

STUDIES IN ANTARCTIC LICHENS IV: Notes on *Umbilicaria aprina* Nyl.

by

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SUMMARY

The occurrence of *Umbilicaria aprina* Nyl. in Antarctica is confirmed. On the basis of thallus morphology *Umbilicaria spongiosa* Dodge & Baker and *Umbilicaria antarctica* var. *subvirginis* Frey & Lamb are proposed as synonyms of *Umbilicaria aprina*.

INTRODUCTION

Previously the author referred all of the rhizinate *Umbilicaria* specimens from Mac. Robertson Land, Antarctica to *Omphalodiscus antarcticus* (Frey & Lamb) Llano. (Filson 1966:59). Kashiwadani (1970) and Lindsay and Brook (1971) have similarly referred rhizinate *Umbilicaria* specimens from other regions in Antarctica to *O. antarcticus*.

Lindsay (1972) suggested that two species were involved; *Umbilicaria antarctica* from the Antarctic Islands and Peninsula region, and *U. aprina*, a Northern Hemisphere species on the Antarctic Continent. This present study supports this suggestion confirming the presence of *U. aprina* in mainland Antarctica.

DISCUSSION

Llano in his treatment of *Umbilicaria* (*Omphalodiscus*) *antarctica* (1950: 76-78) clearly had not seen the type specimen of this species, stating that he had not seen fertile specimens. The description he gave for *U. antarctica* Frey & Lamb, was very similar to that of *U. spongiosa* Dodge & Baker and it seems certain that he was confused as to the identity of *U. antarctica*. This confusion led to Filson (1966:60) placing all of the rhizinate *Umbilicaria* material from Mac. Robertson Land under *O. antarcticus*.

The author has recently examined the type specimen of *U. antarctica* (figs. 3 & 4) and considers it to be significantly different from other rhizinate *Umbilicaria* specimens found on mainland Antarctica. The specimen is large, 16 cm wide on its widest axis, upper surface light buff, browning towards the margins, smooth, not at all rugulose hardly even wrinkled, margins deeply lacerate. Lower surface is sooty black with a dense coverage of rhizines around the margins extending inwards for 4-5 cm, zone around the umbilicus bare. Rhizines variable, thin or thick, terete or flattened, simple or branched, black at the base, pale towards the tips.

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This specimen is the largest, smooth surfaced sample that the author has seen. Although there are no habitat details available it is possible that the specimen may have been collected from a very sheltered environment. Many small pale coloured and smooth surfaced rhizinate *Umbilicaria* specimens from Mac. Robertson Land are similar in thallus morphology.

Umbilicaria antarctica var. *subvirginis* Frey & Lamb (fig. 6a) is very similar to most rhizinate *Umbilicariaceae* found on mainland Antarctica. Dodge (1948: 148) confirmed this by placing the variety *subvirginis* Frey & Lamb as a variety of *U. spongiosa* Dodge & Baker. Llano (1950: 93) suggested that despite some morphological and anatomical differences the var. *subvirginis* was not distinct and should merely be treated as a synonym of *Umbilicaria* (*Omphalodiscus*) *spongiosa*. Dodge (1973: 124) apparently still considers it to warrant separation and made the new combination *O. spongiosa* var. *subvirginis* (Frey & Lamb). This author has examined both the type of *Umbilicaria antarctica* var. *subvirginis* from Cape Sastrugi, Evans Cove, Victoria Land, (74° 59'S., 163° 47'E.) and a portion of the type of *Umbilicaria spongiosa* from Lichen Peak, Marie Byrd Land, (76° 55'S., 145° 20'W.) and considers them to be the same taxon.

Lindsay (1972: 14) suggested that *U. spongiosa* was very similar to *Umbilicaria aprina* Nyl. The type specimen of *U. aprina*, from Dedschen Mountains, Abyssinia (Nylander 31742) and several recent collections from Iceland have been examined. A comparison of these specimens with the type specimens of *U. antarctica* var. *subvirginis* and *U. spongiosa* and all the recent collections of rhizinate *Umbilicaria* from Antarctica and housed in the National Herbarium, Melbourne, suggested that they were conspecific.

