illustrated from a collection made on decorticated wood in the Transvaal, South Africa.

INTRODUCTION

The genus *Custingophora* Stolk, Hennebert and Klopotek, type species *C. olivacea* Stolk, Hennebert and Klopotek, was described from an isolate obtained from compost in Germany (Stolk and Hennebert, 1968). The genus has remained monotypic since its establishment although Barr and Crane (1979) recognised the anamorph of *Chaetosphaeria aspergilloides* Barr and Crane as belonging to it.

A collection of a species of *Custingophora* has been made on decaying, decorticated wood in the northeastern Transvaal, South Africa. It is distinct from both *C. olivacea* and the conidial state of *C. aspergilloides*.

TAXONOMIC PART

Custingophora suidafrikana sp. nov. (Fig. 1).

Coloniae effusae, griseae vel atrae. Mycelium in substrato immersum, ex hyphis ramosis, septatis, subhyalinis vel pallide brunneis, laevibus, 2 - 3µm crassis compositum. Conidiophora macronemata, mononemata, erecta, recta, simplicia, ad apicem versus undata, laevia, brunnea, cylindrica, apicem inflata; stipes usque ad 230µm longus X 3 - 5µm crassa. Cellae conidiogenae monophialidicae, discretae, determinatae, leviae, pallide brunneae, lageniformes, 7 - 9 X 2.5 - 3µm. Conidia enteroblastica,

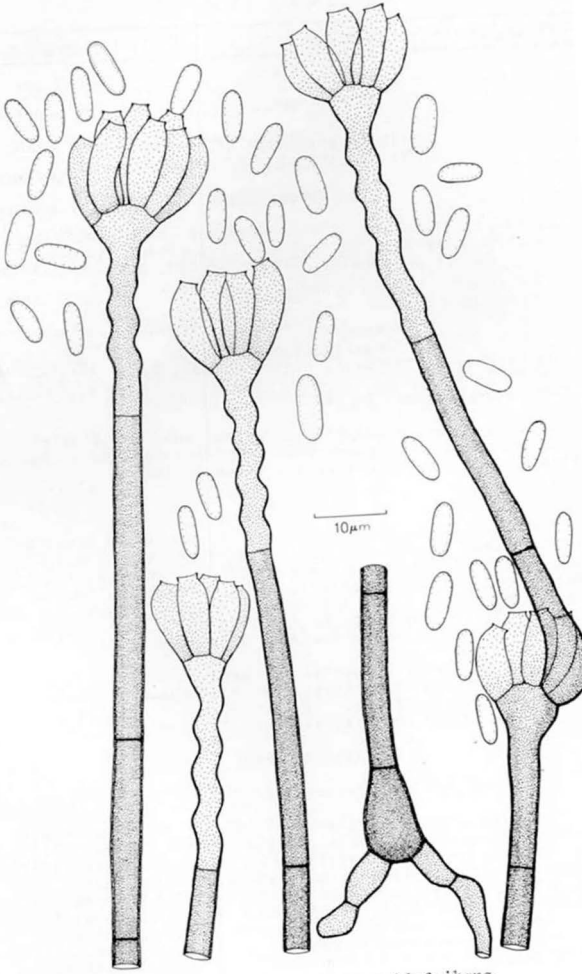

FIGURE 1. *Custingophora suidafrikana.*

aggregata, acropleurogena, simplicia, oblonga, hyalina, laevia, aseptata, 5 - 8 X 2 - 2.5µm.

In lignis putredinis, Debengeni Forest Reserve, N.E. Transvaal, South Africa, August 17, 1979, R.C. Sinclair, AUA, holotypus.

Colonies effuse, brownish gray to black. Mycelium mostly immersed in the substratum, composed of branched, septate, subhyaline to pale brown, smooth, 2 - 3µm wide hyphae. Conidiophores macronematous, monomenatous, erect, mostly straight, simple or rarely proliferating subapically, wavy towards the apex, smooth, brown, cylindrical but inflated at the extreme apex over the surface of which are borne a cluster of phialides; stipe up to 230µm long X 3 - 5µm wide. Conidiogenous cells monophialidic, discrete, determinate, smooth, pale brown, lageniform, straight or somewhat curved if at the periphery of a cluster, with a small terminal collarette, in groups at the swollen apex of the conidiophores, 7 - 9 X 2.5 - 3µm. Conidia enteroblastic, aggregated in heads, acropleurogenous, simple, oblong, obtuse at each end, hyaline, smooth, nonseptate, 5 - 8 X 2 - 2.5µm.

On rotten wood; South Africa.

Collection examined: on rotten, decorticated wood, Debengeni Forest Reserve, N.E. Transvaal, South Africa, August 17, 1979, R.C. Sinclair, AUA, holotype.

C. suidafrikana can be distinguished from *C. olivacea* in a number of respects. The morphology of the distal reaches of the conidiophore stipe, which is invariably wavy, is distinctive as are conidium dimensions; conidia of *C. olivacea* measure 2 - 3 X 1 - 1.5µm. The anamorph of *C. aspergilloides* differs similarly; the stipe is entirely straight and conidia are 10 - 12 X 5 - 7µm in size.

REFERENCES

Barr, M.E. and J.L. Crane. 1979. Another conidial state for a species of *Chaetosphaeria*. Can. J. Bot. 57: 835-837.

Stolk, A.C. and G.L. Hennebert. 1968. New species of *Thysanophora* and *Custingophora* gen. nov. Persoonia 5: 189-199.

ACKNOWLEDGEMENT

I thank Dr. J. Leland Crane, Illinois Institute of Natural Resources, for reviewing the manuscript.

MYCOTAXON

Vol. XI, No. 2, p. 446 July-September 1980

NOTES ON HYPHOMYCETES. XXXVII. *ARNOLDIOMYCES* NOM. NOV.

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ABSTRACT

The generic name *Arnoldiomyces* Morgan-Jones is proposed to replace *Arnoldia* Gray and Morgan-Jones, the latter being a homonym of three previously established names.

NOMENCLATURAL PART

Gray and Morgan-Jones (1980) in proposing the generic name *Arnoldia* Gray and Morgan-Jones [type species *Arnoldia clavispora* Gray and Morgan-Jones] for a hyphomycetous mycoparasite growing on carpophores of *Coriolus versicolor* (Fr.) Quelet in Alabama, inadvertently created a later homonym of three earlier Arnoldias; *Arnoldia* Cassini 1824 (flowering plant), *Arnoldia* Blume 1826 (flowering plant), and *Arnoldia* Massalongo 1856 (lichen).

This faux pas necessitates the establishment of a new name for the fungus to replace the illegitimate *Arnoldia*.

Arnoldiomyces nom. nov.
= *Arnoldia* Gray and Morgan-Jones, Mycotaxon 10:375, 1980. [non *Arnoldia* Cassini, Dict. Sc. Nat. 30: 330, 1824, *Arnoldia* Blume, Bijdr. 868, 1826; *Arnoldia* Massalongo Flora 39: 214, 1856]

Species typica: *Arnoldiomyces clavisporus* (Gray and Morgan-Jones) comb. nov.
≡*Arnoldia clavispora* Gray and Morgan-Jones, Mycotaxon 10: 376, 1980.

ACKNOWLEDGEMENT

I thank Dr. Clark T. Rogerson, The New York Botanical Garden, for bringing the illegitimate status of *Arnoldia* Gray and Morgan-Jones to my attention and for reviewing this note.

MYCOTAXON

Vol. XI, No. 2, pp. 447-475 July-September 1980

NEW TAXA OF CORTICIACEAE FROM N. IRAN (BASIDIOMYCETES)

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ABSTRACT: Eight species and two formae are described as new. They belong to the genera *Cystostereum*, *Galzinia*, *Hyphodontia*, *Oliveonia*, *Peniophora*, *Phlebia*, *Sistotrema* and *Trechispora*. *Conferticium* (a segregate from *Glococystidiellum*) is described as a new genus with *C. insidiosum* as its type species. Deviating specimens from *Athelia*, *Mycoacia* and *Sistotrema* are discussed.

INTRODUCTION. During the spring of 1978, I carried out field research on wood-fungi in the Caspian forests of N. Iran. The present work is a continuation of earlier collections made in 1976 (Hallenberg 1978, 1980). Two localities were now thoroughly investigated:

1. The national park in Golestan forest, 150 km N.E. of Gorgan. Virgin forests with mainly *Parrotia* — along the rivers —, *Quercus* and *Crataegus*. The E. part of the national park is a bush steppe. 1978-04-26—05-08.

2. Sang-deh, S. of Pol-e-Sefid (Mazanderan). The collections were made in the *Fagus orientalis* zone, 1300—1800 m.s.m. 1978-05-10—13.

The wood-fungus flora of respective locality will be treated in later papers. In the present study, new taxa from this collection are presented, 8 *novae species*, 2 *formae* and 1 *genus*. Three deviating specimens are also discussed.

The collected material has been deposited in the herbaria GB and IRAN. The author's collection numbers are indicated with (NH).

Conferticium Hallenb. n. gen.

Fructificatio effusa, resupinata, ceracea, in sicco crustacea, saepe rimosa, cremea vel ochracea, stratosa, hymenio levi vel tuberculato; systema hyphale monomiticum, hyphis effibulatis, ± crassitunicatis, parietibus cyanophilis; subiculum tenue; hyphae subhymeniales verticales, dense confertae; cystidia tenuitunicata, cylindracea, sinuosa, saepe materiam granulosam, sulfo-positivam continentia; basidia clavata, 4 sterigmatibus, denso vallo conferta, interdum intus repetita; sporae subcylindraceae, ellipsoides, 4—8 µm longae, leves vel minute tuberculatae.

ETYMOLOGY: *confertus* = pressed close together, and *(Cort-)icium*.

TYPE SPECIES: *Gloeocystidium insidiosum* Bourdot & Galzin, Bull. Soc. mycol. Fr. 28:370, 1913. — *Gloeocystidiellum insidiosum* (Bourd. & Galz.) Donk, Fungus 26:9, 1956.

ADDITIONAL SPECIES: *Conferticium karstenii* (Bourd. & Galz.) Hallenb. n. comb. — *Gloeocystidium karstenii* Bourdot & Galzin, Hym. de Fr. p 254, 1928. — *Gloeocystidiellum karstenii* (Bourd. & Galz) Donk, Fungus 26:9, 1956.

Conferticium ochraceum (Fr.) Hallenb. n. comb. — *Thelephora ochracea* Fr., Syst. mycol. 1:446, 1821. — *Gloeocystidiellum ochraceum* (Fr.) Donk, Fungus 26:9, 1956.

Fructification effused, ceraceous, hard-crustaceous when dry, often cracking, stratified; hymenophore smooth, tuberculate, cream-coloured — ochraceous; hyphal system monomitic; hyphae without clamps, moderately thick-walled, subiculum thin, context hyphae vertically directed, densely united into a pseudoparenchymateous tissue, hyphal walls cyanophilous; cystidia thin-walled, tubular, sinuouse, with a granular content, mostly reacting positively to sulfo-vanilline; basidia clavate, with 4 sterigmata, without basal clamp, in a dense pallisade, occasional internal basidial repetition; spores subcylindrical, ellipsoid, spore wall smooth or finely warted, amyloid.

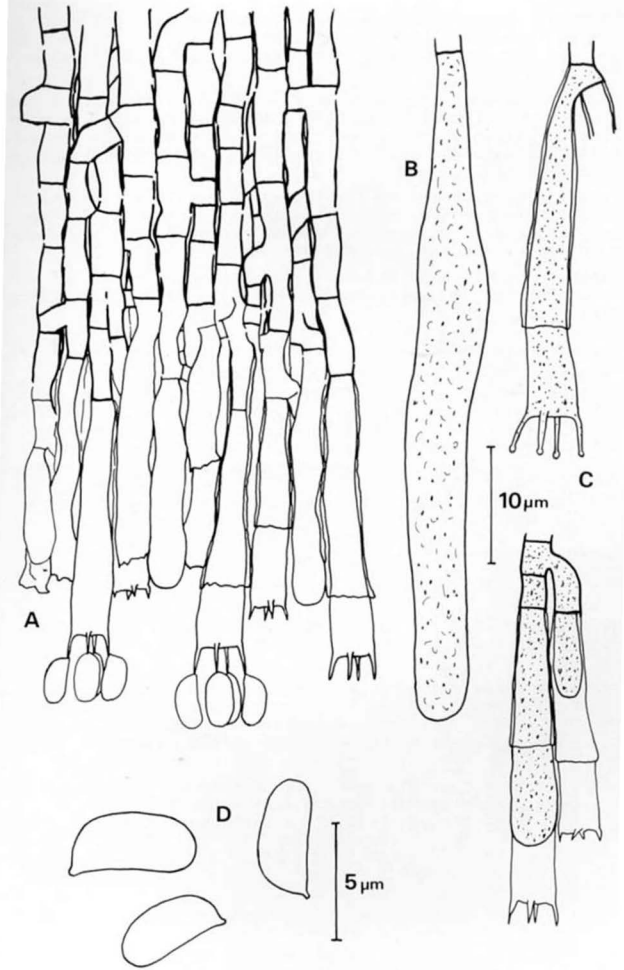
REMARKS: This genus is a segregate from *Gloeocystidiellum* Donk. Uniting characters are amyloid spores and presence of gloeocystidia, which mostly react positive to sulfo-vanilline. *Conferticium* differs by the hard context, consisting of vertically growing, cyanophilous, simple-septated, moderately thick-walled hyphae. Internal basidial repetition also occurs.

DESCRIPTION OF THE IRANIAN SPECIMENS OF *Conferticium insidiosum* (Bourd. & Galz.) Hallenb. (see fig. 1).

FRUCTIFICATION resupinate, effused, adnate, hard-crustaceous when dry, stratified, 50—500 µm thick; hymenophore smooth — tuberculate, sometimes cracked, cream-coloured — light ochraceous; margin more or less abrupt.

HYPHAL SYSTEM monomitic; hyphae without clamps, moderately thick-walled, 2—3 µm wide (according to Bourdot & Galzin, 1927, 2—4.5 µm), densely united; hyphal direction vertical; subiculum inconspicuous or absent; hyphal walls stained by cottonblue; scattered crystal aggregates in the context.

Fig. 1. *Conferticium insidiosum* A) section through fructification B) cystidium C) basidia D) spores. — Coll. N. Hallenberg 2277.


A
B
C
10 µm
D
5 µm

CYSTIDIA tubular, sinuose, thin — thick-walled, 30—70X3.5—5 μm, embedded, often growing through the whole fructification; content granular with positive reaction to sulfovanilline.

BASIDIA clavate, thin-walled, 22—30X3.8—4 μm, with 4 sterigmata and without basal clamp. Internal basidial repetition occasional. In the sporulating basidial layer the cell walls are strongly cyanophilous and in some collections also dextrinoid.

SPORES subcylindrical — ellipsoid, adaxial side straight or a little concave, smooth, thin-walled, 4—5X2—2.5 μm, with light-refracting content when observed with a phase-contrast microscope, walls amyloid.

HABITAT AND DISTRIBUTION: On fallen logs and trunks of deciduous trees. Golestan forest (NH 2277, 2278, 2279, 2280, 2281, 2282, 2299).

Cystostereum heteromorphum Hallenb. n. sp. (See fig. 2, 3)

Fructificatio resupinata, effusa, ceracea — membranacea, pallide ochracea, hymenophoro aculeis dispersis, aggregatis instructo, partim levi; subiculum arachnoide; margine angusto, arachnoide — fibrilloso; systema hyphale dimiticum; hyphae generatoriae fibulatae, 2—4 μm latae, hyphae sceleticae effibulatae, crassitunicatae, non cyanophilae, 1—2 μm latae; gloeocystidia cylindracea vel moniliformia, materiam flavidam, oleosam vel resinosam continentia, in hymenio et subiculo dispersa; corpora conidiis similia, 4—6X2—3 μm, a gloeocystidiis et hyphis subicularibus seiuncta; basidia clavata, 11—15X3.5—5 μm, 4 sterigmatibus; sporae subcylindraceae — ellipsoides, leves, tenuitunicatae, non-amyloides, 4—4.5X2—2.5 μm.

ETYMOLOGY: *heteromorphum* = different shape (of the hymenophore).

HOLOTYPUS: U.S.S.R., Carpatorossia, Jalinka prope Kosovská Polana/ad ligna/ 1930—07/ A. Pilát 2474.

FRUCTIFICATION resupinate, effused; hymenium ceraceous — membranaceous, light ochraceous; subiculum cobwebby, whitish, unevenly distributed, up to 1/2 mm thick; hymenophore partly odontioid with scattered, aggregated aculei, partly smooth, when dry, somewhat cracked; margin rather narrow, cobwebby or fibrillose.

HYPHAL SYSTEM dimitic; generative hyphae with clamps, thin- to moderately thick-walled, 2—4 μm wide, narrowing to 1.5 μm in diam. and then gradually turning into skeletal hyphae; these are sparsely branched, with false septa, thick-walled, often only with a narrow lumen, 1—2 μm wide, the walls are not stained by cottenblue or Melzer's reagent. Subiculum mostly of skeletal hyphae along with generative hyphae, that produce gloeocystidia. In the subhymenium richly branched, thin-walled, generative hyphae, present.

GLOEOCYSTIDIA with an oily or resinous content, sulfonegative, thin- to moderately thick-walled, occurring both in the subiculum and the hymenium. In the hymenium they are more or less cylindrical, 12—40X5—8 μm; in the subiculum

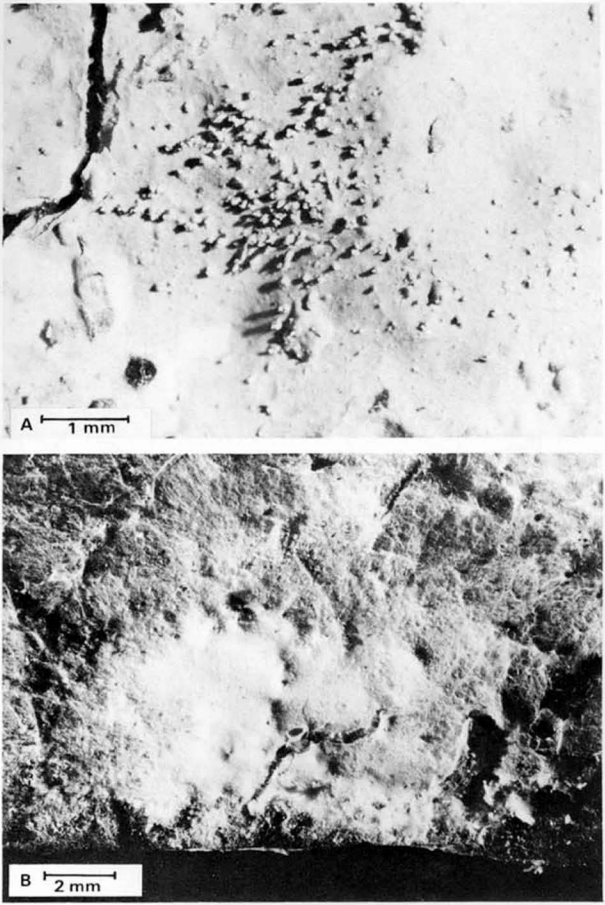


Fig. 2. *Cystostereum heteromorphum* A) Coll. A. Pilát 2474 (holotypus) B) Coll. N. Hallenberg 2712. Photo T. Hallingbäck.

