

FALKLAND ISLAND HEPATICAE
AND ANTHOCEROTAE:
A TAXONOMIC AND
PHYTOGEOGRAPHIC STUDY

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This is to certify that the
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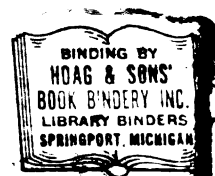
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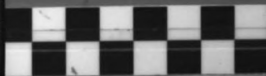
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ABSTRACT

FALKLAND ISLAND HEPATICAEE AND ANTHOCEROTAE: A TAXONOMIC AND PHYTOGEOGRAPHIC STUDY

By

John J. Engel

The Falkland Islands were visited in 1968 and ca. 1000 collections of Hepaticae and Anthocerotae were made. These collections, which represent the first made by an hepaticologist in the Falklands, as well as the collections of earlier visitors such as Sir J. D. Hooker and Dr. Carl Skottsberg, were studied in detail and identified insofar as possible by comparison with pertinent type material. The results of this study are presented in the form of keys to all taxa, and a treatment of each of the 127 species. These treatments include taxonomic and nomenclatural remarks where pertinent, statements of ecological tolerances, and requirements, phytogeographic remarks, lists of literature records and lists of material studied. Particular attention is given to the typification of Falkland Island and related taxa.

Studies resulted in one new genus, Hygrobiellopsis (Schust.) Engel, and the following new species: Adelanthus tenuis, Andrewsianthus australis, A. planifolius, Chiloscyphus hookeri, Frullania pseudolobulata and Metzgeria falklandica. Detailed plates of all new taxa have been prepared. In addition, the following nine new combinations were made: Cheilolejeunea savatieriana (Besch. & Mass.)

Engel, Clasmatocolea cookiana (Mass.) Engel, Clasmatocolea georgien-
sis (Gott.) Engel, Hygrobiellopsis isophyllum (Schust.) Engel, Meta-
hygrobiella tubulata (Hook, f. & Tayl.) Engel, Microlepidozia cuculli-
folia (Steph.) Engel, M. mollis (Steph.) Engel, M. saddlensis (Besch.
& Mass.) Engel, and M. setiformis (De Not.) Engel.

The ecology of the Falkland Island Hepaticae and Anthocerotae is assessed by the arrangement of the taxa into the communities recognized by previous workers.

The distribution of taxa within the Falkland Islands is discussed, especially with reference to available rainfall data. An assessment of the phytogeographic affinities of the Falkland Island Hepaticae and Anthocerotae is made, with special reference to the characteristics and differentiation of south temperate and subantarctic distribution patterns. These patterns are historically based on the classification of austral regions which primarily utilize vegetational criteria. The relative merits of the several zonation schemes is discussed and summarized.

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I am indebted to Richard C. Harris for assistance with the Latin diagnoses. I am grateful to the following hepaticologists for identifying Falkland Island groups in which they specialize. The keys to these groups were also prepared by these specialists. These individuals are: Dr. R. Grolle, Jena Germany (Cryptochila, Jamesoniella), with special thanks to Dr. Grolle who generously supplied unpublished

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THE FALKLAND ISLANDS

A. Location

The Falkland Islands lie between 51° 00' and 52° 30' S., and 57° 40' and 61° 30' W. in the South Atlantic Ocean, 520 km. east of the Strait of Magellan. The Falklands are an archipelago of more than 230 islands, comprised of two principal islands, East Falkland with adjacent small islands making up ca. 5,000 sq. km. and West Falkland, with adjacent small islands, ca. 3,500 sq. km.

The Falkland Islands were previously settled by the French, who referred to them as Iles Malouines. The islands are currently administered as a British crown colony, but claimed by Argentina and referred to as Islas Malvinas. On various Argentine maps, East Falkland Island is known as "Isla Soledad" and West Falkland Island as "Isla Gran Malvina."

B. Topographical Features

In general, the Falklands are made up of generally hilly terrain. The southern portion (Lafonia) of East Falkland is low and flat. The principal mountainous areas extend east-west in the north of the islands, with Mt. Kent (458 m.) and Mt. Usborne (705 m.) in East Falkland, and Mt. Adam (750 m.), Mt. Fegan (360 m.) and Byron

Heights (520 m.) in West Falkland. The Hornby Mountains (including Mt. Maria, 658 m., Muffler Jack Mt., 547 m. and Mt. Moody, 554 m.) lie in West Falkland and roughly parallel Falkland Sound. The small islands occasionally reach quite high altitudes e.g., Keppel Island (Mt. Keppel, 342 m.), Saunders Island (Mt. Harston, 433 m., Rookery Mt., 422 m. and Mt. Rees 372 m.) and Weddell Island (Mt. Weddell, 380 m.).

A large number of valleys, small rivers, streams and boggy areas are present on the islands.

C. Geological Features

The very brief and general account of the geological features provided here merely summarizes the major rock types occurring in the Falklands. Detailed accounts may be found in Adie (1952 a,b, 1953, 1958), Andersson (1907), Baker (1922), Cawkell et al. (1960) Halle (1912) and Riggi (1934). The following review is based primarily on the summary in Cawkell et al. (1960).

The Falklands are almost entirely composed of Palaeozoic and Mesozoic sedimentary rocks. Virtually the only metamorphic and igneous rocks are restricted to Cape Meredith, the southernmost tip of the Falklands.

The Falkland Islands lie on the edge of the Patagonian continental shelf, but as Cawkell et al. (loc. cit., p. 173) state, "there is no stratigraphical connection between the

Falklands and the nearer parts of the South American mainland." The Falkland rocks have strong lithological and structural affinities with those of South Africa, Uruguay and southern Brazil. There is a striking similarity between the marine invertebrate and plant fossils of the Falklands and South Africa, and this evidence, along with studies on fold systems, was used by Adie (1952b) to suggest that during the late Palaeozoic-early Mesozoic, the Falklands were in an inverted position some 250 km. east of the Eastern Province, South Africa, and after fragmentation of Gondwanaland, the Falklands drifted to their present position.

Today there are two main morphological elements which may be recognized within the Falklands. With the exception of the Cape Meredith region, the remainder of West Falkland and the northern half of East Falkland are composed of Devonian sandstones and quartzites. The quartzite is particularly evident as conspicuous parallel ridges which run east-west along the folding zone. The sandstone occurs principally in valley bottoms (Skottsberg, 1913). The southern region (Lafonia) of East Falkland is built up of Permo-carbonian sand- and claystones. The stoneruns, which are so conspicuous in West and northern East Falkland are absent in Lafonia (Skottsberg, loc. cit.). The only limestone occurring in the Falklands is the raised beach at Shell Point, near Fitzroy, East Falkland. This region was not personally visited.

There is no evidence to suggest that the Falkland Islands supported permanent glaciers during the Pleistocene. It is believed that even during the glacial maxima, periglacial conditions persisted

in the islands. However, evidence has shown a Permo-Carboniferous ice sheet existed on the Falklands and this glacier deposited a considerable thickness of tillite.

D. Soils

In the absence of any comprehensive studies on the soils of the Falklands, only a few general remarks will be made here. For further information see Davies (1939), Moore (1968) and Skottsberg (1913).

Podsolization is probably favored by the generally acid conditions, combined with leaching and lack of disturbance (Moore, 1968). Peat accumulation is widespread, the extent depending largely on local drainage. As Moore (loc. cit., p. 5) indicates, "undegraded plant remains normally constitute a high proportion of the top soil, which may vary from a shallow, hard, dry peat under Empetrum on the quartzite ridges to a black, plastic humus under the Chilietrichum scrub that fringes, rivers and creeks."

E. Climate

The Falkland Islands lie on the northern edge of the principal depression belt through Drake Passage (Cawkell et al., 1960). These islands are consequently dominated by the westerly winds, fronts and air masses moving across this region. Although the Falklands are

influenced by their position on the lee side of the Andes the 520 km. of open sea greatly tempers this effect.

Precipitation.--Moore (1968) has assembled the mean annual precipitation figures for those localities with records available for six or more years. This data is presented in Map 61. It may be observed that the drier areas of the islands are in the south, and the wetter areas in the north. The stations with highest available figures lie on the immediate lee sides of mountain ranges, and a general gradient may be observed from west to east in either island, with Port Howard the wettest station in West Falkland and Port Stanley one of the wettest in the East Falklands. The 609 mm. figure for Port Stanley is second only to the 636 mm. of Port San Carlos. The Port Stanley data in Moore (1968) may be conservative, as Davies (1939, p.2) records "in the order of" 635 mm., and Cawkell et al. (1960, p. 188) records "about" 686 mm. for the capital. Moore (1968) points out that the low rainfall of Pebble Island could result from its lying in the "rain shadow" of the Mount Adam complex. The difference between San Carlos and Port San Carlos may be due to The Verde Mountains which lie between the two stations or to some other local factor.

Cawkell et al. (1960) attempt to explain the slight summer maximum in rainfall figures for Port Stanley through the greater tendency for convection and showers in the northeast part of East Falklands. The air has become moist and unstable after it has crossed the Drake Passage, and it is pointed out that an unstable air mass approaching the Falkland Islands from the southwest will produce only

cumulus cloud cover at Fox Bay and Goose Green. However, after this air mass has been sufficiently heated from the land, and perhaps been uplifted by high ground west of Port Stanley, it is able to produce showers in the northeast region of the islands. It is likely that this phenomenon of heating and uplifting is occurring on both island groups and accounts for the data obtained.

The rainfall is distributed fairly even throughout the year, with a slight maximum in summer (December-January). The number of days with rainfall is high (ca. 250 days) with few days of excessive rainfall. The rainfall intensity is thus low, and daily falls exceeding 13 mm. are rare (Cawkell et al., 1960).

Temperature.--The temperature data for Port Stanley is as follows (after Moore, 1968):

	Mean	Minimum	Maximum	Mean Minimum	Mean Maximum
January	8.8	0	23.9	5.4	12.9
July	2.2	-7.8	8.9	0	4.3

While temperature data is available from only Port Stanley, Fox Bay and Westpoint Island, Moore (p. 7) states there is a "suggestion of increasing temperatures towards the west and south of the islands."

Humidity, Cloud and Sunshine.--Cawkell et al. (1960) indicate that the relative humidity average values are high; the mean annual value is 82% at 0900 ZT, and varies from a mean of 75% in November to 90% in July. The Falkland Islands witness a large number of overcast days. The average annual duration of sunshine is less than 35% of the total possible for the latitude of Port Stanley (Cawkell et al., loc. cit.).

II. COLLECTORS OF HEPATICA AND ANTHOCEROTAE

The most significant collections of hepatica have been those of Hooker, Skottsberg and Halle, while those of Lechler and Cunningham have been less numerous. Below is a chronological list of collectors together with pertinent data.

Collector	Expedition	Date of Collection	Collecting Area	No. of Species	Ref.
Bainbridge	Agassiz & Purcell (1845)	1817-20	EE: Port Louis	5	Good
Baker & Levens	Agassiz	1822	EE: Port Louis Mont. Simon Lac. Rose (Quebec)	1	Good Baker
Beer (and Lynn)	Zeeb & Miror	1842			
Lechler					
Abbott					
Cunningham	Nassau				
Macdonald					
Lechler					
Lechler					

Collector	Expedition	Date of Collection	Collecting Areas	No. of Species	Publishing Author	Herbarium (Original Collection)
Gaudichaud	<u>Uranie & Physicenne</u>	1817-20	EF: Port Louis	5	Gaudichaud (1826)	?PC ²
Dumont d'Urville (and Lesson)	<u>Coquille</u>	1822	EF: Port Louis Mount Simon (as Mont. Chateaux)	1	Gaudichaud (1826) Gottsche (1857)	PC
Hooker (and Lyall)	<u>Erebus & Terror</u>	1842	EF: Port William Salvador Bay Mount Vernet	28	Hooker & Taylor (1844) see also Taylor & Hooker 1847b	BM, FH
Lechler		1850	EF: Port Stanley Mount William		collection as whole unpublished; parts in various monographs	BM, S-PA
Abbott		1858-60	unknown			BM
Cunningham	<u>Nassau</u>	1867-68	EF: Port Stanley Mount William Tyssen Islands WF: Fox Bay		collection as whole unpublished; parts in various monographs	BM
Skottsberg (and Birger)	<u>Swedish Polar Expedition</u>	Skottsberg: 1901-1902 Birger: 1904	EF: Port Stanley	18	Stephani (1905)	UPS, S-PA, G

Skottsberg (and Hallé)	Swedish Magellanic Expedition	1907-1908	EF: Port Stanley Port Salvador Mount Osborne San Carlos northern Lafonia and south to North Arm and Speedwell Island WF: Fox Bay to Port Howard, west via Shallow Bay & Hill Cove to West Point Island. Roy Cove & Port Philomel areas, Weddell, Beaver & New Islands (for route see Skottsberg, 1911).	73	Stephanf (1911)	SPA, UPS, G
Hamilton Kitching		1923	unknown			collection seen in LUND
Greene	Falkland Islands Dependency Survey 3-4 (enroute to South Georgia)		EF: Port Stanley area			(specimen in LIL, fide Hassel de Mendez, 1961). BIRM

¹Data extracted principally from Moore (1968).

²I have been unsuccessful in attempts to locate Gaudichaud's Falkland Island collections.

Below is a list of my collection numbers together with collection data. A statement of the ecology is made for nearly every locality since ecological data has been omitted under the specimen citation portion of each series. The localities are indicated on Map 62. All localities are cited with reference to Universal Transverse Mercator Grid (Zone 21) co-ordinates as shown on maps of Falkland Islands 1:50,000 (Directorate of Overseas Surveys 453, Series H791, 1961). This map is included in Moore (1968).

- 2369-2391 EAST FALKLANDS: UTM Grid 21F VC 3472. Stanley: Dwarf shrub heath & outcrops on Tumbledown Mt., 155-230 m. - 3 January 1968
- 2392-2430 EAST FALKLANDS: UTM Grid 21F VC 3871. Stanley: Outcrop on Sapper Hill, 135 m. - 4 January 1968
- 2431-2440 EAST FALKLANDS: UTM Grid 21F VC 4772. Port William: Dwarf shrub heath on S shore of Cape Pembroke peninsula, near Surf Bay. 5 January 1968
- 2441-2442 EAST FALKLANDS: UTM Grid 21F VC 4773. Port William: Outcrop in dwarf shrub heath on central part of Cape Pembroke peninsula between Surf Bay & Kelly Rocks, c. 15 m. - 5 January 1968
- 2443-2451 EAST FALKLANDS: UTM Grid 21F VC 4674. Port William: Dwarf shrub heath on N shore of Cape Pembroke peninsula E of Yorke Pt. 5 January 1968
- 2452-2455 EAST FALKLANDS: UTM Grid 21F UC 7171. Mt. Usborne: Cortaderia heath on S side of The Gap, 260-275 m. - 6 January 1968
- 2456-2478 EAST FALKLANDS: UTM Grid 21F UC 7171. Mt. Usborne: Cortaderia heath at The Gap, 275-290 m. - 6 January 1968
- 2479-2513 EAST FALKLANDS: UTM Grid 21F UC 7371. Mt. Usborne: Feldmark on summit of Mt. Usborne 1, c.700 m. - 7 January 1968
- 2514-2556 EAST FALKLANDS: UTM Grid 21F UC 7371. Mt. Usborne: Sheltered cliffs with seepage on ridge between Mt. Usbornes 1 & 2, 685 m. 7 January 1968

- 2557 EAST FALKLANDS: UTM Grid 21F UC 7370. Mt. Usborne: Stonerun in Cortaderia heath on S slope of Mt. Usborne 1, 550 m. 7 January 1968
- 2558-2579 EAST FALKLANDS: UTM Grid 21F UC 7069. Mt. Usborne: Cortaderia heath below The Gap, c. 90 m. - 8 January 1968
- 2580-2592 EAST FALKLANDS: UTM Grid 21F UC 7069. Mt. Usborne: Stonerun in Cortaderia heath below The Gap, c. 90 m. - 8 January 1968
- 2593 EAST FALKLANDS: UTM Grid 21F UC 7070. Mt. Usborne: Stonerun at base of Cantera Mt., c. 90 m. - 8 January 1968
- 2594-2621 EAST FALKLANDS: UTM Grid 21F UC 7569. Mt. Usborne: Seepage area in Cortaderia heath on SE slope of Mt. Usborne 2, c. 455 m. 9 January 1968
- 2622-2640 EAST FALKLANDS: UTM Grid 21F UC 7669. Mt. Usborne: Marsippospermum-mire in Cortaderia heath on gap between Mt. Usborne 2 & Table Rock, c. 440 m. - 9 January 1968
- 2641-2646 EAST FALKLANDS: UTM Grid 21F UC 7468. Mt. Usborne: Cortaderia heath on gap between Mt. Usborne 2 & Ceritos Rocks, 475 m. 9 January 1968
- 2647-2675 EAST FALKLANDS: UTM Grid 21F UC 7068. Mt. Usborne: Cortaderia heath with stream and occasional sandstone outcrops in valley SW of Mt. Usborne, c. 60 m. - 10 January 1968
- 2676-2679 EAST FALKLANDS: UTM Grid 21F UC 6662. Darwin Settlement: Cortaderia heath near mouth of Ceritos Arroyo. 10 January 1968
- 2680-2687 EAST FALKLANDS: UTM Grid 21F UC 6457. Darwin Settlement: Coastal cliffs near dwarf shrub heath on S side of Carcass Bay, Darwin Harbour. 11 January 1968
- 2688-2699 EAST FALKLANDS: UTM Grid 21F UC 6359. Darwin Settlement: Dwarf shrub heath at Boca House on Brenton Lock. 11 January 1968
- 2700-2738 EAST FALKLANDS: UTM Grid 21F VC 3073. Stanley: Outcrops in dwarf shrub heath on summit ridge of N peak of Two Sisters, 245-290 m. - 13 January 1968

- 2739-2774 EAST FALKLANDS: UTM Grid 21F VC 2374. Stanley: Cliffs on rock dome at summit of Mt. Kent, 455 m.; in dwarf shrub heath - 14 January 1968
- 2775-2780 EAST FALKLANDS: UTM Grid 21F VC 3074. Stanley: Peat bog in valley N of Two Sisters, 75-90 m. - 14 January 1968
- 2781-2803 EAST FALKLANDS: UTM Grid 21F VC 4880. Kidney Island: Tussock grassland N of Shanty, c. 12 m. - 16 January 1968
- 2804-2812 EAST FALKLANDS: UTM Grid 21F VC 4880. Kidney Island: Coastal rocks at margin of tussock grassland on SE shore between landing bay & SE Pt. - 17 January 1968
- 2813-2840 EAST FALKLANDS: UTM Grid 21F VC 4373. Port William: Dwarf shrub heath on ridge on Engineer Point peninsula, 18-25 m. 19 January 1968
- 2841-2843 WEST FALKLANDS: UTM Grid 21F TC 4202. Westpoint Island: Pastureland in Misery Valley, 215-230 m. - 20 January 1968
- 2844-2878 WEST FALKLANDS: UTM Grid 21F TD 4302. Westpoint Island: Hebe-scrub in dwarf shrub heath near The Waterfall, 30-90 m. 20 January 1968
- 2879-2880 WEST FALKLANDS: UTM Grid 21F TD 4006. Westpoint Island: Coastal rocks at margin of tussock grassland along NE shore adjacent to Cape Terrible. - 21 January 1968
- 2881-2895 WEST FALKLANDS: UTM Grid 21F TD 4104. Westpoint Island: Dwarf shrub heath at W base of Black Hog Hill, adjacent to Devils Nose, c. 18 m. - 21 January 1968
- 2896 WEST FALKLANDS: UTM Grid 21F TD 4204. Westpoint Island: Pastureland on divide between Devils Nose & Cat Cove, 60 m. 21 January 1968
- 2897-2940 WEST FALKLANDS: UTM Grid 21F TD 4404. Westpoint Island: Hebe-scrub in dwarf shrub heath on steep slope & cliffs facing The Woolly Gut. - 22 January 1968
- 2941-2942 WEST FALKLANDS: UTM Grid 21F TD 4404. Westpoint Island: Pastureland on SE slope of settlement bay, c. 60 m. - 22 January 1968
- 2943- 2963 WEST FALKLANDS: UTM Grid 21F TC 8087. Hill Cove: Outcrops on summit of West French Peak, 290 m.; in dwarf shrub heath - 24 January 1968

- 2964-2973 WEST FALKLANDS: UTM Grid 21F TC 8187. Hill Cove:
Cliffs on summit of East French Peak, 305 m., in dwarf
shrub heath. 24 January 1968
- 2974-2984 WEST FALKLANDS: UTM Grid 21F TC 8087. Hill Cove:
Cortaderia-heath with stream, gap between French Peaks,
200-215 m. 24 January 1968
- 2985-2992 WEST FALKLANDS: UTM Grid 21F TC 8781. Mt. Adam: Out-
crops on summit of southernmost peak, 685 m. - 25 January
1968
- 2993-3002 WEST FALKLANDS: UTM Grid 21F TC 8781. Mt. Adam: Corta-
deria -heath with stream in basin E of summit, 580-595 m.
25 January 1968
- 3003-3006 WEST FALKLANDS: UTM Grid 21F TC 8781. Mt. Adam: Corta-
deria-heath with outcrops on E slope of main peak, c. 610
m. - 25 January 1968
- 3007-3021 WEST FALKLANDS: UTM Grid 21F TC 8781. Mt. Adam: Shel-
tered cliffs on E side of summit ridge, 670-700 m. - 25
January 1968
- 3022-3047 WEST FALKLANDS: UTM Grid 21F TC 8782. Mt. Adam: Shel-
tered cliffs on ridge S of northern lake, 610 m. - 25
January 1968
- 3048 WEST FALKLANDS: UTM Grid 21F TC 8686. Hill Cove: Creek
in dwarf shrub heath, valley between Mt. Donald & Mt.
Adam, 180 m. 25 January 1968
- 3049-3056 WEST FALKLANDS: UTM Grid 21F TC 8188. Hill Cove: Grove
of planted trees (mainly hardwoods) in settlement, 15 m.
26 January 1968
- 3057-3062 WEST FALKLANDS: UTM Grid 21F TC 7289. Hill Cove: Out-
crops & dry feldmark on ridge of N slope of Mt. Fegen,
c. 275 m. 26 January 1968
- 3063-3079 WEST FALKLANDS: UTM Grid 21F TC 7289. Hill Cove: Cliffs
in dwarf shrub heath on summit of Mt. Fegen, 335-360 m.
26 January 1968
- 3080-3135 WEST FALKLANDS: UTM Grid 21F UC 2078. Port Howard:
Sheltered cliffs on pass SW of Mt. Maria summit, c. 610 m.
28 January 1968
- 3086 WEST FALKLANDS: UTM Grid 21F UC 2079. Port Howard:
Feldmark on summit of Mt. Maria, 658 m. - 28 January 1968

- 137-3154 WEST FALKLANDS: UTM Grid 21F UC 2279. Port Howard:
Large outcrops in dwarf shrub heath, Freezer Rocks, 320 m.
28 January 1968
- 3155-3186 EAST FALKLANDS: UTM Grid 21F VC 3270. Stanley: Mosaic
of dwarf shrub heath & peat bogs, headwaters of Mullet
Creek Stream, c. 60 m. - 30 January 1968
- 3187-3217 EAST FALKLANDS: UTM Grid 21F VC 2971. Stanley: Out-
crops in dwarf shrub heath along Goat Ridge, c. 180 m.
30 January 1968
- 3218-3239 EAST FALKLANDS: UTM Grid 21F VC 4379. Port William:
Outcrops in dwarf shrub heath on summit ridge of Mt. Low,
c. 245 m. 31 January 1968
- 3240-3262 EAST FALKLANDS: UTM Grid 21F VC 4474. Port William:
Outcrops in dwarf shrub heath on N side of Gypsy Cove.
1 February 1968
- 3263 WEST FALKLANDS: UTM Grid 21F TC 0164. New Island: Dry
feldmark on summit of cliffs at NW tip opposite Landsend
Bluff, 90 m. 2 February 1968
- 3264-3278 WEST FALKLANDS: UTM Grid 21F TC 0863. New Island:
Scattered outcrops in dwarf shrub heath along ridge be-
tween Bold Hill & Bold Pt., 105 m. - 3 February 1968
- 3279-3280 WEST FALKLANDS: UTM Grid 21F TC 0864. New Island:
Pastureland S of Bold Pt., 30 m. - 3 February 1968
- 3281-3286 WEST FALKLANDS: UTM Grid 21F TC 0258. New Island:
Sandstone bluffs (seal caves) at South End. - 4 February
1968
- 3287-3300 WEST FALKLANDS: UTM Grid 21F TC 0362. New Island: Seep-
age cliffs at margin of dwarf shrub heath along shore of
Ship Harbour N of Ship Island. - 4 February 1968
- 3301-3332 WEST FALKLANDS: UTM Grid 21F TC 2842. Weddell Island:
Dwarf shrub heath in Waterfall Valley, west of settle-
ment, c. 125 m. 5 February 1968
- 3333-3353 WEST FALKLANDS: UTM Grid 21F TC 2839-2840. Weddell
Island: Dwarf shrub heath at summit of Mt. Weddell,
380 m. - 6 February 1968
- 3354-3400 WEST FALKLANDS: UTM Grid 21F TC 2941. Weddell Island:
Rock dome on summit of peak NE of Mt. Weddell, 335 m.;
dwarf shrub heath. - 6 February 1968

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- 3401 WEST FALKLANDS: UTM Grid 21F TC 2842. Weddell Island:
Dwarf shrub heath on slope SW of settlement, 180 m. -
6 February 1968
- 3402-3415 WEST FALKLANDS: UTM Grid 21F TC 3043. Weddell Island:
Dwarf shrub heath near headwaters of House Creek, c. 15
m. - 7 February 1968
- 3416-3443 WEST FALKLANDS: UTM Grid 21F TC 9334. Fox Bay: Dwarf
shrub heath at summit of East Head, 180 m. - 7 February
1868
- 3444-3456 WEST FALKLANDS: UTM Grid 21F TC 8536. Fox Bay: Out-
crops at summit of Fox Bay Mt., 307 m.; dwarf shrub
heath. 8 February 1968
- 3457-3476 WEST FALKLANDS: UTM Grid 21F TC 8537. Fox Bay: Dwarf
shrub heath on N base of Fox Bay Mt., 75 m. 8 February
1968
- 3477-3500 WEST FALKLANDS: UTM Grid 21F TC 9039. Fox Bay: Pas-
ture near mouth of Cheeks' Creek, c. 12 m. - 9 February
1968
- 3501-3521 WEST FALKLANDS: UTM Grid 21F TC 9341-9441. Fox Bay:
Mosaic of dwarf shrub heath & peat bogs near peat cut-
tings in Ram Paddock, 45-60 m. - 10 February 1968
- 3522-3538 WEST FALKLANDS: UTM Grid 21F TC 8950. Fox Bay: Dwarf
shrub heath in sandy area in stream valley E of Sullivan
House, c. 75 m. - 11 February 1968

III. ECOLOGY

A. Introduction

Skottsberg (1913) made a vegetational analysis of the vascular plants of the Falkland Islands, and Moore (1968) based his account of the Falkland vegetation primarily on that of Skottsberg. Brief accounts of the natural vegetation are also provided in Davies (1939) and Cawke et al. (1960). In summarizing the bryophyte ecology in the Falkland Islands, I have utilized the community groupings and terminology of Moore (loc. cit.). I have, however, added one community grouping, i.e., the sheltered high altitude cliff vegetation, which is primarily cryptogamic. As emphasized by Moore the predominant Falkland plant associations are closely related to one another.

The associations and formations, especially those of lowland areas, frequently are not arranged as discreet units, but a kind of mosaic of community groupings is rather the pattern.

Moore (1968) has recognized five formations. In addition, he has recognized four associations (Senecio candicans, Ammophila-Elymus, Eleocharis and Myriophyllum) which do not merit formation grouping. These are arranged according to types of vegetation.

B. Distribution of Bryophytes in Plant Communities of the Falkland Islands

1. MARITIME TUSSOCK FORMATION

a. POA FLABELLATA ASSOCIATION

This primarily coastal association was previously far more prevalent than observed today (see Hooker 1847, Moore 1968). The unrestricted, extensive grazing of sheep has been primarily responsible for the depletion of this formation. Pigs, which destroy plants by digging up the roots, are of lesser significance. Tussock grass today is confined to smaller offshore islets (e.g., Kidney Island) which have not been stocked with sheep, and a few fenced off areas on the larger islands. On Kidney Island, where there are extensive areas of almost pure stands of Poa flabellata, this association has reached its maximum development (see Photo 1). As discussed in Moore (1968), Poa flabellata tussocks can attain a height of 2-3 m. with each tussock composed of a fibrous stock (1.5 - 2.0 m. high and 1.0 - 1.5 m. in diameter) surmounted by a dense crown of leaves. In areas where the community is uninterrupted, the dense canopy of interlaced leaves excludes all associated species except Carex trifida (see Photo 2). On the tussock bases Lophocolea lenta and Telaranea pseudozoopsis were particularly common, and Cephaloziella dusenii, Lophocolea divaricata (very rare), L. leptantha, L. sabuletorum, Marchantia berteriana var. polylepida and Campylium sp. were also present. Lophocolea leptantha, L. sabuletorum and Hygroamblystegium

fuegianum var. skottsbergii were found on soil between the tussock bases. On the coastal cliffs of Kidney and Westpoint Islands, at the margin of the tussock community, Lophocolea sabuletorum was common on rock and in rock crevices, but Muelleriella crassifolia was also present. Lophocolea divaricata is the only hepatic restricted to this association.

2. OCEANIC HEATH FORMATION

This formation has been subdivided into two groups. Cortaderia pilosa is dominant or co-dominant in one and dwarf shrubs are prominent in the other. Most of the Falkland Islands are covered by one facies or another of these associations.

a. CORTADERIA ASSOCIATION

This association, as Moore (1968, p. 15) states, "can be developed on most non-swampy ground having indifferent drainage. It is widespread on level or undulating country below 100 m. . . . but it is also very common on gentler slopes up to an altitude of ca. 180-200 m." (see Photo 3). I have found this association, which is dominated by Cortaderia pilosa, occurring at various altitudes up to ca. 610 m. The grass blades form an excellent protective cover against the sun and especially the winds, while the coarse fibrous peaty humus which develops under the tussocks retains considerable moisture. These factors contribute to a protected environment in which a surprisingly large number of bryophyte species may be found. This association includes several facies, each differing in the means of providing

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protection and moisture conservation. These facies will be discussed separately.

Bryophytes directly associated with Cortaderia, in depressions, pockets or holes, and deriving protection and moisture from the association are as follows: Adelanthus lindenbergianus, A. tenuis (only above 245 m.), Anastrepta bifida, Balantiopsis cancellata, Blepharidophyllum clandestinum, B. gottscheanum, Cheilolejeunea savatieriana (c. 610 m.), Chiloscyphus hookeri subsp. hookeri (275-290 m.), Clasmatoclea humilis, Jamesoniella colorata (275-290 m.), Lepidozia fuegiensis (275-290 m.), Leptoscyphus patagonicus, Microlepidozia mollis (275-290 m.), Riccardia georgiensis, Saccogynidium australe, S. vasculosum, Telaranea plumulosa, T. pseudozoopsis (275-290 m.), Wettsteinia densiretis, Calliergon sarmentosum, Conostomum australe, Dicranoloma robustum, D. setosum, Racomitrium lanuginosum, Sphagnum fimbriatum, S. magellanicum and Webera albicans.

The stream facies.--Streams are frequently present in the Cortaderia association (see Photo 4), and often the bank vegetation (which frequently is Gunnera magellanica) or the stream itself offers protective niches for bryophytes. Bryophytes of the stream or stream bank habitat are Balantiopsis bisbifida, B. cancellata, B. erinacea, Clasmatoclea humilis, C. vermicularis, Isotachis humectata, Lophoclea austrigena (very common), L. elata, L. sabuletorum, L. sylvatica, Metahygrobiella tubulata, Noteroclada confluens, Pallavicinia xiphoides, Pseudocephalozia tristaniana, Riccardia fuscobrunnea, R. papillosa, R. spectabilis, Schistochila subintegerrima, Telaranea plumulosa, T. pseudozoopsis, Blindia torrentium, Drepanocladus fluitans,

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Philonotis vagans and Sciaromium conspissatum. Lophocolea austrigena and L. elata are the only Hepaticae which are nearly always submerged in these streams.

The wet depression facies.--Wet depressions, where the peat is saturated and small pools may occur, provide another means of protection (see Photo 5). Here Adelanthus tenuis, Clasmatocolea humilis, Jensenia pisicolor, Paracromastigum subsimplex, Riccardia opuntiformis, R. pallidevirens, R. papillosa, Telaranea plumulosa, Ternoma quadripartitum and Sphagnum magellanicum may be found.

The stonerun facies.--Stoneruns are of frequent occurrence in the Cortaderia association (see Photos 6-7). Often cool, damp, shaded crevices are present and here occur Clasmatocolea fulvella, Frullania magellanica, Jamesoniella colorata, Lejeunea corralensis, Lophocolea sabuletorum, Metzgeria decipiens, Plagiochila ansata, Andreaea verruculosa and Distichophyllum cavifolium.

The rock outcrop facies.--On rock outcrops (particularly of exposures protected from prevailing winds) with their crevices, overhangs and small niches as well as on soil immediately below the outcrops occur Chiloscyphus hookeri subsp. hookeri, Clasmatocolea fulvella (above 580 m.), C. humilis, C. koeppensis (475 m.), Leptoscyphus patagonicus, Lophocolea austrigena, Pachyglossa spegazziniana var. exilis, Riccardia pallidevirens, Telaranea plumulosa, Andreaea rupestris, A. parallela and Racomitrium lanuginosum.

The Cortaderia association, while not possessing the bryophyte species diversity of the closely related dwarf shrub heath, possesses the greatest assemblage of rare Falkland species, several of which are

also rare in southern South America. Hepaticae unique to this association are: Anastrepta bifida, Blepharidophyllum gottscheanum, Iso-tachis humectata, Lejeunea corralensis, Microlepidozia mollis, Paracromastigum subsimplex, Pseudocephalozia tristaniana, Riccardia pallidevirens and Saccogynidium australe.

b. DWARF SHRUB HEATH ASSOCIATIONS

Moore (loc. cit., p. 15) states that

The communities included here are usually found on comparatively dry ground, being best developed on rocky ridges, stony areas or places where the immediate subsoil is of relatively coarse material so that drainage is good. A hard, dry peat underlies well-developed heath.

The principal species in the dwarf shrub heath are Empetrum rubrum, Pernettya pumila, Blechnum magellanicum, B. penna-marina, Baccaris magellanica and Bolax gummifera. Various combinations of these may become co-dominant, and Moore (1968) has listed the following associations: Empetrum rubrum-Blechnum penna-marina, Empetrum rubrum-Blechnum magellanicum, Empetrum rubrum-Pernettya pumila, Bolax gummifera-Empetrum rubrum and Blechnum magellanicum-B. penna-marina. Moore (loc. cit., p. 15) states "The Empetrum rubrum association is much the most common" and the discussion below pertains to this association. As in the Cortaderia association, there are several means of protection against the sun and winds as well as the conservation of adequate moisture so that this association has a fairly rich bryophyte flora. Each local facies will be discussed separately.

Bryophytes commonly grow on the bases of Blechnum magellanicum, the fronds of which provide an excellent protective cover, particularly when interlaced with fronds of other Blechnum plants or branches of Empetrum (see Photo 8). The soil below such situations often has a considerable bryophyte cover. Frequently Bolax cushions, particularly old, decayed portions, have a bryophyte (mostly hepatic) cover. In these situations occur Adelanthus lindenbergianus, Balantiopsis bisbifida, B. cancellata, Blepharidophyllum clandestinum, B. densifolium, Cephaloziella dusenii, Chiloscyphus hookeri subsp. hookeri, Clasmatoclea humilis, C. vermicularis, Frullania boveana, Gackstroemia magellanica, Hyalolepidozia bicuspidata, Jamesoniella colorata, Lepidozia chordulifera, L. laevifolia, Leptoscyphus aequatus, L. expansus, L. patagonicus, Lophocolea lenta, L. leptantha, L. sabuletorum, L. sylvatica, Marchantia berteriana var. polylepida, Metzgeria decipiens, M. leptoneura, Plagiochila ansata, P. elata, P. hirta, Riccardia georgiensis, R. opuntiformis, R. papillosa, R. spectabilis, Roivainenia jacquini, Telaranea blepharostoma, T. plumulosa, T. pseudozoopsis, Wettsteinia densiretis, Anisothecium hookeri, Blindia curviseta, Bryum macrophyllum, Bryum (subsect. Doliolidium) sp., Campylopus introflexus, Ceratodon purpureus, Chorisodontium aciphyllum, Distichophyllum cavifolium, D. dicksoni, D. flaccidum, Dicranoloma falklandicum, D. robustum, Fissidens rigidulus, Polytrichadelphus robustus, Polytrichum strictum, Pseudodistichium austrogeorgicum, Racomitrium lanuginosum, R. rupestre and Tortula antarctica.

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The stream facies.--Streams frequently occur in the Empetrum rubrum association. Vascular plants such as Blechnum magellanicum, B. penna-marina, Empetrum rubrum and Gunnera magellanica frequently offer a protective cover, which may be very dense, and at the same time provide cool, moist niches for bryophytes (see Photo 9). Several species grow partially or wholly submerged in the streams, Lophocolea austrigena and L. elata nearly exclusively so. This facies, when compared to the stream facies of the Cortaderia association, while having the same Lophocolea species, has quite a different species compliment as well as greater species diversity. The bryophytes of this habitat include Adelanthus tenuis, Balantiopsis bisbifida, B. cancellata, B. erinacea, Chiloscyphus hookeri subsp. hookeri, Clasmatocolea humilis, C. vermicularis, Jamesoniella colorata, Jensenia pisicolor, Jungermannia crassula, Lepidozia chordulifera, L. laevifolia, Leptoscyphus expansus, Lophocolea austrigena, L. elata, L. sabuletorum, L. sylvatica, Marchantia berteroa var. polylepida, Noteroclada confluens, Pallavacinia xiphoides, Riccardia georgiensis, R. papillosa, R. spectabilis, Saccogynidium vasculosum, Symphyogyna hymenophyllum, Telaranea plumulosa, T. pseudozoopsis, Bartramia patens, Bryum laevigatum, Campylopus introflexus, Fissidens rigidulum, Leptotheca gaudichaudi, Polytrichum strictum, Racomitrium subnigrum and Sphagnum fimbriatum.

The wet depression facies.--Like the Cortaderia association the Empetrum rubrum association has shallow depressions where the peat is saturated and small pools may occur. The habitat has a characteristic



bryophyte flora with Balantiopsis erinacea, Clasmatocolea humilis, Metahygrobiella tubulata, Saccogynidium vasculosum (rare), Bryum macrophyllum, Drepanocladus longifolius, Sphagnum engelii and S. fimbriatum. Sphagnum falcatum was present in depressions where free standing water occurred.

The rock outcrop facies.--Rock outcrops of varying sizes are frequently present in this association, with protection provided in a manner similar to that in the rock outcrop facies of the Cortaderia association. Bryophytes occurring in the various niches associated with the outcrops, as well as on soil at the base of the outcrops, are Adelanthus lindenbergianus, A. tenuis, Andrewsianthis australis, A. planifolius, Austrolophozia fuegiensis, Cephalolobus scabrellus, Cephaloziella dusenii, Cheilolejeunea savatieriana, Chiloscyphus hookeri subsp. hookeri, Clasmatocolea fulvella, C. humilis, C. koepensis, Frullania boveana, F. magellanica, F. pseudolobulata, Gackstroemia magellanica, Harpalejeunea marginalis, Jamesoniella colorata, Lepicolea ochroleuca, Lepidozia chordulifera, L. laevifolia, Leptoscyphus abditus, L. expansus, Lophocolea austrigena, L. lenta, Lophozia hatcheri, Marchantia berteriana var. polylepida, Marsupidium urvilleanum, Metzgeria decipiens, M. falklandica, M. multiformis, Pachyglossa spegazziniana var. exilis, Plagiochila ansata, P. elata, P. gayana, P. hirta, P. obovata, Riccardia opuntiformis, R. papillosa, R. prehensilis, Schistochila pachyla, S. subintegerrima, Symphyogyna hymenophyllum, Telaranea plumulosa, T. pseudozoopsis, Temnoma quadripartitum, Wettsteinia densiretus, Acrocladium auriculatum, Andreaea

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subulata (exposed rock surfaces), Bartramia patens, Bryum cf. Hatcheri, Campylopus introflexus, Catagonium nitidum, Ceratodon purpureus, Chorisodontium aciphyllum, Conostomum australe, Dicranoloma imponens, D. robustum, D. setosum, Dicranoweisia austrocrispula, Leptotheca gaudichaudi, Muelleriella crassifolia, Philonotis scabrifolia, Polytrichadelphus robustus, Polytrichum strictum, Pseudodistrichium austrogeorgicum, Psilopilum antarcticum, Racomitrium stenocladium and Tortula anderssonii.

The Hebe Facies.--Hebe elliptica, when occurring as scattered bushes, may be regarded as a relatively minor component of a dwarf shrub heath (Moore, 1968). A heath of this type was visited in Waterfall Valley, Westpoint Island. The Hebe shrubs occurred on steep slopes on the valley sides (see Photo 10), while through the valley bottom flowed a rather fast moving stream, with Gunnera magellanica forming a dense carpet along the watercourse. The sides of the valley were often cliff like, with numerous damp, shaded, sheltered ledges and overhangs, where Leptoscyphus expansus, Lophocolea sabuletorum, L. sylvatica, Marchantia bertercoana var. polylepida, Pallavacinia xiphoides, Riccardia georgiensis, R. spectabilis, Symphyogyna hymenophyllum, Muelleriella crassifolia and Bartramia patens occurred, with Megaceros fuegiensis, Riccardia georgiensis, Telaranea pseudozoopsis, and Webera albicans occurring under the waterfall or in the spray zone. The bryophytes associated with the stream bed were typical of this habitat with Lophocolea austrigena, L. elata, Riccardia spectabilis, Telaranea plumulosa, T. pseudozoopsis and Sciaromium conspissatum present.

Hebe elliptica also occurred on cliffs facing The Woolly Gut on Westpoint Island. The cliffs were rather moist, where numerous crevices, ledges, and overhangs were present. The bryophyte vegetation included Clasmatocolea vermicularis, Hyalolepidozia bicuspidata, Leptoscyphus expansus, Lophocolea lenta, L. sabuletorum, L. semiteres, Marchantia berteriana var. polylepida, Metzgeria decipiens, M. violacea, Telaranea pseudozoopsis, Bartramia patens, Distichophyllum dicksoni, Eriopus apiculatus, Fissidens rigidulus, Hygroamblystegium fuegianum, Muelleriella crassifolia and Webera sp. Lophocolea semiteres, Megaceras fuegiensis, and Metzgeria violacea are the only Hepaticae or Anthocerotae found exclusively in this association.

Summary of dwarf shrub heath Hepaticae.--The dwarf shrub heath associations have the highest number of hepatic species of any of the Falkland associations (75), and of these the following 17 are unique to it: Andrewsianthus planifolius, Cephalolobus scabrellus, Frullania boveana, F. pseudolobulata, Harpalejeunea marginalis, Jungermannia crassula, Lepicolea ochroleuca, Lepidozia laevifolia, Leptoscyphus aequatus, Metzgeria leptoneura, M. multiformis, Plagiochila gayana, P. obovata, Riccardia alcicornis, R. prehensilis, Schistochila pachyla and Telaranea blepharostoma. Of those that are not restricted to this association in the Falkland Islands, 49% also occur in the Cortaderia heaths, which is indicative of the rather close relationship between the associations. However, I regard the bryofloras of the Cortaderia association and dwarf shrub heath associations as sufficiently distinct, and the differences aid in distinguishing the two associations.

The dwarf shrub heath associations and Cortaderia association: are vegetation types which have been highly altered both through grazing and conversion to pastureland, a process which frequently involves burning and usage of introduced grasses (commonly Holcus lanatus) (see Davies, 1939). Even in the most severely altered state of the oceanic heaths, I have found it possible to determine the natural vegetation type through examination of the bryoflora of stream banks. The stream banks are somewhat less disturbed and here the natural vegetation is least altered. See further comments under Man Influenced Communities at the end of the ecology section.

3. FELDMARK FORMATION

The feldmark formation has been characterized by the following four features:

- i. Considerable areas of bare, exposed, usually mineral soils with scattered small rocks or boulders. According to Greene (1964), feldmarks have a vegetation cover of one half or less the total area.
- ii. The tendency for the cushion habit to predominate. The feldmark cushions do not form a continuous layer of peat (Wace, 1965), and do not have among them the cushion-bog¹ dominants of other associations (in the Falklands the Astelia association). Likewise, Azorella, the principal feldmark cushion

¹The term cushion bog is used to indicate cushion plant communities on deep peat; see Wace (1965) for a discussion.

species, does not occur in cushion bogs (Wace, 1960). Wace (loc. cit., p. 486) lists the principal species for feldmarks of the following islands:

Falkland Islands--Azorella selago, Bolax gummifera

Kerguelen--Azorella selago, Colobanthus kerguelensis,
Lyallia kerguelensis

Macquarie--Azorella selago, Racomitrium crispulum,
Dicranoweissia antarctica

Tristan da Cunha--Empetrum rubrum, Racomitrium crispulum,
R. lanuginosum

Gough Island--Racomitrium crispulum, Thysanomitrium richardii, Jamesoniella spp.

The cushion habit is predominant in all of the above flowering plants. Bryophytes commonly assume either a cushion or compact habit.

iii. An often conspicuous cryptogamic component of the vegetation.

On the Falkland Islands Neuropogon is a conspicuous element of the feldmark vegetation. Mosses are conspicuous in Macquarie Island feldmarks, and Ashton and Gill (1965) propose that the feldmark community be termed the Azorella-Ditrichum alliance.

iv. A preference for higher altitudes. Wace (1960) lists feldmark altitudinal ranges for the following islands: Falkland Islands (600-700 m.), Macquarie Island (200-450 m.), Kerguelen Islands (100-300 m.) and Tristan da Cunha and Gough Islands (850-1500 m.). Wace (1960) and Wace and Dickson (1965)

indicate the distribution of feldmark is in large part determined by exposure. Due to exposure factors in the Falkland Islands, feldmarks occasionally occur at lower altitudes in the western part of the archipelago. Moore (1968, p. 16) states that "Apparently the formation is not solely a response to high altitude, because a comparable community type occurs among rock detritus along exposed cliff tops on the west coast just north of Cape Meredith . . ." (southernmost point of West Falkland Island). On Westpoint Island it is presumably exposure which results in a feldmark at the summit of Mt. Misery (335 m.). Feldmarks may also occur at rather low altitudes on Macquarie Island, where they occur above 183 m. (Ashton and Gill, 1965).

The general aspect of Falkland feldmarks differs considerably. While there may be a continuum present, there appear to be two general types of feldmarks.

- i. The mesic feldmark. This type is characterized by a rather conspicuous fruticose lichen flora (principally Neuropogon). The lichen flora is apparently a result of the presence of mists and frequent enshrouding clouds. The feldmark community on the summit of Mt. Usborne I (ca. 700 m.) had a rather lush bryophyte vegetation due presumably to the numerous, rather small, scattered pools which were present. Associated solely with the pools, either submerged, at the edge of, or on rock

in the pools were Acrobolbus ochrophyllus, Adelanthus integerrimus, A. lindenbergianus, Anastrophyllum ciliatum, Archeochaete kuehnemannii, Cephalozia badia, Clasmatocolea fulvella, Herzogobryum vermiculare, Lophozia hatcheri, Pachyglossa fissa, and Plagiothecium laetum var. usbornense. Species not exclusively associated with the pools were Blepharidophyllum densifolium, Clasmatocolea koeppensis, Gackstroemia magellanica, Lepidozia chordulifera, L. fuegiensis, Leptoscyphus abditus, Leptoscyphus expansus, Pachyglossa dissitifolia, Plagiochila hirta, Riccardia granulata, R. opuntiformis, Chorisodontium sp., Conostomum australe, Dicranoloma nigricaulis, Polytrichum strictum and Racomitrium microcarpon f. papillosum. The feldmark community on the summit of Mt. Maria (658 m.) was rather xeric, had a conspicuous lichen cover, but only a single bryophyte (Riccardia opuntiformis).

While Adelanthus integerrimus is the only hepatic found exclusively in this formation, it is of interest to note that the following hepatics are found exclusively in the Mt. Usborne feldmark and sheltered high altitude cliff vegetation: Acrobolbus ochrophyllus, Anastrophyllum ciliatum, Archeochaete kuehnemannii, Herzogobryum vermiculare, Pachyglossa dissitifolia and P. fissa.

- ii. The xeric feldmark. This type is characterized by a comparatively poor lichen cover (Neuropogon is absent). The moisture available to this feldmark type is derived solely from rain

and not from enshrouding clouds, and exposure is likely the factor which governs the comparative lack of moisture. Two fieldmarks of this type were visited: the northwest tip of New Island opposite Landsend Bluff (90 m.), and the north slope of Mt. Fegen (c. 275 m.).

Very characteristic of the bryophytes of this formation are the following three mosses, all of which grew on exposed rock surfaces, Andreaea pseudomutabilis, Racomitrium lanuginosum and R. rupestre. On soil in crevices under rock overhangs are Lepidozia chordulifera and Ditrichum sp.; Bryum argenteum may be found on Bolax cushions. This fieldmark type is quite xeric and exposed to the winds, and consequently supports only a very small bryophyte vegetation. Even the rock crevices, which often are relatively moist in the Falkland Islands, were dry and only Lepidozia chordulifera, which is able to grow in a wide range of habitats, was apparently able to tolerate the dryness.

4. FEN AND BOG FORMATION

This formation occurs where the water table is just below, at, or above the ground surface.

a. ROSTKOVIA ASSOCIATION

Moore (1968, p. 17) states, "This [association] is normally confined to the wettest depressions, where drainage is impeded, and

standing water is often present for long periods." In this association Sphagnum falcatum grew submerged or nearly so, with S. fimbriatum also present. No hepatics were observed.

b. ASTELIA ASSOCIATION

Moore (loc. cit., p. 17) states, "This [association] is usually found over deep peat and consists of a series of low flat cushions or a dense carpet composed of a few species which all are able to retain water in the dense covering of old leaves and branches surrounding their stems." These cushion bogs grade into the Rostkovia association and the wetter facies of the Cortaderia heath. The observed Astelia associations which did not grade into the above associations were dense, compact, and very hard, and no bryophytes were observed growing here.

c. JUNCUS SCHEUZERIOIDES ASSOCIATION

No bryophyte collections were made in this association.

5. BUSH FORMATION

This formation is of restricted occurrence in the Falkland Islands, and only two native shrubs contribute to associations of this formation.

a. CHILIOTRICHUM ASSOCIATION

This association was not visited in the Falkland Islands.

According to Moore (1968) and Skottsberg (1913) it is best developed

along the fringes of streams and rivers. Skottsberg (loc. cit.) lists two localities for this association, both in western West Falkland.

b. HEBE ASSOCIATION

Hebe elliptica, which is restricted to the West Falkland Islands, was observed at Westpoint Island, but the plants were present only as scattered individuals or small thickets in a dwarf shrub heath (q. v.). When a dense stand of Hebe elliptica occurs, a true Hebe association is said to be present. Such an association is very rare in the Falkland Islands. A photograph of an example on Fox Island is in Skottsberg (1913, pl. 13).

6. LITTORAL VEGETATION

The Senecio candicans and Ammophila-Elymus associations belong here, and both occur in sandy areas. The former association was visited on the south shore of Cape Pembroke peninsula, near Surf Bay (East Falklands), and the latter at Gypsy Cove, Port William region (East Falklands). No bryophytes were found in either of these associations. It is likely that the dune and sandy areas are too unstable for bryophyte survival.

7. FRESH-WATER VEGETATION

Moore (1968) includes the Eleocharis and Myriophyllum associations in this category. No bryophytes were observed in either of these associations. The bryophyte collections which were frequently

[illegible]

gathered on the banks of shallow lagoons and ponds are included in the association of the surrounding area.

8. SHELTERED HIGH ALTITUDE CLIFF VEGETATION

These communities consist principally of bryophytes, and occur above 610 m. in the Falklands (see Photo 12). They possess a highly characteristic assemblage of hepatics, and because of their restriction to high altitudes, I believe they deserve separate recognition. Cliffs on ridge tops have numerous protective niches such as ledges and rock crevices, the latter frequently beneath overhangs of varying sizes. The crevices, especially when beneath ledges, are commonly moist, cool, and well shaded, a situation highly favorable to bryophyte growth. When this is accompanied by water seepage, the bryophytes are particularly luxuriant. The variation in exposures, moisture, light, and the consistently rather cool temperatures, etc., probably accounts for the considerable diversity of these communities. The following species occur in this community; those indicated by an asterisk are restricted to this community: Acrobolbus ochrophyllus, *Acrolophozia fuegiana, Adelanthus lindenbergianus, A. tenuis, Andrewsianthus australis, Anastrophyllum ciliatum, Archeochaete kuehnemannii, Austrolophozia fuegiensis, Balantiopsis bisbifida, Blepharidophyllum clandestinum, B. densifolium, Cephalozia badia, Cheilolejeunea savatieriana, Clasmatocolea fulvella, C. georgiensis, C. koeppensis, Cryptochila grandiflora, C. paludosa, *Diplophyllum

acutilobum, Gackstroemia magellanica *Herzogobryum erosum, *H. teres,
H. vermiculare, *Hygrobiellopsis isophyllum, Jamesoniella colorata,
Jensenia pisicolor, Lepidozia chordulifera, L. fuegiensis, Leptoscyphus
additus, L. expansus, Marsupidium urvilleanum, Metzgeria falklandica,
Pachyglossa dissitifolia, P. fissa, P. spegazzininana var. exilis,
*Plagiochila atroviridis, P. elata, P. hirta, *Radula helix, R. papil-
losa, R. saxicola, R. tenax, Roivainenia jacquinotii, Schistochila
carnosa, S. subintegerrima, Symphyogyna hymenophyllum, Telaranea
plumulosa, Triandrophyllum subtrifidum, Andreaea alpina, Bartramia
leptophylla, Dendroligotrichum squamosum, Dicranoloma hariatii, Philon-
otis scabrifolia, Polytrichadelphus robustus, and Polytrichum strictum.

The following combination of hepatics was very frequently encountered and were often intermixed: Austrolophozia fuegiensis, Balantiopsis bisbifida, Cryptochila spp., Herzogobryum teres and Pachyglossa spp.

In these sheltered high altitude cliffs there are an amazingly high percentage of Hepaticae which either (a) have a subantarctic distribution, (b) also occur in New Zealand, or (c) have very close relatives in New Zealand or Tasmania. The hepatic flora of this association appears to be in large part an old, relic one. A large number of taxa (especially the genera Acrolophozia, Austrolophozia, Herzogobryum and Pachyglossa) may represent remnants of an early, widespread flora involving the Antarctic continent. It is possible that the high altitude cliffs served as nunatak areas. This is in marked contrast to the lowland associations where the hepatics are characteristic of a flora that has recently (i.e., post Pleistocene) invaded

the Falkland Islands. Exemplifying this is the complete absence of the genus Lophocolea from the sheltered high altitude cliffs. This genus is not characteristic of austral relic floras, but as many members of the genus are highly plastic (often strikingly so), and tend to be weedy, the taxa of the genus are more characteristic of areas that have been recently invaded.

9. MAN INFLUENCED COMMUNITIES

a. PASTURELAND

In the Falkland Islands there are wide expanses of pastureland (see Davies, 1939) which are regularly grazed by sheep. The bryophytes occurring here are Bryum (sect. Rosulata) sp., Campylopus introflexus, Ceratodon purpureus and Polytrichum piliferum. It is of interest to note that all of these mosses are quite widespread and weedy, and it is not surprising that these three rather plastic species were able to tolerate highly disturbed situations. Near the mouth of Cheeks' Creek, Fox Bay region, a collection was made in a stream cut through a pasture. It is probable that before conversion to pastureland the vegetation of the area was that of a dwarf shrub heath association, as the bryoflora was similar to the stream in that association, with the exception of the presence here of Lophocolea irregularis.

b. GROVES OF PLANTED TREES

At the Hill Cove settlement, a mature grove exists, which, according to Dallimore (1919) was introduced in the period 1889-1894.

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The hardwood grove, which is made up of Nothofagus sp. and Populus sp., has a rather dense canopy with little woody undergrowth (see Photos 13-14). The hepatics found here were Leptoscyphus expansus, Lophocolea lenta, L. leptantha and Marchantia berteroana var. polylepida; all occur in a variety of natural communities. Adjacent to the hardwood grove was a stand of conifers. No bryophytes were observed in this stand, or the coniferous stand on Weddell Island.

c. GORSE THICKETS

Gorse (Ulex europaea), a native of western Europe, is widely utilized in the Falkland Islands as sheep fencing. A gorse thicket was visited at Boca House near Brenton Lock, near Darwin Settlement, East Falklands. On soil beneath the gorse occurred Leptoscyphus expansus, Brachythecium austrosalebrosus, Bryum argenteum, B. (sect. Rosulata) sp. and Tortula robusta. Tortula monoica was the only bryophyte actually growing on the gorse and it occurred on the exposed roots.

5. 10. 1991
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IV. PHYTOGEOGRAPHY

A. Austral Regions

Greene (1964) notes that the greatest barrier against arrival at a satisfactory botanical criterion for recognizing and subdividing the various zones in the austral regions is the critical lack of knowledge about the plants of these lands. In view of this, most recent attempts at classification schemes are primarily vegetational and geographical.

Wace (1960) devised a system based primarily on lowland vegetation criteria. He combined all those islands bearing oceanic heath and Sphagnum or flowering plant cushion bogs into a temperate category, and further divided this group into warm and cool temperate respectively according to the presence or absence of fern-bush communities. He limited usage of the subantarctic to include only those islands with a closed herbfield vegetation and in which Sphagnum and cushion bogs are absent. The islands in which there are no flowering plants (or only scattered individuals), be considered as Antarctic. Wace compiled the available temperature data and noted that the groupings based on lowland vegetation types correlated well with groupings

¹It must be understood that islands, like Bounty Island off New Zealand, may be without vascular plants as a result of physiographic and biotic factors.

based on mean annual temperature. The following is his classification scheme:

SUBTROPICAL	Kermadec Islands
	Juan Fernandez Islands
TEMPERATE	Chatham Island
	Tristan da Cunha, Inaccessible, Nightingale and Gough Islands
	New Amsterdam and St. Paul Islands
	New Zealand shelf islands
	Falkland Islands
	Marion and Prince Edward Islands
SUBANTARCTIC	Macquarie Island
	Crozet Islands
	Kerguelen and off-lying islands
	South Georgia
	Heard and Macdonald Islands
ANTARCTIC	Bouvet Island
	South Sandwich, South Orkney and South Shetland Islands
	Palmer Archipelago (Graham Land)

Greene and Greene (1963) and Greene (1964) adopted Wace's (1960) concept of the term subantarctic, but included Marion and Price Edward Islands, and used the term Antarctic region to embrace the Antarctic and subantarctic zones (see Map 63).

Wace (1965, p. 239) extended his earlier scheme, stating "In order to arrive at a vegetational classification, the major features of the structure of the plant community should be used exclusively to delimit the different zones." He then proposed to use the limit of tree or woody shrub growth to separate the temperate from the subantarctic and the limit of closed phanerogamic communities to separate the subantarctic from the antarctic vegetation. He characterized the subantarctic vegetation zone as having terrestrial plant communities with the following four features:

1. Soligenous mires in which the important peat-forming plants are Bryales and Juncaceae (not Sphagna).
2. Feldmark communities composed of flowering plants with very close-growing and compact mat and cushion forms.
3. Closed herbfield communities in which large-leaved perennial herbs are conspicuous.
4. Communities of large trunk-forming tussock grasses around the coasts.

Wace excluded all continental areas and restricted the usage of the term subantarctic to remote islands. This zone included South Georgia, Marion, Prince Edward, Crozet, Kerguelen, Heard and Macquarie Islands.

It is evident from the criteria outlined in Wace (1960, 1965) and Greene (1964) that the Falkland Islands are south temperate rather

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

than subantarctic. The characters which place them in the south temperate region are the following: a) a widespread oceanic heath formation, b) the presence of flowering plant cushion bogs, c) the presence of Sphagnum bogs, d) the presence of woody shrub growth and e) the absence of a closed herbfield vegetation. The presence of a fieldmark community has been used as a characteristic of the subantarctic region. In the Falkland Islands, this community is present, but certainly does not reach the significant proportions and role that it does in the Kerguelen Islands.

Skottsberg (1960) based his austral phytogeographic analysis on the following floristic regions. Five further regions are included, some including "outposts" for "antarctic types."

- I. The antarctic zone, south of 60° S., but including the South Sandwich Islands and Bouvet Island.
- II. The subantarctic zone, between approximately 48° S. and 60° S., but including Marion, Prince Edward and Crozet Islands.
 - A. Magellanian province.
 1. West Patagonian-Fuegian district.
 2. Andean Patagonian-Fuegian district.
 3. Falkland Islands and South Georgia district.
 - B. Kerguelen province. Marion, Prince Edward, Crozet, Kerguelen and Heard Islands.
 - C. Province of the subantarctic islands of New Zealand.

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III. The Austral zone, between approximately 40° S. and 48° S. A conspicuous antarctic floristic element is present, often forming distinct communities in a flora and vegetation of a different origin.

A. Valdivian province.

B. Province of the South Island of New Zealand, Chatham Islands and the Tasmanian tableland.

Godley (1960) adopted the subantarctic zone of Skottsberg, but remarked (p. 472), "The presence or absence of Sphagnum bogs appears to me to be one of the significant features to be taken into consideration when delimiting a homogeneous subantarctic region." He regarded peat formation as a common feature of the region, and the bogs formed by cushion plants rather than by Sphagna.

The Antarctic region includes regions south of the subantarctic and is characterized by a vegetation which ". . . is at best a poorly developed tundra" (Rudolph, 1971, p. 192). Soligenous mires, herbfields, tussock forming grasses and cushion plants are absent, and the vegetation is a tundra type dominated by mosses and lichens. Two flowering plants, Deschampsia antarctica and Colobanthus crassifolius, occur in Antarctica.

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B. The Phytogeographic Categories

There are a large number of monotypic genera and stenotypic¹ species which possess a range centering about the cool, moist south temperate and subantarctic regions. There is also a high proportion of taxa which Schuster (1969c, p. 82) states "can be interpreted as 'relict' groups, rather than as relatively new and as yet undiversified groups." The chief difficulty in the assessment of the phytogeographical relationships of the Falkland Island Hepaticae and Anthocerotae is the delimitation of the south temperate and subantarctic patterns of distribution. I have delimited these patterns after the concept of the zones or regions developed by Skottsberg, Godley, Greene and Wace.

I have recognized 12 categories of distribution patterns of Falkland Island Hepaticae. The Anthocerotae fall within only one of these categories. The data for these distributions was gathered from specimens personally examined, and reports extracted from the literature. If the report is regarded as questionable, it is not included here. To my knowledge, references to Macquarie Island hepatics are restricted to the following: Ashton and Gill (1965), Gillham (1967), Grolle (1966, 1967), and Hodgson (1953, 1961, 1962). The paucity of Macquarie Island reports undoubtedly affects the data in the amphipacific, pantemperate and subantarctic groups. The only recorded hepatic species shared by the Falkland and Macquarie Islands are Jamesoniella colorata and Lepidozia laevifolia (fide Hodgson in Ashton and Gill 1965).

¹Taxa with very narrow habitat requirements.

CONSPECTUS OF PHYTOGEOGRAPHICAL CATEGORIES

		Category	Number of Species	Percent of Total Flora
American Temperate		Endemic	3	2.3
		Fuegian - Falkland	10	7.8
		Magellanian - Falkland	19	14.9
		Valdivian - Falkland	7	5.5
		Magellanian + Valdivian - Falkland	46	36.2
		Andean - Falkland	2	1.5
Extra American Temperate		Amphipacific temperate	12	9.4
		Amphiatlantic temperate	10	7.8
		Pantemperate	5	3.9
		Subantarctic	10	7.8
		Antarctic	1	.7
		Widespread	2	1.5

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1. TEMPERATE

Species occurring within the south temperate regions of the world.

a. AMERICAN TEMPERATE

Species occurring within the south temperate regions of the American sector. There are three species which occur in southern South America as well as South Georgia (see 5-f). Their distribution is regarded as temperate rather than subantarctic, as northward extension from the subantarctic is not confined to higher altitudes.

It has frequently been remarked that the Falkland vascular plant flora is an extension of the southern South American flora (Hooker, 1847; Skottsberg, 1909, 1913; Moore, 1968), a statement to be expected with regard to a continental shelf island. Moore states that of the 163 native species of vascular plants of the Falkland Islands, 89% occur on the mainland south of 40° S. All except three of the remainder are endemic to the Falkland Islands and are in large part related to mainland taxa. Like the vascular flora, the mainland hepatic representatives extend northward to varying degrees. Commencing with the endemic category, the remainder of groups are arranged principally according to the degree of northward extension.

1) Endemic to Falkland Islands

Andrewsianthus planifolius

Metzgeria falklandica

Riccardia regularis

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2) Fuegian-Falkland.

Taxa occurring in the Falkland Islands and Tierra del Fuego.

<u>Acrolophozia fuegiana</u>	<u>Lophocolea elata</u>
<u>Adelanthus integerrimus</u>	<u>Riccardia opuntiformis</u>
<u>Archeochaete kuehnemannii</u>	<u>Riccardia papillosa</u>
<u>Balantiopsis bisbifida</u>	<u>Riccardia saxicola</u>
<u>Harpalejeunea marginalis</u>	<u>Schistochila subintegerrima</u>

3) Magellanian-Falkland.

Taxa occurring in southern Patagonia north to 48° S. or Fuegia and southern Patagonia north to 48° S. The northern boundary was affixed by Skottsberg (1916) to delimit the Magellanian and Valdivian regions, and has been widely followed by various authors. Of the 19 taxa in this group, 74% have been found to occur in the magellanian moorland. Their occurrence in the moorland is indicated by an asterisk, and those taxa restricted to the moorland are indicated by a double asterisk. This region occurs south of 48° S. to Cabe de Hornos, and is limited by the magellanian rain forest to the east and the Pacific Ocean to the west (see discussion and map in Godley, 1960). The moorland is extremely wet, exposed to violent winds and has a permanently saturated peaty soil. Of the remaining four taxa, Adelanthus tenuis and Hygrobiellopsis isophyllum are known from deciduous Nothofagus forests, and Anastrophyllum ciliatum and Fruilania pseudolobulata from evergreen Nothofagus forests.

[Illegible handwritten notes]

<u>Adelanthus tenuis</u>	* <u>Microlepidozia setiformis</u>
<u>Anastrophyllum ciliatum</u>	* <u>Neolepidozia oligophylla</u>
* <u>Andrewsianthus australis</u>	(?) <u>Plagiochila atroviridis</u>
* <u>Cephalolobus scabrellus</u>	* <u>Plagiochila obovata</u>
* <u>Chiloscyphus hookeri</u>	* <u>Riccardia granulata</u>
<u>Frullania pseudolobulata</u>	* <u>Riccardia spectabilis</u>
* <u>Gackstroemia patagonica</u>	* <u>Riccardia tenax</u>
<u>Hygrobiellopsis isophyllum</u>	** <u>Saccogynidium vasculosum</u>
* <u>Leptoscyphus aequatus</u>	* <u>Schistochila pachyla</u>
** <u>Microlepidozia mollis</u>	

4) Valdivian-Falkland.

Occuring in Chile and/or Andean Patagonia (see group 5 for definition) north of 48° S. and south of 36° S., or occasionally absent from mainland and only on Juan Fernandez. Skottsberg (1916, p. 13) places the northern boundary of the Valdivian region at 40° S., while Kuschel (1960) states that the zone occurs from 36° S. in the Andes, 37° S. in the central valley. As stated above, the southern boundary of the region has been placed at 48° S. This forest region is characterized by possessing a "species rich" vegetation, dominated by Eucryphia cordifolia, Laurelia serrata, Weinmannia trichosperma and Anomyrtus spp. (Holdgate, 1961).

- a) The following species are known to occur on the mainland and in all cases, except Lejeunea corralensis, on Juan Fernandez:

Jungermannia crassulaPlagiochila gayanaLejeunea corralensisWettsteinia densiretisLophocolea sylvatica

b) The following are known to occur on Juan Fernandez, but have not been reported from the mainland:

Metzgeria multiformisSymphyogyna hochstetteri

5) Valdivian + Magellanian - Falkland.

Species which are essentially widespread in the American temperate zone. Of the 46 taxa in this group, 72% are known to occur in the magellanian moorland. Their occurrence in the moorland is indicated by an asterisk. It should be repeated here that the moorland occurs south of 48° S. and thus is restricted to the Magellanian floristic region. With regard to the magellanian region, of the remaining 28%, Cheilolejeunea savatieriana, Clasmatocolea koeppensis, Diplophyllum acutilobum, Lophocolea irregularis, Megaceros fuegiensis, Paracromastigum subsimplex and Riccardia fusco-brunnea occur in the deciduous Nothofagus zone, Plagiochila ansata and P. hirta in the evergreen Nothofagus region and Metzgeria violacea and Teleranea pseudozoopsis in the deciduous and evergreen Nothofagus regions.

The taxa, with the exception of group f), are arranged according to their latitudinal range.

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a) South from 45° S.:

Cheilolejeunea savatieriana *Lophocolea divaricata

*Lepicolea rigida *Pigafettoa crenulata

b) South from 43° 30' S. (line from north side of I. Guafo):

*Blepharidophyllum gottscheanum *Microlepidozia saddlensis

*Clasmatocolea cookiana Plagiochila ansata

*Leptoscyphus patagonicus Plagiochila hirta

*Lophocolea leptantha *Riccardia pallidevirens

*Lophocolea textilis *Teleranea plumulosa

c) South from 40° S.:

Diplophyllum acutilobum *Riccardia alcicornis

Megaceros fuegiensis Telaranea pseudozoopsis

*Plagiochila obcuneata

d) South from 36° S.; from latitude indicated:

*Anastrepta bifida (39° 52' S.)

*Balantiopsis cancellata (39° 48' S.)

*Balantiopsis erinacea (36° 50' S.)

*Clasmatocolea fulvella (36° 50' S.)

*Cryptochila paludosa (39° 52' S.)

*Frullania boveana (39° 53' S.)

*Gackstroemia magellanica (39° 52' S.)

*Lophocolea austrigena (39° 52' S.)

*Marsupidium urvilleanum (39° 38' S.)

Metzgeria violacea (39° 46' S.)

*Plagiochila elata (39° 36' S.)

*Radula helix (39° 38' S.)

*Schistochila laminigera (39° 38' S.)

*Telaranea blepharostoma (39° 48' S.)

e) Species about which insufficient knowledge is known concerning range:

*Frullania magellanica

Lophocolea sabuletorum

*Lepidozia chordulifera

*Metahygrobiella tubulata

*Lepidozia fuegiensis

Paracromastigum subsimplex

Lethocolea radicata

Riccardia fuscobrunnea

Lophocolea irregularis

*Riccardia prehensilis

f) Valdivian + Magellanian--Falkland Islands--South Georgia

The species listed here are considered as south temperate rather than subantarctic, as northward extension from the subantarctic is not confined to higher altitudes.

*Cephaloziella dusenii

*Roivainenia jacquinotii

Clasmatocolea koeppensis

Skottsberg (1910, 1916) and Moore (1968) recognize three vegetation zones in the region south of 40° S.

i. West Patagonia. The region including the west slope of the Andes to the Pacific Ocean, characterized by high

[illegible]

precipitation and supportive of lush rain forests and magellanian moorland.

- ii. Andean Patagonia. The eastern slope of the Andes from base to snowline. This region experiences moderate rainfall and supports a deciduous, comparatively dry forest. Hueck (1966) recognizes two forested regions which extend to Andean Patagonia, the Northern Nothofagus forests which are composed predominantly of two species of deciduous Nothofagus, N. obliqua and N. procera, and the Araucaria - Libocedrus zone.
- iii. East Patagonia. The steppe region, ranging east from the Andean foothills, characterized by grassland and xerophytic shrubs.

As is to be expected, the vast majority of Hepaticae in groups 3, 4, and 5 occur predominantly in the West Patagonian zone. The following Valdivian-Magellanian Hepaticae and Anthocerotae occur within the Andean Patagonia zone, and nearly all in the Lago Nahuel Huapi region. None are restricted here.

Clasmatocolea fulvella

Clasmatocolea humilis

Frullania magellanica

Jensenia pisicolor

Lepidozia chordulifera

Lophocolea textilis

Marsupidium urvilleanum

Megaceros fuegiensis

Metzgeria violacea

Plagiochila elata

Riccardia prehensilis

Telaranea pseudozoopsis

Leptoscyphus expansus, Megaceros fuegiensis, and Symphyogyna hymenophyllum are the only three hepatics occurring in east Patagonia.

6) Andean-Falkland.

Species extending north of 36° S. in the Andes. Of the American temperate species, there are two taxa which have utilized the Andes as a route for northward migration to lower latitudes. It is evident that migration has been northward as both species are rather common in southern South America, and occur in the Andes only at higher altitudes.

Isotachis humectata

Noteroclada confluens

b. AMPHIPACIFIC TEMPERATE

Distribution mainly in temperate parts of the South Pacific in the southern hemisphere, i.e., temperate South America (occasionally Juan Fernandez), New Zealand, Tasmania and southeast Australia. The relatively large number of taxa (12) in this group is illustrative of the rather close relationship between the New Zealand and southern South American hepatic floras. There are varying degrees of penetration northward into the New Zealand sector, and the taxa have been arranged accordingly. One asterisk indicates occurrence on New Zealand shelf islands, two indicates occurrence in New Zealand and three indicates occurrence on New Zealand shelf islands and New Zealand. Only two taxa also occur in the Northern Hemisphere; these are Metzgeria decipiens and Triandrophyllum subtrifidum.

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1) South Island:

Austrolophozia fuegiensis

2) To North Island:

*Chiloscyphus triacanthusSymphyogyna hymenophyllumPallavacinia xiphoides*Telaranea tetradactylaSaccogynidium australe*Temnoma quadripartita

3) To Tasmania:

Herzogobryum teres*Triandrophyllum subtrifidum*Lepidozia laevifolia

4) To Australia:

***Lophocolea lenta

5) To Japan:

**Metzgeria decipiens

c. AMPHIATLANTIC TEMPERATE

Distribution mainly in temperate parts of the south Atlantic, i.e., temperate South America, South Africa (and occasionally Tristan da Cunha). Species whose sole occurrence in the Indian Ocean sector is on subantarctic islands are included here and indicated by an asterisk. They are not considered as subantarctic species, as northward extensions from the subantarctic are not restricted to higher altitudes.

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<u>Adelanthus lindenbergianus</u>	<u>Hyalolepidozia bicuspidata</u>
* <u>Blepharidophyllum clandestinum</u>	* <u>Jensenia pisicolor</u>
* <u>Blepharidophyllum densifolium</u>	<u>Lepicolea ochroleuca</u>
* <u>Clasmatocolea humilis</u>	<u>Leptoscyphus expansus</u>
<u>Clasmatocolea vermicularis</u>	<u>Pseudocephalozia tristaniana</u>

All of these taxa, with the exception of Hyalolepidozia bicuspidata,¹ penetrate north via the Andes to lower latitudes (Adelanthus lindenbergianus, Clasmatocolea vermicularis, and Lepicolea ochroleuca reaching into the Northern Hemisphere), and are known from relatively high altitudes north of 36° S. This is an ensemble of rather plastic, polystenic species which are able to adapt to a variety of ecological niches. Leptoscyphus expansus is particularly xeric tolerant as it is one of the two Falkland taxa known from the east Patagonia zone. Among them, Lepicolea ochroleuca perhaps has the narrowest ecological requirements, especially moisture requirements.

d. PAN-TEMPERATE

Species occurring in temperate regions of South America, Australia, and South Africa.

<u>Acrobolbus ochrophyllus</u>	<u>Lophocolea semiteres</u>
<u>Cryptochila grandiflora</u>	<u>Marchantia berteriana</u>
<u>Jamesoniella colorata</u>	

¹Hyalolepidozia bicuspidata has been reported from "Fraile Jorge," Prov. Coquimbo, Chile.

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2. SUBANTARCTIC

Species occurring on one or more subantarctic islands (as defined by Greene, 1964) of at least one sector (e.g., American, Indian Ocean, or New Zealand) with northward extensions only at higher altitudes. If one includes cool, south temperate taxa in this group the number of species becomes drastically inflated, and the south temperate and subantarctic elements merge and become confused. Several authors have not recognized the south temperate and subantarctic regions (as defined here) and have included the patterns under the single category of "antipodal" (Schuster 1963a, 1969c, etc.), "subantarctic" (Grolle, 1969, and others) or "antarctic" (Fulford, 1963b, 1966). There are only ten subantarctic species in the Falkland flora. None of the species occurs on Juan Fernandez, or penetrates northward beyond the Valdivian region. The sectors in which the taxa occur are indicated after each species.

<u>Cephalozia badia</u> (A)	<u>Pachyglossa dissitifolia</u> (A)
<u>Clasmatocolea georgiensis</u> (A)	<u>Pachyglossa fissa</u> (I)
<u>Herzogobryum erosum</u> (A)	<u>Pachyglossa spegazziniana</u> (A)
<u>Herzogobryum vermiculare</u> (A,I)	<u>Riccardia georgiensis</u> (A)
<u>Leptoscyphus abditus</u> (I)	<u>Schistochila carnososa</u> (A,I)

3. ANTARCTIC

Species occurring in the Antarctic Zone (as defined by Greene, 1964), with northward extensions into the subantarctic or temperate

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zones only at higher altitudes. The only species which may be included here is Lophozia hatcheri, which is restricted in the Falklands to the higher elevations. Unfortunately its precise distribution as regards altitude in South Georgia is unknown. The worldwide distribution of L. hatcheri can be termed bipolar.

4. WIDESPREAD

Species not in any of the above categories and not pan-tropical.

Aneura pinquis

Metzgeria leptoneura

C. Distribution within the Falklands

The taxa below are arranged according to their occurrence in either the East Falklands or the West Falklands.