The holotype of *U. aprina* consists of two large and two smaller fragments, (see fig. 1a) the two larger fragments being dissimilar. On one fragment (fig. 1a(i)) the upper surface (fig. 7a) is smooth and rugulose, warm brown to buff, the lower surface (fig. 7d) is black, not very rhizinate, rhizines thick terete or flattened, simple or branched, mostly black with pale tips. This fragment corresponds closely to *U. spongiosa*. On the second fragment (fig. 1a(ii)) the upper surface is warm brown to buff and smoother and less rugulose. The lower surface of this fragment (fig. 7b) is black, densely rhizinate, rhizines simple or branched, terete, black at the base but mostly pale. This fragment corresponds closely to specimens of *U. aprina* collected in Iceland (fig. 2).

One sample of *U. aprina* collected at Herðubreðarlínder, Central Highlands, Iceland, contained six lichen thalli of which four are illustrated (fig. 2). These specimens vary considerably in their surface texture and rugosity; some being rugulose around the umbo and quite smooth towards the margins (fig.

7c), while others are rugulose to the margins (fig. 7e). The colour of the upper surface varies from light grey to pale brownish grey. The lower surface (fig. 7f) is mostly sooty black and the degree to which it is covered with rhizinae varies from complete coverage to having a wide bare zone for some distance out from the umbilicus.

In Antarctica under some conditions *U. spongiosa* forms tightly compressed thalli with ascending margins (fig. 6c). These thalli have in the past been mistakenly referred to var. *subvirginis*. This same tightly compressed form also occurs in Iceland (fig. 6b). There seems no reason to apply sub specific rank to such forms caused by environmental conditions.

From the fragment of the type specimen of *U. spongiosa* (fig. 5a) it appears that this is a very old and weathered sample. The upper surface (fig. 8a) is very rugulose, warm brown to buff, with a thick amorphous layer. The lower surface (fig. 8b) is densely rhizinate, rhizines simple or branched, terete or flattened, black at the base but mostly pale. This sample compares favourably with other old weathered specimens collected in Mac.Robertson Land by the author (Filson 4455 fig. 5d).

The present study has indicated that *U. aprina*, *U. spongiosa* and *U. antarctica* var. *subvirginis* are conspecific. It is evident that *U. antarctica* will have to be examined more carefully in the field in order to clarify its taxonomic relationship since the type from Signey Island, South Orkneys (60° 43'S., 45° 38'W.) appears quite different to any other specimens seen by the present author. Lindsay (1974, *pers. comm.*) stated that:

“The type of *Umbilicaria antarctica* in BM is a large, well-developed specimen and in some ways, e.g. colour of the dorsal surface, colour and development of rhizinae on ventral surface, is not typical of much of the material of *U. antarctica* I saw in the South Orkneys.”

It appears from this that the type of *U. antarctica* may be atypical and its differences may be attributed to environmental conditions.

ACKNOWLEDGMENTS

The author is indebted to Dr. D. C. Lindsay who first determined the Antarctic *Umbilicaria* as *U. aprina* Nyl. and who also gave helpful comments during the course of this study. He wishes to thank The Director, British Museum (Natural History), The Director, Botanical Museum, University of Helsinki and Prof. C. W. Dodge for the loan of type specimens. He offers special thanks to Dr. Horður Kristinsson for collecting weathered specimens of *U. aprina* in Iceland and for the loan of specimens from the herbarium of the Akureyri Museum of Natural History.



Fig. 1. — a — Type specimen *Umbilicaria aprina* Nyl. from Dedschen Mountains, Abyssinia; b — section through upper cortex, scale = 10 $m\mu$; c — section through lower cortex, scale = 10 $m\mu$.

