AN ABSTRACT OF THE THESIS OF

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Title: *Pseudaleuria quinaultiana*, A New Genus and Species of Operculate Ascomycete From the Olympic Peninsula.

Abstract approved: Redacted for Privacy

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Pseudaleuria quinaultiana gen. et sp. nova is described in English and Latin. *P. quinaultiana* is compared with *Aleuria*, *Anthracobia* *Cheilymenia*, *Geopyxis*, *Humaria*, *Iodophanus*, *Jafnea*, *Leucoscypha*, *Melastiza*, *Octospora*, *Pyronema*, *Scutellinia*, *Sphaerosporella*, *Tricharina*, *Morchella*, *Cookeina*, *Phillipsia*, *Pseudoplectania*, *Sarcoscypha*, and *Sarcosoma*. Of these genera *P. quinaultiana* has hairs most similar to those found on *Pseudoplectania* species, excipular construction like that of *Aleuria* and *Melastiza*, spores comparable to those of *Geopyxis* in size, shape, and ornamentation, and produces soft sclerotia in culture as do *Morchella* and *Pyronema*. This new species is placed in the Pyronemaceae (sensu Eckblad), Pyronemataceae (sensu Korf), and the tribe Aleurieae (sensu Korf). Evidence is presented in favor of creating a new genus to accommodate the new species.

Pseudaleuria quinaultiana, A new Genus and Species of Operculate Ascomycete From the Olympic Peninsula.

by

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I. INTRODUCTION

Pseudaleuria quinaultiana gen. nov., sp. nov., was discovered on the Olympic Peninsula of North America. The peninsula is in the extreme Northwest corner of the continental United States, in the state of Washington, between 122.25 - 124.8 degrees west longitude and 47.0 - 48.4 degrees north latitude. It is bordered to the west by the Pacific Ocean, to the north by the Strait of Juan de Fuca, to the east by Puget Sound, and to the south is connected to the continent. Much of this area is temperate rain forest that receives at least 250 cm., (100 inches) precipitation per year and has moderate temperatures. The region has shallow stoney, mountain soils, and coniferous vegetation (USDA, 1975). On the wetter west side there is an abundance of bryophytes and angiosperms (National Park Service, 1976, Kirk, 1966).

The only discomycete flora of this area was prepared by Kanouse (1947). This publication lists the discomycetes collected by C. H. Kauffman in 1915 and 1925, and A. H. Smith in 1935, 1939, and 1941. From these collections Kanouse and Smith described 3 new genera and 12 new species (Kanouse and Smith, 1940, Kanouse, 1941, 1944, and 1947). None of these fungi resemble the fungus which is described here.

Specific and generic delimitations within the Pezizales are based on differences in morphology, ontogeny, cytology, chemistry, culture, and ecology, singly or in combination. Eckblad (1968), vanBrummelen (1967), Rifai (1968), and Kimbrough (1970), discuss the value of taxonomic characters in general terms. Further information on taxonomic criteria in the Pezizales can be deduced from the keys of authors such as Seaver (1942), Korf (1972 and 1973), and Dennis (1968 and 1972).

The placement of Pseudaleuria quinaultiana within a family, and determination of related genera was aided by studying articles on Pezizalian taxonomy and classification, such as Korf (1972), Eckblad (1968), Rifai (1968), Kimbrough (1970), and Arpin (1968). Family placement was also aided by studying monographs and notes on those genera

it resembles, specifically: Aleuria, (Seaver, 1914), Geopyxis (Thind and Kaushal, 1982), Scutellinia (Denison, 1959), Sarcoscypha (Denison, 1972), Phillipsia (Denison, 1969), Cookeina (Denison, 1967), Pseudoplectania and Sarcosoma (LeGal, 1953).

II. MATERIALS & METHODS

Collection of Fresh Specimens

This project is a result of finding an unidentifiable fungus specimen among collections from the Olympic Peninsula made mid-May 1983. Two collections of this fungus were found during that 1983 trip, one near Lake Quinault, and the other on a forest trail east of Forks, Washington. One additional collection was made in May 1984 at the Lake Quinault site. The Lake Quinault site was checked for fall fruiting in Sept. 1984, and no apothecia were found. A fourth collection trip in May 1985 included sites further north, south,and east of the original collections as well as the original sites. All collections were examined in the field and taken fresh to Oregon State University. The 1985 collections were packed with damp mosses to maintain freshness and hydration. When laboratory examination and spore shoots were completed, specimens were air-dried, packeted, fumigated and stored at the Oregon State University herbarium, for subsequent study.

Fresh specimens of Aleuria aurantia (Oed. ex Fr.) Fuck., and Caloscypha fulgens (Pers. ex Fr.) Boud., collected on the Olympic Peninsula, and a fresh collection of Sarcoscypha coccinea (Scop. ex Fr.) Lambotte, found near Crovallis, Oregon were handled in a similar manner.

Macroscopic Examination

External examination of fresh specimens were made with a 10X Hastings triplet handlens. Diameter measurements, color photographs, and habitat notes were made at the collection sites. Color determination was made on fresh material in the laboratory using Ridgway (1912) color standards.

Microtechnique and Microscopic Examination

Parafin sections were prepared to examine the excipular tissues and hairs of the apothecia, and for examination of sclerotia. Fresh material was preserved in FAA, dehydrated and embedded through a tertiary butyl alcohol series, sectioned at 12 micrometers, and stained with safranin and fast green (Johansen, 1940).

Crush mounts of fresh and dried material were prepared for microscopic examination of asci, spores, paraphyses, and hairs. When dried specimens were used a fragment of apothecium was rehydrated either in 10% ammonium hydroxide, 2% KOH, or tap water, then crushed and stained. Stains employed on crush mounts were: Congo red followed by 2% KOH (Kimbrough, personal communication), cotton blue in lactic acid with heat (LeGal, 1947), Meltzer's (Dennis, 1968, Stevens, 1981), phloxine (Stevens, 1981), and a fuelgen stain series (Johansen, 1940). Concentrated sulfuric acid was used to determine the presence of caronoids (Johansen, 1940).

A Zeiss microscope with standard brightfield illumination (Kohler) and ocular micrometer was used for measurements. A Leitz microscope was used for general observations and photography.

Culture Methods and Materials

Spores of *Pseudaleuria quinaultiana* were shot and germinated on malt agar (Stevens, 1981). Further cultural characteristics were examined in cultures transferred to CMMY (Denison and Carlstrom, 1968), PDA (Hawksworth, 1974, Stevens, 1981). Cultures were also grown on cooked rye grain (Stamets and Chilton, 1983).