Taxa known only from East Falklands; of these, 39% are known only from the Mt. Usborne region, and these are indicated by an asterisk.

*Acrolophozia fuegiana

*Microlepidozia sadlensis

*Anastrepta bifida

*Microlepidozia setiformis

Andrewsianthus planifolius

*Neolepidozia oligophylla

Blepharidophyllum gottscheanum

Pachyglossa fissa

Cephalolobus scabrellus

*Paracromastigum subsimplex

[illegible]

<u>Clasmatocolea cookiana</u>	<u>Plagichila obcuneata</u>
* <u>Gackstroemia patagonica</u>	<u>Riccardia alcicornis</u>
<u>Jungermannia crassula</u>	* <u>Riccardia granulata</u>
<u>Lejeunea corralensis</u>	<u>Riccardia prehensilis</u>
<u>Lepicolea ochroleuca</u>	* <u>Riccardia saxicola</u>
<u>Lepicolea rigida</u>	* <u>Saccogynidium australe</u>
<u>Leptoscyphus aequatus</u>	<u>Schistochila laminigera</u>
<u>Lophocolea divaricata</u>	<u>Schistochila pachyla</u>
<u>Lophocolea textilis</u>	<u>Symphyogyna hochstetteri</u>
<u>Metzgeria multiformis</u>	<u>Telaranea blepharostoma</u>
* <u>Microlepidozia mollis</u>	<u>Telaranea tetradactyla</u>

Taxa known only from West Falklands:

<u>Diplophyllum acutilobum</u>	<u>Pigafettoa crenulata</u>
<u>Herzogobryum erosum</u>	<u>Plagiochila atroviridis</u>
<u>Lethocolea radicata</u>	<u>Plagiochila obovata</u>
<u>Lophocolea irregularis</u>	<u>Radula helix</u>
<u>Lophocolea semiteres</u>	<u>Riccardia regularis</u>
<u>Megaceros fuegiensis</u>	<u>Schistochila carnosa</u>
<u>Metzgeria violacea</u>	

While I regard the highly local occurrence of many Falkland Island taxa to be a reflection of the availability of microhabitats and narrow ecological requirements, the comparison of hepatics restricted to the East Falklands (29) compared to the West Falklands (11) is impressive, and may well reflect differing climatic conditions

[illegible]

within each of the respective island groups. Alternatively, the difference in species diversity between East and West Falklands may be due to critical local levels of temperature and rainfall which are present in various parts of the Falkland Islands (see Map 61 with rainfall indicated, compare especially San Carlos with Port San Carlos).

Port Stanley is one of the wettest areas in the entire archipelago, and this feature coupled with the cool temperatures known for the region may account for the ten taxa which were found to occur only in the Port Stanley-Port William regions. These species, which fall within a variety of elements, were:

Andrewsianthus planifolius

Metzgeria multiformis

Cephalolobus scabrellus

Riccardia prehensilis

Jungermannia crassula

Schistochila pachyla

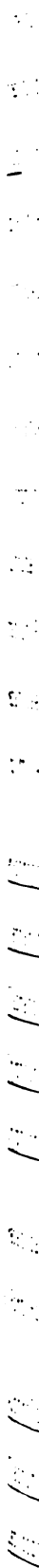
Lepicolea ochroleuca

Telaranea blepharostoma

Lophocolea divaricata

Telaranea tetradactyla

The northwesternmost portion of the Falkland Islands has higher temperatures and within this region are confined or nearly so, three vascular plants (Blechnum chilense, Gavilea macroptera, and Ranunculus acaulis), of the Valdivian element. Lophocolea semiteres is known in the Falkland Islands only from Westpoint Island. The species seems to be restricted to rather warm temperature regions, especially in the American sector (i.e., the species is unknown for the Magellanian region), where it may be considered Valdivian.



Of the taxa occurring on both East and West Falklands, three were confined to the wettest known stations on record. Frullania pseudolobulata, and Metzgeria falklandica, were collected at Port Stanley and Port Howard. Jensenia pisicolor is known from Port Stanley, Port Howard, and Mt. Adam.

Rainfall figures for the Mt. Usborne region would be of great interest. A large number of the Hepaticae of this region are also known only from the wettest known stations on record, as the lists below illustrate. It is likely that the area receives as much rainfall as that of Port Stanley, Port Howard, or Mt. Adam.

Hepaticae known only from the regions of Mt. Usborne, Port Howard, and Mt. Adam:

<u>Anastrophyllum ciliatum</u>	<u>Herzogobryum teres</u>
<u>Blepharidophyllum gottscheanum</u>	<u>Herzogobryum vermiculare</u>
<u>Clasmatocolea cookiana</u>	<u>Hygrobiellopsis isophyllum</u>
<u>Cryptochila grandiflora</u>	<u>Pachyglossa fissa</u>
<u>Cryptochila paludosa</u>	

Hepaticae known only from the regions of Port Stanley, Mt. Usborne, Port Howard, and Mt. Adam:

<u>Austrolophozia fuegiensis</u>	<u>Pachyglossa dissitifolia</u>
<u>Clasmatocolea fulvella</u>	<u>Pachyglossa spegazziniana</u> <u>var. exilis</u>
<u>Lepidozia fuegiensis</u>	<u>Schistochila subintegerrima</u>

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Hepaticae known only from the regions of Mt. Usborne and Port

Howard:

Adelanthus integerrimus

Clasmatocolea georgiensis

Cephalozia badia

Riccardia fuscobrunnea

Hepaticae known only from the regions of Mt. Usborne and Mt.

Adam:

Acrobolbus ochrophyllus

Riccardia pallidevirens

Archeochaete kuehnemannii

Hepaticae known only from the regions of Mt. Usborne and Port

Stanley:

Leptoscyphus aequatus

Symphyogyna hochstetteri

Hepaticae known only from the regions of Port Stanley, Mt.

Usborne and Mt. Adam:

Blepharidophyllum densifolium

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V. SYSTEMATIC ACCOUNT

A. Introduction

1. FORMAT

The sequence of orders and families follows the system of classification outlined in Schuster (1966b). The austral genera not placed in families in Schuster (loc. cit.) are placed where appropriate. The genera are arranged in alphabetical order within families, and species in alphabetical order within genera.

2. NOMENCLATURE AND LITERATURE CITATIONS

a. AUTHOR CITATIONS

Author citations follow the abbreviations in Sayre et al. (1964).

b. JOURNAL CITATIONS

Journal citations follow the abbreviations in the World List of Scientific Periodicals (Brown and Stratton, 1963-1965). The titles of journals not included in the World List have been abbreviated in a similar manner.

c. SYNONYMY

Wherever possible, I have attempted to provide a full synonymy for each taxon. In the citation of synonyms, I have used *cf.* and *fide* in the sense used in Index Muscorum (Wijk et al., 1959-1969), i.e., the former as "confer, compare, a reference to an implicit statement by an author concerning a question of taxonomic synonymy," and the latter as "according to, a reference to an explicit statement by an author concerning a question of taxonomic synonymy."

d. TYPIFICATIONS

I have attempted to indicate the status of typification of all taxa. The vast majority of taxa from the Valdivian and Magellanian regions as well as the Falkland Islands were originally described by Hooker, Taylor, or Stephani. These individuals worked in a period prior to the establishment of the current type method, and the terms holotype and isotype should not be applied to the original material on which their taxa were based. I have proposed a lectotype only after I have examined a sufficient number of specimens of the original material to state that a single specimen best represents the describing author's concept of the species. Otherwise, the expression original material is used. I have accredited lectotypification to an author if a lectotype is implied by the citation, i.e., in several instances the term type is followed by citation of an isotype. With regard to lectotypification, I have used the term *cf.* to refer to an implicit statement made by an author and the term *fide* is used in reference to an explicit statement made by an author. If the author

1. The first step is to identify the problem or question that needs to be addressed. This involves understanding the context and the specific requirements of the task.

used the term type and no clear identification of a particular collection is furnished, I have used the expression original material. If an author has merely said type when describing a species after 1952,¹ I have used the term holotype if the location and identity of the type is clearly given.

If many localities are listed in the original protologue, as often is the case with species described by Stephani, there is an obvious requirement for lectotypification. In instances where only a single locality is given, there is still no assurance that a single collection or element is involved. Since several collections or elements may be involved, either in one herbarium or distributed in two or more herbaria, I have referred to the specimen(s) as "original material." This is especially pertinent with collections of Skottsberg (and/or Halle) and Hooker, since I have frequently found more definitive and better representative specimens in an herbarium other than that of the describing author, and I have preferred to designate these as the lectotypes.

e. HERBARIUM CITATIONS

These follow the abbreviations in Lanjouw and Stafleu (1964).

3. ECOLOGY

I have provided ecological notes for each species I have collected in the Falklands. The terminology and concepts used in the

¹The term holotype, lectotype, syntype and neotype, etc., were adopted at the Seventh International Botanical Congress in Stockholm, 1950 (see Lanjouw 1950 and Troupin, 1949) and are used in the International Code for the first time in 1952 (see Lanjouw, 1952).

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ecological discussions have been defined in the ecology section (see section III, B).

4. DISTRIBUTION

The distribution. The distribution of each species has been summarized, and the terminology and concepts used have been defined in the phytogeography section (see sections IV A, B). The expression Patagonian Channels, however, has not been defined elsewhere, and I have used it to indicate the highly dissected portion of Chile south of Puerto Montt to and including the Brunswick Peninsula (i.e., latitudes $41^{\circ} 28' S.$ to $53^{\circ} 30' S.$). It includes the western portion of the mainland, and the channels near Puerto Natales, S. Skyring, S. Otway, etc.

5. LITERATURE RECORDS

An attempt has been made to compile the literature records for each species. References in which taxa were originally described are not repeated in the literature record section. The information is presented as it is given in the original source, and no attempt has been made to edit the extractions. For example, there are several instances where a collector is reported for a locality he did not visit. The localities are cited in the manner provided in gazetteers of the various regions, and it is only to this extent that I have edited the extractions. The following gazetteers were utilized: Chile (U.S.

Office of Geography: Chile...1967), Argentina (American Geographical Society of New York...Argentina...1944), and New Zealand (New Zealand. Dept. of Lands and Survey, 1968). Abbreviations of localities follow the American Geographical Society indices to maps of Hispanic America (see American Geographical Society of New York...Argentina...1944) and are as follows:

Arch. - Archipelago	M. - Monte
A. - Arroyo	Mt. - Mount, Mountain
B. - Bahía	Pen. - Peninsula
Br. - Brazo	Pta. - Punta
Cta. - Caleta	Port. - Portezuelo
C. - Cerro	Pto. - Puerto
Cord. - Cordillera	Q. - Quebrada
Ens. - Ensenada	Ran. - Rancho
Esto. - Estuario	R. - Río
F. - Fiordo	S. - Seno
I. - Isla	Sa. - Serra, Sierra
L. - Lago	Vo. - Ventisquero
La. - Laguna	V. - Volcan

6. SPECIMENS SEEN

I have grouped all Falkland collections together, followed by additional collections seen. The specimens I have personally collected are indicated by number only, without citation of collector.

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A complete set of my collections has been deposited in the Cryptogamic Herbarium, Michigan State University (MSC). All other specimens are cited with the collector's name provided.

B. Key to the Classes and Orders of
Hepaticae and Anthocerotae¹

1. Gametophytic cells (at least superficial cells) each normally with 1 (-2-several) chloroplasts; cells lacking oil bodies; gametophyte prostrate, thallose, never with leaves, never with air chambers, with stomata on ventral surface; sporophyte linear, 2 valved, with a columella; archegonia embedded and antheridia endogenous.
 Class ANTHOCEROTAE, Order ANTHOCEROTALES
1. Gametophytic chlorophyllose cells with numerous chloroplasts; chlorophyllose cells usually all (or many) with oil bodies; gametophyte thallose or leafy, without stomata; sporophyte a non-linear capsule, usually 4 valved, without a columella, without stomata; sex organs exogenous, not embedded 2. . . Class HEPATICAE
2. Rhizoids typically dimorphic, some tuberculate, others smooth; plants clearly thalloid, without leaf-like lobes, the thallus firm, fleshy, opaque, with ventral scales, with air chambers of air canals opening dorsally by pores; cells typically

¹Key adapted from Schuster (1963a).

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dimorphic, a small minority of generally smaller cells each with a single, large oil body, but no chloroplasts, the large majority of cells with chloroplasts only; capsule wall always unistratose; seta short, not extruding the sporophyte to any extent. Archegonia on specialized thallus branches (carpocephala, archegoniophores) Order MARCHANTIALES

2. Rhizoids, if present, all smooth, isolated thickenings excepted; plants leafy or thallose, if thallose $\pm$ delicate and translucent, without air chambers or pores; cells not sharply dimorphic, oil bodies usually present in all chlorophyllose cells of gametophyte; capsule wall 2-10 stratose; seta usually long and extruding the sporophyte.3
3. Plants clearly and uniformly leafy; archegonia usually terminal on shoots resulting in a cessation of plant growth; capsule wall 2-10 stratose, the cells variously thickened or lacking band-line thickenings . Order JUNGERMANNIALES
3. Plants usually thallose (leafy in Noteroclada); archegonia and antheridia scattered on dorsal thallus surface (occasionally on short thallus branches), or in dorsal groups, not causing cessation in growth of plant; capsule wall 2-5 stratoseOrder METZGERIALES

C. Order Jungermanniales: Key to the Genera
of the Falkland Islands¹

1. Leaves of main stems with orientation (and usually insertion) incubous, at least at dorsal end of insertion, the leaves usually incubously shingled (but ventral portions sometimes modified to form a lobule or water sac); rhizoids always restricted in origin, never scattered on stem, often lacking or rare2
1. Leaves of main stems varying from transverse in insertion to succubously inserted and oriented, to almost longitudinally (horizontally) oriented; never with ventral margin of leaf bearing, or transformed into, a lobule or sac; rhizoids often copious, often scattered on ventral face of stem. 14
2. Leaves divided into a larger dorsal lobe and a solitary, smaller ventral lobe, which is usually sac like or pouch like; branching exclusively lateral, the branches terminal or infra-axillary, neither vegetative nor sexual branches ever ventral or axillary; underleaves 0-2 lobed or absent. . . .3
2. Leaves various, but never with ventral base or lobe modified to form a flap or inflated sac; branching various; underleaves always very large, varying from 2-4 lobed8

¹This generic key is adapted, with considerable modification, from Schuster (1963a) with portions from Schuster (1964b, 1965a, 1966).

3. Underleaves lacking; rhizoids (when present) in fascicles from lobuli, absent from stem. Branches uniformly infra-axillary; plants light to yellow green; leaves with a wide, J- or U-shaped insertion; perianth flattened, mouth wide, truncate. Radula
3. Underleaves present, conspicuous, some or all of them with rhizoids at their bases4
4. Lobuli, at least in large part, galeate, almost free from the dorsal lobe; plants often with reddish or brownish, or dark green coloration.5
4. Lobuli not saccate or galeate, united for most of their length with dorsal lobe along an elongate keel (the water-sac formed partly by lobule, partly by the opposed portion of the lobe); plants green to yellow green. Plants often small and delicate; perianth usually pentagonal, with a beak6
5. Underleaves undivided (in Falkland species); plants without perianths, but with a clavate, variously paraphyllose coelocaul. Leaves entire or ciliate Gackstroemia
5. Underleaves bifid; plants with perianths, but without a coelocaul. Leaf margins entire Frullania

[illegible]

6. Hyaline papilla of lobule distal to apical tooth.

Leaves convex, often strongly so; lobuli always $\pm$
inflated; plants firm, often dull and opaque . . . Cheilolejeunea

6. Hyaline papilla of lobule proximal to apical

tooth.7

7. Lobe apices acute to acuminate, narrowly ovate to

lanceolate to elliptical, 1.5 x 3 x as long as wide.

Leaves ocellate; underleaves obdeltoid, with divergent

blunt to rounded lobes Harpalejeunea

7. Lobe apices blunt to rounded, usually less than 1.5 X

as long as wide. Leaves with or without ocelli.

Plants delicate, usually with leaves flat or weakly

convex; leaf trigones absent or small. Lejeunea

8. Plants only with lateral, terminal branching,

without ventral branches and never with ventral

flagella or stolons; leaves divided for 0.6 or

more their length; leaf and underleaf margins and

segments often ciliate or lacinate. Leaves nearly

transversely inserted; cells rigid, with large,

course, sometimes confluent trigones; plants with-

out perianths but with a fleshy coelocaulis densely

covered with scales and paraphyllia; plants with

subfloral innovations. Lepicolea

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8. Plants with branching not exclusively lateral and terminal; sometimes vegetative and/or sexual branches partly or wholly ventral in origin and abbreviated; plants often with ventral stolons or flagella (at least from older parts of plant); leaves rarely very deeply lobed, never with longly ciliate margins.9
9. Plants isophyllous (both on main stems and branches), the underleaves similar in size, and usually in form, to lateral leaves; branches usually few and irregular, subfloral innovations excepted, all or in large part ventral and axillary, slender flagella usually lacking; sexual branches never abbreviated and ventral. Lateral leaves 2-4-fid; leaf insertion only weakly incubous, the orientation subtransverse. 10
9. Plants normally somewhat to strongly anisophyllous, the underleaves differing in size (and usually in form) from lateral leaves, at least on the branches, underleaves often (if lobed) with fewer lobes than lateral leaves, or else more shallowly lobed; branches (usually) in large part lateral, usually terminal, the plants often regularly 1-2-pinnately branched; stolons, flagella or rhizomes bearing vestigial leaves usually present; sexual branches always short, postical 11

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10. Male bracteoles with antheridia; leaf margins entire in Falkland species (occasionally dentate only at base of ventral margin); perianth distinct; plants usually without conspicuous pigmentation, at most pale brown Triandrophyllum
10. Male bracteoles without antheridia; leaf margins usually $\pm$ dentate; a firm fleshy coelocaulis present, with vestigial perianth at its tip; plants usually with reddish and/or chestnut brown to fuscous pigmentation Isotachis
11. Lateral branches irregular, plastic, i.e., Frullania-, Microlepidozia- (and in M. mollis Acromastigum-type), intercalary branching both ventral and lateral. Underleaves frequently with 1 segment shorter than others Microlepidozia
11. Lateral branches all of Frullania type. 12
12. Stem without a hyaloderm layer (cortical cells $\pm$ thick walled, not conspicuously larger than medullary cells); leaf cells often with thick walls and $\pm$ guttulate lumina; leaves usually conspicuously asymmetric (dorsal margin longer and/or arched). Lepidozia
12. Stem with a conspicuous hyaloderm layer, formed of large cells, with walls little or not thickened,

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- contrasted to smaller medullary cells often with thick walls; leaf cells without trigones, usually large, hyaline, thin or slightly thick-walled; leaves usually symmetrical 13
13. Leaves with lamina 5-12 cells high, distinct; leaf lobes triangular, never filiform. Lamina cells in longitudinal rows. Neolepidozia
13. Leaves with lamina 0-4 cells high; leaf lobes uniseriate throughout, filiform and terete, at most 2 cells wide in basal cell tier Telaranea
14. Stem with underleaves conspicuous throughout (not merely with a minute underleaf here and there), even on sterile stems (except Lophozia, which is gemmiparous and has quadrifid leaves with cilia on the ventral margins). 15
14. Stem with underleaves either lacking on sterile stems, or minute, or mere small, scattered cilia or laciniae, or groups of slime papillae, never conspicuous (exc. Lophozia). Rhizoids almost always scattered over ventral stem surface if present at all 33
15. Leaves sharply complicate bilobed, with a $\pm$ smaller (rarely subequal) dorsal lobe lying over a larger ventral lobe 16

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15. Leaves not complicate bilobed if lobed at all, the lobes lying in nearly the same plane, or leaf merely concave or $\pm$ naviculariform, never folded. 17
16. Apex of dorsal lobe oriented towards apex of ventral lobe, keel between lobes usually with a broad wing, leaf lobes undivided, never bifid; cells of leaf lobes irregularly arranged, not in tiers; sporophyte in a terminal coelocaulis lying in the axis of the stem. Schistochila
16. Apex of dorsal lobe at angle to axis of ventral lobe, the lobes $\pm$ divergent, keel between lobes wingless, leaf lobes bifid; cells of leaf lobe oriented in $\pm$ distinct tiers; sporophyte in a marsupium. Balantiopsis
17. Mature leaves 3-4 (5-6) lobed, often very deeply so, the lobes usually ending in cilia or acuminate, often the lobe margins with cilia or teeth; stem without a distinct, pellucid hyaloderm. Underleaves very large, ca. 0.5-0.9 the area of leaves, similarly lobed and/or ciliate; rhizoids usually sharply restricted to under-leaf bases 18
17. Mature leaves unlobed to 2(3-4) lobed (occasionally with accessory small lobes or teeth, or occasional leaves deeply trifid), if leaves lobed, margins entire or dentate, but not with long cilia; stem sometimes with a hyaloderm 19

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18. Lobes of mature leaves (usually of vegetative shoot sectors, at least in and below gynoecea) with opposed, sharp teeth or cilia, usually of both disk margins and of lobes, rarely of one only; perichaetial bracts freely spinose-dentate to copiously ciliate; perianth trigonous, wide at open mouth, the mouth $\pm$ ciliate. Temnoma
18. Lobes of mature leaves quadrifid, without cilia or teeth (or, rarely, with an isolated tooth on one or both margins of the disk); perichaetial bracts 4-fid, without trace of teeth or cilia; perianth terete below, basically trigonous only in distal 0.2-0.25, closely contracted to the narrow mouth, the mouth denticulate-lobulate to short ciliate. Leaves and underleaves equally (3) 4-fid, never bisbifid, unistratose throughout, with segment apices setaceous; plants distinctly anisophyllous, the underleaves at most 0.5 X the area of lateral leaves, stem with undifferentiated cortex, cortical cells not distinctly smaller than medullary; plants brown Archeochaete
19. Plants with perfect isophylly; leaves undivided or retuse, 2-3 stratose in median, basal portion; leaf and underleaf margins and apices with slime papillae. Branching exclusively intercalary; perianth trigonous, fusiform

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- to elongate, contracted toward the mouth, the mouth with small lobes and slime papillae Hygrobiellopsis
19. Plants quite anisophyllous, or if nearly isophyllous, as in Pachyglossa, then with stiffly patent leaves without slime papillae, never julaceous; leaves undivided to bifid, unistratose, or if pluristratose at the base, as in Clasmatocolea georgiensis, then strongly anisophyllous; leaves and underleaves without slime papillae. Terminal branching present or absent 20
20. Rhizoids frequent to common, scattered over ventral stem surface; underleaves usually ovate to triangular, unlobed or obscurely bilobed, or large, bifid and ciliate; cells each with dense, conspicuous papillae (exc. Cephaloziella dusenii where small or absent. 21
20. Rhizoids always restricted in origin, only at underleaf (sometimes also at leaf) bases, often largely confined to reduced leaves and underleaves of stolons, flagella, or rhizomes, never scattered; cells smooth or with scattered, small fine papillae (if, rarely, with coarser papillae, see Clasmatocolea) 24
21. Underleaves large, ciliate and/or bifid; without stolons or flagella; vigorous plants, usually ± brownish, to

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- 3-5 mm wide. Cells with small or moderately coarse trigones; cuticle with high, coarse, hemispherical papillae; perianth apex twisted. Roivainenia
21. Underleaves small or minute, eciliate, usually unlobed; often with flagella or stolons; small plants (shoots to 0.7-2 mm wide). 22
22. Leaves quite unequally bilobed, the dorsal lobe smaller, succubously inserted throughout, large (leaf width much greater than stem width); perianth lacking, plants with marsupia Acrobolbus
22. Leaves subequally or equally bilobed, with at least dorsal half transversely inserted (occasionally dorsal half subsuccubous in Cephalolobus scabrellus), small (little broader than stem), distant; perianth present. Plants with Cephaloz-
iella-like facies. 23
23. Branching exclusively lateral intercalary; leaf cuticle with conspicuous, very coarse, hemispherical, hyaline papillae Cephalolobus
23. Branching usually ventral intercalary, occasionally of Frullania type; leaf cuticle (at least in C. dusenii) smooth to at most with low, rounded papillae Cephaloziella
24. Stem very soft, pellucid, with a cortex of large hyaline cells surrounding a $\pm$ small celled medulla

(which is usually visible through the cortex by transmitted light); cells not collenchymatous, hyaline, large; ventral terminal branching present (in Paracromastigum) 25

24. Stem without a transparent, colorless hyaloderm; the cortical cells never conspicuously larger than medullary cells, the medullary cells not visible through the cortex; cells various, often with distinct trigones; ventral terminal branching absent. . . 27
25. Leaves cephalozoid (leaves at least feebly dorsally inclined), transverse to distinctly succubously inserted, transverse to basically succubously oriented. Branching mostly intercalary, both lateral and ventral, Frullania-type branches rare or sporadic, Acromastigum-type branching in some taxa, Microlepidozia-type branching absent Pseudocephalozia
25. Leaves lepidozoid (leaf lobes turned ventrally), transversely to feebly incubously inserted, basically incubously or transversely oriented 26
26. Branching predominantly or nearly exclusively lateral- and ventral-intercalary, with rare or sporadic Frullania- and Microlepidozia-type branches, never with Acromastigum-type branching; antheridial stalk 1-seriate. Hyalolepidozia

26. Branching predominantly or nearly exclusively terminal, of Acromastigum- and Frullania-types, never with Microlepidozia-type branching, with rare ventral-intercalary branches, never with lateral-intercalary branching; antheridial stalk 2-seriate
 Paracromastigum
27. Plants producing marsupia, perianths absent; gynocia (and androecia) always on abbreviated ventral branches. Leaves ovate, undivided or bidentate (occasionally short bifid in S. vasculosum), cuticle very densely papillose; underleaves 1/2-3/4 bifid (in Falkland species), free from lateral leaves, much smaller than leaves; plants dull, opaque, gray or light-green plants developing (often) some brownish pigmentation. . . . Saccogynidium
27. Plants producing perianths, perigynia lacking; gynoecia on apices of unmodified stems or short lateral branches, rarely on short ventral branches 28
28. Cell walls with enlarged, knot-like secondary swellings giving the leaf and underleaf margins a crenulated appearance; stems with single layered cortex of larger cells than medullary. Leaves transversely (or occasionally subsuccubously) inserted Pigafettoa

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28. Cell walls without secondary thickenings, the leaf and underleaf margins plane; stems never with cortex of larger cells than medulla. 29
29. Plants rigid, erect, almost isophyllous, with spreading, pluristratose leaves and underleaves; both leaves and underleaves unlobed or at most retuse at apex, both nearly transversely inserted; plants stoloniferous . . Pachyglossa
29. Plants lax, or at least not rigid, usually prostrate, $\pm$ anisophyllous, the leaves and underleaves unistratose; stolons usually lacking. 30
30. Perianth strongly laterally compressed, mouth truncate, wide, 2-lipped. Plants often $\pm$ intensely brownish Leptoscyphus
30. Perianth trigonous to trigonous inflated 31
31. Perianth $\pm$ inflated, restricted to strongly abbreviated lateral-intercalary branches; leaves unlobed or to 3 spinose-dentate. Chiloscyphus
31. Perianth normally on more or less long branches (at least in large part; branches rarely abbreviated, but never consistently so); leaves undivided or bifid. . . 32
32. Leaves convex and with apices decurved or deflexed Lophocolea

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32. Leaves deeply adaxially concave (at least slightly concave in C. vermicularis). Leaves frequently suborbicular to reniform in shape Clasmatocolea
33. Leaves $\pm$ sharply complicate-bilobed, transversely to succubously inserted and oriented. Leaf margins (and/or apices) often $\pm$ denticulate to ciliate 34
33. Leaves lobed or not, but if lobed, never with lobes sharply bent over each other. Perianth (if present), not sharply dorsiventrally compressed. 35
34. Leaf lobes $\pm$ short bifid; rhizoids (often present only on small plants) in fascicles from the stem at the ventral leaf bases; terminal branching frequent, or Frullania type. Blepharidophyllum
34. Leaf lobes undivided, never bifid; rhizoids scattered over ventral stem surface; branching only intercalary, lateral. Diplophyllum
35. Stem soft textured, consisting of a conspicuous, hyaline cortex of enlarged cells (surrounding a medulla of much smaller, $\pm$ thick-walled cells usually distinct by transmitted light, or medullary cells also soft but large). Leaves bilobed; cells thin-walled, $\pm$ hyaline 36
35. Stem anatomy very various, but never with a hyaline cortex of large cells surrounding a medulla of smaller, $\pm$ thick-walled cells. 37

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36. Leaf insertion transverse at least dorsally, extended to stem midline; pigmentation, when present, purplish or brownish; leaves $\pm$ canaliculate, plano-distichous; branching plastic, always with free Frullania-type branches, plus lateral-intercalary and ventral-intercalary branches; gynoecia terminal on leading axes Metagygrobiella
36. Leaf insertion oblique throughout, the dorsal end oblique to almost longitudinal; pigmentation never purplish, usually absent; leaves never plano-distichous, flat to concave but not canaliculate; branching from axils of lateral leaves absent; gynoecia normally on sort, ventral branches which occasionally are elongated Cephalozia
37. Leaves inserted $\pm$ transversely (at least in part of the dorsal half of the insertion) and transversely oriented, generally appearing $\pm$ pectinate when not densely appressed-imbricate. 38
37. Leaves obliquely inserted and $\pm$ succubously oriented, at least half of the insertion quite oblique on stem to nearly horizontal 41
38. Leaves unlobed or to 1/5 bifid, margins often with 1-several rows of hyaline cells forming a border Herzogobryum

38. Leaves usually bilobed 0.35-0.5 their length; leaves
not with 1-several rows of leaf cells forming a
hyaline border 39
39. Plants minute or small, wiry; the leaves remote, bilobed
0.5-0.75 their length; leaf lobes (2) 3-8 cells broad.
Cells very small, equally thick walled, lacking trigones;
perianth mouth crenulate Cephaloziella
39. Plants large; the leaves bilobed ca. 0.35-0.45 their
length, their lobes 8 or more cells broad. 40
40. Cells with coarse, conspicuous trigones and thin
to sinuous intervening walls; leaves strongly
antically secund, the dorsal end of the line of
insertion arcuate and $\pm$ decurrent along dorsal
midline of stem. Anastrophyllum
40. Cells non-collenchymatous or with rather small
trigones; leaves laterally patent and pectinate-
distichous, not antically second; insertion
dorsally transverse, not decurrent. Cuticle
with large, coarse papillae; plants green,
leaves brownish distally; lateral-intercalary
branching only; leaf lobes $\pm$ sulcate; plants
autoecious Acrolophozia

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41. Plants with perianths terminal on leafy, main or lateral stems; androecia intercalary or terminal on leading stems. 42
41. Plants without perianths, with pendent perigynia or without perianth and without perigynium, the erect shoot-calyptra fleshy and rigid. Leaves various, often entire or irregularly dentate. 48
42. Branching uniformly arising from the dorsal end of the leaf axil, all intercalary. Flagella common, wiry, positively geotropic; leaves bilobed; leaf cells with large trigones. Andrewsianthus
42. Branching various, if intercalary, arising from the ventral portion of the leaf axil, near the ventral portion of leaf base, or ventrally 43
43. Perianth laterally sharply compressed, wide and truncate at mouth. Vegetative branches lateral intercalary and/or terminal and of Frullania-type, never ventral intercalary. Plagiochila
43. Perianths terete below, pluriplicate and contracted to the mouth. 44
44. Leaves unlobed, usually rounded at apex. 46
44. Leaves consistently 2-4 lobed. Underleaves laciniate to ciliate or reduced 45

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45. Ventral leaf margin frequently slightly to strongly reflexed, leaves short bifid; underleaves present, of only a few cells only toward the stem apices (in Falkland species) Anastrepta
45. Ventral leaf margin plane, not reflexed, leaves 2-4 lobed, often deeply so; underleaves, when present, may be large and conspicuous (ciliate in the Falkland species, L. hatcheri) Lophozia
46. Involucral bracts unlobed and edentate; bracteole lacking; plants soft textured, usually prostrate growing, small in size Jungermannia
46. Involucral bracts $\pm$ lobed and/or dentate, $\pm$ smaller than leaves; usually with bracteole present; plants $\pm$ firm, usually erect growing, often robust, highly pigmented. Cells often rigid and thick walled 47
47. Terminal branching completely absent; flagellae regularly produced. Bracteoles nearly as long as bracts; perianth mouth entire to weakly crenulate; plants usually brown to red brown Cryptochila
47. Terminal branching present, if only isolated; flagellae only rarely and sporadically produced, mostly absent Jamesoniella

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48. Plants without a marsupium, the erect calyptra becoming thick, green, massive, enclosing the developing sporophyte; leaves undivided; plants erect 49
48. Plants with a marsupium; leaves undivided or 2-4 lobed, plants erect or depressed 50
49. Stem with a collapsing hyaloderm (thus scabrous with age); dorsal leaf margin 4-5 cells thick (in Falkland species); plants green, without secondary pigmentation. Subhyalodermal cells in 2-4 layers of thick walled cells; stems 20-45 cells in diameter Wettsteinia
49. Stem without a collapsing hyaloderm, smooth, never roughened; leaves unistratose throughout; plants green to red brown Adelanthus
50. Leaves unlobed, leaf margins entire; marsupium slenderly cylindrical, deeply penetrating substratum. Plants closely prostrate Lethocolea
50. Leaves 2-4 lobed (or if undivided, then with leaf margins dentate to lobate), leaf margins entire-dentate-lobate; marsupium $\pm$ conoidal to wide cylindrical in shape, not deeply penetrating substratum 51
51. Leafy shoots $\pm$ ascending, not adhering to substratum by rhizoids. Gynoecia and androecia variable in position, acrotonic or basitonic; plants a clear,

translucent to opaque green, often whitish when dead;

capsule tips acute Marsupidium

51. Leafy shoots $\pm$ creeping, often entire axis including

shoot tips adhering to the substratum by rhizoids. 52

52. Leaves bilobed, often asymmetrically so; cuticle

coarsely papillose; rhizoids few, arising from

ventral leaf bases, never in dense, decurrent

bundles on stem; plants without gemmae; antheridia

solitary. Capsule tips acute. Acrobolbus

52. Leaves 3-4 lobed; cuticle smooth; rhizoids dense,

decurrent along stem in fascicles; plants gemmi-

parous; antheridia 1-10 per bract. Austrolophozia

HERBERTACEAE

- K. Müll. (Freib.) ex Fulf. & Hatch. Bryologist 61 (4): 284. 1959.
 K. Müll. (Freib.) in Rabenh. Kryptogamenfl. 6 (1): 557. 1954, nom.
nud.

Triandrophyllum

- Fulf. & Hatch. Bryologist 64 (4): 349. 1962. Triandrophyllum Fulf.
 & Hatch. Bryologist 61 (4): 277. 1959, nom. illeg., sin. gen. typ.
Triandrophyllum Grolle, Bryologist 64 (1): 25. 1961, nom. nud.

Triandrophyllum subtrifidum (Hook. f. &
 Tayl.) Fulf. & Hatch.

- Jungermannia subtrifida Hook. f. & Tayl. London Jour. Bot. 3: 579.
 1844. Isotachis subtrifida (Hook. f. & Tayl.) Mitt. in Hook. f.
 Bot. Ant. Voy. 2 (2): 149. 1854. Mastigophora subtrifida (Hook.
 f. & Tayl.) Hodg. Revue Bryol. Lichén. 18 (1-2): 25. 1949.
Triandrophyllum subtrifidum (Hook. f. & Tayl.) Fulf. & Hatch.
 Bryologist 64 (4): 350. 1962. Lectotype (cf. Fulford 1963b):
 Tasmania, Hooker (BM - non vidi).
Isotachis ripensis Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 339.
 1885, syn. fide Fulford & Hatcher (1959). Original material:
 Ecuador, "Andes Quintenses," M. Pichincha, Spruce s.n. (FH, G,
 NY) - cited in Fulford (1963b).

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Isotachis anceps Mass. Nuovo G. Bot. Ital. 17: 219. pl. 15. f. 9.

1885, syn. fide Fulford & Hatcher (1959). Original material: Chile, Prov. Magallanes, I. Basket, Spegazzini s.n. (G) - cited in Fulford (1963b).

Isotachis nordenskjoeldii Steph. Sp. Hep. 3: 659. 1909, syn. fide

Fulford & Hatcher (1959). Original material: Chile, Prov. Magallanes, L. Dickson, Nordenskjöld 905 p.p. (FH) - cited in Fulford (1963b).

Mastigophora beckettiana Steph. Sp. Hep. 4: 35. 1909, syn. cf. Hodg-

son (1949). Original material: New Zealand, South Island, Waimate, 1901 Beckett 254 (G) - cited in Grolle (1964c).

Leioscyphus schismoides Steph. K. Svenska VetenskAkad Handl. 46 (9):

38. f. 13. f.g. 1911, syn. fide Grolle (1964c). Leptoscyphus schismoides (Steph.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 177. 1937. Myliia schismoides (Steph.) Kühnem. Lilloa 19: 341. 1949. Lectotype (cf. Grolle 1964c): Falkland Is., Mt. Adam, 700m., Halle & Skottsberg s.n. (UPS - non vidi).

Isotachis halleana Steph. K. Svenska VetenskAkad. Handl. 46 (9): 69.

f. 27. a,b. 1911, syn. fide Fulford & Hatcher (1959). Original material: Chile, Prov. Magallanes, F. Peel; Argentina, Tierra del Fuego, R. Azopardo and Ushuaia, R. Olivia, Halle & Skottsberg (G) - cited in Fulford (1963b).

Isotachis lanciloba Steph. K. Svenska VetenskAkad Handl. 46 (9): 70.

f. 26 f.g. 1911, syn. fide Fulford & Hatcher (1959). Original material: Falkland Is., Mt. Usborne, Skottsberg s.n. (G) - cited in Fulford (1963b).

Isotachis mutabilis Herz. Archos Esc. Farm. Córdoba 7: 26. 1938,
 syn. fide Fulford & Hatcher (1959). Original material: Chile,
 Prov. Cautin, Pucon, Hosseus s.n. (G) - cited in Fulford (1963b).

Taxonomical remarks: Triandrophyllum subtrifidum is closely related to T. trifidum. The former has underleaf margins and ventral leaf margins entire or only occasionally with a single tooth, and with leaf cells thin walled to very slightly thickened. Triandrophyllum trifidum possesses underleaf margins and ventral leaf margins with several sharp teeth, especially toward the bases and leaf cells uniformly thick walled. One collection, Engel 2869, has several under leaf and ventral leaf margins dentate and leaf cells slightly thickened. While the plant is somewhat intermediate between T. subtrifidum and T. trifidum, I believe it is but a variant of T. subtrifidum. Hodgson (1967, p. 197) states in her discussion of T. trifidum in New Zealand,

Examination of many specimens may reveal more and more of this species with the toothed lower margins. Excepting these toothed margins I can find no other character distinguishing T. trifidum from T. subtrifidum, nor do Fulford and Hatcher (1961, p. 350) mention any other in their key to the four species of the genus. With the marginal vagaries of Isotachis species in mind, one cannot help but wonder about this, but it is doubtless the only practicable way to treat with this complex.

Further study of the complex is necessary and may show T. trifidum to be conspecific with T. subtrifidum.

Ecology: In the Falklands this species is of sporadic occurrence on soil or rock under rock ledges of sheltered high altitude cliffs. It occurs rarely in stands of Hebe in dwarf shrub heaths.

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Phytogeography: This species has an amphipacific temperate distribution with occurrences in New Zealand and Tasmania and north in the Andes to Guatemala.

Literature Records (FALKLANDS): Anonymous - (Fulford & Hatcher 1959, 1962, Kühnemann 1937 as Isotachis lanciloba & Leptoscyphus schismoides, 1949 as I. lanciloba & Mylia schismoides); Skottsberg - Fulford 1963b, Stephani 1922 as I. lanciloba), Mt. Usborne (Bonner 1966 as I. lanciloba), Mt. Adam (Skottsberg 1913 & Stephani 1922 as Leioscyphus schismoides); Skottsberg & Halle - Mt. Adam (Grolle 1962).

Additional Literature Records: Tierra del Fuego: Anonymous (Fulford & Hatcher 1959, 1962, Grolle 1969, Kühnemann 1937 & 1949 as Isotachis anceps & I. halleana); Dusén - Fuegia, I. Desolacion (Stephani 1909 as I. anceps); Halle - Fuegia (Bonner 1966 as Isotachis halleana, Fulford 1963b, Stephani 1922 as I. halleana); Santesson - Ushuaia (Arnell 1955 & Müller 1955 as I. nordenskjoeldii); Spegazzini - I. Basket (Bonner 1966 & Massalongo 1927 as I. anceps), I. Basket-Cabo Desolacion (Fulford 1963b). PATAGONIA: Anonymous - (Fulford & Hatcher 1959, 1962), Strait of Magellan (Kühnemann 1937 & 1949 as I. anceps); Dusén - R. Aisen (Stephani 1900 as I. anceps); Hosseus - Pucon (Bonner 1966 as I. mutabilis, V. Villarrica (Fulford 1963b); Nordenskjold - (Fulford 1963b), L. Dickson (Bonner 1966 as I. nordenskjoeldii; Schwabe - C. Tesoro (Herzog 1954 as I. anceps); Skottsberg - (Fulford 1963b); Spegazzini - Strait of Magellan (Stephani 1909 as I. anceps). BOLIVIA: Brooke - Unduavi (Fulford 1963b); Herzog - Tablas - 3400 m. (Stephani 1916 as I. ripensis). PERU: Vargas - Cuzco (Fulford 1963b).

ECUADOR: Jameson - Quito (Fulford 1963b); Spruce - M. Pichincha (Bonner 1966 as Isotachis ripensis, Fulford 1963b). COLOMBIA: Bischler - Huila-Cauca: Páramo de Las Papas, Cauca: Páramo de Las Papas (Fulford 1963b). COSTA RICA: Standley - San José: Las Nubes - 1500-1900 m. (Fulford 1963b, Herzog 1938). GUATEMALA: Anonymous - (Grolle 1969); Steyermark - San Marcos: V. Tacaná (Fulford 1963b). TRISTAN DA CUNHA: Christophersen & Mejland - Cave Gulch (Arnell 1958 as Isotachis halleana). NEW ZEALAND: Anonymous - (Bonner 1966 as Isotachis subtrifida. NORTH ISLAND (NEW ZEALAND): Hooker - Bay of Islands (Hooker 1867 & Mitten 1885 as Isotachis). TASMANIA: Anonymous - Mt. Wellington (Rodway 1916 as Isotachis); Hooker (G. L. & N. 1847 as Jungermannia); Lawrence (Mitten 1860 as Isotachis); Weymouth (Pearson 1924 as Isotachis).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2516, 2531 B & 2552). WEST FALKLANDS: MT. ADAM, 700 m., 13 December 1907 Halle and Skottsberg 347, syntype of Leioscyphus schismoides (S-PA); ridge south of northern lake, 610 m. (3026, 3036 A, 3040, & 3042 B). WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2869-c.♀).

Triandrophyllum Species Excluded from the Falklands

Triandrophyllum durum (Steph.) Fulf. & Hatch. The Falkland report originates from Grolle (1962) who stated Leioscyphus schismoides, which is based upon a Falkland Island collection, was a synonym of T. durum. Triandrophyllum durum (Steph.) Fulf. & Hatch. is a

synonym of T. trifidum fide Fulford and Hatcher (1962). Grolle (1964c) later placed L. schismoides in the synonymy of T. subtrifidum.

BLEPHAROSTOMACEAE

Engel,¹ K. Müll. (Freib) in Rabenh. Kryptogamenfl.

6 (1): 590. 1954, nom. nud.

Caulis irregulariter ramosus, ramificatione variabili, terminali ramificatione plerumque Frullaniae modo, minus frequens Micropolepidoziae vel Acromastigi modo, intercalaribus ramis ventralibus vel lateralibus. Caulis cellulae omnes subaequimagnae. Plantae isophyllae ad moderate anisophyllae; folia transversa ad succubas, profunde quadrifida, rarius bilobata; amphigastria caulina similis foliis in forma. Rhizoidea solum ex amphigastriorum basibus rarius e foliorum basibus.

Plantae dioicae vel monoicae. Gynoecia terminalia in caulinis majoribus. Perianthium unistratosum, teretium basin versus, 3-4-5 (-6) plicatum apicem versus; calpytra crassa. Capsula valvulis 2-5 stratosis. Sporae 8-16 u, aequales vel duplo elaterum latitudine; elateres 1-2 spiri.

Typus: Blepharostoma Dum. Recueil Obs. Jungerm. 18. 1835.

¹The diagnosis is based on the information in Schuster (1966b, c).

[illegible]

ARCHEOCHAETE

Schust. J. Hattori Bot. Lab. 26: 262. 1963.

Archeochaete kuehnemannii Schust.

Archeochaete kuehnemannii Schust. J. Hattori Bot. Lab. 26: 262. 1963.

Holotype: Argentina, Terr. Tierra del Fuego, ca. 16-17 km. W. of Ushuaia, on road to Lapataia, C. Bandera, February 1961 Schuster & Gamundi de Amos 58852 (RMS - non vidi).

Taxonomical remarks: Schuster (1965b) in his description of Archeochaete kuehnemannii states the leaf lobe apices are uniseriate for a length of 4-6 (7) cells. The Falkland plants, however, have lobe apices uniseriate for a length of (1) 2-4 cells. Schuster (loc. cit., p. 816), in distinguishing Archeochaete states,

The more attenuate leaf apices, with the uniseriate tips longer than in any species of Lophochaete, are (also) distinctive. In Lophochaete the tips are formed by, at most, 2-3 superimposed cells.

While the genera Lophochaete and Archeochaete are distinct and well defined, the leaf lobe apices should not be used as a character to differentiate them. Lophochaete has (a) leaves and underleaves subequal in size and form and bisbifid and (b) perianths 4-5-6 plicate distally. Archeochaete has (a) underleaves at most 1/2 the leaf size and leaves, when quadrifid, with sinuses subequal and (b) perianths 3 plicate distally.

The only other member of the genus, A. temnomoides Schust., is endemic to Tristan da Cunha.

1990

Ecology-Phytogeography: This rare species was found in a feldmark pool and on a cushion plant on a sheltered high altitude cliff. The type was collected in a Sphagnum bog in Tierra del Fuego, and I have found it in the same habitat in the Brunswick Peninsula. The ecology of the Falkland plants thus deviates considerably from that of the only known previous collections.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, summit of Mt. Usborne 1, c. 700 m. (2496 D). WEST FALKLANDS: MT. ADAM, ridge south of northern lake, 610 m. (3046).

TEMNOMA

Mitt. in Hook. f. Handb. N. Z. Flora 753. 1867. Teinnoma Mitt.
Phil. Trans. R. Soc. 168 (extra vol.): 32, 33. 1879, err. typogr.¹
(et Mitten, 1884).

¹I regard the use of the genus "Teinnoma" as an typographic error since (a) Mitten used the spelling Temnoma on herbarium specimens; Dr. G. L. Smith [I am grateful to Dr. G. L. Smith, associate curator of the New York Botanical Garden, for providing this information] states (in litt.),

I have looked at Mitten's handwritten labels on his specimens of Temnoma (in The New York Botanical Garden), and I can see how one might read "Teinnoma" if he didn't know the name. I'm inclined to think it's merely an error;
(b) Temnoma is Greek derived from the word "Temno" meaning "cut off," and "Teinnoma" has no Greek derivation, being merely a nonsense word which Mitten would have had little cause to use; further, Mitten stated in his original description for Temnoma: "from the truncate

Temnoma quadripartitum (Hook.) Mitt.

Jungermannia quadripartita Hook. Musci Exot. 2: pl. 117. f. 1-3. 1820.

Temnoma quadripartitum (Hook.) Mitt. J. Linn. Soc. 15: 68. 1876.

Blepharostoma quadripartitum (Hook.) Trev. Memorie Ist. Lomb. Sci.

Lett. III. 4: 417. 1877. Original material: Argentina, Terr.

Tierra del Fuego, I. de los Estados, Menzies (K,V) - cited in

Schuster (1966c).

Jungermannia podophylla Ångstr. Öfvers. K. VetenskAkad. Förh. 29

(4): 11. 1872, syn. fide Pearson (1887); non Jungermannia podo-

phylla Thunb. Prodr. Fl. Cap. 2: 174. 1823 (= Symphyogyna podo-

phylla (Thunb.) Nees & Mont. in G. L. & N. Syn. Hep. 481. 1846).

Original material: Chile, Prov. Magallanes, Pto. del Hambre,

Andersson s.n., (S-PA) - cited in Schuster (1966c).

Lepidozia randii S. Arnell, Svensk. Bot. Tidskr. 47 (3): 417. f. 6.

1953, syn. fide Schuster (1966c). Original material: Marion Is.,

Rand 3276 (S-PA) - cited in Schuster (1966c).

Taxonomical remarks: The Falkland material is referable to
var. quadripartitum and not var. pseudopungens or var. randii.

Ecology: This taxon is rather rare in the Falklands, where
only a few gatherings were made in Cortaderia (wet depressions) and
dwarf shrub heaths (under rock overhangs of outcrops).

mouth of the perianth"; (c) as Temnoma is a Mitten genus, there would
have been little reason for this author to alter the spelling 12
years later, (d) in my opinion the fact that "Teinnoma" is twice
mentioned in 1879 merely indicated the editor chose to use one spell-
ing consistently, and (e) Mitten (1884) is merely a list of Kerguelen
hepaticae based upon his 1879 paper, thus the presence of "Teinnoma"
is a repetition of the earlier error and has little significance.

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Phytogeography: This taxon has an amphipacific temperate distribution with northward extensions in the American sector (West Patagonia north to 39° 16' S., Andean Patagonia at P. N. Nahuel Huapi), and in the New Zealand sector into the mountains of North Island. It is also present in the subantarctic on Kerguelen and Marion Islands. The report from Tristan da Cunha in Arnell (1958) is based on a specimen of Archeochaete temnomoids (see Schuster 1966c). The report from Inaccessible Islands in Arnell (1958) is questionable (see Map 1).

Literature Records TIERRA DEL FUEGO: Anonymous-(Kühnemann 1949), Fuegia (Schuster 1959), I. de los Estados (Schuster 1966c as var. randii); Davis - I. Hermite (Taylor & Hooker 1847b as Jungermannia); Dusén - Pto. Angosto (Schuster 1966c as var. randii); Gasperi B. Angelito, Valle delle Fate & S. Agostini (Gola 1923 as Blepharostoma); Halle - Fuegia (Schuster 1966c as var. randii); Halle & Skottsberg - Cta. Gomez (Schuster 1966c as var. randii); Hariot - I. Clarence (actually I. Capitan Arcena) (Bescherelle & Massalongo 1889 as Jungermannia, Schuster 1966c as var. typica), I. Hermite (Fulford 1963b, Schuster 1966c as var. typica); J. B. Hatcher - Fuegia (Evans 1898 as Blepharostoma); Menzies - I. de los Estados (G. L. & N. 1845, Taylor & Hooker 1847b as Jungermannia, Fulford 1963b, Schuster 1966c); Santesson - S. de Sorondo (Arnell 1955 as Blepharostoma, Hodgson & Allison 1962, Schuster 1966c as var. typica); Schuster - C. Garibaldi (Schuster 1966c as var. typica); Skottsberg & Halle-Cta. Gomez (Stephani 1911 as Blepharostoma); Spegazzini - M. Conegliano & Pto.

[illegible]

Cook (Massalongo 1885 as Jungermannia, 1927 as Blepharostoma. PATA-
 GONIA: Anonymous - Strait of Magellan, West Channel (Schuster 1966c
 as var. typica), Strait of Magellan (Schiffner 1895 as Blepharostoma);
Andersson - Pto. del Hambre (Ångström 1872 as Jungermannia quadri-
partitum, Fulford 1963b, Schuster 1966c as var. typica & var. randii);
Cunningham - B. Halt (Fulford 1963b, Schuster 1966c as var. typica &
randii); Donat - M. Tronador (Grolle 1964a, Herzog 1957 as Blephar-
ostoma, Schuster 1966c as var. typica); Dusén - Pto. Bueno (Schuster
 1966c as var. randii, Stephani 1900 as Blepharostoma), R. Aisen (Ful-
 ford 1963b, Schuster 1966c as var. typica); Hariot - Patagonia
 (Schuster 1966c as var. randii); Hosseus - Pucon (Grolle 1964a, Her-
 zog 1938 as Blepharostoma); Oberdorfer - C. Puntagudo (Grolle 1964a);
Schwabe - P. Magdalena (Grolle 1964a, Herzog 1954 as Blepharostoma);
Skottsberg & Halle - F. de Los Ventisqueros (Stephani 1911 as Blephar-
ostoma). TRISTAN DA CUNHA: Christophersen & Mejland - (Arnell 1958
 as Blepharostoma). INACCESSIBLE: Christophersen & Mejland (Arnell
 1958 as Blepharostoma). MARION: Rand (Schuster 1966c as var. randii).
 KERGUELEN: Anonymous - Schiffner 1895); Hooker (Mitten 1879); Moseley
 (Mitten 1876, 1879, 1884, Schuster 1966c as var. typica). ST. PAUL:
Anonymous - (Schuster 1966c as var. randii, Stephani 1909). AUCKLAND:
Hooker (Hodgson 1962). NEW ZEALAND. SOUTH ISLAND: Berggren - Bealey
 (Arthurs Pass Natl. Park) (Schuster 1966c as var. typica); Holdsworth -
 Arthur's Pass (Hodgson & Allison 1962, Schuster 1966c as var. typica);
Schuster - S. of Haast Pass (Schuster 1966c as var. typica & var.
pseudopungens), Milford Sound - on track to Bowen Falls, Humboldt Mts.,
 track from Lake Howden to Lake Mackenzie (Schuster 1966c as var.

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typica). NORTH ISLAND (New Zealand); Druce - Ruahine Mts. (Hodgson & Allison 1962, Schuster 1966c as var. typica); Hodgson - Ruahine Mts. (Schuster 1966c as var. typica); Schuster - Mt. Hector (Schuster 1966c as var. typica & var. randii), Mt. Egmont (Schuster 1966c as var. typica).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, The Gap, 275-290 m. (2470-c. o→ + young ♀ & 2472). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3428-c. per.); summit of Fox Bay Mt., 307 m. (3446-c. o→).

ADDITIONAL SPECIMEN SEEN: CHILE. AISEN: R. Aisen, January 1897 Dusen as Trichocolea verticillata (NY).

ISOTACHIDACEAE

Hatch. Nova Hedwigia 2: 579. 1960 as Isotachaceae; corrected by Grolle (1964e).

Isotachis

Mitt. in Hook. f. Bot. Ant. Voy. 2. (2): 148. 1854.

Isotachis humectata (Hook. f. & Tayl.) Steph.

Jungermannia humectata Hook. f. & Tayl. London Jour. Bot. 3: 462.

1844. Lophocolea humectata (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 6: 656. 1906 (Sp. Hep. 3: 72). Isotachis humectata (Hook. f. & Tayl.) Steph. Sp. Hep. 3: 654. 1909. Lectotype (fide Stephani 1906): Falkland Is., Hooker s.n. (BM!).

Jungermannia madida Hook. f. & Tayl. London Jour. Bot. 3: 465. 1844,

non Jungermannia madida Nees in Mart. Fl. Bras. 1: 362. 1833 (= ? Porella, fide Swails 1970, p. 249). Isotachis madida (Hook. f. & Tayl.) Mitt. in Hook. f. Bot. Ant. Voy. 2 (2): 149. pl. 158. f. 2. 1854. Original material: Chile, Prov. Magallanes, Cago de Hornos, Hooker s.n. (NY, BM) - cited in Hatcher (1960).

Isotachis fusca Steph. K. Svenska VetenskAkad. Handl. 46 (9): 68.

f. 25 d, e. 1911, syn. fide Hatcher (1960). Original material: Chile, Prov. Chiloe, V. Corcovado, 31 July 1908 Halle and Skottsberg 126 (NY!); Prov. Magallanes, F. Peel, F. de Los Ventisqueros Halle & Skottsberg; Argentina, Terr. Tierra del Fuego, Ushuaia, R. Olivia, Halle & Skottsberg (non vidi).

Isotachis pallens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 70.

f. 25 h-1. 1911, syn. fide Hatcher (1960). Original material: Chile, Prov. Chiloe, I. Chiloe, R. Pudeto, Skottsberg (G) - cited in Hatcher (1960).

Isotachis striolata Steph. K. Svenska VetenskAkad. Handl. 46 (9): 71.

f. 27 c, d. 1911, syn. fide Hatcher (1960). Original material: Chile, Prov. Magallanes, S. Otway, R. Grande, Skottsberg 133 (S-PA) - cited in Hatcher (1960).

1. The first part of the document is a list of names and their corresponding dates. The names are listed in a column on the left, and the dates are listed in a column on the right. The names are: John Doe, Jane Smith, and Bob Johnson. The dates are: 1/1/2020, 2/1/2020, and 3/1/2020.

2. The second part of the document is a table with two columns. The first column is labeled 'Name' and the second column is labeled 'Date'. The table contains the following data:

Name	Date
John Doe	1/1/2020
Jane Smith	2/1/2020
Bob Johnson	3/1/2020

Isotachis aequifoliata Steph. Sp. Hep. 6: 349. 1922, syn. fide

Hatcher (1960). Original material: Bolivia, without specific location, Herzog 2848 (G) - cited in Hatcher (1960).

Isotachis flavicans Steph. Sp. Hep. 6: 351. 1922, syn. fide

Hatcher (1960). Original material: Chile, without specific location, Skottsberg 739 (G) - cited in Hatcher (1960).

Taxonomical remarks: Fulford (1963b, p. 71), in the generic key, separates Triandrophyllum from Isotachis in a couplet based upon the character "line of insertion hook-form or recurved at the dorsal end . . .," with Triandrophyllum possessing the character and Isotachis lacking it. I have found I. humectata to have a strongly recurved ("hook-form") line of insertion at the dorsal end, and Hatcher (1961, pl. 18, f. 583) illustrates this in a male plant of I. humectata. Vegetative characters are of little value in distinguishing the two genera and androecial and gynoecial characters must be relied upon.

Hatcher (1960) records only ventral-intercalary branches for the genus Isotachis. Isotachis humectata, however, may produce ventral-intercalary branches as well as Frullania-type branches, the latter being quite commonly developed. Frullania-type branching within Isotachis has been documented by Schuster (1963a, 1964d) and Crandall (1969).

There has been considerable confusion regarding the type locality and systematic position of Isotachis humectata. The type locality for Jungermannia humectata is the Falkland Islands, and the

plant was originally described by Hooker and Taylor (1844, p. 462). Stephani (1906) transferred the species to Lophocolea and commented, "Das originale Exemplar dieser Pflanze in Kew Herbarium . . ." which effectively lectotypifies the plant to a specimen in the Kew Herbarium. Three years later Stephani transferred the species to Isotachis, listing it from both Campbell and Falkland Islands. Hatcher (1961) was in error in his treatment of the taxon. He states (p. 31) for I. humectata "Campbell's Island: without loc., Hooker, a portion of the original material of J. humectata (FH)," and treated the plant as a synonym of I. intortifolia without mentioning the Falkland Island locality, the Lophocolea transfer or the Kew Herbarium typification.

Ecology: This species occurs sporadically in streams in Cortaderia heaths above 215 m. where it often forms very extensive mats. The species seems to be restricted to Cortaderia heaths in the Falklands.

Phytogeography: This Andean South American species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia north to 36° 43' S. and in Andean Patagonia in P. N. Nahuel Huapi), central Chile (Valparaiso), in the Andes north to Colombia and Tristan da Cunha (see Map 2).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949, Bonner 1966); Hooker (G. L. & N. 1847, Taylor & Hooker 1847b, Stephani 1906, 1909).

Additional Literature Records: Anonymous (Kühnemann 1937 & 1949 as I. fusca & I. madida), M. Foster (Hatcher 1960 as I. madida);

Dusén - Pto. Angosto (Fulford 1963b & Hatcher 1960 as I. madida);
Hooker - I. Hermite and/or Cabo de Hornos (Fulford 1963b as I. madida,
 G. L. & N. 1847 as I. madida, Hatcher 1960 as I. madida, Taylor &
 Hooker 1847b as I. madida; Hyades - I. Hoste (Bescherelle & Massa-
 longo 1886 as I. madida); Skottsberg - Pto. Cook (Stephani 1905a as
I. madida); Skottsberg & Halle - L. Fagnano (Stephani 1911 as I. ma-
dida; Spegazzini - Pto. San Juan del Salvamiento (Massalongo 1885 as
I. madida & 1927). I. de los Estados (Fulford 1963b & Hatcher 1960
 as I. madida). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as I.
madida & I. striolata); Dusén - Strait of Magellan (Fulford 1963b &
 Hatcher 1960 as I. madida), Pto. Bueno (Fulford 1963b, Hatcher 1960
 & Stephani 1900 as I. madida), I. Guaitecas (Fulford 1963b & Hatcher
 1960 & Stephani 1900 as I. madida), Pto. Octay, Corral, Concepcion,
 Talcahuano (Fulford 1963b & Hatcher 1960 as I. madida); Hosseus -
 Corral (Herzog 1938 as I. madida), Valdivia (Fulford 1963b & Hatcher
 1960 as I. madida); Junge - Pilmaiquen (Fulford 1963b & Hatcher 1960
 as I. madida); Schwabe - I. Magdalena - Pto. Puyuhuapi (Herzog 1954
 as I. madida); Skottsberg - I. Riesco (Fulford 1963b & Hatcher 1960
 as I. madida), I. Chiloe (Stephani 1922 as I. pallens), Patagonia
 (Stephani 1922 as I. fusca); Skottsberg & Halle - S. Otway - R.
 Grande (Stephani 1911 as I. madida), R. Pudeto (Stephani 1911 as I.
madida); Thaxter - Corral (Hatcher 1960 as I. madida); Wolffhugel -
 L. Todos los Santos (Fulford 1963b & Hatcher 1960 as I. madida).
 BOLIVIA: Herzog (Fulford 1963b & Hatcher 1960 as I. madida).
 COLOMBIA: Bischler - Antioquia (Fulford 1963b & Hatcher 1960 as
I. madida); Weir - Bogota (Fulford 1963b & Hatcher 1960 as I. madida).

TRISTAN DA CUNHA: Christophersen & Mejland (Fulford 1963b & Hatcher 1960 as I. madida), 550-800 m., 3rd Gulch-550-600 m. & above Burntwood 700 m. (Arnell 1958 as I. madida & I. striolata); Wace - Soggy Plain, 740 m. (Arnell 1958 as I. madida).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker s.n., syntypes of Jungermannia humectata (FH, MICH). MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2611, 2619 B, 2620 & 2621). DARWIN SETTLEMENT, near mouth of Ceritos arroyo (2676 & 2679). WEST FALKLANDS: MT. ADAM, basin east of summit, 580-595 m. (2993).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I. Desolacion, Pto. Angosto, 16 April 1896 Dusen 399 (NY).

LEPICOLEACEAE

Schust. Nova Hedwigia 5: 27. 31 January 1963. Schust. ex Fulf.
Mem. N.Y. Bot. Gdn. 11 (1): 30. 15 March 1963. Lepicoleaceae
Schust. Revue Bryol. Lichén. 26 (3-4): 126. 1957, nom. nud.

Lepicolea

Dum. Recueil Obs. Jungerm. 20. 1835.

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Key to the Falkland Island Species of Lepicolea

1. Leaf segments ending in a uniseriate tip of a few to several elongate cells, the second, third and fourth cell from tip elongate L. ochroleuca
1. Leaf segments ending in a uniseriate tip of a few-celled row of short (subquadrate to short-rectangular) cells which are often caducous; the third and fourth cell from the tip short. Vittae commonly present L. rigida

Lepicolea ochroleuca (Spreng.) Spruce

Jungermannia ochroleuca Spreng. Syst. Veget. 4 (2): 325.

1827. Sendtnera ochroleuca (Spreng.) Nees in G. L. & N. 240. 1845. Leperoma ochroleuca (Spreng.) Mitt. in Hook. f. Handb. N. Z. Flora. 754. 1867. Herbertia ochroleuca Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. Lepicolea ochroleuca (Spreng.) Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 345. 1885. Original material: South Africa, Cape of Good Hope, Ecklon s.n., (NY!, STR - cited in Scott. 1960).

Jungermannia hirsuta Nees ex Hook. f. & Tayl. London

Jour. Bot. 3: 289 (in errore pro 389), 475. 1844, nom. nud.

Sendtnera ochroleuca B mexicana Gott. Kongel. Danske Vi-

densk. Selsk. Naturvidensk. Math. Afh. II. 6:140.

1863, syn. fide Scott (1960).

Taxonomical remarks: This is the first authentic report of Lepicolea ochroleuca from the Falkland Islands, as all previous reports (G. L. & N. 1845 as Sendtnera, Hooker & Taylor 1844 and Taylor & Hooker 1847b as Jungermannia hirsuta) were based upon a Hooker collection which is actually L. rigida.

Ecology: This species is rare in the Falklands, where it occurred on wet rock walls at the summit of Mt. Kent, 455 m. Only a few "clones" were observed. The second and only other locality for the species was deep in a cool, cave-like hollow of a rock outcrop in a dwarf shrub heath. Here, as in the above local, the plants (again only a few) grew on an extensive, flattish area of the outcrop. The species is common in the wet Magellanian moorland, where it may form extensive mounds over bark. It also is quite common on Nothofagus bark in the Valdivian region. The species appears to require a high rainfall and cool temperatures, the absence of the former (as well as the bark habitat) presumably accounting for the rarity of the taxon in the Falklands). The above two sites apparently possessed the precise conditions for growth of the species; both were cool, and received moisture through rock seepage, the former was cool owing to altitude, the latter, 180 m. was cool owing to a particular niche. The Port Stanley region has cooler temperatures and a higher rainfall than other Falkland regions, a point which almost undoubtedly accounts for the presence of L. ochroleuca in this part of the Falklands.

Phytogeography: This amphiatlantic species occurs in South Africa, Tristan da Cunha the Falklands, Tierra del Fuego, Patagonian

Channels, Valdivian region (West Patagonia north to 39° 16' S., Andean Patagonia at P. N. Nahuel Huapi), Juan Fernandez and north in the Andes to Mexico. The report from Brazil in Stephani (1909) and India in Hooker (1867) are regarded as erroneous. The New Zealand reports are either L. attenuata or L. scolopendra, and that from Tasmania is likely L. scolopendra (fide citations in Scott 1960) (see Map 3).

Literature Records (note: locality information is omitted for extra-southern South American collections): TIERRA DEL FUEGO: Anonymous - (Arnell 1953b, Hooker 1867 as Sendtnera, Kühnemann 1937, 1949, Mitten 1855 as Sendtnera, Stephani 1909); Albatross - Pto. Churruca (Evans 1892); Dusén - Pto. Angosto (Fulford 1963b, Scott 1960, Stephani 1901a), R. Azopardo Stephani 1901a); Gasperi - M. Sarmiento, I. Laberinto (Gola 1923); J. B. Hatcher - Ens. Villarino (Evans 1898); Hooker - I. Hermite and/or Cabo de Hornos (Fulford 1963b, G. L. & N. 1845 as Sendtnera, Hooker & Taylor 1844 & Taylor & Hooker 1847b as J. hirsuta, Scott 1960); Naumann - B. Tuesday (Schiffner 1890 as Sendtnera); Pennington - Ens. Villarino & Ushuaia (Dusén 1905); Racovitza - I. Clarence (actually I. Capitan Arencena) (Stephani 1901); Savatier - Pto. Churruca (Bescherelle & Massalongo 1889 as Leperoma); Skottsberg & Halle - R. Fontaine, Cta. Gomez (Stephani 1911), Pto. Cook (Stephani 1905a); Spegazzini - I. Basket, M. Sarmiento, Pen. Brecknock & B. Slogget (Massalongo 1885 as Leperoma). PATAGONIA: Anonymous (Kühnemann 1937, 1949 Stephani 1909), Valdivia, I. Chiloe (Gay 1852); Albatross - Pto. Mayne (Evans 1892); Cuming - I. Chiloe (Fulford 1963b, Scott 1960); Cunningham - Pto. Gallant,

B. Sholl, B. Halt (Fulford 1963b, Scott 1960); Dusén - I. Newton (Stephani 1900), R. Aisen, I. Guaitecas, L. Llanquihue, L. Nahuel Huapi (Puerto Blest) (Fulford 1963b, Scott 1960, Stephani 1900); Gusinde - Canal Smyth (Scott 1960); Hahn - Valdivia (Fulford 1963b, Scott 1960); Hollermayer - Panguipulli (Reimers 1926); Hosseus - Corral, Pucon, Petrohue (Herzog 1938); Lechler - Rada York (Fulford 1963b, Scott 1960); Santesson - R. Aisen, Pto. Montt, Valdivia, R. Enco, Enco, Rinihue, C. Tralcan (Arnell 1955), Rinihue, Enco (Müller 1955); Savatier - Pto. Bueno, Pto. Eden, I. Madre de Dios (Beschrelle & Massalongo 1889 as Leperoma); Schwabe - Calbuco, R. Puelo (Herzog 1939); Pto. Puyuhuapi & Termas de Puyehue (Herzog 1954), L. Pellaifa, Huitrapulli-Aleucapi, Chaihuin-R. Colun, C. Lungoico (Herzog 1960); Skottsberg & Halle - Pto. Cutter, I. Atalaya, I. Pacheco, F. Peel, Cta. Rayo, Cta. Connor, B. Chacabuco, I. de San Pedro, Ancud (Stephani 1911); Sleumer - Pen. Quettrihue (=Pen. Beatriz), (Müller 1955); Thaxter - Corral (Fulford 1963b); Thomasson - L. Villarrica (Thomasson 1963). JUAN FERNANDEZ. MAS A TIERRA: Hatcher & Engel (Crandall 1969); Kunckel (Arnell 1957); Skottsberg (Arnell 1957, Fulford 1963b, Scott 1960). MAS AFUERA: Skottsberg (Arnell 1957, Fulford 1963b, Herzog 1942, Scott 1960, Stephani 1911). BOLIVIA: Rusby (Spruce 1890). HONDURAS: Standley (Fulford 1963b). GUATEMALA: Steyermark (Fulford 1963b). MEXICO: Anonymous (Fulford 1963b, G. L. & N. 1845 & Hooker 1867 & Mitten 1855 as Sendtnera, Scott 1960). BRAZIL: Anonymous (Stephani 1909). TRISTAN DA CUNHA: Christophersen & Mejland (Arnell 1958); Wace (Arnell 1958).

INACCESSIBLE: Christophersen & Mejland (Arnell 1958). SOUTH AFRICA: Anonymous - (Arnell 1963, Hooker 1867 & Mitten 1855 as Sendtnera, Sim 1926, Stephani 1909); Eaton (Mitten 1877 as Leperoma); Eaton, Ecklon, Marloth, Milne, Rehmann (Scott 1960). CAMPBELL: Anonymous - (Mitten 1855 as Sendtnera); Hooker (Hooker 1867 as Sendtnera, Taylor & Hooker 1847a as J. hirsuta). AUCKLAND: Hooker (G. L. & N. 1845 as Sendtnera). NEW ZEALAND. SOUTH ISLAND: Buchanan, Hector, Lya11 (Hooker 1867 as Sendtnera); Lya11 (Mitten 1855 as Sendtnera). TASMANIA: Anonymous (Rodway 1916). JAVA: Anonymous - (G. L. & N. 1845 & Mitten 1855 as Sendtnera). INDIA: Anonymous - (Hooker 1867 as Sendtnera).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3195); summit of Mt. Kent, 455 m. (2740 & 2742).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: Cabo de Hornos, sin. coll. (?Hooker) as Jungermannia hirsuta (MICH); I. Desolacion, Pto. Angosto, 26 March 1896 Dusen 276 (NY); Canal Smyth, January 1924 Gusinde 3697 (Cryptogamae exsiccatae editae a Museo Hist. Natur. Vindobonensi, det. Herzog) (NY); B. Sholl, March 1868 Cunningham 239 (NY); Pto. Mayne, 5 February 1888 Albatross s.n. (BM, NY); B. Halt, Cunningham s.n. (NY). CHILOE: I. Guaitecas, May 1897 Dusen s.n. (BM). VALDIVIA: Corral, Thaxter 116, 119 - c. coel. + cap., 135, 148 (MICH); Arique, Lechler 639 b (NY).

Lepicolea rigida (De Not.) Scott

Sendtnera rigida De Not. *Memorie Accad. Sci. Torino* II. 16: 229.

pl. XV, 1-9. 1855. Herbertia rigida (De Not.) Trev. *Memorie Ist. Lomb. Sci. Lett.* III. 4: 397. 1877. Leperoma rigida (De Not.) Mass. *Nuovo G. Bot. Ital.* 17: 252. 1885. Lepicolea rigida (De Not.) Scott, *Nova Hedwigia* 2 (1-3): 148. 1960.

Original material: Chile, "Valparaiso," Puccio (NY!).

Lepicolea seriata Herz. *Hedwigia* 66: 91. f. 8. 1926, syn. fide

Scott (1960). Original material: Chile, Prov. Aisen, Pta.

Leopardos, Reichert & Hicken s.n. (JE) - cited in Scott (1960).

Ecology: See comments for the ecology of L. ochroleuca, which also apply here. Hooker visited only East Falkland and it is likely that his collection was made in a niche similar to those of L. ochroleuca.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels and Valdivian region north to 46° 32' S., 73° 52' W. (Pta. Leopardos) (see Map 4).

Literature Records: TIERRA DEL FUEGO: J. B. Hatcher - Lapataia (Crandall 1969, Fulford 1963b, Scott 1960), Ens. Villarino (Fulford 1963b, Scott 1960); Hooker - Cabo de Hornos, I. Hermite (Fulford 1963b, Scott 1960); Spegazzini - I. de los Estados (Fulford 1963b, Scott 1960). PATAGONIA: Cunningham - Pto. Gallant, Pto. Island (Fulford 1963b, Scott 1960); Dow - Strait of Magellan (Fulford 1963b, Scott 1960); Dusén - I. Newton (Fulford 1963b, Scott 1960);

Gusinde - Canal Smyth (Fulford 1963b); J. B. Hatcher - Patagonia (Scott 1960); Hicken - Pta. Leopardos (Fulford 1963b), Pillwax - Strait of Magellan (Fulford 1963b, Scott 1960), Reichert - Pto. Leopardos (Fulford 1963b).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: 1843 Hooker s.n. as Jungermannia hirsuta "with a Frullania allied to Jung. lobulata Hook." (FH).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: Cabo de Hornos, Hooker s.n. as Sendtnera ochroleuca (NY). ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, 2 February 1882 Spegazzini 37 as Sendtnera ochroleuca (NY). CHILE. MAGALLANES: Ensenado Villarino, J. B. Hatcher 3, 13 as L. ochroleuca (MICH); Cta. Playa Parda, Cunningham 208 as L. ochroleuca (BM); "Patagonia," J. B. Hatcher 12, 13, 34, 42 as L. ochroleuca (NY); Pto. Bueno, May 1896 Dusen s.n. as L. ochroleuca (NY). AISEN: Pto. Island, Cunningham s.n. (NY).

LEPIDOLAENACEAE

Nakai in Ogura et al. List Prof. Nakai's Pap. 200. 1943.

Gackstroemia

Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877.

Key to Falkland Island Species of Gackstroemia

1. Dorsal lobes of main axis armed and auriculate at antical base; cells of dorsal lobes with large knot-like trigones and thickened walls; dorsal lobes of branches with 6-8 cilia; lobules of main axis involuted, widely ovate in shape, often with decurved margins, not inflated G. magellanica
1. Dorsal lobes of main axis not armed or auriculate at antical base; cells of dorsal lobes with small trigones and thickened walls; dorsal lobes of branches mostly entire; lobules of main axis inflated . . . G. patagonica

Gackstroemia magellanica (Lam.) Trev.

Jungermannia magellanica Lam. Encycl. Method. Bot. 3: 284. 1789, non Jungermannia magellanica Spreng. Annln Wetter. Ges. Naturk. 1 (1): 25. 1809 (= Frullania fide Grolle, 1967). Polyotus magellanicus (Lam.) Gott. in G. L. & N. Syn. Hep. 248. 1845. Gackstroemia magellanica (Lam.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. Lepidolaena magellanica (Lam.) Evans, Contr. U.S. Natn Herb. 1: 140. 1892. Lectotype (cf. Grolle 1967): Chile, Prov. Magallanes, Strait of Magellan, Commerson (PC - non vidi).

Polyotus decipiens Goeb. ex De Not. Memorie Accad. Sci. Torino II. 16: 228. 1855, nom. nud., pro syn. Polyotus decipiens Goeb. Ann. Jard. Bot. Buitenzorg I. 7: 30. f. 23. 1888, syn. fide Grolle (1967).

Lepidolaena hallei Steph. K. Svenska VetenskAkad Handl. 46 (9): 74.

f. 29 a-d. 1911, syn fide Grolle (1967), non Lepidolaena halle-
ana Steph. Sp. Hep. 6: 370. 1923 (= L. menziesii fide Grolle,
1967). Lectotype (cf. Grolle 1967): Falkland Is., Mt. Usborne,
Halle s.n. (UPS) - non vidi.

Lepidolaena skottsbergii Steph. Sp. Hep. 6: 371. 1923, syn fide
Grolle (1967), non Lepidolaena skottsbergii Steph. K. Svenska
VetenskAkad. Handl. 46 (9): 76. 1911 (= L. menziesii fide
Grolle, 1967). Original material: Falkland Is., 1909 Skotts-
berg s.n. (G) - cited in Grolle (1967).

Ecology: This species is common and exhibits a wide ecolog-
ical tolerance in the Falklands as well as southern South America.
In the Falklands it is often encountered on soil and old, rotted
cushion plants in dwarf shrub heaths. It is also common on soil,
rock or Astelia cushions of sheltered high altitude cliffs. I fur-
ther encountered it in a moist feldmark (700 m.).

Phytogeography: This species occurs in the Falklands, Tierra
del Fuego (widespread). Patagonian Channels, Valdivian region (West
Patagonia north to 39° 52' S.) and Juan Fernandez. Australasian
records of the species were shown by Grolle (1967) to be plants of
G. weindorferi (see Map 5).