NATTURUGRIPASAFNIÐ A AKUREYRI
Museum rerum naturalium Akureyrense
HERBARIUM

Umbilicaria aprina

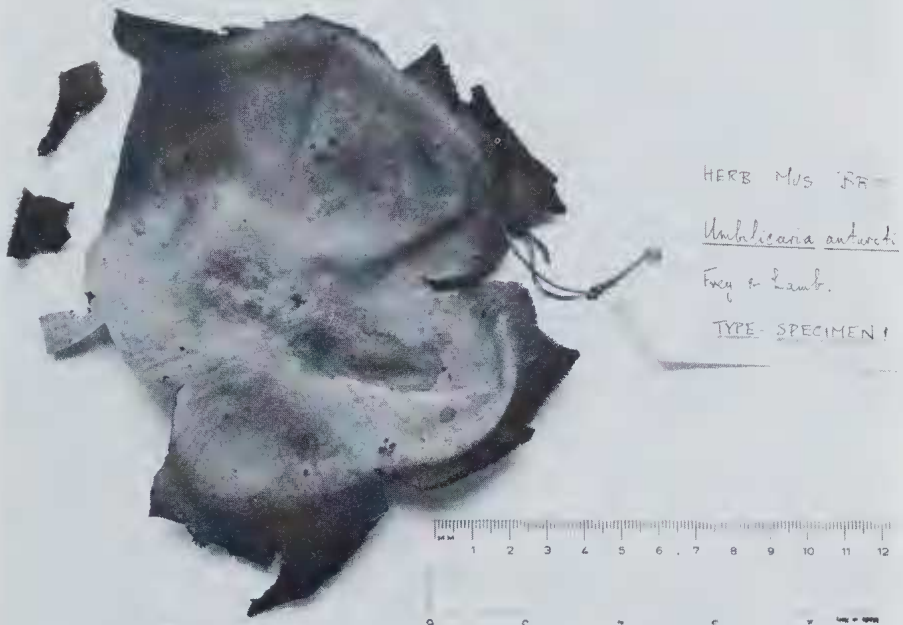
Loc. Central Highlands: Herðubreiðar-
lindir, on rock.

Hab. 420 m. Dat. 22 August 1974

No. 2815 Leg. Hörður Kristjánsson
Det. Hörður Kristjánsson



Fig. 2. — a — Weathered specimen of *Umbilicaria aprina* Nyl. from Central Highlands, Iceland; b — section through upper cortex, scale = 10 μ ; c — section through lower cortex, scale = 10 μ .



Umbilicaria antarctica Frey & M. Lamb
in Trans. Brit. Mycol. Soc., XXII, 270 (1939).

Type specimen from

Antarctica: South Orkneys, Signy Island,
leg. A. G. Bennett, 1915.

Fig. 3. — Upper surface of Type specimen *Umbilicaria antarctica* Frey & Lamb from Signy Island, Antarctica.



Fig. 4. — a — Lower surface of Type specimen *Umbilicaria antarctica* Frey & Lamb from Signy Island, Antarctica; b — section through upper cortex, scale = 10 $m\mu$; c — section through lower cortex, scale = 10 $m\mu$.