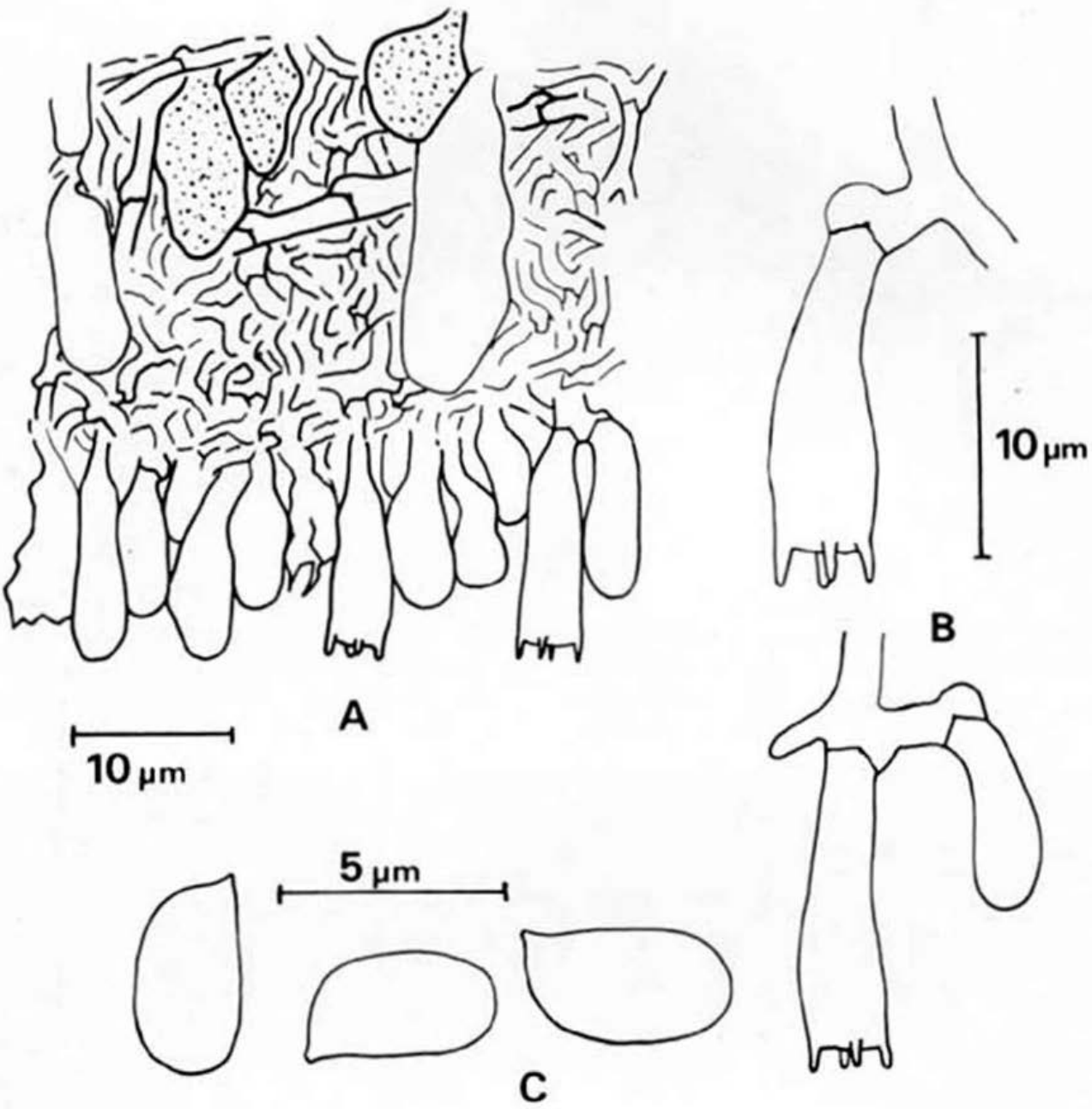
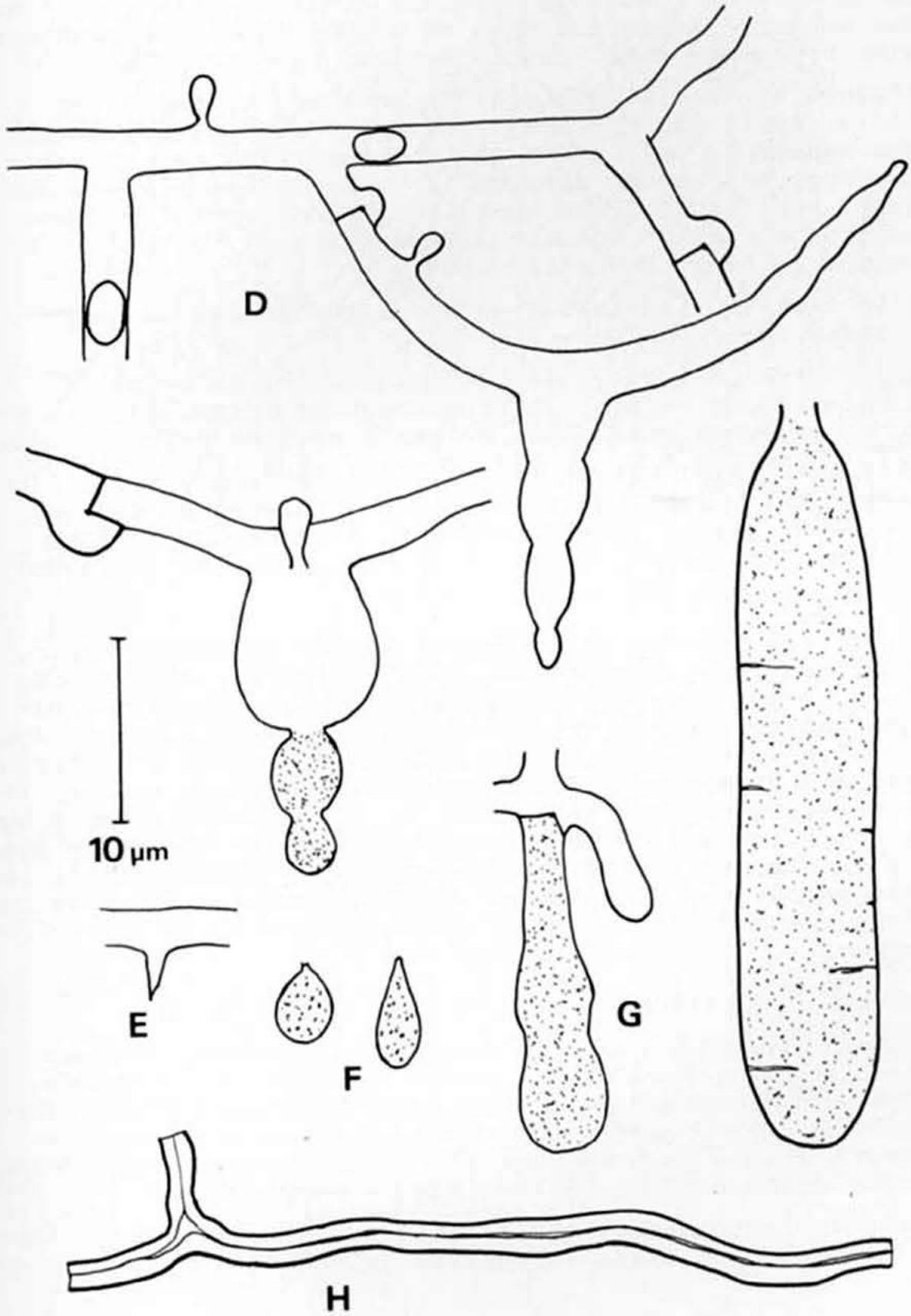


Fig. 3. *Cystostereum heteromorphum* A) hymenial details B) basidia C) spores D) generative hyphae in the subiculum producing gloeocystidia and conidium-like structures E) hypha with "conidiophore" F) conidium-like structures G) gloeocystidia H) skeletal hypha. — Coll. A. Pilát 2474


D
10 µm
E
F
G
H

they have very plastic shapes, often laterally initiated on a hypha, and more or less moniliform. The constriction which unites the terminal swelling with the rest of the cystidium is often very narrow. This terminal swelling which may also become detached appearing then as a conidium-like structure, is always plasma-dense, deeply stained by cottonblue.

ADDITIONAL HYPHOID STRUCTURES: In addition to the gloeocystidia, small plasma-rich bladders, 4—6X2—3 µm, develop on the hyphae as well as on the gloeocystidia in the subiculum. They may become detached in a manner similar to the terminal swellings of the moniliform gloeocystidia. These structures are also conidium-like and are of the same size and shape as those described above.

BASIDIA clavate, 11—15X3.5—5 µm, with basal clamp and 4 sterigmata, 3—4 µm long.

SPORES subcylindrical — ellipsoid, smooth, thin-walled, 4—4.5X2—2.5 µm, often adhering together in groups of 2 or 4; spore wall not stained by Melzer's reagent or cottonblue.

HABITAT AND DISTRIBUTION: Two collections from U.S.S.R. (Carpatorossia, Jalinka prope Kosovská Polana/ ad ligna/ 1930—07/ A. Pilát, 2474 (Type) and 685). One collection from Iran, Mazanderan, Sang-deh /on a fallen log of Fagus/ NH 2712.

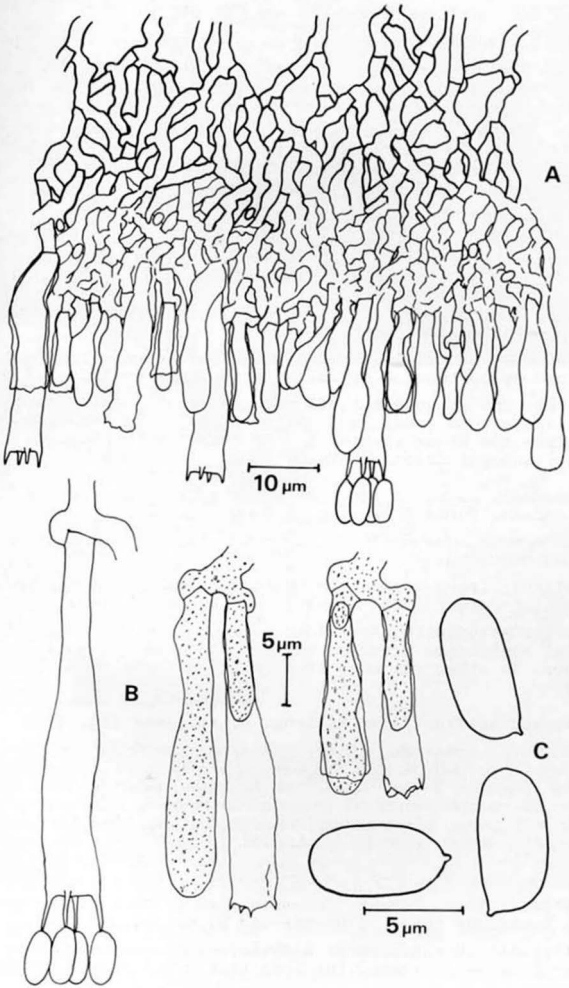
REMARKS: This species is a typical member of *Cystostereum*, when defined by gloeocystidia, with yellowish, oily or resinous content, presence of skeletal hyphae, clavate basidia and small, subcylindrical spores. In fact it comes close to *C. subabruptum* which mainly differs by having a different texture and presence of dendrohyphidia. While *C. subabruptum* has a crustaceous fructification, *C. heteromorphum* has a cobwebby subiculum and ceraceous subhymenium. In the early stages it is almost athelioid and smooth. The gloeocystidia in *C. subabruptum* may be provided with an apical bulb, thus resembling the more or less moniliform structures in *C. heteromorphum*.

Galzinia longibasidia Hallenb. n. sp. (see fig. 4)

Fructificatio resupinata, effusa, adnata, tenuis, ceracea, in sicco crustacea, pruinosa, hymenio levi, pallide ochraceo; systema hyphale monomiticum; hyphae fibulatae, 2—3 µm latae; basidia subclavata, sinuosa, saepe in medio constricta, 26—38X5—6.5 µm, materiam granulosam continentia, intus ± frequenter repetita; sporae subcylindraceae, leves, parietibus crassescentibus, 6—7X3—3.8 µm, non-amyloides.

ETYMOLOGY: *longibasidia*, the basidia are longer than in the closely related *Galzinia incrustans* (v. Höhn. & Litsch.) Parm.

Fig. 4. *Galzinia longibasidia* A) section through fructification B) basidia C) spores. — Coll. N. Hallenberg 2417.


A
10 µm
B
5µm
C
5µm

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On a fallen branch of a deciduous tree/ 1978—05—04/ NH 2417.

PARATYPUS: NH 2403, collection data as above.

FRUCTIFICATION effused, resupinate, adnate, thin, ceraceous, as dry pruinose and rather hard; hymenophore smooth, grey ochraceous; margin abrupt.

HYPHAL SYSTEM monomitic; hyphae with clamps, flexuose, richly branched, 2—3 µm wide, in subiculum moderately thick-walled, in subhymenium more thin-walled; walls not stained by cottonblue or Melzer´s reagent.

CYSTIDIA none.

BASIDIA subclavate, sinuose, sometimes stalked, often with a constriction in the middle, 26—38X5—6.5 µm, content granular, with 4 sterigmata and basal clamp.

Internal basidial repetition more or less frequent. Occasionally basidia deviate by developing abnormal sterigmata; few pleurobasidia seen.

SPORES subcylindrical, smooth, with thickened walls, not stained by cottonblue or Melzer´s reagent, 6—7X3—3.8 µm.

REMARKS: The sinuose basidia with internal repetition make *Galzinia* a good genus for this species, being easily separated from the other species in the genus by the relatively large, subcylindrical spores.

Hyphodontia quercina (Fr.) John Erikss. f. *coralloides* Hallenb. n. forma. (see fig. 5 B, C)

Formae typicae valde similis sed differt hymenophoris aculeis diffuse ramosis instructis.

HOLOTYPUS: Iran, Mazanderan, Sang-deh/ On a still-attached branch of *Fagus*/ 1978—05—11/ N. Hallenberg 2797.

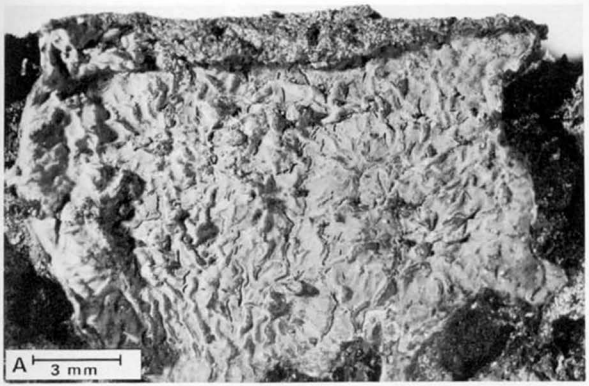
FRUCTIFICATION with a raduloid hymenophore, where the individual aculei are branched several times in a coralloid manner. In other respects like *Hyphodontia quercina* f. *quercina*.

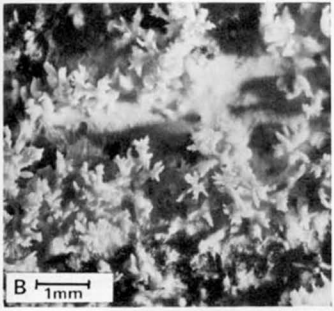
Oliveonia subfibrillosa Hallenb. n. sp. (see fig. 6)

Fructificatio resupinata, effusa, dense adnata, reticulata — fibrillosa, tenuis, pallida; margine indeterminato; systema hyphale monomiticum; hyphae fibulatae, 1—3 µm latae, tenuitunicatae; subiculum valde tenue; hyphae subiculares rectae vel irregulariter ramosae, gelatinosae; cystidia cylindracea, sinuosa, tenuitunicata, hyalina, 17—37X5—7 µm; basidia late clavata, interdum pedunculata, 10—12X5.5—6.5 µm, 4 sterigmatibus, 5—6.5 µm longis; sporae ellipsoides — suballantoides, tenuitunicatae, leves, 6—7X3—3.5 µm, non-amyloides, repetitione germinantes.

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On a fallen trunk of a deciduous tree/ 1978—04—30/ N. Hallenberg 2227.

FRUCTIFICATION resupinate, effused, closely adnate, finely reticulate — pruinose, thin, whitish grey; margin indistinct





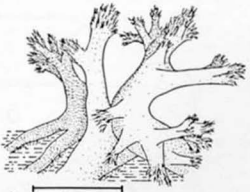


Fig. 5. A) *Peniophora quercina* f. *phlebioides* — Coll. NH 2015. B, C) *Hyphodontia quercina* f. *coralloides* — Coll. NH 2797.

HYPHAL SYSTEM monomitic; hyphae with clamps, 1—3 µm wide, thin-walled, non-cyanophilous; subiculum very thin, composed of straight or irregularly branched hyphae, united in a gelatinous substance; from the subiculum hymenial branches develop vertically.

CYSTIDIA cylindrical, sinuose, 17—37X5—7 µm, sometimes with protuberances, thin-walled, hyaline.

BASIDIA broadly clavate, sometimes stalked, 10—12X5.5—6.5 µm, with 4 prominent sterigmata, 5—6.5 µm long, and basal clamp.

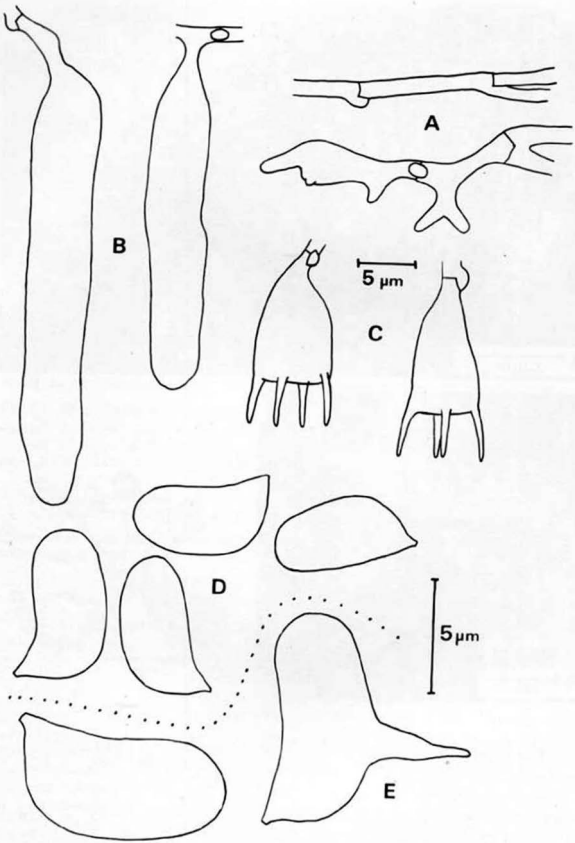


Fig. 6. *Oliveonia subfibrillosa* A) subicular hyphae B) cystidia C) basidia D) spores. — Coll. N. Hallenberg 2227. *O. fibrillosa* E) spores. — Coll. Murill 515 (holotypus).

SPORES ellipsoid — suballantoid, thin-walled, smooth, 6—7X3—3.5 µm, non-amyloid, germinating by repetition.