Photography

Photomicrographs were taken with a Nikon F3 mounted on the Leitz compound microscope with a Vivatar adapter. Kodak technical-pan film was developed in Kodak HC-110 or D19 and fixed in Rapid Fix.

Habitat and macro shots were taken with the Nikon F3 and micro-Nikkor 55 mm lens with Hoya filter. Kodachrome 64 film was used for all habitat and macro photographs.

III. DESCRIPTIONS

Pseudaleuria gen. nov.

Apothecia sparsa vel fasciculata, mediocria, sessilia vel substipitata, orbicularia vel repanda; hymenio clare rubro-aurantiaco, extus similari vel pallidiore, pilis hyalinis, flexuosis, stratum externum velutinum tormantibus; excipulo ex duobus stratis composito, strato interiore ex textura intricata, strato exteriore ex textura angularis; ascis operculatis, non amyloideis, octosporis, cylindraceis, basin versus sensim angustatis, ad maturitatem non prodtrudentibus, muro tenui; ascosporis ellipsoideis, laevibus, hyalinis, eguttulatis, mediocribus; paraphysibus gracilibus, sursum plus minsve dilatatis, raro ramificantibus.

Apothecia scattered or in clusters, medium sized, sessile to substipitate, discoid to repand, thick-fleshed, texture firm fleshy to rubbery, becoming corky when dry; hymenium bright reddish orange; exterior concolor or lighter when fresh, with flexuous hyphoid hairs, these hairs forming a felty layer; excipulum two-layered, medullary layer is textura intricata, ectal layer is textura angularis; asci operculate, non-amyloid, eight-spored, cylindrical, tapering to the base, thin-walled, not protruding at maturity; ascospores ellipsoid, smooth, hyaline, eguttulate, uninucleate, medium sized; paraphyses slender, slightly to greatly and abruptly enlarged above, rarely branching.

Soil and/or wood saprobe, or mycorrhizal. Thus far, only known from the Olympic Peninsula, Washington State, U.S.A.

Type species: Pseudaleuria quinaultiana.

Pseudaleuria quinaultiana sp. nov.

Apothecia sparsa vel fasciculata, mediocria (0.7-3.5 cm. lata, 0.5-1.5 mm. crassa), sessilia vel substipitata, orbicularia vel repanda, hymenio clare rubro-aurantiaco, extus similari vel pallidiore, pilis hyalinis, flexuosis, stratum externum velutinum tormantibus (vel 260 µm crassa); excipulo ex duobus stratis composito, strato interiore ex textura intricata, (155-770 µm crassa), strato exteriore ex textura angularis, (100-115 µm crassa); ascis operculatis, non amyloideis, octosporis, cylindraceis (200-

300 x 8.0-12.5 µm), basin versus sensim angustatis, ad maturitatem non protrudentibus, muro tenui; ascosporis ellipsoideis, laevibus, hyalinis, eguttulatis, mediocribus (15.5-19.5 x 7.5-10.5 µm); paraphysibus gracilibus (240-320 µm lata, 2.0-3.5 µm crassa), sursum plus minusve dilatatis (4.5-11.5 µm lata, 4.5-9.5 µm crassa), raro ramificantibus; hyphae in cultura hyalinae adpresae; sclerotia sub pagina evolvens demum erumpens.

Apothecia scattered or in clusters, medium sized (0.7-3.5 cm. broad, 0.5 - at least 1.5 mm. thick), sessile to substipitate, centrally attached, discoid to slightly concave or repand, larger specimens frequently with a central depression, often with an inrolled margin, texture firm fleshy to rubbery, becoming corky when dry; hymenium bright reddish orange, "Scarlet" to "Scarlet Red", drying to a dull reddish brown, "Orange Rufus" to "Mahogany Red"; exterior lighter to concolorous, with long, flexuous, hyphoid hairs, hairs arising from external thick-walled cells of the excipulum, these hairs are compacted into a thick (up to 260 µm) felty layer exterior to the ectal excipulum; medullary excipulum is 155-770 µm thick, textura intricata, of septate hyphoid cells; ectal excipulum is 100-115 µm thick, textura angularis, the outermost cell walls are thickened; asci are operculate, eight-spored, cylindrical, 200-300 x 8.0-12.5 µm, tapering to the base, not protruding at maturity, maturing seriatim; ascospores ellipsoid, 15.5-19.5 x 7.5-10.5 µm, smooth, eguttulate, uninucleate; paraphyses slender, 240-320 x 2.0-3.5 µm, slightly to greatly and abruptly enlarged above, heads 4.5-11.5 x 4.5-9.5 µm, straight, containing carotenoid granules, septate, rarely branching, branching in top half; in all cultures hyphae were hyaline, appressed to the agar surface, no conidial anamorph was found; soft sclerotia are produced on PDA, CMMY, malt agar, and boiled rye grain cultures, on agar the sclerotia first appear below the surface and later erupt, sclerotia range from reddish brown to dark chocolate brown in color, variously shaped, largest dimension not greater than 2.5 mm. All collections were made near the butt end of fallen conifers, in temperate rainforests.

Distribution appears to be limited to the Olympic Peninsula, Washington State, U.S.A.

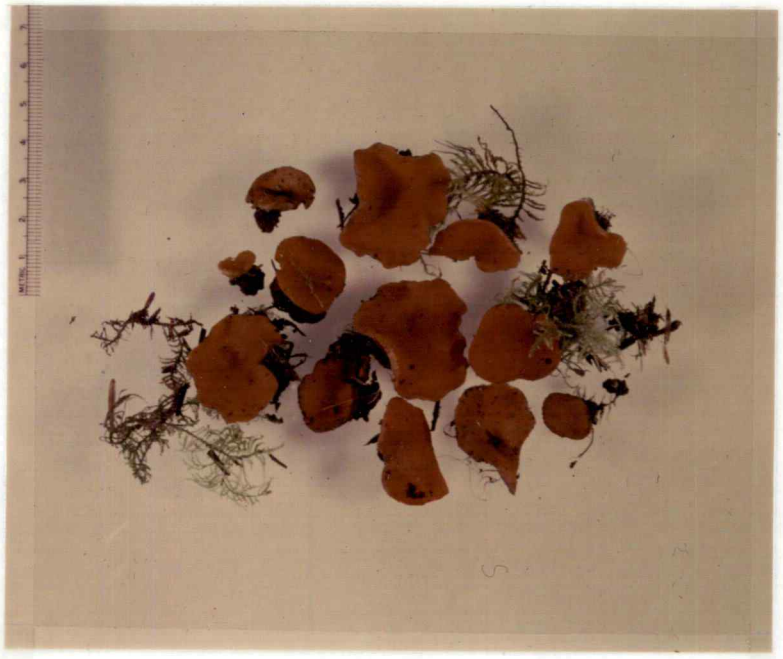
Type specimens; holotype; P. quinaultiana OSC# 45,764, collected at Lake Quinault, Wa., T23N R9W Sec. 29, 1984; paratypes OSC# 45,765, collected at Lake Quinault site, 1983, OSC# 45,766, collected at Lake Quinault site, 1985, OSC# 45,767, collected in the Olympic National Park east of Forks, Wa., T28N R11W Sec., 17, 1983, OSC# 45,768, collected in the same section though not the identical location as OSC# 45,767 in the Olympic National Park, 1985.