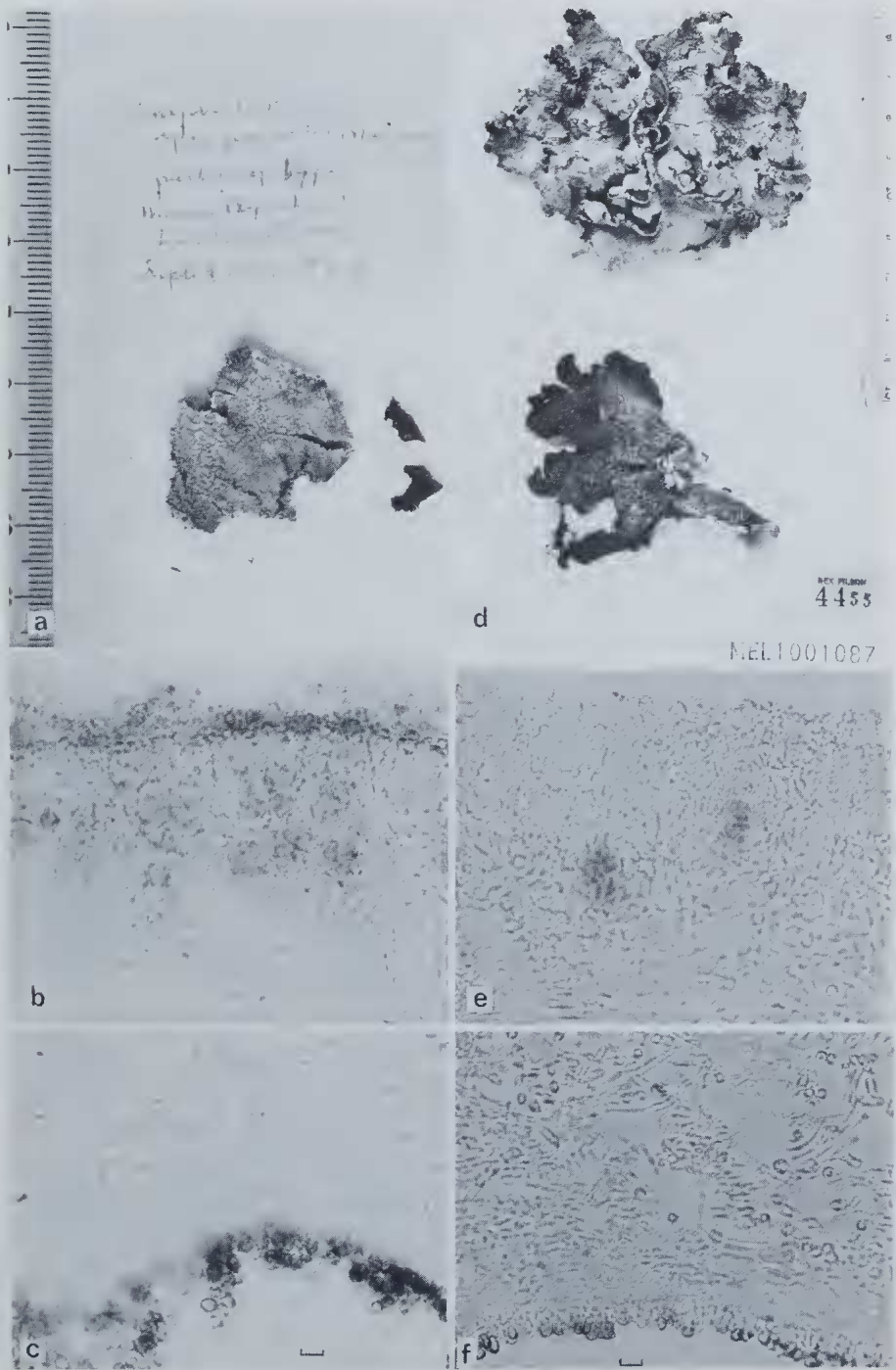
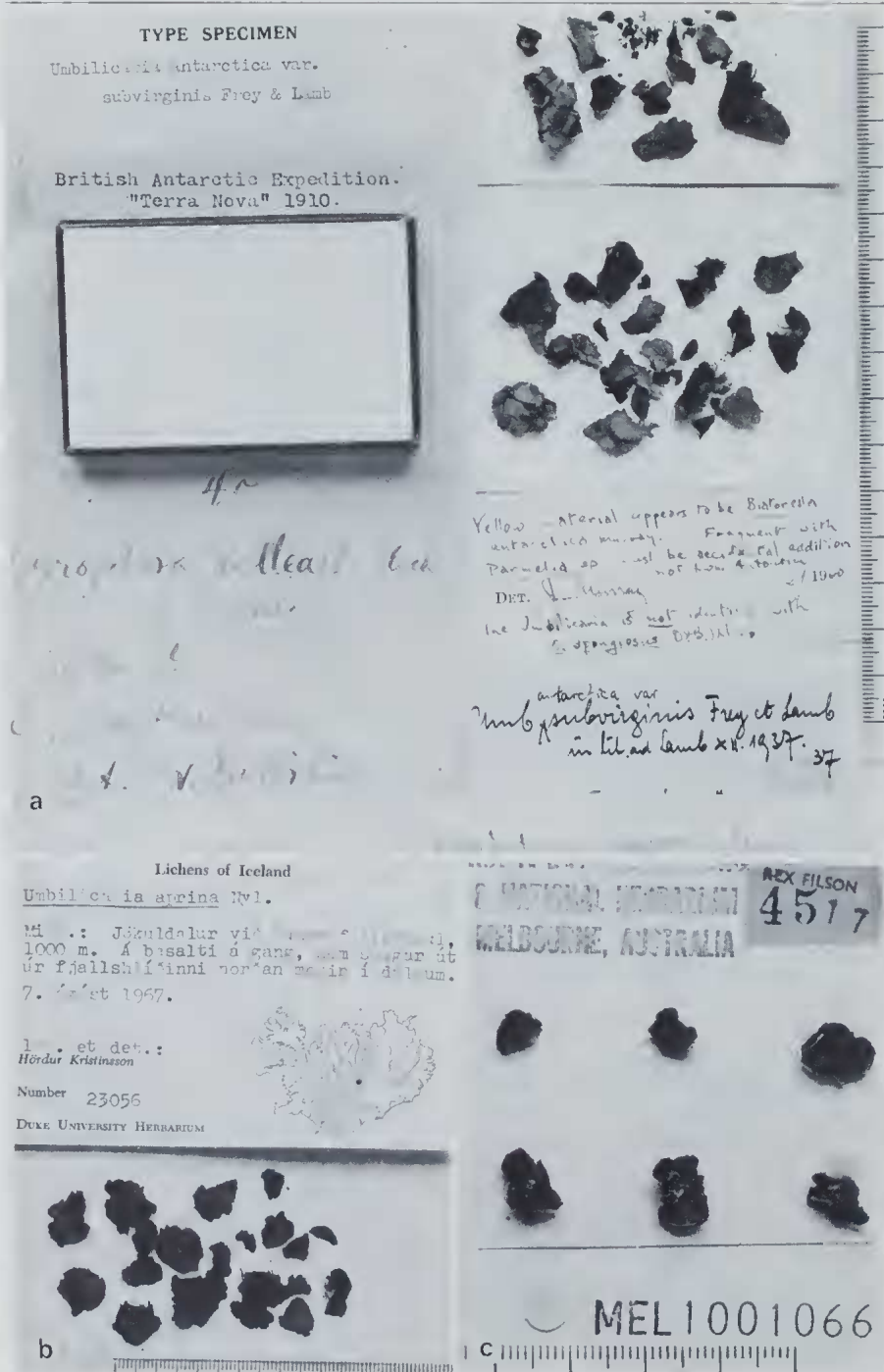