Literature Records (FALKLANDS): Anonymous - (Herzog 1926
as L. skottsbergii, Kühnemann 1937 & 1949 as Lepidolaena & L. hallei);
Halle - Mt. Usborne (Grolle 1967); Skottsberg - Mt. Usborne (Grolle
1967); Skottsberg & Halle - Mt. Usborne (Stephani 1911 as Lepido-
laena), Weddel Is. (Grolle 1967).

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Additional Literature Records (note: locality information has been omitted for non-American sector records): TIERRA DEL FUEGO:

Anonymous - Strait of Magellan (Stephani 1909 as Lepidolaena), M. Forster (Grolle 1967, Hooker 1867 as Polyotus, Rodway 1916 as Lepidolaena, Schwaegrichen 1814 as Jungermannia), Kühnemann 1937 & 1949 as Lepidolaena); Dusén - R. Azopardo (Grolle 1967, Stephani 1901a as Lepidolaena), Pto. Angosto (Grolle 1967); Gasperi - B. Angelito, S. Agostini, M. Sarmiento, Valle delle Fate, I. Laberinto (Gola 1923 as Lepidolaena); J. B. Hatcher - Fuegia (Evans 1898 as Lepidolaena); Hocker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1845 as Polyotus, Hooker & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia); Lechler - Rada York (Grolle 1967); Menzies - I. de los Estados (G. L. & N. 1845 as Polyotus, Grolle 1967, Hodgson 1959 as Lepidolaena, Hooker 1818 as Jungermannia, Taylor & Hooker 1847b as Jungermannia, Montagne 1845 as Polyotus); Naumann - B. Tuesday (Schiffner 1890 as Polyotus); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as Lepidolaena); Santesson - Canasaca (Arnell 1955 as Lepidolaena); Savatier - I. Hermite, I. Hoste, I. Clarence (actually I. Capitan Arecena), Pto. Churruca (Bescherelle & Massalongo 1889 as Polyotus); Skottsberg - Pto. Cook, B. Tekenika (Stephani 1905a as Lepidolaena); Skottsberg & Halle - R. Fontaine (Stephani 1911 as Lepidolaena); Spegazzini - I. de los Estados (Massalongo 1927 as Lepidolaena), I. Hoste, M. Sarmiento, Pto. Vancouver, M. Buenos Aires, B. Blossom, Penguin Rookery (Massalongo 1885 as Polyotus).

PATAGONIA: Anonymous (Kühnemann 1937 & 1949 as Lepidolaena); Albatross - Strait of Magellan (Evans 1892 as Lepidolaena); Andersson -

Pto. del Hambre (^oÅngström 1872 as Jungermannia, Grolle 1967); Commer-
son - Strait of Magellan (Gay 1852 as Polyotus, Grolle 1967, G. L. &
 N. 1845 as Polyotus, Hodgson 1959 as Lepidolaena, Hooker 1818 as
Jungermannia, Taylor & Hooker 1847b as Jungermannia, Montagne 1845
 as Polyotus); Dumont d'Urville - Pto. Gallant (Montagne 1845 as Poly-
otus), Strait of Magellan (Gay 1852 as Polyotus); Dusén - I. Newton,
 Pto. Bueno, R. Aisen, Puerto Blest (Stephani 1900 as Lepidolaena), I.
 Newton (Grolle 1967); Hollermayer - V. Villarrica (Reimers 1926 as
Lepidolaena); Jacquinet - Pto. Gallant (Montagne 1845 as Polyotus);
Krause - Corral (Grolle 1967); Kubitski - Cord. Pelada (Grolle 1967);
Neger - western slope of Andes - 39° - 39° 30' S. (Neger 1899 as
Lepidolaena); Nobl - B. Borja (Grolle 1967); Santesson - C. Mina
 Rica (Müller 1955 as Lepidolaena), R. Rubens, Tres Puentes, C. Mina
 Rica (Arnell 1955), Punta Arenas (Grolle 1967); Savatier - Pto. Bueno,
 Pto. Eden, I. Madre de Dios, Pto. Barroso (Bescherelle & Massalongo
 1889 as Polyotus); Schwabe - Istmo de Ofqui (Herzog 1954 as Lepido-
laena), C. Tesoro (Herzog 1939, 1954 as Lepidolaena), Pto. Puyuhuapi
 (Grolle 1967); Skottsberg - Pto. Cuarenta Dias, I. Chiloe (Grolle
 1967); Skottsberg & Halle - Pto. Cutter, I. Atalaya, F. Peel, L.
 Azara, Cta. Rayo, I. de San Pedro (Stephani 1911 as Lepidolaena),
 S. Skyring (Grolle 1967); Spegazzini - R. Santa Cruz (Massalongo 1906
 as Polyotus); Poyo - Huapi, R. Santa Cruz (Massalongo 1927). JUAN
 FERNANDEZ. MAS A TIERRA: Kunkel - near summit of El Yunque - ca.
 900 m. (Arnell 1957 as Lepidolaena). MAS AFUERA: Skottsberg - Camp
 Correspondencia - ca. 1350 m. (Grolle 1967, Herzog 1942 as Lepidolaena).

[illegible]

CENTRAL CHILE: Puccio - "Valparaiso" (De Notaris 1855 as Polyotus).
 CAMPBELL: Hooker (G. L. & N. 1845 as Polyotus, Hodgson 1959 as Lepidolaena, Hooker 1867 as Polyotus, Hooker & Taylor 1844 as Jungermannia). NEW ZEALAND: Anonymous (Stephani 1909 as Lepidolaena).
 STEWARD ISLAND (NEW ZEALAND); Kirk, Martin (Hodgson 1959 as Lepidolaena); Lya11 (Martin 1949). SOUTH ISLAND (NEW ZEALAND): Du Rietz, Kirk, Macdonald, Martin, Zotov (Hodgson 1959 as Lepidolaena); Lya11 (Hooker 1867 & Mitten 1855 as Polyotus). NORTH ISLAND (NEW ZEALAND): Beadie, Colenso, Hodgson, Mossman (Hodgson 1959 as Lepidolaena); Colenso (Hooker 1867 & Mitten 1855 as Polyotus). TASMANIA: Anonymous - (Hodgson 1959 as Lepidolaena, Hooker 1867 as Polyotus, Rodway 1916 as Lepidolaena, Stephani 1909 as Lepidolaena); Bastow, Rodway (Carrington & Pearson 1888 as Polyotus); Hooker (G. L. & N. 1845 as Polyotus, Hooker & Taylor 1844 as Jungermannia); Archer, Gunn, Oldfield (Mitten 1860 as Polyotus); Weymouth - (Pearson 1924 as Lepidolaena). AUSTRALIA: Anonymous (Hooker 1867 as Polyotus, Stephani 1909 as Lepidolaena); Cunningham (G. L. & N. as Polyotus, Hodgson 1959 as Lepidolaena).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2710 A); summit of Mt. Kent, 455 m. (2741 & 2864 B). MT. USBORNE REGION, gap between Mt. Usborne 2 and Table Rock, c. 440 m. (2625 A); south-east slope of Mt. Usborne 2, c. 455 m. (2594 A); ridge between Mt. Usbornes 1 & 2, 685 m. (2539 A, 2546 & 2553 A); summit of Mt. Usborne 1, c. 700 m. (2480 & 2501 B). WEST FALKLANDS: PORT HOWARD,

[illegible]

Freezer Rocks, east slope of Mt. Maria, 320 m. (3145 A); pass southwest of Mt. Maria summit, c. 610 m. (3080 C, 3092, 3113); MT. ADAM, ridge south of northern lake, 610 m. (3024 B-c. perigyn.). WEDDELL ISLAND, rock dome on summit of peak northeast of Mt. Weddell, 335 m. (3363, 3366 C & 3369 A).

ADDITIONAL SPECIMENS SEEN (representative selection): CHILE.

MAGALLANES: Cabo de Hornos (Brown 95 (NY); I. Hermite, Hooker (NY); I. Lennox, 19 March 1900 Brown (FH, NY); R. Azopardo, 3 March 1896 Dusen 114 (NY); I. Desolacion, B. Tuesday, 2 February 1876 Naumann (FH); B. Ventisqueros, Hill (FH); B. Isthmus, Savatier (FH); I. Newton, May 1896 Dusen (FH, NY); Pto. Bueno, May 1896 Dusen 32 (NY-perigyn.); Pto. Grappler, 1893 Douglas (FH); B. Halt Cunningham (NY). AISEN: R. Aisen, January 1897 Dusen (NY).

Gackstroemia patagonica (Steph.) Grolle

Lepidolaena patagonica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 76. f. 29, e-h. 1911. Gackstroemia patagonica (Steph.) Grolle, J. Hattori Bot. Lab. 30: 14. 1967. Lectotype (cf. Grolle, 1967): Chile, Prov. Magallanes, Canal Gajardo, Halle & Skottsberg s.n. (UPS - non vidi).

Ecology: This species is very rare in the Falklands and was collected but once, at 455 m. in a stream on a slope (southeast) in a Cortaderia heath. In the Magellanian moorland this species is characteristic of non-forested areas of cushion plants, scattered rocky outcrops and scattered small pools.

1. What is the main purpose of the study?
 2. What are the research objectives?
 3. What is the significance of the study?
 4. What is the scope of the study?
 5. What is the methodology used?
 6. What are the results of the study?
 7. What are the conclusions of the study?
 8. What are the limitations of the study?
 9. What are the future research directions?
 10. What is the overall impact of the study?

Phytogeography: This taxon occurs in the Falklands, Tierra del Fuego (R. Azopardo and Pto. Angosto) and southern Patagonian Channels (Canal Gajardo).

Literature Reports: TIERRA DEL FUEGO: Anonymous - (Stephani 1923 as Lepidolaena); Dusén - R. Azopardo, Pto. Angosto (Grolle 1967); Skottsberg & Halle - R. Azopardo (Grolle 1967). PATAGONIA: Skottsberg & Halle - Canal Gajardo (Grolle 1967).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2613).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: FUEGIA, Dusen 133 as Lepidolaena reticulata (NY); R. Azopardo, 600 m., 9 March 1896 Dusen 122 as L. hariotiana (NY); I. Desolacion, Dusen 137 as L. hariotiana (FH). Without definite location, Lechler (NY).

Lepidolaenaecae Species Excluded from Falklands

Gackstroemia hariotiana (Besch. & Mass.) Grolle. This taxon was reported from the Falklands by Stephani (1911 as Lepidolaena). Grolle (1967) did not report the species from the Falklands, and I have searched for the collection in numerous herbaria without success. I am at least temporarily excluding the species from the Falkland flora.

Lepidolaena reticulata (Hook. f. & Tayl.) Trev. This species was reported for the Falklands by Stephani (1911) and Kühnemann (1937, 1949) cited the Stephani paper in his catalogues. Grolle (1967, p. 47)

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states the specimen on which the Falkland report was based is Gackstroemia magellanica. Lepidolaena reticulata is found on Auckland Island, Campbell Island, New Zealand and Tasmania.

LEPIDOZIACEAE

Limpr. in Cohn, Kryptogamenfl. Schles. 310. 1875.

Hyalolepidozia

S. Arnell ex Grolle, Revue Bryol. Lichén. 32: 179. 1963.

Hyalolepidozia bicuspidata (Mass.)
S. Arnell ex Grolle

Lepidozia bicuspidata Mass. Nuovo G. Bot. Ital. 17: 239. pl. 22. f.

25. 1885. Hyalolepidozia bicuspidata (Mass.) S. Arnell, Bot.

Notiser 115: 213. 1962, nom. illeg. Paracromastigum bicuspidatum (Mass.) Schust. J. Hattori Bot. Lab. 26: 276. 1963.

Hyalolepidozia bicuspidata (Mass.) S. Arnell ex Grolle, Revue Bryol. Lichén. 32: 179. 1963. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, Pto. Cook, Spegazzini 45b (G) - cited in Fulford (1968).

Taxonomical remarks: After a thorough survey of branch types in the Falkland material of H. bicuspidata, I found both lateral- and ventral-intercalary branches in about equal frequency, and only a single occurrence of a Frullania-type branch. I was unable to find Microlepidozia-type branching. Terminal branching is only rarely developed in the genus; in H. bicuspidata Grolle (1963b) found two Frullania-type branches (Chilean material) and one Microlepidozia-type branch (South African material!). The branching pattern in Hyalolepidozia readily distinguishes the genus from the closely related genera Bonneria and Paracromastigum. In Bonneria the branching is plastic with Acromastigum-, Frullania-, Microlepidozia- and ventral-intercalary branches (with lateral-intercalary branches absent). Paracromastigum has Acromastigum- and Frullania-type branches and rarely ventral intercalary branches (with Microlepidozia- and lateral-intercalary branches absent). See Schuster (1965a) for a discussion of the evolution and relationships within this complex of genera.

Fulford (1968, p. 277), in her generic key, utilizes as her primary key character for Hyalolepidozia, "underleaves and leaves similar in size and form." This statement is presumably based upon examination of the type, although the ventral view of the stem (plate 101, fig. 1b) is from non-type material. Massalongo (1885) in his original description of "Lepidozia" bicuspidata states, "Amphigastria fol. 2-4-plo minora . . ." and his figures clearly show the underleaves as considerably smaller than the leaves. The

underleaves of the Falkland material of H. bicuspidata are ca. 1/3-1/2 the leaf size and are never equal to the size of the leaves.

Ecology: This taxon was collected in dwarf shrub heaths where it was found on soil particularly on soil layers over rock.

Phytogeography: This amphiatlantic temperate species is known from South Africa (Table Mt.), southern Patagonia (R. Rubens), Patagonian Channels, the Valdivian region north to 41° 46' S. (West Patagonia), Juan Fernandez and "Fraí Jorge" (see Map 6).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lepidozia); Dusén - R. Azopardo (Fulford 1968); Spegazzini - Pto. Cook (Fulford 1968, Massalongo 1927 as Lepidozia), Fuegia (Stephani 1909 as Lepidozia), M. Richardson (Fulford 1968). PATAGONIA: Anonymous - (Grolle 1969); Santesson - R. Rubens (Arnell 1955 as Lepidozia); Schwabe - Calbuco (Grolle 1963b, Herzog 1939 as Lepidozia), I. Puluqui (Fulford 1968), I. Magdalena, Pto. Puyuhuapi (Herzog 1954 as Lepidozia). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - between Piedra Agujiada & Laura (Herzog 1942 as Lepidozia). CENTRAL CHILE: Schwabe - "Fraí Jorge" (Herzog 1954 as Lepidozia). TRISTAN DA CUNHA: Christophersen & Mejland - 700 m. & 550-600 m. (Arnell 1958 as Lepidozia). SOUTH AFRICA. CAPE PROV.: Anonymous - Table Mt., Disa Gorge (Arnell 1963), Arnell - Table Mt. (Grolle 1963b).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION: summit ridge of Mt. Low, c. 245 m. (3233). STANLEY REGION, Sapper Hill, 135 m. (3402). MT. USBORNE REGION, southeast slope of Mt. USBORNE 2, c. 455 m. (2612-E). WEST FALKLANDS: WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2914, 2924, 2931, & 2932 - c. per.).

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Hygrobiellopsis

(Schust.) Engel, comb. nov. Hygrolembidium subg. Hygrobiellopsis

Schust. Nova Hedwigia 15: 467. 1968.

Type: Hygrolembidium isophyllum Schust.

Plants erect, perfectly isophyllous, trigonous, branching only of lateral and ventral intercalary type, stem cortical cells small, thin or slightly thickened, medullary cells larger, leptodermous, in many rows; leaves and underleaves closely imbricated, deeply concave, ovate or orbicular, apices plane or retuse, margins and apices with slime papillae, (1-) 2-3 stratose at least locally in median basal portion, cell walls thin or uniformly thickened, trigones absent. Perianths on short intercalary branches, upper portion pluriplicate, mouth with slime papillae. Seta of Lepidozia type, epidermal cells in 18-20 rows. Capsule walls 4-6 stratose. Spores red-brown in color, with numerous vermiculate, short to long, closely arranged, irregular, occasionally branched ridges, Elaters bispiral throughout or 3-4 spiraled in median portion.

Hygrobiellopsis isophyllum (Schust.)
Engel, comb. nov.

Hygrolembidium isophyllum Schust. Nova Hedwigia 15: 467. pl. 56.

1968. Holotype: Argentina. Terr. Tierra del Fuego, C. Garibaldi, near L. Escondido, Schuster 58319e (RMS !).

Taxonomical remarks: Schuster (1968b) reflected his uncertainty regarding the systematic position of Hygrolembidium isophyllum when he stated (p. 467),

Allied to Isolembidium and possibly also to Hygrolembidium is another undescribed taxon which serves, in some ways, to connect Hygrolembidium and Isolembidium, yet differs from both taxa.

The margins and apices of leaf and underleaf of Hygrobiellopsis isophyllum have several (8-20) slime papillae. The papillae are usually mounted directly on the margin but may be on the tip of a 1-several celled tooth. There is no mention of slime papillae or teeth in the original description or indication of their presence in the figures of the taxon in Schuster (1968b). I have, through the kindness of Dr. R. M. Schuster, studied the holotype material of Hygrolembidium isophyllum and confirmed the presence of these structures in the original material. Neither Isolembidium nor Hygrolembidium possess slime papillae, and the presence of this character in Hygrobiellopsis aids in the differentiation from the two genera. The perianth mouth, bract and bracteole margins and apices are likewise ornamented with slime papillae. The perianth mouth and bracts of Hygrolembidium andinum may have slime papillae, judging from the general appearance of the structures figured, but not described, in Herzog (1954, f. 8, e, h). The leaves are entire and without slime papillae. I have not seen type material of this taxon.

Hygrobiellopsis isophyllum was described on the basis of completely sterile material. The perianths of Hygrobiellopsis and Hygrolembidium compare somewhat in general shape, both being trigonous,

fusiform to elongate-ovate and contracted toward the mouth. Hygrobiellopsis, however, is pluriplicate in the upper 1/2.

Both Hygrolembidium and Hygrobiellopsis possess the Lepidozia type seta anatomy (8-16 (-20) rows of large epidermal cells surrounding an indefinite number of interior rows of cells). While Hygrolembidium isodictyon has 17 rows of epidermal cells and H. stereophyllum 16 rows (fide Herzog, 1951 figs. 7 and 9 respectively), Hygrobiellopsis isophyllum has 18-20 rows. The capsule anatomy differs somewhat in the two genera with bistratose walls in Hygrolembidium (fide description of H. stereophyllum in Herzog, 1951), and Hygrobiellopsis with 4-6 layers.

Schuster (1968b) stated the leaves of Hygrobiellopsis isophyllum were unistratose, and utilized this character in differentiating it from Isolembidium and Hygrolembidium. I have found the leaves of Hygrobiellopsis to be 2-3 stratose in the median basal portion, with marginal areas unistratose. The leaves, however, may have polystratose regions scattered among areas of a single cell layer. The possession of at least locally polystratose leaves aids in the establishing the rather close relationship of this taxon to both Hygrolembidium and Isolembidium.

Hygrobiellopsis shares several critical features with Hygrolembidium and Isolembidium and indeed may be said to "connect" the two taxa. H. isophyllum has the isophylly and polystratose, deeply concave leaves of Isolembidium but differs in (a) stem cells thin walled throughout, without a hyaloderm but with a cortex of small

cells, (b) leaf margins with slime papillae, (c) cells thin to uniformly thickened, with trigones absent, and (d) the exclusively intercalary branching. Like Hygrolembidium, Hygrobiellopsis has polystratose leaves, exclusively intercalary branching, and a Lepidozia type seta anatomy, but the latter differs in (a) the small celled cortex with an absence of a hyaloderm, (b) the perfect isophylly, (c) the presence of slime papillae on the leaves, (d) the pluriplicate (upper 1/2) perianth, and (e) the 4-6 stratose capsule walls.

I have studied fertile material (♀) of this species from the Brunswick Peninsula (Engel 1982--c. per. + cap.), and from near Puerto Natales (Hatcher H. 15-13-c. per.). On the basis of this material I am providing below, a detailed description of the gynoecium and sporophyte.

Plants dioicous; androecia not seen. Gynoecia on short intercalary branches; bracts and bracteoles in 3 series, bracts of innermost series deeply concave to subnavicularis, ovate, margins and especially apices with slime papillae, bracts 2 cell layers thick in basal region, marginal 2-6 rows unistratose, cutical very finely papillose; bracteoles concave, not nearly as concave as bracts, broadly ovate, apex broadly rounded, margins and apices with slime papillae; perianth 1/4 - 1/2 exerted beyond bracts, fusiform to wide ovate, contracted toward the mouth, obscurely to distinctly trigonous in lower 1/2, keels, when present, $\pm$ rounded, not sharp, upper 1/2 pluriplicate, basal portion of perianth 2 cell layers thick, 3 layers thick only very locally, median portion mostly unistratose, but with

scattered regions of 2 cell layers, upper 1/3 unistratose throughout, perianth mouth with several small lobes, with slime papillae, sub-apical perianth cells irregularly rectangular, 52-77 μ long, 20-26 μ wide.

Seta of the Lepidozia type, 10 cells in diameter, epidermal cells in 18-20 very regular longitudinal rows, the cells 52-62 μ in diameter, finely papillose, interior cells indefinite in number, (26-) 33-48 μ in diameter, corners slightly thickened. Capsule broadly ovate, 1.05 mm long, 0.86 mm wide, capsule wall 52-59 μ thick, of 4-6 layers, the outer layer of large cells and the inner 3-5 rows of smaller cells of approximately equal size, outer layer of cells regularly to irregularly rectangular or subsquarrose in shape, 39-60 μ long, 13-26 μ wide, 18-26 μ thick, exposed wall smooth, outer layer with radial walls with small to quite large red-brown nodular thickenings which have been interconnected by sheetlike thickenings, the thickenings strictly I-shaped or feebly extending onto outer tangential wall, radial walls occasionally thin walled and without thickenings; inner layer of cells irregularly rectangular in shape, 55-79 μ long, 10-22 μ wide, 7-12 μ thick, exposed wall smooth, inner wall with usually incomplete semiannular bands or with nodular extensions of various lengths from sparingly developed swellings on the radial walls, rarely with complete semiannular band, swellings often without bands or extensions, radial walls occasionally without thickenings; intermediate cell layers with or without radial thickenings, thickenings occasionally extending slightly on to outer tangential walls.

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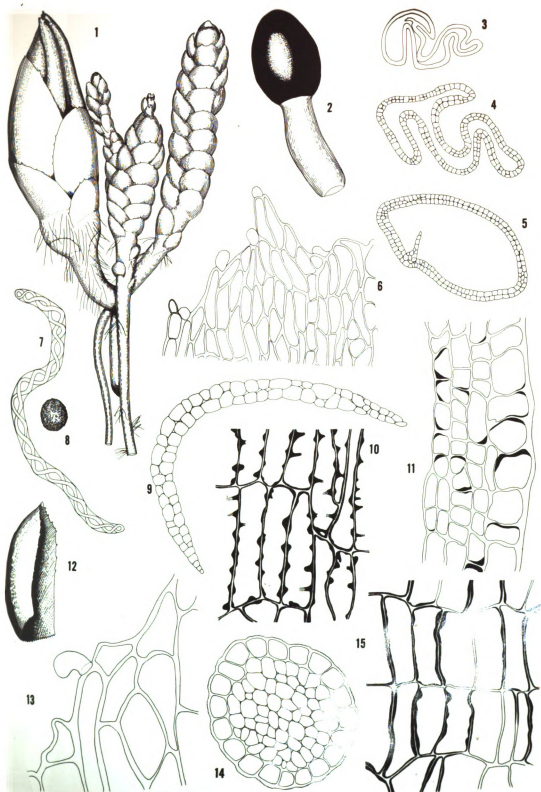
Spores red-brown in color, globose or broadly ovate, covered with numerous vermiculate, short to long, closely arranged, irregular, occasionally branched ridges, spores 17-21 μ . Elaters usually bispiral throughout, occasionally 3 or 4 spiraled in median portion and bispiraled only at tips, spirals yellow-brown, elaters gradually tapering at both ends, usually long and slender, 126-169 μ long, 7.8-11.7 μ wide, occasionally shorter and stouter and to 16.9 μ wide.

Ecology-Phytogeography: In the Falklands this species seems to be restricted to sheltered high altitude cliffs, where it grows on soil under rock overhangs or on Azorella cushions. In the Brunswick Peninsula I found the species only in the relatively dry eastern end (8 km. west of Punta Arenas, 305-610 m.), and here it grew on soil among cushion plants. Raymond E. Hatcher made several collections of the taxon between Punta Arenas and Puerto Natales, ca. 100 km. north of the Strait of Magellan, a locality which is on the eastern side of the Andes and thus relatively dry. The only other locality for the plant is in the mountainous region of Isla Grande de Tierra del Fuego. On the mainland this taxon seems to be restricted to deciduous Nothofagus forests of magellanian South America (see Map 7).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2522, 2556). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3102). MT. ADAM, east side of summit ridge 670-700 m. (3008); summit of southermost peak 685 m. (2991).

PLATE 1

Hygrobiellopsis isophyllum (Schust.) Engel. Fig. 1. Portion of plant with perianth, X 24. Fig. 2. Capsule with portion of seta, X 24. Figs. 3, 4, 5. Perianth, cross sections at ca. 1/4 distance from apex, middle, and base respectively, X 43. Fig. 6. Perianth mouth showing 5 slime papillae, X 205. Fig. 7. Elater, X 530. Fig. 8. Spore, X 530. Fig. 9. Innermost bract, cross section through base, X 105. Fig. 10. Inner cells of capsule wall, X 530. Fig. 11. Capsule wall, cross section, X 530. Fig. 12. Bract of innermost series, lateral view, X 24. Fig. 13. Bract apex of innermost series showing a slime papilla, X 530. Fig. 14. Seta, cross section, X 105. Fig. 15. Outer cells of capsule wall, X 530. Fig. 1 from Hatcher H 15-13, Chile, Prov. Magallanes, Pto. Natales. Figs. 2-15 from Engel 1982, Chile, Prov. Magallanes, Brunswick Peninsula, 8 km. W of Punta Arenas.



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Lepidozia

(Dum.) Dum. Recueil Obs. Jungerm. 19. 1835. Pleuroschisma sect.

Lepidozia Dum. Syll. Jungerm. 69. 1831.

Key to the Falkland Island Species of Lepidozia

1. At least some leaves and/or underleaves on well developed stems with marginal teeth-laciniae L. chordulifera
1. Margins of leaves and underleaves entire, very rarely with an isolated tooth 2
2. Leaf segments in conspicuous pairs, the dorsal and ventral segments often reduced to a tooth of a few cells, leaves often distant, often scale-like; (only above 245 m. in Falklands, common in sheltered high altitude cliffs). L. fuegiensis
2. Leaf segments not in conspicuous pairs, dorsal and ventral segments larger, never reduced to a few cells, leaves imbricated, leafy, never scale-like; (rather common below 245 m. in Falklands, absent in sheltered high altitude cliffs) L. laevifolia

Figure 1 displays 15 line graphs showing the time course of the effect of the 100% rule on the probability of a correct response (P_c) for different groups of subjects. The x-axis represents time in minutes (0 to 100), and the y-axis represents P_c (0.0 to 1.0). The groups are: 100% (solid line), 75% (dashed line), 50% (dotted line), 25% (dash-dot line), and 0% (long-dashed line). The 100% group shows a rapid increase in P_c , reaching near 1.0 by 10 minutes. The 75% group shows a similar but slightly slower increase. The 50% group shows a more gradual increase. The 25% and 0% groups show very little change in P_c over time.

Lepidozia chordulifera Tayl.

Lepidozia chordulifera Tayl. London Jour. Bot. 5: 371. 1846. Jungermannia chordulifera (Tayl.) Hook. f. & Tayl. in Hook. f. Bot. Ant. Voy. 1 (2): 442. 1847. Mastigophora chordulifera (Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. Original material: Chile, Prov. Aisen & Chile, Arch. de los Chonos, 1834 Darwin 461 (FH-cited in Fulford 1966, NY!).

Lepidozia hastata Steph. Sp. Hep. 3: 605. 1909, syn. fide Fulford (1966). Original material: Chile, Prov. Aisen, R. Aisen, Dusén 83a (G) - cited in Fulford (1966).

Lepidozia cuspidata Steph. K. Svenska VetenskAkad. Handl. 46 (9): 61. f. 23 a-b. 1911, syn. nov. Original material: Western Patagonia, Skottsberg s.n. (G) - cited in Fulford (1966).

Lepidozia effusa Steph. K. Svenska VetenskAkad. Handl. 46 (9): 62. f. 23 g-h. 1911, syn. fide Fulford 1966. Original material: Chile, Prov. Magallanes, Pto. Ramirez and I. Atalaya, Halle & Skottsberg (G) - cited in Fulford (1966).

Lepidozia fernandeziensis Steph. K. Svenska VetenskAkad. Hand. 46 (9): 63. f. 24 e. 1911,¹ syn. fide Fulford (1966). Original material: Juan Fernandez, Mas a Tierra, near El Yunque, Skottsberg s.n. (G) - cited in Fulford (1966).

Lepidozia hariotii Steph. Sp. Hep. 6: 329. 1922, syn. fide Fulford (1966). Original material: Chile, Prov. Magallanes, I. Hermite, Hariot (G, ex hb. Bescherelle) - cited in Fulford (1966).

¹Fulford (1966) states the description and figures of L. fernandeziensis have been interchanged with those of L. disticha in Stephan (1911).

Lepidozia microscopica Steph. Sp. Hep. 6: 334. 1922, syn. fide Fulford (1966). Original material: Chile, Prov. Aisen, Cta. Hale, Dusén s.n. (G) - cited in Fulford (1966).

Lepidozia angulata Steph. ex. Fulf. Mem. N.Y. Bot. Gdn 11 (2): 206. 1966, nom. nud., pro syn.

Taxonomical remarks: I cannot recognize Lepidozia cuspidata and must treat the species as a synonym of L. chordulifera. This treatment is based upon the study of some 123 collections of the L. chordulifera - "cuspidata" complex from southern Chile, the Falkland Islands and South Georgia. The reasons for this synonymy are outlined below.

Taylor (1960, p. 110) states for Lepidozia cuspidata,

The species is known only from the original collection. It is, however, readily distinguished by the broad leaves, very broad underleaves with rounded margins and the spinose margins of both leaf and underleaf-laminas.

Fulford (1966, p. 183) states for L. cuspidata in the key to species, ". . . the lamina of the underleaves with bulging sides often bearing several teeth;" I have found the underleaf curvature and armature highly variable, with several combinations of amounts of each. I have examined several specimens in which the underleaf bases vary considerably in curvature on a single stem axis. I have seen several specimens with 2-3 teeth on the dorsal, basal leaf margin and regularly produce underleaf marginal teeth. This condition grades into those specimens with a regular production of a single tooth on the dorsal leaf base and $\pm$ regularly toothed underleaves, which

then phases into one in which the leaves and underleaves are occasionally toothed, but otherwise entire.

Fulford (1966) records for the cell size of the segment bases of Lepidozia chordulifera 10-18 X 18 μ , and for L. cuspidata 18-24 X 24 μ , and includes the measurements in her key to aid in distinguishing the two taxa. I have made cell measurements of the basal segment cells of some 83 collections of the Lepidozia chordulifera-"cuspidata" complex and I find a steady continuum and wide range of cell sizes with no indication that L. chordulifera (s. str.) has smaller cells, or L. "cuspidata" larger cells. The basal segment cell size of L. chordulifera (s. lat.) is (10-) 12-31 (-36) μ long, and 10-26 (-33) μ wide.

Ecology: This species is very common in the Falklands, where it is able to tolerate, more so than any other Falkland hepatic, quite xeric, exposed conditions. It is very common in crevices and under overhangs of rock outcrops in dwarf shrub heaths. In this association it is also frequently encountered under Blechnum magellanicum cover as well as on Bolax cushions. The species is rare in sheltered high altitude cliffs and moist feldmarks.

Phytogeography: This species occurs in South Georgia, the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian region and Juan Fernandez (400-795 m. on Mas a Tierra). The report from Tasmania in Rodway (1916) requires confirmation (see Map 8).

Literature Records (FALKLANDS): Anonymous (Kühnemann 1937, 1949); Skottsberg - Port Stanley (Fulford 1966, Skottsberg 1913), Port Harriet (Fulford 1966); Skottsberg & Halle - Port Harriet (Stephani 1911).

Additional Literature Records: SOUTH GEORGIA: Anonymous - (Stephani 1909); Skottsberg - Royal Bay (Steere 1961, Stephani 1905a). TIERRA DEL FUEGO: Anonymous - Kühnemann 1937, 1949, Stephani 1909); Chelminski - B. Orange (Fulford 1966 as L. cuspidata), Cunningham - Pto. Churruca (Fulford 1966); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a); I. Desolacion (Fulford 1966), R. Azopardo (Fulford 1966 as L. cuspidata); Gasperi - B. Angelito (Fulford 1966 as L. chordulifera & L. cuspidata, Gola 1923); B. Ainsworth (Fulford 1966, Gola 1923), M. Sarmiento (Fulford 1966 as L. chordulifera & L. cuspidata, Gola 1923), I. Laberinto (Fulford 1966 as L. chordulifera & L. cuspidata, Gola 1923 as L. chordulifera & L. hastata), B. Parry (Gola 1923 as L. chordulifera & L. hastata); Hässel - Lapataia, Est. Los Cerros, L. Roca, L. Fagano (Fulford 1966), L. Fagnano, L. Roca, Est. La Rubi, Est. Carmen (Fulford 1966 as L. cuspidata); Racovitza - I. Clarence (actually I. Capitan Arecena) (Fulford 1966, Stephani 1901b); Santesson - Pto. Yartou, Ushuaia (Arnell 1955 as L. hastata), S. Alvear, Pto. Yartou (Arnell 1955, Taylor 1960), Est. Yendegaia (Arnell 1955 as L. cuspidata); Skottsberg - Ushuaia, I. Navarino, Harberton, B. Tekenika, Pto. Cook (Stephani 1905a), Pto. Cook (Fulford 1966 as L. chordulifera & L. cuspidata); Skottsberg & Halle - R. Azopardo (Fulford 1966, Stephani 1911 as L. chordulifera & L. hastata), Cta. Gomez, B. Harris, R. Azopardo (Stephani 1911); Spegazzini - M. Richardson (Massalongo 1885, 1927) I. de los Estados (Fulford 1966). PATAGONIA: Anonymous - (Kühnemann 1937 as L. hastata). Astrolabe - Pto. del Hambre (Fulford 1966); Claude-Joseph-Lanalhue (Fulford 1966); Cunningham - Pto. Grappler (Fulford 1966); Darwin - Punta Arenas

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(Fulford 1966), Arch. de los Chonos (Fulford 1966, G. L. & N. 1847, Taylor & Hooker 1847b as J. chordulifera, Taylor 1960); Dusén - Pto. Bueno, S. Molyneux, R. Aisen, I. Guaitecas, La Ensenada (Stephani 1900), Punta Arenas (Stephani 1901a), Pto. Bueno, Cta. Hale (Fulford 1966). R. Aisen, L. Llanquihue (Fulford 1966), Corral (Fulford 1966 as L. cuspidata); Fulford - Fuerte Bulness, between Punta Arenas & Hotel Rubens, Pta. Leon (Fulford 1966), between Punta Arenas & Hotel Ruben (Fulford 1966 as L. cuspidata; Hahn - Valdivia (Fulford 1966); Hässel - Fuerte Bulnes, R. Blanco (Fulford 1966), Pta. Leon (Fulford 1966 as L. cuspidata); Herzog - Valdivia (Herzog 1923 as L. chordulifera & L. effusa); Lechler - Rada York (Fulford 1966); Nadaud - Strait of Magellan (Fulford 1966); Popelear de Terloo - Strait of Magellan (Fulford 1966); Santesson - Puerto Montt (Arnell 1955, Taylor 1960), Llanquihue, Alerce (Taylor 1960); Savatier - Pto. Eden (Bescherelle & Massalongo 1889); Schwabe - Chaihuin - R. Colun (Herzog 1960 as L. cuspidata), Pto. Puyuhuapi (Herzog 1939, 1954 as L. fernandeziensis), C. Tesoro, Termas de Puyehue (Herzog 1954), Pucatrihue, Huitrapulli-Aleucapi, Chaihuin - R. Colun, L. Pellaifa (Herzog 1960); Skottsberg - Patagonia (Stephani 1922 as L. cuspidata & L. effusa, Taylor 1960 as L. cuspidata & L. effusa); Skottsberg & Halle - R. de las Minas, Pto. Cutter, B. Chacabuco, I. Guaitecas, Pto. Quellon, Pampa del Chalia (Stephani 1911); Sleumer - I. Victoria (Müller 1955); Spegazzini Poyo-huapi (Massalongo 1906, 1927); Thaxter - Punta Arenas (Fulford 1966 as L. cuspidata), Corral (Fulford 1966); Thomasson - between L. Villarrica & V. Lanin (Thomasson 1963); Warnstorff - Strait of Magellan (Fulford

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1966). JUAN FERNANDEZ. Skottsberg (Stephani 1922 as L. fernandeziensis). MAS A TIERRA: Kunkel - Cordon Chifladores (Arnell 1957); Skottsberg (Fulford 1966), Q. Damajuana - 400-500 m., above Plazoleta del Yunque (Arnell 1957), between Piedra Agujeriada & Laura-650 m., Pangal-580 m., near El Yunque-795 m., Centinela-350 m., C. Piramide-600 m., Salsipuedes-660 m. (Herzog 1942 as L. fernandeziensis). TASMANIA: Anonymous - Mt. Wellington, Mt. Fieft, West Coast (Rodway 1916).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: 1843 Hooker s.n. as Jungermannia laevifolia var. incrassata (FH). PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3230 & 3238); north side of Gypsy Cove, sea level (3242, 3243, 3252 & 3258); Engineer Point headland, The Narrows, c. 15 m. Imshaug 40618; ridge on Engineer Point peninsula, 18-25 m. (2817). STANLEY REGION, Port Stanley, 8 April 1902 Skottsberg s.n. as Lepidozia saddlensis (S-PA); near Sapper Hill, 29 October 1907 Skottsberg as L. pallida (S-PA, UPS); Sapper Hill, 135 m. (2392, 2394, 2397 A, 2399, 2407-c. per., 2410, 2413-c. sporo., 2414 & 2419); Tumbledown Mt., 155-230 m. (2375 A, 2380, 2384 & 2391); Goat Ridge, c. 180 m. (3118, 3205, 3208 & 3216); summit ridge of north peak of Two Sisters, 245-290 m. (2703 A, 2727, 2732 B, 2735 & 2736); summit of Mt. Kent, 455 m. (2766). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2640 B); summit of Mt. Usborne 1, c. 700 m. (2495). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, east slope of Mt. Maria, 320 m. (3141 & 3147). FOX BAY REGION, summit of East Head, 180 m. (3421 & 3439); valley east of Sullivan House, c. 75 m. (3531). MT. ADAM, east side of summit ridge, 670-700 m. (3017). HILL COVE REGION, summit of East French Peak, 305 m. (2971); summit of West

French Peak, 290 m. (2962 & 2963); summit of Mt. Fegen, 335-360 m. (3065, 3073 & 3076); ridge of north slope of Mt. Fegen, c. 275 m. (3057 & 3062).

ADDITIONAL SPECIMENS SEEN: SOUTH GEORGIA: Royal Bay, Moltke Harbour, 29 April 1902 Skottsberg s.n. (S-PA); Cumberland Bay, May 1902 Skottsberg s.n. (S-PA). CHILE. MAGALLANES: Cabo de Hornos, Hooker s.n. (NY). ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, B. Blossom, March 1882 Spegazzini 48 (NY); I. de los Estados, Penquin Rookery, February 1882 Spegazzini 53 (NY). (?) CHILE. MAGALLANES - (?) ARGENTINA. TIERRA DEL FUEGO: L. Fagnano, 10 March 1908 Halle 175 as L. pallida (UPS). MAGALLANES: R. Azopardo, 2 March 1908 Halle & Skottsberg 175 as L. pallida (S-PA, UPS), March 1896 Dusen 83a as L. setiformis (S-PA), March 1896 Dusen s.n. as L. sadlensis (S-PA); S. Almirantazgo, 2 May 1908 Skottsberg & Halle 175 as L. pallida (UPS); B. Keta, 24 February 1929 Roivainen 2028 as L. cuspidata (S-PA); I. Riesco, R. Grande, 16 April 1908 Halle & Skottsberg 175 as L. pallida (UPS); S. Skyring, Pta. Eulogio, 22 April 1908 Halle & Skottsberg 175 as L. pallida (UPS); B. Halt, Cunningham 96 as L. pallida (G).

Lepidozia fuegiensis Steph.

Lepidozia fuegiensis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 63. f. 24, f-g. 1911. Original material: Chile, Prov. Magallanes, Pto. Cutter, Cta. Gomez, R. Fontaine and R. Azopardo, Halle & Skottsberg (G) - Fulford (1966).

Lepidozia minuta Steph. Sp. Hep. 3: 603. 1909 non Lepidozia minuta Col. Trans. Proc. N. Z. Inst. 18: 245. 1886, syn. fide (Fulford (1966)). Original material: Chile, Prov. Magallanes, R. Azopardo, Dusén 93 (G) - cited in Fulford (1966).

Lepidozia magallanica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 64. f. 24 m,n. 1911, syn. fide Fulford (1966). Original material: Chile, Prov. Magallanes, I. Felix, Skottsberg 594 (S-PA) - cited in Fulford (1966).

Lepidozia halleana Steph. K. Svenska VetenskAkad. Handl. 46 (9): 64. f. 24 k, l. 1911, syn. fide Fulford (1966). Original material: Falkland Is., Port Stanley, Halle 218 (G) - cited in Fulford (1966).

Lepidozia parva Steph. K. Svenska VetenskAkad. Handl. 46 (9): 65. f. 24 o, p. 1911, syn. fide Fulford (1966). Original material: Chile, Prov. Aisen, Cta. Hale and Cta. Connor, Halle & Skottsberg (G) - cited in Fulford (1966).

Taxonomical remarks: The variation of this species is to a considerable extent correlated with the robustness of the individuals. Leaf apices vary in shape from truncated in robust plants to narrowly rounded in weakly developed individuals. My collections of this taxon from the Brunswick Peninsula (Strait of Magellan) are robust, with plants more leafy in appearance and with a facies somewhat like that of Neolepidozia seriatitexta. The figures of the leaves in Fulford (1966) appear to be from well developed plants. In robust plants the lamina is large and conspicuous and frequently is spreading from the stem.

In comparison, the Falkland Island population consists of more weakly developed plants. The lamina is small and scale-like in appearance and frequently is strongly convex and lies close to the stem axis. The Falkland plants have dorsal and ventral sinuses of the leaf apex frequently reduced to a mere notch. The notches are of varying sizes and when very small, a dorsal or ventral leaf "lobe" barely exists and is reduced to a tooth of several cells. Frequently the three dorsal lobes are truncated while the ventral reaches to only the base of the median sinus or slightly below. The leaves often appear trifid, with the ventral segment recurved. This species like that of L. laevifolia rarely possesses a tooth on the dorsal leaf margin.

Lepidozia fuegiensis is a distinctive species, not likely to be confused with any other southernmost American or Falkland Island species of the genus. It is distinguished by the leaf segments occurring in conspicuous pairs, i.e., the centrally located sinus is considerably deeper, and the dorsal and ventral segments commonly reduced to a few cells. The leaves are distant and the stem, which thus is quite exposed, is at least in the Falkland plants, usually thick and fleshy.

Ecology: This species was not found below 245 m. in the Falklands, where it is of frequent occurrence in crevices of sheltered high altitude cliffs. It is also known from fieldmark rocks, particularly those in shallow pools. It rarely occurs in Cortaderia and dwarf shrub heaths. It is of interest to note that L. chordulifera

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and L. laevifolia are very common below 245 m. and only rarely (a single collection of L. chordulifera) are encountered in sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Valdivian portion of Patagonian Channels, and central Chile ("Fraí Jorge"). The "Fraí Jorge" report in Herzog (1954) requires confirmation.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Lepidozia halleana), Halle (Fulford 1966, Stephani 1922 as L. halleana, Taylor 1960 as L. halleana).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous Kühnemann 1937 & 1949 as L. minuta); Dusén - R. Azopardo (Fulford 1966, Taylor 1960); Gasperi - M. Sarmiento, B. Angelito, Valle delle Fate (Fulford 1966); Hariot - I. Hermite (Fulford 1966); Hässel - L. Fagnano (Fulford 1966); Skottsberg - Fuegia Stephani 1922), I. de los Estados, I. Navarino, I. Felix (Fulford 1966). PATAGONIA: Dusén - R. Aisen (Fulford 1966); Fulford - between Punta Arenas & Hotel Ruben (Fulford 1966); Halle - West Patagonia (Fulford 1966, Stephani 1922, Taylor 1960 as L. halleana); Hässel - between Punta Arenas & Hotel Rubens (Fulford 1966); Santesson - R. Rubens (Arnell 1955 as L. minuta); Schwabe - L. Puyehue (Herzog 1954 as L. parva); Skottsberg - Patagonia (Stephani 1922, Taylor 1960), Strait of Magellan (Fulford 1966, Stephani 1922 as L. magellania, Taylor 1960), Canal Jeronimo (Fulford 1966); Thaxter - Punta Arenas (Fulford 1966). CENTRAL CHILE: Schwabe - "Fraí Jorge" (Herzog 1954 as L. parva).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2724). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2638); southeast slope of Mt. Usborne 2, c. 455 m. (2604 & 2616-c. per.); ridge between Mt. Usbornes 1 & 2, 685 m. (2534A & 2539B); summit of Mt. Usborne 1, c. 700 m. (2491, 2492 & 2496); The Gap, 275-290 m. (2466). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3083A, 3096, 3107, 3109 & 3126B), MT. ADAM, ridge south of northern lake, 610 m. (3033 & 3035).

ADDITIONAL SPECIMEN SEEN: ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, Pto. Cook, 18 November 1902 Skottsberg s.n. as L. cuspidata (S-PA).

Lepidozia laevifolia (Hook. f.
& Tayl.) G. L. & N.

Jungermannia laevifolia Hook. f. & Tayl. London Jour. Bot. 3: 385.

1844. [3:285. (sic.) in errore pro 385]. Lepidozia laevifolia (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 208. 1845. Mastigophora laevifolia (Hook. f. & Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Original material: Campbell Is., Hooker (non vidi).

Lepidozia Jacquinetii¹ Steph. Sp. Hep. 3: 604. 1909, yn. fide

¹Stephani, in describing his new species, uses the spelling "Jacquemontii," which was the spelling used by subsequent authors. Stephani based his species on a specimen from Pto. Gallant (as well as one

Fulford (1966), non Lepidozia Jacquiniotii.^{1,2} Steph. Sp. Hep.

6: 330. 1922. Original material: Chile, Prov. Magallanes, Pto. Gallant, Jacquiniot (G) - cited in Fulford (1966).

Lepidozia viridissima Steph. Sp. Hep. 3: 604. 1909, syn. fide Fulford (1966). Original material: Chile, Prov. Magallanes, Strait of Magellan, Dusén (G) - cited in Fulford (1966).

Lepidozia falklandica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 63. f. 24 c, d. 1911, syn. fide Fulford (1966). Original material: Chile, Prov. Aisen, L. O'Higgins³ and Falkland Is., Mt. Adam and Hearnden Water, Halle & Skottsberg (G) - cited in Fulford (1966).

Ecology-Phytogeography: This amphipacific temperate species occurs rather commonly in dwarf shrub heaths, where it occurs on soil under Empetrum or more rarely on stream banks. It also may be found in rock crevices of outcrops in this association.

from Patagonia, leg. Dusen) and since Honoré Jacquiniot visited this locality while aboard the Zélée, and Stephani presumably named the species after its collector, I have altered the spelling.

¹Ibid.

²I believe there is a distinct possibility that Lepidozia Jacquemontii of Stephani 1922, leg. Skottsberg at "Fretum magellanicum" is based upon the same type as L. jacquemontii of Stephani 1909. In support of this (a) Stephani, in his Species Hepaticarum, frequently added "St. n. sp." after names he described earlier, (b) the descriptions in 1909 and 1922 are quite similar (yet not identical), and (3) Fulford (1966, p. 211) includes L. jacquemontii Steph. 1922 among the "additional species of Lepidozia reported from Latin America for which there has been insufficient or no material available."

³Skottsberg & Halle visited the north west arm of L. San Martin, which is in Chile, and there called L. O'Higgins.

Literature records (FALKLANDS): Anonymous (Kühnemann 1937 & 1949 as L. jacquemontii, sic., and L. falklandica); Halle (Fulford 1966); Hooker (Taylor & Hooker 1847b as Jungermannia); Skottsberg (Fulford 1966), Port Stanley (Skottsberg 1913), as L. jacquemontii, sic.), Port Stanley & Mt. Adam (Skottsberg 1913 as L. falklandica), Stephani 1922 as L. falklandica); Skottsberg & Halle (Fulford 1966), Port Stanley (Stephani 1911 as L. jacquemontii, sic.).

Additional Literature Records (note: locality information has been omitted for non-American sector records): TIERRA DEL FUEGO: Anonymous - (Kühnemann 1949); Chelminski - B. Orange (Fulford 1966); Gasperi - bay near M. Sarmiento (Fulford 1966); Hässel - Est. Los Cerros (Fulford 1966); Santesson - Pen. Dumas (Arnell 1955 as L. jacquemontii, sic.); Skottsberg & Halle - Cta. Gomez (Stephani 1911 as L. jacquemontii, sic.); Spegazzini - Pto. Cook (Massalongo 1885, 1927). PATAGONIA: Anonymous - Kühnemann 1937 & 1949 as L. jacquemontii, sic., L. falklandica and L. viridissima); Cunningham - B. Halt (Fulford 1966); Pto. Grappler (Taylor 1960 as L. jacquemontii, sic.); Donat - R. Manso (Herzog 1957 as L. jacquemontii, sic.); Dusén - Strait of Magellan, R. Aisen (Fulford 1966), Strait of Magellan (Taylor 1960 as L. jacquemontii, sic.), R. Aisen, I. Guaitecas, Puerto Varas (Stephani 1900); Fulford - Fuerte Bulness, Pta. Leon, Puerto Varas (Fulford 1966); Hahn - Valdivia (Fulford 1966, Taylor 1960 as L. jacquemontii, sic.); Jacquinet - Pto. Galant (Fulford 1966, Taylor 1960 as L. jacquemontii, sic.); Lechler - Punta Arenas (Fulford 1966); Santesson - Tres Puentes, Enco (Arnell 1955 as L. jacquemontii, sic.); Schwabe - Calbuco (Herzog 1939 as

L. jacquemontii, sic.), C. Lungoico (Herzog 1960 as L. viridissima); Skottsberg & Halle - I. Guafo (Stephani 1911 as L. jacquemontii, sic.). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - near Portequelo (Herzog 1942 as L. jacquemonti, sic.), Plazoleta del Yunque, Portequelo de Villagra (Arnell 1957 as L. jacquemontii, sic.). MAS AFUERA: Skottsberg - Los Inocentes (Herzog 1942 as L. jacquemonti, sic.). CENTRAL CHILE: Skottsberg - "Fraí Jorge" (Arnell 1956 and Herzog 1950 as L. jacquemontee, sic.); C. Talinay (Arnell 1956 as L. jacquemontii, sic.). MARION: Moseley (Mitten 1876, 1884). KERGUELEN: Naumann (Schiffner 1890); Werth (Schiffner 1907). CAMPBELL: Anonymous (Mitten 1855); Oliver, Sorensen, Zotov, Laing (Hodgson 1962); Hooker (G. L. & N. 1845, Hodgson 1956, 1962, Taylor & Hooker 1847a as Jungermannia, Hooker 1867). AUCKLAND: Anonymous (Mitten 1855); Turbott (Hodgson 1962); Hooker (Taylor & Hooker 1847a as Jungermannia, Hooker 1867). NEW ZEALAND: Anonymous (G. L. & N. 1845); Hooker (Hooker & Taylor 1844 as Jungermannia). SOUTH ISLAND (NEW ZEALAND): Anonymous (Hodgson 1956). NORTH ISLAND (NEW ZEALAND): Anonymous (Hodgson 1956); Colenso, Lyall, Stephenson (Hooker 1867, Mitten 1855). TASMANIA: Anonymous (G. L. & N. 1845, Hooker 1867, Rodway 1916); Archer, Oldfield (Mitten 1860); Bastow, Rodway (Carrington & Pearson 1888).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3259); ridge on Engineer Point Peninsula, 20-25 m. (2834). STANLEY REGION, Sapper Hill, 135 m. (2398, 2417A & 2426); Goat Ridge, c. 180 m. (3199). DARWIN

SETTLEMENT, Boca House on Brenton Lock, sea level (2696). PORT LOUIS, 2 August 1902 Skottsberg s.n. as L. saddlensis (S-PA). WEST FALKLANDS: FOX BAY REGION, near peat cuttings in Ram Paddock, 45-60 m. (3509); valley east of Sullivan House, c. 75 m. (3536).

ADDITIONAL SPECIMEN SEEN: CHILE. MAGALLANES: Cabo de Hornos, Hooker s.n. as L. oligophylla (NY).

Notes on Lepidozia Species

Lepidozia pallida Steph. I have examined material from the type packet of Lepidozia pallida (Patagonia, leg. Dusen 383 pp. in G (n.0177), and found it to contain a few stems of Microlepidozia sp. (creeping) among Sphagnum. From the description and the label information in Stephani's handwriting which reads "mixta cum Lepidozia (Microlepidozia) saddlensis," it is clear that Stephani was not describing the Microlepidozia as Lepidozia pallida. Thus, the plants on which Stephani based his description are not present in Geneva 0177. Perhaps it is of some significance that all the reports (from five localities) of Lepidozia pallida in Stephani (1911) were found after study to be specimens of Lepidozia chordulifera. This includes the Falkland specimen from Port Stanley, Sapper Hill. Further, the figures (Lepidozia No. 162) of the type of L. pallida in Stephani's unpublished icones show both the dorsal and ventral leaf margins with a single tooth each (the figure of the underleaf margins are entire in the figure). I regard armature of the leaf and/or

underleaf bases as a character of L. chordulifera. Until the type is located, or until it can be stated for certain that the type is missing, the taxonomic standing of L. pallida remains in question.

Microlepidozia

(Spruce) Jørg. Bergens Mus. Skr. 16: 303. 1934. Microsophylla Fulf. Brittonia 14 (1): 124. 1962, syn. fide Schuster (1969b, p. 41).

There has been some degree of doubt expressed concerning the validity of the genus Micrisophylla. Grolle (1963b) transferred one of the taxa, M. saddlensis to Kurzia (= Microlepidozia), and Schuster (1969b, p. 41) stated,

I tentatively agree (with Grolle) in regarding the Microlepidozia and Micrisophylla elements as being basically congeneric, although the type of Micrisophylla may represent a distinct genus.

In addition, Schuster (loc. cit., p. 44) states,

I think, however, that perhaps the type M. setiformis stands further apart from Microlepidozia than preceding accounts make clear. The brownish color and the irregular and almost Temnoma-like branching and facies, without the rather regularly pinnate branching typical of Microlepidozia, are suggestively different. The status of Micrisophylla thus remains open to question.

I regard the genus Micrisophylla as a distinct and highly primitive subgenus of Microlepidozia.

Micrisophylla was described in Fulford (1962) for four species of southern South American Hepaticae, and was held by her to be distinct from Microlepidozia because of the possession of the following

[illegible]

characters: a) the radial symmetry of leafy stems, b) the long ventral stolons, c) the wide variation in gynoeceal position, and d) the enlarged turgid axes below the female inflorescence.

Study of specimens of the complex from southern Chile (including the Brunswick Peninsula), the Falkland Islands and Tristan da Cunha has shown a distinct progression of stages from near isophylly to distinct anisophylly, and a trend from lack of definite branch organization, (i.e., irregularly pinnate and diffuse pattern) to a $\pm$ regularly pinnate pattern with regularly alternating Microlepidozia - and Frullania-branch types which are characteristic of Microlepidozia (sensu stricto).

I regard M. mollis as the most primitive of the subgenus, as it approaches true isophylly more closely than other members of the subgenus, and has a highly irregularly branch system. Fulford (1966, p. 222) implies true symmetry for the species in her statement "leaves and underleaves alike." However, the underleaves are .65-.85 X the size of the leaves. I have studied the branching of M. mollis in some detail. Frullania-type, Acromastigum-type (a branch type not previously reported for "Microsophylla," and a third type of terminal branching for the species), and leafy as well as flagelliform ventral-intercalary branches are commonly produced with ventral-intercalary branches often copiously developed. On material studied, Frullania-type branches are frequently produced on one side of the axis with the other side denude of branches. Microlepidozia-type and lateral-intercalary branches are very rarely produced. I have found the

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branching to be quite plastic, e.g., on one short stem (1.1 cm. long) the following branch types were present: lateral- and ventral-intercalary type, Frullania-type, Acromastigum-type and Microlepidozia-type. In addition, apices of leafy branches occasionally become flagelliform. With the presence of nearly complete radial symmetry and irregular branch pattern coupled with the production of terminal branching from all three sectors, M. mollis is a highly unspecialized, primitive taxon. Fulford (1962) states for the gynoeclial position of the species, "female inflorescence terminal on a long flagelliform branch ending in an enlarged turgid tip." While I have seen gynoeclia in only a single specimen (young ♀ in Engel 2313), they were found to be present on short, restricted, ventral-intercalary branches, as they typically are in Microlepidozia (and the family Lepidoziaceae). The instability of gynoeclial position is also considered a primitive condition.

Microlepidozia setiformis (the type species of Micrisophylla) was found to be intermediate between M. mollis and M. saddlensis. This species, like M. mollis, possesses the irregularly pinnate, diffuse branching, but differs in lacking Acromastigum-type branches. The underleaves are .45-.75 the leaf size and are thus somewhat more anisophyllous than M. mollis. Fulford (1962 and 1966) reports that only a single immature female inflorescence was seen, and this on a ventral leafy branch. I have, however, seen several collections with mature perianths, and all gynoeclia observed were found to occur on short, abbreviated ventral-intercalary branches. While M. mollis

is pigmented only at the base, with upper portions green, M. setiformis possesses brownish secondary pigmentation throughout the entire plant.

Microlepidozia (Micrisophylla) saddlensis may be regarded as more advanced (reduced) than the above two taxa. The branching in M. saddlensis frequently has the regularly pinnate alternation of Microlepidozia type on one side of the axis with Frullania type on the other side (however, axes with Frullania-type branching on one side and the other denude of branches, as well as branchless axes are occasionally produced). Thus, M. saddlensis possesses a branch pattern similar to Microlepidozia (sensu stricto). This taxon is slightly more anisophyllous than M. setiformis, with the underleaves .40-.66 (-.86) the leaf size. This species is thus the most reduced of the three taxa and culminates a reduction sequence from the primitive M. mollis through M. setiformis to M. saddlensis. While the branching pattern is more advanced, the gynoecial position is variable and thus unstable, a primitive feature compared to the more advanced condition of perianths restricted to short, abbreviated ventral-intercalary branches in the Lepidoziaceae. Like M. setiformis, this species has the deep brown secondary pigmentation. It is with good reason then, that Grolle (1963b) regards M. saddlensis as a Microlepidozia in his placement of the species in Kurzia (= Microlepidozia).

Fulford (1962, 1966) regards the "unequal (rarely equal)" underleaf segments a generic feature of Microlepidozia, but does not mention this feature for Micrisophylla in either publication. In all

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three species of Microlepidozia examined, I have found aborted underleaf segments to be a highly consistent and dependable character.

Microlepidozia mollis commonly has but one of the underleaf segments short and abbreviated, and a given axis produces underleaves with one abbreviated segment scattered among underleaves with no size reduction in segments. In M. setiformis the underleaves have 1-2 (-3) aborted segments, commonly with the middle two segments smaller.

The underleaves with abbreviated segments tend to be scattered among leaves with all four segments equal in size or occasionally occur in regions of asymmetrical underleaves. A given axis of this taxon has at least some to nearly all of its underleaves with aborted segments. Figures 78 and 81 in Fulford (1962) exhibit slightly (fig. 81) and distinctly (fig. 78) aborted segments; this feature, however, is not mentioned in the text. The quadrifid or occasionally trifid underleaves of M. saddlensis have 1-2 segments of an underleaf aborted, and on a given axis, nearly all of the underleaves have aborted segments, with $\pm$ equal segments scattered or in groups among the typical individuals.

In summary, I regard Micrisophylla Fulf. as a subgenus of Microlepidozia for the reasons outlined below. 1) The presence of a typically Microlepidozoid branching pattern in M. saddlensis, which represents the extreme in a progression toward branch stabilization in the subgenus. As M. setiformis, the type of Micrisophylla, represents an intermediate condition in this progression, I would not regard it as "suggestively different." 2) The consistent production of at least some (and frequently nearly all) underleaves with 1-2

(-3) aborted segments. 3) The frequent production of gynoecia on short, abbreviated, ventral-intercalary branches. 4) The presence in Telaranea (Lepidoziaceae) of a species (T. apiahyna) with gynoecia on short or long ventral-intercalary branches, or even terminal on the main stem or a lateral branch. Thus Microlepidozia (sensu lato) is not unique in the absence of restricted gynoecial position typical of Lepidoziaceae. 5) The presence of the brown secondary pigmentation, a feature very commonly produced in Microlepidozia, and thus not "suggestively different" from it. As there is wide variation in anisophylly, e.g., from near isophylly to distinctly anisophyllous, I do not agree with Fulford's statement (1962, p. 124), "This new genus (Micrisophylla) is of special significance because of the radial symmetry . . .," and would thus not attach the generic significance given to it by Fulford.

The unstable, plastic, irregular branching, the variable i.e. unstable gynoecial position, the approach to isophylly, and the relatively broad and many-celled leaf lobes (especially in M. setiformis) are features which mark the subgenus as the most primitive element within the genus Microlepidozia.

Key to the Falkland Island Species of Microlepidozia

1. Leaves and underleaves stiff, erect, strongly spreading, bristle like; leaf lobes ending in a uniseriate row of 2-5 cells; plants, at least in a considerable apical portion, green; Acromastigum-type branches frequently produced. M. mollis

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1. Leaves and underleaves suberect, leaf lobes usually curved towards the stem, leaves lax, not bristle like; leaf lobes ending in a uniseriate row of 1-3 cells; plants deep brown throughout, or occasionally golden-brown at apices; Acromastigum-type branches not present. 2
2. Leaf lobes (4-) 5-12 cells wide at base; Microlepidozia type branching rare and sporadic, branching irregularly pinnate, lacking regularly pinnate alternation of Microlepidozia and Frullania-type branches; plants $\pm$ large, robust M. setiformis
2. Leaf lobes (2-) 3-4 (-7) cells wide at base; Microlepidozia-type branching common, branching frequently with $\pm$ regularly pinnate alternation of Microlepidozia and Frullania types; plants small, 222-403 μ wide, delicate M. saddlensis

Microlepidozia cucullifolia (Steph.)
Engel, comb. nov.

Lepidozia cucullifolia Steph. Bih. K. Svenska VetenskAkad. Handl. 26
(Afd. III. N:o 6): 51. 1900. Micrisophylla cucullifolia (Steph.)
Fulf. Brittonia 14: 133. 1962. Original material: Chile, Prov.
Chiloe, I. Guaitecas, Dusén 387 (G, K) - cited in Fulford (1962).
Isotachis symmetrica Steph. Sp. Hep. 3: 661. 1909, syn. fide Ful-
ford 1962. Original material: without specific locality

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Schubert (G) - cited in Fulford (1962).

This species does not occur in the Falkland Islands. It occurs in the Patagonian Channels north to I. Guaitecas.

Microlepidozia mollis (Steph.)
Engel, comb. nov.

Lepidozia mollis Steph. Sp. Hep. 3: 601. 1909. Micrisophylla mollis (Steph.) Fulf. Brittonia 14 (1): 131. 1962. Original material: Chile, Prov. Magallanes, Pto. Bueno, Dusén s.n. (G) - cited in Fulford (1962).

Ecology: All of the three Microlepidozia taxa are rare in the Falklands: M. mollis was gathered in a small depression at 275-290 m. in a Cortaderia heath.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and the Patagonian Channels north to 50° 59' S.

Literature Records: TIERRA DEL FUEGO: Dusén - R. Azopardo (Fulford 1962 & 1966 as Micrisophylla); Spegazzini - I. Hoste, I. Basket (Fulford 1962 & 1966 as Micrisophylla). PATAGONIA: Dusén - Pto. Bueno (Fulford 1962 & 1966 as Micrisophylla).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, The Gap, 275-290 m. (2465-c. per + o→).

ADDITIONAL SPECIMEN SEEN: CHILE. MAGALLANES: Pto. Bueno May 1896 Dusen s.n. (FH).

Microsepidozia saddlensis (Besch. & Mass.) Engel, comb. nov.

Lepidozia Senlensis Besch. & Mass. Bull. Mens. Soc. Lin. Paris 1 (80);

637. 1886. Micrisophylla saddlensis (Besch. & Mass.) Fulf. Brittonia 14: 128. 1962. Kurzia saddlensis (Besch. & Mass.) Grolle, Revue Bryol. Lichén. 32: 174. 1963, nom. illeg.¹). Lectotype (cf. Fulford 1966): Chile, Prov. Magallanes, I. Saddle, Hariot (PC - non vidi.).

Lepidozia diversifolia Steph. K. Svenska VetenskAkad. Handl. 46 (9):

62. f. 23 c-f. 1911, syn. fide Fulford (1962). Original material: Chile Prov. Chiloe, I. Guaitecas, Melinca, Skottsberg s.n. (G) - cited in Fulford (1962).

Taxonomical remarks: The 1902 Skottsberg collections of Microlepidozia saddlensis (Lepidozia saddlensis) from the Falkland Islands in Stephani (1905a) are misdeterminations of Lepidozia chordulifera.

Ecology: This species is very rare in the Falklands, where it was mixed with other hepatics (Clasmatocolea fulvella, Gackstroemia magellanica and Riccardia papillosa) in wet depressions of a Cortaderia heath (455 m.).

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and in Valdivian West Patagonia at 43° 57' S. It also occurs in Tristan da Cunha, Nightingale and Inaccessible Islands. I regard the report from Tasmania in Rodway (1916) as doubtful.

¹Kurzia saddlensis is invalidly published, as Grolle incorrectly cited the basonym reference as Beschereille & Massalongo, Mission Scient. du Cap Horn 5: 233. 1889.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949); Skottsberg - Port Stanley & Port Louis (Skottsberg 1913).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - Fuegia (Rodway 1916 as Lepidozia), Kühnemann 1937 & 1949 as Lepidozia); Chelminski - B. Orange (Fulford 1966 as Micrisophylla); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a, as Lepidozia); Gasperi - B. Ainsworth (Gola 1923 as Lepidozia); Hariot I. Saddle (Bescherelle & Massalongo 1889 as Lepidozia, Fulford 1962 & 1966 as Micrisophylla); Naumann - B. Tuesday (Schiffner 1890); Skottsberg - Pto. Cook, Ushuaia (Stephani 1905a as Lepidozia). PATAGONIA: Anonymous (Kühnemann 1937 & 1949 as Lepidozia); Dusén - Strait of Magellan (Stephani 1909 as Lepidozia), I. Guaitecas (Fulford 1962 & 1966 as Micrisophylla, Grolle 1963b as Kurzia, Stephani 1900 as Lepidozia), R. Aisen (Stephani 1900 as Lepidozia); Halle - Melinca (Fulford 1962 & 1966 as Micrisophylla); Hariot - Strait of Magellan (Stephani 1909 as Lepidozia); Skottsberg - Melinca (Fulford 1962 as Micrisophylla); Skottsberg & Halle - I. Guaitecas (Stephani 1911 as Lepidozia), Melinca (Fulford 1966 as Micrisophylla). TRISTAN DA CUNHA: Christophersen & Mejland - 3rd Gulch - 550-600 m., Soggy Plain, above Burntwood (Arnell 1958 as Lepidozia); Wace - Soggy Plain - 740 m. (Arnell 1958). INACCESSIBLE: Christophersen & Mejland - 450 m. (Arnell 1958 as Lepidozia). NIGHTINGALE: Christophersen & Mejland - 200 m., 275-300 m. (Arnell 1958 as Lepidozia). TASMANIA: Anonymous - Cradle Mt., West Coast (Rodway 1916 as Lepidozia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2594 B-c. o+ & 2597 B).

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ADDITIONAL SPECIMENS SEEN: TRISTAN DA CUNHA: Soggy Plain, 800 m., 14 January 1938 Christophersen & Mejland 1121 as Lepidozia fusca (S-PA-c. gynoecia); Soggy Plain 800 m., 19 January 1938 Christophersen & Mejland 1077-c ♀, 1080 as L. fusca (S-PA); Soggy Plain 800 m., 19 January 1938 Christophersen & Mejland 1088 (S-PA). CHILE. MAGALLANES: Fuegia, Hariot 166, syntype of Lepidozia saddlensis (G-c. per.). CHILOE: I. Guaitecas, 24 January 1897 Dusen 386 (S-PA), April 1897 Dusen s.n. (S-PA-ster. + c. o→), May 1897 Dusen 386, (S-PA-c. o→); Melinka, 1 July 1908 Halle 179 (S-PA).

Microlepidozia setiformis (De Not.)
Engel, comb. nov.

Lepidozia setiformis De Not. Memorie Accad. Sci. Torino II. 16: 255. f. XIII, 1-6. 1855. Mastigophora setiformis (De Not.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 416. 1877. Micri-sophylla setiformis (De Not.) Fulf. Brittonia 14: 127. 1962. Neotype¹ (fide Fulford 1966): Argentina, Terr. Tierra del Fuego, I. de los Estados, Spegazzini s.n. (G 334! ex hb. Massalongo 1152). Original material: Chile, Prov. Valparaiso, "Valparaiso," Puccio (non vidi).

¹Fulford (1962) lists a collection Spegazzini (ex. hb. Massalongo 1152) from I. Navarino as a neotype and in 1966 she lists the same collection (G 334) from I. de los Estados. I have examined this Geneva specimen and it is from I. de los Estados. Fulford (1966) states the type of Lepidozia setiformis, which I have not seen, is a Niger collection. Puccio (with one exception) made the Chilean collections reported on in De Notaris (1855).

Lepidozia obscura Ångstr. in Steph. Sp. Hep. 3: 602. 1909, syn. fide Fulford (1962). Original material: Chile, Prov. Magallanes, Strait of Magellan, Pto. del Hambre, Andersson s.n. (FH!, G!).

Lepidozia fusca Steph. K. Svenska VetenskAkad. Handl. 46 (9): 64. f. 24. h-i. 1911, syn. fide Fulford (1962). Original material: Chile, Prov. Magallanes, S. Skyring, B. Pinto, Halle & Skottsberg 170 (G, S-PA) - cited in Fulford 1962).

Lepidozia cunninghami Steph. Sp. Hep. 6: 322. 1922, syn. fide Fulford (1962). Original material¹: Chile, Prov. Magallanes, Pto. Grappler, Cunningham, inter no. 179 (G) - cited in Fulford (1962).

Taxonomical remarks: Mixed with original material of Lepidozia obscura is a plant of Microlepidozia mollis. It is clear, however, that Stephani, in his original description, was referring to plants of M. setiformis.

Ecology: This species is very rare in the Falklands, where it was gathered in a wet depression of a Cortaderia heath (455 m). It was mixed with other hepatics, nearly all of which are rare or relatively so, e.g. Neolepidozia oligophylla, Clasmatocolea cookiana, Hyalolepidozia bicuspidata and Leptoscyphus aequatus.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and the Patagonian Channels north to 48° 55' S. It is reportedly disjunct in Tasmania (fide Fulford 1962, 1966).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1949 as Lepidozia); Dusén - R. Azopardo (Stephani 1901a as Lepidozia),

¹Stephani, in the original description of Lepidozia cunninghami, lists for the collector and locality "Nova Granada (Wallis Legit)." Fulford (1962, 1966) has seen the type and lists it as

R. Azopardo, Pto. Angosto (Fulford 1962 & 1966 as Micrisophylla);
Hyades - I. Hoste (Bescherelle & Massalongo 1889 as Lepidozia);
Roivainen - I. Clarence (actually I. Capitan Arecena) (Fulford 1962
 & 1966 as Micrisophylla); Skottsberg - Pto. Cook (Fulford 1962 &
 1966 as Micrisophylla); Spegazzini - Pto. Vancouver, Blak-Mary-Bay,
 I. Navarino (Massalongo 1885 as Lepidozia), I. Navarino (Fulford
 1962 as Micrisophylla, Massalongo 1927 as Lepidozia), I. Navarino
 (Fulford 1962 as Microsophylla, Massalongo 1927 as Lepidozia).
 PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as L. obscura & L.
setiformis), Pto. Grappler (Fulford 1966 as Micrisophylla); Cunning-
ham - Pto. Grappler, B. Halt (Fulford 1962 & 1966 as Microsophylla);
Dusén - Strait of Magellan (Stephani 1909 as Lepidozia), Pto. Bueno
 (Stephani 1900 as Lepidozia); Skottsberg - Patagonia (Stephani 1922
 as L. fusca); Skottsberg & Halle - Pto. Pinto (Fulford 1962 & 1966
 as Micrisophylla); Spegazzini - Strait of Magellan (Stephani 1909
 as Lepidozia). TASMANIA: Anonymous - Mt. Wellington, West Coast
 (Rodway 1916 as Lepidozia); Weymouth (Stephani 1909 as Lepidozia),
 Sandfly Road (Fulford 1962 & 1966 as Micrisophylla).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION,
 southeast slope of Mt. Usborne 2, c. 455 m. (2612B).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I Desola-
 cion, Pto. Angosto, 28 March 1896 Dusen 175 (G), 31 March 1896 Dusen
 206 (G); Pto. Grappler, sin. coll., com. Husnot (G); B. Halt, April
 1868 Cunningham 95 (G).

above. Stephani, in his Icones (Lepidozia No. 146) states "Fretum
 Magellanicum leg. Cunningham." Fulford (in litt.) has stated she
 was unable to locate a Wallis collection of Lepidozia cunninghamii
 from "Nova Grandada."

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NEOLEPIDOZIA

Fulf. & J. Tayl. Brittonia 11 (2): 81. 1959.

Neolepidozia oligophylla (Lehm.
& Lindenb.) Fulf. & J. Tayl.

Jungermannia oligophylla Lehm. & Lindenb. in Lehm. Pug. Pl. 6: 26.

1834. Lepidozia oligophylla (Lehm. & Lindenb.) G. L. & L. Syn.

Hep. 201. 1845. Mastigophora oligophylla (Lehm. & Lindenb.)

Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 415. 1877. Neo-

lepidozia oligophylla (Lehm. & Lindenb.) Fulf. & J. Tayl.

Brittonia 11 (2): 84. 1959. Original material: Argentina,

Terr. Tierra del Fuego, I. de los Estados, Menzies s.n. (NY!).

Ecology: This species is very rare in the Falklands, where it was gathered in a wet depression of a Cortaderia heath (455 m.). It was mixed with other hepatics, nearly all of which are rare or relatively so, e.g., Clasmatocolea cookiana, Hyalolepidozia bicuspidata, Leptoscyphus equatus, Microlepidozia setiformis and Riccardia spectabilis.

Phytogeography: This taxon occurs in the Falklands, Tierra del Fuego and the Patagonian Channels north to 49° 09' S (see Map 9).

Literature records: SOUTH GEORGIA: Skottsberg (Stephani 1909 as Lepidozia). TIERRA DEL FUEGO: Anonymous (Kühnemann 1937 & 1949 as Lepidozia), I. de los Estados (G. L. & N. 1845 as Lepidozia); Dusén - R. Azopardo, Pto. Angosto (Fulford 1966, Stephani 1901a as Lepidozia); Gasperi - B. Angelito, Valle delle Fate (Gola 1923 as Lepidozia), B. Ainsworth (Fulford 1966); Hooker - Cabo de Hornos (G. L. & N. 1845 as Lepidozia, Hooker & Taylor 1844 as Jungermannia); Hyades - B. Packsaddle (Bescherelle & Massalongo 1889 as Lepidozia); Menzies - I. de los Estados (Taylor & Hooker 1847b as Jungermannia); Naumann - B. Tuesday (Schiffner 1890 as Lepidozia); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b, as Lepidozia); Roivainen - B. Brookes (Fulford 1966); Savatier - Pto. Churruca (Bescherelle & Massalongo 1889 as Lepidozia); Skottsberg - Pto. Cook, B. Tekenika (Stephani 1905a as Lepidozia); Spegazzini - Pto. Vancouver, M. Richardson, I. Basket, Canal Beagle, I. Navarino (Massalongo 1885 & 1927 as Lepidozia). PATAGONIA: Anonymous - Strait of Magellan (Stephani 1909 as Lepidozia), Kühnemann 1937 & 1949 as Lepidozia); Cunningham - Pto. Mayne (Fulford 1966); Dusén - Patagonia (Fulford 1966); Gardner - Pto. Eden (Fulford 1966); Savatier - Pto. Eden (Bescherelle & Massalongo 1889 as Lepidozia); Skottsberg & Halle - Pto. Cutter, B. Pinto (Stephani 1911 as Lepidozia).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2612A).

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ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO.

I. de los Estados, M. Richardson, February 1882 Spegazzini 67 (NY).

CHILE. MAGALLANES: R. Fontaine, 1 March 1908 Halle & Skottsberg 180 as Lepidozia seriatitexta (NY); Cta. Gomez, 26 February 1908 Halle & Skottsberg 19 as Lophocolea angulata (UPS); R. Azopardo, 29 February 1896 Dusen 36 and March 1896 Dusen 120 (NY); I. Desolacion, Pt. Angosto, 30 March 1896 Dusen 200 (NY); S. Skyring, B. Rodriguez, 25 April 1908 Halle & Skottsberg s.n. as Lepidozia seriatitexta (NY); Pto. Mayne, 1 April 1869 Cunningham 169 (NY).

Paracromastigum

Fulf. & J. Tayl. Brittonia 13 (4): 336. 1961.

Paracromastigum subsimplex (Steph.)
Fulf. & J. Tayl.

Lepidozia subsimplex Steph. K. Svenska VetenskAkad. Handl. 46 (9):

66. f. 24 r, s. 1911. Paracromastigum subsimplex (Steph.)