FIGURE 1. Representative ascocarps of *Pseudaleuria quinaultiana*.

A. Holotype collection, OSC# 45,764. (0.5X)

B. *P. quinaultiana* in natural habitat. Paratype collection OSC# 45,768. (0.56X)

FIGURE 1



IV. DISCUSSION

Macromorphology

Pseudaleuria quinaultiana (Fig. 1) is most similar in external appearence to Sarscypha coccinea, and Aleuria aurantia. Both of these fungi occur in the Pacific Northwest (Larsen and Denison, 1978). Superficially, P. quinaultiana differs from S. coccinea in its lack of a stipe, and typically non-cupulate form. It is slightly more orange than S. coccinea, but this color difference is not great enough to be a good field identification character. A. aurantia and P. quinaultiana are similar in size and form but the flesh of the former is thinner and more brittle than that of the latter. A. aurantia is a bright orange, with little or no hint of red, and P. quinaultiana is distinctly red-orange.

Apothecial form has been used to separate genera, but its taxonomic value at this level has been questioned (Eckblad, 1968). Here, apothecial form has therefore only been used as a recognition character.

Excipular Features

The single most distinctive feature of P. quinaultiana is its apothecial hair (Fig. 2A). Its hairs are hyphoid, thin-walled, hyaline when fresh (sometimes darker when dry), arising from external thick-walled cells (Fig. 3A & B), long and interwoven, forming an apparent layer external to the ectal excipulum (Figs. 4A & B, & 6B). Although not unusual in type,, the quanity and length are extraordinary, some hairs being longer than 1 mm (Table 1). Sarcoscypha coccinea, and probably other members of that genus have tomentose hairs (Denison, 1972b, Eckblad, 1968, Rifai, 1968, LeGal, 1953) which are similar, but lack the length, weaving, and compaction to form a layer. The hairs of Pseudoplectania negrella (Pers. ex Fr.) Fuck., (Fig. 2B) and Sarcosoma spp., (LeGal, 1953) are more similar to P. quinaultiana hairs in length and form than any other Pezizalian taxa. When long hairs are present in species of Pseudoplectania Fuck., and Sarcosoma Casp., they are sometimes ornamented, and although in some species coiled, are not extensively interwoven. In these ways Pseudoplectania and Sarcosoma hairs differ from Pseudaleuria hairs.

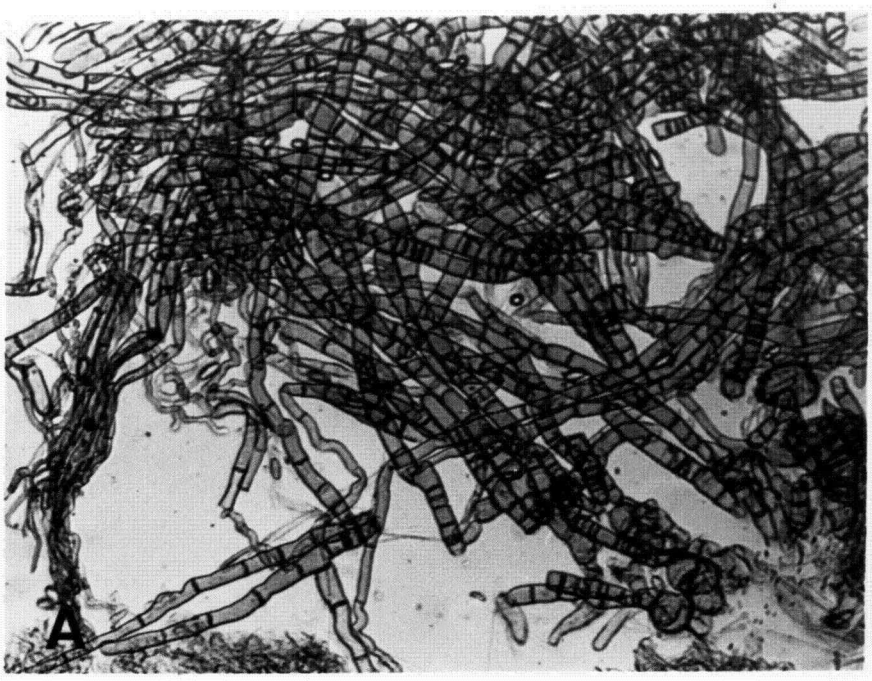
FIGURE 2. Excipular hairs, squash mount in Congo red.