HABITAT AND DISTRIBUTION: On wood and fallen trunks of *Quercus*, *Fagus* and a deciduous tree. Golestan forest (NH 2222, 2227), Sang-deh (NH 2868).

REMARKS: This species is very close to *O. fibrillosa* (Burt) Donk and *O. pauxilla* (Jacks.) Donk. *O. fibrillosa* differs by larger spores 7—10X3—5 µm, cystidia 30—90X6—9 µm, and basidia about 10 µm wide (Martin 1948). *O. pauxilla* differs mainly by the absence of clamps.

Peniophora quercina (Fr.) Cke f. *phlebioides* Hallenb. n. forma (see fig. 5 A)

Formae typicae valde similis sed differt hymenophoris radiatim plicatis.

HOLOTYPUS: Iran, Gorgan, Golestan forest/On a fallen twig/ 1978—04—26/ N. Hallenberg 2015.

FRUCTIFICATION with a radiately folded hymenium. In other respects like *P. quercina* f. *quercina*.

Peniophora pseudonuda Hallenb. n. sp. (see fig. 7 A, 8)

Fructificatio effusa, resupinata, adnata, usque ad 0.2 mm crassa, hymenio murino — pallide subfusco, margine abrupto; systema hyphale monomiticum; hyphae fibulatae, 2—5 µm latae, parietibus crassescentibus, non cyanophilis; stratosa basale 15—75 µm, hyphis crassitunicatis, fulvis, substrato parallelis compositum; hyphae subhymeniales dense confertae, verticales; sulfocystidia clavata, cylindracea, 50—80X9—15 µm, parietibus crassescentibus, inclusa; cystidia incrustata anguste conica — cylindracea, crassitunicatae, 25—40X9—12 µm, inclusa; basidia clavata — cylindracea, 47—80X5—7 µm, 4 sterigmatibus; sporae cylindraceae — suballantoides, tenuitunicatae, leves, 9—11X3.5—4 µm, non-amyloides, uni-nucleatae.

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On a fallen branch of a deciduous tree 1978—05—06/ N. Hallenberg 2555.

FRUCTIFICATION effused, resupinate, adnate, up to 0.2 mm thick; hymenium light greyish brown, smooth; margin abrupt.

HYPHAL SYSTEM monomitic; hyphae with clamps, 2—5 µm wide, with thickened walls, non-cyanophilous; basal layer 15—75 µm thick, composed of brown-pigmented, thick-walled hyphae, densely united, running parallel to the substrate; subhymenial hyphae vertically directed, densely united, basal parts sometimes brown-pigmented.

CYSTIDIA of two kinds. Sulfocystidia clavate — cylindrical, sinuose, 50—80X9—15 µm, rather thick-walled, at least in the basal part, content granular, numerous, embedded but often reaching the hymenial surface. Encrusted cystidia narrowly conical, thick-walled, 25—40X9—12 µm, rather frequent, embedded.

BASIDIA clavate — tubular, sinuose, 47—80X5—7 µm, densely packed in a thickening hymenium, thin-walled but often with basally thickened walls, with 4 sterigmata and basal clamp.

SPORES cylindrical — suballantoid, thin-walled, smooth, 9—11X3.5—4 µm, non-amyloid, uni-nucleate.

HABITAT AND DISTRIBUTION: On branches and twigs of *Parrotia*, *Quercus*, *Fagus* and other deciduous trees. Golestan forest 5, Sang-deh 1 collection. Two collections, previously reported as *P. nuda* (Fr.) Bres. (Gorgan, NH 1296, 1549) belong to this taxon.

REMARKS: *P. pseudonuda* is very close to *P. nuda*. It differs by the presence of a well developed basal layer of densely united, parallel oriented, brown-pigmented hyphae and by the broader, less slender spores.

Interfertility tests between *P. pseudonuda* (NH 2555) and *P. pseudoversicolor* Boid (LY 2086, 4643), *P. nuda* (GB 24031, 24036, NH 3070), and *P. incarnata* (Fr.) Karst. (NH 2215, 2267) have been made and were all negative.

Phlebia caspica Hallenb. n. sp. (see fig. 7 B, C, 9)

Fructificatio resupinata, effusa, dense adnata, tenuis, in sicco crustacea, hymenio ± dense tuberculato, cremaceo — pallide ochraceo; systema hyphale monomiticum; hyphae fibulatae, in subiculo parallelae, 3—5 µm latae, in subhymenio dense confertae, verticales, 2—3 µm latae, non cyanophilae, parietibus tenuibus, distinctis; cystidia subulata, tenuitunicata, 40—67X4—4.5 µm; basidia clavata, 18—30X4—4.5 µm, 4 sterigmatibus; sporae ellipsoides, leves, tenuitunicatae, 4—5X 2—2.5 µm, non-amyloides.

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On a fallen branch of a deciduous tree/ 1978—04—29/ N. Hallenberg 2189.

FRUCTIFICATION resupinate, effused, closely adnate, thin, crustaceous when dry; hymenium rather densely tuberculate, cream-coloured — light ochraceous; margin thin, white, minutely fibrillose or indeterminate.

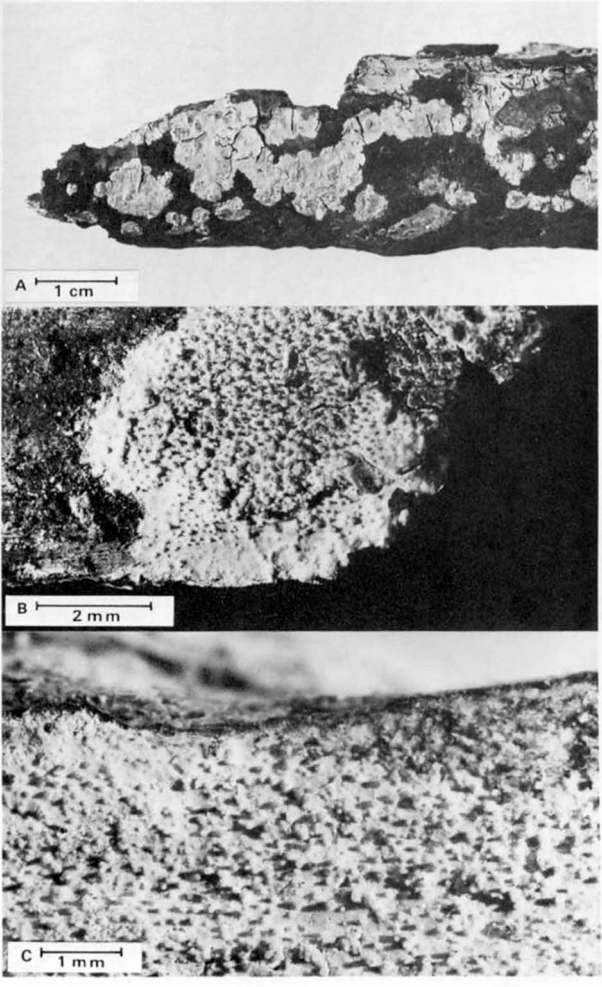
HYPHAL SYSTEM monomitic; hyphae with clamps, walls thin but distinct; in the subhymenium running vertically, richly branched, densely packed, 2—3 µm wide; in the subiculum more or less parallel to the substrate, 3—5 µm wide; walls not cyanophilous.

CYSTIDIA subulate, thin-walled, hyaline, 40—67X4—4.5 µm, distributed through the hymenium but most common at apices of aculei.

BASIDIA clavate, 18—30X4—4.5 µm, with 4 straight sterigmata and basal clamp.

SPORES ellipsoid, adaxial side flattened or a little concave, smooth, thin-walled, 4—5X2—2.5 µm, non-amyloid.

Fig. 7. A) *Peniophora pseudonuda* — Coll. N. Hallenberg 2557 B) *Phlebia caspica* — Coll. NH 2189 C) ditto — Coll. NH 2628 A. Photo T. Hallingbäck.


A
1 cm
B
2 mm
C
1 mm

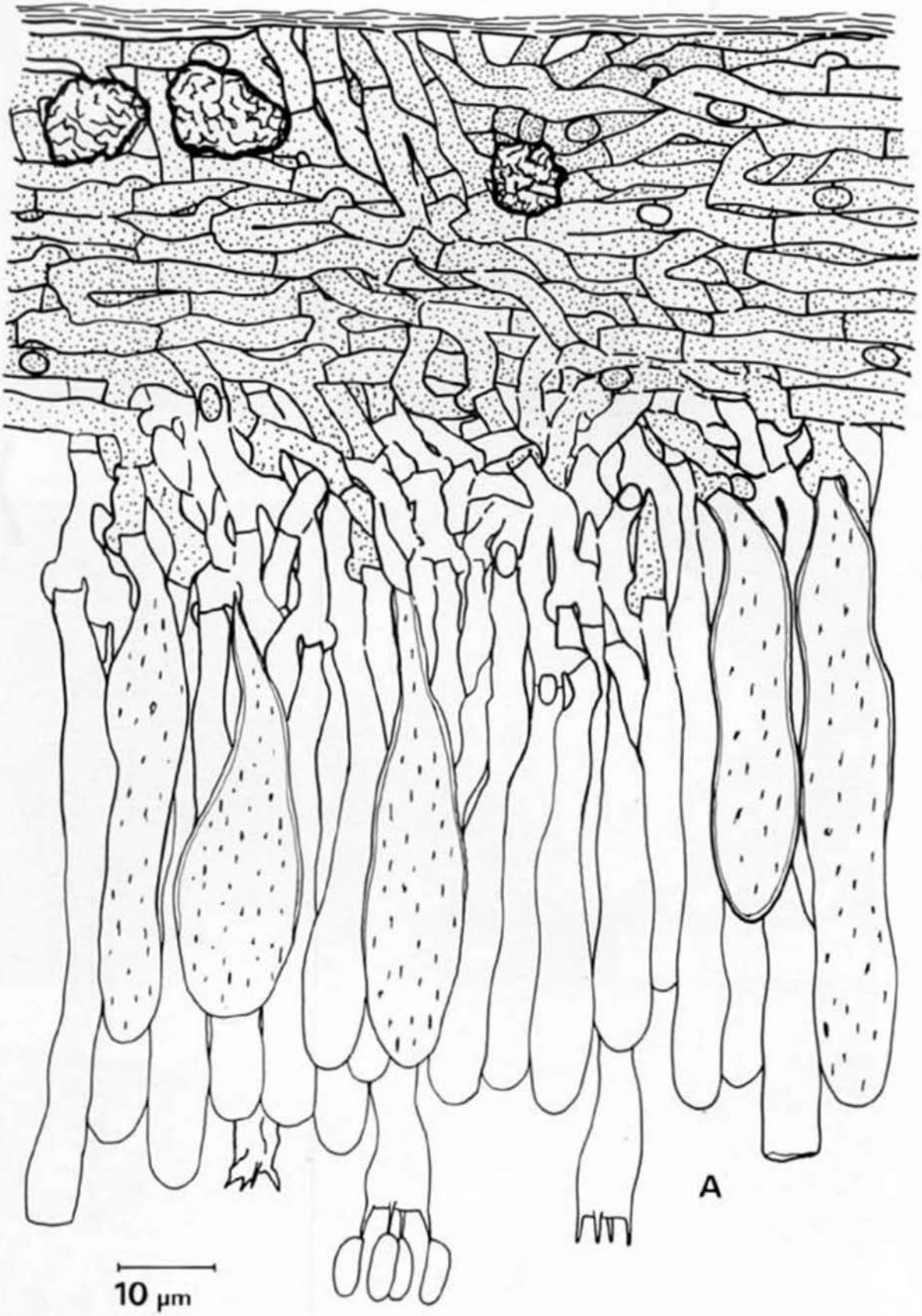
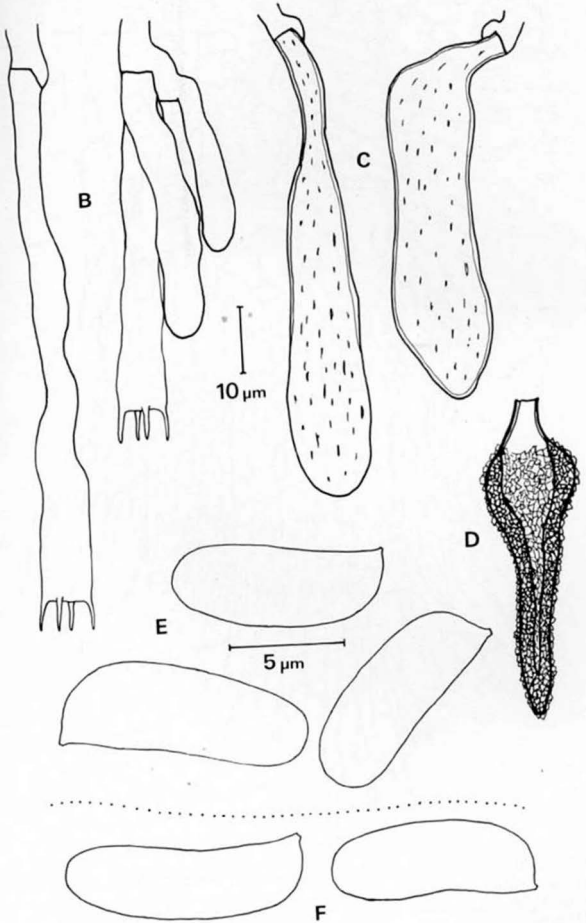


Fig. 8. *Peniophora pseudonuda* A) section through fructification B) basidia C) gloeocystidia D) encrusted cystidium E) spores. — Coll. N. Hallenberg 2555. *P. nuda* F) spores. — GB 24031.


B
C
10 µm
D
E
5 µm
F

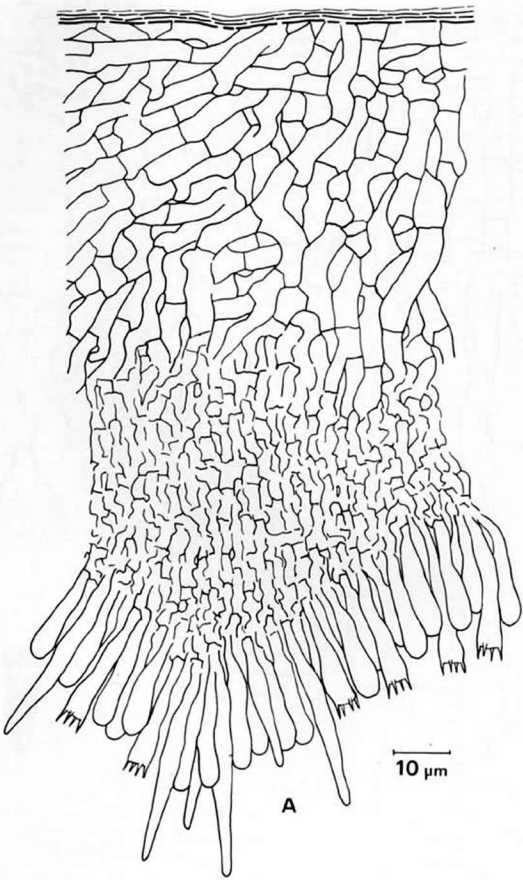
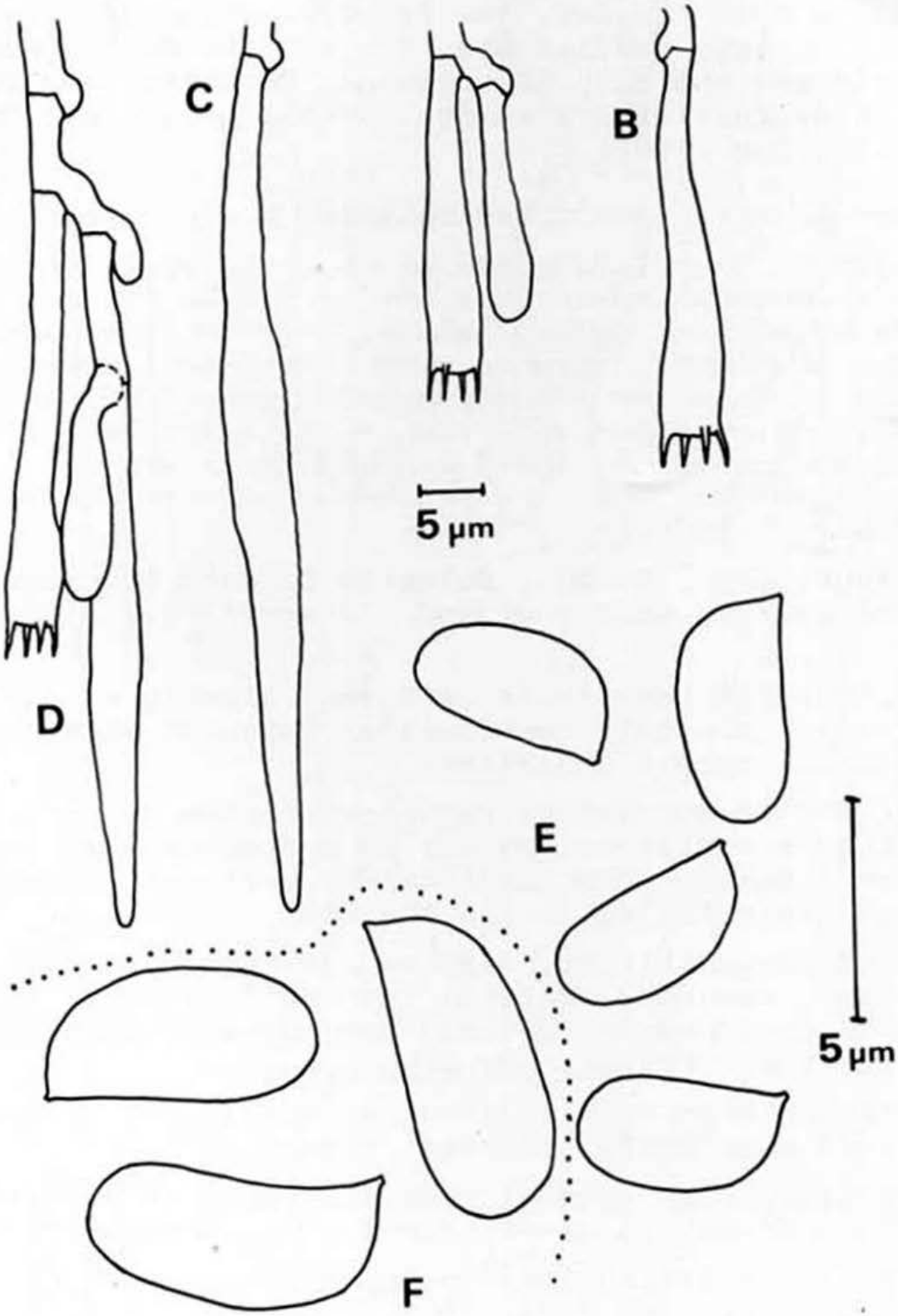


Fig. 9. *Phlebia caspica* A) section through fructification B) Basidia C) cystidium D) hymenial detail with basidium and cystidium E) spores. — Coll. N. Hallenberg 2189. *P. subochracea* F) spores. — Coll. N. Hallenberg 2152.