Fulf. & J. Tayl. Brittonia 13: 336. 1961. Original material:
(?) Chile, Prov. Magallanes - (?) Argentina, Terr. Tierra del
Fuego, L. Fagnano, 1908 Halle s.n. (G) - cited in Fulford &
Taylor (1961).

Ecology: This rare species, represented by a single Falkland collection, was gathered on the bank of a wet depression in a

Cortaderia heath, 580-595 m.

Phytogeography: This species is known from the Falklands, I. Grande de Tierra del Fuego and the Valdivian region.

Literature records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lepidozia); Halle - Fuegia (Stephani 1922 as Lepidozia), L. Fagnano (Fulford & Taylor 1961). PATAGONIA: Halle - Melinca (Fulford 1966, Fulford & Taylor 1961).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, basin east of summit, 580-595 m. (3002).

Pseudocephalozia

Schust. Nova Hedwigia 10: 21. 1965.

Pseudocephalozia tristaniana Schust.

Pseudocephalozia tristaniana Schust. Nova Hedwigia 10: 23. 1965.

Holotype: Tristan da Cunha, Red Hill, Christophersen 1229c (G-non vidi).

Taxonomical remarks: The Falkland Island plants fit the original description of the species in Schuster (1965c), except for the median cell measurements of the leaf which are 39-53 μ long and 21-36 μ wide in the Falkland material and "ca. 20-25 X 25-38 μ " in the type material.

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Ecology-Phytogeography: This species is apparently quite rare in the Falklands, where it was collected but once. It occurred on a stream bank in a Cortaderia heath. The species is restricted to the Falkland Islands and Tristan da Cunha.

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, valley SW of Mt. Usborne, c. 60 m. (2670 - c. 0+).

TELARANEA

Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 365. 1885.

Key to the Falkland Island Species of Telaranea

1. Leaves of main axis with a lamina of 1 row of cells high,
leaves 2-3 segmented; underleaves conspicuously smaller
than the leaves, plants small, filamentous. . . T. pseudozoopsis
1. Leaves of main axis with a lamina of 1-1/2 to 4 rows
of cells high, leaves 4-6 segmented; underleaves
similar to leaves in size; plants large, leafy. 2
2. Leaves and underleaves stiff, ascending, bristle-
like, lamina 1-1/2 cell rows high T. blepharostoma

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2. Leaves and underleaves lax, curved, not ascending
and bristle-like; lamina 2-4 cell rows high 3
3. Leaf margins 3-4 cell rows high, apices of plants often
recurved; perianth mouth crenulate. T. plumulosa
3. Leaf margins 1-2 cell rows high, apices of plants
plane; perianth mouth long-ciliate. T. tetradactyla

Telaranea blepharostoma (Steph.) Fulf.

Lepidozia Blepharostoma Steph. Bih. K. Svenska VetenskAkad.

Handl. 26 (III, 17): 22. 1901. Telaranea blepharostoma

(Steph.) Herz. Revue Bryol. Lichen. 20 (3-4): 189. 1960.

nom. illeg. Telaranea blepharostoma (Steph.) Fulf. Brittonia 15:

73. 1963. Original material: Chile, Prov. Magallanes, Pto.

Angosto, "ex Bot. Mus. Upsal.," Dusén 142 (G) - cited in Fulford
(1963a).

Lepidozia trichophylla Ångstr. ex Fulf. Mem. N.Y. Bot. Gdn 11 (2):

240. 1966, nom. nud., pro syn.

Taxonomical remarks: As all previous reports of T. bleph-
arostoma from the Falklands are based upon misdeterminations of
T. plumulosa, this is the first authentic report of Telaranea
blepharostoma in these islands.

Ecology-Phytogeography: This species occurs in the Falk-
lands, Tierra del Fuego, Patagonian Channels and Valdivian region
(see Map 10). Within the Falklands, it was found to occur only in

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the Port Stanley region (under Blechnum in a dwarf shrub heath), and the cooler temperatures and higher rainfall in this region may account for its presence there.

Literature records (FALKLANDS): Anonymous - (Kühnemann 1937 and 1949 as Lepidozia); Skottsberg - Port Philomel, Port Stanley (Skottsberg 1913 as Lepidozia); Skottsberg & Halle - Port Philomel, Port Stanley (Stephani 1911 as Lepidozia).

Additional Literature Records: TIERRA DEL FUEGO: Dusén - Pto. Angosto (Fulford 1963a, 1966), I. Desolacion (Stephani 1909 as Lepidozia); Gasperi-B. Angelito (Gola 1923 as Lepidozia); Skottsberg & Halle - Cta. Gomez, R. Azopardo (Stephani 1911 as Lepidozia). PATAGONIA: Anonymous - Canal Smyth (Fulford 1963a, 1966); Cunningham - B. Halt (Fulford (1963a, 1966); Krause - Valdivia (Fulford 1963a, 1966); Schwabe - I. Magdalena, Pto. Puyuhuapi, Termas de Puyehue (Herzog 1954), Huitrapulli - Aleucapi, Chaihuin - R. Colun, L. Pellaifa (Herzog 1960); Skottsberg & Halle - Pto. Cutter, I. Guaitecas (Stephani 1911 as Lepidozia).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3201).

Telaranea plumulosa (Lehm.
& Lindenb.) Fulf.

Jungermannia plumulosa Lehm. & Lindenb. in Lehm. Pug. Pl. 6: 30.

1834. Lepidozia plumulosa (Lehm. & Lindenb.) G. L. & N. Syn.

Hep. 211. 1845. Mastigophora plumulosa (Lehm. & Lindenb.)

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Trev. Memorie Ist Lomb Sci. Lett. III. 4: 416. 1877. Telaranea plumulosa (Lehm. & Lindenb.) Herz. Revue Bryol. Lichén. 29 (3-4): 189. 1960, nom. illeg. Telaranea plumulosa (Lehm. & Lindenb.) Fulf. Brittonia 15 (1): 77. 1963. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, Menzies s.n. (G) "ex hb. Kew," - cited in Fulford (1963a).

Lepidozia magellanica Gott. ex Fulf. Mem. N.Y. Bot. Gdn 11 (2): 243. 1966, nom. nud., pro syn., non Lepidozia magellanica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 64. 1911 (= L. fuegiensis).

Taxonomical remarks: This taxon reaches its optimal development in the evergreen forested region of southern Chile. The plants of the Falkland population, when compared with the Chilean plants, are smaller in size, less luxuriant and robust, often without recurved plant tips, and with few exceptions have leaves which are consistently 4 segmented. Fulford (1963a, 1966) states that the leaves of T. plumulosa are 5 or 6 segmented. The leaf lamina and margins of the Falkland plants are 3-4 cells high, data which agrees with the Fulford descriptions. The Falkland Island plants, which show little variation, are thus somewhat intermediate between T. plumulosa and T. tetradactyla; however, I believe the concept of the former should be expanded to include plants with 4 segmented leaves.

Ecology: This very common species is characteristic of stream banks, particularly under Gunnera, Blechnum magellanicum or

Empetrum cover and in crevices of outcrops in dwarf shrub heaths. It is also common on soil, frequently of stream banks in Cortaderia heaths. It occasionally grows in rock crevices or under overhangs of sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia only at 43° 57' S. on an off-shore island) and Mas a Tierra (Juan Fernandez) (400-500 m.) (see Map 11).

Literature records (FALKLANDS): Anonymous (Fulford 1963a, 1966, Kühnemann 1937 as Lepidozia); Lyall (Fulford 1963a, 1966); Skottsberg - North West Bay (Fulford 1963a, 1966), Port Stanley (Fulford 1966).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous I. de los Estados (G. L. & N. 1845 as Lepidozia, Hooker 1867 as Lepidozia); Chelminski - B. Orange (Fulford 1966); Davis - Cta. San Martin, Cabo de Hornos (Fulford 1963a, 1966); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a, as Lepidozia), Fuegia, Pto. Angosto (Fulford 1963a, 1966); Gasperi - B. Angelito, I. del Laberinto (Fulford 1963a, 1966, Gola 1923 as Lepidozia), M. Sarmiento (Gola 1923 as Lepidozia); Hariot - I. Hornos (Bescherelle & Massalongo 1889 as Lepidozia); J. B. Hatcher - Fuegia (Evans 1898 as Lepidozia); Hooker - I. Hermite (Fulford 1963a, 1966); Menzies - I. de los Estados (Fulford, 1963a, 1966, Taylor & Hooker 1847b as Jungermannia); Savatier - Pto. Churruca (Bescherelle & Massalongo 1889 as Lepidozia); Skottsberg - B. Tekenika (Stephani 1905a as Lepidozia), Fuegia (Fulford 1963a, 1966); Skottsberg & Halle - I.

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Felix (Stephani 1911 as Lepidozia); Spegazzini - I. de los Estados, I. Basket (Massalongo 1885 & 1927 as Lepidozia), I. de los Estados (Fulford 1963a, 1966), Penguin Rookery & Cabo de Hornos (Fulford 1963a, 1966). PATAGONIA: Anonymous - (Kühnemann 1937 as Lepidozia Stephani 1909 as Lepidozia), Pto. del Hambre (Fulford 1966); Coppinger - Est. Neesham (Fulford 1963a, 1966); Cunningham - Pto. Gallant (Fulford 1963a, 1966); Dumont d'Urville - Strait of Magellan (Gay 1952 as Lepidozia, G. L. & N. 1845 as Lepidozia, Taylor & Hooker 1847b as Jungermannia, Montagne 1845 as Lepidozia); Dusén - Strait of Magellan (Fulford 1966). I. Guaitecas (Fulford 1963a, 1966, Stephani 1900 as Lepidozia); Grosse - Istmo de Ofqui Herzog 1954 as Lepidozia); Jacquinet - Strait of Magellan (Fulford 1966); Lechler - Rada York (Fulford 1963a, 1966); Schwabe - Pto. Puyuhuapi, C. Tesoro (Herzog 1954 as Lepidozia), Huitrapulli - Aleucapi, L. Pel-laifa, Chaihuin - R. Colun (Herzog 1960); Skottsberg & Halle - Cta. Hale, I. Guafo (Stephani 1911 as Lepidozia). JUAN FERNANDEZ. Anonymous - (Stephani 1909 as Lepidozia). MAS A TIERRA: Kunkel - C. Damajuana-500 m. (Arnell 1957 as Lepidozia); Skottsberg - Plazoleta del Yunque, Villagra - 400-500 m. (Arnell 1957 as Lepidozia), Pangall (Fulford 1963a, 1966, Herzog 1942 as Lepidozia); Sparre - Valle Anson - 400-500 m. (Arnell 1957 as Lepidozia). AUCKLAND: Hooker (Hooker 1867 as Lepidozia). ANTIPODES: Anonymous - Stephani 1909 as Lepidozia). NEW ZEALAND: Anonymous (Stephani 1909 as Lepidozia); Hooker (Fulford 1963a, 1966). GREENLAND: Anonymous (Stephani 1909 as Lepidozia).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, near Port Stanley, 11 November 1907 Skottsberg 165 as Lepidozia blepharostoma (S-PA, UPS), headwaters of Mullet Creek Stream, c. 60 m. (3162); summit ridge of north peak of Two Sisters, 245-290 m. (2700 A, 2719 & 2738); summit of Mt. Kent, 455 m. (2746). MT. USBORNE REGION, southeast slope of Mt. Usborne, 2, c. 455 m. (2596); The Gap, 275-290 m. (2467 & 2477); below The Gap, c. 90 m. (2564, 2567 & 2577); south side of The Gap, 260-275 (2452 A); valley southwest of Mt. Usborne, c. 60 m. (2655 & 2664). WEST FALKLANDS: PORT HOWARD, southwest of Mt. Maria summit, c. 610 m. (3131). FOX BAY REGION, near peat cuttings in Ram Paddock, 45-60 m. (3514-c. ♀); north base of Fox Bay Mt., 75 m. (3459, 3460 & 3464 A). MT. ADAM, ridge south of northern lake, 610 m. (3025 & 3031 B). HILL COVE REGION, gap between French Peaks, 200-215 m. (2978); summit of West French Peak, 290 m. (2949). PORT PHILOMEL, Northwest Bay, 2 November 1907 Halle s.n. as Lepidozia blepharostoma (UPS). WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2874 & 2878). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3305 A, 3312, 3321, 3327 B & 3328); near headwaters of House Creek, c. 15 m. (3404, 3406, 3407 & 3410); summit of peak northeast of Mt. Weddell, 335 m. (3365); summit of Mt. Weddell, 380 m. (3336).

Telaranea pseudozoopsis (Herz.) Fulf.

Lepidozia pseudozoopsis Herz. in Skottsberg, Nat. Hist. Juan Fernandez, Easter Is. 2 (5): 723. f. 5. 1942. Telaranea

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pseudozoopsis (Herz.) Fulf. Brittonia 15: 71. 1963. Original material: Juan Fernandez, Mas a Tierra, Centinela, 530 m., Skottsberg 227 (JE) - cited in Fulford (1966).

Ecology: This species is rather common in the Falklands, where it grows typically in moist, shaded situations (moist rock crevices, stream banks, etc.) in dwarf shrub heaths, Hebe associations and (more rarely) in Cortaderia heaths. It was rather common on the bases of tussock grasses in tussock associations.

Phytogeography: This taxon occurs in the Falklands, Tierra del Fuego, and the Valdivian region. It is also present on Mas a Tierra (Juan Fernaneez) (400-530 m., where recorded) (see Map 12).

Literature records: TIERRA DEL FUEGO: Roivainen - B. Brookes (Schuster 1968b); Schuster - C. Garibaldi (Schuster 1968b). PATAGONIA: Schuster - Los Cantaros (Schuster 1968b); Schwabe - Pto. Puyuhuapi, Termas de Puyehue (Herzog 1954 as Lepidozia); Sparre - C. de Nahuelbuta, PichiNahuel (Arnell 1961 as Lepidozia). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - Centinella-530 m. (Fulford 1963a, 1966), Q. Damajuana - 400-500 m. (Arnell 1957 as Lepidozia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: KIDNEY ISLAND, north of shanty (2786, 2793, 2794 & 2800). STANLEY REGION, Sapper Hill, 135 m. (2395); Tumbledown Mt., 155-230 m. (2377 B); headwaters of Mullet Creek Stream, c. 60 m. (3165 & 3181 C); Goat Ridge, c. 180 m. (3212 & 3217). MT. USBORNE REGION, The Gap, 275-290 m. (2461-c. per + o-); valley southwest of Mt. Usborne, c. 60 m. (2648 C). WEST FALKLANDS: FOX BAY REGION, summit of East Head,

[illegible][illegible]

180 m. (3423); summit of Fox Bay Mt., 307 m. (3448 & 3454). HILL COVE REGION, summit of West French Peak, 290 m. (2951). WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2919, 2922, 2927, 2928 & 2939); near The Waterfall, 30-90 m. (2875 A & 2876); west base of Black Hog Hill, adjacent to Devils Nose, c. 20 m. (2891 & 2893). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3307).

Telaranea tetradactyla (Hook. f.
& Tayl.) Hodg.

Jungermannia tetradactyla Hook. f. & Tayl. London Jour. Bot. 3:

386. 1844. [3: 286 (sic.) in errore pro 386]. Lepidozia tetradactyla (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 213.

1845. Mastigophora tetradactyla (Hook. f. & Tayl.) Trev.

Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. Neolepidozia tetradactyla (Hook. f. & Tayl.) Fulf. & J. Tayl. Brittonia 11: 84. 1959. Telaranea tetradactyla (Hook. f. & Tayl.) Hodg. Rec. Dom. Mus., Wellington 4 (11): 106. 1962. Original material: Auckland Is., Hooker s.n. (NY) - cited in Fulford (1963a).

Lepidozia lindenbergii Gott. in G. L. & N. Syn. Hep. 213. 1845.

syn. fide Fulford (1963a). Mastigophora lindenbergii (Gott.)

Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 397. 1877. Original material: New Zealand, without specific locality, "ex hb. Taylor," Hooker s.n. (G, NY) - cited in Fulford (1963a).

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Lepidozia disticha Steph. K. Svenska VetenskAkad Handl. 46 (9): 62. f.24 a-b. 1911, syn. fide Fulford (1963a). Neolepidozia disticha (Steph.) Fulf. & J. Tayl. Brittonia 11: 84. 1959. Original material: Juan Fernandez, Mas a Tierra, Skottsberg 117 (G) - cited in Fulford (1963a).

Lepidozia effusiseta Steph. Sp. Hep. 6: 325. 1922, syn. fide Fulford (1963a). Original material: Juan Fernandez and I. Desolacion, Skottsberg (G) - cited in Fulford (1963a).

Taxonomical remarks: Fulford (1963a, p. 277, 1966, p. 206, 241) stated that the original description and figures of Lepidozia fernandeziensis and L. disticha (syn. of Telaranea tetradactyla) were interchanged in Stephani 1911. Herzog (1954) was apparently not aware of Stephani's error when citing (p. 51) "Lepidozia (Telaranea) fernandeziensis St. (= L. effusiseta St.)". Fulford (1966) has cited the Herzog error as a misidentification ["Lepidozia (Telaranea) fernandeziensis Herzog, Revue Bryol. Lichenol. 23: 51. 1954 (in error)"] in the synonymy of Lepidozia chordulifera.

Phytogeography: This amphipacific temperate species occurs in the (?) Falklands, Tierra del Fuego, the Patagonian Channels, the Valdivian Region (West Patagonia north to 39° 48' S.), Juan Fernandez, Auckland Island and New Zealand. Hodgson (1956) states the species is common throughout New Zealand and neighboring islands.

Literature reports (FALKLANDS): Skottsberg - Port Stanley (Fulford 1966).

Additional Literature Reports (note--locality information for extra-American sector reports have been omitted): TIERRA DEL FUEGO: Anonymous - I. Hermite (Fulford 1963a); Chelminski - B. Orange (Fulford 1966); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1845 as Lepidozia, Hooker & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia). PATAGONIA: Fulford - Puerto Varas (Fulford 1966); Herzog - Valdivia (Herzog 1923 as Lepidozia effusiseta); King - I. Chiloe (Fulford 1963a, 1966); Nadaud - Strait of Magellan (Fulford 1966); Schwabe - Calbuco, Pto. Puyuhuapi, L. Risopatron (Herzog 1939 as Lepidozia effusiseta), Pto. Puyuhuapi (Herzog 1954 as Lepidozia effusiseta); Thaxter - Corral (Fulford 1963a, 1966). JUAN FERNANDEZ. Gay (Fulford 1963a, 1966). MAS A TIERRA: Kunkel - C. Damajuana - ca. 500 m. (Arnell 1957 as Lepidozia disticha); Skottsberg - (Stephani 1922 as Lepidozia disticha), Fulford 1963a, 1966), Cordon de los Chifladores, Centinela-530 m. between Piedra Agujeriada & Laura - 650 m., Cumberland Bay-caves, Valle Colonial - Q. Seca - 435 m. (Herzog 1942 as Lepidozia disticha), Cumberland Bay - cave (Arnell 1957 as Lepidozia disticha). AUCKLAND: Hooker (G. L. & N. 1845 as Lepidozia, Hodgson 1962, Taylor & Hooker 1847a as Jungermannia, Fulford 1963a, 1966); Dawbin, Turbott (Hodgson 1962). NEW ZEALAND: Anonymous - (Hodgson 1956 as Lepidozia); Hooker (G. L. & N. 1845 as Lepidozia, Hooker & Taylor 1844 as Jungermannia). STEWART ISLAND (NEW ZEALAND): Martin (Martin 1949 as Lepidozia). NORTH ISLAND (NEW ZEALAND): Colenso, Hooker, Stephenson (Mitten 1855 as Lepidozia lindenbergii). TASMANIA: Gunn (Mitten 1860 as L. lindenbergii).

Lepidoziaceae Species Excluded from the Falklands

Bazzania skottsbergii (Steph.) Fulf. This species was reported from the Falklands by Stephani (Sp. Hep. 6: 480. 1924 as Mastigobryum) Kühnemann (1949) and Bonner (1963). I have failed after several attempts to locate this specimen. However, a label of a specimen from Geneva of a 1908 Skottsberg 50 collection from Mas a Tierra, Juan Fernandez, originally bore the locality "Falkland Ins.," which had been crossed out. It is likely that Stephani discovered his error when curating the Skottsberg collections, but did not delete the record from his Species Hepaticarum. The species occurs in the Magallanian and Valdivian regions, Juan Fernandez and Tristan da Cunha. I do not believe it grows in the Falklands.

LOPHOZIACEAE

Cavers, New Phytol. 9 (8-9): 293. 1910.

Anastrepta

(Lindb.) Schiffn. in Engl. & Prantl. Naturl. Pflanzenfam. 1 (Abt. 3, 1 Hälfte): 85. 1893. Jungermannia sect. Anastrepta Lindb. K. Svenska VetenskAkad. Handl. 23 (5): 40. 1889.

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Anastrepta bifida (Steph.) Steph.

Plagiochila bifida Steph. Annuar. R. Ist. Bot. Roma 2 (2): 86. pl. 6, f. 1-6. 1886. Anastrophyllum bifidum (Steph.) Steph. Bih. K. Svenska VetenskAkad Handl. 26 (III, 6): 25. 1900. Anastrepta bifida (Steph.) Steph. Bull. Herb. Boissier II. 2 (5): 474. 1902 (= Sp. Hep. 2: 193). Original material: Chile, Prov. Magallanes, Pto. Caracciolo, De Amezaga (non vidi).

Tylimanthus bilobatus Steph. K. Svenska VetenskAkad. Handl. 46 (9): 24. f. 9b. 1911, syn. fide Grolle (1961). Lectotype (cf. Grolle 1961): Juan Fernandez, Mas a Tierra, Valle Colonial, 1908 Skottsberg (UPS - non vidi).

Leioscyphus fernandeziensis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 36. f. 14a. 1911, syn. fide Grolle (1961). Lectotype (fide Grolle 1961): Juan Fernandez, Mas Afuera, Camp Correspondencia, 1908 Skottsberg (UPS - non vidi).

Ecology: This species was collected at but a single station in the Falklands, where it grew on soil under a thick protective grass cover in a Cortaderia heath.

Phytogeography: This species occurs in the Falklands, Patagonian Channels, Valdivian region (north to 39° 52' S.) and Juan Fernandez. It has not been reported for Tierra del Fuego or Andean Patagonia (see Map 13).

Literature Records: PATAGONIA: Anonymous - Strait of Magellan (Bonner 1962); Cunningham - Strait of Magellan (Stephani 1902); De Amezaga - Strait of Magellan (Bonner 1962 as Plagiochila, Stephani 1902);

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Dusén - Pto. Bueno (Stephani 1900 as Anastrophyllum), Strait of Magellan (Stephani 1902); Grosse - Istmo de Ofqui (Grolle 1961); Hosseus - Corral (Herzog 1938); Schwabe - Termas de Puyehue (Herzog 1954, Grolle 1961); Skottsberg - Pto. Gray (Grolle 1961). JUAN FERNANDEZ. Skottsberg (Stephani 1922 as Leioscyphus fernendeziensis & Tylimanthus bilobatus). MAS A TIERRA: Skottsberg - Valle Colonial (Grolle 1961), Portezuelo de Villagra (Arnell 1957, Grolle 1961), near Portezuelo (Herzog 1942), trail to Villagra above colony (Arnell 1957). MAS AFUERA: Skottsberg (Grolle 1961, 1962, Camp Correspondencia (Arnell 1957, Grolle 1961, 1962).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, below The Gap, c. 90 m. (2561-c. o→, 2572B & 2573A-c. o→).

Anastrophyllum

(Spruce) Steph. Hedwigia 32: 139. 1893. Jungermannia subg. Anastrophyllum Spruce, J. Bot., London 14: 234. 1876.

Anastrophyllum ciliatum Steph.

Anastrophyllum (sic.) ciliatum Steph. Hedwigia 32: 139. 1893. Sphenolobus ciliatus (Steph.) Steph. Bull. Herb. Boissier II. 2 (2): 175. 1902 (= Sp. Hep. 2: 167). Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, Spegazzini s.n. (G!). Anastrophyllum semifissum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 21. f. 7b. 1911, syn. nov. Lectotype (nov.): 27 April

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1908 Halle & Skottsberg 62, Chile, Prov. Magallanes, Canal Gajardo, Cta. Inga (UPS ! - c. o→).

Taxonomical remarks: This species is closely related to Anastrophyllum leucocephalum, which was described from the Ecuadorian Andes and reaches the Magellanian floristic zone. The two taxa share the following features: a) distinctly apiculate leaf lobes, b) ventral leaf lobes slightly larger than the dorsal, c) dorsal margins of leaves 1 (-2, -3) laciniate-lobate at the base and d) frequent production of reddish secondary pigmentation. Anastrophyllum leucocephalum, however, has leaves which are only at most slightly canaliculate, has leaf cells with large trigones which are confluent or if not confluent, with intermediate walls thickened, and has perianths which are narrowly elliptical in shape and 1/2-2/3 exerted beyond the bracts. Anastrophyllum ciliatum has leaves varying from canaliculate to distinctly conduplicate, with a strongly arched keel, leaf cells with large knot-like trigones with thin (very rarely slightly thickened) intermediate walls and perianths which are broadly ovate in shape and ca. 1/2 exerted beyond the bracts.

Ecology: This species occurs usually mixed with other Hepaticae above 440 m. in the Falklands, and is fairly common in sheltered high altitude cliffs under overhangs or on cushions of Azorella selago. It also was collected in a feldmark (700 m.), where it was associated with pools.

Phytogeography: This taxon is known from the Falklands and the Magellanian region (I. de los Estados and V. Inga, Canal Gajardo).

Literature records: TIERRA DEL FUEGO: Anonymous - Kühnemann 1937 as Sphenolobus, 1949 as Anastrophyllum & Sphenolobus); Spegazzini - I. de los Estados (Bonner 1962, Stephani 1902 as Sphenolobus). PATAGONIA: Skottsberg - Canal Gajardo (Bonner 1962 as A. semifissum), Patagonia (Stephani 1917 as A. semifissum).

FALKLANDS SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2630-c.o.); ridge between Mt. Usbornes 1 & 2, 685 m. (2554 E); summit of Mt. Usborne 1, c. 700 m. (2489 A, 2491 A, 2496 C). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3080 B). MT. ADAM, side of summit ridge, 670-700 m. (3014 B).

Anastrophyllum Species Excluded from Falklands

Anastrophyllum subcomplicatum (Lehm. & Lindenb.) Steph.

This species was reported from the Falklands by Herzog (1926), who confused the type locality "Insulis Marianis" (Mariana Islands) with the Falklands (= Îles Malouinae, Islas Malvinas).

Andrewsianthus

Schust. Revue Bryol. Lichén. 30 (1-2): 66. 1961.

Key to the Falkland Island Species of Andrewsianthus

1. Leaves often canaliculate or conduplicate, $1/4 - 1/3$ (- $1/2$) bifid; leaf lobes acutely triangular, angle of lobe outline $17^\circ - 63^\circ$ (- 81°), apices occasionally acuminate or apiculate; sinus usually sharply triangular, occasionally narrowly rounded, rarely broadly rounded, never lunate; leaf insertion transverse, at most occasionally weakly succubous in dorsal half; ventral intercalary branches very rare. A. australis
1. Leaves usually plane to slightly concave, exceptionally canaliculate, never conduplicate, $1/9 - 1/4$ bifid; leaf lobes acutely to obtusely triangular, angle of lobe outline $43^\circ - 116^\circ$, apices occasionally somewhat apiculate, never acuminate; sinus broadly rounded to lunate in shape, occasionally triangular; leaf insertion often distinctly succubous; ventral intercalary branches occasional A. planifolius

Andrewsianthus australis Engel, sp. nov.

Andrewsianthus achroi (Spruce) Schust. similis, sed differt

- 1) amphigastriis habentibus, 2) margo dorsali folii prope basin cum unica papilla efferenti mucum, 3) cortice caulis 1- 2 (-3)- stratoso, cellulis parum minoribus, 4) lobis $\rightarrow$ bracteae integris.

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Holotype: Chile, Prov. Magallanes, Caleta Amalia, 1 October 1969 Engel 5411A (MCS! - c. per. + sporo. + o→).

Plants mostly loosely intermixed with other bryophytes, occasionally caespitose, axes prostrate to suberect, to 2 cm. tall, 1 mm. wide, golden brown in color, occasionally light green toward stem apices, nitid when dry.

Branches sparing to occasionally rather frequent, of lateral intercalary type, arising from dorsal 1/2 of leaf axil, occasionally appearing from dorsal side of stem, often initially suberect to erect and then becoming arched, main axis or branches frequently becoming positively geotropic and flagelliform, the flagelliform axis with rhizoids and scale-like leaves, occasionally becoming leafy.

Stems 90-170 μ thick, 120-230 μ wide, in surface view the cortical cells subsquarrose to rectangular in shape, cell walls thick, the ventral cortical cells thicker than the dorsal, end walls transverse to oblique, cells 20-47 μ long, 10-18 μ wide; stems in section 7-13 cells in diameter, cortex of 1-2 (-3) rows of slightly smaller, considerably thicker walled cells, the outermost row light brown to red brown pigmented, cells 9-16 μ thick, cuticle smooth or sparing to coarsely striate; medullary cells slightly thickened, especially in the corners, 13-20 μ in diameter. Rhizoids usually sparingly produced, scattered on ventral stem surface, when less copiously developed then frequently in fascicles from stem near ventral base of leaf.

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Leaves 390-780 μ long from segment apices to leaf base, (130-) 270-430 μ wide, transverse to weakly succubously oriented, insertion transverse, occasionally weakly succubous in dorsal half, the insertion extending to stem midline dorsally, leaves stiffly obliquely to laterally spreading, frequently with distal 1/3-1/2 slightly to distinctly recurved, distant to approximate, deeply concave, often canaliculate or conduplicate, rather narrowly elliptic to narrowly to broadly ovate, dorsal margin with a sessile or stalked slime papilla near the base, the slime papillae turgid on leaves toward stem apex and becoming progressively more collapsed on progressively older leaves, leaves otherwise entire, leaves bifid to 1/4-1/3 (-1/2), lobes acutely triangular, angle formed by the lobe margins 17° - 63° (81°), apices occasionally acuminate or apiculate, the apices frequently hyaline, the dorsal lobe often erect to weakly folded over the ventral lobe, the dorsal lobe 0.5-0.94 times the size of the ventral lobe, the sinus usually sharply triangular, occasionally narrowly rounded, rarely broadly rounded, never lunate, dorsal margin slightly to distinctly curved, especially toward the base, often repand, short to very long decurrent on the stem, ventral margin slightly to distinctly curved, often repand, not to short to long decurrent.

Leaf cells subsquarrose to rectangular or pentagonal, walls thin to slightly thickened, trigones medium to protuberant, occasionally confluent, trigone sides straight to bulging, median leaf cells 17-33 μ long, 16-26 μ wide, marginal cells smaller, 12-20 μ long, 10-21 μ wide; cuticle smooth to finely to rather coarsely striate.

Underleaves rudimentary composed of (1-) 2-3 stalked or sessile slime papillae, usually with 2 basal cells each terminating in a slime papilla, slime papilla rarely terminating in a unicellular row of 2 cells.

Gemmae absent.

Plants dioicous; androecia intercalary on the main axis or on lateral intercalary branches, the lateral intercalary branches of male stems often appearing from ventral 1/2 of leaf axil, bracts in groups of 3-4 pairs, entire bract strongly saccate, or saccate in basal 1/2 with distal portion flaring, dorsal margin with basal slime papilla characteristic of leaves, bracts bifid, with lobe apices commonly hyaline, antheridia 1 (-2) per bract, stalk of a single row of cells, commonly biseriate immediately below the body. Gynoecia terminal on main axis or commonly terminating a subfloral innovation, innovations 1-3 per gynoecium, intercalary, originating from near the ventral end of a bract or in bracteole axil, the innovations may become flagelliform or produce gynoecia, repeatedly fertile innovations frequent, innovations occasionally absent; bracts in 3 series, becoming progressively larger towards the perianth, bracts of innermost series with apices bifid, rarely trifid, with lobes straight or recurved, dorsal margin 1-2 dentate toward the median or basal portion, ventral margin with 2 small teeth near the base; bracteoles 265-660 μ long, wide ovate, undivided or retuse, apex broadly rounded to truncate, apices entire or sparingly dentate, occasionally appearing ragged, strongly connate on 1 side with bract, lamina margins entire. Perianths (mature) 2.3-3.8 mm.

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long, 0.7-0.96 mm. wide, 3/4-4/5 emergent, slenderly cylindrical or oblong-pyriform, terete in basal portion, becoming slightly laterally compressed distally, 6-many plicate in extreme distal portion, plicae occasionally obscurely extending to 1/2, very rarely to 2/3, the plicae rounded, perianth contracted at the mouth, the mouth rather copiously spinosely dentate to elongate ciliate.

Seta with cells arranged in longitudinal rows, 7 cells in diameter, with 21-23 rows of epidermal cells (33-47 μ wide), surrounding an inner core of scattered cells (33-52 μ in diameter) with corners thickened as in medium sized trigones. Capsule elliptic, 510 μ long, 270 μ wide, wall 31-38 μ thick, of 3-4 layers, outer row of cells larger, subsquarrose to rectangular in shape, thin walled, 22-52 μ long, 13-34 μ wide, 14-18 μ thick, exposed wall thickened, smooth, outer layer with red-brown thickenings on radial walls, the thickenings nodule-like, the nodules occasionally somewhat externally dilated and appearing stalked, the thickenings frequently feebly tangentially dilated; intermediate layers subequal to inner cell layer in size, with thickenings mostly on radial walls; inner layer of cells subrectangular to elongate subrectangular to sigmoid in shape, 39-75 μ long, 13-36 μ wide, 5-9 μ thick, radial and outer walls with thick, orange-brown, semiannular bands, the bands often branched, the thickenings often reticulate, exposed wall slightly roughened. Spores 13-14 μ , light brown, globose to subglobose in shape, with truncated verrucae. Elaters 7-8 μ wide, tapering at both ends, bispiral, the spirals extending to elator tips, spirals yellow-brown.

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This species appears to be most closely related to A. achrous of the Peruvian Andes. The two taxa share the following complex of characters: strongly spreading, frequently canaliculate-conducuplicate, asymmetrically and relatively deeply bilobed leaves, with the lobes sharply pointed. It differs from A. achrous by characters summarized in Chart A below.

Ecology: In the Falklands, this species was gathered on soil over rock or in rock crevices of cliffs or large rock outcrops in dwarf shrub heaths above 335 m. I found it on a single occasion on soil under rock cover of sheltered high altitude cliffs.

Phytogeography: This species is known from the Falklands and Patagonian Channels (north to 50° 56' S., 73° 52' W.).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2743 - c. o→). WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3020B); HILL COVE REGION, summit of Mt. Fegen, 335-360 m. (3075 - c. per.); WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3356).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: PUERTO CUTTER REGION, between copper mine and river south of mine, Engel 2161G (MSC c. per.); along shore north of copper mine, Engel 2219B (MSC-c. o→); coastal rocks on north side of copper mine, Engel 2301B (MSC); FIORDO PEEL REGION, north shore of Cta. Amalia, Engel 5411A (holotype) (MSC).

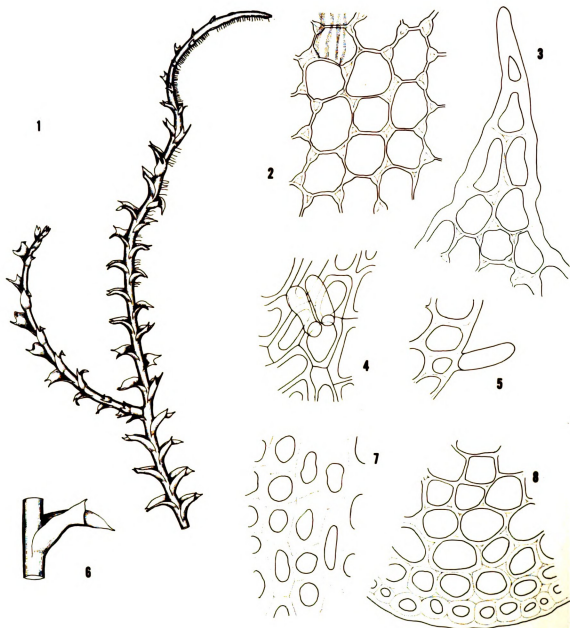
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CHART A. COMPARATIVE CHARACTERISTICS OF THE AMERICAN SPECIES OF ANDREWSIANTHUS

Character	<u>A. achrous</u>	<u>A. australis</u>	<u>A. planifolius</u>
underleaves	absent	rudimentary, formed by (1-) 2-3 stalked or sessile slime papillae	rudimentary, formed by 1-2 stalked slime papillae
leaf slime papillae	absent	near base of dorsal margin	near base of dorsal margin
cortex	ill defined, a single row of cells at least same size as medullary cells	1-2 (-3) rows of cells slightly smaller than medullary cells (cortical cells 9-16 μ thick, medullary cells 13-20 μ in diameter)	ill defined, of 1-2 rows of cells at least same size as medullary cells
antheridial bracts	dorsal lobes may have 1-2 sharp teeth; ventral lobes often with 1-2 sharp teeth	lobes entire	not seen
gynoecial bract margins	spinose-dentate	denticulate (1-2 small teeth near median or basal portion)	mature bracts not seen
subfloral innovations	?absent	1-3 per gynoeceium, or occasionally absent	1-2 per gynoeceium

PLATE 2

Andrewsianthus australis Engel. Fig. 1. Portion of plant with main axis becoming flagelliform, and with lateral intercalary branch, dorsal view, X 11. Fig. 2. Median leaf cells with cuticular striations indicated in upper left X 530. Fig. 3. Apical portion of dorsal lobe, X 530. Fig. 4. Ventral view of stem showing sessile, rudimentary underleaf, X 530. Fig. 5. Slime papillae of basal region of dorsal margin of leaf, X 530. Fig. 6. Leaf of main axis, X 33. Fig. 7. Ventral cortical cells, surface view, X 530. Fig. 8. Stem, cross section, X 530. Fig. 9-33. Leaves of main axis, X 24. Fig. 1-3, 6-9, 15, 18, 20, 25 from holotype material, Engel 5411A, Chile, Prov. Magallanes, Cta. Amalia. Figs. 4, 5, 14, 21, 22 from Engel 2219B, Chile, Prov. Magallanes, Pto. Cutter, north of copper mine. Figs. 10-12 from Engel 2161G, Chile, Prov. Magallanes, Pto. Cutter, between copper mine and river south of mine. Figs. 13, 19, 24 from Engel 3075, Falkland Is., Mt. Fegen. Figs. 16-17, 26 from Engel 3020B, Falkland Is., Mt. Adam. Figs. 23, 37 from Engel 2301B, Chile, Prov. Magallanes, Pto. Cutter, north side of copper mine. Figs. 28, 32, 33 from Engel 3356, Falkland Is., Mt. Weddell. Figs. 29-31 from Engel 2743, Falkland Is., Mt. Kent.



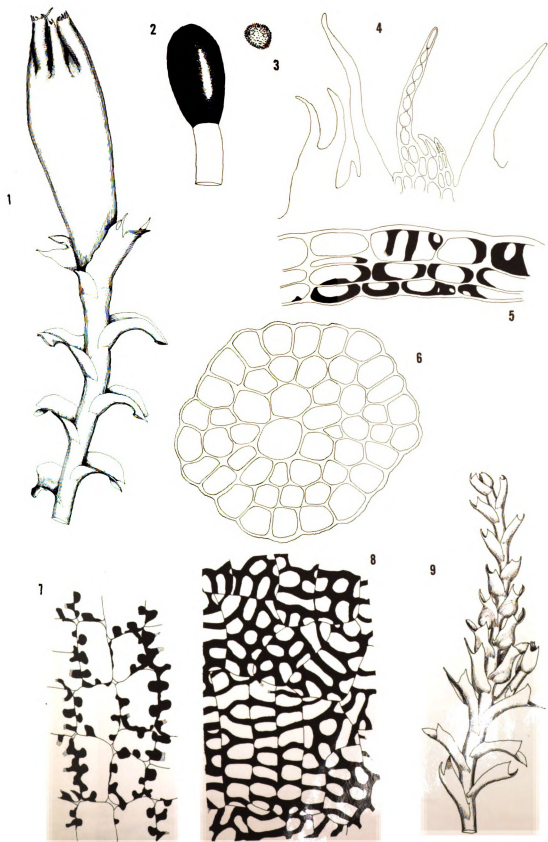
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PLATE 3

Andrewsianthus australis Engel. Fig. 1. Portion of main axis with perianth, X 24. Fig. 2. Capsule and portion of seta, X 24. Fig. 3. Spore, X 530. Fig. 4. Portion of perianth mouth with cellular detail indicated, X 205. Fig. 5. Capsule wall, cross section, X 530. Fig. 6. Seta, cross section, X 205. Fig. 7. Outer cells of capsule wall, X 530. Fig. 8. Inner cells of capsule wall, X 530. Fig. 9. Portion of axis bearing androecia, X 24. Figs. 1-8 from holotype material, Engel 5411A, Chile, Prov. Magallanes, Cta. Amalia. Fig. 9 from Engel 2743, Falkland Is., Mt. Kent.



Andrewsianthus planifolius Engel, sp. nov.

Andrewsianthi australis Engel similis, sed differt 1.) foliis planis usque parum concavis, linea insertionis succuba, 2.) foliis apice 1/9-1/4 bilobatis, 3.) lobis acute usque obtuse triangularibus, angulo formato marginibus loborum 43° - 116° , 4.) sinu late rotundato usque lunato.

Holotype: Falkland Islands, Goat Ridge, c. 180 m. 30 January 1968 Engel 3187B (MSC! -- c. young gynoecea).

Plants in compact mats mixed with other Hepaticae, axes prostrate to suberect, to 1.5 cm. tall, 1.2 mm. wide, golden brown to red-brown in color, nitid when dry.

Branches sparing to rather frequent, of lateral intercalary type, occasionally of ventral intercalary type, arising usually from dorsal 1/2 of leaf axil, occasionally from median portion of leaf axil, occasionally appearing from dorsal side of stem, often initially suberect to erect and then becoming arched, main axis and/or branches frequently becoming positively geotropic and flagelliform, the flagelliform axis sparsely rhizoidous, and with scale-like leaves.

Stems 110-140 μ thick, 110-180 μ wide, in surface view cortical cells subsquarrose to rectangular in shape, cell walls thickened, end walls transverse to oblique, cells 21-46 μ long, 9-17 μ wide; stems in section 8-11 cells in diameter, cortex poorly differentiated, of 1-2 rows of thicker walled cells, the outer row red-brown, stems occasionally without secondary pigments, cortical cells the same size to slightly larger than medullary cells, cortical cells 12-18 μ thick,

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cuticle smooth to minutely striated; medullary cells thickened, especially in the corners, becoming thinner walled and commonly smaller toward the center, 10-16 μ in diameter. Rhizoids, when present, scattered on ventral stem surface.

Leaves 390-660 μ long from segment apices to leaf base, 130-430 μ wide, transverse to rather strongly succubously oriented, insertion succubous, dorsal half of insertion oblique, occasionally transverse, the insertion extending to stem midline dorsally, leaves obliquely to laterally spreading, frequently gently recurved, distant to approximate, plane to slightly concave to medium concave, exceptionally canaliculate, obovate to ovate to elliptic to oblong, dorsal margin, at least in some of leaves on a given axis, with a sessil or stalked slime papilla near the base, the slime papillae turgid on leaves toward stem apex and becoming progressively more collapsed on progressively older leaves, leaves otherwise entire, leaves bifid to 1/9-1/4, very rarely trifid, lobes acutely to obtusely triangular, angle formed by the lobe margins 43°-116°, apices occasionally somewhat apiculate, never acuminate, the dorsal lobe 0.5-0.86 times the size of the ventral lobe, sinus broadly rounded to lunate in shape, occasionally triangular, dorsal margin straight to broadly curved, often repand, not or long decurrent, ventral margin usually broadly curved, occasionally slightly curved or straight and curved only at the base, occasionally repand, not decurrent.

Leaf cells subsquarrose to rectangular or pentagonal, walls thin to slightly thickened, intermediate thickenings occasionally present, trigones medium to protuberant, often confluent, trigone

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sides straight and bulging, median leaf cells 16-30 μ long, 17-26 μ wide, marginal cells slightly smaller, 12-21 μ long, 17-23 μ wide; cuticle smooth.

Underleaves rudimentary, composed of 1-2 stalked slime papillae.

Gemmae absent.

Plants dioicous; androecia not seen. Gynoecia observed only in very young stages, terminal on main axis, innovations 1-2 per gynoecium, innovations intercalary, originating laterally or from near the ventral end of a bract, the innovations may produce gynoecia, repeatedly fertile innovations frequent.

While the two new species of Andrewsianthus may appear to grade into one another when individual characters are contrasted, they are clearly different when the entire complex of characters is considered, see Chart b below. The discovery of androecia, perianths and sporophytes may furnish additional characteristics to separate this species from A. australis.

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CHART B. COMPARATIVE CHARACTERISTICS OF ANDREWSIANTHUS AUSTRALIS
AND A. PLANIFOLIUS

Character	<u>A. australis</u>	<u>A. planifolius</u>
leaf concavity	deeply concave, often canalicate or conduplicate	plane to medium concave, exceptionally canalicate
leaf insertion	transverse, or at most occasionally weakly succubous in dorsal half	often distinctly succubous
leaf lobe shape and angle outline formed by lobe margins	acutely triangular, 17°-63° (81°)	acutely to obtusely tri- angular, never acuminate
leaf lobe apices	occasionally acuminate or apiculate	occasionally somewhat apiculate, never acuminate
extent of division of leaf apex	1/4-1/2 bifid	1/9-1/4 bifid
sinus shape	usually sharply tri- angular, occasionally narrowly rounded	broadly rounded to lunate, occasionally triangular

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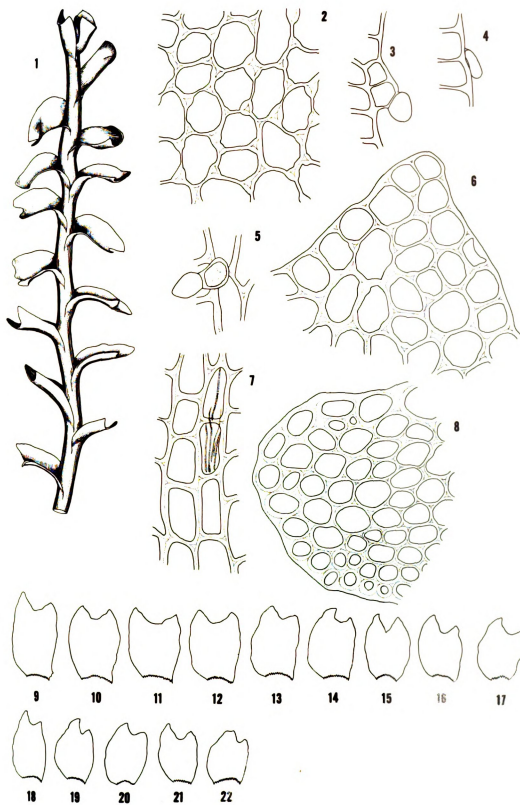
For a comparison of A. planifolius and A. achrous see Chart A. Additional characters may well be listed here upon the discovery of fertile material of A. planifolius.

Ecology: Phytogeography: This species is endemic to the Falkland Islands, where it occurred mixed with Frullania pseudolobulata on rock walls of large outcrops in a swarf shrub heath (c. 180 m.).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3187B - c. young gynoecia, 3192A).

PLATE 4

Andrewsianthus planifolius Engel. Fig. 1. Portion of main axis, X 33. Fig. 2. Median leaf cells, X 530. Fig. 3, 4. Stalked and sessile slime papillae of basal region of dorsal margin of leaf, X 530. Fig. 5. Ventral view of stem showing rudimentary underleaf, X 530. Fig. 6. Apical portion of ventral lobe, X 530. Fig. 7. Cortical cells, surface view, with cuticular striations indicated, X 530. Fig. 8. Stem, cross section, X 530. Figs. 9-22. Leaves of main axis, X 33. Figs 1-14, 20 from holotype material, Engel 3187B, Falkland Is., Goat Ridge. Figs. 15-19, 21-22 from Engel 3192A, Falkland Is., Goat Ridge.



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Cephalolobus

Schust. Revue Bryol. Lichén. 34 (1-2): 244. 1966. Cephalolobus

Schust. J. Hattori Bot. Lab. 26: 211, 266. 1963, nom. nud.

Cephalolobus scabrellus (Mass.) Schust.

Cephalozia scabrella Mass. Nuovo G. Bot. Ital. 17: 233. pl. 20.

f. 19. 1885. Sphenolobus scabrellus (Mass.) Steph. Bull. Herb.

Boissier II. 2 (2): 170. 1902 (= Sp. Hep. 2: 162). Cephalolobus

scabrellus (Mass.) Schust. Revue Bryol. Lichén. 34: 250. 1966.

Lectotype (fide Schuster 1966a): Argentina, Terr. Tierra del

Fuego, I. de los Estados, "Port Cook and Port St. John," 1882

Spegazzini (G - non vidi).

Ecology: This species is quite rare in the Falklands, where I found it mixed with Harpalejeunea marginalis in rock crevices in dwarf shrub heaths.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and Patagonian Channels (51°19' S.). Within the Falklands, it was found only in the Port Stanley region, and the cooler temperatures and higher rainfall in this region may account for its presence there.

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 as Sphenolobus, 1949 as Cephalozia and Sphenolobus); Dusén - Pto. Angosto (Stephani 1901a as Cephalozia); Naumann - B. Tuesday

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(Schiffner 1890 as Cephalozia); Spegazzini - Pto. Cook (Schuster 1966a),
Fuegia (Bonner 1963 as Cephlozia, Stephani 1902 as Sphenolobus).

PATAGONIA: Albatross - Pto. Mayne (Evans 1892 as Cephalozia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION,
summit ridge of north peak of Two Sisters, 245-290 m. (2726 B); summit
of Mt. Kent, 455 m. (2769 C).

Lophozia

Dum. Recueil Obs. Jungerm. 17. 1835.

Lophozia hatcheri¹ (Evans) Steph.

Jungermannia Hatcheri Evans, Bull. Torrey Bot. Club. 25 (8): 417.

pl. 346. f. 1-7. 1898. Lophozia hatcheri (Evans) Steph. Résult.

Voyage S. Y. Belgica 6 (5): 4. 1901. Barbilophozia hatcheri
(Evans) Loeske, Abh. Bot. Ver. Brandenburg 49: 37. 1907. Original
material: Argentina, Terr. Tierra del Fuego, Lapataia, J. B.

Hatcher 35b (NY !).

Ecology: This species is rather rare in the Falklands, where I
found it in or at the margin of feldmark pools (700 m.) as well as in a
dwarf shrub heath on rock in a cool, protected niche under rock cover
(180 m.).

Phytogeography: This species has a bipolar distribution. In
the northern hemisphere it is holoarctic and high subarctic-subalpine

¹See Schuster 1969b for a full synonymy of L. hatcheri.

[illegible]

to arctic-alpine. In the southern hemisphere it has an Antarctic distribution occurring in the Antarctic Peninsula, South Georgia, the Falklands (above 245 m.) the mountainous region of I. Grande de Tierra del Fuego and the Andes of southern Patagonia. In the latter two regions I suspect it is either subalpine or alpine.

Literature Records (FALKLANDS): Anonymous - (Fulford 1963c as Barbilophozia, Kühnemann 1937); Skottsberg & Halle - Mt. Adam (Grolle 1960a as Barbilophozia, Stephani 1911).

Additional Literature Records (austral only): ANTARCTICA. PALMER PENINSULA: Racovitza - Canal de la Belgica (Stephani 1901b), Gerlache Strait (Steere 1961 as Barbilophozia, Stephani 1901b); Skottsberg - K. Ada, Moss Is., Orleans Canal-Mosson (Grolle 1960a as Barbilophozia). SOUTH GEORGIA: Anonymous - (Fulford 1963c as Barbilophozia, Stephani 1911), Royal Bay (Grolle 1960a as Barbilophozia); Will (Stephani 1902). TIERRA DEL FUEGO: Anonymous - (Fulford 1963c & Grolle 1969 & Kühnemann 1949 as Barbilophozia); J. B. Hatcher - Fuegia (Schiffner 1916); Skottsberg & Halle - R. Azopardo (Stephani 1911). PATAGONIA: Anonymous - (Fulford 1963c as Barbilophozia, Kühnemann 1937); J. B. Hatcher - Patagonia (Stephani 1902).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, summit of Mt. Usborne 1, c. 700 m. (2489 C & 2501 D). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3431).

ADDITIONAL SPECIMENS SEEN: (Austral collections only): Province unknown, Patagonia, "Volcanic country, lat. 52° S.," January 1920 Hamilton 72 (MICH).

Roivainenia

Perss. in Perss. & Grolle, Nova Hedwigia 3: 43. 1961.

Roivainenia jacquinotii (Mont.) Grolle

Jungermannia Jacquinotii Mont. Annls Sci. Nat. II. 19: 250. 1843.

Chiloscyphus jacquinotii (Mont.) Nees in G. L. & N. Syn. Hep. 185.

1845. Roivainenia jacquinotii (Mont.) Grolle in Perss. & Grolle, Nova Hedwigia 3 (1): 44. 1961. Lectotype (cf. Persson & Grolle 1961): Chile, Prov. Magallanes, Strait of Magellan, Jacquinot (PC !).

Jungermannia antarctica Ångstr. Öfvers. K. VetenskAkad. Förh. 29 (4):

10. 1872, syn. fide Persson & Grolle (1961). Lophozia antarctica (Ångstr.) Evans, Bull. Torrey Bot. Club 25 (8): 416. 1898.

Roivainenia antarctica (Ångstr.) Perss. in S. Arnell, Svensk Bot. Tidskr. 49: 239. 1955, nom. illeg. Original material: Chile, Prov. Magallanes, Pto. del Hambre, 1852 Andersson (non vidi).

Jungermannia Pigafettoana Mass. Nuovo G. Bot. Ital. 17: 217. pl. 14,

f. 7. 1885, syn. cf. Stephani (1901). Lophozia pigafettoana (Mass.) Kühnem. Lilloa 19: 344. 1949. Original material:

Argentina, Terr. Tierra del Fuego, Ushuaia, Spegazzini (non vidi).

Jungermannia verrucosa Steph. Hedwigia 34: 51. 1895, syn. cf. Stephani

(1901). Original material: Chile, Prov. Magallanes, Pto. Eden, Cunningham (non vidi).

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Leioscyphus skottsbergii Steph. Wiss. Ergebn. Schwed. Südpolarexped.

4 (1): 5. f. 6-7. 1905, syn. fide Persson & Grolle (1961). Mylia skottsbergii (Steph.) Schust. Am. Midl. Nat. 62 (1): 34. 1959.

Lectotype (cf. Persson & Grolle 1961): South Georgia, Skottsberg (G - non vidi).

Anastrophyllum verrucosum Steph. K. Svenska VetenskAkad. Handl. 46

(9): 21. f. 7c. 1911, syn. fide Persson & Grolle (1961). Lectotype (cf. Persson & Grolle 1961): Southern Patagonia, Skottsberg (G--non vidi).

Acrobolbus patagonicus Steph. K. Svenska VetenskAkad. Handl. 46 (9):

23. f. 7d. 1911, syn. fide Persson & Grolle (1961). Lectotype (cf. Grolle & Persson 1961): Chile, Prov. Aisen, Coihaique, Halle (G--non vidi).

Leioscyphus bilobatus Steph. K. Svenska VetenskAkad. Handl. 46 (9):

35. f. 13 a,b. 1911, syn. fide Persson & Grolle (1961).

Leptoscyphus bilobatus (Steph.) Kühnem. Revta Cent. Estud. Doct.

Cienc. Nat., B. Aires 1: 175. 1937. Mylia bilobata (Steph.)

Kühnem. Lilloa 19: 340. 1949. Original material: Falkland Is.,

near Port Stanley, Skottsberg (UPS)--cited in Persson & Grolle (1961).

Ecology: In the Falklands, this species may be found in dwarf shrub heaths under protective cover of Empetrum, Blechnum magellanicum, and B. penna-marina. It occasionally occurs on soil or rock of sheltered high altitude cliffs. This taxon is very common in the deciduous Nothofagus forests of southern South America.

Phytogeography: This species occurs in South Georgia, the Falklands, Tierra del Fuego, the Patagonian Channels and Valdivian region (West Patagonia north to 39° 52' S., and in Andean Patagonia at P. N. Nahuel Huapi) (see Map 14).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 as Leptoscyphus bilobatus, 1949 as Mylia bilobata); Skottsberg (Grolle 1962, Persson & Grolle 1961, Skottsberg 1913 & Stephani 1922 as Leioscyphus bilobatus).

Additional Literature Records: SOUTH GEORGIA: Skottsberg (Grolle 1962, Pearson & Grolle 1961), Cumberland Bay (Steere 1961 as Mylia skottsbergii, Stephani 1905a as Leioscyphus skottsbergii).
TIERRA DEL FUEGO: Anonymous (Kühnemann 1949 as Lophozia pigafettoana); Dusén - Ushuaia, R. Azopardo, R. Condor (Stephani 1901a as J. pigafettoana), Fuegia (Stephani 1901 as Lophozia antarctica); J. B. Hatcher - Lapataia (Evans 1898 as J. antarctica); Roivainen - R. Rusphen, L. Lynch, Est. Vicuna, C. Pedro Grande, R. Bueno, Pto. Arturo, Pico Nariz, B. Keta, S. Contraalmirante Martinez (Pearson & Grolle 1961); Santesson - Pto. Yartou Arnell 1955 as R. antarctica, Müller 1955 as Lophozia antarctica, Pearson & Grolle 1961), Est. Yendegaia (Arnell 1955, as R. antarctica, Persson & Grolle 1961); Spegazzini - Ushuaia (Massalongo 1927 as J. antarctica), Fuegia (Stephani 1901 as Lophozia antarctica). PATAGONIA: Anonymous - (Bonner 1963 as Chiloscyphus, Kühnemann 1937 as Anastrophyllum verrucosum, 1949 as Chiloscyphus); Andersson - Strait of Magellan (Stephani 1901 as Lophozia antarctica); Cunningham - Strait of

Magellan (Stephani 1901 as Lophozia antarctica); Donat - L. Nahuel Huapi (Grolle 1962, Persson & Grolle 1961); Dumont d'Urville - Strait of Magellan (Taylor & Hooker 1847b as Jungermannia); Dusén - Punta Arenas (Stephani 1901a as J. pigafettoana), Strait of Magellan & southern Chile (Stephani 1901 as Lophozia antarctica), R. Aisen, Puerto Blest (Stephani 1900 as Jungermannia pigafettoana); Halle - Patagonia (Persson & Grolle 1961, Stephani 1917 as Acrobolbus patagonicus), Coihaique (Bonner 1962 as Acrobolbus patagonicus); Jacquinet - Strait of Magellan (Gay 1852 as Chiloscyphus, Grolle 1962, G. L. & N. 1845 as Chiloscyphus, Montagne 1856 as Chiloscyphus, Persson & Grolle 1961); Neger - western slope of Andes (39°-39°30' S.) (Neger 1899 as J. pigafettoana), southern Chile (Stephani 1901 as Lophozia antarctica); Santesson - Tres Puentes (Arnell 1955 as R. antarctica, Persson & Grolle 1961), Skottsberg - southern Patagonia (Persson & Grolle 1961), Patagonia (Stephani 1917 as Anastrophyllum verrucosum), B. Pinto (Bonner 1962 as Anastrophyllum verrucosum); Wawra - Strait of Magellan (Stephani 1901 as Lophozia antarctica).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3229 c. o.); north side of Gypsy Cove, sea level (3248, 3256 & 3261). STANLEY REGION, Sapper Hill, 135 m. (2405 & 2416); Tumbledown Mt., 155-230 m. (2389); summit ridge of north peak of Two Sisters, 245-290 m. (2707). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2524 & 2554 c.). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3084).

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ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO:

Lapataia, J. B. Hatcher 24, 29b as Jungermannia pigafettoana (NY).

CHILE. MAGALLANES: R. Azopardo, 29 January 1896 Dusen 49 as Jungermannia pigafettoana (NY); near R. Fontaine, Halle & Skottsberg 237 as Lophozia fuegiensis (S-PA-c. per.), I. Desolacion, Pto.

Angosto, April 1896 Dusen 292 as Jungermannia pigafettoana (NY).

AISEN: R. Aisen Valley, January 1897 Dusen s.n. as Jungermannia pigafettoana (NY-c. per.). VALDIVIA: Corral, 29 November 1896 Dusen 296 as Jungermannia pigafettoana (NY). ARGENTINA. NEUQUEN-RIO NEGRO: L. Nahuel Huapi, July 1897 Dusen 439 as Jungermannia pigafettoana (NY).

JUNGERMANNIACEAE

Dum. Comment. Bot. 112. 1822¹

Cryptochila

Schust. J. Hattori Bot. Lab. 26: 284. 1963.

¹I have followed Schuster (1969b, p. 806) in ascribing authorship to the Jungermanniaceae; according to Schuster, Dumortier used the term "tribe."

Key to the Falkland Island Species of Cryptochila

1. Stem tips (of mostly robust plants) curved ventrally;
leaves (of mostly robust plants) curved ventrally;
dorsal stem surface usually with paraphyllia between
the leaves (paraphyllia occasionally absent); perianth
plicae strongly twisted; leaves orbicular or reniform.
Dorsal leaf margin (of most robust plants) long decur-
rent C. grandiflora
1. Stem tips mostly somewhat curved dorsally, occasionally
plane; leaves plane or $\pm$ curved dorsally; stems without
paraphyllia; perianth plicae not twisted; leaves 1.3-
1.5 (-1.6) X as long as wide, spatulate or ligulate.
Base of dorsal leaf margin (mostly of robust plants)
with a small bistratose swelling and here conspicuously
rigid. C. paludosa

Cryptochila grandiflora (Lindenb. & Gott.) Grolle

Jungermania grandiflora Lindenb. & Gott. in G. L. & N. Syn. Hep. 673.
1847. Jamesoniella grandiflora (Lindenb. & Gott.) Jack & Steph.
Hedwigia 31: 13. 1892. Cryptochila grandiflora (Lindenb. & Gott.)
Grolle, Feddes Repert. 82 (1): 19. 1971. Lectotype (cf. Grolle
1971): Chile, Prov. Valdivia, Valdivia, "mis. Montagne 1845 as
J. colorata; W (Lindenb. Hep. no. 1807)," sin. coll. (Gay) (non
vidi).

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Jungermannia sonderi Gott. Linnaea 28: 550. 1856, syn. fide Grolle (1971). Jamesoniella sonderi (Gott.) Steph. Bull. Herb. Boissier II. 1(10): 1036. 1901 (= Sp. Hep. 2: 99), non Jamesoniella sonderi Steph. 1895 (= C. grandiflora fide Grolle, 1971). Lectotype (fide Grolle 1971): Australia, Australian Alps, von Müller, (L-937, 183-17 - non vidi).

Jungermannia penicillata Loitl. in Szyszlowicz, Diagn. pl. nov. a C. Jelski in Peruvia lect., P. 1. Acad. Litt. Cracov 238. 1894, syn. fide Grolle (1971). Original material: Peru, without specific locality, Jelski 549 (W) - cited in Grolle (1971).

Jamesoniella Sonderi Steph. Hedwigia 34: 48. 1895, syn. fide Grolle (1971), non Jamesoniella sonderi (Gott.) Steph. 1901. (= C. grandiflora fide Grolle, 1971). Original material: Tasmania, Mt. Wellington, Moore 48 (G) - cited in Grolle (1971).

Jamesoniella nervosa Berggr. N.Z. Hep. 13. f. 10. a-m. 1898, syn. cf. Stephani (1901). Lectotype (fide Grolle 1971): New Zealand, South Island, Bealey River, Berggren 2839 (LD - non vidi).

Jamesoniella Hectori Berggr. N.Z. Hep. 15. f. 11. a-n. 1898, syn. cf. Stephani (1901). Lectotype (fide Grolle 1971): New Zealand, South Island, Bealey River, Berggren 2843 (LD - non vidi).

Jamesoniella Allionii Steph. in Herz. Bibliotheca Bot. 87: 182. 1916, syn. fide Grolle (1971). Lectotype (fide Grolle 1971): Bolivia, above Tablas, 3400 m., Herzog 2847 (JE - non vidi).

Jamesoniella pyrogea Mass. Atti Ist. Veneto Sci. 87: 235. pl. 3. f. 1-4. 1927, syn. fide Grolle (1971). Original material: Chile,

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Prov. Magallanes, I. Basket and B. Sarmiento, Spegazzini (non vidi).

Jamesoniella pellucida Herz. Hedwigia 74: 85. 1934, syn. fide Grolle (1971). Lectotype (fide Grolle 1971): Bolivia, "Cejagürtel von Stillutincara, Jungas von La Paz," Troll 132 (JE - non vidi).

Ecology: This taxon is rather characteristic of the sheltered high altitude cliffs, where it occurs on Azorella cushions, under ledges or occasionally in a rather exposed rock crevice. It is part of a combination of hepatics frequently associated in this habitat, i.e., Austrolophozia fuegiensis, Balantiopsis bisbifida, Cryptochila paludosa, Herzogobryum teres, Pachyglossa spp. and Triandrophyllum subtrifidum. It is commonly mixed with other Hepaticae, often with members of the above group of associates.

Phytogeography: This pan-temperate species occurs in the Falklands, Tierra del Fuego, in the Andes north to Guatemala, in Africa from Cape of Good Hope to Natal (3150 m.), and an outpost at 4400-4600 m. in northeast New Guinea (see Map 15). This taxon is yet another example of a strictly south temperate element occurring on Serra do Itatiaia, Brazil (see Engel 1968, p. 119).

Literature Records: (note, locality information has been omitted for non-southern South American records): SOUTH SANDWICH IS. LESKOV IS.: Longton (Grolle 1971). CANDLEMAS IS.: Longton (Grolle 1971). BELLINGHAUSEN IS.: Holdgate (Grolle 1971). SOUTH GEORGIA: Skottsberg (Grolle 1971). TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1939 as J. allionii and J. grandiflora, Stephani 1901 as

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Jamesoniella); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Jamesoniella), Pto. Angosto (Grolle 1971); Gasperi - Valle delle Fate, B. Angelito, S. Agostini, B. Parry (Gola 1923 as Jamesoniella);
Hooker - I. Hermite (Grolle 1971); Skottsberg and Halle - L. Fagnano (Stephani 1911 as J. allionii and J. grandiflora), R. Betbeder (Stephani 1911 as J. allionii); Spegazzini - I. Basket (Bonner 1966 as J. pyrogea). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as Jamesoniella); Dusén - Pto. Bueno, S. Molyneux, I. Chiloe, I. Guaitecas, La Ensenada, L. Llanquihue (Stephani 1900 as Jamesoniella), Pto. Bueno, I. Chiloe (Grolle 1971); Grosse - Istmo de Ofqui (Grolle 1971, Herzog 1954 as Jamesoniella); Hicken - (Carl 1931 as Jamesoniella); Hosseus - Corral, Pucon & Petrohue (Herzog 1938 as Jamesoniella), Dep. Corral, Dep. Villarica (Grolle 1971); Lorentz - Prov. Buenos Aires - S. Ventana (Grolle 1971); Santesson - Pen. Lacuy (Arnell 1955 as Jamesoniella); Schwabe - Pto. Puyuhuapi, C. Tesoro (Herzog 1954 as Jamesoniella), Calbuco (Herzog 1939 as Jamesoniella); Skottsberg & Halle - Canal Gajardo, I. Atalaya, I. Pacheco, F. Peel, Quellon & Pampa del Chalia (Stephani 1911 as Jamesoniella), S. Skyring (Grolle 1971); Thomasson - L. Villarrica, between Pto. Octay, La Ensenada (Thomasson 1963 as Jamesoniella). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg (Arnell 1957 as Jamesoniella, Grolle 1971, Herzog 1942 as Jamesoniella). NEW GRANADA: Anonymous - (Stephani 1901 as Jamesoniella). PERU: Anonymous - (Stephani 1901 as J. grandiflora and J. penicillata). BOLIVIA: Anonymous - (Bonner 1966 as J. allionii, Stephani 1901 as Jamesoniella); Herzog (Grolle 1971,

[illegible]

Stephani 1917 as J. allionii; Troll (Bonner 1966 as J. pellucida).

ECUADOR: Allioni (Grolle 1971, Stephani 1917 as J. allionii); Jameson (Mitten 1851 and Spruce 1885 as Jungermannia), Spruce (Grolle 1971, Spruce 1885 as Jungermannia). COLUMBIA: Trolle (Grolle 1971, Herzog 1934 as Jamesoniella allionii); Winkler (Grolle 1971). GUATEMALA: Steyermark, Turckheim (Grolle 1971). BRAZIL: Ule (Grolle 1971).

GOUGH: Wace (Grolle 1971). TRISTAN DA CUNHA: Christophersen & Mejland (Arnell 1958 as Jamesoniella, Grolle 1971). INACCESSIBLE: Christophersen & Mejland (Arnell 1958 as Jamesoniella, Grolle 1971).

SOUTH AFRICA: Esterhuysen (Arnell 1963, Grolle 1971). NATAL: Esterhuysen (Grolle 1971). REUNION IS.: Een (Grolle 1971). MARION IS.: Rand (Arnell 1953a as Jamesoniella, Grolle 1971). PRINCE EDWARD: van Zinderen Baker (Grolle 1971). CROZETS: Ring & Raknes (Grolle 1971). KERGUELEN: Naumann (Grolle 1971). NEW ZEALAND: Anonymous - (Bonner 1966 as J. sonderi); Berggren, Kirk (Stephani 1901 as J. sonderi (G.) (St.)). STEWART ISLAND (NEW ZEALAND): Martin (Grolle 1971, Hodgson 1946 as J. sonderi (G.) (st.)). SOUTH ISLAND (NEW ZEALAND): Allison, Berggren, A.L. & H. M. Hodgson, Martin, Simpson (Hodgson 1946 as J. sonderi (G.) (St.)); Berggren (Bonner 1966 as J. hectori and J. nervosa); Berggren, Schuster (Grolle 1971). NORTH ISLAND (NEW ZEALAND): Allison, Kirk, Hodgson, Sainsbury, Zotov (Hodgson 1946 as J. sonderi (G.) (St.)); Druce (Grolle 1971). TASMANIA: Anonymous - (Bonner 1966 as J. sonderi, Hodgson 1946 as J. sonderi (G.) St., Rodway 1916 as J. grandiflora and J. sonderi, Stephani 1901 as Jamesoniella); Moore (Stephani 1901 as J. sonderi (G.) St.); Weymouth (Grolle 1971). NEW GUINEA: Schuster (Grolle 1971).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2608); ridge between Mt. Usbornes 1 & 2, 685 m. (2548--see Grolle 1971 & 2555 A). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3093). MT. ADAM, ridge south of northern lake, 610 m. (3042 C); east side of summit ridge, 670-700 m. (3014 E); summit of southernmost peak, 685 m. (2988).

Cryptochila paludosa (Steph.) Grolle

Jamesoniella paludosa Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 11. 1901. Bull. Herb. Boissier II. 1 (10): 1034. 30 Sept. 1901 (= Sp. Hep. 2: 97). Cryptochila paludosa (Steph.) Grolle, Feddes Repert. 82 (1): 26. 1971. Lectotype (cf. Grolle 1971): Chile, Prov. Magallanes, I. Desolacion, Pto. Angosto, Dusén (G- non vidi).

Ecology: In the Falklands, this species seems to be restricted to sheltered high altitude cliffs, where it may be found in crevices, under ledges, etc. Like C. grandiflora, it is part of a combination of hepatics frequently found associated in this habitat, i.e., Austrolophozia fuegiensis, Balantiopsis bisbifida, Cryptochila grandiflora, Herzogobryum teres, Pachyglossa spp. and Triandrophyllum subtrifidum, and often occurs mixed with these Hepaticae.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, the Valdivian region north to 39°52' S. and the Tristan da Cunha (see Map 16).

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Literature Records: TIERRA DEL FUEGO: Cunningham - B. Swallow Grolle 1971 as f. paludosa); Dusén - I. Desolacion (Grolle 1971 as f. terricola, Stephani 30 Sept. 1901 as Jamesoniella); Hässel - Paso Garibaldi (Grolle 1971 as f. terricola); Hooker - I. Hermite (Grolle 1971 as f. terricola). PATAGONIA: Cunningham - Pto. Bueno (Grolle 1971 as f. paludosa); Dusén - Corral (Grolle 1971 as f. paludosa); Schwabe - C. Tesoro (Grolle 1971 as f. terricola); Skottsberg & Halle - I. Pacheco (Grolle 1971 as f. paludosa, Stephani 1911 as Jamesoniella). TRISTAN DA CUNHA: Christophersen & Mejland - above Bruntwood, 1200-1400 m. (Grolle 1971 as f. terricola), Upper Pond above Rookery, Cave Gulch (Arnell 1958 as Jamesoniella). SOUTH AFRICA. CAPE PROV. Esterhusen - Worchester, Fonteintjiesberg - 1525-1675 m. (Arnell 1963 as Jamesoniella).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2554 F). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3097 C, 3120 & 3129 B - see Grolle 1971). MT. ADAM, ridge south of northern lake, 610 m. (3030 B & 3037); summit of southernmost peak, 685 m. (2986 C).

Jamesoniella

(Spruce) Steph. Bull. Soc. R. Bot. Belg. 30: 200. 1891. Jungermannia subg. Jamesoniella Spruce, J. Bot., London 14: 230. 1876.

Jamesoniella colorata (Lehm.) Schiffn.

Jungermannia colorata Lehm. Linnaea 4: 366. 1829. Jamesoniella colorata (Lehm.) Schiffn. in Engl. & Prantl., Natürl. Pflanzenfam. 1 (Abt. 3, 1 Hälfte): 83. 1893. Lectotype (fide Grolle 1971): South Africa, Cape Prov., Table Mt., Ecklon (S-PA, non vidi).

Jungermannia oenops Lindenb. & Gott. in G. L. & N. Syn. Hep. 673. 1847, syn. fide Grolle (1971). Jamesoniella oenops (Lindenb. & Gott.) Steph. Bull. Herb. Boissier II. 1 (10): 1028. 1901 (= Sp. Hep. 2: 91). Lectotype (cf. Grolle 1971): Juan Fernandez, Bertero (W, Lindenb. Hep. no. 1809 - non vidi).

Jungermannia? arcta De Not. Memorie Accad. Sci. Torino II. 16: 219. pl. 6. f. 1-5. 1855, syn. fide Stephani (1901). Jungermannia colorata var. arcta (De Not.) Mass. Nuovo G. Bot. Ital. I. 17: 215. 1885. Jamesoniella colorata var. arcta (De Not.) Mass. Atti Ist. Veneto Sci. 87: 235. 1927. Original material: Chile, "Valparaiso," Puccio (K, S-PA) - cited in Grolle (1971).

Jungermannia? spectabilis De Not. Memorie Accad. Sci. Torino II. 16: 219. pl. 7. f. 1-4. 1855, syn. fide Grolle (1971). Jamesoniella spectabilis (De Not.) Steph. Bull. Herb. Boissier II. 1 (10): 1038. 1901 (= Sp. Hep. 2: 101). Original material: Chile, without specific locality, Puccio (S-PA) - cited in Grolle (1971).

Jungermannia malouina Gott. Annls Sci. Nat. IV. 8: 337. 1857, syn. fide Grolle (1971). Jamesoniella maluina (sic.) (Gott.) Steph.

Bull. Herb. Boissier II. 1 (10): 1027. 1901 (= Sp. Hep. 2: 90).
Lectotype (cf. Grolle 1971): Falkland Is., Lesson¹ (PC--non vidi).

Jamesoniella dusenii Steph. Bih. K. Svenska VetenskAkad. Handl. 26
(III, 6): 22. 1900. Bull. Herb. Boissier II. 1 (10): 1033. 30
September 1901 (= Sp. Hep. 2: 96), syn. fide Grolle (1971). Ori-
ginal material: Chile, Prov. Llanquihue, near Puerto Varas, Dusen
479 (BM, FH, FI, K, LD, O, S-PA, UPS) - cited in Grolle (1971).

Jamesoniella gibbosa Steph. K. Svenska VetenskAkad. Handl. 46 (9): 18.
f. 6. b-e. 1911, syn. fide Grolle (1971). Original material:
Chile, Prov. Chiloe, I. Chiloe, Pto. Quellon, Halle & Skottsberg
140 (BM, LD, S-PA, UPS) - cited in Grolle (1971).

Jamesoniella raknesii Kaal. Nyt. Mag. Naturvid. 49: 89. 1911, syn.
fide Grolle (1971). Lectotype (fide Grolle 1971): Crozets,
Possession Is., Ring & Raknes 14 (O - non vidi).

Jamesoniella colorata f. marginata Herz. Hedwigia 64: 3. 1923, syn.
fide Grolle (1971). Jamesoniella colorata var. marginata (Herz.)
Herz. Archos Esc. Farm. Córdoba 7: 7. 1938. Original material:
Chile, Prov. Valdivia, Valdivia Herzog (non vidi).

Jamesoniella reflexa Herz. Hedwigia 66: 89. f. 6 a-e. 1926, syn.
fide Grolle (1971). Holotype: Chile, Prov. Aisen, Pta. Leopardos,
13 January 1921 Hicken 63 (JE - non vidi).

Jamesoniella repens Herz. Archos Esc. Farm. Córdoba 7: 8. f. 1. a-c.
1938, syn. fide Grolle (1971). Holotype: Chile, Prov. Valdivia,
Corral (Quitaluto), Hosseus 643B (JE - non vidi).

¹Gottsche (1857) states the original collection was made in 1825, however, Moore (1968) states Lesson, who was physician and assistant to Dumont d'Urville, was in the Falklands from 20 November - 18 December 1822.

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Jamesoniella colorata var. libera Herz. Beih. Bot. Zbl. 60 (B): 2.

1939, syn. fide Grolle (1971). Original material: Chile, Prov. Llanquihue, Calbuco, Schwabe 112 (non vidi).

Jamesoniella colorata var. obovata Herz. in Skottsberg, Nat. Hist.

Juan Fernandez, Easter Is. 2: 700. 1942, syn. fide Grolle (1971).
Lectotype (fide Grolle 1971): Juan Fernandez, Mas a Tierra,
Portezuela de Villagra, 600 m., Skottsberg 196 (S-PA - non vidi).