A. Pseudaleuria quinaultiana. (155X)

B. Pseudoplectania nigrella. (140X)

C. Cheilymenia coprinaria (Cooke) Boud. (140X)

FIGURE 2



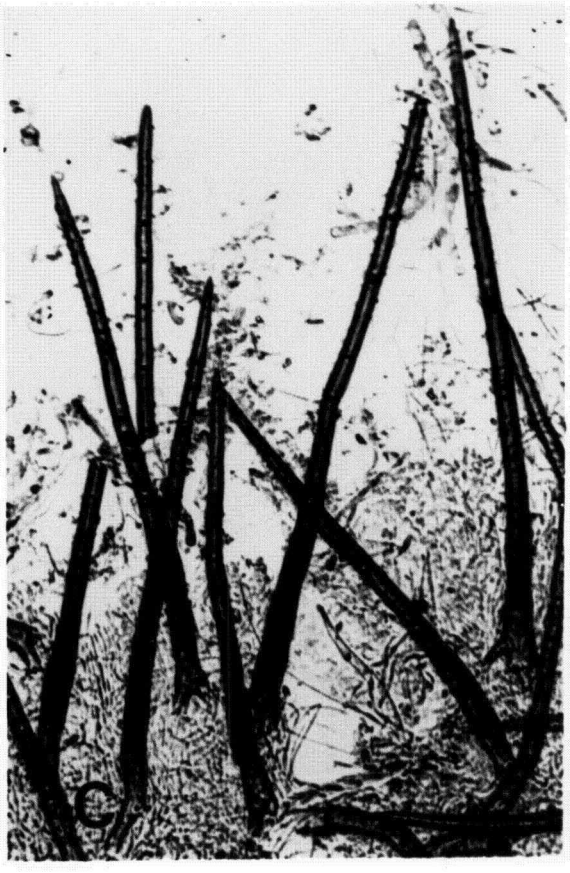


FIGURE 3. Cross sections of Pseudaleuria quinaultiana hair layer, stained with safranin and fast green. (560X)

FIGURE 3

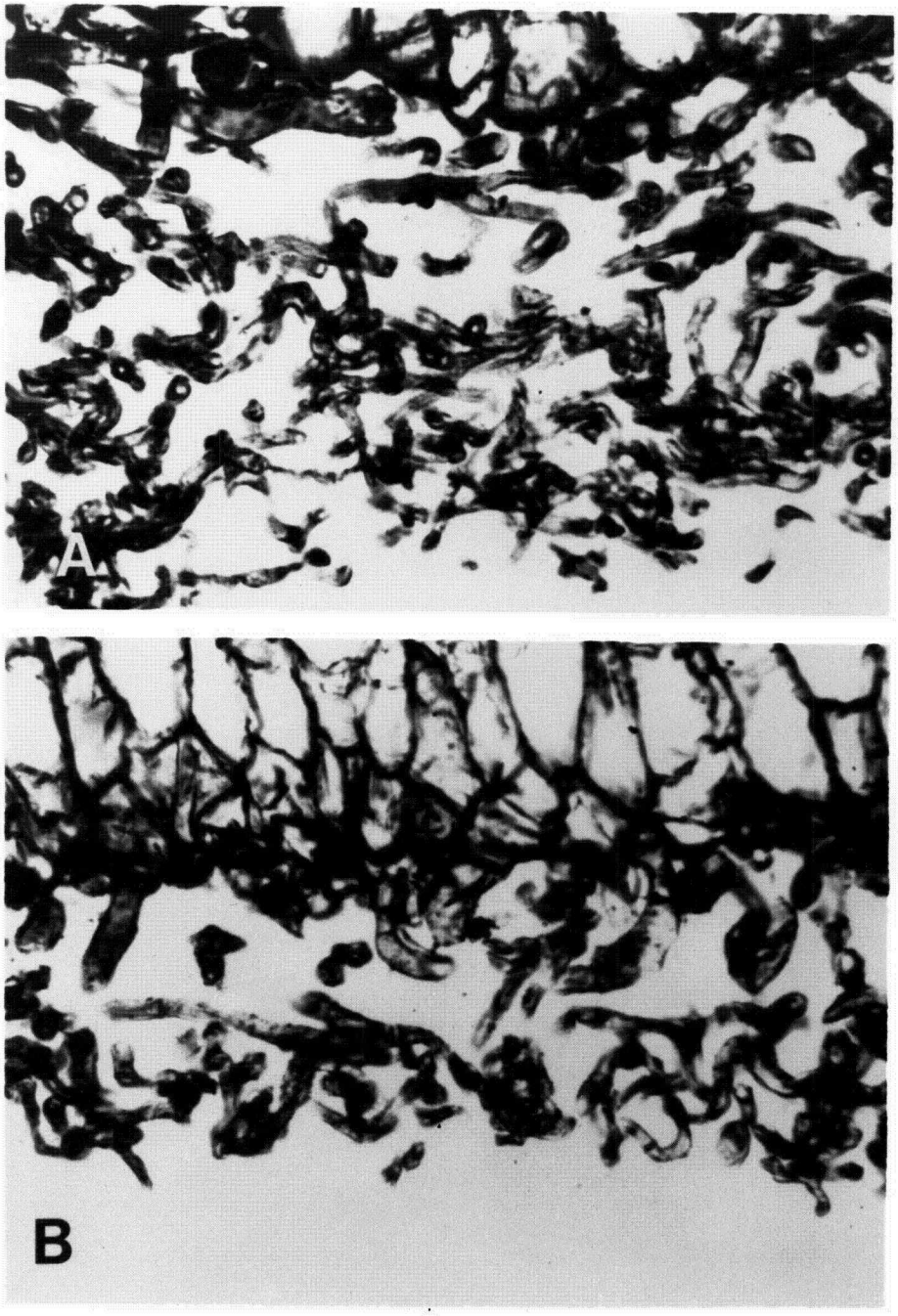


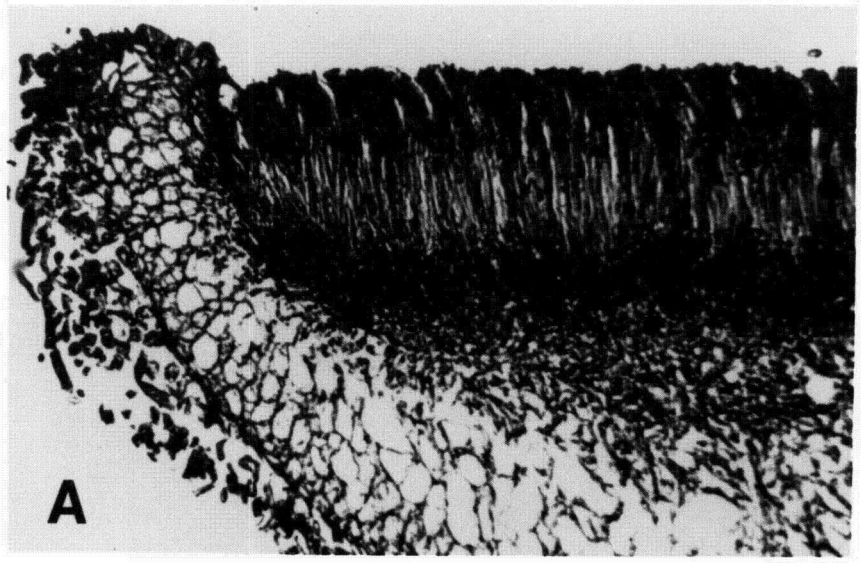
FIGURE 4. Apothecial cross sections, stained with safranin and fast green.