B
C
D
5 µm
E
F
5 µm

HABITAT AND DISTRIBUTION: On fallen branches and on a fallen trunk of *Fagus orientalis* and another deciduous tree. Golestan forest (NH 2189). Sang-deh (NH 2628 A, 2673, 2849, 2855, 2880).

REMARKS: This species is very close to *P. subochracea* (Bres.) Erikss. & Ryv. However, the fructification of *P. subochracea* is more or less reddish when dry and the aculei are more sparsely and unevenly distributed. Moreover, the spores of the latter species are larger (6—8X2.5—3.5 µm, Erikss., Hjortst., Ryv. 1980).

Sistotrema resinicystidium Hallenb. n. sp. (see fig. 10)

Fructificatio resupinata, effusa, dense adnate, tenuis, hypochnoides, minute tuberculata, hymenio albescenti — pallide ochraceo; systema hyphale monomiticum, hyphae fibulatae, 2—4.5 µm latae, parietibus tenuibus, distinctis, in subiculo laxe intertextae, partim materiam flavidam, resinosam continentes; cystidia submoniliformia, sinuosa, 20—40X4.5—8 µm, materiam flavidam, resinosam continentia, ± inclusa; basidia urniformia, 17—30X4—5 µm, basali parte usque ad 6 µm lata, 4—8 sterigmatibus; sporae ellipsoides, leves, tenuitunicatae, 4—4.5X 2—2.8 µm, non-amyloides.

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On brown-rotted wood of *Quercus* on the ground/ 1978—04—27/ N. Hallenberg 2105.

FRUCTIFICATION resupinate, effused, closely adnate, thin, hypochnoid, minutely tuberculate; hymenium whitish — light ochraceous; margin indistinct.

HYPHAL SYSTEM monomitic; hyphae with clamps, 2—4.5 µm wide, with thin but distinct walls; in subiculum very loosely interwoven; partly with a yellowish, resinous content; lots of crystalline material in the context.

CYSTIDIA submoniliform, sinuose, 20—40X4.5—8 µm, with a yellowish, resinous content, turning dark brown in sulfo-vanilline, embedded or slightly projecting, often connected with the resin-filled, subicular hyphae.

BASIDIA urniform, 17—30X4—5 µm, basal part up to 6 µm wide, with 4—8 sterigmata and basal clamp.

SPORES ellipsoid, adaxial side flattened or a little convex, smooth, thin-walled, 4—5.5X2—2.8 µm, non-amyloid.

HABITAT AND DISTRIBUTION: On brown-rotted wood of *Quercus*. Golestan forest (NH 2104, 2105, 2466).

REMARKS: *S. resinicystidium* is easily distinguished from the other species in *Sistotrema*, due to the peculiar cystidia and the resinfilled subicular hyphae. Nevertheless, it finds a natural position in the vicinity of *S. coroniferum* (v. Höhn. & Litsch.) Donk.

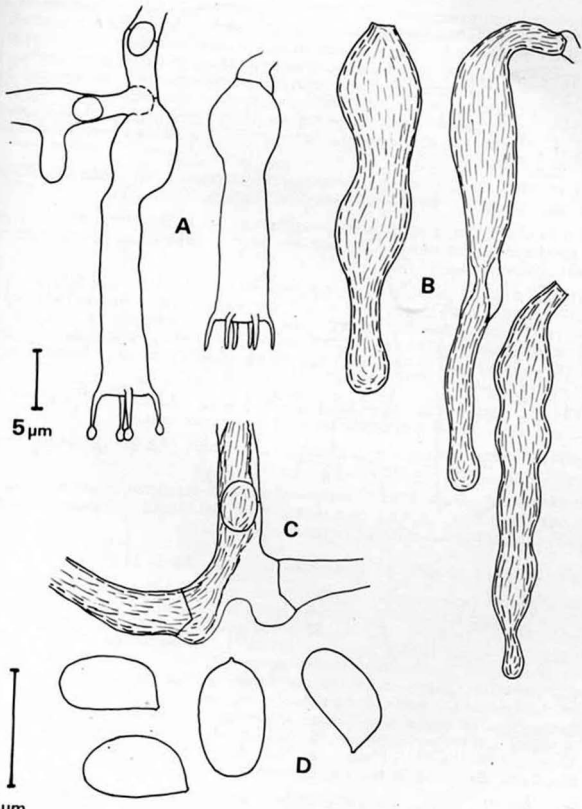


Fig. 10. *Sistotrema resinicystidium* A) basidia B) cystidia C) subicular hyphae D) spores. — N. Hallenberg 2105.

Sistotrema suballantosporum Hallenb. n. sp. (see fig. 11)

Fructificatio resupinata, effusa, pellicularis, tenuis, hymenio levi, cremeo — pallide ochraceo, margine albescenti, arachnoide; systema hyphale monomiticum; hyphae fibulatae, in subiculo laxe intertextae, 3.5—5.5 µm latae, parietibus crassescentibus, fibulis ampullatis, interdum in modum striarum conjuncta, in subhymenio tenuitunicatae, 2.5—4 µm latae, materiam oleosam continentes; basidia urniformia, 14—30X 4.5—5.5 µm, basali parte 5.5—6.5 µm lata, 4—8 sterigmatibus; sporae suballantoides — subfusoides, leves, tenuitunicatae, 7—9X2—2.5 µm, non-amyloides.

HOLOTYPUS Iran, Gorgan, Golestan forest/ On decayed wood on the ground/ 1978—04—26/ N. Hallenberg 2019.

FRUCTIFICATION resupinate, effused, pellicular, thin; hymenium smooth, cream-coloured — light ochraceous; margin whitish, cobwebby.

HYPHAL SYSTEM monomitic; hyphae with clamps; subicular hyphae rather thick-walled, 3.5—5.5 µm wide, with ampullate clamps, sparsely branched, loosely interwoven, sometimes united in strands running parallel to the substrate; subhymenial hyphae thin-walled, 2.5—4 µm wide, with abundant oil drops; hymenium athelioid.

BASIDIA urniform, 14—30X4.5—5.5 µm, basal part 5.5—6.5 µm wide, with 4—8 sterigmata and basal clamp.

SPORES suballantoid—subfusoid, smooth, thin-walled, 7—9X 2—2.5 µm, non-amyloid.

REMARKS: *S. suballantosporum* is well distinguished from the other species in the genus by the pellicular fructification and the narrow, suballantoid spores.

Trechispora dimitica Hallenb. n. sp. (see fig. 12)

Fructificatio resupinata, effusa, laxe adnata, hypochnoides, valde fragilis, rhizomorphae adsunt; systema hyphale dimiticum; hyphae sceleticae effibulatae, 2—2.5 µm latae, crassitunicatae, cyanophilae; hyphae generatoriae 1.3—2 µm latae, tenuitunicatae, in rhizomorphis fibulis ampullatis instructae, in subhymenio fibulis usitatis; in contextu crystalla acicularia, permulta, forma ad instar stellarum aggregata; aleuriosporae frequentes, subglobosae, tenuitunicatae, leves, 4—5X3.5—4.5 µm, fibula basali instructae, in ramis hyphalibus, angustis, 0.8—1 µm latis, procreatae; basidia breviter cylindracea, 9—13X3.5—4 µm, 4 sterigmatibus, basibus interdum biradicatis (pleurobasidia); sporae ellipsoides, asperulatae, adaxiali parte saepe levi, tenuitunicatae, 3—4X2.3—2.5 µm, non-amyloides.

HOLOTYPUS: Iran, Gorgan, Golestan forest/ On a fallen branch/ 1978-05-01/ N. Hallenberg 2328.

FRUCTIFICATION resupinate, effused, loosely adnate, very brittle; hymenium whitish, farinose, discontinous; subiculum loosely cobwebby; rhizomorphs present; margin indistinct.

HYPHAL SYSTEM dimitic; skeletal hyphae with false septa, 2—2.5 µm wide, thick-walled, forming the major part of the rhizomorphs, sometimes connected with a thin-walled hypha by a clamp, walls stained by cottonblue; generative hyphae with clamps, thin-walled, 1.3—2 um wide, in rhizomorph hyphae with ampullate

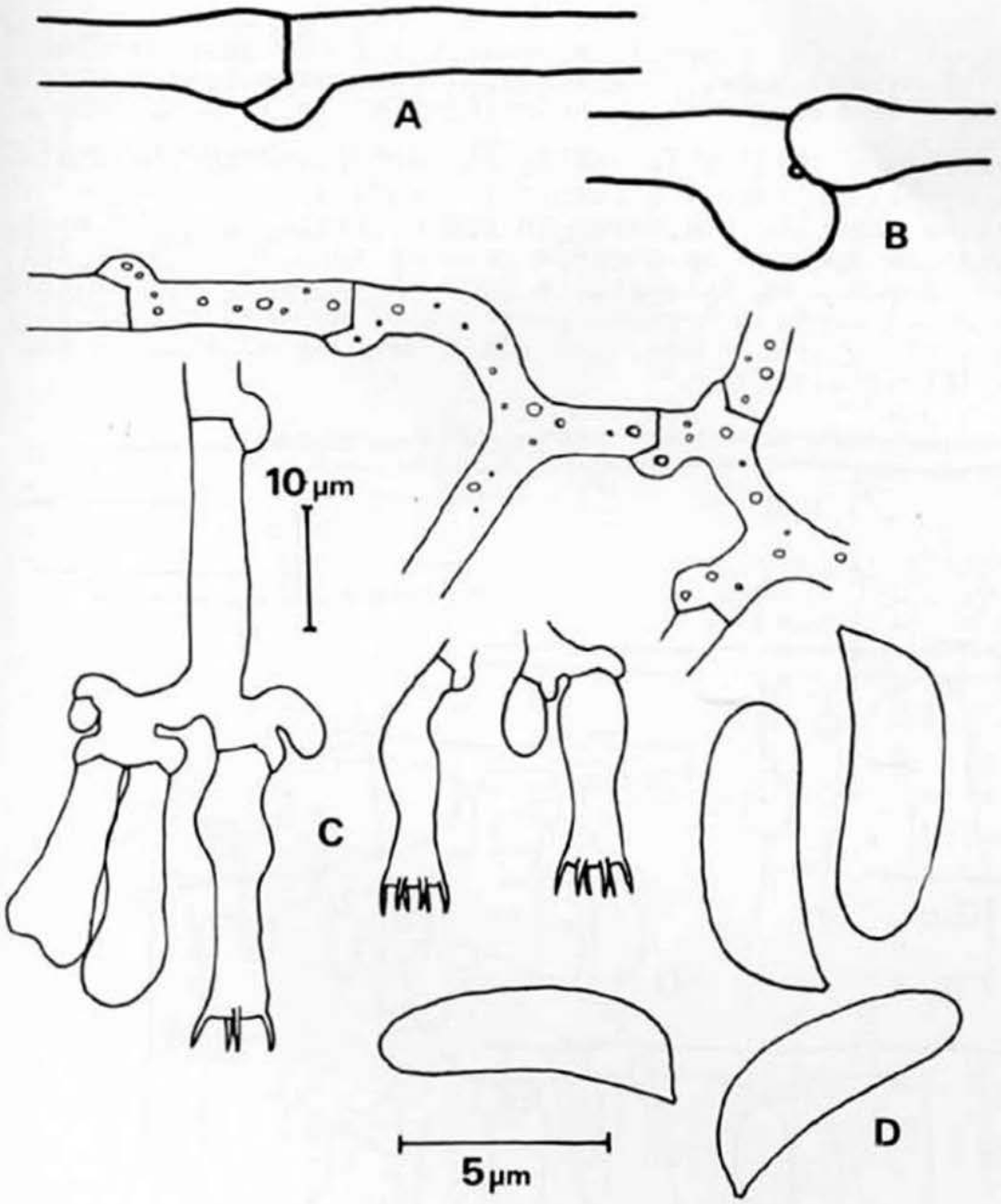


Fig. 11. *Sistotrema suballantosporum* A) subicular hyphae B) subhymenial hyphae C) hymenial details with basidia D) spores. — Coll. N. Hallenberg 2019.

clamps, subhymenial hyphae with ordinary clamps. Numerous needle-shaped crystals in the context grouped in star-like structures.

ALEURIOSPORES frequent in the context, smooth, thin-walled, subglobose, 4—5X3.5—4.5 µm with basal clamp, produced on narrow hyphal branches, 0.8—1 µm wide.

BASIDIA short-cylindrical, 9—13X3.5—4 µm, with 4 sterigmata and basal clamp, mostly developed on hyphal strands, sometimes pleurobasidia formed.

SPORES ellipsoid, asperulate, except for the adaxial side which is often smooth, thin-walled, 3—4X2.3—2.5 µm, non-amyloid.

REMARKS: This species is easily characterized by the dimitical hyphal system, the frequent aleuriospores and the star-like crystal structures in the context. Hitherto only one dimitic species in *Trechispora* has been found viz. *T. pallido-aurantiaca* Gilberts. & Bud. which, however, differs by coloured context hyphae, presence of hyphoid cystidia, absence of aleuriospores, and basidiospores of a different shape (Liberta 1973).

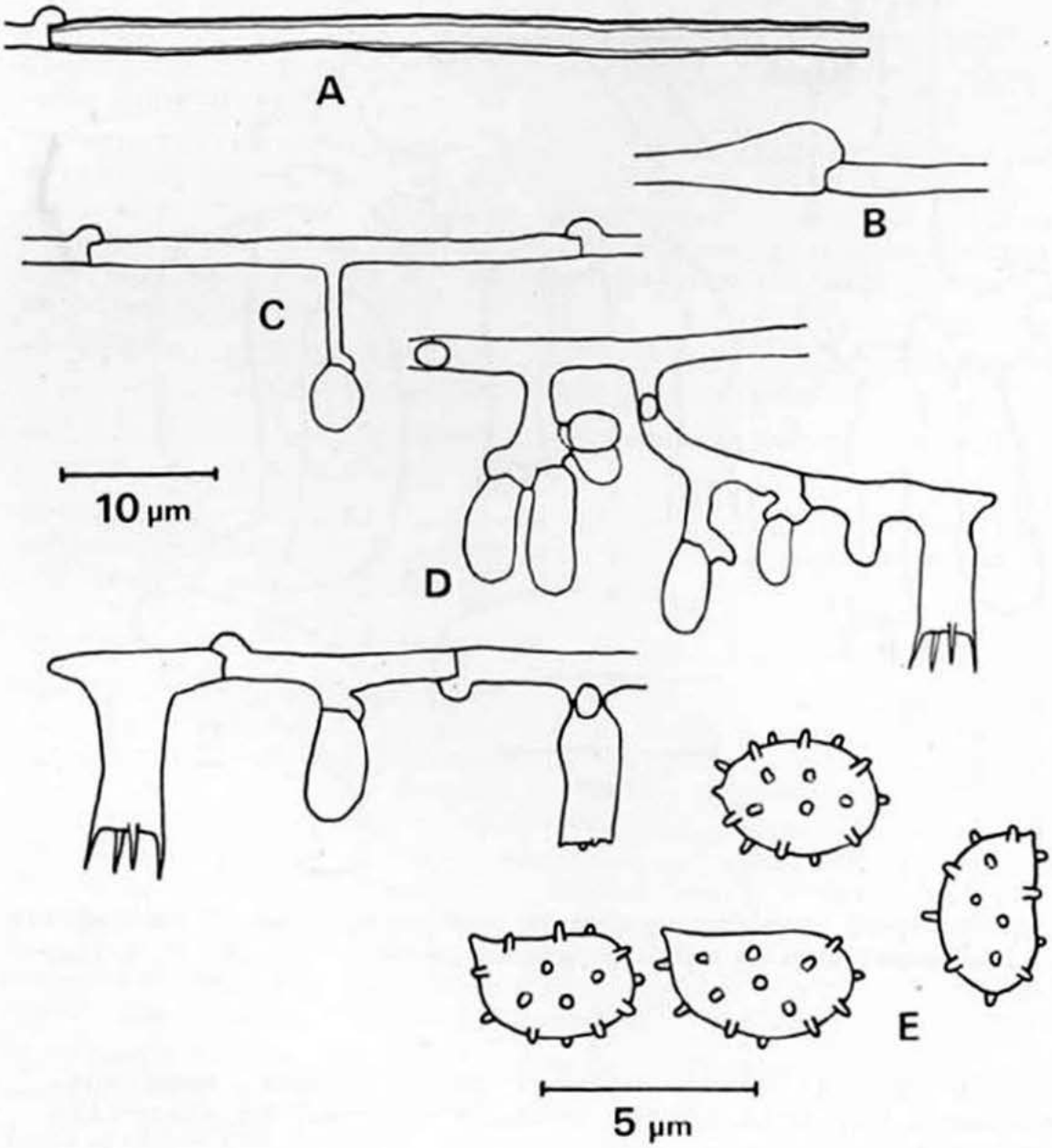


Fig. 12. *Trechispora dimitica* A) skeletal hypha B) generative hypha with ampullate clamp C) aleuriospore-formation D) hymenial details with basidia E) spores. — Coll. N. Hallenberg 2328

Athelia sp. (see fig. 13)

SPECIMEN: Iran, Gorgan, Golestan forest/ On a fallen branch of a deciduous tree/ 1978—05—08/ N. Hallenberg 2588.

FRUCTIFICATION resupinate, effused, thin, pellicular, whitish.

HYPHAL SYSTEM monomitic; basal hyphae thin- to moderately thick-walled, 2.5—4.5 µm wide, with scattered clamps, walls cyanophilous; subhymenial hyphae thin-walled, 2.5—3.5 µm wide, without clamps.