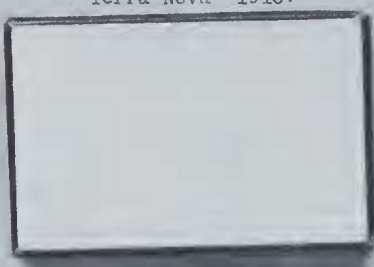
Fig. 5. — a — Portion of Type specimen *Umbilicaria spongiosa* Dodge & Baker from Lichen Peak, Marie Byrd Land, Antarctica; b — section through upper cortex; c — section through lower cortex, scale = 10 $m\mu$; d — specimen of *U. aprina* Nyl. from Field Rock, Mac. Robertson Land, Antarctica; e — section through upper cortex; f — section through lower cortex, scale = 10 $m\mu$.



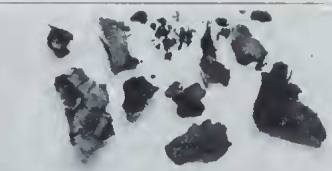
TYPE SPECIMEN

Umbilicaria antarctica var.
subvirginis Frey & Lamb

British Antarctic Expedition.
"Terra Nova" 1910.



Umbilicaria antarctica var. *subvirginis* Frey & Lamb
Cape Sastrugi, Evans Cove, Antarctica



Yellow - areolae appears to be *Biaforella antarctica* Murray. Frequent with *Paracelia* sp. - not be accidental addition not from Antarctica - 1960
DET. J. Murray
The *Umbilicaria* is not identical with *U. spongosus* (Duby.) M. S.