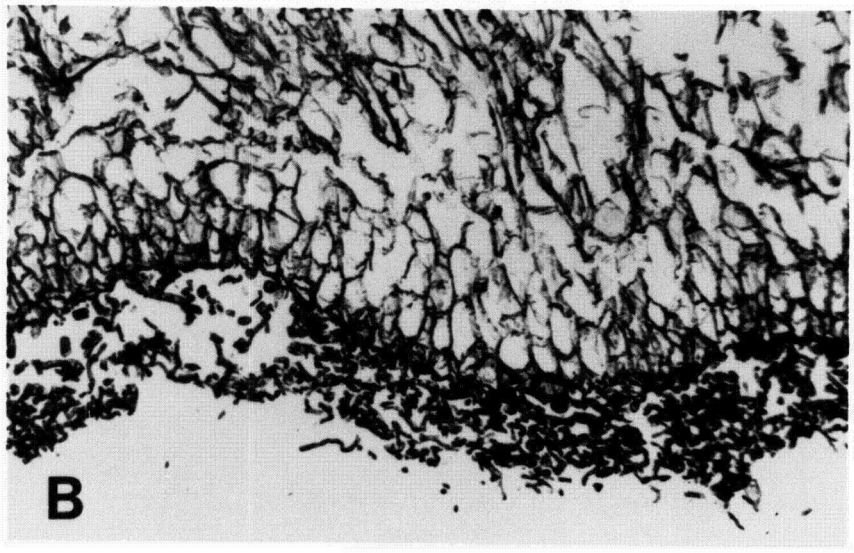
A. Pseudaleuria quinaultiana. (143X)

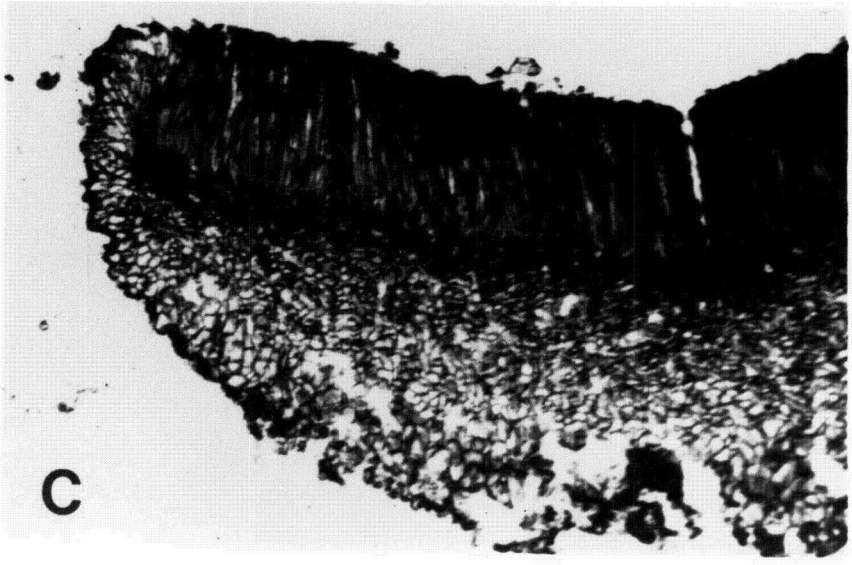
B. P. quinaultiana. (140X)

C. Aleuria aurantia. (120X)

FIGURE 4







When hairs are present on Aleuria Fuck., spp., they are hyaline, hyphoid, and thin-walled, but are never abundant (Korf, 1972). Melastiza Boud., a genus closely related to Aleuria has short, brown, hyphoid, thick-walled hairs (Korf, 1972, Eckblad, 1968). Again, the Melastiza hairs are very different from Pseudaleuria hairs. The brown, thick walled, setose hairs found in Scutellinia(Cooke) Lamb., and Cheilymenia Boud., (Fig. 2C) represent the most extremely different hair type from that of Pseudaleuria found in the Pezizales.

Hair differences are often correlated with differences in other characteristics, and thus are of taxonomic value at the generic level (Eckblad, 1968). Pseudaleuria hairs are distinct from the hairs of those genera thought to be most closely related. Therefore, this character supports the argument for creation of the new genus.

The excipular tissue combination (textura intricata / textura angularis) present in Pseudaleuria (Fig. 4A & B) is also found in at least some species of Iodophanus Korf, Octospora Hedw. ex S.F. Gray, Leucoscypha Boud., Scutellinia, Humaria Fuck., Tricharina (Boud.) Eckblad, Sphaerosporella (Svr.) Svr. and Kub., Jafnea Korf, Aleuria, Geopyxis (Pers. ex Fr.) Sacc., and Anthracobia Boud., (Eckblad, 1968). Although this tissue type combination is common in the Pyronemaceae (sensu Eckblad), the exact nature of the cells within each layer varies. of those genera listed above, Pseudaleuria excipular tissues compare most favorably with Aleuria tissues (Fig. 4C) as seen in the line drawings of Rifai (1968).

The excipular tissue combination of Pseudaleuria is distinct from that of Sarcoscypha (Fr.) Boud., which has an ectal layer of textura porrecta (Denison, 1972, Eckblad, 1968), and Pseudoplectania which is textura intricata throughout (Eckblad, 1968).

Micromorphology

Pseudaleuria asci are operculate, but there is no sign of the operculum prior to discharge (Fig. 5B). The wall at the apex appears uniform. There is no subapical pad discernible with the light-microscope (although opercula of immature asci frequently appear caved-in when material is rehydrated) as there is in members of the Sarcoscyphaceae (Fig. 5G).

FIGURE 5. Paraphyses, asci, and opercula, stained with Congo red.