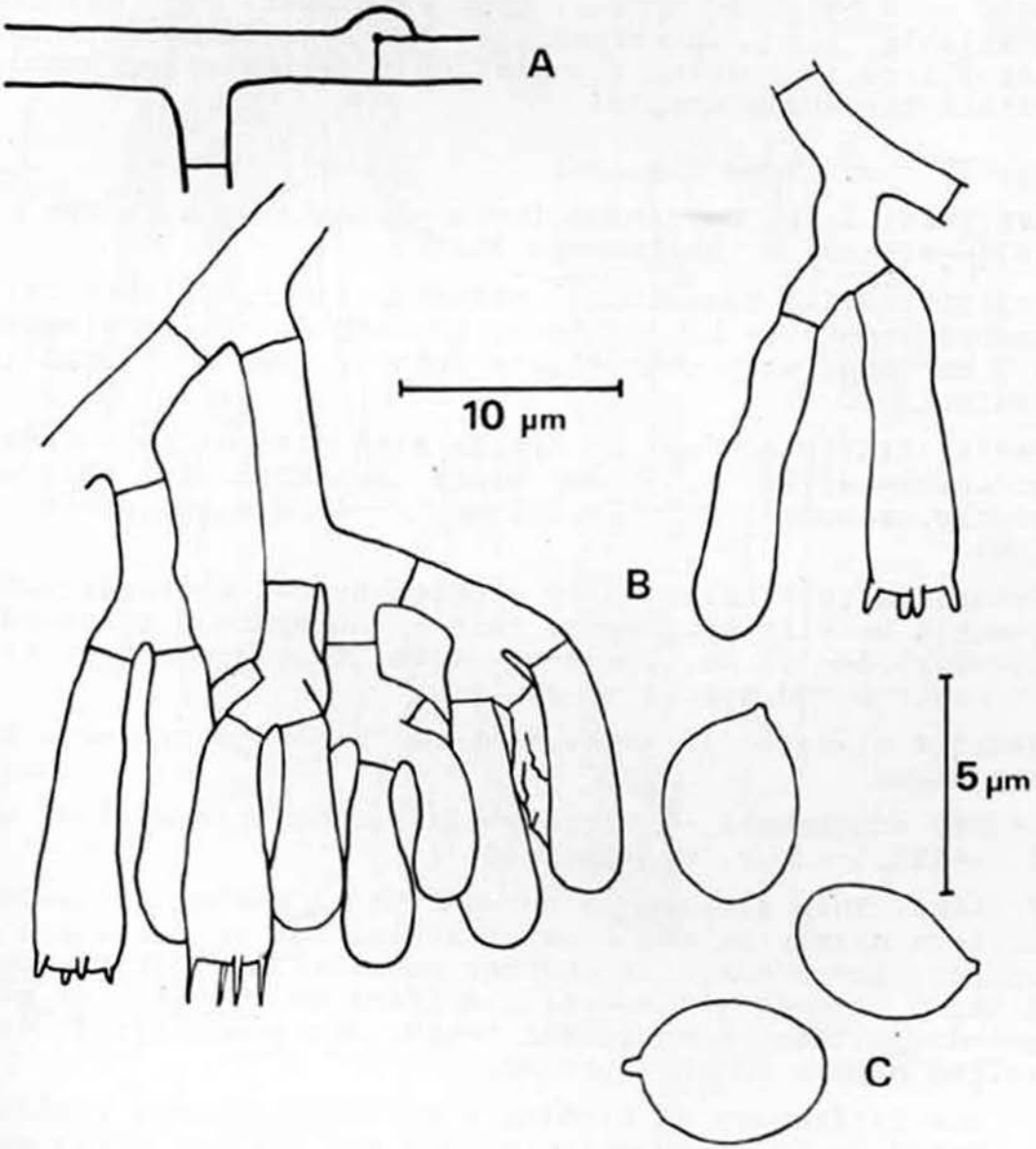


Fig. 13. *Athelia* sp. A) basal hypha B) hymenial details with basidia C) spores — Coll. N. Hallenberg 2588.

CYSTIDIA none.

BASIDIA 12—18X4—5 µm, with 4 sterigmata, 3—4 µm long, and without basal clamp.

SPORES broadly ellipsoid, thin-walled, smooth, non-amyloid, 4—5X3—3.5 µm.

REMARKS: This specimen belongs to the *A. epiphylla*-complex but differs by the broadly ellipsoid spores and the smaller basidia. *A. subsphaerospora* Jül. in herb. (see also Eriksson & Ryvarden, 1973, p. 131) comes very close but differs by somewhat narrower basidia and slightly smaller spores. Taxonomic conclusions about these specimens, with broadly ellipsoid — subglobose spores, must wait until more material is available. Also, interfertility tests would be of greatest importance in solving the difficult delimitation problems within the whole complex.

Mycoacia sp. (see fig. 14)

SPECIMEN: Iran, Gorgan, Golestan forest/ On a fallen branch/ 1978—04—29/ N. Hallenberg 2139.

FRUCTIFICATION resupinate, effused, adnate, rather thin, membranaceous — crustaceous, odontioid, aculei slender, ab. 0.2 mm long, with penicillate apices, cream-coloured; margin indistinct.

HYPHAL SYSTEM monomitic; hyphae with clamps; in context rather thick-walled, 1.5—2 µm wide; in subhymenium thin-walled, richly branched, densely united, 2—4 µm wide, non-cyanophilous.

PSEUDOCYSTIDIA irregularly widened hyphal endings, subsequently heavily encrusted, thin — moderately thick-walled, 50—75X5.5—7.5 µm, sulfo-negative. They are frequently found in centres and apices of aculei.

BASIDIA clavate, 13—25X4.5—6 µm, with 4 sterigmata and basal clamp.

SPORES subglobose — broadly ellipsoid, thin-walled, smooth, 3.5—4X2.5—3 µm, non-amyloid.

REMARKS: This species is not a typical member of *Mycoacia*. It differs mainly by the shorter aculei and in the shape of the spores. *Sarcodontia* is another possibility, but the only species, *S. crocea* (Fr.) Kotl., differs by the lack of encrusted pseudocystidia, much larger teeth, and specialized, very thick-walled hyphae in the context.

The difficulty in finding a suitable generic position has prompted me to delay describing a new species until more material is available and the extent of morphological variation is better known.

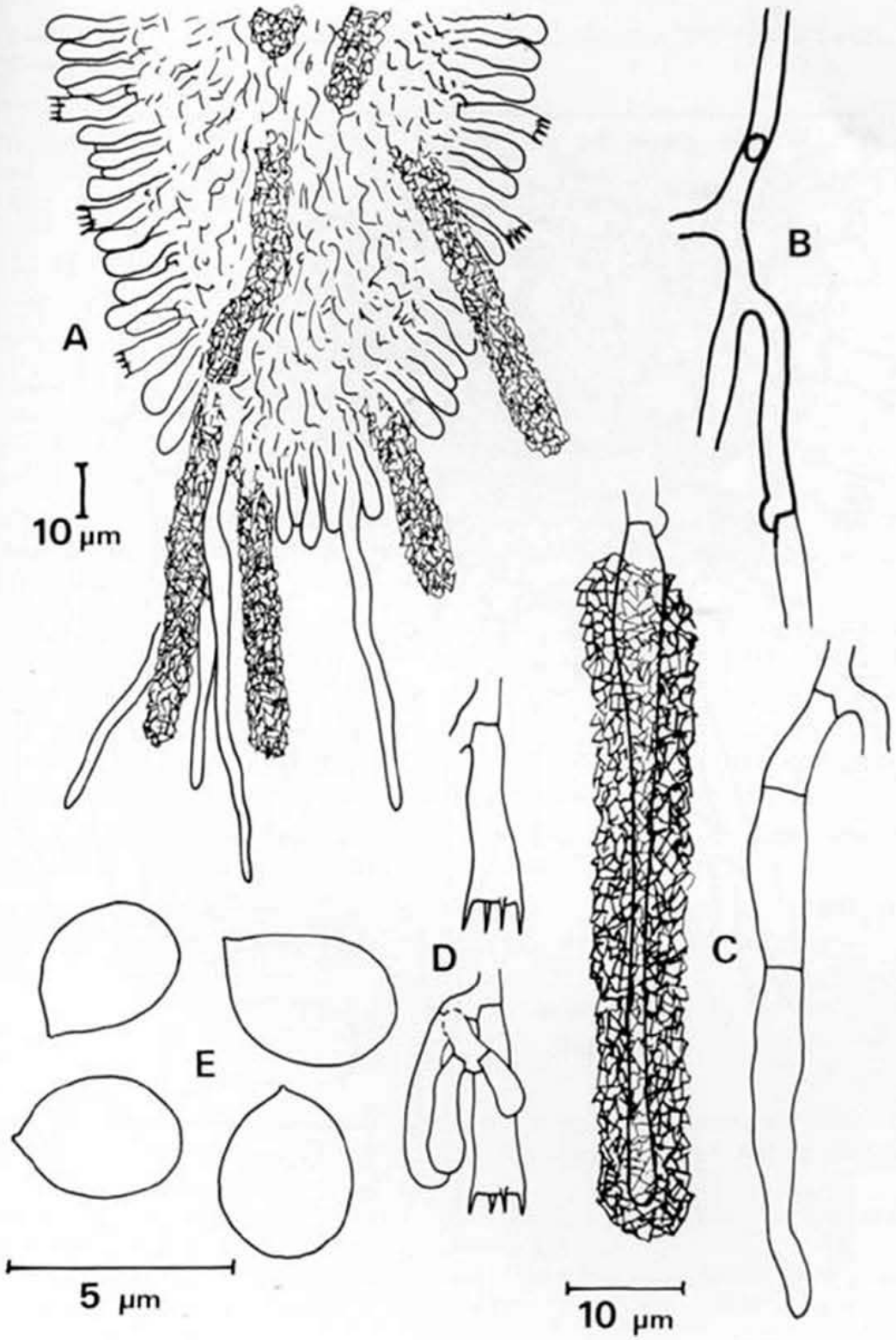


Fig. 14. *Mycoacia* sp. A) section through aculeus B) context hyphae C) pseudocystidia D) basidia E) spores. — Coll. N. Hallenberg 2138.

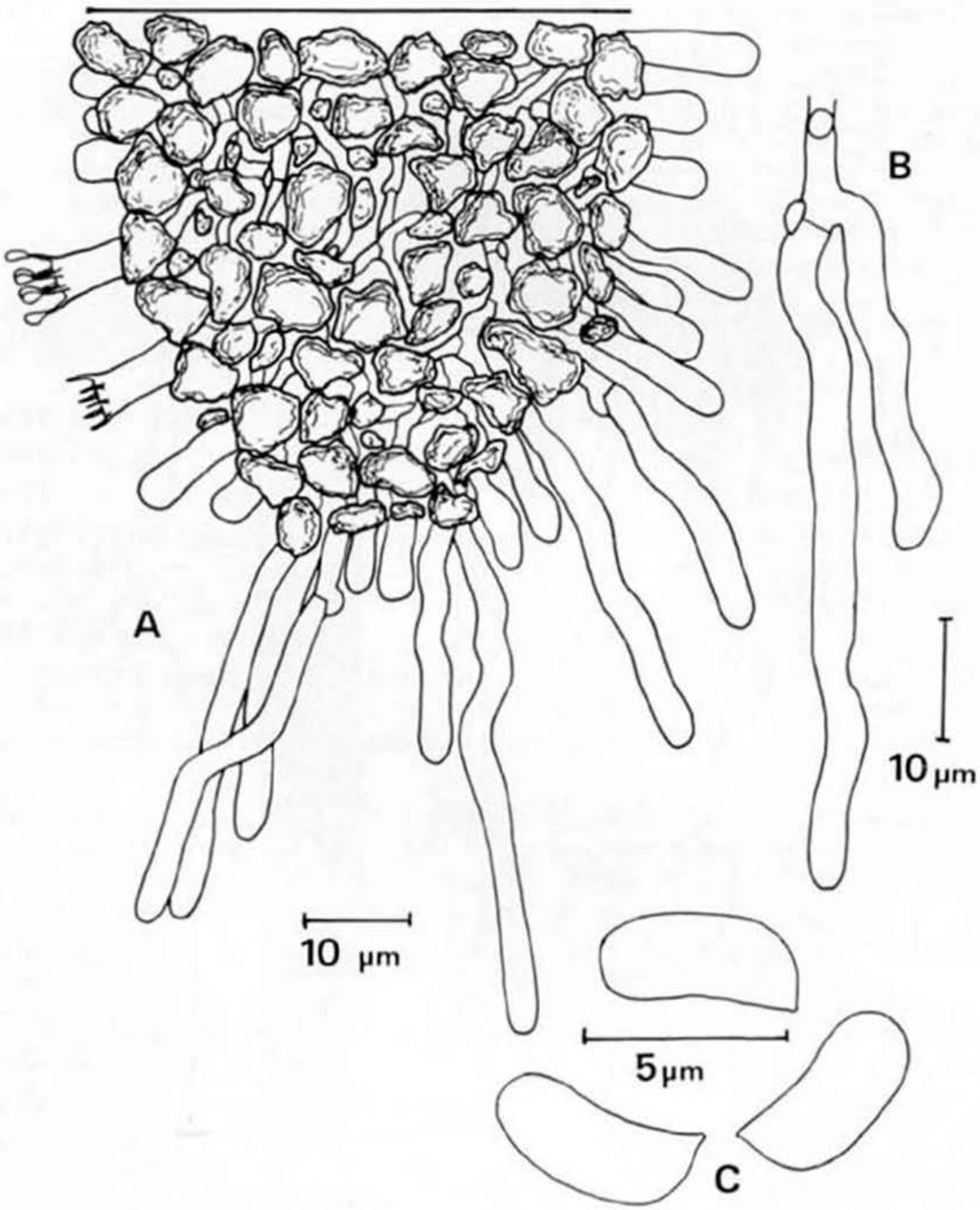


Fig. 15. *Sistotrema brinkmannii* s.l. A) section through aculeus B) widened hyphal ends C) spores. — Coll. N. Hallenberg 2325.

Sistotrema brinkmannii s.l. (see fig. 15)

SPECIMEN: Iran, Gorgan, Golestan forest/ On a fallen log/ 1978—05—01/ N. Hallenberg 2325.

This specimen differs from typical *S. brinkmannii* (Bres.) John Erikss. by the long, slightly widened hyphal ends, 30—65X2.5—3.5 µm, protruding from the apices of aculei. In the context there is abundant crystalline material.

ACKNOWLEDGEMENTS

I am much indebted to prof. J. Eriksson, Göteborg, for many valuable advices and discussions; to prof. J. Boidin, Lyon, for advices regarding the genus *Confertícium*.

The field-work in Iran was realized thanks to the generous help from Dr. D. Ershad and B. Danesh-Pashuuh at "Plant Pests and Diseases Research Institute", Tehran.

Dr. Paule Lanquetin, Lyon, has kindly isolated monosporous cultures from fructifications of *Peniophora pseudonuda*, which were sent to Lyon by mail from Iran.

T. Hallingbäck, Göteborg has made the photos, S. Carpenter, Göteborg, has checked the English and prof. Å. Frid, Göteborg, has corrected the Latin diagnosis. I greatly acknowledge their help.

Financial support was given by the foundations of Anna and Gunnar Vidfelt, Carl Stenholm, and Wilhelm and Martina Lundgren.

Finally, I want to thank the Curators of the Herbaria BPI, K, LY, P, and UPS for having kindly placed material at my disposal.

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MYCOTAXON

Vol. XI, No. 2, pp. 476-484 July-September 1980

A NEW SPECIES AND A NEW VARIETY OF PSILOCYBE FROM NORTH AMERICA

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SUMMARY

A new species from the Northwestern U.S.A., and a new variety from the Northwestern and Eastern U.S.A. are herein described. Both fungi exhibit the characteristic bluing feature shared by many of the hallucinogenic species in the genus *Psilocybe*. The new species contains psilocybin and psilocin and the new variety contains psilocybin but no psilocin.

INTRODUCTION

With the increased attention focusing on the hallucinogenic species of *Psilocybe* it is not surprising that new species and varieties are being discovered throughout the world. Guzmán and Vergeer (1978) listed 390 names of *Psilocybe* of which 210 are excluded taxa, and of which 73 are hallucinogenic. More recently, Guzmán (1978A), Guzmán and Pollock (1978,1979), Guzmán and Smith (1978), Guzmán and Horak (1978), and Guzmán and Lopez (in Guzmán et al., 1979) described several species, the majority having hallucinogenic properties.

The first decisive and thorough taxonomic survey of the bluing species in the genus *Psilocybe* was authored by Singer and Smith (1958). Heim (in Heim and Wasson, 1958) presented a study of the hallucinogenic species from Mexico,

and later (in Heim et al., 1967) described additional hallucinogenic species from many regions of the world, including *Psilocybe semilanceata* (Secr. ex Fr.) Kumm., a species originally thought to be non-bluing and therefore excluded from the Singer and Smith monograph. Peck (1912), who reported *P. semilanceata* from the Eastern United States, studied the species in the genus *Psilocybe* endemic to New York State, though many of the species considered by him now belong to other genera (such as *Naematoloma* and *Psathyrella*). Guzmán et al (1976) presented a list of the known hallucinogenic species of *Psilocybe* from the northwestern region of North America where they seem very common. Recently, Stamets (1978) surveyed a majority of the known species in the genus from North America, including those previously described by Earle, Murrill, Kauffman, Ola'h and Heim, and Smith.

In the present paper a new species from the Pacific Northwest and a new variety from both the Northwestern and Eastern United States are described. Both fungi contain psilocybin and share a strong taxonomic relationship to other known hallucinogenic species.

Psilocybe cyanofibrillosa Guzmán and Stamets, sp. nov.

Figs. 1,3, & 4

Pileus 14-35 mm latus, conicus demum convexus, dein planus, laevis, viscidus, glaber udo striato, pellicula separabili intructus, flavido-brunneus, hygrophanous albido-alutaceus. Lamellae adnatae, pallidae demum brunnae. Stipe 30-70 x 1.5-4 mm, strictus, deorsum soride vinaceo brunnea vel pallide griseo-fibrillosa vel cyanofibrillosa. Sporis (9-) 9.5-11 (-12) x (5.5-) 6-6.6 (-7.1) µ, ellipsoideis, cocainus brunneolus. Pleurocystidiis nullis. Cheilocystidiis 22-33 x 5.5-7 µ, hyalinis, sublageniform. Cuticula pileorum gelatinosa. Gregariis vel caespitose in scobis substratum. Typus: Stamets 79-8, (ENCB), South King County, Washington, U.S.A.

Pileus 14-35 mm in diameter, conic to broadly convex, and eventually plane in age, deep chestnut brown, strongly hygrophanous, fading to pale tan to light yellowish brown, viscid when moist from a separable gelatinous pellicle. Lamellae adnate or adnexed to shortly subdecurrent, light grayish when young to purplish brown with age, moderately broad and with pallid edges. Stipe 30-70 x 2-4 mm, flex-

uous or straight, sometimes curved at the base, equal or enlarged downwards, longitudinally striate, fibrous, hollow to stuffed with a yellowish pith; surface light tan to yellowish brown, covered with fine light grayish fibrils that turn bluish in age or when touched. Veil copious at first, whitish and cortinate, leaving fibrillose remnants especially on the upper parts of the stipe, but not forming an annulus. Context brownish in pileus and stipe, mildly bluish when bruised.

Spores (9-) 9.5-11 (-12) x (5.5-) 6-6.6 (-7.1)μ, subelliptic in both face and side view, chocolate brown, thick wall, with a distinct apical germ pore. Basidia 22-28 x 6-9.5 μ, hyaline, ventricose or subpyriform, frequently with a median constriction, 4-spored or sometimes 2-spored, with sterigmata up to 5 μ long. Pleurocystidia absent. Cheilocystidia 22-33 x 5.5-7 μ, abundant, forming a sterile band at the edge of the lamellae, hyaline, fusiformlanceolate, sometimes subpedicellate, with an elongated neck, 1-1.5 μ broad, frequently irregularly incrusted on some walls. Epicutis formed by a thick gelatinous hyaline layer, with more or less parallel hyphae, no more than 4 μ in diameter. Hypodermium hyaline, with parallel filamentous hyphae, up to 20 μ in diameter, sometimes irregularly incrusted. Lactiferous hyphae 5-10 μ broad, commonly colored chocolate brown or pallid yellowish in the hypodermium. Clamp connections present, but not common.

Habitat. Growing in large colonies, caespitosely or subcaespitosely, sometimes scattered in small groups, in decayed urea-enriched fir sawdust during the fall.

Material studied. U.S.A., Washington, South King County.

Stamets 79-8(Type, ENCB); *Stamets 79-15* (ENCB); *Stamets 78-20* (ENCB); *Whitcher* (ENCB).