Umbilicaria antarctica var. *subvirginis* Frey & Lamb
in *Lilad Lamb* x. v. 1937. 37

a

Lichens of Iceland

Umbilicaria aprina Nyl.

Mi. .: Jökuldalur við . . . 1000 m. Á basalti á gans, sem er áttur út úr fjallshlífinni norðan megin í dalnum.
7. Okt 1967.

l. . . et det.:
Hörður Kristjánsson

Number 23056

DUKE UNIVERSITY HERBARIUM



b

NATIONAL HERBARIUM
MELBOURNE, AUSTRALIA
REX FILSON
4517



MEL1001066

c

Fig. 6. — a — Type specimen *Umbilicaria antarctica* var. *subvirginis* Frey & Lamb from Cape Sastrugi, Evans Cove, Antarctica; b — small thalli of *Umbilicaria aprina* Nyl. with upturned margins from Iceland; c — small thalli of *U. aprina* Nyl. with upturned margins from Mount Burnett, Mac. Robertson Land, Antarctica.

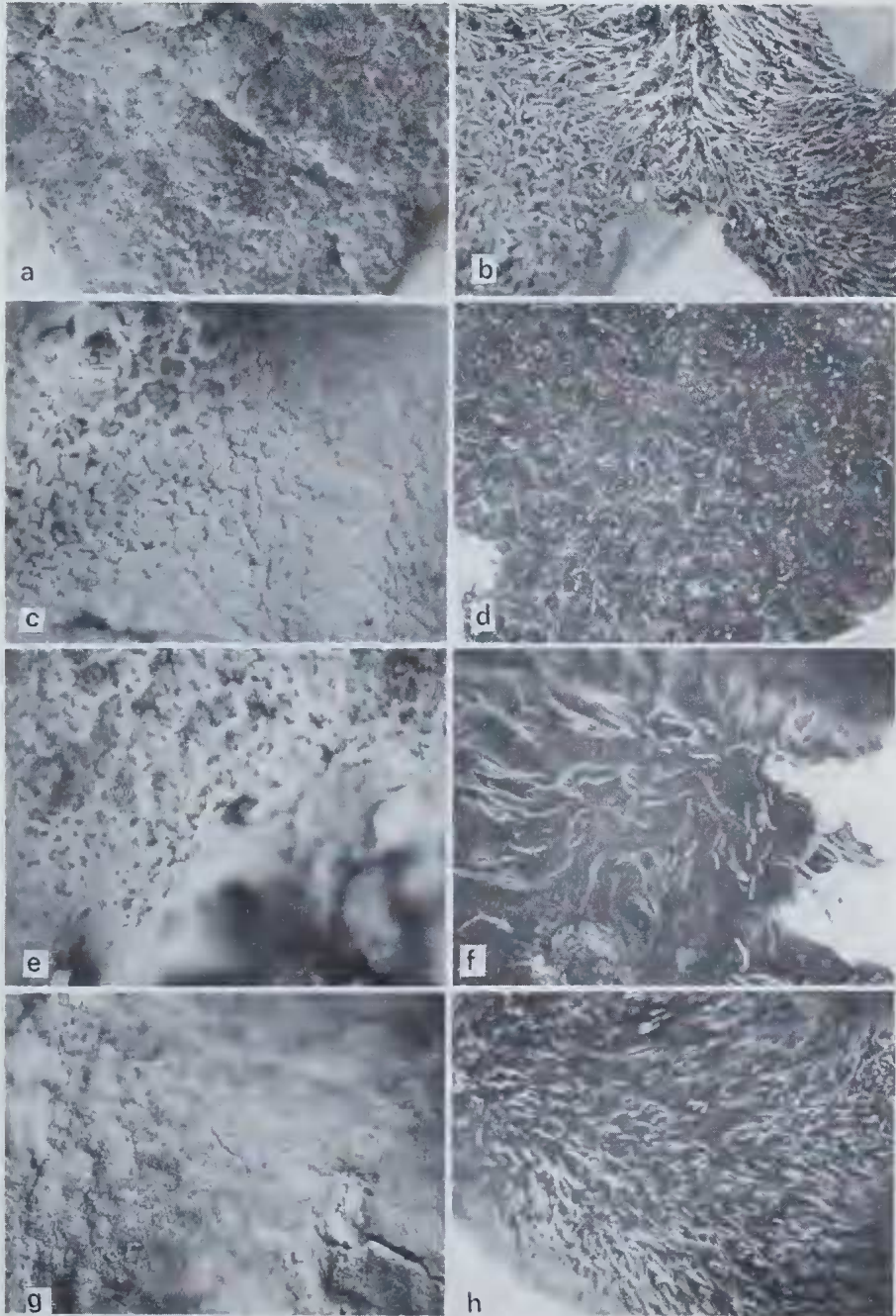