A. *Pseudaleuria quinaultiana* paraphyses. (470X)

B. *P. quinaultiana* ascus. (625X)

C. *P. quinaultiana* opercula. (750X)

D. *Aleuria aurantia* paraphyses. (475X)

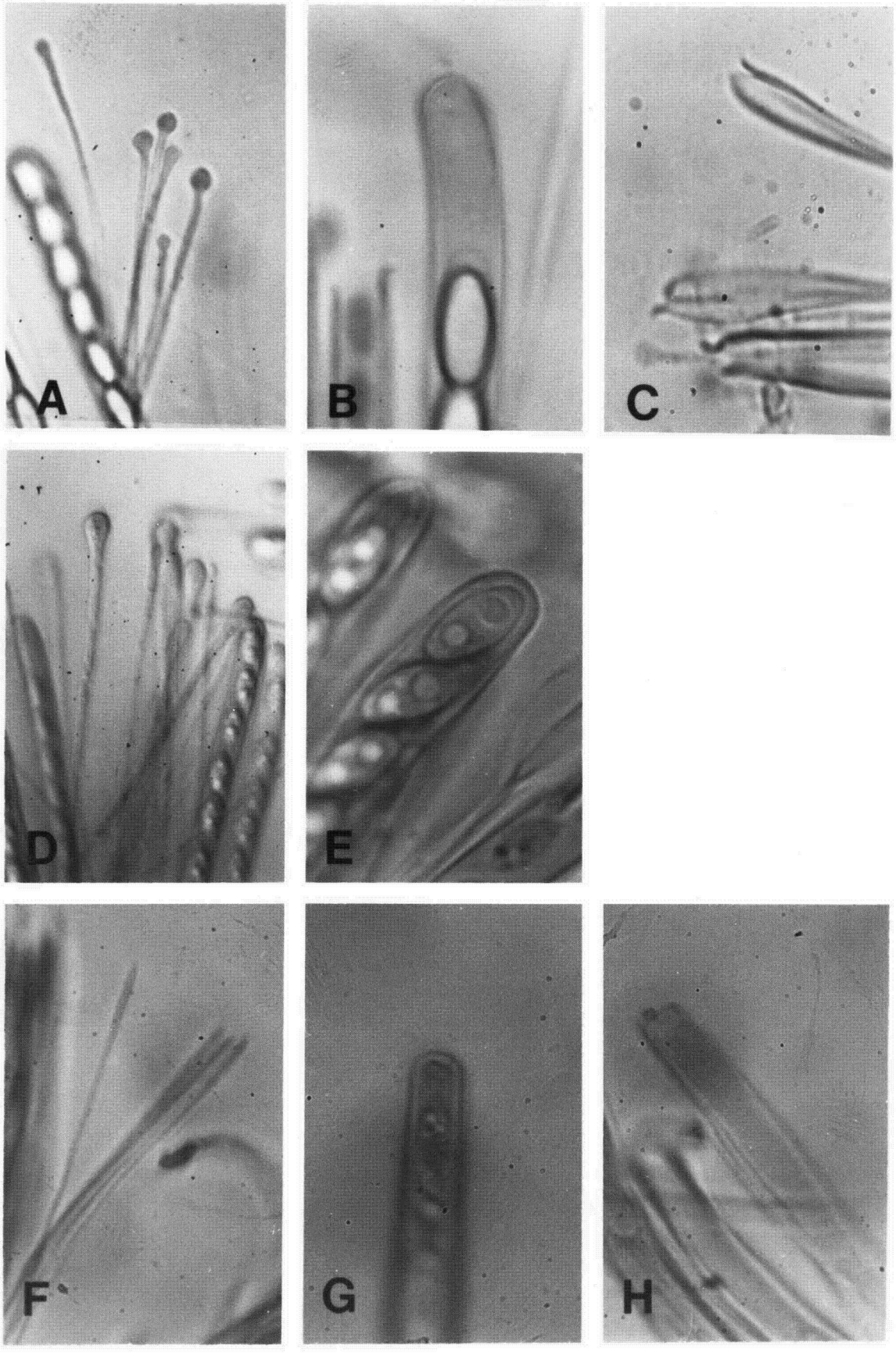
E. *A. aurantia* ascus. (1300X)

F. *Sarcoscypha coccinea* paraphyses. (665X)

G. *S. coccinea* ascus. (625X)

H. *S. coccinea* operculum. (665X)

FIGURE 5



Therefore, the asci are not suboperculate, and for this reason Pseudaleuria cannot be a member of the Sarcoscyphaceae. When comparing Pseudaleuria ascus characters to vanBrummelen's (1981) ascus descriptions, they are most similar to Aleuria asci (Fig. 5E). The most frequently encountered difference between asci of these genera is the lateral or eccentric position of opercula in Pseudaleuria (Fig. 5C), generally not seen in Aleuria. This habit is more typical of the tropical Sarcoscyphaceous genera Phillipsia Berk., and Cookeina O. Ktze., (Denison, 1967, 1969, 1972).

Ascospores of Pseudaleuria (Fig. 6A) are very unlike those of Aleuria and Melastiza. Pseudaleuria spores are smooth and eguttulate whereas Aleuria and Melastiza spores are always ornamented and contain 1 or 2, usually 2, oil droplets (LeGal, 1947, Korf, 1972, Eckblad, 1968, Seaver, 1914), (Table 1). These spore differences are a major reason for excluding P. quinaultiana from the genus Aleuria. Spore guttulation and ornamentation are considered of high taxonomic value on the generic level by Eckblad (1968).

Geopyxis spores are probably the most similar to Pseudaleuria spores being smooth, eguttulate, ellipsoid, and of the same size range (Korf, 1972, Khind and Kaushal, 1981). Geopyxis and Pseudaleuria differ in other critial characteristics, such as hair, pigmentation, and apothecial shape, and thus P. quinaultiana can not be considered to be a species in that genus.

Spores of Pseudaleuria are uninucleate. All members of the Sarcoscyphaceae have 2 to 25 nuclei per spore (Kimbrough, 1970, Eckblad, 1968). Despite similarities in color, form and operculum placement, the uninucleate condition, asci with thin rather than thick walls, and lack of a suboperculate pad in Pseudaleuria exclude it from the Sarcoscyphaceae.