Jamesoniella colorata f. latifolia Herz. in Skottsberg, Nat. Hist.

Juan Fernandez, Easter Is. 2: 700. 1942, syn. fide Grolle (1971).
Lectotype (fide Grolle 1971): Juan Fernandez, Mas a Tierra,
Portezuelo, 475 m., Skottsberg 197 (JE - non vidi).

Jamesoniella colorata var. oblata Herz. Revue Bryol. Lichén. 23 (1-2):

31. 1954, syn. fide Grolle (1971). Holotype: Chile, Prov. Valdivia, L. Puyehue, Schwabe 93 p.p. (JE - non vidi).

Jamesoniella grolleana Herz. Revue Bryol. Lichén. 26 (3-4): 145.

f. l. a-m. 1958, syn. fide Grolle (1971). Holotype:¹ Chile, Prov. Osorno, L. Rupanco, Schwabe 11d (JE - non vidi).

Jamesoniella colorata f. subtilis Herz. Revue Bryol. Lichén. 29 (3-4):

184. 1960, syn. fide Grolle (1971). Holotype: Chile, Prov. Valdivia, L. Pellaifa, Schwabe 18 p.p. (JE - non vidi).

Ecology: This species is quite common in dwarf shrub and Cortaderia heaths, where it grows on soil or more often in crevices, etc., of rock outcrops. It was not found below 75 m.

¹Grolle (1971) states the holotype was collected at Río Puelo (Prov. Llanquihue).

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Phytogeography: This species has a pan-temperate distribution. It has not penetrated north beyond temperate regions in any of the sectors. It has, however, penetrated into the subantarctic region, as it occurs on the Crozets and Kerguelen Islands. Grolle (1971) states the records from Neotropical regions are erroneous and are mostly specimens of J. rubricaulis. Grolle also states the report from South Georgia by Stephani (1911) is based upon a specimen which is actually Cryptochila grandiflora (see Map 17).

Literature Records (FALKLANDS): Anonymous - (Bonner 1966 as J. maluina, Kühnemann 1937 & 1949 as J. colorata & J. maluina, Spruce 1876 as Jungermannia); Hooker (G. L. & N. 1847 as Jungermannia, Hooker & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia, Spruce 1876 as Jungermannia); Lesson (Stephani 1901 as J. maluina); Skottsberg - Port Stanley (Grolle 1971, Skottsberg 1913 & Stephani 1905a as J. colorata & J. maluina), Port Louis (Stephani 1905a), Port Louis, Mt. Adam, Port William (Skottsberg 1913), Hornby Mts. & between Arrow Harbour House & Victoria Creek-Lafonia (Skottsberg 1913 as J. maluina); Skottsberg & Halle - Port Stanley, Mt. Adam, Roy Cove, Weddel Is. (Stephani 1911), Hornby Mts., (Stephani 1911 as J. maluina).

Additional Literature Reports (note: locality information has been omitted for extra-southern South American collections): SOUTH GEORGIA: Skottsberg (Steere 1961, Stephani 1911 as J. oenops). TIERRA DEL FUEGO: Anonymous - (Hooker 1867 as Jungermannia, Kühnemann 1937 & 1949 as J. colorata, J. dusenii and J. oenops), Cabo de Hornos (Spruce 1885); Dusén - R. Azopardo (Grolle 1971, Stephani 1901a), Pto. Angosto (Stephani 1901a as J. oenops); Gasperi - M. Sarmiento,

B. Parry, B. Angelito (Gola 1923), Valle della Fate (Gola 1923 as J. oenops); J. B. Hatcher - Ens. Villarino (Evans 1898); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1847 as Jungermannia, Hooker & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia); Naumann - B. Tuesday (Schiffner 1890 as Jungermannia); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b); Skottsberg - Pto. Cook (Stephani 1905a), R. Olivia (Stephani 1905a as J. oenops); Skottsberg & Halle - L. Fagnano (Stephani 1911 as J. colorata and J. dusenii), I. Otter, I. Lagrelus (Stephani 1911 as J. oenops); Spegazzini - I. Basket (Massalongo 1885 as Jungermannia, 1927), Pta. Remolino, I. Basket (Massalongo 1885 as Jungermannia colorata var. arcta), Fuegia (Massalongo 1927 as J. colorata var. arcta). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as J. colorata & J. oenops); Strait of Magellan (Bonner 1966 as J. oenops); Albatross - Pto. Mayne (Evans 1892 as Jungermannia colorata var. arcta), B. Borja (Evans 1892 as Jungermannia); Cunningham - Strait of Magellan (Stephani 1901 as J. oenops); Dusen - Pto. Bueno, R. Aisen, I. Guaitecas, Corral, La Ensenada (Stephani 1900), southern Chile (Stephani 1901 as J. dusenii), Puerto Varas (Bonner 1966 as J. dusenii, Grolle 1971); Herzog - Valdivia (Herzog 1923); Hollermayer - Panguipulli (Reimers 1926); Hosseus - Corral (Bonner 1966 as J. repens, Grolle 1971, Herzog 1938); Reichert and/or Hicken - Pta. Leopardos (Bonner 1966 as J. reflexa, Grolle 1971); Santesson - R. Aisen & Enco (Arnell 1955); Savatier - Pen. Tres Montes, Pto. Eden (Beschereille & Massalongo 1889 as Jungermannia); Schwabe - R. Puelo, L. Puyehue (Grolle 1971), Termas de Puyehue (Herzog 1954 as J. oenops), L. Pellaifa (Grolle 1971, Herzog 1960 as J. gibbosa and J. repens),

R. Chanleufu, Termas de Puyehue (Herzog 1954); Skottsberg and/or Halle - B. Arauz, Pto. Cutter, R. del Hielo (Stephani 1911), B. Arauz, Pto. Pomar, V. Inga, Pto. Altamirano, F. de Los Ventisqueros, B. Rodriguez, I. Pacheco, F. Peel, L. O'Higgins, L. Azara, Coihaique, Melinca, Queilen, Pto. Quellon, R. Pudeto (Stephani 1911 as J. oenops), B. Pinto, S. de Valdivieso (Stephani 1911 as J. spectabilis), Pto. Pomar, V. Inga, Est. Excelsior, F. de Los Ventisqueros, F. Peel, Quicavi, Ancud (Stephani 1911 as J. dusei), I. Chiloe (Bonner 1966 and Stephani 1917 as J. gibbosa), Pto. Quellon (Grolle 1971). JUAN FERNANDEZ: Anonymous - (Grolle 1971, G. L. & N. 1844 & Hooker 1867 as Jungermannia). MAS A TIERRA: Skottsberg (Arnell 1957, Grolle 1971, Herzog 1942 as J. colorata var. typica and var. marginata, Stephani 1911); Sparre (Arnell 1957). MAS AFUERA: Skottsberg (Arnell 1957, Grolle 1971, Herzog 1942, Stephani 1911 as J. colorata & J. oenops). CENTRAL CHILE: Anonymous - (Grolle 1971, Stephani 1901 as J. spectabilis). ECUADOR: Spruce - (Spruce 1885 as Jungermannia). COLOMBIA: Troll (Herzog 1934). COSTA RICA: Standley (Herzog 1938). MEXICO: Anonymous - (Spruce 1885 as Jungermannia); Liebman (G. L. & N. 1847 as Jungermannia). PUERTO RICO: Britton, Pagan (Pagon 1939). TRISTAN DA CUNHA: Christophersen & Mejland (Arnell 1958 as J. colorata and J. oenops, Grolle 1971); Moseley (Mitten 1876 as Jungermannia); Wace (Arnell 1958). INACCESSIBLE: Christophersen & Mejland (Arnell 1958, Grolle 1971). SOUTH AFRICA: Anonymous - (Arnell 1963 as J. colorata and J. oenops, Sim 1926 as Jamesoniella; Eaton (Mitten 1877 as Jungermannia); Ecklon (G. L. & N. 1844 as Jungermannia); Esterhuysen, Rolfes (Grolle 1971).

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NATAL: Anonymous - (Arnell 1963 as J. colorata and J. oenops);
Esterhuysen (Grolle 1971). TRANSVAAL: Mac Sea (Grolle 1971). MARION:
Commander (Grolle 1971); Moseley (Mitten 1876 as Jungermannia); Rand
 (Arnell 1953a). PRINCE EDWARD: Huntley (Grolle 1971). CROZETS:
Anonymous - (Bonner 1966 as J. racknesii). KERGUELEN: Hooker (Grolle
 1971, G. L. & N. 1847 as Jungermannia, Hooker & Taylor 1844 & Taylor
 & Hooker 1847b as Jungermannia); Moseley (Mitten 1876, 1879, 1884 as
Jungermannia); Naumann (Schiffner 1890 as Jungermannia). AUCKLAND:
Hooker (Hooker 1867 & Taylor & Hooker 1847a as Jungermannia); Turbott
 (Hodgson 1946, 1962). CAMPBELL: Brockie, Rae (Hodgson 1962); Hooker
 (Grolle 1971, G. L. & N. 1847 & Hooker 1867 as Jungermannia, Hooker
 & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia); Oliver,
Sorensen (Hodgson 1946, 1962). ANTIPODES: DuRietz (Hodgson 1962,
 Hodgson & Sainsbury 1948); Kirk (Grolle 1971). NEW ZEALAND: Anon-
ymous (Berggren 1898). STEWART ISLAND (NEW ZEALAND): Martin
 (Grolle 1971, Martin 1949). SOUTH ISLAND (NEW ZEALAND): Hodgson,
Martin, McMahon, Teague (Hodgson 1946); Beckett, Kason, Scott (Grolle
 1971). NORTH ISLAND (NEW ZEALAND): Allison, Moore, Teague (Hodgson
 1946); Colenso (Hooker 1867 & Mitten 1855 as Jungermannia); Allison
 (Grolle 1971). TASMANIA: Anonymous (G. L. & N. 1844 & Hooker 1867
 as Jungermannia, Rodway 1916); Bastow (Carrington & Pearson 1888 as
Jungermannia); Gunn, Hooker (G. L. & N. 1847 as Jungermannia); Archer,
Gunn, Oldfield (Mitten 1860 as Jungermannia); Weymouth (Grolle 1971).
 AUSTRALIA: Anonymous - (Hooker 1867 as Jungermannia); Melville, Harrop
 (Grolle 1971).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Sapper Hill, 135 m. (2422); Tumbledown Mt., 155-230 m. (2374 & 2382 B-c. per.); summit of Mt. Kent, 455 m. (2769 A). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2553 C-c. per.); The Gap, 275-290 m. (2464); below The Gap, c. 90 m. (2585 & 2588). WEST FALKLANDS: FOX BAY REGION, valley east of Sullivan House, c. 75 m. (3530 & 3533). HILL COVE REGION, summit of West French Peak, 290 m. (2959). WEDDELL ISLAND, summit of Mt. Weddell, 380 m. (3341).

Jungermannia

L. Sp. Pl. 1131. 1753.

Jungermannia crassula Nees & Mont.

Jungermannia crassula Nees & Mont. Annls Sci. Nat. II. 5: 54. 1836.

Solenostoma crassula (Nees & Mont.) Steph. Bull. Herb. Boissier

II. 1 (5): 497. 1901 (= Sp. Hep. 2: 59). Original material:

Juan Fernandez, sin. coll. (non vidi).

Jungermannia Domeikoana Mont. Annls Sci. Nat. III: 4: 349. 1845, syn.

fide Stephani (1901). Original material: southern Chile, without specific locality, Gay (non vidi).

Solenostoma rostratum Steph. K. Svenska VetenskAkad. Handl. 46 (9): 16.

f. 5 b. 1911, syn. fide Váňa (in litt.). Original material: Juan

Fernandez, Mas Afuera, Skottsberg (non vidi).

[illegible]

Jungermannia simplissima Steph. K. Svenska VetenskAkad. Handl. 46 (9):

17. f. 5 c, d. 1911, syn. fide Váňa (in litt.). Original material: Chile, Prov. Chiloe, I. Chiloe, Pto. Quellon, Halle & Skottsberg (non vidi).

Solenostoma obtusiflos Steph. Sp. Hep. 6: 82. 1917, syn. fide Váňa (in litt.). Original material: Skottsberg, Juan Fernandez, Skottsberg (non vidi).

Jamesoniella nana Steph. Sp. Hep. 6: 101. 1917, syn. fide Grolle (1971). Original material: Falkland Is., Halfway Cove, 1907 Halle¹ (UPS) - cited in Grolle (1971).

Ecology: This species was collected at a single locality in the Falklands, on a stream bank of a dwarf shrub heath.

Phytogeography: This species has a disjunct distribution, occurring in the Falklands, Valdivian region (West Patagonia north to 41°52' S.), Mas Afuera (Juan Fernandez) and central Chile (Prov. Santiago). It has also been reported from Tristan da Cunha and Inaccessible islands (Arnell 1958). Within the Falklands it was found only in the Port Stanley region, and the cooler temperatures and higher rainfall may account for its presence there.

Literature Records (FALKLANDS): Dusen² - Halfway Cove (Bonner 1966 as Jamesoniella nana).

¹Stephani cites Dusen as the collector of the specimen; this, however, is incorrect, as Dusen did not visit the Falklands. Bonner (1966) states for the type of this species, "West Falkland, Halfway Cove, s.d., Dusen s.n., in hb. G." The collection is probably a Skottsberg one as Halfway Cove is a Skottsberg collecting locality and Stephani determined the Skottsberg hepatic collections.

²Ibid.

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Additional Literature Records: PATAGONIA: Gay - southern Chile (Gay 1852 as J. domeikoana, Montagne 1856 as J. domeikoana); Skottsberg & Halle - near Ancud (Stephani 1911 as Solenostoma), I. Chiloe (Stephani 1917 as J. simplissima); Sparre - Punta (Arnell 1961 as S. rostratum). CENTRAL CHILE: Schwabe - Prov. Santiago, Lo Valdes (Herzog 1954 as Solenostoma). JUAN FERNANDEZ. MAS AFUERA: Skottsberg (Stephani 1917 as S. rostratum), between Q. Casas & Chozas, Camp Correspondencia, Q. Mono (Herzog 1942 as Solentostoma). TRISTAN DA CUNHA: Christophersen & Mejland - above Burntwood, 600 m., & Cave Gulch, 1200 m. (Arnell 1958 as Solenostoma). INACCESSIBLE: Christophersen & Mejland - 400 m. (Arnell 1958 as Solenostoma).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3161 A & 3172).

Notes on Jungermannia Species

Jungermannia stereocauli Bory. This species was described in Gaudichaud (1826, p. 130) for a Falkland Island Gaudichaud collected specimen. I have not been successful in numerous attempts to locate this specimen and it is quite impossible to ascertain the identity of the species from the original, one line diagnosis: "Foliis ovato-concavis, integerrimis, imbricatis."

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MARSUPELLACEAE

Buch, Suomen Maksasammalet 20. 1936.

Acrolophozia

Schust. Revue Bryol. Lichén. 34 (1-2): 259. 1966. Acrolophozia

Schust. J. Hattori Bot. Lab. 26: 216, 279. 1963, nom. nud.

Acrolophozia fuegiana Schust.

Acrolophozia fuegiana Schust. Nova Hedwigia 15 (2-4): 494. pl. 63.

1968. Holotype: Schuster 58317, Argentina, Terr. Tierra del Fuego, C. Garibaldi, ca. 900 m. (non vidi).

Ecology - Phytogeography: This rare species was found at a single station which was in the sheltered high altitude cliffs. The species was growing with Clasmatocolea fulvella and Herzogobryum teres on rock under a rock overhang. The Falkland ecology of A. fuegiana appears to be quite similar to the only other known collection, that of the type, which was gathered on C. Garibaldi, Tierra del Fuego at "ca. 900 m., on damp ledges in alpine tundra . . . associated with Pachyglossa dissitifolia, Clasmatocolea sp. (a species with polystro-tose leaves) (= C. georgiensis), and Herzogobryum teres" (Schuster 1968b). All of the associates listed above are found in the sheltered high altitude cliffs in the Falklands. The species is very closely

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allied to A. pectinata of South Island, New Zealand. It is of significance to note the New Zealand taxon is known from ca. 1370-1460 m., on soil over shaded ledges in the snow tussock (alpine zone) of Mt. Cook Natl. Park.

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2521 C-c. per.).

GYMNOMITRIACEAE

Nakai in Ogura et al. List Prof. Nakai's Pap. 200. 1943.

Herzogobryum

Grolle, Revue Bryol. Lichén. 32: 160. 1963.

Key to the Falkland Island Species of Herzogobryum

1. Cells of leaf margins with considerably thicker walls than median lamina cells; plants monoecious; antheridia double, perianth not exerted beyond bracts. H. erosum
1. Cells of leaf margins with thinner walls than median lamina cells; plants dioicous; antheridia single; perianth exerted far beyond the bracts. 2

2. Leaves cucullate, leaf margins plane to weakly
crenulate, leaf apex not fissured. H. vermiculare
2. Leaves concave, leaf margins strongly crenulate,
leaf apex often fissured H. teres

Herzogobryum erosum (Carring. & Pears.) Grolle

Cesia erosa Carring. & Pears. Pap. Proc. R. Soc. Tasm. 1887: 8.

pl. 6. f. 1-19. 1888. Gymnomitrium erosa (sic!) (Carring. & Pears.) Bast. Pap. Proc. R. Soc. Tasm. 1887: 244. 1888.

Herzogobryum erosum (Carring. & Pears.) Grolle, Öst. Bot. Z.

113: 231. 1966. Original material: Tasmania, Bastow s.n.

(BM) - cited in Grolle (1966a).

Cesia stygia var. denticulata Berggr. N. Z. Hep. 4. 1898, syn. fide

Grolle (1966a). Acolea denticulata (Berggr.) Steph. Bull. Herb.

Boissier II. 1 (2): 143. 1901 (= Sp. Hep. 2: 4). Gymnomitrium

denticulatum (Berggr.) K. Müll. (Freib.) Revue Bryol. Lichén.

20 (1-2): 176-7. 1951. Lectotype (fide Grolle 1966a): New

Zealand, South Island, Westland, Kelly's Hill, 1200 m., 1874

Berggren 2870 (LD - non vidi).

Ecology: This taxon was collected only once in the Falklands, on sandy soil under a rock ledge of sheltered high altitude cliffs.

Phytogeography: This species has a subantarctic distribution and occurs in South Georgia, the Falklands, Tierra del Fuego (I. de los Estados), Tristan da Cunha and 500-2000 m. in the New Zealand sector, occurring on Stewart Island north to Tasmania (see Map 18).

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Literature Records: SOUTH GEORGIA: Skottsberg - Cumberland Bay, Moraine Fiord (Grolle 1966a). TIERRA DEL FUEGO: Spegazzini - M. Buenos Aires, M. Conegliano (Grolle 1966a). TRISTAN DA CUNHA: Christophersen & Mejland - Crater of Peak - 2000 m. (Grolle 1966a). NEW ZEALAND. STEWART ISLAND: Martin - Mt. Anglem - 500 m. & 1100 m. (Grolle 1966a). SOUTH ISLAND (NEW ZEALAND): Berggren - Westland - Kelly's Hill - 1200 m. (Bonner 1963 as Cesia stygia var. denticulata, Grolle 1966a); Simpson - Fiordland, Lake Monk (Grolle 1966a). NORTH ISLAND (NEW ZEALAND): Druce - Mt. Egmont - 1600 m. & 2000 m. (Grolle 1966a); Sainsbury - Mt. Ruapehi - 1500 m. (Grolle 1966a). TASMANIA: Bastow - Mt. Wellington summit (Bonner 1963 as Cesia); Rodway - Mt. Wellington (Grolle 1966a), Rodway 1916 as Gymnomitrium concinatum.

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: MT. ADAM, summit of southernmost peak, 685 m. (2986 A-c. per. + o→).

Herzogobryum teres (Carring. & Pears.) Grolle

Jungermania (sic.) teres Carring. & Pears. Pap. Proc. R. Soc. Tasm. 1887: 9. pl. 7. f. 1-16. 1888. Jamesoniella teres (Carring. & Pears.) Steph. Bull. Herb. Boissier II. 1 (10): 1037. 1901 (= Sp. Hep. 2:100). Herzogobryum teres (Carring. & Pears.) Grolle, Öst. Bot. Z. 113: 223. 1966. Lectotype (cf. Grolle 1966a): Tasmania, Mt. Wellington, Bastow s.n. (MANCH, non vidi). Acolea magellanica Mass. & Steph. in Mass. Atti Ist. Veneto Sci. 87: 237. pl. 3. f. 5-7. 1927, syn. fide Grolle (1966a). Original

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material: Argentina, Terr. Tierra del Fuego, I. de los Estados, Penguin Rookery, Spegazzini s.n. (non vidi).

Jamesoniella inflexo-limbata Herz. Trans. R. Soc. N. Z. 68: 41. 1938, syn. fide Grolle (1966a). Lectotype (cf. Grolle 1966a): New Zealand, North Island, Mt. Tongariro, 12 January 1933 Moore 130 (JE -non vidi).

Ecology: In the Falklands, this taxon seems restricted to sheltered high altitude cliffs, where it occurs very commonly with Austrolophozia fuegiensis, Balantiopsis bisbifida, Cryptochila spp., Pachyglossa spp. and Triandrophyllum subtrifidum. It grows in moist, protected rock crevices, frequently under rock overhangs. Schuster (1968b) includes this species as an associate of Acrolophozia fuegiana, which was collected at Cerro Garibaldi, Tierra del Fuego at "ca. 900 m., on damp ledges in alpine tundra," an ecological situation which apparently is quite similar to the sheltered high altitude cliffs in the Falklands.

Phytogeography: This is a montane species with an amphipacific distribution, occurring in the Falklands, Tierra del Fuego, Tristan da Cunha and 1200-2300 m. in New Zealand and Tasmania. It is not known from the subantarctic islands (see Map 19).

Literature Records: TIERRA DEL FUEGO: Dusén - R. Azopardo (Grolle 1966a); Halle - L. Fagnano - 850 m. (Grolle 1966a); Schuster - C. Garibaldi - 800-900 m. (Schuster 1968b); Skottsberg - M. Marcial, Pto. Cook (Grolle 1966a); Spegazzini - I. de los Estados - Penguin Rookery (Bonner 1962 as Acolea magellanica). TRISTAN DA CUNHA:

Christophersen & Mejland - Crater of Peak - 2000 m. (Grolle 1966a).
 NEW ZEALAND. SOUTH ISLAND: Berggren - Westland - Kelly's Hill -
 1200 m. (Grolle 1966a). NORTH ISLAND (NEW ZEALAND): Moore - Mt.
 Tongariro (Bonner 1966 as Jamesoniella inflexo-limbata, Grolle 1966a);
Hodgson - Mt. Ruapehu - 1300 m. (Grolle 1966a); Druce - Mt. Egmont -
 2300 m. (Grolle 1966a). TASMANIA: Anonymous - Bonner 1966 as
Jamesoniella), Mt. Wellington, Mt. Field, Mt. Hartz (Rodway 1916 as
Jamesoniella teres); Bastow - (Stephani 1901); Selling - Mt. Welling-
 ton (Grolle 1966a).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION,
 ridge between Mt. Usbornes 1 & 2, 685 m. (2515-c. o→, 2517 A, 2521 A-
 c. o→, 2527, 2528-c. per. + o→, 2530 & 2554 G). WEST FALKLANDS: PORT
 HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3087-c. per.,
3098-c. o→, 3112 B, 3315 B-c. o→, 3127 A-c. o→ & 3129 C). MT. ADAM,
 ridge south of northern lake, 610 m. (3030 A-c. per. + o→, 3036 B).

Herzogobryum vermiculare (Schiffa.) Grolle

Gymnomitrium vermiculare Schiffn. in Naumann, Forschungsr. Gazelle 4
 (4): 2. pl. 1. f. 9-10. 1890. Herzogobryum vermiculare (Schiffn.)
 Grolle, J. Hattori Bot. Lab. 28: 103. 1965. Original material:
 Îles Kerguelen, Successful Harbor, 1874 Naumann s.n. (W) - cited
 in Grolle (1965d).

Chondrophyllum cucullatum Herz. Revue Bryol. Lichén. 21 (1-2): 46.

f. 1-2. 1952, syn. fide Grolle (1965d). Herzogobryum cucullatum

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(Herz.) Grolle, Revue Bryol. Lichén. 32: 160. 1963. Original material: Chile, Prov. Aisen, C. Tesoro, ca. 1000 m., 13 February 1940 Schwabe 39c p.p. (JE) - cited in Grolle (1965d).

Ecology: This species was found in a moist fieldmark (700 m.), on Azorella cushions, soil over rock and in rock crevices of sheltered high altitude cliffs. It is very frequently mixed with other hepatics, particularly with Cryptochila spp., Pachyglossa spp. and Herzogobryum teres.

Phytogeography: This species has a subantarctic distribution, occurring in South Georgia, the Falklands, in southern South America only at ca. 1000 m. in the Valdivian region (44°19' S.), Kerguelen and Marion islands (see Map 20).

Literature Reports (FALKLANDS): Anonymous - (Grolle, 1969).

Additional Literature Reports: SOUTH GEORGIA: Anonymous (Grolle 1969); Skottsberg - Cumberland Bay (Grolle 1963a). PATAGONIA: Schwabe - C. Tesoro - ca. 1000 m. (Bonner 1963 as Chondrophyllum cucullatum, Grolle 1963a as H. cucullatum, Herzog 1954 as Chondrophyllum cucullatum). MARION: Rand (Grolle 1965d). KERGUELEN: Naumann (Bonner 1966 as Gymnomitrium, Grolle 1965d).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2555 B); summit of Mt. Usborne 1, c. 700 m. (2505 D). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3097 B-c. per., 3110 A, 3111 & 3129 A). MT. ADAM, summit of southernmost peak, 685 m. (2986 B).

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SCAPANIACEAE

Cavers, New Phytol. 9 (8-9): 292. 1910.

Blepharidophyllum

Ångstr. Öfvers K. VetenskAkad. Förh. 30 (5): 151. 1873.

Key to the Falkland Island Species of Blepharidophyllum¹

1. Leaves not keeled, not conduplicately bilobed, bifid to the middle, insertion curved; leaf cells with large knot-like trigones; perianth mouth with long cilia which consist of long cylindrical cells. B. densifolium
1. Leaves keeled, conduplicately bilobed, divided 3/4-7/8 into 2 lobes, insertion nearly transverse; leaf cells ± equally thick walled, or with thin walls and small trigones; perianth mouth with teeth and short spines, the latter of 1-2 massive, extended cells. 2
2. Leaf margins irregular and with numerous small teeth, at least on antical margin of dorsal lobe, leaf segments apiculate; cell walls thick, trigones absent. B. clandestinum
2. Leaf margins entire; leaf segments triangular; cell walls thin, with small trigones B. gottscheanum

¹Key adapted and modified from Grolle (1965b).

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Blepharidophyllum clandestinum (Mont.) Lac.

Plagiochila (Scapania) clandestina Mont. Annls Sci. Nat. II. 19: 247.

1843. ? Scapania clandestina (Mont.) G. L. & N. Syn. Hep. 73.

1844. Jungermannia clandestina (Mont.) Hook. f. & Tayl. in Hook.

f. Bot. Ant. Voy. 1. (2): 434. 1847. Martinellia clandestina

(Mont.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 411. 1877.

Balantiopsis clandestina (Mont.) Schiffn. in Engl. & Prantl,

Natür. Pflanzenfam. 1 (Abt. 3, 1 Hälfte): 112. 1895. Diplo-

phyllum clandestinum (Mont.) Steph. Bih. K. Svenska VetenskAkad.

Handl. 26 (III, 6): 61. 1900. Blepharidophyllum clandestinum

(Mont.) Lac. Gen. Hep. 27. 1910. Original material: (fide

Grolle 1965b, excl. B. gottscheanum): Chile, Prov. Magallanes,

Pto. Gallant, "Inter caespites Hypni fluitantis," Hombron (PC -

non vidi).

Balantiopsis incrassata Mitt. J. Linn. Soc. 15: 197. 1876, syn. fide

Mitten (1879). Original material: Îles Kerguelen, Hill N.W. of

Mt. Crozier, Eaton (NY !).

Ecology: This species is of rather local occurrence in the Falklands, where I found it on soil in a Cortaderia heath, on the bases of Blechnum magellanicum in a dwarf shrub heath, and on a sheltered high altitude cliff.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels and the Valdivian region (to 42°30' S. in West Patagonia). It is also present on Kerguelen (see Map 21).

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Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Diplophyllum, Schiffner 1895 as Balantiopsis, Stephani 1910 as Diplophyllum); Skottsberg - B. Tekenika (Stephani 1905a as Diplophyllum), L. Fagnano (Stephani 1911 as Diplophyllum), Pto. Cook. B. Tekenika (Grolle 1965b); Spegazzini - M. Conegliano, M. Richardson, I. Basket, M. Sarmiento (Massalongo 1885 as Scapania). PATAGONIA: Anonymous - Strait of Magellan (Stephani 1910 as Diplophyllum), Pto. Gallant, I. Chiloe (Grolle 1965b); Andersson - Pto. del Hambre (Ångström 1872 as Jungermannia); Dusén - I. Newton (Grolle 1965b, Stephani 1900 as Diplophyllum); Hall (?sic) Pto. Eden (Grolle 1965b); Hollermayer - V. Villarrica (Reimers 1926 as Diplophyllum); Hooker (in error) - Pto. Gallant, Pto. del Hambre (Montagne 1845 as Scapania); Hombron - Strait of Magellan (G. L. & N. 1844 as Scapania), Pto. del Hambre, Pto. Gallant (Gay 1852 as Scapania, Taylor & Hooker 1847b as Jungermannia, Montagne 1856 as Scapania), Pto. Gallant (Grolle 1965b); Schwabe - Pto. Puyuhuapi, C. Tesoro (Herzog 1954 as Diplophyllum), L. Risopatron, C. Tesoro (Grolle 1965b). KERGUELEN: Anonymous - (Bonner 1962 as B. incrassata, Schiffner 1895 as Balantiopsis); Eaton (Grolle 1965b, Mitten 1879 as Scapania); Moseley (Mitten 1885 as Scapania); Naumann (Schiffner 1890 as Scapania).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2525 A); below The Gap, c. 90 m. (2566). WEST FALKLANDS: WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3313 A-c. o→ & 3318).

ADDITIONAL SPECIMEN SEEN: CHILE. CHILOE: I. Chiloe, sin. coll. (NY).

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Blepharidophyllum densifolium (Hook.) Ångstr. ex Mass.

Jungermannia densifolia Hook. Musci Exot. 1: pl. 36. f. 1-4. 1818.

? Scapania densifolia (Hook.) Nees in G. L. & N. Syn. Hep 72.

1844. Diplophyllum densifolium (Hook.) Mitt. J. Linn. Soc. 15:

69. 1876. Martinellia densifolia (Hook.) Trev. Memorie Ist.

Lomb. Sci. Lett. III. 4: 411. 1877. Blepharidophyllum densi-

folium (Hook.) Ångstr. ex Mass. Nuovo G. Bot. Ital. 17: 208.

1885. Original material: Argentina, Terr. Tierra del Fuego, I.

de los Estados, Menzies (NY!, S, W) - cited in Grolle, 1965b).

Jungermannia chloroleuca Hook. f. & Tayl. London Jour. Bot. 3: 467.

1844, syn. fide Beschereille & Massalongo (1889). Scapania

chloroleuca (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 662. 1847.

Schistocalyx chloroleuca (Hook. f. & Tayl.) Lindb. J. Linn. Soc.

13: 185. 1873, nom. illeg. Martinellia chloroleuca (Hook. f. &

Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 411. 1877.

Blepharidophyllum vertebrale var. β chloroleucum (Hook. f. &

Tayl.) Mass. Nuovo G. Bot. Ital. 17: 208. 1885. Blepharido-

phyllum densifolium var. γ chloroleucum (Hook. f. & Tayl.)

Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 9. 1890.

Diplophyllum vertebrale var. β. chloroleucum (Hook. f. & Tayl.)

Mass. Atti Ist. Veneto Sci. 87: 221. 1927. Original material:

Chile, Prov. Magallanes, Cabo de Hornos, Hooker (NY !).

Scapania pycnophylla De Not. Memorie Accad. Sci. Torino II. 16: 215.

pl. 3. f. 1-6. 1855, syn. fide Beschereille & Massalongo (1889).

Martinellia pycnophylla (De Not.) Trev. Memorie Ist. Lomb. Sci.

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Lett. III. 4: 411. 1877. ?Blepharidophyllum pycnophyllum (De Not.) Ångstr. ex Mass. Nuovo G. Bot. Ital. 17: 208. 1885.

Blepharidophyllum densifolium var. ε. pycnophyllum (De Not.)

Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 9. 1890.

Diplophyllum pycnophyllum (De Not.) Steph. Résult. Voyage S. Y.

Belgica 6 (5): 6. 1901. Original material: Chile, Prov. Valparaíso, "Valparaíso," Puccio (NY !).

Blepharidophyllum fuscum Besch. in Besch. & Mass. Mission Scient.

Cap Horn 5: 209. 1889, nom. nud. pro syn. Blepharidophyllum densifolium var. δ fuscum (Besch.) Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 9. 1890.

Ecology: In southern South America this taxon is quite common and exhibits a wide ecological amplitude. It is common on mounds of bryophytes in the very wet magellanian moorland region, as well as in the mesic, deciduous forested zones. The species is surprisingly local in the Falklands, where it was found in pools, rock crevices, and between Bolax cushions as well as Azorella cushions of sheltered high altitude cliffs. It rarely occurs on soil of dwarf shrub heaths.

Phytogeography: This taxon occurs in the Falklands, Tierra del Fuego, Patagonian Channels and north in the Valdivian region (West Patagonia) to 36°50' S. It is quite well represented in the subantarctic, occurring on Kerguelen, Crozet and Marion islands (see Map 22).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as D. densifolium & D. pycnophyllum), Rodway 1916 as

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Diplophyllum, Schiffner 1895, Stephani 1910 as D. densifolium & D. pycnophyllum); Brown - Beagle Channel (Grolle 1965b); Dusén - R. Azopardo, Pto. Angosto (Grolle 1965b, Stephani 1901a as Diplophyllum); Gasperi - B. Angelito, S. Agostini, Valle delle Fate (Gola 1923 as B. densifolium & B. pycnophyllum), I. Laberinto, M. Sarmiento (Gola 1923); Hariot - I. Clarence (actually I. Capitan Arecena), I. Hoste (Bescherelle & Massalongo 1889); J. B. Hatcher - Ens. Villarino (Evans 1898); Hooker - I. Hermite and/or Cabo de Hornos (Grolle 1965b, G. L. & N. 1847 as Scapania chloroleuca, Taylor & Hooker 1847b as J. chloroleuca & J. densifolia); Hyades - I. Hoste (Bescherelle & Massalongo 1889); Menzies - I. de los Estados (Grolle 1965b, G. L. & N. 1844 as Scapania); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as D. densifolium & D. pycnophyllum); Roivainen - C. Chico (Grolle 1965b); Santesson - S. de Sorondo, Pto. Yartou (Arnell 1955); Savatier - Pto. Churruca (Bescherelle & Massalongo 1889); Skottsberg - Pto. Cook, B. Tekenika (Stephani 1905a as Diplophyllum), Pto. Cook (Grolle 1965b, Stephani 1905a as D. pycnophyllum); Skottsberg & Halle - L. Fagnano (Stephani 1911 as Diplophyllum), L. Fagnano, R. Fontaine, Cta. Gomez (Stephani 1911 as D. pycnophyllum); Spegazzini - B. Slogget (Massalongo 1885, 1927 as Diplophyllum), I. de los Estados (Massalongo 1885 as B. pycnophyllum, 1927 as D. pycnophyllum). PATAGONIA: Anonymous - Strait of Magellan (Bonner 1963); Andersson - Pto. del Hambre (Ångström 1872 as J. chloroleuca); Dusén - I. Newton, Pto. Bueno, S. Molyneux (Grolle 1965b, Stephani 1900 as Diplophyllum), I. Guaitecas, Concepcion (Grolle 1965b); Gusinde - Canal Smyth (Grolle 1965b); Santesson -

R. Rubens (Arnell 1955); Savatier - Pto. Eden (Bescherelle & Massalongo 1889); Schwabe - C. Tesoro (Grolle 1965b, Herzog 1954 as D. pycnophyllum); Skottsberg & Halle - Pto. Cutter, I. Atalaya, F. Peel, Cta. Rayo (Stephani 1911 as Diplophyllum), Canal Messier (Grolle 1965b); Wawra - Pto. Gallant (Grolle 1965b). CENTRAL CHILE: Anonymous (Puccio) - "Valparaiso" (Grolle 1965b). MARION: Rand (Arnell 1953a, Grolle 1965b). CROZET: Ring & Raknos (Grolle 1965b). KERGUELEN: Anonymous (Hodgson 1962, Schiffner 1895); Moseley (Grolle 1965b, Mitten 1876 as Diplophyllum, 1879 & 1884 as Scapania); Naumann (Grolle 1965b, Schiffner 1890). AUCKLAND: Anonymous (Rodway 1916 as Diplophyllum). TASMANIA: Anonymous - Adamson Peak, Cradle Mt. (Rodway 1916 as Diplophyllum).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2721). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2526); summit of Mt. Usborne 1, c. 700 m. (2490, 2493 A, 2494 & 2504 A). WEST FALKLANDS: MT. ADAM, ridge south of northern lake, 610 m. (3032).

ADDITIONAL SPECIMENS SEEN: (representative selection): CHILE. MAGALLANES: Cabo de Hornos, Hooker (NY); R. Azopardo Dusen 37, 74 (NY); Cta. Columbine, April 1869 Cunningham 77 (NY); I. Newton, 30 May 1896 Dusen 74 (NY); Pto. Bueno, 31 May 1896 Dusen 111 (NY); Pto. Eden, Ball (NY). CHILOE: I. Guaitecas, 7 May 1897 Dusen 374 (NY). CONCEPCION: Concepcion, 5 September 1896 Dusen 201 (NY). KERGUELEN: Moseley (NY).

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Blepharidophyllum gottscheanum Grolle

Blepharidophyllum gottscheanum Grolle, J. Hattori Bot. Lab. 28: 69.

f. 4. 1965. Original material: Chile, Prov. Magallanes, I.

Desolacion, Dusén (JE) - cited in Grolle (1965b).

Ecology: I found this species at but a single locality in the Falklands, where it grew in a Cortaderia heath, 90 m.

Phytogeography: This species occurs in the Falklands, western Tierra del Fuego, the Patagonian Channels and north to 44° 19' S. in the Valdivian region (West Patagonia) (see Map 23).

Literature Records: TIERRA DEL FUEGO: Anonymous (Grolle 1965b). PATAGONIA: Ball - Pto. Eden (Grolle 1965b); Cunningham- Cta. Columbine (Grolle 1965b); Hombron - Pto. Gallant (Grolle 1965b); Schwabe - Pto. Puyuhuapi, C. Tesoro (Grolle 1965b); Wawra - Pto. Gallant (Grolle 1965b).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, below The Gap, c. 90 m. (2562 B & 2578 B).

ADDITIONAL SPECIMEN SEEN: (?) CHILE. MAGALLANES: FUEGIA, sin. coll. (NY).

Diplophyllum

(Dum.) Dum. Recueil Obs. Jungerm. 15. 1835. Jungermannia sect.

Diplophyllum Syll. Jungerm. 44. 1831.

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Diplophyllum acutilobum Steph.

Diplophyllum acutilobum Steph. K. Svenska VetenskAkad. Handl. 46 (9):

83. f. 32 f. 1911. Original material: Chile Prov. Magallanes, west end of L. Fagnano, Halle & Skottsberg s.n. (S) - cited in Grolle (1965b).

Ecology: This rare species was collected at a single locality, on soil under a rock overhang of sheltered high altitude cliffs.

Phytogeography: This species is known from the Falklands, Tierra del Fuego (L. Fagnano) the Patagonian Channels and the Valdivian region north to 40°42' S.

Literature Records: TIERRA DEL FUEGO: Anonymous - (Grolle 1965b, Kühnemann 1937, 1949); Skottsberg - Fuegia (Stephani 1924). PATAGONIA: Anonymous - (Grolle 1965b); Schwabe - Pto. Puyuhuapi (Herzog 1939), Termas de Puyehue (Herzog 1954).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: MT. ADAM, ridge south of northern lake, 610 m. (3027-c. per. + o→).

BALANTIOPSIDACEAE

Nakai in Ogura et al. List Prof. Nakai's Pap. 200. 1943.¹

¹The family name is erroneously spelled "Blantiopsidaceae" in Ogura (1943).

Balantiopsis

Mitt. in Hook. f. Handb. N. Z. Flora 753. 1867.

Key to the Falkland Island Species of Balantiopsis

1. Dorsal lobes $\pm$ erect or aligned toward stem base; rhizoids frequently arising in tufts from the stem near the ventral portion of the ventral leaf lobes (as well as from the stem near the underleaf bases) B. bisbifida
1. Dorsal lobes strongly flattened over the ventral lobes, never erect; rhizoids arising in tufts from the stem near the underleaf bases, not from stem near the ventral portion of the ventral leaf lobes. 2
2. Leaves without a definite carina; dorsal lobe bases auriculate B. erinacea
2. Leaves with a definite carina; dorsal lobe bases plane, never auriculate. Leaf lobe cells in highly regular tiers. B. cancellata

Balantiopsis bisbifida (Steph.) Steph.

Isotachis bisbifida Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 17): 24. 1901. Balantiopsis bisbifida (Steph.) Steph.

Sp. Hep. 4: 101. 1910. Steereocolea bisbifida (Steph.) Schust.

Bull. Natn. Sci. Mus., Tokyo, 11 (1): 25. 1968. Original

material: Chile, Prov. Magallanes, L. Desolacion, Dusén 228 (G !).

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Balantiopsis latifolia Steph. Sp. Hep. 4: 101. 1910, syn. fide Engel (1968). Steereocolea latifolia (Steph.) Schust. Bull. Natn. Sci. Mus., Tokyo 11 (1): 25. 1968. Lectotype (cf. Engel 1968): Chile, prov. unknown, Dusén p.p. (G !).

Taxonomical remarks: Schuster (1968a) utilized B. bisbifida as the generitype for his new genus Steereocolea, which he stated (p. 25) differed from Balantiopsis in two ways: "The leaves are succubous throughout and never at all complicate-bilobed, and are diagnostically, shallowly, symmetrically bisbifid; a distinct and relatively well-developed perianth is apparently present." I cannot recognize the genus Steereocolea for reasons outlined below.

Balantiopsis bisbifida was known only from material with immature, unfertilized gynoecia until I collected abundant material with mature marsupia in the Brunswick Peninsula, southern Chile (Engel, 6389). The perianth associated with the mature marsupia is represented by remnants which are small to large laciniae (which admittedly may be $\pm$ large and somewhat leaf like) which surround the marsupium mouth, along with other remnants which are usually mounted on the upper part of the marsupium. This condition is also present in B. diplophylla (see Engel, 1968 pl. 40, fig. 348, as well as the discussion on p. 88), the generitype.

The dorsal leaf lobes of B. bisbifida are aligned toward the stem base, to erect, to aligned toward the stem apex. In the latter condition, however, a distinct carina is absent and the leaves are thus weakly conduplicately bilobed, as shown in Schuster (1968a,

f. 2: 7). I believe the leaf condition in B. bisbifida is an integral part of a continuum of sequential stages developing toward a distinctly conduplicately bilobed leaf with a well defined carina as in B. cancellata, B. convexiuscula and B. tumida. As discussed in Engel (1968, p. 86-7) this continuum begins with B. asymmetrica, extends through B. bisbifida to B. purpurata and culminates in the condition found in such species as B. cancellata. Schuster (loc. cit.) also transferred Balantiopsis latifolia (= B. bisbifida) to the genus Steereocolea.

Ecology: This species, previously known from only a few collections, is actually quite common in the Falklands, where it is frequently present on moist soil under Bolax and rock overhangs, among rocks or in rock crevices of sheltered high altitude cliffs. Here it is often mixed with other Hepaticae, particularly Austrolophozia fuegiensis and Schistochila subintegerrimum. This taxon is also fairly common on stream banks in Cortaderia and dwarf shrub heaths where it occurs under cover of Gunnera magellanica or Blechnum magellanicum. It more rarely grows on the bases of Blechnum.

Phytogeography: This species is known from the Falklands, the mountainous region of southern Isla Grande de Tierra del Fuego and western Tierra del Fuego.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as B. latifolia); Skottsberg - and/or Halle - Mt. Adam (Engel 1968, Skottsberg 1913 as B. latifolia, Stephani 1911 as B. latifolia).

Additional Literature Records: TIERRA DEL FUEGO: Dusén - I. Desolacion (Pto. Angosto) (Engel 1968); Schuster - C. Garibaldi (Schuster 1968a as Steereocolea bisbifida).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3175, 3178 & 3181). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2542 A-c. very young ♀, 2545, 2551 & 2556 A); valley southwest of Mt. Usborne, c. 60 m. (2659). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3091, 3094 A, 3101, 3124, 3126 & 3130). MT. ADAM, Skottsberg 203 (G); Halle & Skottsberg 338 as B. latifolia (UPS); ridge south of northern lake, 610 m. (3031, 3042 & 3047); east side of summit ridge, 670-700 m. (3015). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3304, 3313 B, 3322 & 3327).

ADDITIONAL SPECIMENS SEEN: See Engel (1968).

Balantiopsis cancellata (Nees) Steph.

Ptilidium cancellatum Nees in G. L. & N., Syn. Hep. 251. 1845.

Balantiopsis cancellata (Nees) Steph. Hedwigia 32: 145. 1893.

Original material: "In Peruvia ad Plagiochilam Hookerianan repens . . .," sin. coll. (STR !).

Balantiopsis versicolor Mitt. Rep. Scient. Results Challenger. Bot.

1 (3): 86. 1884, syn. fide Engel (1968). Lectotype (cf. Engel 1968): Chile, Prov. Valdivia, Valdivia, Sainthill (NY !).

Balantiopsis aequifolia Mitt. Rep. Scient. Results Challenger. Bot.

1 (3): 87. 1884, syn. fide Engel (1968). Lectotype (cf. Engel 1968): Chile, Prov. Magallanes, I. Desolacion, Pto. Churruca, Cunningham s.n. (NY !).

Balantiopsis chilensis Steph. Hedwigia 32: 145. 1893, syn. fide Engel (1968). Steereocolea chilensis (Steph.) Schust. Bull. Natn. Sci. Mus., Tokyo 11 (1): 25. 1968. Lectotype (cf. Engel 1968): Chile, prov. unknown, "com. Müller," sin. coll. (G !).

Balantiopsis fragilis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 81. f. 33 a,b. 1911, syn. fide Engel (1968). Lectotype (cf. Engel 1968): Fuegia (Chile, Prov. Magallanes, west end of L. Fagnano), Skottsberg s.n. (G !).

Taxonomical remarks: Schuster (1968a) transferred Balantiopsis chilensis (= B. cancellata) to Steereocolea. I have studied material with mature marsupia (Juan Fernandez, Mas A Fuera, Hatcher & Engel 739), which has small to $\pm$ large laciniae mostly surrounding the marsupium mouth, with a few inserted on the upper regions of the perigynium. The leaves of this species are distinctly conduplicately bilobed, possessing a dorsal lobe lying flat over the ventral and a sharply defined carina. This condition represents the culmination of sequential stages toward the conduplicate leaf condition within the genus Balantiopsis. See discussion under B. bisbifida.

Ecology: This species is of sporadic occurrence in Cortaderia and dwarf shrub heath associations at 60-90 m., where it may be found on soil or on stream banks. It was also found on soil under a grass overhang at the margin of a dried water basin at c. 75 m. in a dwarf shrub heath.

Phytogeography: This species is present in the Falklands, Tierra del Fuego, Patagonian Channels and north in the Valdivian

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region to 39° 48' S. It has not been reported from Andean Patagonia. It also occurs on Mas a Tierra and Mas Afuera of the Juan Fernandez group (see Map 24).

The type of B. cancellata supposedly was gathered in Peru. As this species is restricted to the cool south temperate regions of southern South America, and the species was not subsequently collected in the Peruvian Andes (or anywhere else in the Andes north of Chile), I regard the record as doubtful. Stephani (1892, p. 276) also expressed doubt regarding the Peruvian specimen.

Literature Records (FALKLANDS): Hamilton - Weddel Is. (Engel 1968).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as B. fragilis); Cunningham - Pto. Churruca (Engel 1968); Dusén - Pto. Angosto (Engel 1968, Stephani 1901a as B. chilensis); Halle - L. Fagnano (Engel 1968). PATAGONIA: Claude-Joseph - I. Chiloe (Engel 1968); Dusén - R. Aisen, I. Guaitecas, Puerto Varas, Corral (Engel 1968), R. Aisen, Corral (Stephani 1900 as B. chilensis); Halle - Melinca (Engel 1968); Hosseus - Corral (Herzog 1938); Krause - Valdivia (Engel 1968); Sainthill - Valdivia (Engel 1968); Schwabe - Pto. Puyuhuapi, Termas de Puyehue (Herzog 1954), Pto. Puyuhuapi, Calbuco (Engel 1968), Huitrapulli - Aleucapi (Herzog 1960), Calbuco, Pto. Puyuhuapi (Herzog 1939), Calbuco (Herzog 1939 as B. chilensis, Herzog 1954 as B. fragilis); Skottsberg & Halle - S. Skyring (Engel 1968), I. Guafo, I. Guaitecas, B. Chacabuco & Esto. Excelsior (Stephani 1911); Sparre - La Gualleria, Puyehue, Puerto

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Varas (Engel 1968); Thaxter - Corral (Engel 1968). JUAN FERNANDEZ.
 MAS A TIERRA: Skottsberg - near El Yunque (Arnell 1957, Engel 1968,
 Stephani 1911). MAS AFUERA: Hatcher & Engel - Camp Correspondencia
 (Engel 1968); Skottsberg - Q. Casas (Engel 1968, Herzog, 1942 as B.
cancellata & B. chilensis), Camp Correspondencia (Arnell 1957, Engel
 1968, Herzog 1942 as B. cancellata & B. chilensis).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION,
 below The Gap, c. 90 m. (2558, 2560 B, 2568, 2571 A & 2573 B); valley
 southwest of Mt. Usborne, c. 60 m. (2648 A, 2649, 2662 & 2674). WEST
 FALKLANDS: FOX BAY REGION, valley east of Sullivan House, c. 75 m.
 (3534). WEDDELL ISLAND, Hamilton 5 as B. erinacea (G); near head-
 waters of House Creek, c. 15 m. (3402 & 3413).

ADDITIONAL SPECIMEN SEEN; other than those cited in Engel
 1968: CHILE. VALDIVIA: Corral, December 1905 Thaxter 42 (MICH).

Balantiopsis erinacea (Hook. f. & Tayl.) Mitt.

Jungermannia erinacea Hook. f. & Tayl. London Jour. Bot. 3: 462.

1844. Gottschea erinacea (Hook. f. & Tayl.) Nees in G. L. & N.
 Syn. Hep. 624. 1846. Gymnanthe erinacea (Hook. f. & Tayl.)
 Mitt. in Hook. f. Bot. Ant. Voy. 3 (2): 230. 1859. Balantiopsis
erinacea (Hook. f. & Tayl.) Mitt. in Hook. f., Handb. N. Z. Flora
 753. 1867. Lectotype (cf. Engel 1968): Falkland Is., Hooker
s.n. (NY !).

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Balantiopsis fuscescens Steph. K. Svenska VetenskAkad. Handl. 46 (9):

82. f. 33 c-e. 1911, syn. fide Engel (1968). Original material: Chile, Prov. Magallanes, S. Skyring, Esto. Excelsior, Skottsberg 613 (G !).

Taxonomical remarks: Balantiopsis erinacea has been reported from Juan Fernandez by Stephani (1911). This report is based upon misdeterminations of B. cancellata.

Balantiopsis erinacea along with B. bisbifida and B. cancellata have a characteristic musty odor in dried herbarium specimens. This odor becomes more pronounced when the material is moistened.

Ecology: This species has rather narrow ecological requirements in the Falklands, where it may be found on stream banks, commonly just above water level in Cortaderia and dwarf shrub heaths. In the latter association it is characteristic of small pools of saturated peaty areas.

Phytogeography: This species is known from the Falklands, Patagonian Channel region and north in the Valdivian region to 36° 50' S. The species has not been reported from Tierra del Fuego or Andean Patagonia. As the New Zealand record of the taxon is based only upon two Mitten herbarium specimens and seems not to have been subsequently collected there, it is likely that Mitten created the confusion when labeling (see Map 25).

Literature Records (FALKLANDS): Anonymous - (Herzog 1926, Kühnemann 1937, 1949); Hooker (Engel 1968, G. L. & N. 1846 as Gottschea, Taylor & Hooker 1847b as Jungermannia); Skottsberg - Saunders Is.,

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Port Stanley (Engel 1968); Skottsberg & Halle - Saunders Is., Port Stanley (Stephani 1911), Port Stanley (Skottsberg 1913).

Additional Literature Records: PATAGONIA: Dusén - Pto.

Bueno, R. Aisen, Puerto Montt, Corral, Concepcion (Engel 1968), Pto.

Bueno, I. Guaitecas, Corral (Stephani 1900); Skottsberg & Halle -

S. Skyring (Engel 1968); Thaxter - Corral (Engel 1968).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker s.n., syntype of Jungermannia erinacea (FH). STANLEY REGION, Port Stanley, west of town, 11 November 1907 Skottsberg s.n., syntype of Lophocolea falklandica (UPS); Port Stanley, Skottsberg 5 (LD, UPS); headwaters of Mullet Creek Stream, c. 60 m. (3157). WEST FALKLANDS: FOX BAY REGION, near peat cuttings in Ram Paddock, 45-60 m. (3501 A-c. o, 3502, 3504, & 3521). HILL COVE REGION, gap between French Peaks, 200-215 m. (2980, 2982 & 2984). SAUNDERS ISLAND: 16 December 1907 Halle & Skottsberg (UPS); Skottsberg 38 (G).

ADDITIONAL SPECIMEN SEEN; other than those cited in Engel (1968): CHILE. CHILOE: 15 February 1925 Claude-Joseph s.n. as B. chilensis (MICH).

SCHISTOCHILACEAE

Buch, Comment. Biol. 1928.

Schistochila

Dum. Recueil Obs. Jungerm. 15. 1835.

Key to the Falkland Island Species of Schistochila

1. Leaves polystratose. S. carnosa
1. Leaves unistratose throughout. 2
 2. Leaves with lamellae. Ventral lobes with lamella
on dorsal and ventral surfaces; dorsal lobe 1/2-
3/4 as long as ventral lobe. S. laminigera
 2. Leaves without lamellae. 3
3. Carina 1/2-3/4 the length of the dorsal lobe; leaf
cells with large, knot-like trigones; underleaf lobes
often of unequal size and configuration; plants often
developing a deep red pigmentation S. pachyla
3. Carina as long as dorsal lobe; leaf cells with small
to medium trigones; underleaf lobes of equal size and
configuration; plants light to dark green, not devel-
oping secondary pigments S. subintegerrima

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Schistochila carnosa (Mitt.) Steph.

Gottschea carnosa Mitt. J. Linn. Soc. 15: 72. 1876. Schistochila carnosa (Mitt.) Steph. Sp. Hep. 4: 93. 1909. Original material: Moseley, Marion Is. (non vidi).

Ecology: This species is rare in the Falkland Islands, where it was collected but twice, both instances on sandy soil under rock ledges of sheltered high altitude cliffs.

Phytogeography: This species has a subantarctic distribution; it occurs on South Georgia, the Falklands, Tierra del Fuego (R. Azopardo region - 720 m.), the Valdivian region at C. Tesoro (1200 m.) and Marion and (?) Crozets Islands.

Literature Records: SOUTH GEORGIA: Skottsberg - Cumberland Bay (Steere 1961, Stephani 1911). TIERRA DEL FUEGO: Skottsberg & Halle - R. Azopardo (Stephani 1911). PATAGONIA: Schwabe - C. Tesoro (Herzog 1954). MARION: Anonymous - Stephani 1911); Moseley - (Bonner 1966 as Gottschea). CROZETS: Anonymous (Bonner 1966 as Gottschea).

FALKLAND SPECIMENS SEEN: WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3009); summit of southernmost peak, 685 m. (2989).

Schistochila laminigera (Hook. f. & Tayl.) Evans

Jungermannia laminigera Hook. f. & Tayl. London Jour. Bot. 3: 456.

1844. Gottschea laminigera (Hook. f. & Tayl.) G. L. & N. Syn.

Hep. 623. 1846. Schistochila laminigera (Hook. f. & Tayl.)

Evans, Contr. U. S. Natn. Herb. 1: 141. 1892. Fulfordistria

laminigera (Hook. f. & Tayl.) H. Mill. Phytologia 20 (5):

321. 1970. Original material: Chile, Prov. Magallanes,

I. Hermite, Hooker (non vidi).

Taxonomical remarks: I cannot recognize the genus Fulfordistria for the following reasons: a) it is based upon a single character, i.e., lamellation, b) other genera contain elements of a similar nature, and there is no precedent for removal and recognition of such elements as segregate genera, i.e., the spinose leaves in Lophocolea muricata, the sulcate stems of Lophocolea striatella, the ventral lamellation of the thalli in Riccardia fuegiensis, etc., and c) Dr. R. M. Schuster informs me (in litt.) that the lamellae character "breaks down" in the New Zealand taxa of Schistochila.

Schistochila laminigera has been reported from the Falklands by several individuals, and the record in G. L. & N. is probably the source for all later records. I have not been able to locate the Falkland specimen collected by Lyall. The type localities of Lophocolea alternifolia (= L. leptantha) and Clasmatocolea obvoluta have been confused, and this may yet be another instance of the confounding of localities. Without the examination of specimens and

label data, however, I cannot make a definite statement regarding the Falkland Island report, and I am thus, for the present, including Schistochila laminigera in the Falkland flora. The original description in Hooker and Taylor (1844) states "Hermite Island, Cape Horn" as the locality for the species. This locality is not mentioned in G. L. & N.

Phytogeography: This taxon occurs in the (?) Falklands, Tierra del Fuego, Patagonian Channels and Valdivian region north to 39° 38' S.

Literature Records: (FALKLANDS): Anonymous - (Bonner 1966 as Gottschea, Kühnemann 1937 & 1949, Stephani 1909); Lyall (G. L. & N. 1846 as Gottschea).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1939 & 1949); Harriot - I. Saddle, I. Wollaston (Bescherelle & Massalongo 1889 as Gottschea); J. B. Hatcher - Fuegia (Evans 1898); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1846 as Gottschea, Taylor & Hooker 1847b as Jungermannia); Hyades - I. Hoste (Bescherelle & Massalongo 1889 as Gottschea); Naumann - B. Tuesday (Schiffner 1890 as Gottschea); Savatier - Pto. Churruca (Bescherelle & Massalongo 1889 as Gottschea); Spegazzini - I. de los Estados (Massalongo 1885 as Gottschea, 1927 as Schistochila). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949, Schiffner 1895, Stephani 1909); Albatross - B. Borja (Evans 1892); Andersson - Pto. del Hambre (Ångström 1872 as Jungermannia); Dusén - R. Aisen, Puerto Blest (Stephani 1900); Grosse - Istmo de Ofqui (Herzog 1954); Neger - West slope of Andes (39°-39°30' S.)

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(Neger 1899); Savatier - Pen. Tres Montes (Bescherelle & Massalongo 1889 as Gottschea); Schwabe - C. Lunguico (Herzog 1960).

SPECIMENS SEEN: CHILE. MAGALLANES: R. Azopardo, 4 March 1896 Dusen s. n. (S-PA); R. Azopardo, 5 March 1896 Dusen 403 (NY); Ens. Villarino, J. B. Hatcher (NY); I. Desolacion, Pto. Churruca, March 1869 Cunningham 67 (NY). ARGENTINA. NEUQUEN-RIO NEGRO: L. Nahuel Huapi, July 1897 Dusen s. n. (NY, S-PA).

Schistochila pachyla (Hook. f. & Tayl.) Steph.

Jungermannia pachyla Hook. f. & Tayl. London Jour. Bot. 3: 456.

1844. Gottschea pachyla (Hook. f. & Tayl.) G. L. & N. 621.

1846. Schistochila pachyla (Hook. f. & Tayl.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 29. 1901. Original material: Chile, Prov. Magallanes, I. Hermite, Hooker (non vidi).

Schistochila crassiretis Steph. K. Svenska VetenskAkad. Handl. 46 (9):

78. f. 32 a, b. 1911, syn. fide Herzog (1942). Original material: Chile, Prov. Magallanes, Pto. Cutter, Skottsberg & Halle (non vidi).

Ecology: This species was collected but once in the Falklands, on soil at the base of large outcrops, 455 m. The taxon is common on or at the base of bryophyte mounds in the magellanian moorland region of southern South America.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, southern Patagonian Channel region and Juan Fernandez, but has not been reported from the Valdivian region. Within the Falklands, it was found to occur only in the Port Stanley region, and the cooler temperatures and higher rainfall in this region may account for its presence there.

Literature Records: Anonymous - Tierra del Fuego (Rodway 1916); Dusén - Pto. Angosto (Stephani 1901); Hariot - I. Clarence (actually I. Capitan Arecena) (Bescherelle and Massalongo 1889 as Gottschea); Hooker - I. Hermite (G. L. & N. 1846 as Gottschea, Taylor & Hooker 1847b as Jungermannia); Spegazzini - M. Conegliano, M. Richardson, I. Burnt, B. Slogget (Massalongo 1885 as Gottschea), I. de los Estados (Massalongo 1927). PATAGONIA: Anonymous - (Kühnemann 1937, 1949, Stephani 1910); Hariot - Patagonia (Bescherelle & Massalongo 1886 as Gottschea); Skottsberg - I. Atalaya, C. Gajardo (Stephani 1911), Patagonia australis (Stephani 1924 as S. crassiretis). JUAN FERNANDEZ: MAS AFUERA: Skottsberg - Las Torres (Herzog 1942). INACCESSIBLE: Christophersen & Mejland - West end - 400 m., 450 m. (Arnell 1958).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2739 & 2754).

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Schistochila subintegerrima Steph.

Schistochila subintegerrima Steph. K. Svenska VetenskAkad. Handl.

46 (9): 81. f. 32 e. 1911. Lectotype (nov.) Chile, Prov.

Magallanes, west end of L. Fagnano, 10 March 1908 Halle 313

(NY! - c. per.).

Ecology: This species is rather common under ledges and in rock crevices of sheltered high altitude cliffs, where it commonly is mixed with other hepatics, particularly Austrolophozia fuegiana and Balantiopsis bisbifida. It was also gathered on stream banks in Cortaderia heaths (c. 60 m.), and on soil in a wet crevice of outcrop rocks in a dwarf shrub heath, 455 m.

Phytogeography: This species occurs in the Falklands and Fuegia (southern I. Grande de Tierra del Fuego).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949); Skottsberg - Fuegia (Stephani 1924).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2749). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2525 B & 2542 C); valley southwest of Mt. Usborne, c. 60 m. (2653 & 2663). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 60 m. (3083 C, 3091 B, 3094 D, 3118 & 3134). MT. ADAM, ridge south of northern lake, 610 m. (3039 B & 3043).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: Fuegia, without specific locality, 1908 Skottsberg 511, syntype of S. subintegerrima (G).

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Notes on Schistochila species

Schistochila lanceolata Steph. This species was described by Stephani (K. Svenska VetenskAkad Handl. 46 (9): 79. 1911) for a Falkland Island collection. I have not seen material of the species.

LOPHOCOLEACEAE

Jørg. Bergens Mus. Skr. 1934.

Chiloscyphus¹

Corda in Opiz, Beitr. Naturg. 12: 651. 1829.

Key to the Falkland Island Species of Chiloscyphus

1. Underleaves connate with leaves on one side; as wide as or of lesser width than stem. Leaves on a single axis usually with leaf apices variable, e.g., broadly rounded

¹Grolle (1970) has proposed that Chiloscyphus Dum. (Sylloge Jung. Europ. Indig. 67. 1831) be conserved. Until the proposal is voted upon, the authorship must be that of Corda (1829) who, ~~however~~, used the spelling "Cheiloscyphus."

to truncate to retuse to single lobed to bifid; ventral margin entire, apex never trifid in appearance . . .

. C. hookeri subsp. hookeri

1. Underleaves connate (strongly asymmetrically so, e.g. connate much more strongly so on one side, and lower on one side than the other) with leaves on both sides, ca. twice as wide as stem; leaves bifid, with a tooth-cilium varying in position on the upper ventral margin, frequently near leaf apex giving it a trifid appearance . .

. C. triacanthus

Chiloscyphus Hookeri Engel, sp. nov.

Chiloscypho pallido-virenti satis similis, sed differt amphigastriis caulinis planis, laminis cauli aequilatis, et margine ventrali foliorum caulinorum recto vel parum deflexo.

Holotype: Chile, Prov. Magallanes, Cabo de Hornos, Hooker 12, mixed with syntype plants of Jungermannia pallido-virens (NY !).

Plants caespitose to mixed with other bryophytes, prostrate, to 6.5 cm. tall, 6 mm. wide, light green to light brown, occasionally cocoa brown in color, nitid when dry.

Branches occasional, mostly of lateral intercalary type, occasionally of Frullania type.

Stems 134-468 μ thick, 312-585 μ wide, in surface view cortical cells subrectangular, cell walls slightly thickened, and walls

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transverse to slightly oblique, straight or V-shaped, cells 39-114 μ long, 17-46 μ wide, stems in section 12-17 cells in diameter, cortex undifferentiated to very slightly differentiated in 1-3 rows, if the latter, the cortex slightly smaller celled and/or slightly thicker walled, cortical cells of ventral surface often smaller than the dorsal, the latter then often as large as medullary cells and undifferentiated, cortical cells 18-38 μ thick, cuticle smooth; medullary cells thin to slightly thickened, cells elongate rectangular, end walls transverse to oblique, straight or V-shaped, 88-163 μ long, 20-44 μ in diameter. Rhizoids, when present, in clusters from the stem at the base of the underleaves, very rarely scattered.

Leaves (1.7-) 1.8-2.8 mm. long, 1.5-3.0 mm. wide, strongly succubously oriented, $\pm$ erect to spreading, imbricated, usually slightly concave, occasionally strongly convex, especially near the dorsal margin, rarely slightly concave, wide ovate to subrectangular in shape, margins entire, apex polymorphic, broadly rounded to truncate to retuse, frequently with a single tooth in the dorsal 1/2 of leaf apex, occasionally with 2 lobes, the dorsal acute and the ventral broadly rounded, occasionally short bifid, lobes, if present, narrow to broadly triangular, occasionally apiculate, sinus, if present, shallow, broadly rounded, dorsal margin straight to slightly curved, occasionally repand, usually plane, occasionally strongly deflexed or revolute, not to very short decurrent, ventral margin strongly curved, usually more strongly curved than the dorsal margin, occasionally repand, usually plane, occasionally slightly deflexed, occasionally

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more strongly so in robust forms, not decurrent, line of insertion of free leaf very slightly recurved at ventral end.

Leaf cells subsquarrose to subrectangular to septangonal to hexagonal, walls thin or thickened, intermediate thickenings occasionally present, trigones minute to medium, larger toward leaf base, median leaf cells 33-68 μ long, 26-51 (-68) μ wide, median marginal cells narrower, 16-44 μ wide, basal median leaf cells 42-86 μ long, 33-64 μ wide, basal, dorsal, marginal cells smaller, 31-75 μ long, 20-39 μ wide, cuticle smooth.

Underleaves .8-1.3 mm. long, as wide as the stem, connate on one side, distant, plane, lamina slightly spreading, bifid to 4/5-1/2, sinus usually narrow to broadly rounded, occasionally lunate, margins of the lamina 1 (-3) dentate-laciniate, the segments directed straight forward to spreading to 150°, often curved slightly dorsally, long acuminate in shape, segment margins entire-1 dentate-ciliate, free margin long decurrent on the stem.

Plants dioicous; androecia intercalary on the main axis or on short to long lateral intercalary branches, bracts in groups of 3-6 pairs, ca. 1/2 the size of the leaves, entire-2-3 dentate-ciliate-laciniate near dorsal point of insertion, antheridia 1-2 per bract, stalk of 2 cell rows. Gynoecia usually on short lateral intercalary branches, occasionally on elongated lateral intercalary branches, rarely on ventral intercalary branches or terminal on the main axis; bracts in 2-3 series, becoming progressively larger towards the perianth, bracts of innermost series with apex incurved to recurved,

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broadly rounded to retuse to bifid, lobes, if present, acute to broadly rounded, bracts occasionally canaliculate toward apex, dorsal margin entire-l lobate, plane to recurved, ventral margin entire, plane to recurved; bracteoles of innermost series, connate with one of bracts at base, 1/2-3/4 bifid, lamina margins entire-l laciniate; perianth subcampanulate or $\pm$ narrow and only slightly expanded at mouth, usually slightly inflated and slightly widened at the mouth, obscurely trigonous to occasionally $\pm$ laterally compressed, the two dorsal lobes straight to convex, the ventral concave to folded inward giving the perianth the $\pm$ laterally compressed appearance, lobes rounded, plane to undulated, bifid, otherwise sparingly to $\pm$ densely ciliate-laciniate, segments acuminate, keels sharp or rounded, occasionally winged, the wings of a few cells and 1-2 dentate, secondary wings occasionally present, the calyptra extending to slightly less than 1/2 the perianth length.

Seta with cells arranged in longitudinal rows, 11-12 cells in diameter, with a single row of outer cells, 39-47 μ wide surrounding an inner core of scattered cells 33-46 μ in diameter, corners of cell walls thickened. Capsule slightly ovate in shape, 1.2 mm. long, .86 mm. wide, wall 85-91 μ thick, of 5-7 layers, outer 2-3 rows of cells larger, with the outer row considerably larger, outer layer of cells subrectangular to subsquarrose in shape, thin walled, 39-72 μ long, 29-46 μ wide, 20-21 μ thick, exposed wall smooth, outer layer with thickenings on radial walls, the thickenings nodule like or spine like, the spines often hooked, the thickenings red brown or "colorless"; intermediate layers with thickenings mostly on radial walls,

occasionally on inner tangential walls; inner layer of cells sigmoid to elongate-elliptic to irregular in shape, 46-92 μ long, 13-33 μ wide, 8-11 μ thick, radial and tangential walls with thickenings, semiannular bands extending from radial walls, bands occasionally incomplete, occasionally forked, bands red brown in color, exposed wall smooth. Spores pale brown in color, spherical to ovoid in shape, minutely papillose, 13.2-14.8 μ . Elaters tapering at both ends, bispiral, rarely trispiral, the spirals extending to the elater tips, spirals light brown to yellow brown in color, 6.9-10.6 μ wide.

As pointed out by Grolle (1962, p. 78) the original material of Chiloscyphus pallido-virens is a mixture of two species. Material from the New York Botanical Garden consists of several plants of Chiloscyphus pallido-virens and several of C. hookeri. Hooker and Taylor (1844, p. 473) state for the underleaf of Jungermannia pallido-virens: "This is minute, not above half as wide as the stem, concave . . ." and for the leaves: ". . . margin antiore recurvo" Since there is no question as to which plants were referred to in the description or in the figures in Taylor & Hooker (1847b), the plants with distinctly recurved underleaves which are 1/2 to 3/4 the width of the stem and with ventral leaf margins greatly recurved are here regarded as a syntype (NY) of Chiloscyphus pallido-virens. Grolle (1962) has designated the material in Hb. S. as "Teil von Holotypus von Jungermannia pallidevirens H. f. & T." The material with plane underleaves which are as wide as the stem and with ventral leaf margins plane or slightly deflexed is here designated the holotype of Chiloscyphus hookeri.

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Stephani's icon 75 is labeled Lophocolea pallido-virens, Cape Horn, Hooker, but is actually a figure of Chiloscyphus hookeri subsp. hookeri.

The perianth position is quite variable. They are usually present on short, abbreviated lateral-intercalary branches, but may be situated on $\pm$ long, lateral-intercalary or ventral-intercalary branches, or rarely terminal on the main axis. The taxon is here included in the genus Chiloscyphus because of the possession of the following features: 1) regular production of perianths on short, abbreviated, lateral-intercalary branches, 2) perianth angles poorly defined, and 3) perianths occasionally considerably inflated.

Chiloscyphus hookeri is here divided into two subspecies, subsp. hookeri and subsp. constantifolius.

Chiloscyphus hookeri Engel subsp. hookeri

Ecology: This species is rather common in dwarf shrub heaths, especially over 155 m., where it grows under rock or Blechnum magellanicum cover in deep rock crevices, etc. It more rarely occurs on stream banks in this association, and is less common under grass cover in Cortaderia heaths.

Phytogeography: This subspecies occurs in the Falklands, Tierra del Fuego and Patagonian Channels north to 49° 02' S. Chiloscyphus hookeri subsp. constantifolius is known only from Tierra del Fuego (B. Tekenika, indicated by open circle) (see Map 26).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3227 & 3228); ridge on Engineer Point peninsula, 18-25 m. (2820-c. per.). STANLEY REGION, Tumbledown Mt., 155-230 m. (2372 B-c. ♀ & 2386); Goat Ridge, c. 180 m. (3197-c. per. & 3209-c. per.); summit ridge of north peak of Two Sisters, 245-290 m. (2704 & 2710 C-c. per.). MT. USBORNE REGION, The Gap, 275-290 m. (2462 A-c. o→); south side of The Gap, 260-275 m. (2454-c. per.). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3137). HORNBY MTS., 19 December 1907 Halle & Skottsberg 223 as Lophocolea pallido-virens (UPS). FOX BAY REGION, summit of East Head, 180 m. (3437); near peat cutting in Ram Poddock, 45-60 m. (3511-c. o→). MT. ADAM, 13 December 1907 Halle & Skottsberg 223 as Lophocolea pallido-virens (UPS). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3369 E); summit of Mt. Weddell, 380 m. (3334, 3337-c. o→ & 3343 A).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: B. Tekenika, 5 November 1902 Skottsberg s.n. and ser. III, nr. 33 as Leioscyphus horizontalis (S-PA); B. Tekenika, 6 November 1902 Skottsberg s.n. as Leioscyphus horizontalis (S-PA). ARGENTINA. TIERRA DEL FUEGO: Harberton, 30 October 1902 Skottsberg ser. III, nr. 32 as Leioscyphus chiloscypoides (S-PA); Ushuaia, 11 March 1902 Skottsberg s.n. as Leioscyphus horizontalis (S-PA). CHILE. MAGALLANES: Cta. Gomez, 26 February 1908 Halle & Skottsberg 149 as Leioscyphus fuegiensis (S-PA); I. Desolacion, Pto. Churruca, Savatier s.n. as Chiloscyphus pallido-virens (PC); I. Newton, May 1896 Dusen s.n. as Lophocolea

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pallido-virens (S-PA); Pto. Simpson, 7 June 1908 Skottsberg 15 as
Lefoscyphus chiloscypoides (S-PA).

Chiloscyphus hookeri Engel subsp.
constantifolius Engel subsp. nov.

Foliorum caulinarum exhibentibus minima variationem, constanter
rotundatis vel truncatis, interdum retusis, haud unilobis vel bilobis.

Holotype: CHILE, PROV. MAGALLANES, B. Tekenika, 5 November
1902 Skottsberg ser. III, nr. 33 (S-PA!-c. per.).

This subspecies differs from subspecies hookeri by possessing
only slightly variable leaves which are broadly rounded or truncate,
occasionally retuse and never toothed or bifid. The subspecies is
known only from the type locality.

PLATE 5

Chiloscyphus hookeri. Fig. 1. Portion of lengthy lateral intercalary branch showing intercalary androecia, X 11. Fig. 2. Male bract, X 11. Fig. 3. Female bract and bracteole, X 11. Fig. 4. Excised capsule and seta, X 11. Fig. 5. Elater, X 530. Fig. 6. Spores, X 530. Fig. 7. Inner cells of capsule wall, X 530. Fig. 8. Outer cells of capsule wall, X 530. Fig. 9. Capsule wall, cross section, X 530. Fig. 10. Seta, cross section, X 205. Figs. 1, 2 from Engel 3337, West Falklands, Weddell Island, Mt. Weddell. Fig. 3 from Hatcher 25-3, Chile, Prov. Magallanes, Pta. Leon. Figs. 4-10 from Engel 5957A, Chile, Prov. Magallanes, B. Fortescue.

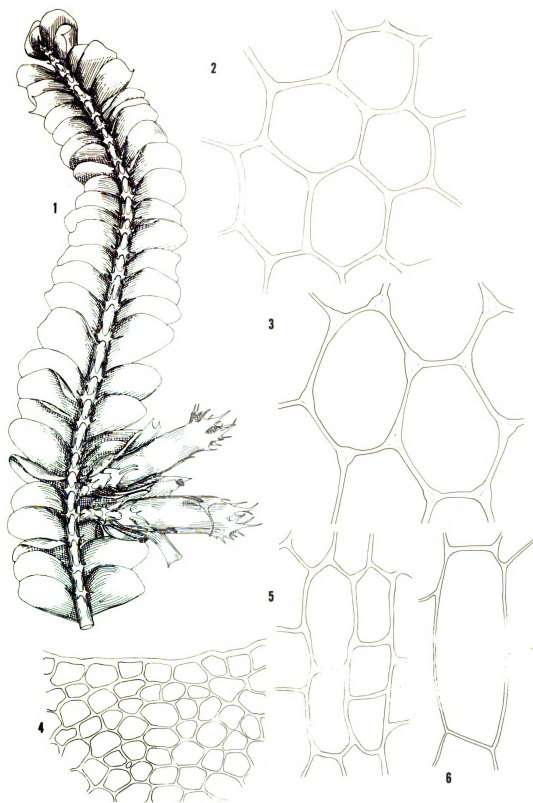
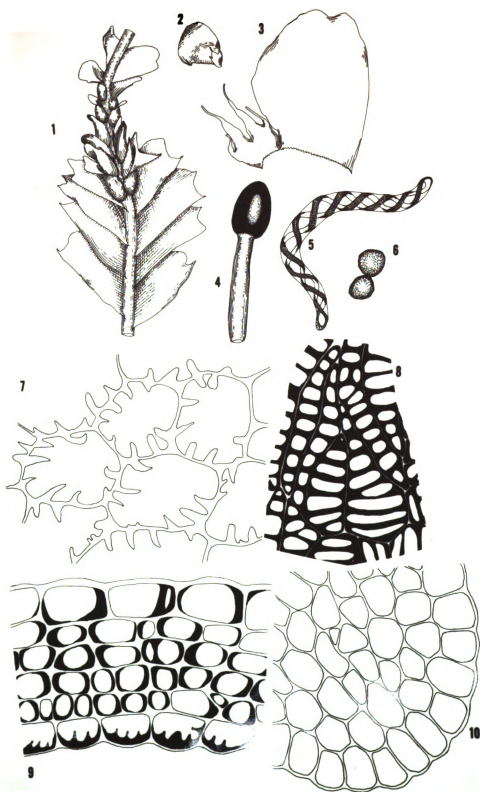


PLATE 6

Chiloscyphus hookeri. Fig. 1. Portion of plant with perianths, ventral view, X 7. Fig. 2. Median leaf cells, X 530. Fig. 3. Basal leaf cells, X 530. Fig. 4. Stem, cross section, X 205. Fig. 5. Cortical cells, surface view, X 530. Fig. 6. Medullary cell, median longitudinal section, X 530. Figs. 1, 2, 3, 6 from holotype material, Hooker s.n., Chile, Prov. Tierra del Fuego, Cabo de Hornos. Figs. 4, 5 from Engel 2704, East Falklands, Stanley, summit ridge of N peak of Two Sisters.