Discussion. This species is delimited from *P. baeocystis* Sing. & Smith emend. Guzmán (Guzmán, 1978, B) by its habit and the even non-undulated, non-incurved margin. Microscopically, this new taxon differs from *P. baeocystis* in the form of the spores, not being asymmetrical, and in their size ((8.5-) 9.5-13.7 (-17) x 5.5-6.6 (-7.1) μ in *P. baeocystis*). *P. cyanofibrillosa* is also close to *P. cya-*

nescens Wakef. but is easily distinguished from it by the lack of pleurocystidia. *P. pelliculosa* (Smith) Singer & Smith is another related species. However, the tendency of the pileus to expand to plane, the more fibrillose and bluing stipe, and the dark color of the spores (yellowish brown in *P. pelliculosa*), and the incrusted reddish brown pigmented hypodermium readily distinguishes *P. cyanofibrillosa* from that species. Further, the scarcity of clamp connections and the presence of lactiferous hyphae seem yet another set of characters typifying *P. cyanofibrillosa*.

This species is named for the fibrils adorning the stem, initially grayish and soon becoming bluish in age, or when injured.

Chemistry. Methanolic extracts of 3 collections of *Psilocybe cyanofibrillosa* were analyzed by high performance liquid chromatography using a reversed phase μC_{18} column and uv quantification at 254 nm. The solvent was 75% water; 25% methanol with 0.05M heptanesulfonic acid at pH 3.5.

Both psilocybin and psilocin were detected. The type collection, PS 79-8, contained 0.05 mg psilocybin per gram dry weight and 1.4 mg/g psilocin.

Two other collections made during the fall of 1979 were analyzed. One collection contained 0.31 mg/g psilocybin and 0.62 mg/g psilocin. The other contained 2.1 mg/g psilocybin and 0.4 mg/g psilocin. The observed variation of psilocybin and psilocin levels from one collection to another is typical of several species in the genus and leads us to the conclusion that neither the level of psilocybin and psilocin nor the ratio of the two can be utilized as a chemotaxonomic tool. Further, when we analyzed two herbarium collections of *Psilocybe cyanofibrillosa* from 1978, we found that they had lost most of their psilocybin and psilocin. We thus conclude that collections should be analyzed promptly. However, activity can be retained for at least two years by drying or freeze drying the collections, sealing them in plastic, and storing frozen.

Additional confirmation of the presence of indolealkylamines was obtained by Thin Layer Chromatography (TLC) with n-Butanol/Acetic Acid/Water (12/3/5). Developed plates were examined under short-wave ultraviolet light, then sprayed with Ehrlich's reagent (10% p-dimethylaminobenzaldehyde (pDAB) in concentrated hydrochloric acid diluted

1 to 4 with acetone). The type collection and one other collection from 1979 were analyzed. *Psilocybe cyanofibrillosa* produced 7 separate spots: R_f 0.18, a brownish spot identical to psilocybin in both R_f and color; R_f 0.33, a sky-blue spot of an unidentified compound; R_f 0.42, a blue-purple spot identical to psilocin in R_f and color; as well as four additional spots visible under UV but only slightly resolved by pDAB - R_f 0.5; R_f 0.65; R_f 0.83 and R_f 0.93.

Based on an examination of *Psilocybe* in the Pacific Northwest, we have found the chromatographic patterns of each species to be of potential chemotaxonomic use. The intensity of each chromatographic spot varies from collection to collection, but the number of and location of spots is fairly constant within each species. It is interesting to note that microscopically *Psilocybe cyanofibrillosa* is quite similar to *Psilocybe baeocystis* Singer and Smith emend. Guzmán. Their TLC chromatographic patterns are also quite similar.

Psilocybe liniformans Guzmán & Bas,
var. *americana* Guzmán & Stamets, var. nov.

Figs. 2 & 5

A var. typus differt lamellae margine nulla elastica. Sporis et cheilocystidiis ut in var. typus. Pratensis ad terram. Typus: Stamets 79-12, November 1979, Oyster Bay Road, Thurston County, Olympia, Washington, U.S.A., (ENCB).

This variety is very close to the type variety, but differs in the absence of the gelatinous layer on the edge of the lamellae, as well as in the terricolous habitat. The other macroscopic and microscopic features are the same, even the bluing reaction.

P. liniformans var. *liniformans* was described (Guzmán & Bas, 1977) from the Netherlands, growing on dung in a pasture. The gelatinized edge of the lamellae is the most prominent feature delimiting it from other similar species. The new variety described here is known only from Washington, Oregon, and Michigan in the U.S.A.. It is close to *P. callosa* (Fr. ex Fr.) Quel. and *P. semilanceata* (Secr. ex Fr.) Kumm., but differs from the former in the size of the spores, (9.5-) 10-12 (-14.5) x (6.5-) 7-8.5 µ and in the size of the cheilocystidia, 20-45 x 4-7 µ in that species. From *P. semilanceata* this species differs in its

non-umbonate pileus and in its wider spores (x (6-) 7-8 µ in *P. semilanceata* and x 7.5-10 µ in *P. liniformans*.)

Habitat. Scattered on soil in a field.

Material studied. U.S.A., Michigan, Cheyboygan, *Smith 35963* (MICH); Washington, Thurston County, Olympia, *Stamets 79-12* (Type, ENCB); Oregon, Corvallis, *Morgan* (Nov. 1979) (ENCB).

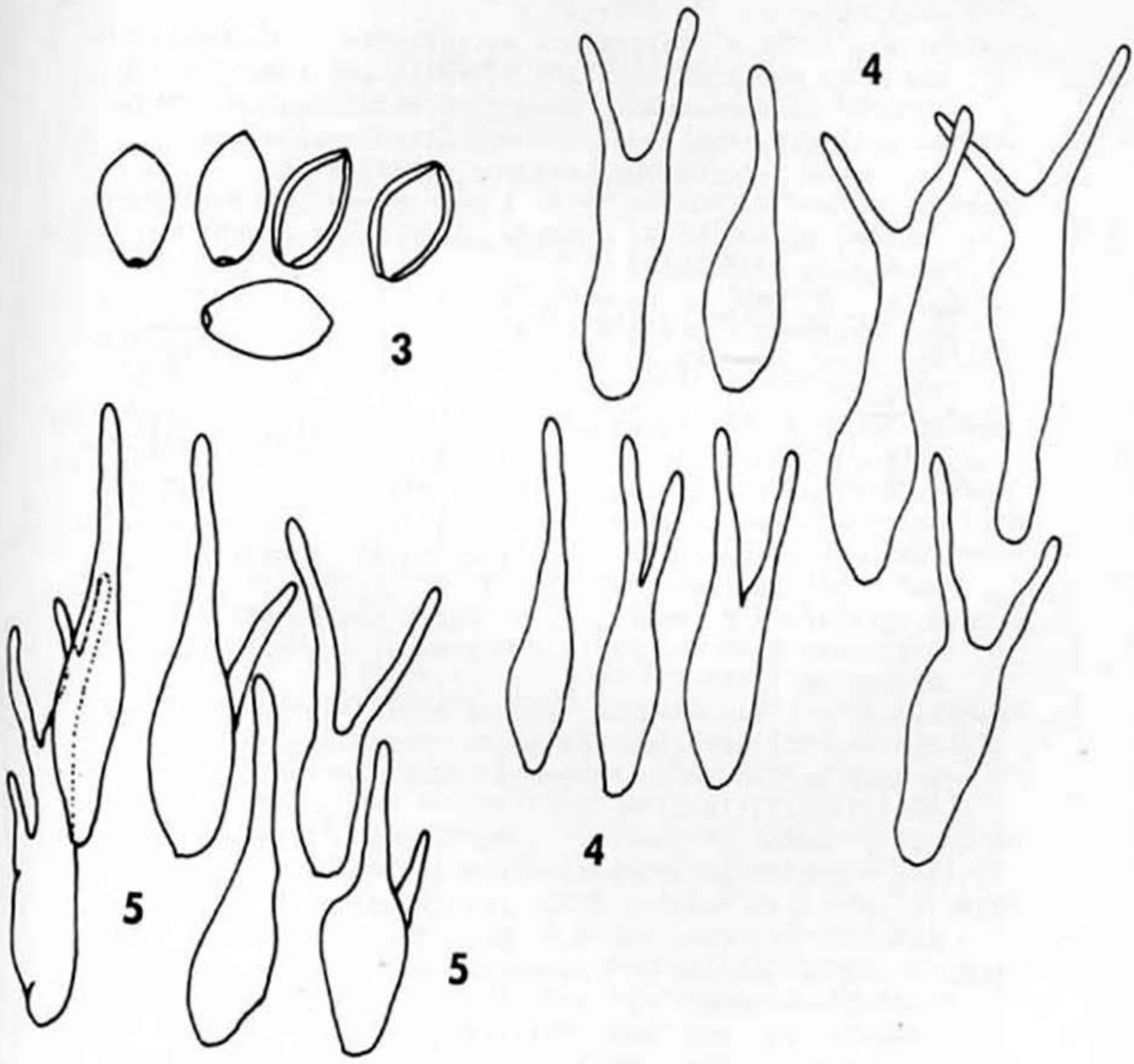
Chemistry. Methanolic extracts of 7 collections of *Psilocybe liniformans* var. *americana* were analyzed by high performance liquid chromatography. Psilocybin but no psilocin was detected. The type collection, PS 79-12, contained 5.9 mg psilocybin per gram dry weight. The other collections contained levels of psilocybin ranging from 6.5 mg/g to 12.8 mg/g (average 8.9 mg/g). The high performance liquid chromatograms of *Psilocybe liniformans* var. *americana* are quite similar to those of *Psilocybe semilanceata* (Secr. ex Fr.) Kumm. Herbarium samples of these two species both appear to retain their activity, unlike most other *Psilocybe* species analyzed to date.

Thin layer chromatography of extracts of *Psilocybe liniformans* var. *americana* produced 6 spots: R_f 0.26, identical to psilocybin; R_f 0.31, the same color as psilocybin; R_f 0.34, a light brown, barely visible; R_f 0.44, a sky blue; R_f 0.55, a light blue; R_f 0.94, a brown color. No psilocin was detected. The TLC Chromatographic pattern is very close to that of *Psilocybe semilanceata*.

ACKNOWLEDGEMENTS

One of the authors (Guzmán) expresses his thanks to Consejo Nacional de Ciencia y Technologia (CONACYT) at Mexico City for the grant enabling the continuation of the research on *Psilocybe*. The authors are indebted to Dr. Alexander Smith for providing specimens, as well as Steve Whitcher, Steve Morgan and Eric Iseman, for supplying collaborative collections. The authors are additionally appreciative of the help recieved by Dr. Alexander Smith in the advance proof-reading of the manuscript. Further, one of the authors (Stamets) would like to acknowledge the able assistance provided in the field by his wife, Cruz Stamets.

Figs. 1-2 1(above): *Psilocybe cyanofibrillosa* Guzman & Stamets, fruit bodies in the habitat (type). 2(below): *Psilocybe liniformans* var. *americana* Guzman & Stamets, fruit bodies in the habitat (type) (Photos - Stamets).



Figs. 3-5 *Psilocybe cyanofibrillosa*; 3: Spores; 4: Cheilocystidia (both from the type); 5: *Psilocybe liniformans* var. *americana*, cheilocystidia (type).

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MYCOTAXON

Vol. XI, No. 2, pp. 485-492 July-September 1980

NOTES ON PERITHECIAL DEVELOPMENT IN THE EUCERATOMYCETACEAE FAM. NOV. (LABOULBENIALES, LABOULBENIINEAE) AND HERPOMYCES (HERPOMYCETINEAE)

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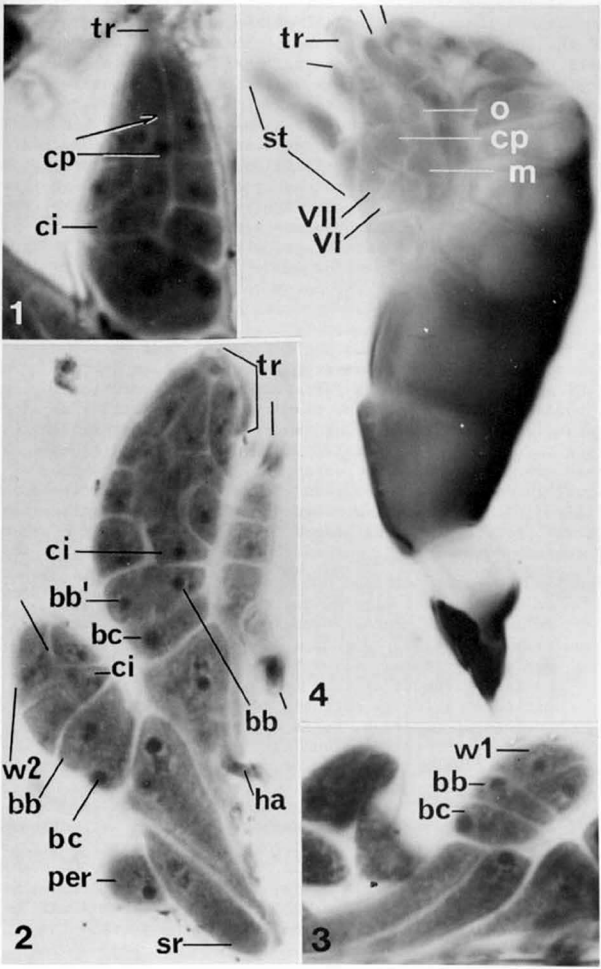
SUMMARY

The family Euceratomycetaceae has been established for those genera in the Laboulbeniales in which the stalk and secondary stalk cells of the perithecium are intercalary cells of a lateral appendage of the primary axis of the thallus. As in the other families of the Laboulbeniineae, which include all genera of the order except *Herpomyces*, the outer wall cells of the perithecium grow up around the carpogonium; by contrast, in *Herpomyces* (Herpomycetineae [Thaxt.] stat. nov.), the carpogonium grows upward between the rows of outer wall cells.

Although Thaxter illustrated the stalk appendage of *Euceratomyces terrestris* (Thaxt.) Thaxt. (pl. XXV, fig. 19, 1896), he did not mention it when he described this taxon as *Ceratomyces terrestris* in 1894. Study of additional material called his attention to this structure (1931), which he described as an accessory appendage arising from the outer, upper basal cell of the perithecium (a cell that he did not associate with the secondary stalk cell of such taxa as *Stigmatomyces baeri* [Knoch] Peyr.--designated *h* in pl. I, figs. 12, 13, 1896). Because of this appendage, he transferred the species to a new genus, although he did not remove it from the Ceratomyceteae.

The relationship of the stalk appendage to the cells of the young perithecium of *Euzodiomyces lathrobii* Thaxt. was shown by Cépède and Picard (pl. IV, fig. 5, 1909); however, they referred to the structure only as a lateral appendage of the perithecium. A greater understanding of the significance of this appendage was shown by Spegazzini (1912) when he indicated that the basal cell of the secondary axis of *Cochliomyces argentinensis* Speg. was laterally perithecigerous.

Figs. 1-3. *Herpomyces ectobiae* Thaxt. (on antennae of *Blattella germanica* [L.], Life Sciences Building, University of California, Berkeley, 1955; acetocarmine). 1. Perithecium in which lower left vertical row of outer wall cells consists of 4 cells and the other 3 rows have 3 cells each; carpogonium-initiating cell (*ci*) has produced upward extension that has emerged apically as a trichogyne (*tr*). Arrow indicates third septum in lower left wall row; nucleus in carpogonium (*cp*) is indicated by line. X 2475. 2. Young female thallus; 4-celled primary axis is at right (lines point to foot at base and dark upper end); tall secondary receptacle cells (*sr*) are produced by suprabasal cell of primary axis--they extend at their bases into haustoria (*ha*); 1-celled perithecial bud is at base of thallus (*per*); second perithecium has 2 tiers of outer wall cells (which are designated *w1*, *w2* in figures), subtended by 2 basal cells (*bb*, *bc*); *ci* cell is beginning to extend upward between the outer wall cells (upper edge indicated by line above); upper perithecium is 4-tiered; it bears a deteriorating trichogyne; its *ci* cell has produced 3 central upgrowths; cell *bb* has produced cell *bb'*. X 2070. 3. Portion of young female thallus showing perithecia with only 4 outer wall cells. X 2380. 4. *Euceratomyces terrestris* (Thaxt.) Thaxt. (on leg of *Lathrobium*, Kittery Point, Maine, R. Thaxter, August, 1895; acetocarmine). Immature thallus, showing manner in which perithecium develops from secondary axis terminating in stalk appendage (*st*); cells *VI* (perithecial stalk cell) and *VII* (secondary stalk cell) are intercalary cells of this axis. Carpogonium (*cp*) subtends trichogyne cell; first outer wall cell (*o*) is produced by basal cell *m*, formed from *VI*. Lines above indicate branches of primary axis of thallus. X 1900.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In his description of *Colonomyces*, Benjamin (1955) emphasized that the stalk cell of the perithecium is one of the intercalary cells of the secondary axis bearing the perithecium and that the terminal part of the axis extends beyond the mature perithecium as an appendage. However, he made no comparison with *Euzodiomyces*, which he had studied earlier (see Benjamin and Shanor, 1951). When Rossi (1977) established the new genus *Pseudoecteinomyces*, he recognized its relationship to *Cochliomyces*. His figs. 1 and 4 show the 3-celled secondary axis clearly; there is no indication of a stalk appendage extending beyond the solitary cell superposed upon the secondary stalk cell of the perithecium. With the exception of the numerous, short outer wall cells, the perithecium of *Pseudoecteinomyces* is very similar to that of *Stigmatomyces* in basic structure; however, the stalk in *Stigmatomyces* consists of only 2 cells, not 3. The perithecia of *Euceratomyces*, *Euzodiomyces*, *Colonomyces*, *Cochliomyces*, and *Pseudoecteinomyces* develop from a lateral appendage (which because it bears a perithecium is referred to as a secondary axis) in the same manner that the perithecium of *Ceratomyces* arises from the primary axis of the thallus (see Thaxter, 1896, pl. XXIV, figs. 4, 7); in addition, they are characterized by outer wall cells that are subequal in height and usually very numerous (this is considered to be a primitive characteristic). Consequently these 5 genera are being placed in a new family, the Euceratomycetaceae.

Familia Euceratomycetaceae nom. nov. Cellula pedicellaris et cellula pedicellaris secondaria perithecii sunt cellulae continentes appendicis lateralis ex axe primario thalli, appendice basim perithecii superante sed saepe caduca, cellulas 1 vel 2 ad latus exterius basis perithecii affixas relinquente. Perithecii paries exterior ex seriebus quattuor verticalibus cellularum constans, serie quaque ex cellulis brevibus quattuor vel pluribus altitudine subaequis composita. Receptaculum inferius infra perithecium ex cellulis plus quam duabus constans. Antheridia phialides sunt vel cellulae intercalares non speciales spermatia lateralia producentes.

Typus: *Euceratomyces* Thaxter, 1931, p. 343.

There are more than 2 cells, often very many, in the receptacle below the perithecium. As in the other families of the Laboulbeniales, the outer wall of the perithecium

consists of 4 vertical rows of cells. Phialides occur in all genera; in addition, lateral, exogenous spermatia are formed by undifferentiated intercalary cells of the appendages of *Euceratomyces* (additional observations will be reported in a later, general paper on the Laboulbeniales).