Paraphyses of Pseudaleuria quinaultiana are similar to those of Aleuria, both being swollen at the apex (Fig. 5D & F). P. quinaultiana has more abruptly swollen and often larger apices than Aleuria spp. Kimbrough (1970) states that paraphyses characteristics have been useful in distinquishing taxa, particularly at the species level. Size and shape provide little or no evidence for separating Pseudaleuria from Aleuria, but differences in carotenoid content does. P. quinaultiana has caroten-

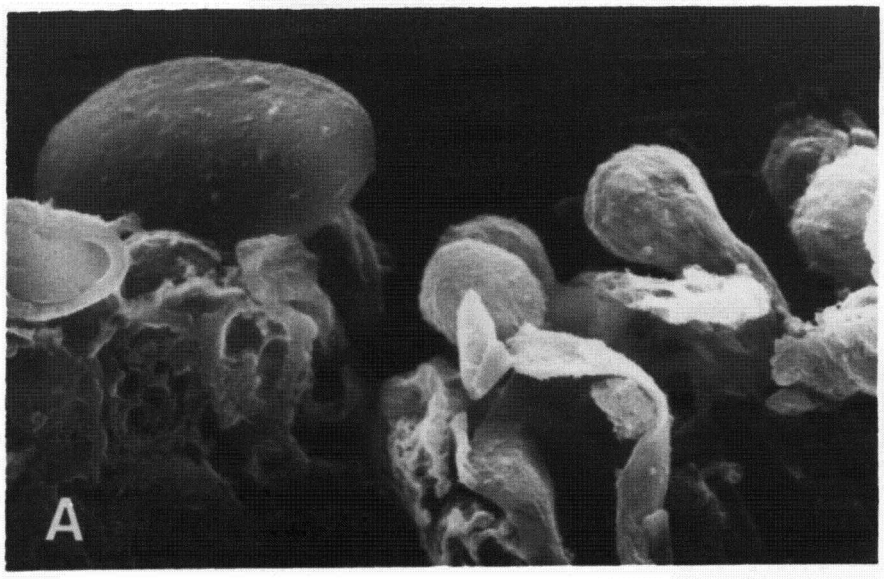
FIGURE 6. Scanning electron micrographs.

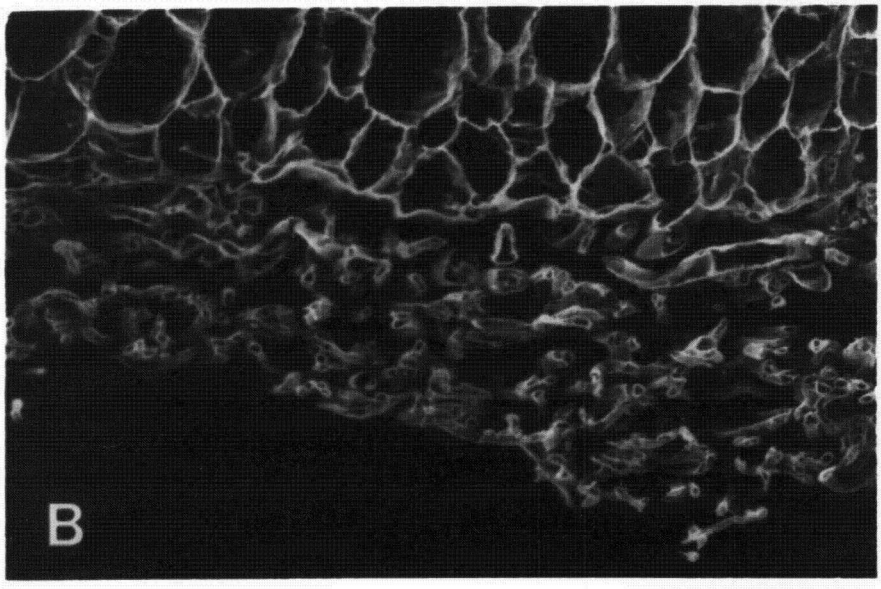
A. Psuedaleuria quinaultiana hymenial surface and spore. (4000X)

B. P. quinaultiana ectal layer and hair layer. (350X)

C. Aleuria aurantia spore. (5900X)

FIGURE 6





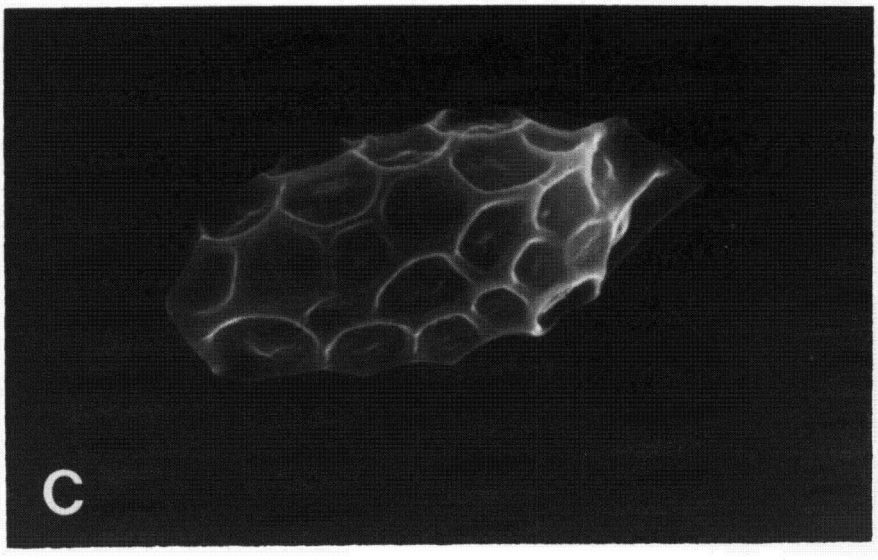


TABLE 1. Comparison of genera.

	Apothecia				Hairs						Para-physes		Oper-culum		Spores					
	small (< 5 mm)	medium (5-25 mm)	sessile	stipitate	setose	flexuous	& abundant	well-developed	& scattered	absent or few	< 100 µm long	> 100 µm long	enlarged	not enlarged	pad	with suboperculate	without	smooth	sculptured	guttulate	eguttulate	uninucleate	multinucleate
Pseudaleuria		X	X			X		X				X	X			X		X		X		X	
Aleuria	X	X	X	X		X			X		X		X	X		X			X	X		X	
Anthracobia	X	X	X			X		X	X		X		X			X		X		X		X	
Tricharina	X	X	X		X	X		X	X		X		X	X		X		X		X	X	X	
Caloscypha		X	X			X			X		X			X		X		X			X	X	
Sarcoscypha	X	X	X	X		X		X	X		X			X	X			X		X			X

oids as evidenced by a positive sulfuric acid test (Johansen, 1940). When the iodine test for carotenoids (Arpin, 1968) was used, P. quinaultiana tested negative, whereas Aleuria tested positive. The iodine test does not give a positive test for all carotenoids. Thus, while both genera have carotenoids, Aleuria has at least one carotenoid componud that Pseudaleuria does not. As carotenoid differences have been used to justify separation of taxa at the family and tribe levels (Arpin, 1968), the carotenoid difference here is further reason for separating P. quinaultiana from Aleuria.