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Chiloscyphus triacanthus (Hook. f. & Tayl.) Steph.

Lophocolea triacantha Hook f. & Tayl. in Tayl. London Jour. Bot. 5:

368. 1846. Jungermannia triacantha (Hook. f. & Tayl.) Hook. f. & Tayl. in Hook. f. Bot. Ant. Voy. 1 (2): 439. 1847. Chiloscyphus triacanthus (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 8 (2): 131. 1908 (= Sp. Hep. 3: 247). Heteroscyphus triacanthus (Hook. f. & Tayl.) Schiffn. Öst. Bot. Z. 60: 172. 1910. Original material: "East Falkland, Lyall n. 67. New Zealand, Herb. Mus. Paris" (non vidi).

Lophocolea symmetrica Steph. K. Svenska VetenskAkad. Handl. 46 (9):

54. f. 18. g, h. 1911, syn. nov. Lectotype (nov.): Falkland Is., Westpoint Is., 8 December 1907 Skottsberg s.n. (UPS ! - c. o→).

Chiloscyphus skottsbergii Steph. K. Svenska VetenskAkad. Handl. 46 (9):

57. f. 21 d,e. 1911, syn nov. Heteroscyphus skottsbergii (Steph.) Kühnem. Lilloa 19: 333. 1949. Lectotype (nov.): Falkland Is., Port Louis, 7 November 1907 Halle 340 (UPS ! - c. o→).

Taxonomical remarks: The lectotype plants of Lophocolea symmetrica have strongly spreading leaves which are slightly convex and occasionally entire and underleaves which are conspicuously connate on one side and rather inconspicuously so on the other. The underleaf laciniae are ca. equal to or slightly larger than the underleaf segments. The plants are a shade form of the species and possess androecia, which are thus not sterile as stated in Stephani (1911).

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The leaves of the lectotype and syntypes of Chiloscyphus skottsbergii are strongly erect, slightly adaxially concave and have ventral leaf margins occasionally entire.

Phytogeography: This amphipacific temperate species occurs in Campbell Island, New Zealand, the Falkland Islands, Tierra del Fuego and Juan Fernandez.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 as C. skottsbergii, C. triacanthus & Lophocolea symmetrica), 1949 as C. triacanthus, Heteroscyphus skottsbergii & Lophocolea symmetrica); Halle (Stephani 1922 as Chiloscyphus skottsbergii); Lyll (G. L. & N. 1847 as Lophocolea, Taylor & Hooker 1847b as Jungermannia, Stephani 1908); Skottsberg (Stephani 1922 as Lophocolea symmetrica), Port Louis (Bonner 1963 as C. skottsbergii), Port Stanley (Skottsberg 1913 as C. skottsbergii), Westpoint Is. (Skottsberg 1913 as Lophocolea symmetrica).

Additional Literature Records: (note: locality information has been omitted for non-southern South American reports): TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Spegazzini - M. Conegliano & Pto. Cook (Massalongo 1885 as Lophocolea, 1927 as Chiloscyphus). CAMPBELL: Sorensen (Hodgson 1962). NEW ZEALAND: Anonymous - (Bonner 1963, G. L. & N. 1847 as Lophocolea, Hodgson 1943); Colenso, Mantell, Raoul (Hooker 1867 as Lophocolea); Cheeseman, Colenso, Helms, Kirk, Knight, Lyll (Stephani 1908); Allison, Berry, Colenso, A. L. Hodgson, Kirk, Lyll, Moore, Raoul & Zotov (Hodgson 1943); Colenso, Raoul (Mitten 1955 as Lophocolea).

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FALKLAND SPECIMENS SEEN: Westpoint Is., Waterfall, 8 December 1907 Skottsberg s.n., syntype of Lophocolea symmetrica (G); Port Louis, Halle 64, syntype of Chiloscyphus skottsbergii (G); ibid., 1907 Skottsberg 6, syntype of Chiloscyphus skottsbergii (G).

ADDITIONAL SPECIMENS SEEN: NEW ZEALAND: sin. coll., ex. hb. Lehmann (PC); Colenso s.n. (BM). NORTH ISLAND: Northern Ruahine Mts., 3000 ft., March 1934 Hodgson 3275, 10386 (BM).

Chiloscyphus Species Excluded from the Falklands

1. Chiloscyphus pallido-virens (Hook. f. & Tayl.) G. L. & N. This species was reported for the Falklands as Lophocolea pallido-virens by Stephani (1905a, 1911), Skottsberg (1913) and Kühnemann (1937, 1949). Specimens on which these reports are based are actually Chiloscyphus hookeri subsp. hookeri.

2. Chiloscyphus retusatus (Tayl.) G. L. & N. This species was originally described from New Zealand. Hodgson (1953, p. 356) stated she was unable to locate the type (at Kew), but regarded the plant as possibly Chiloscyphus compactus. Chiloscyphus retusatus was reported for the Falklands by Taylor and Hooker (1847b). In the New York Botanical Garden I have seen two Lyall collected Falkland Island specimens labeled Chiloscyphus retusatus, but which actually are Leptoscyphus expansus. I have also seen British Museum and Farlow Herbarium (hb. Taylor) specimens labeled Lophocolea alternifolia, "with Chiloscyphus retusatus." The plants of the latter are a rather

lax form of Leptoscyphus expansus with truncate leaf apices which are frequently emarginate. These specimens agree with Hooker's figures (pl. 159, f. 3) of Jungermannia reclinata (which J. D. Hooker, 1847b states is the name used for J. retusata in the plates). Figure three shows especially well the $\pm$ decurrent dorsal leaf margin, which is found in the plants mixed with Lophocolea alternifolia. Thus, it is likely that plants of Leptoscyphus expansus were used for the plates of "J. reclinata." I have not seen the type of Chiloscyphus retusatus. The report of C. retusatus from the Falklands thus is based upon specimens of Leptoscyphus expansus, and the name Chiloscyphus retusatus may be excluded from the Falkland Island flora.

Clasmatocolea

Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 440. 1885.

Key to the Falkland Island Species of Clasmatocolea

1. Leaves slightly concave, orbicular in shape. Antheridial stalk cells in 2 rows; perianths inflated, clavate-campanulate, trigonous at the base, obscurely so toward the apex, mouth truncate, wide, the three lobes rotund, entire, occasionally emarginate, rarely with the ventral lobe bidentate or bilobed. C. vermicularis

1. Leaves deeply adaxially concave, orbicular to reniform
to ovate in shape. 2
2. Leaves bilobed 3
2. Leaves unlobed 4
3. Leaves usually longer than wide; underleaves bifid from
1/2 to usually near the base C. koeppensis
3. Leaves wider than long; underleaves retuse to slightly
bifid. C. cookiana
4. Leaves (2-) 3-5 stratosed at the base; plants
growing in very densely compacted mats C. georgiensis
4. Leaves unistratosed throughout; plants growing
in loosely compacted mats. 5
5. Leaves of main axis sinuous to incurved in moistened
condition, leaves large-dentate to lacinate; under-
leaves very frequently with apex either approaching
or in contact with stem, underleaves never spreading . C. fulvella
5. Leaves of main axis plane in moistened condition,
leaves entire, very rarely with a few small teeth;
underleaves not with apex lying in contact with
stem, underleaves occasionally spreading C. humilis

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Clasmatocolea cookiana (Mass.) Engel, comb. nov.

Lophocolea Cookiana Mass. Nuovo G. Bot. Ital. 17: 224. pl. 16.

f. 11. 1885. Lectotype (nov.): Argentina, Terr. Tierra del Fuego, I. de los Estados, Pto. Cook, February 1882 Spegazzini 14 (VER ! - c. o→).

Lophocolea latissima Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 42. 1900, syn. nov. Original material: Chile, Prov. Magallanes, S. Molyneux, 1 June 1896 Dusén 68 (G !).

Taxonomical Remarks: Clasmatocolea cookiana exhibits a certain degree of variation. The dorsal margins are usually entire, but may occasionally possess a single tooth. These forms, however, as well as all specimens observed of C. cookiana have plane antical lobes, a character which will separate this taxon from C. obvoluta, its closest ally. The latter consistently has canaliculate dorsal leaf lobes, and has dorsal and ventral leaf margins consistently 1 (2-3) dentate. The above comments are based upon extra-Falkland collections.

Stephani in his original description of Lophocolea latissima states in reference to the leaf: "postice haud longe libera ut in Loph. cookiana sed breviter inserta." The syntype of Lophocolea latissima and lectotype of Clasmatocolea cookiana both have underleaves connate on both sides with ventral leaf margins.

Ecology - Phytogeography: The Falkland record is based upon a single Skottsberg and a single Engel collection, both of which

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consist of a few, poorly developed plants in mixture with other bryophytes. The Skottsberg collection was mixed with Leptoscyphus aequatus and Microlepidozia setiformis, while the Engel collection (from a wet depression in a Cortaderia heath, 455 m.) was mixed with Leptoscyphus aequatus, Microlepidozia setiformis, Hyalolepidozia bicuspidata, Neolepidozia oligophylla and Riccardia spectabilis.

Clasmatocolea cookiana is a species characteristic of the magellanian moorland, and frequently occurs in deeply shaded situations, often at the base of, or on the sides of mounds of bryophytes. This sort of ecology is totally absent from the Falklands, which principally accounts for the poor development and rarity of the taxon. The species extends north to 43° 57' S. (Islas GUAITECAS) (see Map 27).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Skottsberg and/or Halle - Port Stanley (Skottsberg 1913 & Stephani 1911 as Lophocolea).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Lophocolea), I. Desolacion (Stephani 1906 as L. cookiana & L. latissima); Hariot - Cabo de Hornos (Bescherelle & Massalongo 1889 as Lophocolea); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as Lophocolea); Skottsberg - Pto. Cook (Stephani 1905a as Lophocolea); Spegazzini - Lophocolea.
PATAGONIA: Dusén - I. Newton (Stephani 1900 as L. cookiana), Patagonia Stephani 1906 as Lophocolea); Skottsberg & Halle - Pto. Cutter & B. Arauz (Stephani 1911 as L. latissima).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, near Port Stanley, 29 October 1907 Skottsberg 350 (S-PA, UPS). MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2612 C).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: Isla Hornos, Hariot 155 (VER). ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, Pto. Cook, March 1882 Spegazzini 13 (G, VER). CHILE. MAGALLANES: I. Desolacion, Pto. Angosto, April 1896 Dusen s.n. (S-PA); Pto. Angosto, April 1896 Dusen 265 (NY); Pto. Angosto, 16 April 1896 Dusen 401 as Lophocolea latissima (G); B. Isthmus, 1877 Savatier 205 (VER); AISEN: Aisen Valley, 19 January 1897 Dusen 248 (NY). CHILOE: I. Guaitecas, April 1897 Dusen s.n. as Lophocolea trachyopa (NY - c. o→); I. Guaitecas, 30 April 1897 Dusen 363 as Lophocolea trachyopa (S-PA); I. Guaitecas, May Dusen s.n.-c. per. 12, 371 as Lophocolea trachyopa (S-PA).

Clasmatocolea fulvella (Hook. f. & Tayl.) Grolle

Jungermannia fulvella Hook. f. & Tayl. London Jour. Bot. 3: 464.

1844. Chiloscyphus fulvellus (Hook. f. & Tayl.) Nees in G. L. & N. Syn. Hep. 711. 1847. Lophocolea fulvella (Hook. f. & Tayl.) Mass. Nuovo G. Bot. Ital. 17: 227. 1885. Clasmatocolea fulvella (Hook. f. & Tayl.) Grolle, Rev. Bryol. Lichén. 29 (1-2): 72. 1960. Original material: Chile, Prov. Magallanes, I. Hermite, ex. hb. Lehmann, 1843 Hooker s.n. (NY ! S-PA !).

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Lophocolea homomalla Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 39. 1900, syn. nov. Lectotype (nov.): Chile, Prov. Aisen, R. Aisen Valley, 5 February 1897 Dusen 304 (S-PA !).

Taxonomical remarks: The underleaves of C. fulvella show little variability and possess characteristics very distinctive of the species. The underleaves are suborbicular to subsquarrose in outline, and become abruptly concave near the insertion. The margins are curved dorsally, obliterating a view of the stem from lateral and ventral views, lending the underleaf a cup-shaped appearance. The underleaf apices are broadly rounded to truncate at the apex, which is bidentate to retuse. Further, the underleaf apices are very frequently either approaching or in contact with the stem.

Ecology: This is a fairly common species at higher altitudes, where it grows on rock in Cortaderia heaths above 550 m., on soil or rock of dwarf shrub heaths (above 320 m.), on rock under overhangs of sheltered high altitude cliffs, and on submerged rocks in small field-mark pools (700 m.).

Phytogeography: This taxon occurs in the Falklands, Tierra del Fuego, and north to 36° 50' S. in West Patagonia. It also occurs in P. N. Nahuel Huapi of Andean Patagonia (see Map 28).

Literature Reports: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Darwin - southern Tierra del Fuego (Taylor & Hooker 1847b as Jungermannia); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Lophocolea, Fuegia, "Argentina magellanica" (Stephani 1906 as Lophocolea); Hooker - I. Hermite and/or Cabo de

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Hornos (G. L. & N. 1847 as Chiloscyphus, Taylor & Hooker 1847b as Jungermannia, Stephani 1906 as Lophocolea); Hyades - I. Hoste (Bescherelle & Massalongo 1889 as Lophocolea); Skottsberg - Pto. Cook (Stephani 1905a as Lophocolea); Skottsberg & Halle - Cta. Gomez (Stephani 1911 as Lophocolea homomalla); Spegazzini - Pto. San Juan del Salvamiento, B. Blossom, Pto. Cook (Massalongo 1885 & 1927 as Lophocolea). PATAGONIA: Anonymous - (Kuhnemann 1937 & 1949 as Lophocolea); Albatross - Pto. Island (Evans 1892 as Lophocolea); Donat - Puerto Blest (Herzog 1957 as Lophocolea), R. Negro (Herzog 1957 as L. homomalla); Dusén - western Patagonia (Stephani 1906 as L. fulvella & L. homomalla), R. Aisen, I. Guaitecas, Puerto Blest (Stephani 1900 as Lophocolea); Naumann - Punta Aranas (Schiffner 1890 as Lophocolea); Santesson - Pto. Aisen (Arnell 1955 as Lophocolea); Schwabe - Pto. Puyuhuapi, C. Tesoro (Herzog 1939, 1954 as Lophocolea), C. Tesoro (Herzog 1954 as L. homomalla); Skottsberg & Halle - I. Atalaya, Canal Gajardo (Stephani 1911 as Lophocolea); Spegazzini - Poyo-huapi (Massalongo 1906 as Lophocolea).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2753 & 2759). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2635 B & 2640 A); southeast slope of Mt. Usborne 2, c. 455 m. (2535, 2541 A, 2557-c. per.!, 2594 C & 2597A-c. per.!). ridge between Mt. Usbornes 1 & 2, 685 m. (2521 B); summit of Mt. Usborne 1, c. 700 m. (2513); summit of Table Rock, 550m., Imshaug 40101 & 40104 (MSC). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria,

320 m. (3143 & 3150); pass southwest of Mt. Maria summit, c. 610 m. (3132). MT. ADAM, 13 December 1907 Halle & Skottsberg 226 as Lophocolea puccioana (UPS); ridge south of northern lake, 610 m. (3024 A & 3028); basin east of summit, 580-595 m. (2998 B); east slope of main peak, c. 610 m. (3006). WEDDELL ISLAND, 28 November 1907 Halle & Skottsberg 226 as Lophocolea puccioana (UPS).

ADDITIONAL SPECIMENS SEEN (representative selection); CHILE. MAGALLANES: southern part of Tierra del Fuego, Darwin 467 (NY); I. Hermite, sin. coll. as Lophocolea cookiana (PC); B. Orange, sin. coll. (PC). ARGENTINA. TIERRA del FUEGO: I. de los Estados, Pto. Cook, 18 November Skottsberg s.n. as Lophocolea gayana (S-PA). CHILE. MAGALLANES: R. Azopardo, March 1896 Dusen 86 (S-PA); Cta. Gomez, 20 February 1908 Halle & Skottsberg 207 as Lophocolea homomalla (S-PA); I. Desolacion, 13 April 1896 Dusen 444 (S-PA); I. Desolacion, Pto. Angosto, April 1896 Dusen s.n. as L. humilis (S-PA); Canal Gajardo, Cta. Inga, 27 April 1908 Halle & Skottsberg 202 (S-PA). AISEN. R. Aisen, 1897 Dusen 253, syntype of Lophocolea homomalla (S-PA); ibid. January 1897 Dusen s.n., syntype of Lophocolea homomalla (G). CHILOE: I. Chiloe, Pto. Quellon, July 1908 Halle & Skottsberg 220 as Lophocolea navistipula (UPS). CONCEPCION: Concepcion, 5 September 1896 Dusen s.n. as L. humilis (S-PA). ARGENTINA. NEUQUEN - RIO NEGRO: P. N. Nahuel Huapi, Donat 27 as Lophocolea homomalla (S-PA).

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Clasmatocolea georgiensis (Gott.)
Engel, comb. nov.

Lophocolea georgiensis Gott. Ergebn. Dt. Pol.-Exped. 2 (16): 453.

pl. 3, 4. 1890. Original material: South Georgia, 10 May
1883 Will 11 (non vidi).

Taxonomical remarks: This taxon possesses the following
Clasmatocoleoid characters: 1) deeply concave leaves and 2) inflated,
convex-sided perianths which are wide at the mouth.

The only reports of Clasmatocolea (Lophocolea) georgiensis
are those in Stephani (1911) and Kühnemann (1937, 1949), the latter
basing his reports on Stephani (1911). All of the above reports
are based upon misdeterminations, thus this is the first authentic
report of this taxon other than the type material.

Ecology: This species is of sporadic occurrence in the
sheltered high altitude cliffs, where it grows on soil over rock,
on soil in rock crevices or under ledges. Schuster (1968b, p. 499)
includes this species [as "Clasmatocolea sp. (a species with poly-
stratose leaves")] as an associate of Acrolophozia fuegiana, which
was collected at Cerro Garibaldi, Tierra del Fuego at "ca. 900 m.,
on damp ledges in alpine tundra," an ecological situation which
apparently is quite similar to the sheltered high altitude cliffs
in the Falklands.

Phytogeography: This species has a subantarctic distribu-
tion, occurring on South Georgia, the Falklands, the mountainous
region of southern Isla Grande de Tierra del Fuego and the

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Patagonian Channel region. Although label information does not provide habitat or altitude, the Pto. Bueno collection likely was made on rock outcrops at a fairly high altitude (see Map 29).

Literature records: SOUTH GEORGIA: Skottsberg - Cumberland Bay (Steere 1961 and Stephani 1905a as Lophocolea); Will (Steere 1961 as Lophocolea). PATAGONIA: Skottsberg & Halle - Quicavi, Est. Miguens (Stephani 1911 as Lophocolea).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2518-c. sporo.). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3085, 3089-c per., 3090, 3095-c. per., 3110 B & 3117).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: R. Azopardo, 600 m. 9 March 1896 Dusen 110 as Leioscyphus turgescens (NY); Rio Azopardo, 600 m., 3 May 1908 Halle & Skottsberg 220 as Lophocolea navistipula (UPS); Pto. Bueno, 1896 Dusen s.n. (UPS).

Clasmatocolea humilis (Hook.
& Tayl.) Grolle

Jungermannia humilis Hook. f. & Tayl. London Jour. Bot. 3: 468.

1844. Mylia humilis (Hook. f. & Tayl.) Trev. Memorie Ist Lomb. Sci. Lett. III. 4: 412. 1877. Solenostoma humilis (Hook. f. & Tayl.) Mitt. Phil. Trans. R. Soc. 168 (extra vol.): 42. 1879. Nardia humilis (Hook. f. & Tayl.) Berggr. N. Z. Hep. 7. 1898. Lophocolea humilis (Hook. f. & Tayl.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6); 40. 1900. Clasmatocolea

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humilis (Hook. f. & Tayl.) Grolle, Rev. Bryol. Lichen. 29
(1-2): 72. 1960. Original material: Îles Kerguelen, Hooker
s.n., S-PA!, ex hb. Lehmann).

Jungermannia palustris Hook. f. & Tayl. London Jour. Bot. 3: 464.

1844, syn. nov. Lophocolea palustris (Hook. f. & Tayl.) Besch.
& Mass. Mission Scient. Cap Horn 5: 222. 1889. Original
material: Chile, Prov. Magallanes, Cabo de Hornos, Hooker 19b
(NY !, S-PA!).

Lophocolea magellanica Schiffn. in Naumann, Forschungsr.; Gazelle
4 (4); 14. pl. 4. f. 22, 23. 1890, syn. nov. Lectotype (nov.):
Chile, Prov. Magallanes, I. Desolacion, B. Tuesday, 2 February
1876 Naumann s.n. (FH !).

Lophocolea hastatistipa Steph. K. Svenska VetenskAkad. Handl. 46 (9):
45. f. 19 h, i. 1911, syn. nov. Lectotype (nov.): Falkland Is.,
King George Bay, 22 November 1907 Halle & Skottsberg 352 (UPS !).

Lophocolea incrassata Steph. K. Svenska VetenskAkad. Handl. 46 (9):
46. f. 17 c, d. 1911, syn. nov. Lectotype (nov.): Falkland
Is., 1908 Skottsberg 644 (G !).

Lophocolea integerrima Steph. K. Svenska VetenskAkad. Handl. 46 (9):
46. f. 17 a, b. 1911, syn. nov. Lectotype (nov.): Chile,
Prov. Magallanes, S. Skyring, F. de los Ventisqueros, 26 April
1908 Halle & Skottsberg 211 (UPS ! - c. per.).

Lophocolea rotundifolia Steph. K. Svenska VetenskAkad. Handl. 46
(9): 52. f. 19 r, s. 1911, syn. nov. Lectotype (nov.): Chile,
Prov. Magallanes, I. Atalaya, 25 May 1908 Skottsberg 230 (UPS !).

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Lophocolea multispinula Steph. Sp. Hep. 6: 284. 1922, syn. nov.

Original material: Chile, Prov. Magallanes, I Desolacion, B. Tuesday, sin. coll. (G!).

Taxonomical remarks: This species exhibits considerable variability, and I am recognizing the following ecological variants.

Hygrophilus forms: Plants lax, occasionally quite flaccid in texture; leaves closely imbricated, erect; perianth mouth entire or sparingly dentate-laciniate; frequently growing in or near water.

Xerophilus forms: Plants very rigid, stiff, never flaccid in texture; leaves more loosely imbricated and with spreading leaves; perianths not campanulate in shape, with perianth mouths densely dentate-laciniate; growing on rocks and dry, exposed habitats.

The underleaves of Clasmatocolea humilis exhibit considerable variation. They may be plane to very slightly concave as in the type plants of Jungermannia humilis, to cucullate as in type plants of Lophocolea magellanica. They are narrowly to broadly ovate to nearly orbicular in shape. The apex may be very wide truncate or the underleaf may taper gradually to a narrowly rounded apex; in the latter instance the underleaf margins occasionally are revolute. Further, apices vary from unlobed and truncate to emarginate to retuse or bifid to varying degrees, but not to greater than 1/2. The unlobed apices may be entire or bidentate. Underleaf margins are usually entire or 1- dentate to 1- lobate in the middle 1/3, but may be dentate or small to large lobate in either upper, middle or lower 1/3 of the underleaf margin.

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In the syntypes of Jungermannia palustris, which are quite flaccid in texture, the ventral leaf portion is deeply adaxially concave with the ventral margin incurved, while the dorsal leaf portion is concave, often with the dorsal margin decurved. This condition produces in the leaf middle the "remarkable longitudinal obtuse fold," noted in Hooker and Taylor (1844). There is a trend in variation toward this condition commencing in the more xeric forms of Clasmatocolea humilis with the ventral margin only slightly incurved and the dorsal leaf portion slightly concave. The trend then continues in aquatic forms, especially in the very flaccid plants, to the condition found in the syntypes of Jungermannia palustris.

Lophocolea magellanica is here regarded as a new synonym of Clasmatocolea humilis. The underleaves of type plants of L. magellanica exhibit an extreme form when considering the spectrum of underleaf variation in C. humilis. The underleaves are cucullate, nearly orbicular in shape and truncate to slightly emarginate at the apex. The trigones of the type plants of L. magellanica are very large and bulging, and the perianth mouth entire, both characters of which are found within the variation of C. humilis.

The underleaves of Lophocolea hastatistipa are mostly bifid to 1/2 and with a large lobe on one or both sides of the underleaf base. The underleaves, however, may be entire or 1-dentate at the base, and occasionally are lobate on one side and entire on the other. Lophocolea hastatistipa fits well within the variation

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circumscribed for Clasmatocolea humilis and is here reduced to synonymy.

The underleaves of Lophocolea integerrima are occasionally undivided, but more often bidentate with teeth of one to a few cells, or emarginate, or at most retuse. If bidentate or entire, the underleaf apices are then $\pm$ truncate. The underleaf margins are entire. Lophocolea integerrima fits well within the variation pattern of Clasmatocolea humilis and is here reduced to synonymy. Stephani (1911) states the plants of L. integerrima are sterile. However, upon examination of plants of syntype material, perianths were found to be present.

The syntypes of Lophocolea rotundifolia from "Azopardo-Tal" are misdeterminations of Pachyglossa spegazziniana. Of the remaining syntypes, the specimen from Isla Atalaya best fits the description and figures in Stephani (1911), and is here designated the lectotype.

Stephani (1922) states for the leaves of L. multispinula, "ceterum ubique regulariter spinuosa" but was probably referring to leaves of the smaller branches, which are more regularly and consistently dentated than the leaves of the main axis or large branches. The leaves of the latter are entire or sparingly or irregularly dentate. The syntype plants are rather small. Lophocolea multispinula fits well within the pattern of variation of the quite plastic Clasmatocolea humilis and is here regarded as a synonym.

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Ecology: This is one of the most common hepatics in the Falklands, where it is characteristic of Cortaderia and dwarf shrub heaths of varying altitudes (near sea level to 320 m.). It is particularly abundant in areas of considerable moisture, i.e., in wet depressions of saturated peaty areas, especially where small pools are present (see Photo 5). It is also abundant on stream banks and may be partially or wholly submerged in streams. It is less frequently found on soil, rock or Astelia cushions.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels and the Valdivian region north to 36° 43' S. It is also present in P. N. Nahuel Huapi of Andean Patagonia, Tristan da Cunha and Kerguelen (see Maps 30-31).

Literature records (FALKLANDS): Anonymous - (Bonner 1963, Kühnemann 1937 & 1949 as Lophocolea hastatistipa, L. humilis, L. incrassata & L. magellanica, Stephani 1906 as Lophocolea); Skottsberg (Stephani 1922 as L. hastatistipa & L. incrassata), Port Stanley, Westpoint Is. (Skottsberg 1913 as L. magellanica); Skottsberg & Halle - Sapper Hill & Westpoint Is. (Stephani 1911 as L. magellanica).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - Kühnemann 1937 & 1949 as L. magellanica & L. palustris); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Lophocolea), Pto. Angosto (Stephani 1901a as L. palustris); Gasperi - B. Ainsworth (Gola 1923 as L. magellanica); Hariot - I. Saddle (Bescherelle & Massalongo 1889 as L. palustris); Hooker - I. Hermite and/or Cabo

de Hornos (G. L. & N. 1847 as Jungermannia palustris); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1847 as Jungermannia palustris, Taylor & Hooker 1847b as J. palustris); Hyades - I. Hoste (Beschereille & Massalongo 1889 as L. palustris); Santesson - Valle Lasifashaj (Arnell 1955 as L. rotundifolia); Skottsberg - Pto. Cook (Stephani 1905a as L. magellanica & L. palustris). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as L. humilis & L. palustris); Dusén - Pto. Bueno, S. Molyneux, R. Aisen, I. Guaitecas: Pto. Low, Melinca, Boca Chica, Puerto Blest (Stephani 1900 as Lophocolea), Strait of Magellan (Stephani 1906 as Lophocolea); Hariot - Strait of Magellan (Stephani 1906 as L. palustris); Hosseus - Corral (Herzog 1938 as L. multispinula); Hyades - Strait of Magellan (Stephani 1906 as L. palustris); Naumann - Strait of Magellan (Stephani 1906 as L. magellanica); Schwabe - I. Magdalena (Herzog 1954 as L. multispinula), R. Futa, Huitrapulli-Aleucapi (Herzog 1960 as Lophocoles), C. Tesoro (Herzog 1954 as L. rotundifolia); Skottsberg - southern Patagonia Stephani 1922 as L. integerrima); Skottsberg & Halle - I. Guaitecas (Stephani 1911 as Lophocolea), I. Pacheco (Stephani 1911 as L. palustris), B. Pinto (Stephani 1911 as L. magellanica); Spegazzini - Strait of Magellan (Stephani 1906 as Lophocolea). JUAN FERNANDEZ. MAS AFUERA: Skottsberg - Cordon del Barril, Las Torres - 1370 m. (Herzog 1942 as L. rotundifolia). TRISTAN DA CUNHA: Christophersen & Mejland - above settlement - 400-1075 m., above Burntwood - 600-650 m. & 1200-1400 m. (Arnell 1958 as Lophocolea). INACCESSIBLE: Christophersen & Mejland - 500 m. & 450 m. (Arnell 1958 as Lophocolea).

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MARION: Rand (Arnell 1953a as Lophocolea). KERGUELEN: Anonymous - (Bonner 1963, Stephani 1906 as Lophocolea); Hooker - Taylor & Hooker 1847b as Jungermannia, Mitten 1879 as Solenostoma); Moseley (Mitten 1884 as Solenostoma). NEW ZEALAND: Anonymous - (Berggren 1898 as Nardia).

FALKLAND SPECIMENS SEEN: Without specific locality, September 1850 Lechler as Lophocolea rivalis (NY). EAST FALKLANDS: Port Stanley Lechler s.n., as Lophocolea puccioana (S-PA), Port Stanley, ex. hb. Jack, September 1850 Lechler (FH); Port Stanley, 1 November 1907 Halle 222 as Lophocolea otiphylla (NY, S-PA); Port Stanley, sin. coll., ex. hb. Stephani (BM); Sapper Hill, 29 November 1907 Skottsberg 222 as L. otiphylla (NY, S-PA). STANLEY REGION, Sapper Hill, 135 m. (2390, 2403 B, 2421 & 2430-c. per.); between Port Stanley and Port Harriet, 30 October 1907 Halle 222 as L. otiphylla (NY, S-PA); headwaters of Mullet Creek (3161 B, 3167 & 3182); Goat Ridge, c. 180 m. (3206 A). MT. USBORNE REGION, Mt. Usborne, 4 February 1908 Halle 230 as syntype of Lophocolea rotundifolia (UPS); southeast slope of Mt. Usborne 2, c. 455 m. (2601, 2602, 2607, 2609, 2610 & 2618 B); gap between Mt. Usborne 2 & Ceritos Rocks, 475 m. (2642); The Gap, 275-290 m. (2471 & 2478); below The Gap, c. 90 m. (2570 A); base of Cantera Mt., c. 90 m. (2593 B); valley southwest of Mt. Usborne, c. 60 m. (2673). DARWIN SETTLEMENT, Boca House on Brenton Lock, sea level (2695). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3145). HORNBY MTS., 19 December 1907 Skottsberg 222 as L. otiphylla (S-PA). FOX BAY REGION, near peat cuttings in Ram Paddock, 45-60 m. (3503,

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3508-c. per!, 3515, 3516 B & 3520); north base of Fox Bay Mt., 75 m. (3473). MT. ADAM, basin east of summit, 580-595 m. (2996 A-c. per., 2998 A & 3000). HILL COVE REGION, gap between French Peaks, 200-215 m. (2977 & 2981). WEDDEL ISLAND, 28 November 1907 Halle & Skottsberg 226 as Lophocolea puccioana (S-PA); Waterfall Valley, west of settlement, c. 125 m. (3302, 3315, 3319-c. per., 3323 & 3330); slope southwest of settlement, 180 m. (3401); near headwaters of House Creek, c. 15 m. (3408, 3409 & 3414); summit of peak northeast of Mt. Weddell, 335 m. (3355 A, 3361, 3375, 3378, 3379, 3384, 3387 & 3393). NEW ISLAND, shore of Ship Harbour north of Ship Island (3295).

ADDITIONAL COLLECTIONS (representative selection): ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, Pto. Cook, 18 November 1903 Skottsberg 45 as Lophocolea austrigena (S-PA). CHILE. MAGALLANES: 29 February 1896 Dusen 41, 42 as L. otiphylla (S-PA); Pto. Ramirez, 29 May 1907 Skottsberg 198, syntype of Lophocolea diversistipa (UPS); Cta. Rayo, 4 June 1908 Skottsberg 230, syntype of Lophocolea rotundifolia (UPS); B. Halt, Lechler s.n., ex. hb. Stephani (BM). AISEN: R. Aisen, January 1897 Dusen s.n. (BM, S-PA); Pto. Puyuhuapi, 21 January 1938 Schwabe 43 as L. otiphylla (S-PA). CHILOE: I. Guaitecas, Melinca, 21 April 1897 Dusen s.n. (S-PA). ARGENTINA. NEUQUEN: I. Victoria, 820 m., 21 January 1951 Sleumer 1722 as Lophocolea diversistipa (UPS). CHILE. VALDIVIA: Corral, 5 June 1896 Dusen 66 (S-PA). CONCEPCION: Talcahuano, 6 September 1896 Dusen 72 as L. otiphylla, c. per. (NY). Southern Patagonia, without specific locality, 1908 Skottsberg s.n.,

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syntype of Lophocolea integerrima (G); southern Patagonia, without specific locality, syntype of Lophocolea patulistipa (G). TRISTAN DA CUNHA: Cliff above settlement, 400 m., 21 December 1938 Christophersen & Mejland 96 (S-PA). GOUGH: Upper watersmeet, 550 ft., 7 January 1956 Wace 539 as Lophocolea diversistipa (UPS).

Clasmatocolea koeppensis (Gott.) Grolle

Lophocolea koeppensis Gott. Ergebn. Dt. Polar-Exped. 2 (16): 453.

pl. 2. f. 4-9. 1890. Clasmatocolea koeppensis (Gott.) Grolle, Revue Bryol. Lichén. 29 (1-2): 72. 1960. Holotype: South Georgia, Köppenbergl, 10 February 1883 Will 35 (M!).

Lophocolea debilis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 42.

f. 19 a-c. 1911, syn. nov. Lectotype (nov.): Chile, Prov. Magallanes, S. Skyring, Pta. Eulogio, 22 April 1908 Halle & Skottsberg 196 (UPS!).

Taxonomical remarks: The identity of Clasmatocolea koeppensis has been confused, and there are several misdetermined specimens of this taxon in various herbaria. The following brief description is therefore included.

Plants often densely caespitose. Branches mostly of the Frullania type, often slender and copiously produced, lateral-intercalary and ventral-intercalary branches occasionally present.

Leaves usually longer than wide, erect, adaxially concave, ovate in shape, margins entire or occasionally 1-dentate towards

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the apex; leaf apices $1/4 - 1/3$ bifid, sinus narrowly-broadly rounded to lunate, occasionally triangular, lobes wide triangular and usually apiculate; leaf cells thin walled, trigones minute to medium.

Underleaves irregular in shape, often semi-obliquely inserted, i.e., the underleaf directed at an acute angle from the stem, margins entire or usually 1 (to rarely 3) dentate-laciniate, the laciniae of various sizes; apex bifid from ca. $1/2$ to usually near the base.

Perianths often produced, exerted by about $1/4 - 1/2$ their length beyond the bracts, $\pm$ campanulate in shape and quite wide at the mouth, or broadest near the base and narrowing slightly at the mouth, the keels sharp to $\pm$ rounded, with wings of a few cells high; sides slightly convex (especially towards the base) to concave, the lobes rounded, with or without 2 larger laciniae which give the perianth lobes a bifid appearance, the lobes are otherwise sparingly to usually densely dentate-ciliate-laciniate and slightly undulated.

The records of Clasmatocolea (Lophocolea) koeppensis in Stephani (1911), Skottsberg (1913) and Kühnemann (1937, 1949) from the Falklands (Port Stanley) are based on a misdetermination of Lophocolea cf. bidentata (fide a specimen in UPS).

Ecology: This taxon was collected only above 335 m. where it is rare in the following situations: sheltered high altitude cliffs, Cortaderia and dwarf shrub heaths and a feldmark. It grows on rock or soil, particularly in rock crevices.

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Phytogeography: This taxon occurs in South Georgia, the Falklands, Tierra del Fuego (vicinity of Ushuaia and R. Azopardo), southern Patagonian Channels (S. Skyring, Pta. Eulogio) and the Valdivian region (West Patagonia north to 45° 25' S. and Andean Patagonia at 43° 30' S.). The species seems to be characteristic of deciduous forests and boundaries between deciduous and evergreen Nothofagus forests (see Map 32).

Literature records: SOUTH GEORGIA: Anonymous - (Bonner 1963); Skottsberg - Cumberland Bay (Steere 1961 and Stephani 1905a as Lophocolea); Will Steere 1961 as Lophocolea). PATAGONIA: Skottsberg - southern Patagonia (Stephani 1922 as L. debilis).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION summit of Mt. Kent, 455 m. (2752 & 2774). MT. USBORNE REGION, gap between Mt. Usborne 2 & Ceritos Rocks, 475 m. (2641); ridge between Mt. Usbornes 1 & 2, 685 m. (2538 B); summit of Mt. Usborne 1, c. 700 m. (2479, 2484 & 2485). WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3021-c. o→). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3397).

ADDITIONAL SPECIMENS SEEN: SOUTH GEORGIA: Koppenberg, 10 February 1883 Will 37, as Lophocolea koeppensis (M). ARGENTINA. TIERRA DEL FUEGO: Ushuaia, 7 May 1896, Dusen 303 as Lophocolea irregularis (G-c. per., NY). CHILE. MAGALLANES: R. Azopardo, 300 m., 3 March 1908 Halle & Skottsberg 219, syntype of Lophocolea monoica (UPS). AISEN: R. Aisen, February 1897 Dusen s.n., as Lophocolea lenta (BM); Valle Frias, 19 November 1908 Skottsberg 209

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as Lophocolea humifusa (UPS). ARGENTINA. CHUBUT: Arroyo Carbon,
10 November 1908 Halle 219, syntype of Lophocolea monoica (UPS).

Clasmatocolea vermicularis (Lehm.) Grolle

Jungermannia vermicularis Lehm. Linnaea 4: 361. 1829. Alicularia
vermicularis (Lehm.) G. L. & N. Syn. Hep. 11. 1844. Nardia
vermicularis (Lehm.) Trev. Memorie Ist Lomb. Sci. Lett. III.
4: 400. 1877. Notoscyphus vermicularis (Lehm.) Steph. Bull.
Herb. Boissier II. 1 (2): 174. 1901 (= Sp. Hep. 2: 35).
Clasmatocolea vermicularis (Lehm.) Grolle, Rev. Bryol. Lichén.
29 (1-2): 78. 1960. Original material: South Africa, Cape
Province, "Teufelsberg," Ecklon (S) - cited in Grolle (1960c).

Jungermannia flexuosa Lehm. Linnaea 4: 361. 1829, syn. fide Ste-
phani (1901). Alicularia flexuosa (Lehm.) Nees in G. L. & N.
Syn. Hep. 11. 1844. Notoscyphus flexuosus (Lehm.) Sim, S.
Afr. J. Sci. 12: 20. 1916. Original material: South Africa,
Cape Prov. Table Mt., Ecklon (non vidi).

Jungermannia subintegra Hook. f. & Tayl. London Jour. Bot. 3: 477.
1844, syn. fide Grolle (1960c). Lejeunea subintegra (Hook. f.
& Tayl.) G. L. & N. Syn. Hep. 376. 1845. Lophocolea subin-
tegra (Hook. f. & Tayl.) Grolle, Trans. Br. Bryol. Soc. 3 (4):
587. 1959. Original material: Falkland Is., Hooker (FH !,
W - cited in Grolle 1960c).

Jungermannia chamissonis Gott. & Lindenb. in G. L. & N. Syn. Hep.

668. 1847, syn. fide Grolle (1960c). Leptoscyphus chamissonis (Gott. & Lindenb.) Mitt. Hooker's J. Bot. Kew Gdn Misc. 3: 358. 1851. Mylia chamissonis (Gott. & Lindenb.) Trev. Memorie Ist Lomb. Sci. Lett. III. 4: 412. 1877. Leioscyphus chamissonis (Gott. & Lindenb.) Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 445. 1885. Original material: Chile, without specific locality, Chamisso (S) - cited in Grolle (1960c).

Chiloscyphus nigrescens Lindenb. & Hampe, in Hampe, Linnaea 24: 640. 1851, syn. fide Grolle (1960c). Original material: Costa Rica, Reventado, 350 m., Oersted (S) ex hb. Lehmann) - cited in Grolle (1960c).

Leptoscyphus nigricans Mitt. Hooker's J. Bot. Kew Gdn Misc. 3: 358. 1851, nom. nud., syn. cf. Steph. (1906, p. 224).

Notoscyphus variifolius Mitt. J. Linn. Soc. 16: 188. 1877, syn. fide Steph. (1901). Original material: South Africa, Cape Town, near Orange Grove, Eaton (non vidi).

Clasmatocolea heterostipa Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 441. pl. 20. 1885, syn. cf. Grolle (1959a). Original material: Ecuador, "Andes Quintensis," M. Pichincho, 1,700-3,400 m., Spruce (E) - cited in Grolle (1956).

Nardia lindmanii Steph. Bih. K. Svenska VetenskAkad. Handl. 23 (III, 2): 25. 1897, syn fide Grolle (1964e). Alicularia lindmanii (Steph.) Steph. Bull. Herb. Boissier II. 1 (5): 481. 1901 (Sp. Hep. 2: 43). Notoscyphus lindmanii (Steph.) Schiffn. Hedwigia

51: 276. 1912. Original material: Brazil, R  o Grande do Sul, Porto Alegre, Lindman 42 (G) - cited in Grolle (1964e).

Clasmatocolea chilensis Steph. Bih. K. Svenska VetenskAkad. Handl.

26 (III, 6): 33. 1900, syn. cf. Grolle (1956). Original material: Chile, Prov. Concepcion, Concepcion, "ex herbar Genf Coll. Stephani," 5 September 1896 Dusen 157, 166, 473, - cited in Grolle (1956).

Lophocolea turbiniflora Steph. Bih. K. Svenska VetenskAkad. Handl.

26 (III, 6): 45. 1900, syn. fide Grolle (1960c). Original material: Chile, Prov. Valparaiso, El Salto, 1896 Dusen s.n. (S) - cited in Grolle (1960c).

Lophocolea flavovirens Steph. K. Svenska VetenskAkad. Handl. 46 (9):

44. f. 19 d-g. 1911, syn. cf. Grolle (1956). Clasmatocolea flavovirens (Steph.) Herz. Acta Horti Gothoburg. 15: 159. 1943. Lectotype (cf. Grolle 1956): Chile, Prov. Chiloe, I. Guafo, Cta. Samuel, 25 July 1908 Halle 201 (UPS ! - c. sporo.).

Lophocolea ligulata Steph. K. Svenska VetenskAkad. Handl. 46 (9):

47. f. 17 e, f. 1911, syn. fide Grolle (1960c). Original material: Chile, Prov. Chiloe, I. Guafo, Halle (G, UPS) - cited in Grolle (1960c).

Lophocolea skottsbergii Steph. K. Svenska VetenskAkad. Handl. 46

(9): 53. f. f. 1911, syn. fide Grolle (1960c). Original material: Chile, Prov. Chiloe, I. Chiloe, Ancud, Skottsberg s.n. (UPS) - cited in Grolle (1960c).

Lophocolea boliviensis Steph. in Herzog, Bibliotheca Bot. 87: 217.

1916, syn. fide Grolle (1960c). Original material: Bolivia, near Altamachi, 3,500 m., 1911 Herzog (JE) - cited in Grolle (1960c).

Alicularia grandistipula Herz. Bibliotheca Bot. 88: 30. 1921, syn.

fide Grolle (1960c), non Alicularia grandistipula (Steph.)

Horik. Hikobia 1: 30. 1950. Original material: Bolivia, Cord. de Quimsacruz, near Mine Yoloco, 4,400 m., 1911 Herzog (JE) - cited in Grolle (1960c).

Odontoschisma variabile Sim., Trans. R. Soc. S. Afr. 15: 77. un-

numbered plate on p. 77. 1926, syn. fide Grolle (1960c), non

Odontoschisma variabile (Lindenb. & Gott.) Trev. Memorie Ist

Lomb. Sci. Lett. III. 4: 419. 1877. Original material:

South Africa, without specific locality, sin. coll. (non vidi).

Lophocolea ovistipula Herz. Memo. Soc. Fauna Flora Fenn. 27: 98.

f. 43 a-e. 1952, syn. cf. Grolle (1959a). Original material:

South Africa, Cape Prov., Table Mountain, 600-900 m., 1922

Rolfes (JE) - cited in Grolle (1959a).

Lophocolea subulistipa Herz. Memo. Soc. Fauna Flora Fenn. 27: 99.

f. 44 a-e. 1952, syn. fide Grolle (1960c). Original material:

South Africa, Natal, "Pietermaritzburg, Botanischer Garten,"

1922 Rolfes (JE) - cited in Grolle (1960c).

Lophocolea elata (Gott.) Steph. f. aquatica Herz. Reptium nov. spec.

Regni Veg. 57: 164. 1955, syn. fide Grolle (1960c). Original

material: Colombia, Eastern Cord., Laguna de Cunta, 1927 Killip

& Smith (JE), - cited in Grolle (1960c).

Lophocolea minima S. Arnell, Results Norw. Scient. Exped. Tristan da Cunha no. 42: 18. f. 14 a-d. 1958, syn. fide Grolle (1960c). Original material: Inaccessible Is., NE of Blendon Hall, Christophersen & Mejland 2431 (0 - non vidi).

Taxonomical remarks: Jungermannia subintegra was described from the Falkland Islands and is a synonym of Clasmatocolea vermicularis. This treatment is based upon examination of a syntype of the former species and also the work of Grolle (1960c). Mizutani & Hattori (1959), however, treat the species as a synonym of L. novae-zelandiae. There should be little confusion concerning the disposition of J. subintegra as the adaxially concave leaves immediately place the plant within the genus Clasmatocolea.

In a packet glued to the sheet with syntype plants of Jungermannia subintegra are several plants of Lophocolea sabuletorum (leaf apices frequently emarginate, antheridial stalk cells unistratose). These plants should not be confused with those of the type.

Grolle (1960c) has referred to Lophocolea ligulata as a "nomen mixtum," since the original specimen contains both material of Clasmatocolea vermicularis (p. p. maj.) and Lophocolea sabuletorum (p.p. min.), and the original diagnosis contains portions from both species. The description of the perianth was based upon material of C. vermicularis and the sterile structures on material of L. sabuletorum. Grolle (loc. cit.) has typified the specimen as one of Clasmatocolea vermicularis (as most of the material is of this taxon), but was in error, however, in stating Stephani

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originally described L. ligulata as monoecious. Grolle has extracted several portions of Stephani's description in Species Hepaticarum (Vol. 6, p. 280, 1922); Stephani's original description (1911) clearly states his new species in dioicous.

Ecology: This species exhibits a rather wide ecological amplitude in the Falklands, where it occurs rather commonly on stream banks in Cortaderia and dwarf shrub heath associations. It also occurs in seepage areas on sandstone cliffs, and both on rock and rotted wood in Hebe stands of dwarf shrub heaths.

Phytogeography: This amphiatlantic temperate species occurs in South Africa, Natal, Transvaal, Reunion Island, Tristan da Cunha, South Georgia, Falkland Island, the Patagonian Channels, the Valdivian region (West Patagonia north to 36° 50' S., Andean Patagonia north to 41° 00' S.), Juan Fernandez, Central Chile (near Valparaiso) and north in the Andes to Costa Rica. It is also known from Brazil (see Map 33).

Literature records (FALKLANDS): Anonymous (Bonner 1963, Grolle 1969, Stephani 1890 as Lejeunea subintegra); Halle - Halfway Cove, Roy Cove, Port Louis (Grolle 1960c); Hooker - (G. L. & N. 1845 as L. subintegra, Taylor & Hooker 1847b as J. subintegra); Lechler - Port Stanley (Grolle 1960c); Skottsberg - Westpoint Is., Port Stanley (Grolle 1960c); Skottsberg & Halle - King George Bay (Grolle 1960c).

Additional Literature Records (note - locality information has been omitted for non-southern South American reports): SOUTH GEORGIA: Skottsberg (Grolle 1960c, Steere 1961 and Stephani 1911

as L. skottsbergii). TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as L. flavovirens). PATAGONIA: Anonymous - (Grolle 1969). Dusén - Concepcion (Bonner 1963 as C. chilensis, Grolle 1956 as C. heterostipa, 1960c); Halle - I. Guafo, I. Chiloe, Est. Miguens (Grolle 1960c); Hollermayer - Panguipulli (Grolle 1960c, Reimers 1926 as Leioscyphus chamissonis); Hosseus - Corral, Pucon, L. Nahuel Huapi (Grolle 1960c), Corral, Pucon (Grolle 1956 as C. heterostipa), Corral, Pucon (Herzog 1938 as C. heterostipa); Schwabe - L. Pellaifa (Herzog 1960 as L. subintegra), Calbuco (Herzog 1939 as C. heterostipa), 1954 as L. skottsbergii); Pto. Magdalena, Calbuco, L. Rupanco, C. Tesoro (Grolle 1960c), Calbuco, L. Rupanco (Grolle 1956 as C. heterostipa); Skottsberg - I. Chiloe, Lota (Grolle 1960c), Cta. Samuel, Lota (Grolle 1956 as C. heterostipa), Patagonia (Stephani 1922 as L. flavovirens), Lota (Herzog 1943 as C. flavovirens), I. Guafo (Mizutani & Hattori 1959 as L. flavovirens, Stephani 1922 as L. ligulata). I. Chiloe (Stephani 1922 as L. skottsbergii); Skottsberg & Halle - S. Skyring (Grolle 1960c). JUAN FERNANDEZ. MAS AFUERA: Skottsberg (Grolle 1960c). CENTRAL CHILE: Anonymous - (Grolle 1969); Dusén (Grolle 1960c, Stephani 1906 as L. turbiniflora). BOLIVIA: Anonymous - (Grolle 1969); Herzog (Bonner 1962 as Alicularia grandistipula, Grolle 1960c, Stephani 1922 as Lophocolea boliviensis). EQUADOR: Anonymous - (Grolle 1969); Spruce (Bonner 1963 as C. heterostipa, Grolle 1956 as C. heterostipa 1960c, Stephani 1906 as C. heterostipa). COLOMBIA: Killip & Smith (Grolle 1960c). COSTA RICA: Anonymous - (Grolle 1969, Stephani 1908 as

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Chiloscyphus nigrescens); Oersted (Bonner 1963 as C. nigrescens, Grolle 1960c). BRAZIL: Anonymous (Grolle 1969); Lindman (Grolle 1964e, Stephani 1901 as Alicularia); Schiffner (Schiffner 1964 as Notoscyphus lindmanii). TRISTAN DA CUNHA: Anonymous - (Bonner 1963); Christophersen & Mejland (Arnell 1958 as C. heterostipa, Grolle 1960c). INACCESSIBLE: Christophersen & Mejland (Grolle 1960c). SOUTH AFRICA: Anonymous (Bonner 1962 as Alicularia varmicularis, & A. flexuosa, 1963, Sim 1926 as Odontoschisma variabile); Bertelsen, Eaton (Stephani 1901 as Notoscyphus vermicularis). CAPE PROV.: Anonymous - (G. L. & N. 1844 as Alicularia flexuosa & A. vermicularis, Grolle 1969, Sim 1926 as N. vermicularis); S. Arnell, Breutel, Cholnoky, Esterhusen, Krause, Rolfes (Grolle 1959a as L. subintegra, 1960c); Ecklon (Grolle 1960c); Eaton (Mitten 1877 as Notoscyphus variifolius). NATAL: Anonymous (Grolle 1960c, 1969); Sim (Sim 1926 as N. vermicularis); West (Grolle 1960c). TRANSVAAL: Anonymous (Grolle 1969); Cholnoky, Schelppe (Grolle 1959a as L. subintegra, 1960c). REUNION: Anonymous - (Grolle 1969).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker, as Lophocolea sp. with Lejeunea subintegra (BM). PORT WILLIAM REGION, north shore of Cape Pembroke peninsula, east of Yorke Pt. (2446); south shore of Cape Pembroke peninsula, near Surf Bay, sea level (2437). PORT LOUIS REGION, 25 April 1902 Skottsberg s.n. as Lophocolea austrigena (S-PA-c. per.), 1 October 1907 Halle & Skottsberg 236 as L. vasculosa (NY); 7 November 1907 Halle 236 as L. vasculosa (NY-c. o→). MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2669). WEST FALKLANDS: FOX BAY REGION, near mouth of Cheek's

Creek, c. 12 m. (3479, 3482, 3492, 3493-c. o→, 3494 c. o→, 3495 & 3499); north base of Fox Bay Mt., 75 m. (3465-c. o→ & 3466-c. o→); valley east of Sullivan House, c. 75 m. (3522). ROY COVE REGION, 3 December 1907 Halle & Skottsberg 236 as L. vasculosa (NY). WEST-POINT ISLAND, steep slope & cliffs facing The Woolly Gut (2906, 2933 A); west base of Black Hog Hill, adjacent to Devils Nose, c. 18 m. (2885, 2892 & 2895). NEW ISLAND, seal caves, at South End (3283); shore of Ship Harbour north of Ship Island (3296).

ADDITIONAL SPECIMENS SEEN: CHILE. AISEN: Cta. Connor, 26 June 1908 Halle 201, syntype of Lophocolea flavovirens (UPS). CHILOE: I. Guafo, Skottsberg 581, syntype of Lophocolea flavovirens (G). ARGENTINA. CHUBUT: Colonia Diez-y-seis de Octubre, 5 November 1908 Halle 185 as L. austrigena (S-PA-c. sporo.), *ibid.*, Halle 204 as L. georgiensis (UPS). CHILE. CHILOE: I. Chiloe, Quemchi, 19 July 1908 Skottsberg 201 (UPS).

Clasmatocolea Species Exluded from Falklands

Clasmatocolea obvoluta (Hook. f. & Tayl.) Grolle. The typification of Clasmatocolea obvoluta has been confused. The original description in Hooker and Taylor (1844) records the locality: "Falkland Islands," and Taylor and Hooker (1847b) state for the habitat: "Hermite Island, Cape Horn, and the Falkland Islands . . .". A single sheet in the Taylor herbarium (FH) has the following four separate specimens: a) a packet labeled Jungermannia obvoluta from

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Caleta San Martin collected by Davis; b) a portion of a) which has been glued on a separate sheet and labeled number 1; c) a portion of a) which has been placed in a small packet and also labeled number 1; and d) a specimen in a small packet labeled number 2. Taylor has noted below the specimens that number one is from the Falkland Islands and communicated by J. D. Hooker, 1844, and number two is from Cape Horn, W. Davis and communicated by W. Wilson.

Evans (1898, p. 421-2) states:

Under the name Jungermannia obvoluta two plants are preserved in the Taylor herbarium; the first of these from the Falkland Islands, must be considered the type of the species; the second from Cape Horn, is apparently distinct, but there is so little of it that it would be unwise to attempt to describe it.

I believe that specimens labeled number one (and supposedly collected in the Falkland Islands) and number two are merely segregates of the Caleta San Martin collection as both contain the following identical complex of plants: Sphaerophorus tener in majority, Gackstroemia magellanica, Riccardia sp. and a filmy fern. In addition, all Hooker collections of Jungermannia obvoluta in the New York Botanical Garden are labeled Cape Horn or St. Martin's Cove or Hermite Island, without mention of the Falkland Islands. I have also seen a specimen from the Stockholm herbarium (S-PA) labeled Jg. obvoluta Tayl., St. Martin's Cove, Davis which contained in addition to Clasmatocolea obvoluta, the Sphaerophorus tener in majority, with plants of Gackstroemia magellanica and Riccardia sp. mixed in. I believe the following specimen should be considered the lectotype of Jungermannia obvoluta: Davis s.n., Caleta San Martin, hb. FH,

and the Falkland Islands should be eliminated from consideration as a type locality. The origin of the Falkland Island locality in the original description of this taxon is unknown. The specimen labeled number 2 is a variant of Clasmatocolea cookiana.

Clasmatocolea puccioana (De Not.) Grolle. This species has been reported from the Falkland Islands as Lophocolea puccioana by Stephani (1911) and Kühnemann (1949), the latter repeating Stephani's report. Specimens of Clasmatocolea puccioana from the Falklands are misdeterminations of Clasmatocolea fulvella. To my knowledge C. puccioana is restricted to the Magellanian region.

Leptoscyphus

Mitt. Hooker's J. Bot. Kew Gdn Misc. 3: 358. 1851.

Key to the Falkland Island Species of Leptoscyphus

- 1. Leaves convex, at least in the apical ventral margins;
leaf cells with very small to weakly knotted trigones 2
- 1. Leaves concave, at least in the apical ventral margins;
leaf cells mostly with large, knot-like trigones. 3
- 2. Leaves bifid. L. patagonicus
- 2. Leaves unlobed. L. expansus

3. Leaves united near base of antical margins, distinctly
opposite; sinus of underleaf shallow, underleaves
ovate-triangular, margins dentate L. aequatus
3. Leaves free from one another, $\pm$ alternate, strongly
erect and often appressed to one another dorsally;
sinus of underleaf deep, underleaves long-linear,
margins entire. L. abditus

Leptoscyphus abditus (Sull.) Dugas

Plagiochila abdita Sull. Hooker's J. Bot. Kew Gdn Misc. 2: 317.

1850. Mylia abdita (Sull.) Evans, Bull. Torrey Bot. Club.

25 (8): 426. 1898. Leioscyphus abditus (Sull.) Steph. Wiss.

Ergebn. Schwed. Südpolarexped. 1901-1903. 4 (1): 5. 1905.

Leptoscyphus abditus (Sull.) Dugas, Annls Sci. Nat. X. 11: 8.

1929. Lectotype (nov.): Fuegia (Chile, Prov. Magallanes,

B. Orange), US. Exploring Exped. s.n. (FH ! - c. per.)

Leioscyphus pallens Mitt. J. Linn. Soc. 15: 68. 1876, syn. fide

Evans (1898). Lectotype (cf. Grolle 1962): Îles Kerguelen,

Moseley (NY !).

Lophocolea bisetula Steph. K. Svenska VetenskAkad. Handl. 46 (9):

40. f. 15 d. 1911, syn. fide Grolle (1962). Original material:

Falkland Is., Mt. Adam, ca. 700 m., 1907 Halle & Skottsberg s.n.

(S, UPS) - cited in Grolle (1962).

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Ecology: This species was of occasional occurrence on rock or soil over rock in crevices of sheltered high altitude cliffs. It also grows in rock crevices of a moist feldmark, as well as in rock crevices or submerged in pools in dwarf shrub heaths.

Phytogeography: This taxon has a subantarctic distribution occurring in South Georgia, the Falklands, Tierra del Fuego (490-600 m. where recorded) and the West Patagonian zone of the Valdivian region (860-1200 m. on C. Tesoro, 39° 38' S.) (see Map 34).

Literature records (FALKLANDS): Anonymous (Kuhnemann 1937 as L. abditus & Lophocolea bisetula, 1949 as Lophocolea bisetula; Halle (Stephani 1922 as Lophocolea bisetula); Skottsberg - Mt. Adam, Westpoint Is. (Skottsberg 1913 as Leioscyphus), Mt. Adam (Skottsberg 1913 as Lophocolea bisetula); Skottsberg & Halle - Mt. Adam, Westpoint Is. (Grolle 1962, Stephani 1911 as Leioscyphus).

Additional Literature Records: SOUTH GEORGIA: Skottsberg - Cumberland Bay (Steere 1961 Stephani 1911 as L. bisetula). TIERRA DEL FUEGO: Anonymous (Grolle 1969, Kühnemann 1949 as Mylia, 1937); Dusén - Fuegia (Stephani 1906 as Leioscyphus), R. Azopardo, Pto. Angosto (Grolle 1962); Gasperi - B. Parry (Gola 1923 as Lejoscyphus (sic.); J. B. Hatcher - Lapataia (Evans 1898 as Mylia, Grolle 1962), Fuegia (Stephani 1906 as Leioscyphus); Hooker - M. Forster (Grolle 1962); Santesson-S. de Sorondo (Grolle 1962), Est. Yendegaia (Arnell 1955 as Lophocolea bisetula); Skottsberg - Ushuaia (Grolle 1962, Stephani 1905a as Leioscyphus); Skottsberg & Halle - R. Azopardo (Grolle 1962); Spegazzini - I. de los Estados (Massalonga 1885 as

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Plagiochila, 1927 as Leioscyphus (sic.); U.S. Exploring Exped. - Fuegia (Stephani 1906 as Leioscyphus. PATAGONIA: Schwabe - C. Tesoro, C. Lungoica (Grolle 1962), C. Tesoro (Herzog 1954 as Lophocolea bisetula). MARION: Anonymous (Grolle 1969). KERGUELEN: Anonymous (Grolle 1969); Eaton (Grolle 1962, Mitten 1879 as Leioscyphus pallens); Moseley (Grolle 1962, Mitten 1884 as L. pallens); Naumann (Schiffner 1890 as Leioscyphus pallens, Stephani 1906 as Leioscyphus); Werth (Grolle 1962, Schiffner 1907 as Leioscyphus).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2771 B). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2529); summit of Mt. Usborne 1, c. 700 m. (2482 B-c. per., 2488, 2489 B, 2504 B-c. per. & 2506-c. per.). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3082-c. per., 3100 & 3122). MT. ADAM, ridge south of northern lake, 610 m. (3022-c. per.); ridge west of northern lake, 610 m. Imshaug 41119 (MSC). WEDDELL ISLAND, summit of peak north-east of Mt. Weddell, 335 m. (3366 E).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I. Hermite, M. Forster (NY-c. per.) KERGUELEN: Royal Sound, 20 October 1876 Eaton s.n. as Leioscyphus pallens (NY).

Leptoscyphus aequatus (Hook. f. & Tayl.) Mitt.

Jungermannia aequata Hook. f. & Tayl. London Jour. Bot. 3: 465.

1844. Chiloscyphus aequatus (Hook. f. & Tayl.) G. L. & N. Syn.

Hep. 704. 1847. Leptoscyphus aequatus (Hook. f. & Tayl.)

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Mitt. Hooker's J. Bot. Kew Gdn Misc. 3: 358. 1851. Leioscyphus aequatus (Hook. f. & Tayl.) Mitt. in Hook. f. Bot. Ant. Voy. 3 (2): 225. 1859. Mylia aequata (Hook. f. & Tayl.) Kühnem. Lilloa 19: 340. 1949. Original material: Chile, Prov. Magallanes, I. Hermite, Hooker (S) - cited in Grolle (1962).

Jungermannia surrepens Hook. f. & Tayl. London Jour. Bot. 3: 475. 1844, syn. fide Grolle (1962). Chiloscyphus surrepens (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 179. 1845. Leioscyphus surrepens (Hook. f. & Tayl.) Besch. & Mass. Mission Scient. Cap Horn 5: 218. 1889. Leptoscyphus surrepens (Hook. f. & Tayl.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 176. 1937. Mylia surrepens (Hook. f. & Tayl.) Kühnem. Lilloa 19: 341. 1941. Original material: Chile, Prov. Magallanes, Cabo de Hornos, Hooker (W) - cited in Grolle (1962).

Taxonomical remarks: Leptoscyphus aequatus may, as in Engel 2635A, have several plants with leaves which are not connate at the antical base. These plants, however, have opposite leaves and very shallowly bifid underleaves. Further, several leaves are connate at the antical leaf base.

Ecology: This taxon is quite rare in the Falklands, where it was found on soil in a dwarf shrub heath (150 - 230 m.) and in a wet depression of a Cortaderia heath (c. 455 m.).

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Magellanic Channels north to 50° 16' S. and Gough Island (see Map 35).

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Literature records (FALKLANDS): Anonymous (Kühnemann 1937, 1949 as Mylia); Skottsberg and/or Halle - Westpoint Is. (Skottsberg 1913 & Stephani 1911 as Leioscyphus).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous (Kühnemann 1937 as L. aequatus & L. surrepens, 1949 as Mylia abdita, M. surrepens & Chiloscyphus surrepens); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Leioscyphus), I. Desolacion (Stephani 1906 as Leioscyphus), Pto. Angosto (Grolle 1962), R. Azopardo, R. Grande (Stephani 1901a as Leioscyphus surrepens), Fuegia (Stephani 1906 as Leioscyphus surrepens); Hooker - I. Hermite and/or Cabo de Hornos (Grolle 1962, G. L. & N. 1845 as Chiloscyphus surrepens, 1847 as C. abditus, Taylor & Hooker 1847b as J. aequata & J. surrepens); Hyades - Fuegia (Grolle 1962, Stephani 1906 as Leioscyphus surrepens), I. Hoste (Bescherelle & Massalongo 1889 as Leioscyphus surrepens); Naumann - B. Tuesday (Grolle 1962, Schiffner 1890), Strait of Magellan (Stephani 1906 as Leioscyphus surrepens); Skottsberg - Pto. Cook (Grolle 1962); Skottsberg & Halle - R. Olivia, L. Fagnano, I. Dawson (Stephani 1911 as Leioscyphus), Canal Jeronimo (Grolle 1962); Spegazzini - Fuegia (Stephani 1906 as Leioscyphus surrepens), Pto. Cook, M. Conegliano, M. Richardson (Massalongo 1885 as Chiloscyphus? surrepens, 1927 as Lejoscyphus (sic.) surrepens), I. Basket, B. Slogget, I. Gable (Massalongo 1885 as Chiloscyphus? surrepens). PATAGONIA: Anonymous - (Kühnemann 1937 as L. surrepens); Albatross - southern Patagonia (Evans 1892 as C. surrepens), Andersson - Pto. del Hambre (Ångstrom 1872 as Jungermannia surrepens);

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Dusén - Punta Arenas, S. Molyneux (Grolle 1962). GOUGH: Wace - Gonydale - 530-660 m. (Grolle 1962).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Tumbledown Mt., 155-230 m. (2387). MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2612 D).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I. Hermite, ex hb. Hooker, sin. coll., syntype of Jungermannia aequata (G); I. Desolacion, Pto. Angosto, c. 200 m., 29 March 1896 Dusen 187 (G).

Leptoscyphus expansus (Lehm.) Grolle

Jungermannia expansa Lehm. Linnaea 4: 361. 1829. Chiloscyphus expansus (Lehm.) Nees in G. L. & N. Syn. Hep. 179. 1845. Mylia expansa (Lehm.) S. Arnell, Bot. Notiser 108: 310. 1955. Leptoscyphus expansus (Lehm.) Grolle, Nova Acta Leopoldina 25 (161): 60. 1962. Original material: South Africa, Cape Prov. "in locis humidis in vertice montis Tafelberg ibidemque in saxis, ut etiam in monte Teufelsberg," Ecklon (W) - cited in Grolle (1962).

Plagiochila chiloscyphoides Lindenb. in Lehm. Pug. Pl. 8: 4. 1844, syn. fide Grolle (1962). Leptoscyphus chiloscyphoides (Lindenb.) Gott. Bot. Ztg. 16 (supplement): 33. 1858. Leioscyphus chiloscyphoides (Lindenb.) Mitt. in Hook. f. Bot. Ant. Voy. 3 (2): 225. 1859. Mylia chiloscyphoidea (Lindenb.) Evans, Bull. Torrey Bot. Club 25 (8): 426. 1898. Original material: Chile, Prov. Magallanes, Strait of Magellan, Jacquinet 59a (P) - cited in Grolle (1962).

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Plagiochila gottscheana Lindenb. in Lehm. Pug. Pl. 8: 2. 1844, syn.
fide Arnell (1955). Leptoscyphus gottscheanus (Lindenb.) Gott.
 Bot. Ztg. 16 (supplement) 33. 1858. Leioscyphus gottscheanus
 (Lindenb.) Steph. Bull. Herb. Boissier II. 6 (3): 227. 1906 (= Sp. Hep. 3: 27). Original material: South Africa, Cape Prov.,
 "Promontario Bonae Spei," Ecklon (non vidi).

Jungermannia reclinans Hook. f. & Tayl. London Jour. Bot. 3: 470.
 1844, syn. cf. Stephani (1906). Lophocolea reclinans (Hook. f.
 & Tayl.) G. L. & N. Syn. Hep. 700. 1847. Leptoscyphus reclinans
 (Hook. f. & Tayl.) Mitt. Hooker's J. Bot. Kew Gdn Misc. 3: 358.
 1851. Lectotype¹ (nov.) Falkland Islands, Hooker (NY !).

Jungermannia fuscovirens Hook. f. & Tayl. London Jour. Bot. 3: 474.
 1844, syn. fide Grolle (1962). Chiloscyphus fuscovirens (Hook.
 f. & Tayl.) G. L. & N. Syn. Hep. 189. 1845. Lophocolea fusco-
virens (Hook. f. & Tayl.) Mitt. in Hook. f. Bot. Ant. Voy. 3 (2):
 226. 1859. Leioscyphus fuscovirens (Hook. f. & Tayl.) Steph.
 Bull. Herb. Boissier II. 6 (3): 226. 1906 (= Sp. Hep. 3: 26).
Mylia fuscovirens (Hook. f. & Tayl.) Herz. in Skotts., Nat. Hist.
 Juan Fernandez, Easter Is. 2 (5): 714. 1942. Original material:
 Chile, Prov. Magallanes, Cabo de Hornos, Hooker s.n. (NY !, W -
 cited in Grolle 1962).

Chiloscyphus huidobroanus Mont. Annls Sci. Nat. III. 4: 352. 1845,
syn. fide Grolle (1962). Leioscyphus huidobroanus (Mont.) Steph.

¹Grolle. (1962, p. 65) states that "Teil von Holotypus" was collected on I. Cabo de Hornos. The original material, however, is from the Falkland Islands and was collected by J. D. Hooker.

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Bull. Herb. Boissier II. 6 (3): 228. 1906 (=Sp. Hep. 3: 28).

Original material: southern Chile, Gay s.n. (P, S) - cited in Grolle (1962).

Jungermannia obscura Ångstr. Öfvers. K. VetenskAkad. Förh. 29 (4):

11. 1872, syn. fide Grolle (1962), non Jungermannia obscura

Sw. Flora Ind. Occid. 3: 1869. 1806. (= Frullania sp.).

Mylia obscura (Ångstr.) Trev. Memorie Ist. Lomb. Sci. Lett. III.

4: 412. 1877. Leioscyphus obscurus (Ångstr.) Steph. Wiss.

Ergebn. Schwed. Südpolarexped. 4 (1): 5. 1905. Leptoscyphus obscurus (Ångstr.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat.,

B. Aires 1: 176. 1937. Original material: Chile, Prov. Magallanes, Pto. del Hambre, Andersson (non vidi).

Leioscyphus iversenii Pears. Christ. Vidensk. - Selsk. Forhandl.

9: 12. 1888, syn. fide Grolle (1962). Leptoscyphus iversenii

(Pears.) Sim, Trans. R. Soc. S. Afr. 15: 104. 1926. Mylia

iversenii (Pears.) S. Arnell, Bot. Notiser 108: 310. 1955.

Lectotype (cf. Grolle 1962): South Africa, Cape Prov., Knysna,

Iversen s.n. (MANCH - non vidi).

Lophocolea inconspicua Mitt. J. Linn. Soc. 15: 64. 1876, syn. fide

Grolle (1962). Original material: Tristan da Cunha, (?) Moseley (NY) - cited in Grolle (1962).

Chiloscyphus ankefinensis Gott. in Steph. Bull. Herb. Boissier II. 7

(10): 852. 1907 (= Sp. Hep. 3: 224), syn. fide Grolle (1962).

Lectotype (cf. Grolle 1962): Madagascar, South Betsileo, 1891

Hildebrandt s.n. (G non vidi).

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Chiloscyphus lobatus Steph. Bull. Herb. Boissier II. 8 (2): 140.

1908 (= Sp. Hep. 3: 256), syn. fide Grolle (1962). Heteroscyphus lobatus (Steph.) Kühnem. Lilloa 19: 333. 1949. Original material: Chile, Prov. Magallanes, I. Descolacion, Pto. Angosto, Dusen s.n. (G) - cited in Grolle (1962).

Lophocolea dura Steph. K. Svenska VetenskAkad. Handl. 46 (9): 43.

f. 16 a-d. 1911, syn. fide Grolle (1962). Original material: Chile, Prof. Magallanes, Canal Gajardo, Cta. Inga, 1908 Halle & Skottsberg s.n. (UPS) - cited in Grolle (1962).

Chiloscyphus difficilis Steph. in Herz. Biblthca Bot. 87: 222. 1916, syn. fide Grolle (1962). Original material: Bolivia, above Camarapa, ca. 2600 m., 1911 Herzog, s.n. (M) - cited in Grolle (1962).

Lejoscyphus (sic!) antarcticus Mass. Atti Ist. Veneto Sci. 87: 229.

1927, syn. fide Grolle (1962).¹ Original material: Argentina, Terr. Tierra del Fuego, I de los Estados and Chile, Prov. Magallanes, I. Burnt, Spegazzini (non vidi).

Plagiochila knysnana S. Arnell, Revue Bryol. Lichen. 23 (1-2): 179.

f.6. 1954, syn. fide Grolle (1962). Original material: South Africa, Cape Prov. Knysna, Gouna forest, 1951 Arnell 1760 (S) - cited in Grolle (1962).

¹Grolle (1962) erroneously lists Lejoscyphus (sic!) magellanicus Mass. Atti Ist. veneto Sci. 87: 229. 1927 as a synonym of Leptoscyphus expansus.

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Taxonomical remarks: There is a form of Leptoscyphus expansus which is not of infrequent occurrence, is frequently light green, has subrectangular leaves and leaf apices obliquely or transversely truncate to emarginate. The leaves are often distant in this form, and when such plants are sterile, they may offer confusion with Lophocolea sabuletorum. The two taxa may be distinguished as follows: Leptoscyphus expansus has (a) underleaves bifid nearly to the base, (b) segments setaceous and (c) a capacity for development of a brownish-reddish pigmentation. Lophocolea sabuletorum has (a) underleaves bifid usually to ca. 1/2, (b) segments triangular, and (c) no secondary pigment development, with plants consistently light green. If present, either androecia or gynoecia will serve to distinguish the taxa. The antheridial stalk cells are in two rows in Leptoscyphus expansus and in a single row in Lophocolea sabuletorum. The perianths of Leptoscyphus expansus are laterally compressed while those of L. sabuletorum are triangular.

Ecology: This is one of the most common hepatics in the Falklands, where it is especially characteristic of the dwarf shrub heaths. Here it grows in crevices and under ledges of outcrops as well as on soil under plant cover, commonly Empetrum or Blechnum magellanicum. It occasionally occurs on Bolax cushions and on Blechnum bases. It rarely occurs on stream banks. The species is also common on cliffs, small rocks, soil or exposed roots of Hebe stands in dwarf shrub heaths. It was also collected in a moist field-mark (700 m.), and on soil in the grove of planted trees. It only rarely occurs on sheltered high altitude cliffs.

Phytogeography: This amphiatlantic temperate species occurs in the Mascarenes, Madagascar, South Africa, Natal, Tristan da Cunha, Gough Island, South Georgia, the Falklands, Tierra del Fuego, Patagonian Channels, the Valdivian region (West Patagonia north to 36° 43' S., Andean Patagonia at P. N. Nahuel Huapi, East Patagonia in Prov. Cordoba), Juan Fernandez, central Chile and Bolivian Andes (2600 m.) (see Map 36).

Literature records (FALKLANDS): Anonymous - (Hooker 1867 as Leioscyphus chiloscypoides, Kühnemann 1937 as Leptoscypus chiloscypoides & Chiloscyphus lobatus, 1949 as Mylia chiloscypoides & Heteroscypus lobatus); Halle - Port Philomel (Grolle 1962); Hooker - (G. L. & N. 1847 as Lophocolea reclinans, Taylor & Hooker 1847b as J. reclinans); Skottsberg - Port Stanley (Grolle 1962, Stephani 1905a as Leioscyphus chiloscypoides), Port Philomel (Skottsberg 1913 as Chiloscyphus lobatus); Skottsberg & Halle - Mt. Adam (Grolle 1962), Port Philomel (Stephani 1911 as Chiloscyphus lobatus).