The perithecium in the Euceratomycetaceae develops like that of *Laboulbenia* and *Stigmatomyces* (see Thaxter, 1896). The carpogenic cell row extends upward from the secondary stalk cell; it terminates in a trichogyne. Three basal cells (*n*, *n'*, and *m*) are formed from the stalk cell (cell *VI*) and the secondary stalk cell (cell *VII*); each of the 3 cells produces 1 vertical row of outer wall cells; in addition, cell *n* produces a second row. These wall cell rows grow up around the carpogonial cell row (figs. 4, 5).

By contrast, the perithecial walls in *Herpomyces* are formed before the carpogonial upgrowth (figs. 1-3; cf. Tavares, 1965, 1966). Only *Herpomyces* has this characteristic and it is therefore being placed in the suborder Herpomycetineae. The remaining genera are being grouped in the suborder Laboulbeniineae because of the similarity of their perithecial development (an extensive discussion of their interrelationships will be published in a later paper).

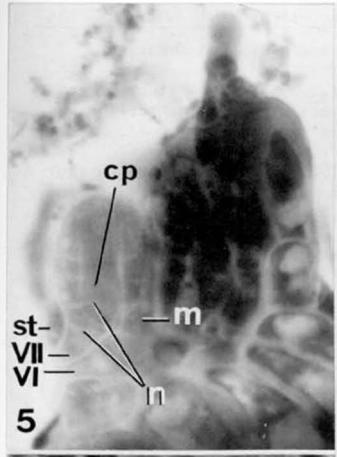
Both *Herpomyces* and the genera of the Euceratomycetaceae, with the exception of *Colonomyces* (in which the outer wall cells are poorly developed and are 4-5 in number), have many outer wall cells (see fig. 7), more or less equal in height, in each vertical row. *Herpomyces* is unusual in having 8 spores with median septa in each ascus. Benjamin and Shanor (1951) reported that there are 8-spored asci in *Euzodiomyces*, although they did not show how the spores are arranged (see Cépède and Picard, 1909). *Euceratomyces* also has 8 spores in the ascus, although, like those of *Laboulbenia* (characterized by the more common 4-spored ascus), the spores have a small lower cell that becomes the appendage when the spore is inverted after discharge from the perithecium (fig. 6).

ACKNOWLEDGMENTS

The author is indebted to the staff of the Farlow Herbarium for making specimens of Thaxter's collection available for study. In addition, she wishes to thank Dr. Tomasz Majewski and Dr. Lars Huggert for lending slides for study and Dr. W. J. Dress for the Latin diagnosis. Thanks are also due to Dr. R. K. Benjamin for reviewing the manuscript. The author is indebted to Mr. Victor Duran (for

fig. 1) and to Mr. James Hendel, Scientific Photographic Laboratory, University of California, Berkeley, for the photographs.

Figs. 5-7. *Euceratomyces terrestris* (same collection as fig. 4; acetocarmine). 5. Portion of young thallus bearing 3-tiered perithecium; upper and lower septa of cell *n*, which produces 2 vertical wall cell rows, are indicated by lines; stalk appendage extends beyond perithecium; trichogyne has disappeared; appendages of primary axis are at right. X 1900. 6. Squashed mature perithecium; upper arrow indicates upper end of 1 apical cell; v-line shows height of wall cell; short lines show location of 7 spore septa within one ascus; arrow in center left indicates large nucleus of large cell of one spore. X 1900. 7. Mature thallus; inner layer of wall cells (*p*) is indicated at left; asci (*as*) in lower part of perithecium are immature; arrow at base indicates outer edge of outer wall cell; lines below point to cell *VII* below and basal cell of stalk appendage above (remainder of appendage has fallen off). X 1107.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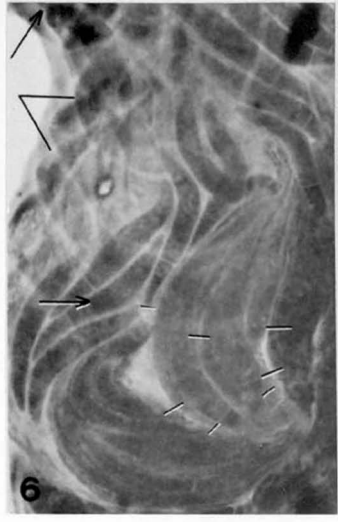
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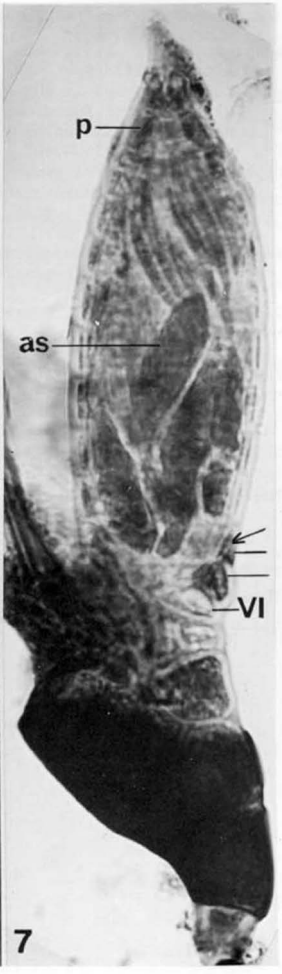
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MYCOTAXON

Vol. XI, No. 2, p. 493 July-September 1980

NOTICE

MYCOLOGICAL SOCIETY OF AMERICA GOLDEN JUBILEE

The Mycological Society of America will celebrate the 50th anniversary of its founding during August 9-14, 1981, at Indiana University, Bloomington, Indiana, USA.

All mycologists are invited to participate in their Anniversary Program. It is anticipated that the event will include addresses and symposia dealing with the past, present, and future of mycology and of the Society. Attendance and contributions from colleagues throughout the world will be welcomed.

Jack D. Rogers, Chairman
Golden Anniversary Committee
Mycological Society of
America

MYCOTAXON

Vol. XI, No. 2, pp. 494-502 July-September 1980

REVUE DES LIVRES

par

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INSECT-FUNGUS SYMBIOSIS, NUTRITION, MUTUALISM AND COMMENSALISM, Proceedings of a symposium at the Second International Mycological Congress, Aug. 27-Sept.3,1977, University of South Florida, Tampa, Florida, par Lekh R. BATRA éd., xii + 276 p., figs., 53 pls. phot. 8°, relié, toilé, nov. 1979, Allanheld, Osmun & Co.19, Brunswick Rd, Montclair, N.J. 07042, USA.John Wiley & Sons, Chichester, UK. Prix £16.80.

Onze spécialistes des interactions entre champignons et arthropodes ayant tenu un symposium à Tampa en 1977 se sont concertés et deux ans plus tard publient ce livre. Un livre excellemment édité, imprimé et illustré. Aussi, un livre passionnant. Ce Symposium a fait la synthèse des connaissances actuelles et a dégagé des voies d'une recherche future. A travers les multiples aspect de la relation champignon-arthropode (taxonomie, développement, reproduction, nutrition, biochimie, morphologie, écologie), sept types de symbioses ont montré divers niveaux de mutualisme, de commensalisme ou de parasitisme. La symbiose entre champignon (*Ambrosiella, Fusarium*) et les *Xyleborus* (ambrosia beetles) est un cas de mutualisme (= symbiose obligée) où le mycosymbionte est en ectosymbiose sauf au niveau du mycétange. Le champignon est indispensable à l'alimentation de l'insecte, lui fournissant ergostérol, phospholipides, acides gras et acides aminés. Le mutualisme entre les levures et les Anobiidae est une endosymbiose où le champignon, intracellulaire, est source de vitamines, de choline, de stérols. Par contre les champignonières (fungus gardens) des fourmilières et des termitières représentent des symbioses par commensalisme. Les champignons des fourmilières (*Xylaria, Lepiota, Rozites*) et ceux des termitières (*Termitomyces* et *Xylaria*, aidés de bactéries cellulolytiques en parasymbiose) réalisent une décomposition enzymatique du gateau ligneux, l'enrichissant en sucre et en azote pour l'élevage des larves et l'alimentation des adultes. La symbiose des Siricidae (woodwasps)avec des nématodes et le *Stereum sanguinolentum* est un commensalisme, où insecte a besoin du champignon mais ne le consomme pas. Il semble que le commensalisme des Trichomycètes soit de sens inverse, ceux-là trouvant abri et nourriture dans le tractus de l'hôte.Les études biochimiques, morphologiques et ultrastructurales des Trichomycètes révèlent des affinités avec les Kickxiellacées. Enfin le commensalisme devient un parasitisme obligé chez les Laboulbeniales des insectes. Ici la spécificité d'hôte est stricte. Les diverses synthèse taxonomiques présentées dans plusieurs cas augmentent encore l'intérêt du livre.

FLORA CRIPTOGAMICA DE TIERRA DEL FUEGO, Tome XI, Fasc. 3: FUNGI, BASIDIOMYCETES, APHYLLOPHORALES, FISTULINACEAE, MUCRONOPORACEAE, POLYPORACEAE, par Jorge E. WRIGHT et Jorge R. DESCHAMPS, 62 p., 9 pls., 8°, broché, 1975. Fundación para la Educación, la Ciencia y la Cultura, Moreno 431, Buenos Aires, Argentina. Prix non donné.

Les 15 espèces d'aphyllophorales décrites en provenance de la Terre de Feu appartiennent aux genres *Fistulina, Pyrrhoderma, Inonotus, Bjerkandera, Spongipellis, Piptoporus, Coriolus, "Poria", Schizopora Polyporus*. Trois combinaisons nouvelles sont proposées. L'étude se base sur les récoltes de Spegazzini de 1887 à 1926, celles d'Irma Gamundi et de Rolf Singer et celles des auteurs. Une liste de 11 espèces signalées par d'autres et non retrouvées par les auteurs est commentée. Notons la haute qualité des descriptions et des dessins.

FLORA CRIPTOGAMICA DE TIERRA DEL FUEGO, Tome X, Fasc. 1: FUNGI, FUNGI IMPERFECTI, HYPHOMYCETES, par Alicia M. GODEAS, Silvia G. MARCHAND et Daniel CABRAL, 121 p., 19 pls., 8° broché, 1977, Fundación para la Educación, la Ciencia y la Cultura, Moreno 431, Buenos Aires, Argentina. Prix non indiqué.

Les auteurs, de l'Université de Buenos Aires, ont effectué une prospection des sols et de litières de la Terre de Feu; ils ont également réexaminé les récoltes de Spegazzini datant de 1887,1923 et 1924. Adoptant la classification traditionnelle de Saccardo, basée sur la couleur des hyphes et des conidies, bien qu'ils utilisentla terminologie conidiogénétique morderne, ils décrivent et classent 46 espèces dans les familles Dematiaceae et Moniliaceae. Ce choix du système de Saccardo met les auteurs dans l'embarras puisqu'ils en arrivent à placer *Aspergillus* dans les deux familles.

TAXONOMY OF FUNGI, Proceedings of the International Symposium on Taxonomy of Fungi, University of Madras, 1973, PART I. par C.V. SUBRAMANIAN éd., 304 p., ill., 41 pls. hors-texte, 8° broché,1978. University of Madras, Centre of Advanced Study in Botany, Madras-600 005 India. Prix £ 5.-.

Ce volume n'est que la première partie des communications du Symposium organisé par le Prof. C.V. Subramanian en 1973 à Madras. C'est grâce aux efforts soutenus de l'éditeur que ce volume a vu le jour,et que le second nous est promis. Les 31 communications reproduites le sont intégralement, avec l'illustration; elles sont pour moitié d'auteurs indiens, pour l'autre d'auteurs invités. Les 9 premières communications traitent des Myxomycètes et des Champignons inférieurs, en particulier de la taxonomie et de la phyllogénie des Myxomycètes, des Chytridiomycètes, des Hyphochytridiomycètes, des Oomycètes, des Mucorales et des marine biflagellate fungi. Les autres communications traitent des Ascomycètes ou de leurs anamorphes.Les uns étudient les problèmes taxonomiques des *Fusarium, Alternaria, Drechslera, Verticillium, Candida, Trichosporon*. Certains cherchent des solutions dans la génétique ou la sérologie, ou encore l'histochimie ou la karyologie. Les autres traitent des problèmes taxonomiques de groupes plus importants, des Hémiascomycètes, des Cleistoascomycètes, en particulier des Chaetomiales, des Pyrénoascomycètes, spécialement des *Phyllachora* et *Hypoxylon* et des Discoascomycètes. Bien qu'on peut y trouver quelques coquilles, ce volume très bien imprimé et illustré à un prix modique sera largement apprécié comme une contribution importante.

TAXONOMY AND DISTRIBUTION OF FUNGI (AGARICALES, ERYSIPHALES, HELOTIALES), par K. KALAMEES, P. POLDMAA et A. RAITVIIR, 160 p., 12°, broché, 1978, Academy of Sciences of the Estonian S.S.R., Institute of Zoology and Botany, Tartu, Estonia. Coll. Scripta Mycologica n° 8. Prix 20 roubles.

Ce fascicule, composé de 4 articles, est partiellement en anglais et partiellement en russe. Kalamees donne une liste des Polyporales, Boletales, Russulales et Agaricales d'Estonie, regroupant 735 espèces, 56 variétés et 10 formes. Dans une étude chorologique des Agaricales, il en étudie la distribution. Põldmaa relève 46 espèces d'Erysiphales sur 162 hôtes en Estonie. Raitviir revoit la systématique de *Cistella* (Discomycètes), y décrit 6 nouvelles espèces *C. arctica, C. conorum, C. orientalis, C. tianschanica, C. turkomanica, C. tuvensis* et y redispose 12 autres espèces. De plus il décrit les genres nouveaux *Venturiocistella (V. venturioides* spec. typ.) et *Cistellina (C. auricolor* spec. typ.).

MR JONATHAN OTT'S REJOINDER TO DR ALEXANDER H. SMITH, par Jonathan OTT, Ethnomycological Studies n° 6 (R. Gordon WWasson éd.), 11 p., 8°, 1978, Botanical Museum of Harvard University, Cambridge, Mass.

J. Ott répond à une opinion critique de A.H. Smith (Mycologia 69: 1196, 1977) au sujet d'une critique d'un de ses articles par Ott dans son livre *Hallucigenic Plants of North America* (1976). Ott retrace ensuite les circonstances de la mise à jour par V.P. et R.G. Wasson et ensuite par feu le Professeur Roger Heim de l'usage de champignons hallucinogènes au cours de cérémonies shamanes au Mexique. Il explique alors comment *Psilocybe mulierula* Singer & Smith a pris priorité sur *Psilocybe wassonii* Heim.

HONGOS, par Gaston GUZMÁN, 194 p. 186 figs. col., 8°, papier, 1978, Editorial Limusa, Arcos de Belen 75 Mexico 1, D.F. Prix $ 7.-.

Ce livre, pour amateurs, décrit en langue espagnole les principales espèces du Mexique. Chaque espèce est illustrée d'une photographie en couleurs dont la reproduction est en certains cas malheureusement défectueuse.

FUNGI, DELIGHT OF CURIOSITY, par Harold J. BRODIE, 131 p., 21 figs., 8° relié, juin 1978, University of Toronto Press, Toronto M5S 1A6, Canada. Prix $ 10.-.

Si les champignons sont un plaisir pour les yeux et l'esprit qui les découvrent, ce livre est lui aussi un divertissement agréable pour le lecteur, qu'il soit ou non mycologue. Ici ce n'est plus l'oeil observateur du scientifique qui scrute au travers de la loupe les réalités vivantes du monde microscopique, mais c'est le regard de l'homme qui, à d'autres dimensions et comme dans le rêve, vit la beauté, l'harmonie, le mouvement, la force, la malice, la combativité, l'habileté, la brillance, la préciosité, la sociabilité, l'endurance d'êtres apparemment fragiles et éphémères, les champignons.

EPISTOLAE MYCOLOGICAE VIII. Indexes to Matsushima's *Microfungi of the Solomon Islands and Papua-New Guinea* (1971) and *Icones microfungorum a Matsushima lectorum* (1975), par Gilbert C. HUGHES, in *Sydowia*, 11:135-169, 1978. Department of Botany, University of British Columbia, Vancouver V6T 1W5, Canada.

Il est heureux que G.C. Hughes ait publié ces index des deux livres de Matsushima que nous avons déjà recensés.

THE MYCOLOGICAL ASSOCIATION OF M.J. BERKELEY AND M.A. CURTIS, par Ronald H. PETERSEN, 120 p., 2 portraits en couverture, 4 ill., 12°, broché, 1980, J. Cramer, FL-9490 Vaduz, Liechtenstein. Prix DM souscr. 24.-/30.-.

Des hazards heureux, et une curiosité innée pour les témoignages du passé, ont poussé l'auteur sur le chemin de la découverte des correspondances de Berkeley à Curtis et de Curtis à Berkeley. De là est né ce livre que tout mycologue ayant la passion de la science qu'il pratique devrait lire. Ronald Petersen nous présente, discrètement commentés, une succession chronologique d'extraits des lettres du mycologue anglais et de l'américain, échangées de 1846 à 1872. Après les travaux de von Schweinitz, qui jeta les fondements de la mycologie américaine, Curtis, guidé, aidé et encouragé par Berkeley, fit progresser celle-ci durant près de 30 ans pour alors laisser la main à Peck, J.B.Ellis et d'autres. Des notes diverses, intervenant dans le déroulement de cette histoire, comme par ex. le voyage de Corda au Texas et sa mort par naufrage lors de son retour, sont groupées en une seconde partie. Enfin en dernière partie, un manuscrit conjoint de Berkeley et Curtis, resté inédit depuis 1859, est aujourdhui publié: *A Commentary on the Synopsis Fungorum in America Boreali media degentium*, un commentaire sur les champignons de Schweinitz. Des études historiques de ce genre sont certainement souhaitables.

FUNGI EXSICCATI SUECICI, PRAESERTIM UPSALIENSES, Mandatu Collegii ex Elia Friesio nominati, FASC. LVII-LX (N° 2801-3000), INDEX N° 1-3000, par †Seth LUNDELL et J.A. NANNFELDT, vi + 145 p., 1 portr. broché, 1979, Uppsala, Institute of Systematic Botany.

Le Comité Elias Fries doit être félicité pour avoir, après la mort de Seth Lundell, facilité la préparation et la publication de ce dernier Fascicule des *Fungi exsiccati suecici*. Le contenu est le suivant: les exsiccata 2801-950 sont des Hyménomycètes, les 2950-3000 sont des Ustilaginales et des Urédinales. J.A. Nannfeldt y ajoute la correction de 45 étiquettes d'exsiccata précédemment publiées. Enfin, un index des noms de genres de l'ensemble est ajouté, où les épithètes spécifiques sont disposées dans les genres.

IDENTIFICACIÓN DE LOS HONGOS COMESTIBLES, VENENOSOS, ALUCINANTES Y DESTRUCTIVOS DE LA MADERA, par Gastón GUZMAN, 452 p., 218 pls. phot. b.n., 4°, briché, 1979, Editorial Limusa , Arcos de Belén 75, México 1, D.F. (première réimpression). Prix $ 9.-.