Fig. 7. — a — Upper surface of fragment (i) Type specimen (fig. 1a) *Umbilicaria aprina* Nyl.; b — lower surface of fragment (ii) Type specimen *U. aprina* Nyl.; c — upper surface *U. aprina* Nyl. (fig. 2a) illustrating specimen with rugulose surface around the umbo, becoming smooth towards the margin; d — lower surface of fragment (i) Type specimen (fig. 1a) *U. aprina* Nyl.; e — upper surface *U. aprina* Nyl. (fig. 2) illustrating specimen with rugulose surface to the margin; f — lower surface *U. aprina* Nyl. (fig. 2); g — upper surface *U. aprina* Nyl. (fig. 5d); h — lower surface *U. aprina* Nyl. (fig. 5d).

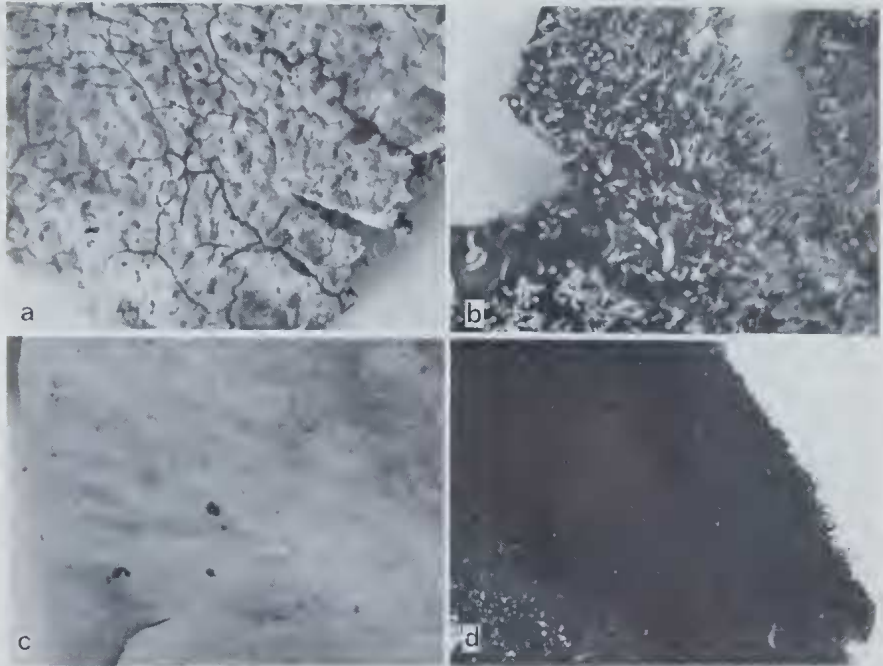


Fig. 8. — a — Upper surface Type specimen *Umbilicaria spongiosa* Dodge & Baker (fig. 5a); b — lower surface Type specimen *U. spongiosa* Dodge & Baker (fig. 5a); c — upper surface Type specimen *Umbilicaria antarctica* Frey & Lamb (fig. 3); d — lower surface *U. antarctica* Frey & Lamb (fig. 4a).

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