Additional Literature Records (note - locality information for non-southern South American records has been omitted): SOUTH GEORGIA: Skottsberg (Grolle 1962). TIERRA DEL FUEGO: Anonymous - (Hooker 1867 as Leioscyphus chiloscypoides, Kühnemann 1937 as Leptoscypus chiloscypoides, Lophocolea fuscovirens & Mylia obscurus, 1949 as Mylia chiloscypoides, Lophocolea fuscovirens & Mylia obscura); Dusén - Ushuaia, Pto. Angosto (Stephani 1901a as Leioscyphus chiloscypoides & Lophocolea fuscovirens), Fuegia (Stephani 1909 as Leioscyphus chiloscypoides), Pto. Angosto (Bonner 1963 as Chiloscyphus

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lobatus, Grolle 1962); Gasperi - B. Parry, B. Angelito, I. Laberinto (Gola 1923 as Lejoscyphus (sic.) chiloscyphoides); Hahn - I. Hoste (Bescherelle & Massalongo 1889 as Leioscyphus chiloscyphoides, Grolle 1962); Hariot - I. Hoste, I. Hornos, I. Hermite (Bescherelle & Massalongo 1889 as Leioscyphus chiloscyphoides); J. B. Hatcher - Fuegia (Evans 1898 as Mylia chiloscyphoidea); Hooker - I. Hermite and/or Cabo de Hornos (Grolle 1962, G. L. & N. 1845 as Chiloscyphus fuscovirens, Taylor & Hooker 1847b as Jungermannia fuscovirens); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as Leioscyphus chiloscyphoides); Santesson - S. Alvear, S. de Sorondo, I. Navarino, Pen. Dumas, Est. Yendegaia, Pto. Yartou (Arnell 1955 as Mylia fuscovirens), Pto. Navarino, S. de Sorondo (Grolle 1962), I. Navarino (Arnell 1955 as Chiloscyphus lobatus); Skottsberg - Pto. Cook, B. Tekenika, Harberton, Ushuaia, I. Navarino (Stephani 1905a, as Leioscyphus chiloscyphoides), Pto. Cook (Stephani 1905a Leioscyphus obscurus), Pto. Cook, Ushuaia, Harberton (Grolle 1962); Skottsberg & Halle - R. Fontaine (Grolle 1962, Stephani 1911 as Lophocolea fuscovirens); Spegazzini - B. Blossom, Pto. Vancouver (Massalongo 1885 as Leioscyphus chiloscyphoides, 1927 as Lejoscyphus (sic.) chiloscyphoides). PATAGONIA: Anonymous - (Kühnemann 1937 as Lophocolea fuscovirens & Mylia obscura, 1949 as Plagiochila chiloscyphoidea & Lophocolea fuscovirens), Strait of Magellan (Bonner 1962 as Chiloscyphus fuscovirens); Andersson - Pto. del Hambre obscurus); Donat - Pto. Panuelo, L. Traful, La. Peterson, M. Tronador (Herzog 1957 as Mylia chiloscyphoides); Dumont d'Urville, Pto. Gallant (G. L. & N. 1847 as Plagiochila chiloscyphoidea), Strait of Magellan

(Bonner 1962 as Plagiochila chiloscypchoidea); Dusén - western Patagonia (Stephani 1909 as Leioscyphus chiloscypchoides), Talcahuano (Stephani 1900 as Leioscyphus chiloscypchoides), Cta. Colombine (Grolle 1962), Strait of Magellan (Stephani 1909 as Lophocolea fuscovirens), Punta Arenas, Concepcion, Corral (Stephani 1900 as Lophocolea fuscovirens), Cabo Froward (Stephani 1901a as Lophocolea fuscovirens); Gay - southern Chile (Bonner 1963 as Chiloscyphus huidobroanus, Grolle 1962); Hahn - Strait of Magellan (Stephani 1909 as Leioscyphus chiloscypchoides); Hosseus - Corral, Petrohue (Herzog 1938 as Leioscyphus chiloscypchoides), Pucon, Laraquete, Prov. Cordoba - C. Uritorco, La Posta (Grolle 1962), Pucon (Herzog 1938 as Lophocolea fuscovirens); Jacquinet - Pto. Gallant (Gay 1852 as Plagiochila chiloscypchoidea, G. L. & N. 1847 as P. chiloscypchoidea, Montagne 1845 as P. chiloscypchoidea), Strait of Magellan (Grolle 1962, Stephani 1909 as Leioscyphus chiloscypchoides); Santesson - Tres. Puentes (Arnell 1955 as Mylia fuscovirens), Pta. Ahui (Arnell 1955 as Chiloscyphus lobatus), Tres Puentes, Pta. Ahui (Arnell 1955 as Chiloscyphus lobatus), Pto. Aisen, I. Chiloe, L. Rinihue (Grolle 1962); Schwabe - Calbuco (Grolle 1962), Termas de Puyehue (Herzog 1954 as Mylia chiloscypchoidea), Valdivia, Huitrapulli-Aleucapi, L. Pellaifa, Chaihuin R. Colun, C. Lungoico, Huitrapulli-Aleucapi (Herzog 1960 as Leptoscyphus chiloscypchoides), Calbuco (Herzog 1939 as Leptoscyphus chiloscypchoides), Pto. Puyuhuapi (Herzog 1954 as Lophocolea dura); Skottsberg - Patagonia (Stephani 1922 as Lophocolea dura), L. San Martin (Grolle 1962), Talcahuano (Grolle 1962), Herzog

1943 as Mylia fuscovirens); Skottsberg & Halle - San Martin (Stephani 1911 as Chiloscyphus lobatus), Pto. Cutter, Pto. Pomar, S. Otway - R. Grande, Canal Gajardo, B. Rodriguez, Est. Excelsior, I. Atalaya, Cta. Rayo, Pto. Simpson, Cta. Hale, Quellon (Stephani 1911 as Leioscyphus chiloscypoides), R. de las Minas, Pto. Pomar, Cta. Inga, B. Coihaique (Grolle 1962) R. de las Minas, F. Heinrich, Quicavi (Stephani 1911 as Lophocolea fuscovirens); Sleumer - I. Victoria (Grolle 1962); Sparre - V. Osorno (Grolle 1962); Spegazzini - Poyo-huapi (Massalongo 1906 as Lejoscyphus (sic.) chiloscyphoides).

JUAN FERNANDEZ. MAS A TIERRA: Kunkel - (Arnell 1957 as Mylia fuscovirens, Grolle 1962); Skottsberg - (Arnell 1957 as Mylia chiloscypoides & M. fuscovirens, Grolle 1962). MAS AFUERA: Skottsberg - (Arnell 1957 as Mylia fuscovirens, Grolle 1962, Herzog 1942 as Mylia fuscovirens, Stephani 1911 as Chiloscyphus lobatus). CENTRAL CHILE: Gay - Central Chilena Provinces (Montagne 1856 as Chiloscyphus huidobroanus); Huidobro - Central Chilean Provinces (Gay 1852 as Chiloscyphus huidobroanus); Skottsberg - C. Talinay (Arnell 1956 as Mylia chiloscypoides & M. fuscovirens). BOLIVIA: Herzog (Bonner 1963 as Chiloscyphus difficilis, Grolle 1962, Stephani 1916 as L. chiloscypoides, Stephani 1922 as Chiloscyphus difficilis). TRISTAN DA CUNHA: Challenger Exped. (Stephani 1906 as Lophocolea inconspicua); Christophersen & Mejland (Arnell 1958 as Mylia chiloscypoides, Grolle 1962); Wace (Arnell 1958 as Mylia fuscovirens). INACCESSIBLE: Christophersen & Mejland (Arnell 1958 as M. chiloscypoides, Grolle 1962). GOUGH: Wace (Grolle 1962). SOUTH AFRICA: Anonymous (Arnell

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1963 as Leptoscyphus iversenii & Plagiochila knysnana, Sim 1926 as C. expansus); Wilman (Arnell 1963); Arnell (Bonner 1962 as Plagiochila knysnana, Grolle 1962); Drege & Pappe (G. L. & N. 1845 as C. expansus); Eaton (Mitten 1877 as Chiloscyphus); Ecklon (Bonner 1962 as P. gottscheana, G. L. & N. 1845 as C. expansus & P. gottscheana, Grolle 1962, Sim 1926 as L. gottscheanus), Stephani 1906 as Leioscyphus gottscheanus, 1907 as Chiloscyphus); Pappe, Devyllder, Rabenhorst (Stephani 1907 as Chiloscyphus); Pappe, Wilms, Jelinek, Rolfes, Esterhuysen, Sim, Selling (Grolle 1962); Iversen (Grolle 1962, Sim 1926 as L. iversenii, Stephani 1906 as Leioscyphus iversenii); Sim (Sim 1926 as L. iversenii & L. gottscheanus). TRANSVAAL: Sim (Sim 1926 as L. iversenii). NATAL: Sim (Grolle 1962). ZULULAND: Sim (Sim 1926 as L. iversenii). RHODESIA: Sim (Sim 1926 as L. iversenii). MADAGASCAR: Hildebrandt (Bonner 1963 as Chiloscyphus ankefinensis, Grolle 1962). MASCARENES: Anonymous (Grolle 1962, Stephani 1906 as Leioscyphus gottscheanus). AUCKLAND: Hooker (Hooker 1867 as Leioscyphus chiloscypoides); Tennant (Stephani 1909 as Leioscyphus chiloscypoides). TASMANIA: Anonymous (Hooker 1867 as Leioscyphus chiloscypoides). Gunn (Mitten 1860 as Leioscyphus chiloscypoides).

FALKLAND SPECIMENS SEEN: without specific locality, Cunningham 106 (NY); sin. coll. "no. 250," as Leptoscyphus chiloscypoides (NY-c. per.). EAST FALKLANDS: Lyaill, as Chiloscyphus retusatus (NY); Hooker, syntypes of Jungermannia reclinans (BM, G); PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3237-c. per. + o→); north side of Gypsy Cove, sea level (3251-c. per. & 3257-c.

per + o→); Engineer Point headland, The Narrows, c. 15 m. (Imshaug 40613); ridge on Engineer Point peninsula, 18-25 m. (2819-c. per., 2821-c. per., 2822-c. young per. 2829-c. per. & 2840-c. per.).

STANLEY REGION, Sapper Hill, 135 m. (2393-c. per., 2406-c. per., 2412, 2417 B-c.o→ & 2428); Tumbledown Mt., 155-230 m. (2385-c. per. + o→); Goat Ridge, c. 180 m. (3200-c. per + o→); summit ridge of north peak of Two Sisters, 245-290 m. (2723 & 2731-c. per.); summit of Mt. Kent, 455 m. (2756-c. per.). PORT LOUIS REGION, 25 July 1902 Skottsberg s.n. as Lophocolea vasculosa (S-PA). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2624-c. per. + o→, 2629-c. young per. & 2633-c. o→); summit of Mt. Usborne 1, c. 700 m. (2493 B). DARWIN SETTLEMENT, south side of Carcass Bay, Darwin Harbour (2681-c. per.) Boca House on Brenton Lock, sea level (2694-c. young per., 2698 & 2699). TYSSEN ISLANDS, January 1868 Cunningham 106 as Lophocolea humilis (BM) and L. fuscovirens (NY).

WEST FALKLANDS: PORT HOWARD, Freezer Rocks on east slope of Mt. Maria, 320 (3142-c. per. & 3152-c. per.). FOX BAY REGION, summit of East Head, 180 m. (3418-c. per., 3420-c. per., 3425-c. per., 3427-c. per., 3429-c. per., 3434 A-c. per. & 3441-c. per.); north base of Fox Bay Mt., 75 m. (3457-c. o→ & 3458); valley east of Suli-van House, c. 75 m. (3537). MT. ADAM, east side of summit ridge, 670-700 m. (3012 B). HILL COVE REGION, settlement 15 m. (3053 & 3055-c. per.) summit of East French Peak, 305 m. (2972-c. per.);

summit of Mt. Fegen, 335-360 m. (3072). WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2898, 2908-c. very young per., 2909, 2912-c. per., 2918, 2934 & 2935); near The Waterfall, 30-90 m. (2848 & 2850-c. per.). WEDDELL ISLAND, 28 November 1907 Halle & Skottsberg 204, as Lophocolea georgiensis (UPS); summit of peak northeast of Mt. Weddell, 335 m. (3372-c. per. & 3391-c. per.); summit of Mt. Weddell, 380 m. (3346-c. o+ & 3349-c. per.). NEW ISLAND, ridge between Bold Hill & Bold Point, 105 m. (3268, 3270-c. per., 3272, 3273 & 3278-c. per.).

ADDITIONAL SPECIMEN SEEN: CHILE. CHILOE: I. Chiloe, Pto. Quellon, 27 July 1908 Halle & Skottsberg 19, syntype of Lophocolea angulata (UPS).

Leptoscyphus patagonicus (Steph.) Grolle

Leioscyphus patagonicus Steph. K. Svenska VetenskAkad. Handl. 46 (9): 38. f. 14 c. 1911. Mylia patagonica (Steph.) S. Arnell, Svensk Bot. Tidskr. 49: 237. 1955, nom illeg. Leptoscyphus patagonicus (Steph.) Grolle, Nova Acta Leopoldina 25 (161): 59. 1962. Original material: Chile, Prov. Magallanes, S. Skyring, Esto. Excelsior, 1908 Halle & Skottsberg (S, UPS) - cited in Grolle (1962).

Lophocolea aromatica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 39. f. 15 b, c. 1911, syn. fide Grolle (1962). Original material: Juan Fernandez, Mas Afuera, 1909 Skottsberg s.n. (UPS) - cited in Grolle (1962).

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Taxonomical remarks: Grolle (1962) states,

Sämtliche Angaben von Leioscyphus repens aus Patagonien (Massalongo 1885 und Stephani 1906) und Juan Fernandez (Stephani 1911; Herzog 1942; Arnell 1957) beziehen sich auf Pflanzen, die zu dem etwas ähnlichen Leptoscyphus patagonicus (Steph.) Grolle gehören.

Leioscyphus repens (type-New Zealand) is a synonym of the New Zealand Chiloscyphus physanthus. See also Hodgson (1943, p. 44).

Ecology: This species occurs in dwarf shrub heaths above 180 m. on Blechnum magellanicum bases and Bolax cushions as well as on soil. It also occurs on soil and in rock crevices in Cortaderia heaths of varying altitudes (c. 90-470 m.).

Phytogeography: This species occurs in the Falklands, Fuegia, I. de los Estados and I. Grande de Tierra del Fuego, southern Patagonian Channels (S. Skyring region) Valdivian Region (44° 19' S. in West Patagonia) and Juan Fernandez. It has not been reported from Andean Patagonia (see Map 37).

Literature reports (FALKLANDS): Skottsberg (Grolle 1962).

Additional Literature Reports: TIERRA DEL FUEGO: Santesson - Pto. Yartou (Grolle 1962), Valle Lasifashaj (Arnell 1955 as Mylia patagonica); Skottsberg - R. Olivia (Grolle 1962). PATAGONIA: Schwabe - Pto. Puyuhuapi (Grolle 1962); Skottsberg - southern Patagonia; (Stephani 1922) as Leioscyphus patagonicus; Esto. Excelsior, F. de Los Ventisqueros, Pto. Cutter (Grolle 1962). JUAN FERNANDEZ: Skottsberg (Stephani 1922 as Lophocolea aromatica). MAS A TIERRA: Kunkel - Cordon Chifladores (Grolle 1962); Skottsberg - Valle Anson -

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400-500 m. (Arnell 1957 as Lophocolea aromatica). MAS AFUERA:
Skottsberg (Grolle 1962), Camp Correspondencia (Grolle 1962).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3222-c. per., 3236-c. per. & 3239-c. per.). STANLEY REGION, Sapper Hill, 29 October 1907 Skottsberg 209 as Lophocolea humifusa (UPS); Goat Ridge, c. 180 m. (3198-c. per.); summit ridge of north peak of Two Sisters, 245-290 m. (2705-c. per. + o→). MT. USBORNE REGION, gap between Mt. Usborne 2 & Ceritos Rocks, 475 m. (2646-c. o→); below The Gap, c. 90 m. (2569-c. per. + o→ & 2571 B-c. per.). WEST FALKLANDS: HILL COVE REGION, summit of East French Peak, 305 m. (2973).

ADDITIONAL SPECIMENS SEEN: ARGENTINA: TIERRA DEL FUEGO. I. de los Estados, Pto. Cook, March 1882 Spegazzini 13 as Lophocolea frustula (NY). CHILE. MAGALLANES: B. Swallow, Cunningham (NY); B. Halt, sin. coll. (NY).

LOPHOCOLEA

(Dum) Dum. Recueil Obs. Jungerm. 17. 1835. Jungermannia sect.

Lophocolea Dum Syll. Jungerm. 59. 1831.

Key to the Falkland Island Species of Lophocolea

1. Leaves consistently bifid. 2
1. Well developed leaves entire, emarginate or 1 dentate. . . 7
2. Leaf lobes and marginal teeth caducous, often giving leaf apices a ragged appearance; leaves often with accessory teeth and laciniae; leaf margins entire to highly dentate. Underleaves deeply bifid, with margins 1-laciniate, and lobes spreading; perianths twice as long as broad; a margin of innermost bract to 8 dentate-laciniate; plants dioicous L. irregularis
2. Leaf lobes and marginal teeth, if present, persistent, leaf apices never with a ragged appearance; leaves never with accessory lobes; leaf margins entire to 1 dentate. 3
3. Leaves bifid to 1/2, leaf segments frequently canal-
 ulate. Leaf segments very wide triangular, widely
 divergent; perianth wings dentate-laciniate. L. divaricata

3. Leaves bidentate or bifid to at most 1/4, leaf segments plane, never canaliculate. 4
4. Underleaves connate with the leaves on both sides.
Leaves symmetrically ovate or nearly so to sub-
rectangular in shape, the sinus truncate or lunate
. L. sylvatica
4. Underleaves connate on only one side or completely
free 5
5. Median leaf cells (46-) 52-78 μ X 33-65 μ ; perianth
terete or obscurely triangular below. Dorsal leaf
margin straight or nearly so, entire, ventral margin
rounded, especially towards the apex, entire-1 den-
tate; underleaves elongate-ovate in shape, as wide as
or slightly wider than stem, connate on one side . . . L. textilis
5. Median leaf cells 17-48 (-52) μ X 20-43 μ , perianth
triangular below 6
6. Leaf segments ending in a uniseriate row of 1-6
cells, segments narrow-broadly triangular. Under-
leaf margins entire-1 dentate or occasionally
ciliate-small laciniate; plants monoecious L. lenta
6. Leaf segments ending in a uniseriate row of 4-15
cells, segments piliferous. Underleaves deeply
bifid (nearly always almost to base), with usually
a single long lacinium-lobe; perianths (3.1-)

3.6-5.3 X longer than broad, perianth lobes narrowly triangular, dentate-laciniate; plants monsecius. .L. leptantha

7. Underleaf apices plane to retuse to bidentate; underleaves frequently convex to $\pm$ canaliculate; underleaf margins entire; leaf apices entire. Underleaves connate on one sideL. austrigena
7. Underleaves bifid to ca. 1/2 or more, plane, underleaf margins entire- 4 dentate-laciniate; leaf apices variable, i.e., broadly rounded to truncate to emarginate . . 8
8. Leaves expanded near ventral base and here often reflexed; leaf apices broadly rounded, never retuse; underleaves 1/2 stem width to as wide as stem; underleaf segments often differing in size and configuration; stems thick, fleshyL. elata
8. Leaves not expanded near ventral base; leaf apices variable, broadly rounded to truncate to retuse to emarginate to 1- or bidentate. 9
9. Underleaves as wide as to 1.5 times stem width, underleaf margins entire- 2 dentate-small laciniate . . .L. sabuletorum
9. Underleaves (as wide as-) 3 times stem width, underleaf margins to 4 dentate-large laciniateL. semiteres

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Lophocolea austrigena (Hook. f. & Tayl.) G. L. & N.

Jungermannia austrigena Hook. f. & Tayl. London Jour. Bot. 3: 466.

1844. Lophocolea austrigena (Hook. f. & Tayl.) G. L. & N.

Syn. Hep. 702. 1847. Original material: Chile, Prov. Magalanes, I. Hermite and/or Cabo de Hornos, Hooker s. n. (BM ! - c. per., NY ! - c. per., S-PA!, W - cited in Grolle 1962).

Jungermannia cavispinga Hook. f. & Tayl. London Jour. Bot. 3: 463.

1844, syn. fide Stephani (1906). Lectotype (nov.) Falkland Is.,

1843 Hooker s. n. (FH !).

Lophocolea triseriata Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 6): 45. 1900, syn. nov. Original material: Chile, Prov.

Aisen, R. Aisen Valley, 13 January 1897 Dusen s. n. (NY !, S-PA! - c. per., UPS!).

Leioscyphus grandistipus Steph. K. Svenska VetenskAkad. Handl. 46 (9):

37. f. 13. c, d. 1911, syn. fide Grolle (1962). Leptoscyphus grandistipus (Steph.) Kühnem. Revista Centro Estud. Doct. Cienc.

Nat. 1: 176. 1937. Mylia grandistipa (Steph.) Kühnem. Lilloa

19: 341. 1949. Lectotype (Nov.)¹ Falkland Is., Hornby Mts.,

19 December 1907 Skottsberg 346 (S-PA !).

Lophocolea falklandica Steph. K. Svenska VetenskAkad. Handl. 46 (9):

44. f. 16 e. 1911, syn. fide Grolle (1962). Lectotype (nov.):

Falkland Is., Westpoint Is., 8 December 1907 Skottsberg 351 (S-PA ! - c. o→).

¹Grolle (1962, p. 74) cites a specimen in hb. S as "Teil vom Holotypus von Leioscyphus grandistipus Steph."

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Taxonomical remarks: Several syntype specimens of Lophocolea falklandica have been misdetermined. These specimens are referable to Balantiopsis erinacea and Lophocolea elata. The description (especially of the underleaf) and figures, however, agree with the syntypes referable to Lophocolea austrigena. I have designated a Stockholm (S-PA) specimen from Westpoint Island, Falkland Islands as the lectotype. Lophocolea elata is mixed with L. austrigena in the lectotype packet.

It appears that Stephani did not have a concept of Lophocolea austrigena. The 1896 Dusen collections of L. austrigena were published in Stephani (1900) as L. gottscheoides and a new species, L. triseriata, which is here treated as a new synonym of L. austrigena. The 1897 Dusen collections of L. austrigena were published in Stephani (1901a), as L. otiphylla and L. triseriata. All observed 1903 Skottsberg collections determined by Stephani (and published in Stephani 1905a) as L. austrigena from Isla de los Estados, Puerto Cook, are specimens of Clasmatocolea humilis. In the same publication, the 1902 Skottsberg Falkland Island collections of L. austrigena are specimens of Clasmatocolea humilis and C. vermicularis. In addition, Leioscyphus grandistipus, published as a new species in Stephani (1911) is a synonym of L. austrigena.

Lophocolea austrigena shows some relationships to L. gottscheoides. Lophocolea austrigena is distinct with (a) entire leaf apices, (b) underleaves connate on one side and (c) clearly anisophyllous plants. Lophocolea gottscheoides has (a) leaf apices one

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dentate, (b) underleaves not connate at the base and (c) plants isophyllous or nearly so.

Lophocolea austrigena is related to L. boveana. The two should not be confused, however, as L. austrigena has (a) leaves broader than long, (b) leaf apices broadly rounded (rarely transversely truncate) and (c) perianths exerted far beyond bracts. Lophocolea boveana has (a) leaves longer than broad, (b) leaf apices narrowly rounded (rarely obliquely truncate), and (c) perianths only slightly exerted beyond bracts.

Lophocolea austrigena is quite variable, and there are several forms exhibited by this taxon. One form is that of short, stiff plants with the free underleaf margin only short decurrent. In this form the ventral leaf margins are often constricted, producing leaves that appear transversely oriented. A second form, which is quite different in appearance, is characterized by elongate plants which are flaccid in texture, and dorsal leaf margins and free underleaf margins very long decurrent. This form is characteristic of several of the syntypes of L. triseriata and of the lectotype of Leioscyphus grandistipulus. I do not regard these forms as being taxonomically significant, as they are connected by numerous intermediates and are part of the continuum of variation of L. austrigena.

Ecology: This taxon is rather common in and typical of the bryoflora of streams in Cortaderia and dwarf shrub heaths. It is especially luxuriant when submerged, and then frequently forms thick, pure, extensive masses. It occasionally may be found on stream banks.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels, the Valdivian region (north to

39° 52' S.), Tristan da Cunha and Inaccessible Island. There have been no authentic reports from Andean Patagonia; the report in Stephani (1911) from Est. Miguens is based upon a specimen of Clasmatocolea vermicularis. The reports from the New Zealand sector require confirmation (see Map 38).

Literature Records (FALKLANDS): Anonymous (Kühnemann 1937 as Leptoscyphus grandistipus, Lophocolea austrigena & L. falklandica, Kühnemann 1949 as L. austrigena, L. falklandica & Mylia grandistipus, Rodway 1916); Hooker (G. L. & N. 1847 as J. cavispinia, Taylor & Hooker 1847b as J. cavispinia, Stephani 1906); Skottsberg (Stephani 1922 as Leioscyphus grandistipus & Lophocolea falklandica), between Arrow Harbour House & Victoria Creek (Skottsberg 1913 as Leioscyphus grandistipus), Hornby Mts. (Grolle 1962), Port Stanley, Port Louis (Skottsberg 1913, Stephani 1905a), Westpoint Is. (Stephani 1913 as L. falklandica); Skottsberg & Halle - Murrell River (Stephani 1911).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous (Kühnemann 1937 & 1949 as L. austrigena & L. triseriata, Rodway 1916); Dusén - Pto. Angosto (Stephani 1901a), R. Grande, Pto. Angosto (Stephani 1901a as L. triseriata), I. Desolacion (Stephani 1906 as L. triseriata); Hariot - I. Hermite (Bescherelle & Massalongo 1889); Hooker - I. Hermite and/or Cabo de Hornos (Grolle 1962, G. L. & N. 1847 as ?Lophocolea, Hodgson 1962, Taylor & Hooker 1847b as Jungermannia, Mizutani & Hattori 1959); Racovitza - I. Londonderry (Stephani 1901b), Beagle Channel (Stephani 1902 as L. triseriata); Santesson - Valle Lasifasnaj (Arnell 1955 as L. triseriata); Skottsberg - Pto. Cook

(Stephani 1905a); Skottsberg & Halle - S. de Valdivieso (Stephani 1911); Spegazzini - Pto. San Juan del Salvamiento, M. Conegliano (Massalongo 1885), M. Conegliano (Massalongo 1927). PATAGONIA: Anonymous (Kühnemann 1949); Dusén - Strait of Magellan (Stephani 1906), Patagonia occidentalis (Stephani 1906 as L. triseriata); Hariot - Strait of Magellan (Stephani 1906); Schwabe - I. Magdalena, Pto. Puyuhuapi (Herzog 1954), Pto. Puyuhuapi (Herzog 1939), I. Magdalena (Hodgson 1962), C. Lungoico (Herzog 1960); Skottsberg & Halle - Est. Miguens (Stephani 1911). TRISTAN DA CUNHA: Christophersen & Mejland (Grolle 1962), Soggy Plain, Round Hill, Sandy Point, above Burntwood, Upper Pond (Arnell 1958). INACCESSIBLE: Christophersen & Mejland - Above "Waterfall" (Arnell 1958). AUCKLAND: Dawbin - Musgrave Peninsula (Hodgson 1962). NEW ZEALAND: STEWART ISLAND: Anonymous (Hodgson 1962). SOUTH ISLAND (NEW ZEALAND): Anonymous (Hodgson 1962). TASMANIA: Anonymous - Adamson Peak (Rodway 1916); Gunn - St. Patrick's River (Mitten 1860); Oldfield - near Brown's River (Mitten 1860).

FALKLAND SPECIMENS SEEN: without specific locality, Capt. Abbott (BM, NY - c per.). EAST FALKLANDS: 1843 Hooker, syntypes of Jungermannia cavispa (BM, S-PA). STANLEY REGION, Port Stanley 28 March 1902 Skottsberg s.n. (S-PA); Port Stanley, Lechler 99 (PC), headwaters of Mullet Creek Stream, c. 60 m. (3160, 3164, 3168 & 3169); Murrell River, 6 November 1907 Halle (S-PA, UPS); Mt. William, Lechler 99 (NY). MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2647, 2651, 2652 B & 2656). WEST FALKLANDS: MT. ADAM, basin east of summit, 580-595 m. (2999). WESTPOINT ISLAND, 8 October 1907

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Skottsberg 351, syntype of Lophocolea falklandica (UPS); near The Waterfall, 30-90 m. (2864, 2870, 2871, 2872, 2873 & 2877). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3311, 3314, 3317, 3331 & 3332).

ADDITIONAL SPECIMENS SEEN: (representative selection):

ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, M. Conegliano, March 1882 Spegazzini 7 (NY); Valle Lasifashaj, Las Cotorras, 8 February 1940 Santesson M 29 (S-PA). CHILE. MAGALLANES: I. Desolación, Pto. Angosto, Dusen 270 (NY-c. per., S-PA-c. per., UPS-c. per.). AISEN: R. Aisen, January 1897 Dusen as L. otiphylla (NY, S-PA - c. per.); Pto. Puyuhuapi, 1 January 1938 Schwabe 38 (S-PA-c. o→). OSORNO: Puyehue, 15 January 1947 Sparre 2181 (S-PA-c. o→). VALDIVIA: Corral, 26 November 1896 Dusen 196a as L. triseriata (NY-c. per). TRISTAN DA CUNHA: Above Burntwood, 600 m., 9 January 1938 Christophersen & Mejland 905, 910 (S-PA).

Lophocolea divaricata Hook. f. & Tayl.

Lophocolea divaricata Hook. f. & Tayl. London Jour. Bot. 5: 367.

1846, non Lophocolea divaricata Herz. Archos. Esc. Farm. Córdoba 7: 19. 1938. Jungermannia divaricata (Hook. f. & Tayl.) Hook. f. & Tayl. in Hook. f. Bot. Ant. Voy. 1(2): 437. 1847. Original material: Chile, Prov. Magallanes, Cabo de Hornos, Hooker (NY !).

Ecology: This species is rare not only in the Falklands, but in southern South America. I was able to find only a relatively few

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stems of the plant mixed with Lophocolea lenta on the base of a tussock grass in a tussock association.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and the Valdivian region (45° 17' S., 73° 43' W). Within the Falklands, it was found only in the Port Stanley region, and the cooler temperatures and higher rainfall of this region may account for its presence there.

Literature Records: TIERRA DEL FUEGO: Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1847, Taylor & Hooker 1847b as Jungermannia); Spegazzini - Pto. Cook, M. Sarmiento (Massalonga 1927).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: KIDNEY ISLAND, north of shanty (2788 B).

ADDITIONAL SPECIMENS SEEN: CHILE. AISEN: Pto. Lagunas, Cunningham s.n. (NY-c. per.). Without province or locality, Lorentz s.n. (NY).

Lophocolea elata (Gott.) Steph.

Jungermannia elata Gott. Ergebn. Dt. Pol. - Exped. 2 (16): 450.

pl. 7. f. 3-6. 1890. Lophocolea elata (Gott.) Steph. Wiss.

Ergebn. Schwed. Sudpolarexped. 4 (1): 7. 1905. Original

material: South Georgia, 1882 Will (M) - cited in Grolle (1962).

Leioscyphus setistipus Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 17): 16. 1901, syn. fide Grolle (1962). Leptoscyphus

setistipus (Steph.) Kühnem. Revta Cent. Estud. Doct. Cienc. Nat.,

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B. Aires 1: 177. 1937. Myliia setistipa (Steph.) Kühnem. Lilloa 19: 341. 1949. Original material: Chile, Prov. Magallanes, R. Azopardo, 1896 Dusén 56 (G, S) - cited in Grolle (1962).

Taxonomical remarks: Lophocolea elata is highly distinctive and should not be confused with any other hepatic. The following, when observed as an ensemble of characters, will serve to distinguish the taxon. The leaves are large, entire, broadly rounded at the apex and are expanded and often reflexed near the ventral base. The underleaves are often abruptly recurved and are polymorphous with regard to size, configuration, and insertion, which may be transverse or oblique. The apices are bifid to ca. 1/2 to often nearly to the base with the segments apiculate, long triangular or long acuminate and often conspicuously differing in size and/or configuration. Frequently one segment may be reduced to a tooth while the other is large and lobe like. I have not observed reproductive structures.

Lophocolea elata has been confused with Saccogynidium vasculosum, but the taxa may be differentiated with the former having (a) a smooth leaf cuticle, (b) leaf apices very broadly rounded and (c) median leaf cells 22-49 μ long. Saccogynidium vasculosum has (a) a finely papillose leaf cuticle, (b) leaf apices usually broadly rounded, and (c) median leaf cells 42-60 μ long.

Ecology: This species seems to be restricted to the stream habitat where it was, without exception, submerged or nearly so in dwarf shrub heath, and Cortaderia associations. This species, with L. austrigena, is characteristic of the submerged stream bryoflora.

Phytogeography: This species occurs in South Georgia, the Falklands and Fuegia (I. Grande de Tierra del Fuego). The report from Grupo Evangelistas in Stephani (1911) requires investigation (see Map 39).

Literature Records (FALKLANDS): Skottsberg-(?) Eastpoint Is. (Grolle 1962).

Additional Literature Records: SOUTH GEORGIA: Bonner - Grytniken (Grolle 1962); Skottsberg - Cumberland Bay (Steere 1961, Stephani 1911), Jason Harbour (Grolle 1962, Stephani 1905a); Will - (Grolle 1962, Steere 1961, Stephani 1906). TIERRA DEL FUEGO: Anon-ymous - Kühnemann 1937 as Leptoscyphus abditus, 1949 as Mylia setis-tipa; Dusén - R. Grande, R. Azopardo (Grolle 1962), Fuegia (Grolle 1962, Stephani 1906 as Leioscyphus setistipus); Santesson - Ushuaia (Arnell 1955); Skottsberg - Ushuaia (Grolle 1962); Skottsberg & Halle - R. Azopardo (Stephani 1911). PATAGONIA: Skottsberg & Halle - Grupo Evangelistas (Stephani 1911).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Lya11, as Junger-mannia vasculosa (FH), MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2667). WEST FALKLANDS: FOX BAY REGION, near mouth of Cheeks' Creek, c. 12 m. (3496 A); near peat cuttings in Ram Paddock, 45-60 m. (3518); valley east of Sullivan House, c. 75 m. (3524 & 3528). WESTPOINT ISLAND, Skottsberg as L. falklandica (G, UPS); near The Waterfall, 39-90 m. (2859).

ADDITIONAL SPECIMEN SEEN: CHILE. MAGALLANES: R. Azopardo, 5 March 1896 Dusen 80 as L. vasculosis (sic.) (NY).

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Lophocolea irregularis Steph.

Lophocolea irregularis Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 6): 40. 1900. Original material: Chile, Prov. Aisen, R. Aisen Valley, 9 February 1897 Dusen s.n. (S-PA ! - c. per).

Taxonomical remarks: The distinguishing feature of this taxon is the unique leaves. At least some of the leaves on an axis have apices which appear ragged as the result of the caducous lobes and accessory teeth and laciniae. The lobes and leaf margins (especially towards the apex) are often sparingly to highly dentate-laciniate. Several leaves on an axis may be simple bifid with both segments intact, slightly spreading, directed straight forward or slightly connivent, with the segments $\pm$ apiculate or occasionally attenuate. Upon rare occasion, however, the leaves may be entire and have apices which are truncate or retuse. To my knowledge, the only other Lophocoleoid plant with caducous leaf lobes is Leptophyllopsis laxus (Mitt.) Schust. of New Zealand (see Schuster, 1963a, pp. 269-270).

The perianths of Lophocolea irregularis vary from barely exerted beyond the bracts as in the original material, to those which are distinctly exerted.

Ecology: This species is rare in the Falklands as well as southern South America. In the Falklands it was found under Gunnera cover on a stream bank cut through a pasture. As discussed above, since the bryoflora of this stream was very similar to that of the dwarf shrub heaths the area was probably that of this association prior to conversion to pastureland.

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Phytogeography: This species has been reported from Tierra del Fuego (R. Grande, !), southern Patagonian Channels (Brunswick Peninsula), the Valdivian region (!), Juan Fernandez and Tristan da Cunha.

Literature Records: TIERRA DEL FUEGO: Anonymous (Kühnemann 1937, 1949); Dusén - R. Grande, Ushuaia (Stephani 1901a); Skottsberg & Halle - Ushuaia - R. Grande (Stephani 1911). PATAGONIA: Dusén - Punta Arenas (Stephani 1901a); western Patagonia (Stephani 1906); Skottsberg & Halle - R. Aisen (Stephani 1911). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - C. Damajuana - 400-500 m. (Arnell 1957). TRISTAN DA CUNHA: Christophersen & Mejland - 3rd Gulch - 550-600 m. (Arnell 1958).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: FOX BAY REGION, near mouth of Cheeks' Creek, c. 12 m. (3489).

ADDITIONAL SPECIMEN SEEN: FUEGIA, Dusen 305 (G-c. per.).

Lophocolea lenta (Hook. f. & Tayl.) G. L. & N.

Jungermannia lenta Hook. f. & Tayl. London Jour. Bot. 3: 379. 1844.

Lophocolea lenta (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 162.

1845. Original material: Auckland Is., Hooker (non vidi).

Jungermannia secundifolia Hook. f. & Tayl. London Jour. Bot. 3: 471.

1844, syn. fide Mitten (1855). Lophocolea secundifolia (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 693. 1847. Lectotype (nov.):

Falkland Is., Hooker (FH !).

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Taxonomical remarks: The type material of Lophocolea secundifolia is monoecious. The plants of type material are light brown in color and rather small in size. Lophocolea secundifolia is treated as a synonym of L. lenta by the following authors: Evans (1898), Hodgson (1943), Mitten (1855, p. 136).

Lophocolea lenta is related to L. leptantha, but may be separated as follows. Lophocolea lenta has (a) underleaf margins which are entire - 1 dentate or occasionally ciliate - small laciniate and (b) triangular to acuminate leaf segments which are never piliferous and which terminate in a uniseriate row of 1-6 cells. Lophocolea leptantha has (a) underleaf margins which are 1-large laciniate - lobate and (b) piliferous leaf segments which terminate in a uniseriate row of 4-15 cells.

Lophocolea lenta approaches L. bidentata, particularly in robust forms of the former taxon, and the two may be confused, especially if sterile plants are at hand. Lophocolea lenta is distinct with (a) plants small in size, (b) leaves narrowly ovate to elliptic to subrectangular in shape, and (c) plants which are monoecious and which often produce gynoecea. In L. bidentata (a) the plants are robust, (b) the leaves are wide ovate in shape and (c) the plants are dioicous and seldom produce gynoecea.

The underleaves of Lophocolea lenta exhibit considerable variation. They are frequently quite small, i.e., $\frac{3}{4}$ the stem width to as wide as the stem, and are usually entire margined to 1 dentate in weakly developed forms. This form was encountered on tussock grass bases. In more robust plants the underleaves are ca. 1.5 as wide as

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the stem and have margins 1 ciliate-laciniate. The apex varies from bifid to ca. 1/2 to nearly the base. The sinus is narrow to broadly rounded, and the segments vary from directed straight forward to widely spreading.

Ecology: This species is common on bases of tussock in the tussock association. It is also present on outcrops in dwarf shrub heaths where it may be found on soil under rock overhangs and in crevices. It was also found on bark of Hebe, Nothofagus and fir (the latter two in the grove of planted trees at Hill Cove settlement).

Phytogeography: This amphipacific species has been reported from the Falklands, Tierra del Fuego and the Valdivian region in the American sector) and Auckland, Campbell and Snares islands, New Zealand, Tasmania and Australia in the New Zealand sector.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as L. secundifolia); Hooker - (G. L. & N. 1847 as L. secundifolia, Taylor & Hooker 1847b as J. secundifolia, Stephani 1906 as L. secundifolia); Skottsberg - Port Stanley, Port Louis (Stephani 1905a as L. secundifolia), Port Stanley (Skottsberg 1913 as L. secundifolia; Skottsberg & Halle - Port Louis, Halfway Cove (Stephani 1911 as L. secundifolia).

Additional Literature Records: SOUTH GEORGIA: Skottsberg - Bay of Isles, Rosita Harbour (Steere 1961 & Stephani 1911 as L. secundifolia). TIERRA DEL FUEGO: Anonymous - (Hooker 1867, Kühnemann 1937, 1949); J. B. Hatcher - Lapataia (Evans 1898); Santesson - I. Navarino, Est. Yendegaia, Pto. Yartou (Arnell 1955 as L. secundifolia);

Spegazzini - I. de los Estados, Strait of Magellan (Massalongo 1885). PATAGONIA: Anonymous - (Kühnemann 1937, 1949). Dusén - R. Aisen (Stephani 1900 as L. lenta & L. secundifolia); Santesson - Puerto Aisen (Arnell 1955 as L. secundifolia); Spegazzini - Strait of Magellan (Stephani 1906). AUCKLAND: Hooker (G. L. & N. 1845, Hodgson 1953, 1962, Taylor & Hooker 1847a as Jungermannia, Hooker 1867, Stephani 1906); Turbott - No. 2 Camp (Hodgson 1962). CAMPBELL: Kirk (Stephani 1906); Oliver, Sorensen (Hodgson 1962). SNARES: Fineron, Newcombe (Hodgson 1962). NEW ZEALAND. Anonymous (G. L. & N. 1847, Rodway 1916). Hector, Knight, Kirk, Beckett (Stephani 1906); Hooker (Hooker & Taylor 1844 as Jungermannia, Stephani 1906). SOUTH ISLAND (NEW ZEALAND): Anonymous (Hodgson 1953); Buchanan, Hector - Otago (Hooker 1867); NORTH ISLAND (NEW ZEALAND): Anonymous (Hodgson 1953); Colenso - Wairarapa Valley, Hooker 1867, Mitten 1855); Hooker - Bay of Islands (Hooker 1867, Mitten 1855). TASMANIA: Anonymous (G. L. & N. 1847, Hooker 1867, Rodway 1916); Hooker - (Hooker & Taylor 1844 as Jungermannia, Stephani 1906), near Hobarton (Mitten 1860). AUSTRALIA: Anonymous - (Rodway 1916).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: 1843 Hooker, syntypes of Jungermannia secundifolia (BM, NY - c. per. + o→); Lyaill as L. secundifolia (FH). KIDNEY ISLAND, north of Shanty (2788 A, 2792, 2795, 2796, 2797 & 2802-c. per. + o→). PORT WILLIAM REGION, south shore of Cape Pembroke peninsula, near Surf Bay, sea level (2432 & 2434-c. per. + o→); ridge on Engineer Point peninsula, 18-25 m. (2837-c. o→ + young o). DARWIN SETTLEMENT, Boca House on Brenton Lock, sea level (2689-c.

sporo. + o→). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3438 A-c. sporo. & 3442-c. per. + o→). HILL COVE REGION, settlement, 15 m. (3049-c. o→ + ♀ & 3050-c. o→ + ♀ & 3056-c. o→ + ♀). WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2923). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3380-c. o→ + ♀ & 3390-c. per. + o→). NEW ISLAND, ridge between Bold Hill & Bold Point, 105 m. (3265 & 3269).

Lophocolea leptantha (Hook. f. & Tayl.) G. L. & N.

Jungermannia leptantha Hook. f. & Tayl. London Jour. Bot. 3: 471.

1844. Lophocolea leptantha (Hook. f. & Tayl.) G. L. & N., Syn. Hep. 694. 1847. Lectotype (nov.): Chile, Prov. Magallanes, Cabo de Hornos, Hooker s.n. (NY ! - c. sporo.).

Jungermannia alternifolia Hook. f. & Tayl. London Jour. Bot. 4: 83.

1845, syn. nov. Lophocolea alternifolia (Hook. f. & Tayl.) G. L. & N., Syn. Hep. 695. 1847. Lectotype (nov.): Falkland Is. (non New Zealand), Lyall s.n. (FH ! - c. sporo.).

Lophocolea cunninghamii Steph. Bull. Herb. Boissier 6 (8): 652. 1906

(= Sp. Hep. 3: 68), syn. nov. Original material: Chile, Prov. Magallanes, Pto. Eden, ex hb. Kew, April 1868 Cunningham 56 (G !).

Lophocolea monoica Steph. K. Svenska VetenskAkad. Handl. 46 (9): 48.

f. 19. k-p. 1911, syn. nov. Lectotype (nov.): Falkland Is., Port Stanley, Sapper Hill, 29 October 1907 Skottsberg s. n. (UPS ! - c. per.).

Taxonomical remarks: The lectotype material of Lophocolea leptantha is monoecious, a crucial character which was previously not reported for the species. The perianths of L. leptantha are commonly present and are helpful in identifying the species. Perianths are long and narrow (3.1-) 3.6-5.3 X longer than broad.

The type locality of Lophocolea alternifolia has been confused. The original description states New Zealand as the type locality. A single sheet in the Taylor herbarium (FH) has the following three separate specimens: a) a packet labeled "Falkland Islands," but crossed out, with "New Zealand" written below, and collected by Lyall; b) a small packet along with a glued specimen labeled number 1; and c) a portion of (b) which has both been placed in a small packet and glued to the sheet and labeled number 2. Taylor has noted below the specimens that number one is from the Falkland Islands and collected by Lyall and was communicated by J. D. Hooker, 1844 (the following note is also included here "with Chiloscyphus retusus Tayl."), and number two is from New Zealand, W. Lyall and communicated by W. Wilson.

Taylor and Hooker (1847b, p. 436) state of Jungermannia alternifolia: "Hab. Falkland Islands" and "This species was erroneously described (London Jour. Bot. l.c.) as a native of New Zealand; from whence we have never seen specimens." I believe that specimens labeled number one and two are merely segregates of a single Falkland Island, Lyall collection as both contain the following identical complex of plants: Lophocolea leptantha, a rather flaccid form of Leptoscyphus expansus with truncate leaf apices which are frequently

emarginate, a moss, and bits of grass. In addition, I have studied a syntype collection from the Hooker herbarium of the British Museum and this Lyall collected specimen bears the Falkland Island locality only. This specimen also contains in addition to Lophocolea leptantha, the Leptoscyphus expansus, a moss and a grass. (Specimen a) above, which is only a small segregate, has the moss but not Leptoscyphus expansus or the grass). The confusion surrounding this species likely originated during curating of the specimen after it left Hooker and before it was studied by Taylor.

I consider the three Farlow plants to be one collection that has been subdivided and since two of the specimens have perianths and one with a capsule, I have designated these specimens as the lectotype. The British Museum specimen (syntype) appears sterile.

The description and figures of Lophocolea monoica in Stephani (1911) are somewhat confusing. Part of this confusion arises out of the heterogeneous assembly of syntype material. The syntypes from Territory Chubut (Arroyo Carbon), and Azopardo-Tal are misdeterminations of Clasmatocolea koeppensis. The syntypes from Isla Dawson, Falkland Is. (Rabbit Is.) and Falkland Is. (Sapper Hill) are plants of Lophocolea monoica. The figures and descriptions of vegetative material are of L. monoica, while those of the perianth clearly do not correspond to the long, narrow perianths normally produced by this taxon. The perianth drawn and described may be that of a very immature one, or one of C. koeppensis.

Stephani (Sp. Hep. Vol. 6, p. 283) states for L. monoica, plants are "dilute brunnea" and revises the description of the perianth for the species stating, "Perianthia anguste oblonga (7 mm. longa, 2,5 mm. lata) apice ad 1/3 triloba, lobis late ligulatis, irregulariter multispinosis." The description of the perianth here fits that of L. monoica, i.e., corresponds to the vegetative material described and drawn in 1911. Further, in 1922 he stated the species was collected in the Falkland Islands by Skottsberg. Thus, Stephani in the latter reference has excluded South American collections. Of the syntypes from the Falklands, that from Sapper Hill has several plants with leaves concave and decurved, and thus best agrees with the description. The UPS collection by Skottsberg s.n. (29 October 1927) from the Falkland Islands (Sapper Hill) is here designated the lectotype of Lophocolea monoica.

The material of L. monoica agrees well with L. leptanthe and is here treated as a synonym.

Ecology: This taxon is rather rare in the Falklands, occurring in wet depressions and on soil of dwarf shrub heaths. The species was also found on the bases of and in between tussock plants in a tussock association, as well as in a grove of planted trees (Hill Cove settlement).

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels and the Valdivian region (West Patagonian to 43° 54' S.). I have not seen the specimen on which the Juan Fernandez report is based, and its presence there is to be regarded

as questionable. There are no authentic reports of this species from Andean Patagonia; the report of L. monoica from Arroyo Carbon in Stephani (1911) is a misdetermination of Clasmatocolea koeppensis (see Map 40).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as L. cunninghamii & L. monoica); Hooker (Taylor & Hooker 1847b as Jungermannia alternifolia); Skottsberg (Stephani 1922 as L. monoica), Port Stanley, Rabbit Is. (Skottsberg 1913 as L. monoica), Port Louis (Skottsberg 1913 & Stephani 1905a as L. cunninghamii).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1847, Taylor & Hooker 1847b as Jungermannia); Santesson - Pto. Yartou (Arnell 1955 as L. cunninghamii, L. leptantha & L. monoica); Skottsberg - Ushuaia (Stephani 1905a), I. Navarino (Stephani 1905a as L. cunninghamii); Spegazzini - I. Gable, Beagle Channel (Massalongo 1927). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as L. cunninghamii & L. leptantha, 1949 as L. monoica); Andersson - Pto. del Hambre (Ångstrom 1872 as Jungermannia); Dusén - Punta Arenas, Pto. Bueno, R. Aisen, I. Guaitecas (Stephani 1900), Strait of Magellan (Stephani 1906); Santesson - Cta. Mina Elena (Arnell 1955, Puerto Aisen (Arnell 1955 as L. cunninghamii); Schwabe - Pto. Puyuhuapi (Herzog 1954); Skottsberg & Halle - Pto. Cutter (Stephani 1911 as L. cunninghamii), L. San Martin (Stephani 1911). JUAN FERNANDEZ. MAS A TIERRA: Sparre - Pangal - 220 m. (Arnell 1957 as L. cunninghamii).

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FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Lyll, syntype of Jungermannia alternifolia (BM). KIDNEY ISLAND, north of shanty (2791 & 2801 c. per. + o→). PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3253); ridge on Engineer Point peninsula, 18-25 m. (2814, 2816, 2824 c. per. + o→, & 2835 c. per. + o→). STANLEY REGION, Port Stanley, 8 November 1902 Skottsberg s.n. as L. cunninghamii (UPS - c. per.); DARWIN SETTLEMENT, south side of Carcass Bay, Darwin Harbour (2682, c. per. + o→). WEST FALKLANDS: HILL COVE REGION, settlement, 15 m. (3052 c. per. + o→; & 3253 c. per. + o→). KING GEORGE BAY REGION, Rabbit Is., 21 November 1907 Halle & Skottsberg 219, syntype of Lophocolea monoica (UPS - c. per.).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, Spegazzini 29 (NY - c. per.); Ushuaia, May 1896 Dusen 298 as L. cunninghamii (G). CHILE. MAGALLANES: I. Dawson, B. Harris, 25 February 1908 Skottsberg 219 as L. monoica (UPS - c. per.); I. Newton, 30 May 1897 Dusen 29 (NY). CHILOE: I. Guaitecas, Melinca, 5 May 1897 Dusen 334 (NY - c. per.).

Lophocolea sabuletorum (Hook. f. & Tayl.) G. L. & N.

Jungermannia sabuletorum Hook. f. & Tayl. London Jour. Bot. 3: 469.

1844. Lophocolea sabuletorum (Hook. f. & Tayl.) G. L. & N. Syn.

Hep. 697. 1847. Lectotype (nov.): Falkland Is., Hooker (FH !).

Jungermannia rivalis Hook. f. & Tayl. London Jour. Bot. 3: 469. 1844,

syn. nov. Lophocolea rivalis G. L. & N. Syn. Hep. 701. 1847.

Lectotype (nov.): Falkland Is., Port Louis, Hooker (NY ! - c. o→).

Taxonomical remarks: Lophocolea rivalis fits well within the variation of L. sabuletorum and is here treated as a synonym. The type plants of L. rivalis are $\pm$ large and very flaccid, and have a light brown coloration. I have designated a Hooker collection (σ^r) in the New York Botanical Garden as the lectotype.

Lophocolea sabuletorum may offer some confusion with forms of Clasmatocolea vermicularis which do not possess distinctly adaxially concave leaves. Lophocolea sabuletorum has at least some leaves slightly convex, and with leaf apices variable, i.e., broadly rounded to truncate or often retuse to emarginate to 1- or bidentate. Clasmatocolea vermicularis has leaves which exhibit at least a slight concavity and have leaf apices broadly rounded or truncate and never retuse, emarginate or dentate. Lophocolea sabuletorum and C. vermicularis not infrequently have androecia, the antheridial stalk of which will immediately distinguish the taxa, with L. sabuletorum having uniseriate stalks and C. vermicularis biseriate stalks.

Plants of Lophocolea sabuletorum exhibit considerable variation. The type material is very small and was growing on sand or very sandy soil. The leaves, which are erect but may occasionally be spreading, vary from subrectangular to ovate to obovate to cuneate in shape. The leaf apices vary usually on a single axis from broadly rounded to truncate to emarginate. The leaf apices may be one toothed or bifid in depauperate plants. The underleaves are quite consistent and serve to separate the taxon from various forms of Leptoscyphus expansus when either is sterile. The underleaves of L. sabuletorum are as wide as

the stem to 1.5 times as wide as the axis, have apices usually bifid to 1/2 but may occasionally be bifid to 1/3 or to 2/3 and margins entire to 1 dentate. Leptoscyphus expansus is fortunately often fertile, and the bilaterally compressed perianths will immediately distinguish it.

Ecology: This species is quite common in the Falklands where it is present in a variety of habitats. It is present on stream banks and in stoneruns of Cortaderia heaths and on stream banks of dwarf shrub heaths. It is quite common in the Poa flabellata association where it grows on soil and grass bases of nearly pure tussock stands as well as in rock crevices of coastal rocks at the margin of the tussock community.

Phytogeography: This species occurs in the Falklands, Fuegia (I. Grande de Tierra del Fuego), the Valdivian region and Tristan da Cunha.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as L. rivalis); Birger - Port Stanley (Stephani 1905a as L. rivalis); Hooker (G. L. & N. 1847).

Additional Literature Records; PATAGONIA: Schwabe - L. Pel-laifa, Cta. Mansa, Freire, Chaihuin - R. Colun (Herzog 1960). TRISTAN DA CUNHA: Christophersen & Mejland - above Bruntwood - 650 m. (Grolle 1962).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker, syntype of Jungermannia sabuletorum (BM); Lyall, as L. sabuletorum (FH); Hooker, syntype of Jungermannia rivalis (FH - c. o→); Lyall, as L. rivalis

(FH - c. o→); Hooker, as L. grisea (BM - c. o→). KIDNEY ISLAND, north of shanty (2781, 2782, 2787 & 2789); southeast shore between landing bay & Southeast Point (2804, 2805, 2806, 2807 B, 2809, 2810-c. young per., 2811 & 2812). PORT WILLIAM REGION, Port William, September 1850 Lechler as Jungermannia rivalis (NY); north side of Gypsy Cove, sea level (3250-c. young ♀); ridge on Engineer Point peninsula, 18-25 m. (2815). STANLEY REGION, Port Stanley, September 1850 Lechler 100, as L. vasculosa (S-PA); headwaters of Mullet Creek Stream, c. 60 m. (3169, 3174 & 3177). MT. USBORNE REGION, below The Gap, c. 90 m. (2589 & 2590); valley southwest of Mt. Usborne, c. 60 m. (2654, 2547-c. o→ & 2675-c. o→). WEST FALKLANDS: WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2899-c. o→, 2903, 2904-c. o→, 2905-c. o→, 2915, 2916 & 2936); near The Waterfall, 30-90 m. (2851, 2857 & 2861); west base of Black Hog Hill, adjacent to Devils Nose, c. 18 m. (2881, 2882, 2883, 2884, 2886, 2887, & 2890); northeast shore adjacent to Cape Terrible (2879 & 2880). NEW ISLAND, shore of Ship Harbour, north of Ship Island (3291 & 3294-c. o→).

ADDITIONAL SPECIMEN SEEN: ARGENTINA: TIERRA DEL FUEGO: R. Olivia, near Ushuaia, 14 March 1909 Skottsberg 236 as L. vasculosa (S-PA).

Lophocolea semiteres (Lehm.) Mitt.

Jungermannia semiteres Lehm. Linnaea 4: 363. 1829. Chiloscyphus semiteres (Lehm.) Lehm. & Lindenb. in G. L. & N., Syn. Hep. 190.

1845. Lophocolea semiteres (Lehm.) Mitt. J. Linn. Soc. 16: 188.

1877. Original material: South Africa, Cape Prov., ". . .

östlichen Seite des Teufelberges . . . , " Ecklon (W) - cited in Grolle (1959a).

Lophocolea aequifolia Nees & Mont. Annls Sci. Nat. II. 5: 55. 1836,

syn. fide Grolle (1959a). Original material: Juan Fernandez,

April 1830 Bertero (non vidi).

Jungermannia canaliculata Hook. f. & Tayl. London Jour. Bot. 3: 563.

1844, syn. cf. Mitten (1867), non Jungermannia canaliculata Nees,

Hep. Jav. 10. 1830. Chiloscyphus canaliculatus (Hook. f. & Tayl.)

G. L. & N. Syn. Hep. 710. 1847. Lophocolea canaliculata (Hook.

f. & Tayl.) Steph. Bull. Herb. Boissier II. 6 (9): 786. 1906 (= Sp.

Hep. 3: 86). Original material: New Zealand, Hooker (non vidi).

Lophocolea heterophylloides Nees in G. L. & N. Syn. Hep. 157. 1845,

syn. fide Grolle (1959a). Original material: (fide G. L. & N.

1845): "Habitat in Nova Hollandia (Sieber in Hb. N. sub n. 54.

fructifera et sterilis sub n. 47.) ad flumen Cygnorum legit Febr.

1843 James Drummond (Hb. Taylor, Lg. et G.) sterilem; β in Chili

in Hb. L. sub nomine Lophocol. tumidae Ldbg. asservatur" (non vidi).

Chiloscyphus lindenbergianus Nees in G. L. & N. Syn. Hep. 187. 1845,

syn. fide Grolle (1959a). Original material: South Africa, Table

Mt., Drege (W) - cited in Grolle (1959a).

Lophocolea undulata Mont. Annls Sci. Nat. III. 4: 351. 1845, syn. fide

Grolle (1959a). Original material: "Chile australiori reperit cl.

Gay. Herb. Mus. Par.," Gay (non vidi).

Lophocolea krauseana Steph. Bull. Herb. Boissier II. 6 (8): 658. 1906

(= Sp. Hep. 3: 74), syn. fide Grolle (1959a). Original material: Chile, Prov. Valdivia, Corral, "typus in herb. Stephani," Krause (non vidi).

Lophocolea dalliana Steph. Bull. Herb. Boissier II. 6 (9): 785. 1906

(= Sp. Hep. 3: 85), syn. fide Grolle (1959a). Original material: New Zealand, without specific locality, "typus in herb. Stephani," Dall (non vidi).

Lophocolea fernandeziensis Steph. K. Svenska VetenskAkad. Handl. 46

(9): 44. f. 16. f.g. 1911, syn. fide Grolle (1959a). Original material: Juan Fernandez, Mas a Tierra, Valle Colonial, Skottsberg (non vidi).

Lophocolea calbucensis Herz. Beih. Bot. Zbl. 60 (B): 6. f. 3 a-f.

1939, syn. fide Grolle (1959a). Original material: Chile, Prov. Llanquihue, Calbuco, Schwabe (non vidi).

Lophocolea (?) magnistipula S. Arnell, Revue Bryol. Lichén. 23 (1-2):

175. f. 2. a,b. 1954, syn. fide Grolle (1959a). Original material: South Africa, Cape Prov., Kasteel Poort, 1951 S. Arnell 1101 (UPS) - cited in Grolle (1959a).

Taxonomical remarks: Lophocolea semiteres appears quite closely related to L. sabuletorum, however, the underleaves may serve to separate the two taxa. Lophocolea semiteres has underleaves to 3 times the stem width and with margins more ornamented, and tending to have larger laciniae, while L. sabuletorum has underleaves as wide as to 1.5 times the stem width and with margins less ornamented and tending to have smaller laciniae or merely teeth.

Ecology: This apparently is a very rare species in the Falklands, where it was collected on soil under rock cover in a Hebe stand in a dwarf shrub heath.

Phytogeography: This species has a pan-temperate distribution; it occurs in the Falklands, Valdivian region, Juan Fernandez, "Fraile Jorge," Tristan da Cunha, Inaccessible Island, Campbell and Stewart Islands, New Zealand, Tasmania, Australia, Lord Howe Island, and South Africa. It is also present in the cool, oceanic Isles of Scilly (see Paton 1965); Adelanthus lindenbergianus is the only other Falkland taxon with an outpost in the British Isles. The taxon seems to be restricted to rather warm temperate regions, especially in the American sector (the species is absent from the Magellanian region entirely). In the Falklands the species is restricted to Westpoint Island, which is known to have one of the highest temperatures in the archipelago (see Map 41).

Literature Records (note: locality information has been omitted for non-southern South American reports): PATAGONIA: Anonymous - (Kühnemann 1949 as L. aequifolia); Dusén - Concepcion (Stephani 1900 & 1906 as L. aequifolia); Gay - southern Chile (Gay 1852 as L. undulata); Hosseus - Corral Herzog 1938 as L. aequifolia), Corral (Herzog 1938 as L. krauseana); Ljungner - Pto. Nuevo (Herzog 1940 as L. aequifolia); Santesson - Enco (Arnell 1955 as L. aequifolia & L. undulata), Rinihue (Arnell 1955 as L. undulata); Schwabe - R. Puelo (Herzog 1939 as L. aequifolia), Termas de Puyehue, R. Pichi-Chonleufu (Herzog 1954 as L. aequifolia), Termas de Puyehue, L. Puyehue (Herzog 1954 as L. krauseana);

Skottsberg - Lota, Maule (Herzog 1943 as L. fernandezensis); Skottsberg & Halle - R. Amarillo, R. de las Minas, Esto. de las Rucas, B. Chacabuco, Pto. Quellon (Stephani 1911 as L. aequifolia); JUAN FERNANDEZ: Bertero (Gay 1852 as L. aequifolia, G. L. & N. 1845 as L. aequifolia, Montagne 1856 as L. aequifolia, Stephani 1906 as L. aequifolia); Skottsberg (Stephani 1922 as L. fernandezensis). MAS A TIERRA: Skottsberg (Arnell 1957 as L. aequifolia & L. fernandezensis, Herzog 1942 as L. fernandezensis). MAS AFUERA: Skottsberg (Arnell 1957 as L. fernandezensis, Herzog 1942 as L. fernandezensis). CENTRAL CHILE: Schwabe - "Fraí Jorge" (Herzog 1954 as L. krauseana); Skottsberg - "Fraí Jorge" (Herzog 1943 & 1950 as L. fernandezensis). TRISTAN DA CUNHA: Christophersen & Mejland (Arnell 1958 as L. aequifolia). INACCESSIBLE: Christophersen & Mejland (Arnell 1958 as L. aequifolia). SOUTH AFRICA: Anonymous - (Arnell 1963, Bonner 1963 as Chiloscyphus semiteres); Ecklon (Hodgson 1962, Stephani 1907); Rehmann (Stephani 1907). CAPE PROV.: Drege (Bonner 1963 as Chiloscyphus lindenbergianus, Stephani 1907 as C. lindenbergii (sic.)); Eaton (Mitten 1877); Ecklon (Grolle 1959a, G. L. & N. 1845 as Chiloscyphus semiteres); S. Arnell, Eaton, Esterhuysen, Rehmann, Reichenbach, Wilms (Grolle 1959a); Sim (Sim 1926 as C. lindenbergii, sic.). ENGLAND: Murphy, Wanstall (Paton 1965). CAMPBELL: Sorensen, Zotov (Hodgson 1962); Du Rietz (Hodgson 1953 as L. heterophylloides, 1962). NEW ZEALAND: Anonymous - (Bonner 1963 as Chiloscyphus canaliculatus, G. L. & N. 1847 as C. canaliculatus, Hodgson 1962, Rodway 1916 as L. canaliculata, & L. heterophylloides, Stephani 1906

as L. heterophylloides); Hooker (Stephani 1906 as L. canaliculata).

STEWART ISLAND (NEW ZEALAND): Martin (Hodgson 1953 as L. dalleana & L. heterophylloides, Martin 1943 as L. heterophylloides). SOUTH ISLAND (NEW ZEALAND): Anonymous - (Hodgson 1953 as L. heterophylloides).

NORTH ISLAND (NEW ZEALAND): Anonymous - (Hodgson 1953 as L. heterophylloides); Hooker, Lyll (Hooker 1867 as L. heterophylloides); Hooker, Colenso, Lyll (Mitten 1855 as L. heterophylloides); Allison, Jeffreys (Hodgson 1953 as L. dalliana). TASMANIA: Anonymous - (Hooker 1867 as L. heterophylloides, Rodway 1916 as L. canaliculata, & L. heterophylloides, Stephani 1906 as L. heterophylloides); Archer, Gunn, Hooker, Oldfield (Mitten 1860 as L. heterophylloides); Bastow Carrington & Pearson 1888 as L. heterophylloides); Weymouth (Pearson 1924 as L. heterophylloides). AUSTRALIA: Anonymous (Rodway 1916 as L. heterophylloides, Stephani 1906 as L. heterophylloides); Drummond (Hodgson 1953 as L. heterophylloides). Lord Howe Is.: Watts (Stephani & Watts 1914 as L. heterophylloides).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2930).

Lophocolea sylvatica Mitt.

Lophocolea sylvatica Mitt. in Thomson & Murray, Rep. Scient. Results.

Challenger. Bot. 1 (3): 84. 1884. Original material: Juan Fernandez, Saunders (non vidi).

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Taxonomical remarks: This species is a distinctive one, which may be distinguished by the following characters: a) underleaves connate on both sides, b) leaves symmetrically ovate or nearly so to subrectangular in shape, c) leaf apices bidentate to very short-bifid, the teeth or small lobes usually widely divergent and d) sinus truncate or lunate. The cells are thin walled with trigones completely absent or rarely (1 specimen) minute. The leaves are usually spreading and slightly convex.

This is the first report of the species other than from the type locality.

Stephani does not record this species in his Species Hepatricarum.

Ecology: This species is of occasionally encountered on stream banks in Cortaderia and dwarf shrub heaths. It is rare on the bases of Blechnum magellanicum in the latter association and on cliffs in Hebe stands of dwarf shrub heaths.

Phytogeography: This Valdivian species has a disjunct distribution, and occurs in the Falklands, the Valdivian region (West Patagonian zone) and Juan Fernandez (see Map 42).

FALKLAND SPECIMENS SEEN: without specific locality, Capt. Abbott as L. humifusa (BM). STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3173 c. ♂ & 3181 B). MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2650, 2659 B c. very young ♀ & 2660). WEST FALKLANDS: WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2845). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3308 c. ♂, 3309 c. ♂, 3310 & 3325).

ADDITIONAL SPECIMENS SEEN: CHILE: AISEN: Pto. Lagunas, sin. coll. (probably Cunningham) (HY). Without province or specific locality, Reed (NY).

Lophocolea textilis (Hook. f. & Tayl.) G. L. & N.

Jungermannia textilis Hook. f. & Tayl. London Jour. Bot. 3: 468. 1844.

Lophocolea textilis (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 696.

1847. Lectotype (nov.): Falkland Is., Hooker (FH ! - c. o→).

Lophocolea campanulata Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 6): 34. 1900, syn. nov. Original material: Chile, Prov.

Aisen, R. Aisen valley, c. 200 m., 19 January 1897 Dusén 260

(G ! - c. per., without specific locality, NY ! - c. per., UPS ! - c. per.).

Taxonomical remarks: Lophocolea campanulata is here regarded as a synonym of L. textilis. There is a variation in perianth configuration within the species from terete to obscurely triangular below. Perianths also exhibit variation in wings of the keels, from a conspicuous dorsal keel of from 6-8 cells high and without secondary wings in the syntypes of L. campanulata to those with several secondary wings present.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian Region (West Patagonia reportedly north to 43° 57' S., Andean Patagonia in P. N. Nahuel Huapi) and Juan Fernandez. There have been no reports of the species in West

Patagonia north of I. Guaitecas. I regard the New Zealand report in Mitten (1855) as doubtful. Hodgson (1953) includes L. textilis in the synonymy of L. bidentata (see Map 43).

Literature Records (FALKLANDS): Anonymous (Kühnemann 1937 & 1949); Hooker - (G. L. & N. 1847, Taylor & Hooker 1847b as Jungermannia, Stephani 1906).

Additional Literature Records. TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949); Dusén - Fuegia (Stephani 1906), R. Grande, Ushuaia (Stephani 1901a); Hooker - I. Hermite (Taylor & Hooker 1847b as Jungermannia); Santesson - Pto. Yartou (Arnell 1955); Skottsberg - I. Navarino (Stephani 1905a); Skottsberg & Halle - R. Azopardo, Cta. Gomez (Stephani 1911 as L. campanulata). PATAGONIA: Donat - I. Victoria (Herzog 1957); Dusén - Punta Arenas (Stephani 1906), Cabo Froward (Stephani 1901a), I. Guaitecas (Stephani 1900), western Patagonia (Stephani 1906 as L. campanulata & L. textilis); Schwabe - I. Magdalena (Herzog 1954); Skottsberg & Halle - Esto. Excelsior (Stephani 1911 as L. campanulata). JUAN FERNANDEZ: MAS AFUERA: Skottsberg - Q. Casas (Herzog 1942). NEW ZEALAND: NORTH ISLAND: Colenso - Ruahine Mts. (Mitten 1855).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker, syntype of Jungermannia textilis (BM); Port Louis, 10 November 1907 Halle s.n. as L. secundifolia (NY, S-PA - c. o→).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: Cabo de Hornos, Hooker (FH, NY, S-PA); Cabo de Hornos, Lyal (FH). ARGENTINA. TIERRA DEL FUEGO: Ushuaia, Dusen, as L. irregularis (S-PA-c. sporo.); Ushuaia, 7 May 1896 Dusen 304 as L. humifusa (UPS); Ushuaia, 200 m.,

1 February 1940 Santesson M831 (S-PA). CHILE. MAGALLANES: R. Azopardo, 2 March 1908 Halle & Skottsberg 189 as L. campanulata (UPS); S. Skyring Esto. Excelsior, 25 April 1908 Halle & Skottsberg 189 as L. campanulata (UPS-c. per.); I. Newton, May 1896 Dusen 304 as L. humifusa (S-PA). ARGENTIAN. NEUQUEN: L. Nahuel Huapi, I. Victoria, Donat 36 p.p. (S-PA). JUAN FERNANDEZ. MAS AFUERA: Q. Casas, 11 February 1917 Skottsberg 265 (S-PA).

Notes on Lophocolea Species

Lophocolea propagulifera. This "species" was recorded from the Falkland Islands by Skottsberg (1913). It apparently is a nomen nudum.

Lophocolea Species Excluded from Falklands

1. Lophocolea grisea (Hook. f. & Tayl.) G. L. & N. Lophocolea grissa, which was originally described from the Auckland Islands, was previously reported from the Falklands by Hooker and Taylor (1844), and Taylor and Hooker (1847b) as Jungermannia and G. L. & N. (1847). These reports are based upon collections made by Hooker. I have examined two Hooker collections from the British Museum labeled as Lophocolea grisea from the Falkland Islands, and both are specimens of L. sabuletorum. I have studied male syntype plants of L. grisea,

and they appear much like L. sabuletorum. Gynoecial plants, however, must be examined before a final decision is made regarding synonymy.

Lophocolea grisea is a member of the L. sabuletorum - L. novae-zeelandiae complex, which needs careful study. A study of this complex is currently in progress.

2. Lophocolea humifusa (Hook. f. & Tayl.) G. L. & N. Stephani (1911) reported Lophocolea humifusa from the Falkland Islands and later Kühnemann (1937 and 1949) included this reference in his catalogues. The report is in error as the specimen is a misdetermination of Leptoscyphus patagonicus. Although the material is scanty, and Stephani stated the determination was uncertain, he did not have a concept of L. humifusa. The first of the two reports of the taxon in Stephani (1911) is a Valle Frias collection, which is a misdetermination of Clasmatocolea humilis. Further, in the Uppsala Herbarium, the following specimens are misdetermined as L. humifusa, 1896 Dusen 31 from Punta Arenas (a specimen of Clasmatocolea koeppensis mixed with Lophocolea leptantha) and 1896 Dusen 304 from Ushuaia (a specimen of Lophocolea textilis). Lophocolea humifusa was originally described from Kerguelen (leg. Hooker).

3. Lophocolea novae-zeelandiae (Lehm. & Lindenb.) Nees. Reports of Lophocolea novae-zeelandiae from the Falkland Islands were made by Hooker (1867), Stephani (1906), Kühnemann (1937, 1949) and Mizutani and Hattori (1959), and all, at least in part, are based upon the inclusion of the Falkland described Jungermannia subintegra (= Clasmatocolea vermicularis) as a synonym of L. novae-zeelandiae.

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4. Lophocolea otiphylla (Hook. f. & Tayl.) Mitt. Records of Lophocolea otiphylla from the Falkland Islands in Stephani (1911), Skottsberg (1913) and Kühnemann (1937, 1949) are Clasmatocolea humilis. Lophocolea otiphylla is quite common in the magellanian moorland.

Pachyglossa

Herz. & Grolle, Revue Bryol. Lichén. 27 (3-4): 150. 1958. Pachyglossa
 Martin, Trans. R. Soc. N. Z. 78 (4): 500. 1950, nom. nud. Pachyglossa
 Herz. Revue Bryol. Lichén. 21: 256. 1952, nom. nud. Pachyglossa
 Herz. Revue Bryol. Lichén. 21: 256. 1952, nom. nud.

Key to Falkland Island Species of Pachyglossa

1. Leaves retuse to slightly bifid; perianth constricted at the mouth, mouth dentate-crenulate, perianth constricted toward the mouth, without keels P. fissa
1. Leaves plane (a few leaves occasionally retuse to slightly bifid); perianth not constricted at the mouth, mouth entire, perianth with plicae, keeled. 2
2. Leaves of 2-5 layers throughout; superficial cells 15-20 X 15-35 μ P. dissitifolia
2. Leaves of 2 layers only in the basal portion, the upper portion unistratose; superficial cells 10-16 X 10-20 μ P. spegazziniana var. exilis

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Pachyglossa dissitifolia Herz. & Grolle

Pachyglossa dissitifolia Herz. & Grolle, Revue Bryol. Lichén. 27 (3-4):

155. f. 2-3. 1958. Pachyglossa dissitifolia Herz. Revue Bryol. Lichén. 21: 259. f. 3. a-f. 1952, nom. nud. Original material: Chile, Prov. Aisen, C. Tesoro, ca. 1000 m., 1940 Schwabe (JE) - cited in Herzog & Grolle (1958).

Ecology: This species was collected only above 610 m. in the Falklands. It was found in rock crevices and under ledges of sheltered high altitude cliffs and in a feldmark (700 m.), where it was especially prevalent submerged or at the margins of pools.

Phytogeography: This species has a subantarctic distribution, occurring in South Georgia, the Falklands, Tierra del Fuego and north only at 1000-1500 m. in the mountains of the Valdivian region. It is also known from Tristan da Cunha (see Map 44).

Literature Records: SOUTH GEORGIA: Anonymous - (Fulford 1963c); Skottsberg - Herzog & Grolle 1958. TIERRA DEL FUEGO: Anonymous - (Fulford 1963c); Dusén - R. Azopardo (Fulford 1963b, Herzog & Grolle 1958); Halle - L. Fagnano (Fulford 1963b, Herzog & Grolle 1958); Schuster - C. Garibaldi (Schuster 1968b); Skottsberg - Pto. Cook, Ushuaia, S. de Valdivieso (Fulford 1963b, Herzog & Grolle 1958). PATAGONIA: Anonymous - (Fulford 1963c); Schwabe - C. Tesoro (Fulford 1963b, Herzog 1954, Herzog & Grolle 1958); Wolffhugel - near M. Tronador (Fulford 1963b, Herzog & Grolle 1958). TRISTAN DA CUNHA: Anonymous - (Fulford 1963c). Christophersen & Mejland (Fulford 1963b, Herzog & Grolle 1958).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2517 B & 2541 B-c. o→); summit of Mt. Usborne 1, c. 700 m. (2486-c. per., 2502, 2508 B, 2509 & 2512). WEST FALKLANDS: PORT HOWARD, pass southwest of Maria summit, c. 610 m. (3083 B, 3097 A, 3115 A, 3127 B). MT. ADAM, ridge south of northern lake, 610 m. (3038).

Pachyglossa fissa (Mitt.) Herz. & Grolle

Herpocladium fissum Mitt. J. Linn. Soc. 15: 69. 1876. Pachyglossa fissa (Mitt.) Herz. & Grolle in Grolle, Revue Bryol. Lichén. 28 (3-4): 346. 1959. Original material: Iles Kerguelen, Moseley (NY) - cited in Grolle (1959b).

Ecology: This taxon is rather rare in the Falklands, where it was collected intermixed with other Hepaticae in rock crevices and under overhangs of sheltered high altitude cliffs, and at the edge of a feldmark pool (700 m.).

Phytogeography: This taxon has a subantarctic distribution. It is sparsely represented in the American sector, occurring in the Falklands, western Tierra del Fuego (600-700 m.) and at 1200 m. in the Valdivian region. It also occurs in Kerguelen and Marion Islands (see Map 45).

Literature Records: TIERRA DEL FUEGO: Anonymous (Fulford 1963c, Grolle 1969); Dusén - I. Desolacion (Fulford 1963b, Grolle 1959b); Skottsberg & Halle (Fulford 1963b, Grolle 1959b, Stephani

1911 as Herpocladium). PATAGONIA: Anonymous - Andes of Patagonia (Fulford 1963c); Schwabe - C. Tesoro (Fulford 1963b, Grolle 1959b). MARION: Anonymous - (Grolle 1969). KERGUELEN: Anonymous - Fulford 1963b, c, Grolle 1969, Schiffner 1893 as Herpocladium); Moseley (Mitten 1879 & 1884 as Herpocladium, Grolle 1959b, Bonner 1966 as Herpocladium).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2519 B, 2538 A & 2554 H); summit of Mt. Usborne 1, c. 700 m. (2505 C).