Cette contribution à la flore mycologique du Mexique n'a l'humble prétention que de fournir une clé illustrée d'identification des champignons supérieurs, pour la plupart des Basidiomycètes. Mais à la fois par les 582 espèces de champignons qui y sont décrits et illustrés, et par cette illustration de 217 planches de pleine page constituées en moyennede 6 bonnes photographies ou d'un plus grand nombre de dessins au trait, ce livre a une valeur incontestable. Cependant 170 des 194 pages de textes constituent un ensemble de 28 clés dichotomiques dont les dichotomies successives et surtout ultimes constituent les descriptions d'espèces. Cette présentation rend les clés très longues et d'un usage fastidieux et n'a plus l'ordonnance systématique et claire des familles, genres et espèces. De plus, ces clés descriptives ne font état que de caractères macroscopiques, ignorant totalement les caractères microscopiques. Cependant, de bons index facilitent la recherches des illustrations d'espèces.

NORTH AMERICAN SPECIES OF *LACTARIUS*, par L.R. HESLER et A.H. SMITH, x + 841 p., 249 figs., 154 pls. phot. b.n., 147 spores pls., 8°, relié, 19 oct.1979, The University of Michigan Press, Ann Arbor, USA. Prix $ 25.00.

Chacun sait combien riches et difficiles sont les deux genres de Russulaceae, *Lactarius* et *Russula*. Les Lactaires d'Europe ont été traités dans les flores de Bresadola (1928) de Konrad et Maublanc (1924-37), de Lange (1940), de Kühner et Romagnési (1953), ainsi que dans les monographies de Knauth et Neuhoff (1937) et de Neuhoff (1956). Par contre les Lactaires d'Amérique du Nord n'ont jamais fait l'objet que d'études partielles par Burlingham (1907-45), Coker (1918), Earle (1902), Peck (1872-1915), Kauffman (1918), Murill (1938-48), Hesler et Smith (1960-62) et Shaffer (1964). C'est donc bien la première monographie des Lactaires d'Amérique du Nord que publient les auteurs dans une édition très soignée et abondamment illustrée. Les descriptions font état des caractères macro et microscopiques, de l'anatomie du carpophore, de l'ornementation de la paroi sporale observée en SEM et illustrée dans un atlas des spores en annexe, et sur de très amples récoltes. Les auteurs divisent le genre en 6 sous-genres: *Lactarius (L. deliciosus), Plinthogalus (L. lignyotus), Lactifluus (L. volemus), Piperites (L. torminosus), Tristes (L. argillaceifolius), Russularia (L. subdulcis)*, groupant un total de 200 espèces, sans compter de nombreuses variétés. Beaucoup d'espèces et variétés sont nouvelles. Un appendice réunit les espèces qui n'ont pu être vérifiées et celles qui ne sont pas américaines mais pourraient l'être.Un 2e appendice groupe les espèces à rejeter et douteuses. L'ornementation des spores est illustrées de manière traditionnelle, observée après coloration, et au SEM. Beaucoup d'espèces dépassant les limites de l'aire décrite, l'audience de ce livre dépasse de loin l'Amérique du Nord et tendra à s'identifier au monde mycologique.

MUSHROOMS: A SEPARATE KINGDOM, par Loni PARKER, texte de David T. JENKINS, 112 pages, 90 reproductions d'aquarelles de l'auteur, 4°, relié, toilé, 1979, Oxmoor House, P.O.B. 2262, Birmingham, Alabama 35202, USA. Prix $ 16.95.

Rarement, les champignons ont été si délicatement et agréablement dépeints. Les aquarelles de Loni Parker si naturelles, si précises, si riches en contours et en couleurs, parsemées dans le texte qu'elle a entièrement écrit de sa main dans un caractère Renaissance germanique, font de ce livre un joyau. Le texte de Jenkins fait apparaître les champignons dans l'équilibre de notre biosphère et sa survivance, comme des êtres mystérieux mais indispensables. S'ils peuvent être comestibles ils sont aussi vénéneux, ou encore hallucinogènes et,pour cette raison, objets de culte ou de superstitions. Un très beau livre, ornement des bibliothèques et cadeau rêvé pour les amis.

DE FUNGI VAN NEDERLAND. HET SYSTEEM VAN DE FUNGI.TABEL VOOR DE HOOFDGROEPEN EN VERWIJZING NAAR DE DETERMINATIE-WERKEN, par W.GAMS, Wetenschappelijke mededelingen K.N.N.V. 136, 115 p. ill. nov. 1979, Koninklijke Nederlandse Natuurhistorische Vereniging, Draafsingel 36, NL-1623LB Hoorn, Nederland.

Présentation en langue néerlandaise d'une clé dichotomique des diverses classes de champignons des Myxomycètes aux Deuteromycètes et jusqu'aux genres et aux espèces principales. Les diverses clés sont abondamment illustrées de petites figures au trait.Une bonne liste de la littérature mycologique est donnée.

THE BLACK YEASTS, II: MONILIELLA AND ALLIED GENERA, par G.S.DE HOOG édit., Studies in Mycology n° 19, 90 p., 30 figs., 22 phot. b.n., 8°, broché, 29 déc. 1979. Centraalbureau voor Schimmelcultures, Baarn, Nederland. Prix HFL 25,-.

Ce fascicule est composé de 7 articles centrés sur l'étude des trois mêmes genres de champignons levuriformes, *Moniliella, Trichosporonoides, Hyalodendron*. D'abord, De Hoog revoit la taxonomie de ces trois genres. *Moniliella suaveolens* et *M. acetoabutens* y sont reconnus et redécrits, tandis que *M. tomentosa* et *M. tomentosa* var. *pollinis* sont repris comme *M. suaveolens* var. *nigra*. L'auteur y décrit une forme nouvelle de sporulation à conidies échinulées. Deux nouvelles espèces *Trichosporonoides madida* et *T. spathulata* y sont décrites comme nouvelles et l'espèce type *Hyalodendron lignicola* redécrite. La comparaison de la conidiogénèse chez les trois genres montre une conidiation complexe chez *Moniliella:* blastique caténée acrogène avee ramification latérale acropète, ou arthrothallique rétrogressive, tandis qu'une conidiation blastique caténée acrogène apparait latéralement en succession basipète. L'ultrastructure de représentants de ces trois genres y montre des septa à dolipores, prouvant ainsi leur appartenance aux Basidiomycètes. L'étude auxanographique de l'assimilation et la fermentation des sucres, l'assimilation du nitrate, l'hydrolyse de l'urée et du besoin en vitamines , de même que l'analyse des composés organiques volatils et des carbohydrates cellulaires (monosaccharides et polyols) montrent bien les similitudes de ces genres.Dans un essai de systématique, De Hoog place *Moniliella* et *Trichosporonoides* aux confins des Basidiomycota, au voisinage des Dothideales (Ascomycota) et *Hyalodendron* dans une position plus éloignée des Ascomycètes. Nous trouvons dans cette étude un exemple d'utilisation convergente des techniques modernes dont dispose aujourdhui la mycologie systématique.

MUSHROOMS AND TOADSTOOLS, A FIELD GUIDE, par Geoffrey KIBBY, illustré par Sean MILNE, 256 p., nbr. figs., 100 pls. coul., 8°, broché, 1979.Oxford University Press, Walton street, Oxford OX2 6DP, UK. Prix net £ 4.95.

Tout mycologue sera sensible à l'attrait de ce livre, un de plus sans doute, mais bien différent des autres. D'abord, par le fait de son illustration composée d'aquarelles de champignons intégrées dans un dessin au trait figurant l'habitat (feuilles mortes, aiguilles, écorces, etc). Ensuite, ce livre se distingue des autres par le grand nombre d'espèces illustrées (403), dont près de la moitié ne l'ont pas ou sinon rarement été jusqu'à présent dans des ouvrages de ce genre. Cette entreprise de l'auteur et de l'artiste est audacieuse et d'autant plus louable qu'elle permettra au mycologue de terrain de se familiariser à vue avec un plus grand nombre d'espèces. Après une bonne introduction, l'auteur propose dix clés dichotomiques illustrées de dessins, basées, d'abord, sur la forme extérieure des fructifications, ensuite, dans le cas des champignons à lamelles, sur la couleur de la sporée. Je redoute les clés dichotomiques qui, comme les labyrinthes, vous conduisent par un trop long chemin, marqué de plus d'échecs que de succès, au nom du taxon (parfois très commun) que vous recherchez. J'eus espéré que les illustrations des clés en eut accéléré l'usage, mais l'auteur n'exploite pas l'image dans ce but. De plus, il oblige le récolteur à observer la couleur de la sporée en laboratoire avant de pouvoir user de la clé des champignons à lamelles. Les descriptions sont bonnes mais de valeur inégale. Les couleurs vues par l'artiste ne sont pas toujours celles décrites dans le texte. La prudence s'impose donc. Les aquarelles sont numérotées pour référer aux

descriptions données en vis-à-vis où à la page suivante. Des erreurs sont à signaler: p.77 lire 3 et 2 au lieu de 2 et 3, p.129 lire 1,2,3 au lieu de 2, 3 et 4. L'écriture par l'artiste du nom de l'espèce près de chaque aquarelle eut été de loin préférable à la numérotation. Malgré ces quelques imperfections, ce livre sera certainementtrès apprécié et souvent consulté.

MYXOMYCETES, par Maurice CHASSAIN, Fascicule 1,144 p., 16 figs, 44 phot. coul. , 44 phot. b.n., 4°, reliure amovible, 29 août 1979. Ed. P. Lechevalier, 19 Rue Augereau, 75007 Paris. Prix net reliure et fascicule 1: 500 FF.

L'auteur, mycologue passionné de macrophotographie, s'est intéressé aux myxomycètes sur lesquels aucun ouvrage n'a été publié en France depuis Pouchet (1927), et entreprend ici la publication d'une flore illustrée des Myxomycètes de France, par livraisons successives. Cette première livraison comprend la reliure du tome I (farde à anneaux) et les 72 premiers feuillets (144 p.). 24 feuillets (48 p.) sont consacrés à l'introduction; les 48 autres à la description illustrée de 16 espèces (à raison de 3 feuillets par espèce, 5 p. de texte et figures et 1 p. blanche). Chaque espèce est illustrée d'abord par 2 ou 3 photographies en couleurs de 6x9 cm, au grossissement 20 x, de 3 ou 4 photographies blanc-noir au SEM (gross. 1000 à 10000 x)et d'une figure au trait. Les illustrations couleurs sont de très bonne qualité et témoignent d'une haute technicité; les illustrations SEM sont parfois de moindre qualité. Les figures au trait, ne représentant qu'une seule spore et un petit fragment du capillitium, sont rudimentaires et de très médiocre qualité . Le texte, voulu sans raison "très aéré" donne une synonymie sans références, l'habitat, l'affinité taxonomique, les périodes de récolte (en un trop grand tableau) et les caractères macro- et microscopiques. Ce texte d'ailleurs très succint aurait pu tenir en une seule page. La reliure à anneau doit permettre le classement taxonomique ou alphabétique des espèces au fur et à mesure de la parution de l'ouvrage. Si au premir abord on est frappé par la qualité de la photographie en couleurs, on sera aussi vite déçu par la pauvreté scientifique du texte, les dessins sans valeur, le choix malheureux de certaines photos SEM, les espaces "blancs" inutiles, une reliure très peu maniable et le prix exorbitant. De plus aucune indication ne permet de connaître l'importance de l'ouvrage entier et son prix global.

ICONES MYCOLOGICAE, ou ICONOGRAPHIE DES CHAMPIGNONS DE FRANCE PRINCIPALEMENT DISCOMYCETES, par Emile Boudier, Texte et 600 pls. polychrom.32x24 cm, Paris, 1905-1910. Réimpression par Sepia, Beaune, France. Editeur resp. Mr. R. Karger, 8 rue Jacques Briet, Saint-Remy, F-71000 Chalon-sur-Saône, France. Prix: environ 4000 FF (700 FF à la souscription, 600 FF à chacune des 5 livraisons et un solde d'environ 300 FF). Non relié. Texte broché seulement.

Les "*Icones Mycologicae*" d'Emile Boudier sont "l'ouvrage le plus beau, le plus exact et le plus consciencieux qui ait jamais été publié en couleurs sur les champignons...", ainsi s'exprimaient en 1906 les critiques de l'époque, à propos de cette extraordinaire iconographie des Champignons de France, consacrée principalement aux discomycètes. Il fallut 5 ans à l'éditeur pour faire lithographier les 600 planches coloriées qui composent cette oeuvre de toute une vie (Boudier,1828-1920) et 125 exemplaires seulement en furent tirés. Aujourdhui, convaincus de l'importance de l'oeuvre pour la mycologie moderne,Messieurs Roy et Karger, président et vice-président de sociétés mycologiques françaises, rééditent, sans profit,

l'ouvrage de Emile Boudier, grâce à la mise au point d'un procédé spécial de photogravure Offset par la maison Sepia de Beaune. La réimpression demandera un minimum de deux années. Cette réimpression est offerte à la souscription des mycologues, sans but lucratif, c'est-à-dire au prix coûtant. Il n'en sera tiré que 650 exemplaires numérotés. Tant qu'on a pas eu en mains cet ouvrage exceptionnel, qui stupéfie à la fois les bibliophiles et les scientifiques les plus avertis, il est impossible d'imaginer la beauté de ces illustrations, la précision des détails microscopiques et l'exactitude des coloris. La comparaison des planches échantillon (que l'on peut obtenir pour 20FF) avec l'édition originale nous a convaincu de la haute qualité de cette réimpression. Il est exceptionnel de voir un tel ouvrage mis à nouveau à la portée de chacun par l'entreprise généreuse de quelques uns. L'ouvrage ne peut être obtenu que par souscription. L'impression ne se fera qu'après clôture de la souscription. Il importe que les institutions soucieuses du développement de la mycologie et les mycologues eux-mêmes fassent l'effort de donner à cette oeuvre mycologique la place qui lui revient partout à travers le monde.

PACIFIC SCIENCE ASSOCIATION. XIV PACIFIC SCIENCE CONGRESS, USSR, KHABAROVSK, AUGUST 1979, COMMITTEE H . FUNGI,VIRUSES, BACTERIA AND LICHENES, COMPONENTS OF ECOSYSTEMS OF THE PACIFIC REGION, by S.S. KHARKEVICH, édit., 55 p., 12°, broché, Moscou 1979. Prix. R. 27.-

Le texte comprend les résumés de 29 communications présentées à ce congrès international des sciences, concernant la microflore des régions orientales de l'Union soviétique en bordure du Pacifique.

CRYPTOGAMIE-MYCOLOGIE, CRYPTOGAMIE-ALGOLOGIE, CRYPTOGAMIE-BRYOLOGIE ET LICHENOLOGIE, nouvelles séries, Tome 1, fasc. 1, 1980. Laboratoire de Cryptogamie, Museum d'Histoire naturelle, 12 Rue de Buffon, 75005 Paris. Prix d'abonnement à chaque série, 190 FF pour l'étranger, aux trois séries 570 FF. CCP Paris 4481-43.

La *Revue de Mycologie*, la *Revue Algologique* et la *Revue Bryologique et Lichénologique* du Laboratoire de Cryptogamie du Museum National d'Histoire Naturelle de Paris ont fusionné leur édition sous le même intitulé principal *Cryptogamie*, dont elles formeront les trois sections. La revue de chaque section commence une nouvelle série (Tome 1, fasc. 1) dès 1980 et publiera 4 fascicules par an. Les chercheurs de tous pays sont invités à y faire publier leurs travaux, dans la langue de leur choix, après accord de comités de lecture spécialisés de réputation internationale. La haute qualité de la publication restera inaltérée.

BULLETIN ANNUEL DE LA FEDERATION CENTRE-EST [DE FRANCE] D'HISTOIRE NATURELLE ET DE MYCOLOGIE, édité par R. Farichon, N°1, 48 p., 4 figs. 5 phot. couls. 8°, 1979. Les Presses jurassiennes, 80 rue Mont Roland, 39001 Dole-du-Jura, France. Prix du n° 1: FF 15,-.

La *Fédération du Centre-Est d'Histoire naturelle et de Mycologie*, sous la présidence d'honneur de M. G. Becker, mycologue français bien connu, regroupe 12 sociétés régionales de naturalistes et de mycologues des départements français du Jura et de l'Ain. Après un éditorial de R. Farichon et la réponse donnée par G. Becker à la question *Pourquoi la Mycologie?* le lecteur trouvera un relevé illustré de 60 Myxomycètes de l'Ain, une récolte de *Gyromitra parma*, une étude de *Xanthochrous obliquus*, une étude de la mycoflore des tourbières et une étude de la position taxonomique de *Dermoloma intermedium* Bon et des Derlomataceae.

Ce bulletin est intéressant par la qualité de son contenu et sa bonne présentation. Sa périodicité future n'est pas annoncée encore. Il est certainement souhaitable que cette belle entreprise se poursuive, se développe et puisse, par sa qualité et sa régularité, trouver la large diffusion qu'elle mérite.

ALTERNATIVE MYKOLOGIE, édité par Jürgen LEHMANN. Vol. 1, n°1, 36 p. 1980-1981 (sic) 12°. Verlag Alternative Mykologie, An der Leite 66, D-8702 Rossbrunn, BR Deutschland. Abonnement: DM 12.- par n°, net.

L'éditeur, J. Lehmann, est le seul auteur publiant, dans ce premier numéro, un seul article sur les champignons des termitières. Il y exprime son opinion personnelle sur tous les travaux antérieurement publiés sur les champignons des termitières. Le graphisme illustrant la couverture de ce journal semble bien indiquer sa destination de publier les études des champignons termitophiles de l'éditeur.

SYSTEMATIC BOTANY, PLANT UTILIZATION AND BIOSPHERE CONSERVATION. by Inga HEDBERG ed., Proceedings of the Symposium in Commemoration of the 500th Anniversary of the University of Uppsala, 159 p., bound 1979, Amquist & Wiksell International, Gamla Brogatan 26, POB 62, S-10120 Stockholm. Price Sw.kr. 98.-.

Not specifically dealing with fungi but with general systematic Botany, the Symposium emphasized the new trends of systematic Botany and its objectives in the near future. Because of its involvement in agriculture and in medecine, systematic Botany will assume responsabilities in the comprehensive planification towards apparently opposite objectives of Plant Conservation and Plan exploitation.

AUTHOR INDEX, VOLUME ELEVEN

PUBLICATION DATES FOR MYCOTAXON

Volume 10, No. 2: February 23, 1980
Volume 11, No. 1: June 24, 1980

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The Co-Editors express their appreciation to the following individuals who have reviewed one or more of the papers in this volume prior to acceptance for publication.

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ERRATUM, VOLUME TEN

Page 511, line 11: *for* M. Haines *read* H. Haines

ERRATA, VOLUME ELEVEN

Page 5,	line 10:	for helminthospora read helminthosporus
8	10:	for helicospora read helicosporus
35	42:	*for* stoma *read* stoma
189	15:	for *singerinus* read *singerianus*
209	28:	for *pteriodophylla* read *pteridophylla*
214	24:	for *Dasyscypha* read *Dasyscyphus*
298	2:	*for* APHIDIS *read* NEOAPHIDIS
352	28:	for *Menosporopsis* read *Menisporopsis*
378	12:	for *nivius* read *niveus*
385	19:	*for* was *read* were
386	7:	*for* 1.I.1801 *read* 1.I.1821
445	30:	for *C.* read *Chaetosphaeria*

INDEX TO FUNGOUS AND LICHEN TAXA, VOLUME ELEVEN

This index includes genera, infrageneric taxa, species, and infraspecific taxa. New taxa are in **boldface** as are the pages where they are published. The Patouillard Index (pp. 435-442) is referenced here by genus with the notation "see."

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