Habitat & Ecology

Pseudaleuria quinaultiana has only been collected on the west slopes of the Olympic Peninsula to date (Larsen, 1978, Kanouse, 1947). In 1985 sites north of previously known sites (Lake Crescent area), and on eastern slopes were checked, but no P. quinaultiana was found. This fungus's range is clearly limited, but whether this is due to geographic isolation or a specific habitat requirement(s) is not known.

All collections have been made near the butt end of fallen conifers. In all sites except one, enough time had passed since the tree fell for reestablishment of Oxalis L., spp., mosses and liverworts (Fig. 1B). Collection OSC# 45,767 was taken from a rock slide about 1-2 meters from a fallen tree, but fruiting was not observed in 1985. Lack of fruiting in this case is noteworthy because the Lake Quinault site has fruited faithfully for 3 consecutive years. This suggests that the rock slide may lack some crucial element, environmental or otherwise, necessary for establishment of a perennial colony.

Some apothecia have been found on wood and others on soil. Without further study it is impossible to state conclusively that wood, or a disturbance site created by a fallen tree are requirements for the fruiting of P. quinaultiana. It is likely that this fungus is a decomposer, but the possibility of having a mycorrhizal association can not be excluded.

Spring collections of Pseudaleuria quinaultiana were made during the spring fruiting of Aleuria aurantia. A. aurantia fruits in the fall as well as spring. The Lake Quinault P. quinaultiana site was checked during the peninsula's fall fruiting of A. aurantia but no P. quinaultiana

apothecia were found. This suggests that P. quinaultiana fruits only in the spring.

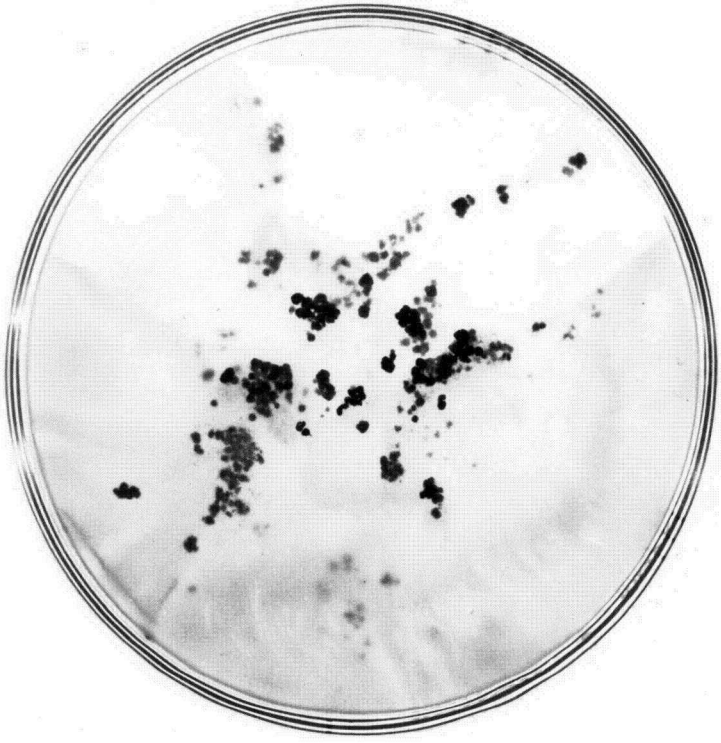
Culture

Although several media were tried Pseudaleuria quinaultiana failed to produce an anamorph. Several related general including Aleuria, Melastiza, Scutellinia, and Cheilymenia also fail to produce anamorphs in culture (Kendrick, 1979).

Sclerotia (Fig. 7) were produced by Pseudaleuria quinaultiana on all media tried. Production of sclerotia is uncommon in the Pezizales. Sclerotia have been found in species of Morchella Dell. ex Fr., (Boudier, 1897, Gilbert, 1960), Pyronema Carus (Moore, 1962, Rosinski and Korf, 1954), and Wynnea Berk. & Curt., (Rosinske and Korf, 1954). Although no information on the taxonomic value of sclerotia production in the Pezizales was found, the fact that sclerotia are not produced in all species of the genera in which they occur indicates that this is probably not a valuable generic character. On the other hand, it may be a valuable species character.

FIGURE 7. *Pseudaleuria quinaultiana* culture with sclerotia. (1X)

FIGURE 7



V. SUMMARY

Taxonomic Placement

Pseudaleuria quinaultiana gen. et sp. nova is an operculate ascomycete and therefore in the order Pezizales. Although the color, macromorphology, and regularly eccentric operculum of P. quinaultiana might lead one to conclude that this fungus is a member of the Sarcoscyphaceae, the nature of its operculum (lack of subapical pad) and the number of nuclei per ascospore exclude it from that family.

Based on apothecial pigmentation and shape, spore nucleation, excipular construction, and operculum, Pseudaleuria quinaultiana is a member of the Pyronemataceae (sensu Korf, 1972), Pyronemaceae (sensu Eckblad, 1968), Humariaceae (sensu Rifai, 1968), Aleuriaceae (sensu Arpin, 1968).

Similarities in the asci, excipular construction, paraphyses, and to a lesser extent apothecial size, shape, and color, suggest that Pseudaleuria's most closely related genus is Aleuria (Table 1). Aleuria is a member of the Aleurieae tribe as described by Korf (1972) and Rifai (1968). Pseudaleuria also fits Korf's description. As the paraphyses (carotenoids) of Pseudaleuria do not green in iodine this genus would be considered an atypical member of that tribe as described by Rifai (1968).

Taxonomic Validity

In the Pyronemataceae / Pyronemaceae all sclerotia producing species known to date belong in the genus Pyronema. As described by Moore and Korf (1963) Pyronema apothecia are minute, and a recently sterilized substrate is necessary for fruiting. Clearly, the fungus species described earlier is not a member of that genus as described, and therefore must be a new species of another genus in that family.

This new species not only fits well into the Aleureae tribe (sensu Korf, 1972) it has critical differences (usually hair, pigmentation, habit, or apothecia size) which exclude it from all other tribes described in the Pyronemataceae (Korf, 1972). None of the genera in that tribe have the hair characteristics of this new species. This difference alone might be considered sufficent for erecting a new genus; however, here additional

differences such as spore ornamentation and guttulation, substrate requirements, and apothecial size and shape exist. The new species does not fit well into any established genus, and therefore creation of a new genus for it is reasonable.

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