Pachyglossa spegazziniana (Mass.) Herz. & Grolle

Lophocolea spegazziniana Mass. Nuovo G. Bot. Ital. 17: 225. pl. 17 f. 13. 1885. Pachyglossa spegazziniana (Mass.) Herz. & Grolle Revue Bryol. Lichén. 27 (3-4): 159. 1958. Lectotype (nov.): Argentina, Terr. Tierra del Fuego, I. de los Estados, M. Italia, February 1882 Spegazzini 137 (Ver ! - c. per.)

Lophocolea azopardana Steph. Bull. Herb. Boissier II. 6 (7): 540.

1906 (= Sp. Hep. 3: 54), syn. fide Herzog & Grolle (1958).

Pachyglossa azopardana (Steph.) M. Miz. & Hatt. J. Jap. Bot. 34 (6): 167. 1959. Original material: Chile, Prov. Magallanes, R. Azopardo, 600 m., Dusen 121 (G) - cited in Mizutani & Hattori (1959).

Pachyglossa spegazziniana var. spegazziniana has not been reported from the Falkland Islands.

Taxonomical remarks: Pachyglossa spegazziniana is related to Lophocolea boveana, and the identity of the two species has been confused. Pachyglossa spegazziniana possesses (a) leaves which are two stratose toward the base, (b) non-connate underleaves and (c) leaf cells 10-20 X 10-16 μ . Lophocolea boveana has (a) unistratose leaves throughout, (b) underleaves connate at the base with one leaf, and (c) leaf cells (21) 25-46 (52) X 20-38 μ . The relationship of the two species may be of evolutionary significance.

Pachyglossa spegazziniana (Mass.) Herz. & Grolle
var. exilis, Herz. & Grolle

Pachyglossa spegazziniana (Mass.) Herz. & Grolle, var. exilis Herz.

& Grolle, Revue Bryol. Lichén. 27 (3-4): 159. 1958.

Herpocladium minimum Steph. in Herz. Geogr. Moose 381. 1926, nom. nud.;

Steph. ex Herz. & Grolle, Revue Bryol. Lichén. 27 (3-4): 159. 1958.

nom. nud., pro syn. Original material: (fide Herzog & Grolle

1958): 1908 Halle & Skottsberg, Falkland Is., Mt. Adam, 700 m.

(G, UPS - non. vidi).

Ecology: This taxon occurred in lower altitudes than any other Falkland Pachyglossa, as it was collected in rock crevices and on rock in wet seepage areas of a Cortaderia heath (475 m.), and in rock crevices of outcrops in a dwarf shrub heath (475 m.). It is more common on rock, in crevices and under overhangs of sheltered high altitude cliffs.

Phytogeography: Pachyglossa spegazziniana, a subantarctic species, occurs in South Georgia, the Falklands, Tierra del Fuego and north only at higher altitudes (ca. 1400-1700 m.) in the Valdivian region mountains. It also occurs on Tristan da Cunha (see Map 46).

Literature Records of Species (FALKLANDS): Anonymous - (Fulford 1963c); Skottsberg - (Bonner 1966 as Herpocladium minimum), Mt. Adam (Fulford 1963b, Herzog & Grolle 1958 - var. exilis).

Additional Literature Records of species: SOUTH GEORGIA: Anonymous - (Fulford 1963c); Skottsberg (Mizutani & Hattori 1959 as P. azopardana), Cumberland Bay (Steere 1961 and Stephani 1905a as L. azopardana); Will (Grolle 1959b - var. exilis). TIERRA DEL FUEGO: Anonymous (Fulford 1963c, Kühnemann 1937 & 1949 as L. azopardana & L. spegazziniana); Dusén - Pto. Angosto (Herzog & Grolle 1958 - var. typica, Mizutani & Hattori 1959 as P. azopardana, Stephani 1901a as Lophocolea), R. Azopardo - (Fulford 1963b, Herzog & Grolle 1958 - var. typica, Mizutani & Hattori 1959 as P. azopardana); Gasperi - B. Ainsworth (Gola 1923 as Lophocolea); Skottsberg - Pto. Cook (Fulford 1963b, Herzog & Grolle 1958 - var. exilis), Ushuaia, Pto. Cook (Stephani 1905a as L. azopardana); Skottsberg & Halle - R. Olivia (Stephani 1911 as Lophocolea), R. Azopardo (Fulford 1963b, Herzog & Grolle - var. exilis); Spegazzini - Pto. San Juan del Salvamiento, M. Italia, M. Conegliano (Massalongo 1927 as Lophocolea), Strait of Magellan (Stephani 1906 as Lophocolea). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea), west Patagonia (Fulford 1963c); Dusén - Strait of Magellan (Stephani 1906 as Lophocolea); Schiller -



V. Calbuco (Fulford 1963b, Herzog & Grolle 1958 - var. exilis), M. Tronador (Fulford 1963b, Herzog & Grolle 1958 - var. typica); Schwabe - C. Tesoro (Fulford 1963b, Herzog 1954 as Lophocolea, Herzog & Grolle 1958 - var. exilis); Skottsberg & Halle - I. Pacheco, I. Guafo (Stephani 1911 as L. azopardana), Canal Gajardo (Stephani 1911 as Lophocolea). TRISTAN DA CUNHA: Anonymous - (Fulford 1963c); Christophersen & Mejland - (Fulford 1963b, Herzog & Grolle 1958 - var. exilis).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2745 & 2770). MT. USBORNE REGION, gap between Mt. Usborne 2 & Ceritos Rocks, 475 m. (2644 c. per. & 2645). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3112 A). MT. ADAM, ridge south of northern lake, 610 m. (3023 & 3034); east side of summit ridge, 670-700 m. (3011).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO: I. de los Estados, M. Conegliano, Spegazzini 124, syntype of Lophocolea spegazziniana (VER); M. Conegliano, Spegazzini 118, 139 (VER-var. spegazziniana); Pto. San Juan del Salvamiento, March 1882 Spegazzini 162 (VER-c. per.-var. spegazziniana). CHILE. MAGALLANES - ARGENTINA. TIERRA DEL FUEGO: L. Fagnano, 11 March 1908 Skottsberg 201 as Lophocolea flavovirens (UPS - var. exilis). CHILE. MAGALLANES: R. Azopardo, 720 m., 3 March 1908 Halle & Skottsberg 230, syntype of Lophocolea rotundifolia (UPS); I. Desolacion, Pto. Angosto, 600 m., 1 April 1896 Dusen 233 as L. boveana (NY); Fuegia, without specific locality, 1908 Halle & Skottsberg s. n., syntype of Lophocolea

rotundifolia (probably syntype from "Azopardo - Tal - 720 m." (G).

VALDIVIA: Corral, 5 June 1896 Dusen 121 as L. boveana (NY).

Pigafettoa

Mass. Nuovo G. Bot. Ital. 17: 237. 1885.

Pigafettoa crenulata Mass.

Pigafettoa crenulata Mass. Nuovo G. Bot. Ital. 17. 237. pl. 21. f. 23.

1885. Original material: Chile, Prov. Magallanes, I. Basket, B. Chilota, I. Hoste-Agaia, I. Skyring - M. Skyring and Argentina, Terr. Tierra del Fuego, I. Gable, Spegazzini (non vidi).

Taxonomical remarks: Since this taxon is very poorly known, I include the very brief description below (based upon Engel, 3355B) which emphasizes distinctive and distinguishing characters.

Plants pale green to pale brown in color, nitid when dry. Branching frequent, mostly of Frullania type, the half leaf usually bifid, rarely undivided, ventral-intercalary branching less frequent. Rhizoids in fascicles from the stem at the underleaf bases. Stems with a cortex of slightly to distinctly larger, thick walled cells surrounding the smaller medullary cells, hyaloderm absent. Leaves transversely or occasionally subsuccubously inserted, stiffly spreading, apex bifid (occasionally trifid) to ca. 1/2, sinus sharply

angular, lobes elongate triangular; leaf cells thick walled, trigones medium, leaves with enlarged, knot-like secondary swellings giving the leaf and underleaf margins a crenulated appearance. Underleaves ca. 1/2 the leaf size, bifid to or slightly greater than 1/2, the lobes equal or asymmetrical, with one lobe longer and/or wider than other. Gynoecia usually terminal on main axis, on short to long Frullania- or ventral-intercalary branches, subfloral innovations present or absent, perianth inflated, subobovate or obscurely to distinctly trigonous in shape, when clearly trigonous, the third keel dorsal, the lobes densely ciliate-laciniate, the armature erect or reflexed.

I know of no other plant that is likely to be confused with this taxon.

This taxon has several Lepidozioid features: 1) bi-trifid, deeply lobed, transversely inserted leaves, 2) cortex of enlarged cells surrounding a medulla of smaller cells, 3) rhizoids restricted to underleaf bases, 4) terminal-lateral branching coupled with ventral-intercalary branching (characters 3 and 4 are also Lophocoleoid features). There are several features, however, which effectively eliminate this family from consideration, i.e., the development of gynoecia on the main axes or on long terminal-lateral branches (Telaranea apiahyna may have gynoecia produced terminal on the main axes, an exception to the usual Lepidoziaceae condition), and the inflated, non-distally tapering, trigonous perianth with the third keel dorsal.

Even though this taxon has several Lepidozioid features, I regard it as a member of the Lophocoleaceae because of the following

features (a) gynoecia on apices of main axis or on short to long lateral terminal branches (however, gynoecia may also be developed on short to long ventral-intercalary branches), (b) mature perianth usually at least obscurely trigonous, (c) when trigonous, the third keel is dorsal in position, (d) rhizoids restricted to underleaf bases, and (e) terminal lateral branching coupled with ventral-intercalary branching.

Members of the Lophocoleaceae possess strongly succubously inserted leaves, however, Xenocephalozia navicularis, with its transversely to occasionally weakly incubously inserted leaves, is an exception (see Schuster, 1965c). Thus Pigafettoa, and Xenocephalozia are the two exceptions to the strongly succubous leaf insertion character of the Lophocoleaceae.

To my knowledge, Pigafettoa stands unique among the Lophocoleaceae with its cortex of larger cells than those of the medulla.

When discovered, sporophyte data, especially seta anatomy, should prove quite revealing.

Ecology: This taxon is rare not only in the Falklands but in southern South America. In the Falklands it was gathered on rock at the margin of an extensive mat of Clasmatocolea humilis on the rock dome summit of Mt. Weddell, 335 m.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels (50° 15' S., 75° 05' W.) and barely extends into the Valdivian region (46° 45' S., 74° 07' W.).

Literature Records: TIERRA DEL FUEGO: Hatcher - Ens. Villarino (Evans 1898); Naumann B. Tuesday (Schiffner 1890); Spegazzini - I. Basket, I. Hoste, I. Gable, S. Melville (Massalongo 1927). PATAGONIA: Anonymous - (Kühnemann 1937, 1949, Schiffner 1895); Savatier - I. Madre de Dios (Bescherelle & Massalongo 1889); Grosse - Istmo de Ofqui (Herzog 1954); Spegazzini - Strait of Magellan (Stephani 1908).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3355 B-c. per.).

Saccogynidium

Grolle, J. Hattori Bot. Lab. 23: 43. 1960.

Key to the Falkland Island Species of Saccogynidium

1. Leaf apices nearly acute or narrowly rounded, entire;
leaf cuticle finely papillose. S. vasculosum
1. Leaf apices bidentate to short bifid; leaf cuticle with
peg-like papillae. S. australe

Saccogynidium australe (Mitt.) Grolle

Saccogyna australis Mitt. in Hook. f. Bot. Ant. Voy. 2 (2): 145.

pl. 100. f. 1. 1854. Saccogynidium australe (Mitt.) Grolle,
J. Hattori Bot. Lab. 23: 49. 1960. Lectotype (cf. Grolle 1960b):
New Zealand, Colenso 2132 (NY - non vidi).

Saccogyna antarctica Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 6): 48. 1900, syn. fide Grolle (1960b). Original material: Chile, Prov. Chiloe, I. Guaitecas, 1897 Dusén s.n. (G, M, S, UPS & W) - cited in Grolle (1960b).

Saccogyna squarristipula Herz. Archos Esc. Farm. Córdoba 7: 22. 1938, syn. fide Grolle (1960b). Original material: Chile, Prov. Valdivia, Corral, 1935 Hosseus 53 (JE) - cited in Grolle (1960b).

Ecology: This taxon is very rare in the Falklands, where it was collected in a Cortaderia heath on soil among grass plants.

Phytogeography: This amphipacific temperate species occurs in the Falklands, Patagonian Channels, Valdivian region (West Patagonia north to 39° 52' S.), Mas a Tierra (390-660 m. where recorded) and is widespread in New Zealand. It has not been reported for Tierra del Fuego or Andean Patagonia (see Map 47).

Literature Records: PATAGONIA: Dusén - S. Molyneux, I. Guaitecas (Grolle 1960b); Hosseus - Corral (Grolle 1960b); Schwabe - I. Magdalena, Dep. Villarica, Termas de Puyehue (Grolle 1960b), I. Magdalena, Termas de Puyehue, R. Elena (Herzog 1954 as Saccogyna squarristipula), Valdivia, Huitrapulli-Aleucapi, C. Lungoico (Herzog 1960 as Saccogyna squarristipula); Sparre - Puntra (Arnell 1961 as Saccogyna squarristipula). JUAN FERNANDEZ. Skottsberg (Grolle 1960b). MAS A TIERRA: Skottsberg - between Piedra Agujeriada & Laura - 620 m., Centinela - 530 m., C. Damajuana, Pangal, Cumberland Bay-Pico Central - 390 m. & Salsipuedes - 660 m. (Herzog 1942 as Saccogyna), Valle

Frances - Cordon Chifladores, Q. Damajuana - 400-500 m. & Valle Anson - 400-500 m. (Arnell 1957 as Saccogyna). NEW ZEALAND. Allison (Grolle 1960b); Colenso (Grolle 1960b), (Stephani 1908 as Saccogyna); Helms (Stephani 1908 as Saccogyna); Hodgson (Grolle 1960b). STEWART ISLAND (NEW ZEALAND): Cockayne (Hodgson 1958 as Saccogyna). SOUTH ISLAND (NEW ZEALAND): Allison (Grolle 1960b), between Dunedin & Waitati (Hodgson 1958 as Saccogyna); Martin - M. Cargill (Hodgson 1958 as Saccogyna). NORTH ISLAND (NEW ZEALAND): Allison - Waipoua State Forest (Hodgson 1958 as Saccogyna); Colenso - Tararua (Hooker 1867 and Mitten 1855 as Saccogyna); Hodgson (Grolle 1960b), between Lake Waikaremoana & Lake Waikareiti 2000-3000 ft., Morere bush, Cringlewood Road, Pinehaven-Silverstream (Hodgson 1958 as Saccogyna); Lindauer - Bay of Islands & Horokino bush - Mangapehi (Hodgson 1958 as Saccogyna); Swanberg - Waitakere & Titirangi (Hodgson 1958 as Saccogyna). TASMANIA: Anonymous - Longley (Rodway 1916 as Saccogyna).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, below The Gap, c. 90 m. (2572 A).

Saccogynidium vasculosum (Hook. f. & Tayl.) Grolle

Jungermannia vasculosa Hook. f. & Tayl. London Jour. Bot. 3: 461.

1844. ? Lophocolea vasculosa (Hook. f. & Tayl.) Nees in G. L. & N. Syn. Hep. 702. 1847. Saccogynidium vasculosum (Hook. f. & Tayl.) Grolle, J. Hattori Bot. Lab. 23: 46. 1960. Original material: Falkland Is., Hooker (FH !, NY !, S - cited in Grolle 1960b, S-PA!).

Taxonomical remarks: The taxonomic position of this species has been somewhat uncertain, since the taxon was known only from the sterile, flaccid plants of the type collection. I have found marsupia (in Engel 2574), and these structures were present on highly abbreviated ventral-intercalary branches. The marsupia are cylindrical or ovate in shape, with rhizoids only sparsely present.

Grolle (1960b) states for the leaves "dorsaliter plurimum minutissime connate" However, I have found the leaves are mostly free and only occasionally connate dorsally.

Grolle (loc. cit., p. 49) states, all reports of Lophocolea vasculosa in the literature are misdeterminations of Lophocolea elata. The two taxa may be differentiated with S. vasculosum having (a) a finely papillose leaf cuticle, (b) leaf apices usually broadly rounded and (c) median leaf cells 42-60 μ long. In addition, I have studied several specimens of Clasmatocolea vermicularis which were misdetermined as Lophocolea vasculosa.

Ecology: The species is of sporadic occurrence in the Falklands, where it occurred on stream banks and in pools of dwarf shrub heaths, and on soil among grass in a Cortaderia heath. It frequently is intermixed with Clasmatocolea humilis.

Phytogeography: This species occurs in the Falklands and the Patagonian Channels. As discussed above, the remaining reports are erroneous.

The report of Saccogynidium vasculosum from Sholl Bay is a highly significant record as little is known of the variation, ecology,

and phytogeography of this species. The vegetation of Sholl Bay is that of magellanian moorland, which is quite different from the plant communities representative of the Falkland Islands.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Hooker (G. L. & N. 1847 as Lophocolea, Grolle 1960b, Taylor & Hooker 1847b as Jungermannia, Stephani 1906 as Lophocolea); Skottsberg - Roy Cove, Port Philonel, Halfway Cove, Port Louis, Port Stanley (Skottsberg 1913 as Lophocolea); Skottsberg & Halle - King Georg's Bay, Halfway Cove, Roy Cove, Weddel Is., Port Louis, Port Stanley, Port Harriet (Stephani 1911 as Lophocolea).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); J. B. Hatcher - Cordilleras of Patagonia (Evans 1898 as Lophocolea); Hyades - I. Hoste (Bescherelle & Massalongo 1889 as Lophocolea); Skottsberg & Halle - Ushuaia - R. Olivia (Stephani 1911 as Lophocolea). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as Lophocolea); Cunningham - B. Sholl (Stephani 1906 as Lophocolea); Skottsberg & Halle - I. Guaitecas (Stephani 1911 as Lophocolea).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3206 B). MT. USBORNE REGION, below The Gap, c. 90 m. (2570 B, 2574 A-c. marsup. & 2576). WEST FALKLANDS: WEDDELL ISLAND, near headwaters of House Creek, c. 15 m. (3403 & 3412).

ADDITIONAL SPECIMEN SEEN: CHILE. MAGALLANES: B. Sholl, Cunningham 197 (NY).

PLAGIOCHILACEAE

Jørg. Bergens Mus. Skr. 16: 61. 1934.

Plagiochila

(Dum.) Dum. Recueil Obs. Jungerm. 14. 1835. Radula sect. Plagiochila
Dum. Syll. Jungerm. 42. 1831.

Key to the Falkland Island Species of Plagiochila¹

1. Stem surface covered with numerous (1-) 2-4 celled
spines; leaves often with teeth to the base of dorsal
margin P. hirta
1. Stem surface smooth, without spines or paraphyllia;
dorsal margins of leaves entire (at least the basal
1/2 of margin) 2
2. Leaves laterally appressed or obliquely spreading
to usually not more than 45°, leaves suborbicular,
subreniform, broadly ovate, obovate or ovate-
quadrate, length/width ratio usually 0.8-1.2; leaf
margins entire or with spinose teeth 3
2. Leaves widely spreading, with an angle more than 45°,
leaves oblong, oblong-obovate, oblong-ovate or

¹Key initially prepared by Dr. H. Inoue, but freely modified
by the author.

- ovate, always longer than wide (length/width ratio usually 1.0-1.5 or more); leaf-margin with 1-5 triangular, acuminate, teeth, or entire. 5
3. Dorsal and ventral stem surfaces widely exposed, not hidden by the leaves; leaves asymmetric, suborbicular, subreniform, obovate, subquadrate or ovate-quadrate, usually remote; margins entire, rarely with an isolated tooth. Perianth long clavate, slightly inflated except at the apex; apex truncate, mouth spinosely dentate. . . P. ansata
3. Dorsal and ventral stem surfaces nearly or totally hidden by the leaves; leaves broadly or narrowly ovate, closely imbricated 4
4. Leaves obliquely spreading; dorsal, basal portion of leaf ± adaxially inflated; ventral margins spinosely toothed, rarely entire; plants large, robust, usually 2.5-3.0 mm. wide; branches few, leafy or flagelliform, the latter common. Dorsal margin of well developed leaves usually revolute, rarely plane or merely reflexed; antheridial stalk cells in 2 rows. P. elata
4. Leaves erect; median, basal portion of leaf ± adaxially inflated; leaf margins entire, apex often with 1-3 small teeth; plants small, somewhat filiform, usually less than 1 mm. wide, branches

usually frequent, leafy, occasionally becoming
flagelliform. Leaf apices polymorphous, narrowly
rounded, truncate, retuse, 1.2 (-3) dentate or
occasionally distinctly bifid. P. atroviridis

5. Leaves oblong-obovate or ligulate, with widest portion
ca. 2/3 the length; margins entire or rarely with 1-3
small, triangular teeth; leaves usually very remote
(contiguous in very robust plants). Underleaves of 2-4
uniseriate filamentous segments. P. obovata

5. Leaves oblong-ovate, with widest portion ca. 1/5-3/5
the length; margins always with 1-5 or more triangu-
lar, acuminate teeth; leaves contiguous. 6

6. Vegetative branches very frequent, often forming a
± dendroid habit, apices of branches usually atten-
uate; median leaf cells 20-26 X 20-30 μ , walls
slightly thickened P. obcuneata

6. Vegetative branches infrequent, usually forming a
pseudodichotomous or monopodial system of branches
by means of frequent subfloral innovations; median
leaf cells 12-20 X 15-21 μ , walls thin, with fre-
quent, intermediate, nodular thickenings. Under-
leaves of 1 (-2) uniseriate, filamentous segments;
perianths (mature) pyriform, mouth dentate-long
ciliate. P. gayana

Plagiochila ansata (Hook. f. & Tayl.) G. L. & N.

Jungermannia ansata Hook. f. & Tayl. London Jour. Bot. 3: 457. 1844.

Plagiochila ansata (Hook. f. & Tayl.). G. L. & N. Syn. Hep. 649.

1847. Original material: Falkland Is., Hooker (FH!).

Taxonomical remarks: Evans (1898) includes excellent figures and a useful, detailed description of P. ansata. There are several points, however, which may be added to this description. The leaves are so oriented that the dorsal and ventral stem surfaces are widely exposed. The leaves are more variable than in Evans' account and may be suborbicular, subreniform, obovate, subquadrate or ovate-quadrate with the dorsal margin plane or reflexed. The leaf apices may be broadly rounded, truncate, retuse, and may be entire or with a few blunt teeth; the apices are often repand.

Ecology: This species is rather common in the Falklands, where it is frequently encountered in crevices of outcrops of dwarf shrub heaths. It is less commonly encountered on soil in dwarf shrub heaths and is rare in Cortaderia heaths.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels and 44° 19' S. in the Valdivian region. It also occurs in Nightingale Island (250 m.) and Inaccessible Island (450 m.). Inoue and Schuster (1971) were unable to locate the plants on which New Zealand reports were based, but state the plants are possibly specimens of Cryptochila pseudocclusa (Hodgs.) Schust. (see also Schuster 1963a, p. 284).

Literature Records (FALKLANDS): Anonymous - (Bonner 1962, Dugas 1929, G. L. & N. 1847, Hooker 1867, Kühnemann 1937, 1949, Schuster 1963a); Hooker - (Taylor & Hooker 1847b as Jungermannia, Stephani 1904); Skottsberg & Halle - Hornby Mts. (Stephani 1911).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949); Gasperi - I. Laberinto (Gola 1923); J. B. Hatcher - Ens. Villarino (Evans 1898); Roivainen - B. Pluschow (Buch 1934); Skottsberg - Ushuaia - R. Olivia, L. Roca, Pto. Cook, Lapataia (Stephani 1905a); Spegazzini - I. Basket (Massalonga 1927). PATAGONIA: Anonymous - (Kühnemann 1937, 1949); Cunningham - Strait of Magellan (Stephani 1904); J. B. Hatcher - Strait of Magellan (Stephani 1904); Schwabe - Pto. Puyuhuapi (Herzog 1939); Skottsberg & Halle - F. de Los Ventisqueros, Canal Gajardo, B. Rodriguez, B. Pinto, Pto. Ramirez (Stephani 1911); Spegazzini - Strait of Magellan (Stephani 1904). NIGHTINGALE: Christophersen & Mejland - 250 m. (Arnell 1958). INACCESSIBLE: Christophersen & Mejland - 450 m. (Arnell 1958). AUCKLAND: Anonymous - (Mitten 1855). NEW ZEALAND. STEWART ISLAND: Lyall (Martin 1949). SOUTH ISLAND (NEW ZEALAND): Lyall - Port William (Hooker 1867, Mitten 1855).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3240); ridge on Engineer Point peninsula, 18-25 m. (2825). STANLEY REGION, Sapper Hill, 135 m. (2420); Tumbledown Mt., 155-230 m. (2372 A, c. per., 2388); Goat Ridge, c. 180 m. (3203 c. per., 3210); summit ridge of north peak of Two Sisters, 245-290 m. (2710 B, 2722 A c. per., 2728, 2730); summit of Mt. Kent,

455 m. (2751, 2755). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2623, 2631 A, 2637 C); below The Gap, c. 90 m. (2583). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3151). FOX BAY REGION, summit of East Head, 180 m. (3424). WEDDELL ISLAND, summit of Mt. Weddell, 380 m. (3339, 3344).

Plagiochila atroviridis (Carl) H. Inoue

Plagiochila dura De Not. var. atroviridis Carl, Annls Bryol. Suppl.

2: 123. 1931. Plagiochila atroviridis (Carl) H. Inoue, Bull.

Natn. Sci. Mus., Tokyo 14 (4): in press. Original material:

Chile, Prov. Magallanes, Pto. Bueno, "zwischen P. angulata",

Dusén 51 (non vidi).

Taxonomical remarks: Carl (1931) states P. dura var. atroviridis was among P. angulata. The latter species was described in Stephani (1900) for I. Desolacion and Pto. Bueno plants. As Carl (loc. cit.) stated the type of his variety was from Patagonia and I. Desolacion is in Tierra del Fuego, Pto. Bueno is the type locality for P. dura var. atroviridis.

Ecology - Phytogeography: This species is apparently rare in the Falklands, where only a few collections were gathered from sheltered high altitude cliffs. It is known only from the Falklands and the type locality.

Literature Records: PATAGONIA: Dusén - Patagonia (Bonner 1962).

FALKLAND SPECIMENS SEEN: WEST FALKLANDS: MT. ADAM, ridge south of northern lake, 610 m. (3044); east side of summit ridge, 670-700 m. (3010 B).

Plagiochila elata Tayl.

Plagiochila elata Tayl. London Jour. Bot. 5: 259. 1846. Original material: Chile, Prov. Chiloe, I. Chiloe, hb. Hooker, Cuming 1449 (non vidi).

Plagiochila ambusta Mass. Nuovo G. Bot. Ital. 17: 210. pl. 28. f. 38. 1885, syn. fide Stephani (1904). Plagiochila patagonica var. y.F. ambusta (Mass.) Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 7. 1890. Original material: Chile, Prov. Magallanes, B. Sarmiento, Paso Brecknock and I. London, Spegazzini (non vidi).

Plagiochila patagonica Besch. & Mass. Bull. Mens. Soc. Linn. Paris 1 (79): 626. 1886, syn. fide Stephani (1904). Original material: Chile, Prov. Aisen, Pt. Barroso, Savatier (non vidi).

Taxonomical remarks: This common Falkland plant is quite distinctive and should offer no confusion with any other hepatic from these islands. The closely imbricated, obliquely spreading, broadly ovate leaves with the dorsal, basal portion $\pm$ adaxially inflated are distinctive. The dorsal margins of well developed leaves are usually revolute and are rarely plane or merely reflexed, a condition, which when coupled with the adaxial inflation, gives the plant a highly

distinctive appearance as viewed dorsally. The dorsal margin is usually entire, but 1 or 2 teeth may be produced in the upper 1/2, and is usually long decurrent on the stem. The ventral margins are usually spinosely dentate, but occasionally may be entire; a repand condition is often observed. The leaves cells have large, bulging, knot-like trigones, and are elongated in the median, basal portion, producing a distinctly developed vitta. The leaves are occasionally so strongly recurved that the ventral leaf surface is observed from the dorsal view. Leafy and flagelliform branches are both common, the latter may be very long and branched.

Ecology: This species is rather common in dwarf shrub heaths above 240 m. where it occurs on soil under cover of rock overhangs or Empetrum and on Bolax cushions. It more rarely grows in crevices of sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia north to 39° 36' S., Andean Patagonia in P. N. Nahuel Huapi) and 600 m. on Juan Fernandez.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2711, 2718, 2720, 2722 B); summit of Mt. Kent, 455 m. (2764 c. o→). WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3010 A). HILL COVE REGION, summit of West French Peak, 290 m. (2947, 2958); summit of Mt. Fegen, 335-360 m. (3064, 3070, 3078). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3385).

Literature Records: TIERRA DEL FUEGO: Dusén - Fuegia (Stephani 1906), R. Azopardo, Pto. Angosto (Stephani 1901a as P. ambusta); Gasperi - M. Sarmiento, B. Parry (Gola 1923), Naumann - B. Tuesday (Schiffner 1890 as P. patagonica); Savatier - I. Desolacion (Bescherelle & Massalongo 1889 as P. patagonica); Skottsberg & Halle - Cta. Gomez (Stephani 1911); Spegazzini - Fuegia (Stephani 1906), M. Sarmiento, Paso Brecknock (Massalongo 1927); I. London (Bonner 1962 as P. ambusta). PATAGONIA: Anonymous - (Kühnemann 1949); Cuming - I. Chiloe (Bonner 1962, Gay 1852, G. L. & N. 1847); Cunningham - Strait of Magellan (Stephani 1906); Donat - Pto. Panuelo (Herzog 1957); Dusén - I. Newton (Stephani 1900 as P. elata & P. patagonica), Strait of Magellan (Stephani 1906), Cabo Froward (Stephani 1901a as P. ambusta), I. Guaitecas, La. Ensenada (Stephani 1900 as P. patagonica); Naumann - Strait of Magellan (Stephani 1906); Reichert - southern Chile (Carl 1931); Savatier - Pen. Tres Montes (Bescherelle & Massalongo 1889 and Bonner 1962 as P. patagonica), Patagonia (Dugas 1929 as P. patagonica); Schwabe - Pto. Puyuhuapi (Herzog 1939, 1954), Huitrapulli - Aleucapi, L. Pellaifa, C. Lungoico, Chaihuin - R. Colun (Herzog 1960); Wolffhugel - southern Chile (Carl 1931). JUAN FERNANDEZ. MAS AFUERA: Skottsberg - 1000 m. (Stephani 1911).

Plagiochila gayana Gott.

Plagiochila Gayana Gott. Annl's Sci. Nat. IV. 8: 322. pl. 9. f. 11-14.

1857. Original material: Chile, "in Herb. Mus. Parisiens. (inter n° 42), et in Herb. Hampeano," Gay (non vidi).

Taxonomical remarks: This is a distinctive taxon recognized by an ensemble of characters. The leaves are nearly always dentated on the ventral margin with 1-5 (-12) small to quite large teeth. The basal portion of the ventral margin flares outward and either lies parallel to the stem or is angled slightly to that side of the stem opposite to the leaf insertion. The leaf apices have several large teeth and are broadly rounded or truncate; the leaves are frequently distinctly bifid. The leaf length/width ratio is 1.0-1.3 (-1.5) with the widest point 1/5 to at most 1/2 the distance from the leaf base. The subapical and median cells possess intermediate thickenings, which although vary in frequency are a useful and dependable character. Trigones are frequently absent or small in the upper 1/3 of the leaf while very large and knot-like in the lower 2/3.

The underleaves consist of 1 (-2) uniseriate filamentous segments of several cells in length.

Perianths are produced quite frequently and are described by Gottsche (1857) as emersed and pyriform in shape (shown in pl. 9, fig. 11 in Gottsche). I have examined only immature perianths, and these are immersed and wide ovate to suborbicular in outline. The pyriform shape is thus manifested with maturity along with a gradual emersion of the perianth. While the perianths are laterally compressed, a single, lateral bulge is commonly present. The mouth, which is dentate to long-ciliate, usually occupies but a small area at the perianth apex. Subfloral innovations, when present, form a pseudodichotomous or monopodial branch system.

Dr. Inoue has determined two collections (Engel 3416 and 3422) as P. rectangulata Steph. However, as I can find no significant differences between the material of the two species, and all collections, in my opinion, fit the description and figures of P. gayana (the earlier name), I shall not record P. rectangulata from the Falkland Islands.

Ecology: This species is fairly common on rock outcrops in dwarf shrub heaths above 180 m.

Phytogeography: This Valdivian species has a disjunct distribution, occurring in the Falklands, to 41° 12' S. in the Valdivina region and Juan Fernandez, Mas a Tierra (400-600 m.).

Literature Records: PATAGONIA: Dusén - R. Aisen, La Ensenada (Stephani 1900). JUAN FERNANDEZ. Saunders (Mitten 1884). MAS A TIERRA: Kunkel - upper slopes of Cordon Chifladores (Arnell 1957); Skottsberg - Pto. Frances - 500 m., C. Piramide - 600 m. (Herzog 1942), upper slopes of Cordon Chifladores, Q. Damajuana - 400-500 m., Valle Anson - 400 m., trail to Villagra - 400-500 m., Villagra - 400-500 m. (Arnell 1957).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3189); summit ridge of north peak of Two Sisters, 245-290 m. (2712 A-c. per.); summit of Mt. Kent, 455 m. (2757-c. young per.). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3416-c. per., 3422-c. per., 3426-c. per., 3430, 3433, 3434 B). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3362-c. per., 3373-c. per. 3392), Imshaug 41989 (MSC).

Plagiochila hirta Tayl.

Plagiochila hirta Tayl. in Hook. f. Bot. Ant. Voy. 2 (2): 134. 1854.

Original material: Falkland Is., on Dicranum pungens, Hooker 199b (FH !).

Plagiochila hirsuta Steph. K. Svenska VetenskAkad. Handl. 46 (9): 31.

f. 12 c. 1911, syn. fide Inoue (in litt.). Original material: Falkland Is., Mt. Adam, 700 m., Skottsberg & Halle (non vidi).

Ecology: This taxon was encountered rather frequently in the sheltered high altitude cliffs where it grew in rock crevices, especially those under ledges. It occasionally was found in crevices of rock outcrops in Cortadera and dwarf shrub heaths above 240 m. It was also collected in a rock crevice of a feldmark.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, and north in the Patagonian channels (coll. Engel, unpublished) to 44° 19' S. in West Patagonia (see Map 48).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as P. hirta & P. hirstua); Hooker (Bonner 1962, Stephani 1903); Skottsberg and/or Halle - (Bonner 1962 and Stephani 1918 as P. hirsuta), Mt. Adam (Skottsberg 1913 as P. hirsuta & P. hirta, Stephani 1911 as P. hirta).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949); Dusén - Pto. Angosto (Stephani 1901a); Gasperi - M. Sarmiento, B. Angelito (Gola 1923); Gortner - Fuegia (Dugas 1929); Naumann - B. Tuesday (Schiffner 1890); Roivainen - B. Pluschow, B. Sarmiento, B. Keta (Buch 1934); Spegazzini - M. Sarmiento, B. Sarmiento,

I. Basket, I. Gable (Massalongo 1885, 1927), Fuegia (Stephani 1903).
 PATAGONIA: Albatross - southern Patagonia (Evans 1892); Cunningham -
 Strait of Magellan (Stephani 1903); Dusén - Strait of Magellan, west
 Patagonia (Stephani 1903); Schubert - Strait of Magellan (Stephani
 1903); Schwabe - C. Tesoro (Herzog 1954); Skottsberg & Halle - I.
 Atalaya, Pto. Cutter (Stephani 1911).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION,
 summit ridge of Mt. Low, c. 245 m. (3231). STANLEY REGION, summit
 ridge of north peak of Two Sisters, 245-290 m. (2706, 2713 A); summit
 of Mt. Kent, 455 m. (2771 A, 2772). MT. USBORNE REGION, gap between
 Mt. Usborne 2 & Table Rock, c. 440 (2622A, 2639); ridge between Mt.
 Usbornes 1 & 2, 685 m. (2514, 2519 A, 2520, 2553 B); summit of Mt.
 Usborne 1, c. 700 m. (2482 A). WEST FALKLANDS: MT. ADAM, east side
 of summit ridge 670-700 m. (3007, 3012 A, 3016 B). WEDDELL ISLAND,
 summit of peak northeast of Mt. Weddell, 335 m. (3366 D).

Plagiochila obcuneata Steph.

Plagiochila obcuneata Steph. Bih. K. Svenska VetenskAkad. Handl. 26
 (III, 6): 30. 1900. Original material: Chile, Prov. Magallanes,
 I. Newton; Prov. Chiloe, I. Guaitecas; Prov. Llanquihue, Puerto
 Varas, Q. del Diavolo, Dusén (non vidi).

Taxonomical remarks: Dr. H. Inoue has informed me that he has
 studied a correctly determined Skottsberg collection of this taxon
 from the Falklands (hb. G).

Phytogeography: This species has been reported from the Falklands, Tierra del Fuego, Patagonian Channels, and Valdivian region north to 41° 19' S. In the phytogeography section I have included this taxon with those which have a Falkland Island - Magellanian - Valdivian range. However, the species may have a narrower distribution upon typification (i.e., possibly either Valdivian or Magellanian).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949); Skottsberg - Sparrow Cove (Skottsberg 1913); Skottsberg & Halle - Port Williams, Sparrow Cove (Stephani 1911).

Additional Literature Records: TIERRA DEL FUEGO: Dusén - Pto. Angosto (Stephani 1901a); Roivainen - B. Sarmiento (Buch 1934). PATAGONIA - Dusén - western Patagonia (Carl 1931, Stephani 1906), Patagonia (Bonner 1962); Skottsberg & Halle - B. Chacabuco, Pen. Lacuy (Stephani 1911); Spegazzini - Poyo-huapi (Massalongo 1906, 1927).

Plagiochila obovata Steph.

Plagiochila obovata Steph. K. Svenska VetenskAkad. Handl. 46 (9): 33.

f. 11 d. 1911. Original material: Chile, Prov. Magallanes,

I. Atalaya, Skottsberg & Halle (non vidi).

Taxonomical remarks: The leaf apices are polymorphous and may be broadly or narrowly rounded, truncate, retuse and/or 2-3-4 dentate. The leaf apices are frequently irregular, with teeth (or small lobes) of varying sizes; the apices then occasionally have a rather ragged appearance. The leaves, which are usually remote (but

may be contiguous in robust plants) have ventral margins which are usually entire, but occasionally may possess 1 to 3 teeth in the upper 1/2.

In all examined material, the underleaves are present and vestigial. An underleaf consists of 2-4 uniseriate, filamentous, segments of several cells in length. The segments occasionally are 2 cells wide at base and may be branched.

Ecology: This taxon is rare in the Falklands, where it was collected on soil under Empetrum and rock cover in dwarf shrub heaths (290 and 335-360 m.).

Phytogeography: This species occurs in the Falklands and 50° 21' S., 74° 47' W. in southern Patagonia. It has been reported from Mas Afuera, Juan Fernandez (Arnell 1957).

Literature Records: PATAGONIA: Skottsberg - west Patagonia (Stephani 1921); I. Atalaya (Bonner 1962). JUAN FERNANDEZ. MAS AFUERA: Kuschel - Inocentes Altos, Q. del Huatón (Arnell 1957); Skottsberg - Las Torres (Arnell 1957).

FALKLAND SPECIMENS SEEN: WEST FALKLANDS: HILL COVE REGION, summit of West French Peak, 290 m. (2956); summit of Mt. Fegen, 335-360 m. (3063).

Plagiochila Species Excluded from Falklands

1. Plagiochila cuneata Lindenb. & Gott. This species was reported from the Falklands in Skottsberg (1913). Neither Dr. Inoue or I have seen the specimen on which this record was based, and since

the type of the taxon is from Mexico (leg. Liebman), I am excluding this species from the Falkland flora.

2. Plagiochila spinulosa (Dicks.) Dum. This species was reported from the Falklands in Gaudichaud (1825, 1826) as Jungermannia. As the species is a European one, it is here excluded from the Falkland flora.

ACROBOLBACEAE

Hodg. Rec. Dom. Mus., Wellington 4 (11): 117. 1962.

Acrobolbus

Nees in G. L. & N. Syn. Hep. 5. 1844.

Acrobolbus ochrophyllus (Hook. f. & Tayl.) Schust.

Jungermannia ochrophylla (Hook. f. & Tayl.) London Jour. Bot. 3: 368.

1844. Acrobolbus ochrophyllus (Hook. f. & Tayl.) Schust. Revue Bryol. Lichén. 30 (1-2): 64. 1961. Original material: Auckland Island, Hooker s.n. (S) - cited in Grolle (1964b).

Marsupidium excisum Mitt. J. Linn. Soc. 15: 69. 1876, syn. fide Grolle (1964b). Acrobolbus excisus (Mitt.) Schiffn. in Engl. & Prantl. Natürl. Pflanzenfam. 1 (3, 1): 86. 1893. Original material: Îles Kerguelen, Moseley s.n. (non Eaton) (non vidi).

Gymnanthe ? crystallina Mass. Nuovo G. Bot. Ital. 17: 238. pl. 22 f. 24. 1885, syn. cf. Massalongo (1927). Marsupidium crystallinum (Mass.) Besch. & Mass. Mission Scient. Cap Horn 5: 229. 1889. Tylimanthus crystallinus (Mass.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 25. 1900. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, between Pto. Cook and Pto. San Juan del Salvamiento, Spegazzini s.n. (G) - cited in Grolle (1964b).

Sarcoscyphus kerguelensis Schiffn. in Naumann, Forschungsr. Gazelle

4 (4): 2. pl. 1. f. 4. 1890, syn. fide Grolle (1964b). Marsu-

pella kerguelensis (Schiffn.) Steph. Bull. Herb. Boissier II.

1 (2): 170. 1901 (= Sp. Hep. 2: 31). Original material: Îles

Kerguelen, Successful Harbour (G, ex hb. Schiffner) - cited in

Grolle (1964b).

Jungermannia kerguelensis Warnst. Hedwigia 60: 71. 1918, syn. fide

Grolle (1964b). Original material: Îles Kerguelen, 1874 Naumann

(B) - cited in Grolle (1964b).

Ecology: This species occurred only very locally in the Falklands, where it was gathered on soil and rock at the edges of small feldmark pools, and on a cushion plant of Azorella selago (670-700 m.) in the sheltered high altitude cliff association. It usually grows mixed with other Hepaticae.

Phytogeography: This pan-temperate species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Mas Afuera (1350 m.), Tristan da Cunha (600-1200 m.), South Africa (660-1000 m.), Marion, Kerguelen, Auckland islands and South Island, New Zealand (1500-1800 m.) (see Map 49).

Literature records: TIERRA DEL FUEGO: Dusén - Pto Angosto (Stephani 1901a as Tylimanthus crystallinus); J. B. Hatcher - Fuegia (Evans 1898 as Marsupidium crystallinum); Naumann - B. Tuesday (Schiffner 1890 as M. crystallinum); Spegazzini - I. de los Estados (Massalongo 1927 as Acrobolbus excisus). PATAGONIA: Cunningham - B. Halt (Grolle 1964b); Dusén - Pto. Bueno (Stephani 1900 as T.

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crystallinus); Savatier - I. Madre de Dios (Bescherelle & Massalongo 1889 as M. crystallinum); Skottsberg & Halle - Canal Gajardo, between R. Amarillo and R. Colorado (Stephani 1911 as A. excisus). JUAN FERNANDEZ. MAS AFUERA: Skottsberg - Camp Correspondencia (Grolle 1964b, Herzog 1942 as A. excisus), Las Torres (Herzog 1942 as A. excisus). TRISTAN DA CUNHA: Christophersen & Mejland (Grolle 1964b); Wace - above settlement (Arnell 1958). SOUTH AFRICA: Esterhuysen - Du Toit's Kloof (Grolle 1964b). MARION: Huntley (Grolle 1969). KERGUELEN: Eaton - Royal Sound (Grolle 1964b); Naumann - Successful Harbor (Grolle 1964b). AUCKLAND: Hooker (Grolle 1964b, Taylor and Hooker 1847a as Jungermannia). SOUTH ISLAND (New Zealand): Burrow - North Canterbury (Grolle 1964b).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, summit of Mt. Usborne 1, c. 700 m. (2501 A, 2505 A & 2508). WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3014 D).

ADDITIONAL SPECIMENS SEEN: ARGENTINA: TIERRA DEL FUEGO: Lapataia, J. B. Hatcher s.n. as A. excisus (NY). CHILE. MAGALLANES: I. Desolacion, Dusen s.n. as A. excisus (FH); I. Magdalena, Hassler Expedition 2092 as A. excisus (FH). JUAN FERNANDEZ. MAS AFUERA: Camp Correspondencia, 14 February 1917 Skottsberg 91 as A. excisus.

AUSTROLOPHOZIA

Schust. J. Hattori Bot. Lab. 26: 282. 1963.

Austrolophozia fuegiensis (Steph.) Schust.

Lophozia fuegiensis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 22.

f. 8 a-b. 1911. Austrolophozia fuegiensis (Steph.) Schust.
Bryologist 67 (2): 185. 1964. Lectotype (nov.): Fuegia,
Skottsberg 94 (G 03722 ! - c. marsup.), non Halle & Skotts-
berg 237 in hb. S-PA as proposed by Hässel de Menendez and
Solari (1970).

Tylunanthus camensis Steph. K. Svenska VetenskAkad. Handl. 46 (9):

24 f. 9 c. 1911, syn. nov. Austrolophozia camensis (Steph.)
Grolle in Hässel de Menendez & Solari, Revta Mus. Argent.
Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc.
Nat. 3 (6): 240. 1970. Original material: Fuegia, 1908
Halle s.n. (G) - cited in Hässel de Menendez & Solari (1970).

Austrolophozia paradoxa Schust. J. Hattori Bot. Lab. 26: 282. 1963,

syn. fide Hässel de Menendez & Solari (1970). Goebelobryum
paradoxum (Schust.) Hodgs. Trans. R. Soc. N. Z. 3 (4): 82.
1965. Holotype: New Zealand, South Island, Mt. Maungatua,
Schuster 48496 (RMS - non vidi).

Taxonomical remarks: Schuster (1963a) described the mono-
typic genus Austrolophozia for specimens from New Zealand and Tierra
del Fuego (type: A. paradoxa from New Zealand). Schuster (1964a),
in a discussion of the genus, added a second species to the genus by
transferring Lophozia fuegiensis, referring to the taxon as Austrolo-
phozia fuegiana. He stated that his material from Tierra del Fuego

seemed identical to the Stephani type. Schuster made no mention of the type of A. fuegiensis; however, I have seen a specimen from Geneva (G 03722) labeled Lophozia fuegiana, Fuegia, Skottsberg 94 and annotated (1964) "Austrolophozia fuegiana (St.) Schust., type" by Schuster.

Hässel de Menendez and Solari (1970), in a paper which has a detailed description and figures of fertile material, stated that the type of Lophozia fuegiensis is a specimen from Stockholm (Fuegia, prope ostium flumin Azopardo ad flum. Fontaine in paludosis, 1 March 1908 Halle and Skottsberg 237) which is actually identical with and a synonym of Roivainenia jacquinotii. The oldest available name then became Tylunanthus camensis, and Grolle made the transfer to Austrolophozia in the paper.

I have studied the Geneva and Stockholm plants and agree with the herbarium typification of Schuster. The description of Lophozia fuegiensis in Stephani (1911) agrees very well with the Geneva specimen and bears no resemblance to the Stockholm specimen as illustrated in the following chart.

| Characters in
Stephani (1911) | <u>Skottsberg 94</u> in G <u>sub</u>
<u>Lophozia fuegiana</u> <u>ined.</u> | <u>Halle & Skottsberg 277</u>
<u>in S-PA sub Lophozia</u>
<u>fuegiensis</u> |
|----------------------------------|---|---|
| rhizoids dense,
creeping | rhizoids dense, lying
parallel with ventral
stem surface | rhizoids in scattered
patches, not creeping |
| leaves clasping
stem | leaves clasping stem | leaves not clasping
stem |
| leaves wide
reniform in shape | leaves ($\pm$) reniform (or
wide cuneate or sub-
squarrose) in shape | leaves asymmetrically
wide ovate in shape |

| Characters in
Stephani (1911) | Skottsberg 94 in G sub
<u>Lophozia fuegiana</u> ined. | Halle & Skottsberg 277
in S-PA sub <u>Lophozia</u>
<u>fuegiensis</u> |
|---|---|--|
| leaves 4 mm wide,
3.2 mm long | leaves to 3.8 mm. wide,
2.7 mm long | leaves to 1.9 mm. wide,
1.7 mm long |
| leaves 5 angled | leaves (3-) 4-5
"angled," apices more
trilobed, with mar-
gins entire or 1
dentate-laciniate
(-lobate) | leaves simply bifid |
| "angles" acute
to apiculate | lobes apiculate, marginal
armature dentate-laciniate
to small lobate | lobes broadly triangu-
lar, lobe apices obtuse |
| upper leaf cells
36 μ | upper cells with length
and width averaged: 39 μ | upper cells with length
and width averaged: 22 μ |
| upper leaf cells
with large, acute
trigones | trigones medium, acute | trigones small to
medium, acute |
| basal leaf cells
36 X 90 μ | basal cells 34 μ wide,
116 μ long | basal cells averaging
27 μ wide, 37 μ long |
| trigones $\pm$ absent
in basal leaf
cells | trigones absent in basal
cells | trigones present in
basal cells small-medium,
acute |

In addition, the figures in Stephani (1911, f. 8 a-b) are clearly those of an Austrolophozia rather than of Roivainenina jacquinotii.

I believe one may assume that Stephani either erred when writing the name "fuegiana" on the label, or that he changed his mind concerning the name to be published, altering the spelling from L. fuegiana to L. fuegiensis. It may be that Stephani returned to Stockholm a duplicate which contained no specimens of Austrolophozia, but

contained only Roivainenia. Concerning the discrepancy in label data, I have seen numerous instances of labels in Geneva bearing a Stephani abbreviated locality of "Fuegia" or "Patagonia" or something similarly vague, while duplicates distributed in other herbaria have full label information.

Further, the Stockholm plant has the typically large, conspicuous, cuticular papillae of Roivainenia jacquinotii. If Stephani was actually describing Lophozia fuegiensis on the basis of the Stockholm specimen, he almost certainly would have mentioned the papillae as he did in the following species which were described as new in the same paper (Stephani, 1911), but which are presently synonyms of Roivainenia jacquinotii (fide Persson and Grolle (1961): Acrobolbus patagonicus and Anastrophyllum verrucosum (with "cuticula papillata").

The figure of the leaf in Stephani (1911) is misleading, as it represents it as possessing a symmetrical shape with an oversimplified insertion. Schuster (1964a, fig. 2) has shown the leaves are asymmetrical in shape, and have a $\pm$ J-shaped insertion which is acroscopically arced at the ventral end.

Ecology: This species commonly occurs on soil in rock crevices, under rock or Bolax overhangs on sheltered high altitude cliffs. It is commonly mixed with other hepatics, often with Balan-tiopsis bisfida and Schistochila subintegerrima. It more rarely occurs in rock crevices of outcrops in dwarf shrub heaths.

Phytogeography: This is a montane species with an amphipacific temperate distribution. It is known from South Island, New

Zealand (855 and 1370 m.), the Falklands, and the mountainous region of southern Isla Grande de Tierra del Fuego (see Map 50).

Literature records (FALKLANDS): Skottsberg, Mt. Adam, 600 m. (Hässel & Solari, 1970 as A. camensis).

Additional Literature Records: TIERRA DEL FUEGO: Hässel de Menendez - near Ventisquero Martial, Paso Garibaldi (Hässel de Menendez & Solari 1970 as A. camensis); C. A. & G. Hässel de Menendez, Gamundi - Paso Garibaldi (Hässel de Menendez & Solari 1970 as A. camensis); Schuster - ca. 3-4 mi. S. of Paso Garibaldi (Schuster 1963a, 1964a), Valle Carbajal (Schuster 1964a); Skottsberg & Halle - R. Fontaine, near mouth of R. Azopardo (Hässel de Menendez & Solari 1970 as A. camensis). NEW ZEALAND SOUTH ISLAND: Burrow - Kelly Range (Hässel & Solari 1970 as A. camensis, Hodgson 1965 as Goebelobryum paradoxum), Schuster & Scott - Mt. Maungatua (Schuster 1964a).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit of Mt. Kent, 455 m. (2761 B). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2525 C, 2533 D, 2542 B & 2550 A). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3094 C). MT. ADAM, ridge south of northern lake, 610 m. (3039 A, 3042 D); summit of southernmost peak, 685 m. (2992).

Lethocolea

Mitt. in Hook. f. Handb. N. Z. Flora 753. 1867.

Lethocolea radicata (Lehm. & Lindenb.) Grolle

Jungermannia radicata Lehm. & Lindenb. in Lehm. Pug. Pl. 6: 35.

1834. ? Sphagnoecetis radicata (Lehm. & Lindenb.) Nees in
G. L. & N. Syn. Hep. 149. 1845. Odontoschisma radicata
(Lehm. & Lindenb.) Trev. Memorie Ist. Lomb. Sci. Lett. III.
4: 419. 1877. Lethocolea radicata (Lehm. & Lindenb.) Grolle,
Bot. Mag. Tokyo 78 (921): 83. 1965. Original material: "Chile
(Herb. Kunzei.)" (S) - cited in Grolle (1965a).

Gymnanthe bustillosii Mont. Annls Sci. Nat. Bot. III. 4: 346.

1845, syn. fide (Grolle (1965a)). Lethocolea bustillosii (Mont.)
Mitt. J. Linn. Soc. 15: 64. 1876. Symphyomitra bustillosii
(Mont.) Schiffn. in Engl. & Prantl., Näturl. Pflanzenfam. 1
(Abt. 3, 1 Hälfte): 81. 1893. Material: "Chile australiori"
Gay (non vidi).

Calypogeia fistulata Mitt. in Thomson & Murray, Rep. Scient. Results
Challenger. Bot. 1 (3): 85. 1885, syn. fide Grolle (1965a).
Original material: Juan Fernandez, Saunders (NY) - cited in
Grolle (1965a).

Calypogeia solitaris Kaal. Nyt. Mag. Naturvid. 49 (1): 96. 1911,
syn. fide Grolle (1965a). Original material: Crozet Is.,
East Island, Ring & Raknes (0) - cited in Grolle (1965a).

Tylimanthus Hallei Steph. K. Svenska VetenskAkad. Handl. 46 (9):
24. f. 9e. 1911, syn. fide Grolle (1965a). Original material:
Falkland Is., Westpoint Is., Skottsberg & Halle 206 (Gl, UPS -
cited in Grolle 1965a).

Tylimanthus Halleanus Steph. Sp. Hep. 6: 247. 1922. Original material: Falkland Is., Halle s.n. (G) - cited in Grolle (1965a).

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Valdivian region, San Fernandez and the Crozets Islands. The species is known from only a few collections, and further study may reveal the taxon has a type of subantarctic distribution.

Literature records (FALKLANDS): Anonymous - (Grolle 1965a-Kühnemann 1937 as T. hallei; Skottsberg - Westpoint Is. (Skottsberg 1913 as Tylimanthus hallei).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Grolle 1965a). PATAGONIA: Schwabe - C. Lungoico, L. Pellaifa (Herzog 1960 as Tylunanthus hallei); Skottsberg & Halle - Esto. Excelsior, Ancud (Stephani 1911 as Symphyomitra bustillosii). JUAN FERNANDEZ: MAS A TIERRA: Skottsberg - Cumberland Bay-cave (Arnell 1957 as Lethocolea bustillosii).

MARSUPIDIUM

Mitt. in Hook. f. Handb. N. Z. Flora 753. 1867.

Marsupidium urvilleanum (Mont.) Mitt.

Plagiochila (Scapania) Urvilleana Mont. Annls Sci. Nat. II, 19: 247. 1843. Jungermannia urvilleana (Mont.) Hook f. &

- Tayl. London Jour. Bot. 3: 468. 1844. Scapania urvilleana
 (Mont.) G. L. & N. Syn. Hep. 63. 1844. Gymnanthe urvilleana
 (Mont.) G. L. & N. Syn. Hep. 193. 1845. Marsupidium urvil-
leanum (Mont.) Mitt. in Hook. f. Handb. N. Z. Fl. 754. 1867.
Acrobolbus urvilleanus (Mont.) Trev. Memorie Ist. Lomb. Sci.
 Lett. III. 4: 423. 1877. Original material: Strait of Ma-
 gellan, Dumont d'Urville (STR) - cited in Engel & Grolle (1971).
Gymnanthe anderssonii Ångstr. Öfvers. K. VetenskAkad. Förh. 33 (4):
 50. 1877, syn. fide Engel & Grolle (1971). Tylimanthus anders-
sonii (Ångstr.) Evans, Bull. Torrey Bot. Club 25 (8): 429. 1898.
 Lectotype (cf. Engel & Grolle 1971): Chile, Prov. Magallanes,
 Pto. del Hambre, Andersson s.n. (S-PA - non vidi).
Gymnanthe faminensis Ångstr. Öfvers. K. VetenskAkad. Förh. 33 (4):
 51. 1877, syn. fide Engel & Grolle (1971). Lectotype (cf.
 Engel & Grolle 1971): Chile, Prov. Magallanes, Pto. del Hambre,
Andersson s.n. (S-PA - non vidi).
Adelanthus (?) brecknockiensis Mass. Nuovo G. Bot. Ital. 17: 213.
pl. 27. f. 35. 1885, syn. fide Stephani (1908). Marsupidium
brecknockiensis (Mass.) Schiffn. in Engl. & Prantl, Naturl.
 Pflanzenfam. 1 (3, 1): 100. 1895. Tylimanthus brecknockiensis
 (Mass.) Steph. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6):
 25. 1900. Original material: Chile, Prov. Magallanes, I.
 Brecknock, Spegazzini s.n. (G) - cited in Engel & Grolle (1971).
Tylimanthus rotundifolius Steph. K. Svenska VetenskAkad. Handl. 46
 (9): 26. f. 9 h. 1911, syn. fide Engel & Grolle (1971).

Lectotype (fide Engel & Grolle 1971): Chile, Prov. Magallanes, S. Skyring, B. Pinto, Skottsberg 620 (G - non vidi).

Tylimanthus patagonicus Steph. K. Svenska VetenskAkad. Handl. 46

(9): 25. f. 9 g. 1911, syn. fide Engel & Grolle (1971). Lectotype (cf. Engel & Grolle 1971): Chile, Prov. Magallanes, Pto. Simpson, Skottsberg 331 (G - non vidi).

Tylimanthus fuegiensis Steph. K. Svenska VetenskAkad. Handl. 46

(9): 24. f. 9. d. 1911=Tylimanthus fuegianus Steph. Spec. Hep. 6: 247. 1922, syn. cf. Arnell (1955). Lectotype (fide Engel & Grolle 1971): Chile, Prov. Magallanes, R. Fontaine, Halle and Skottsberg s.n. (G - non vidi).

Taxonomical remarks: See Engel and Grolle (1971) for a discussion of Marsupidium urvilleanum.

Ecology: This species of occasional presence in the Falklands, where it was collected in crevices, on soil over rock overhangs of sheltered high altitude cliffs, and rock outcrops in dwarf shrub heaths (ca. 305 m.).

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels and Valdivian region (West Patagonia north to 39° 38' S., Andean Patagonia in P. N. Nahuel Huapi region) (see Map 51).

Literature Records (FALKLANDS): Anonymous - (Engel & Grolle 1971).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Gay 1852 as Scapania), I. Hermite (Bescherelle & Massalong 1889 as Scapania), (Kühnemann 1937 & 1949 as M. urvilleanum & T. anderssonii, Schiffner 1893 as M. brecknockiense); Dusén - Pto. Angosto (Stephani 1901a as Tylimanthus brecknockiensis); Hariot - I. Hermite (Bescherelle & Massalong 1889); J. B. Hatcher - Lapataia (Evans 1898 as Tylimanthus anderssonii), Fuegia (Evans 1898); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1845 as Gymnanthe, Hooker & Taylor 1844 & Taylor & Hooker 1847b as Jungermannia); Santesson - Ushuaia, Canasaca, S. de Sorando, between Ushuaia and M. Susana (Arnell 1955 as T. anderssonii, Müller 1955 as T. anderssonii); Skottsberg - I. Navarino, Ushuaia, R. Olivia, B. Tekenika and Pto. Cook (Stephani 1905a); Spegazzini - I. Brecknock (Bonner 1962); I. Brecknock, I. Gable, B. Slogget (Massalong 1927). PATAGONIA: Anonymous - (Kühnemann 1937 as Scapania & Marsupidium, 1949 as T. brecknockiensis, Scapania & Marsupidium); Andersson - Pto. del Hambre (Ångström 1872 as Jungermannia); Cunningham - Strait of Magellan (Stephani 1909); Donat - M. Tronador (Herzog 1957 as T. fuegianus), A. Frias (Herzog 1957 as T. patagonicus); Dumont d'Urville - Strait of Magellan (Gay 1852 as Gymnanthe, G. L. & N. 1844 & Montagne 1845 as ?Scapania, 1856 as Gymnanthe, Stephani 1909); Dusén - Pto. Bueno, Puerto Blest, La Ensenada (Stephani 1900 as T. brecknockiensis); Hombron - Strait of Magellan (G. L. & N. 1847 as Scapania); Schwabe - C. Lungoico (Herzog 1960 as T. patagonicus & T. rotundifolius). BOLIVIA: Herzog - Tablas 3400 m. (Stephani 1916 as T. patagonicus). AUCKLAND:

Hooker (Taylor & Hooker 1847a as Jungermannia). NEW ZEALAND. NORTH ISLAND: Bolton - Auckland (Mitten 1855 as Gymnanthe); Colenso - Wairarapa Valley (Mitten 1855 as Gymnanthe). TASMANIA: Archer, Gunn, Hooker (Mitten 1860 as Gymnanthe).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2523, 2525 D & 2540). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3121). FOX BAY REGION, summit of Fox Bay Mt., 307 m. (3447 & 3450). MT. ADAM: Halle 114 as Tylimanthus homomallus (G). HILL COVE REGION, summit of East French Peak, 305 m. (2965), WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3381-c o→ & 3386).

Acrobolbaceae Species Excluded from the Falklands

Tylimanthus homomallus Steph. The specimens on which the Falkland reports in Stephani (1911), Skottsberg (1913) and Kühnemann (1937, 1949) are based on misdeterminations of Marsupidium urvilleanum. The type of Tylimanthus homomallus Steph. (Sp. Hep. 6: 248. 1922) which was collected on Antipodes Island by Cockayne (n. 826 in hb. FH!) is a synonym of Marsupidium abbreviatum (cf. Hodgson 1958) a species of Tasmania, New Zealand, Stewart Island, Auckland Island and Antipodes Island.

CEPHALOZIACEAE

Cavers, New Phytol. 9 (8-9): 293. 1910.

Cephalozia

(Dum.) Dum. Recueil Obs. Jungerm. 18. 1835. Jungermannia sect.
Cephalozia Dum. Syll. Jungerm. 60. 1831.

Cephalozia badia (Gott.) Steph.

Jungermannia badia Gott. Ergebn. Dt. Pol.-Exped. 2 (16): 452. pl. 1.
f. 1-5. 1890. Cephalozia badia (Gott.) Steph. Bull. Herb.
Boissier II. 8 (7): 483. 1908 (= Sp. Hep. 3: 313). Original
material: South Georgia, Köppenbergl, 10 February 1883 Will 37
(G) - cited in Fulford (1968).

Ecology: In the Falklands, this species was collected on a
rock in a feldmark pool (c. 700 m.) and on soil under rock cover of a
sheltered high altitude cliff.

Phytogeography: This species has a subantarctic distribution;
it occurs on South Georgia, the Falklands and Tierra del Fuego (Lago
Fagnano). Stephani (1911) states the Lago Fagnano collection is from
a "Berge am Westende von Lago Fagnano." The report from Antarctica
in Bonner (1963) is erroneous.

Literature Record (FALKLANDS): Anonymous (Fulford 1968).

Additional Literature Records: ANTARCTICA: Anonymous - (Bonner 1963). SOUTH GEORGIA: Skottsberg - Cumberland Bay (Steere 1961, Stephani 1911); Will - Köppenberg (Steere 1961). TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949); Skottsberg and/or Halle (Fulford 1968, Stephani 1911).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, summit of Mt. Usborne 1, c. 700 m. (2496B - c. per. + o→). WEST FALKLANDS: PORT HOWARD REGION, pass southwest of Mt. Maria summit, c. 610 m. (3104B).

Notes on Cephalozia species

1. Cephalozia setistipa Steph. This species was described by Stephani (Sp. Hep. 6: 440. 1924) for a Halle collection from the Falkland Islands. I have not seen material of this taxon and it is not mentioned in Fulford (1968).

2. Cephalozia varians (Gott.) Steph. This species was originally described by Gottsche (1890) as a Jungermannia for a Will collection from South Georgia. It was reported for the Falklands by Stephani (1911) and Kühnemann (1937, 1949) recorded the taxon from the Falklands in his catalogues. Douin later transferred the species to Cephaloziella (Mem. Soc. Bot. Fr. 29: 70. 1920). I have not seen material of the species, and it is not mentioned in Fulford (1968).

Cephalozia Species Excluded from the Falklands

Cephalozia bicuspidata (L.) Dum. There are three reports of this species from the Falklands, all based upon a Hooker collection(s). The taxon was reported in Hooker and Taylor (1844 as Jungermannia), Taylor and Hooker (1847b as Jungermannia) and Gottsche, Lindenberg and Nees (1847 as Jungermannia). The species is widespread in the Northern Hemisphere, and according to Fulford (1968) is strictly tropical within Latin America (Mexico, Guatemala, and Colombia).

Metahygrobiella

Schust. Bryologist 64 (2-3): 205. 1961.

Metahygrobiella tubulata (Hook. f. & Tayl.)
Engel, comb. nov.

Jungermannia tubulata Hook. f. & Tayl. London Jour. Bot. 3: 463. 1844.

Cephalozia tubulata (Hook. f. & Tayl.) Trev. Memorie Ist. Lomb.

Sci. Lett. III. 4: 417. 1877. Metahygrobiella tubulata Schust.

ex. Fulf. Mem. N. Y. Bot. Gdn 11 (3): 322. 1968 nom. nud., pro syn. Original material: Falkland Is., Hooker s.n. (BM !).

Taxonomical remarks: Schuster (1965a, p. 40) stated Cephalozia tubulata belongs in the genus Metahygrobiella, but did not formally make the transfer. I agree with the placement of "Cephalozia" tubulata

in Metahygrobiella as the species possesses the following ensemble of Metahygrobiella characters: 1) the transverse or subtransverse leaf insertion in the dorsal part (the leaf insertion is quite variable, and may be obliquely inserted in the dorsal part); 2) the leaf insertion frequently extends to the stem midline so as a "leaf free" dorsal strip of stem tissue is absent (this character is also quite variable, as the leaves may approach the stem midline, but not actually reach it); 3) the frequently canaliculate leaves; 4) the production of a purplish pigmentation; 5) the presence of lateral-intercalary branching (this branch type is only very rarely produced, while Frullania-type branching is commonly produced and ventral-intercalary branching is sparingly developed); 6) the terminally placed gynoecia on leading axes. Fulford (1968) includes the species in her treatment of the genus Cephalozia.

Of the five collections of Metahygrobiella tubulata, four were sampled in wet situations, i.e., in creeks or wet depressions and the fifth (Engel 2627) was collected on moist soil in a comparatively dry Marsippospermum mire. The plants growing in the wet habitats were considerably larger, quite flaccid in texture and were at least in part purplish pigmented. The dorsal leaf lobes of these plants were consistently inflexed. The type material possessed these characters and almost certainly was collected in a rather moist situation. The material from the more xeric habitat consisted of smaller, stiffer plants which lacked secondary pigmentation except for an occasional purplish pigmented leaf lobe apex. The stiff, dorsal leaf lobes vary from

strongly inflexed to erect to strongly reflexed, the latter condition giving the leaves a considerably different appearance from the flaccid individuals.

Ecology: This taxon is rather rare in the Falklands, where I have found it in a creek of a Cortaderia heath, and in wet depressions of dwarf shrub heaths.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels, and Valdivian West Patagonia.

Literature Records (FALKLANDS): Anonymous (Kühnemann 1937 & 1949 & Bonner 1963 as Cephalozia), Port Louis (Fulford 1968 as Cephalozia); Hooker (Fulford 1968 as Cephalozia, G. L. & N. 1847 as Jungermannia, Taylor & Hooker 1847b as Jungermannia, Stephani 1908 as Cephalozia); Skottsberg - Port Stanley (Stephani 1905a, 1908, Skottsberg 1913 & Fulford 1968 as Cephalozia).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Cephalozia); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Cephalozia), Fuegia (Stephani 1908 as Cephalozia), R. Azopardo (Fulford 1968 as Cephalozia); Halle - L. Fagnano (Fulford 1968 as Cephalozia); Santesson - Pto. Yartou, Ushuaia (Arnell 1955 as Cephalozia), Ushuaia & Canal Whiteside (Fulford 1968 as Cephalozia); Skottsberg & Halle - R. Azopardo & L. Fagnano (Stephani 1911 as Cephalozia), R. Azopardo (Fulford 1968 as Cephalozia). PATAGONIA: Andersson - Pto. del Hambre (Ångström 1872 as Jungermannia); Dusén - Pto. Bueno (Fulford 1968 as Cephalozia); Fulford & Hatcher - Punta Arenas (Fulford 1968 as Cephalozia); Santesson - R. Rubens

(Arnell 1955 & Fulford 1968 as Cephalozia), Punta Arenas (Fulford 1968 as Cephalozia) Schwabe - C. Tesoro (Fulford 1968 as Cephalozia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3158); Goat Ridge, c. 180 m. (3207-c. per. & 3214). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2627-c. o-). WEST FALKLANDS: HILL COVE REGION, gap between French Peaks, 200-215 m. (2979 B-c. per.).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TERR. TIERRA DEL FUEGO: L. Fagnano, 11 March 1908 Halle 98 as Cephalozia (BM).

CEPHALOZIELLACEAE

Douin, Bull. Soc. Bot. Fr. 60: 477. 1913.

Cephaloziella

(Spruce) Steph. Hedwigia 32: 318. 1893. Cephalozia subg. Cephaloziella
Spruce, On Cephaloz. 62. 1882.

Cephaloziella dusenii Steph.

Cephaloziella dusenii Steph. Bih. K. Svenska VetenskAkad. Handl. 26

(III, 6): 49. 1900. Cephalozia dusenii (Steph.) Steph. Bull.

Herb. Boissier II. 8 (7): 504. 1908 (= Sp. Hep. 3: 334).

Alobiella dusenii (Steph.) Steph. Bull. Herb. Boissier II.

8 (8): 571. 1908 (= Sp. Hep. 3: 355), nom. illeg., non Alobiella dusenii Steph. Bih. K. Svenska VetenskaAkad Handl. 26

(III, 6): 48. 1900. (= Alobiella stephanii Bonn. Candollea 14:

98. 1953. Lectotype (fide Bonner 1953): Chile, Prov. Valdivia, Corral, 5 June 1896 Dusen 94 (G !; duplicates in S-PA! - c. per., UPS! - c. per.).

Taxonomical remarks: Cephaloziella dusenii is a distinctive taxon and is quite easily recognized. The leaves are transversely inserted and are concave to frequently canaliculate - $\pm$ conduplicately bilobed (the leaves may be occasionally three lobed) and with the keel obliquely spreading from the stem. The leaf lobes are broadly triangular ovate, are often slightly sulcate and are frequently quite wide spreading, with a broadly rounded sinus. The leaf lamina and lobe margins are entire but frequently are denticulate. The leaf cells are $\pm$ thickened and have trigones small or absent. The cuticle is quite variable, and even on a single axis may be smooth, or have sparingly developed, low, round papillae. The underleaves are quite distinctive, are polymorphic and usually exhibit a high degree of variability on a single axis. They vary considerably in size, are

narrow to broadly ovate to lingulate in shape and may be undivided at the apex to retuse to bifid. The underleaf lobes are usually asymmetric, with one lobe slightly to greatly larger than the other, and occasionally one lobe is reduced to a lateral tooth on an otherwise undivided structure. The underleaf margins are entire to denticulate, sometimes with a copious production of 1-2 celled rounded teeth. The gynoeceal bracts are connate to 1/2 with the bracteoles and have lobes which are sparingly to $\pm$ densely dentate. The above discussion is based upon collections which include the lectotype specimen.

The following characters of Cephaloziella dusenii when taken collectively, may offer confusion with the genus Cephalolobus: the production of secondary pigments (brown or magenta in C. dusenii), the transversely inserted, deeply bifid, canaliculate to $\pm$ conduplicate leaves, the cuticle of which may have low, rounded, papillae, the small underleaves and the scattered rhizoids. Cephaloziella dusenii, however, may be immediately distinguished by the production of ventral-intercalary and Frullania-type branching, and a cuticle which at most has low rounded papillae. Cephalolobus has exclusively lateral-intercalary branching and has a cuticle with conspicuous, very coarse papillae.

Ecology: This species is of rather common occurrence in dwarf shrub heaths where it occurs on soil over rock, in rock crevices, and under rock of Empetrum cover. It was also found on the basal portion of tussock (Poa flabellata association).

Phytogeography: This species occurs in South Georgia, the Falklands, Patagonian Channels, and Valdivian region (West Patagonia north to 39° 52' S.). With further studies, the taxon may prove to be considerably more widespread, as this species may "represent the common and protean circumsubantarctic C. exiliflora (Tayl.) Douin" (Schuster 1969c, p. 666) (see Map 52).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Cephalozia); Skottsberg - Port Stanley, Warrah River (Bonner 1953 as Alobiella stephanii), Port Stanley (Skottsberg 1913 as Cephalozia); Skottsberg & Halle - Port Stanley, Warrah River (Stephani 1911 as Cephalozia).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Cephalozia). PATAGONIA: Dusén - I. Chiloe (Stephani 1908 as Alobiella dusenii), Pto. Bueno, I. Guaitecas, Corral, Valdivia (Bonner 1953 as Alobiella stephanii); Hahn - Valdivia (Bonner 1953 as Alobiella stephanii); Santesson - R. Rubens, Pto. Aisen, Enco (Arnell 1955); Skottsberg & Halle - S. Otway - R. Grande (Stephani 1911 as Cephalozia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: 1843 Hooker s.n. as Jungermannia byssacea (FH). KIDNEY ISLAND, north of shanty (2790). PORT WILLIAM REGION, south shore of Cape Pembroke peninsula, near Surf Bay, sea level (2438); north side of Gypsy Cove, sea level (3249). STANLEY REGION, Port Stanley, 1907 Skottsberg 22 (G); Sapper Hill, 135 m. (2411 & 2418-c. per.); Tumbledown Mt., 155-230 m. (2378 B-c. per.). WEST FALKLANDS: WARRAH RIVER REGION, 17 December 1907 Halle &

Skottsberg 100 (S-PA, UPS); 1907 Skottsberg 39 (G). FOX BAY REGION, summit of East Head, 180 m. (3438 B-c. per.); valley east of Sullivan House, c. 75 m. (3538). HILL COVE REGION, summit of West French Peak, 290 m. (2946-c. per.). WEDDELL ISLAND, summit of Mt. Weddell, 380 m. (3352-c. per.).

ADDITIONAL SPECIMENS SEEN: SOUTH GEORGIA: 1921 Bergstrom s.n. (S-PA, UPS). CHILE. CHILOE: I. Chiloe, Anguay, 24 May 1896 Dusen 413 (S-PA-c. per.); I. Chiloe, near Ancud, 21 May 1896 Dusen 411, syntypes (S-PA, UPS).

Cephaloziella Species Excluded from the Falklands

1. Cephaloziella byssacea (A. Roth.) Warnst. This species was reported from the Falkland Islands by Hooker and Taylor (1844) and Taylor and Hooker (1847b), both as Jungermannia byssacea, and Kühnemann (1949). These records are all based upon a Hooker collection which is actually Cephaloziella dusenii. See Grolle (1970a) for a discussion of Jungermannia byssacea A. Roth, wherein the taxon is treated as a nomen ambiguum.

2. Cephaloziella starkei (Funck ex Nees) Schiffn. This taxon was reported from the Falklands by Kühnemann (1937), who did so on the basis of the Taylor and Hooker (1847b) reference of Jungermannia byssacea from the Falkland Islands (see above). Kühnemann (loc. cit.) included Jungermannia byssacea as a synonym of C. starkei. In his later catalogue, Kühnemann (1949) used the name Cephaloziella byssacea for a

Falkland report, without mention of C. starkei. The Hooker collection of Cephaloziella byssacea from the Falkland Islands is actually a specimen of Cephaloziella dusenii. Grolle (1970a) has shown Jungermannia starkei Funck ex Nees and Cephaloziella starkei (Funck ex Nees) Schiffn. are illegitimate names, and includes them in the synonymy of Cephaloziella divaricata (Sm.) Schiffn.

ADELANTHACEAE

(Jørg.) Grolle, J. Hattori Bot. Lab., in press. Tribe Adelanteae Jørg. Bergens Mus. Skr. 16: 257. 1934.

Adelanthus

Mitt. J. Proc. Linn. Soc. 7: 243. 1864.

Key to the Falkland Island Species of Adelanthus

1. Ventral leaf margins plane at the base; dorsal leaf margin only weakly incurved; elongate basal-median cells

bordered by 1-3 cell rows at postical leaf base; sub-
apical leaf cells thin to slightly thickened; leaves
orbicular in shape A. tenuis

1. At least some of leaves on an axis with ventral margins
auriculate at the base; dorsal leaf margin distinctly
incurved; elongate basal-median cells bordered by (4-)
5-22 cell rows at postical leaf base; subapical leaf
cells thick walled; leaves never orbicular in shape. . . . 2
2. Leaf margins dentate A. lindenbergianus
2. Leaf margins entire. A. integerrimus

Adelanthus integerrimus Grolle

Adelanthus integerrimus Grolle, J. Hattori Bot. Lab., in press.

Original material: Chile (?) Terr. Tierra del Fuego, 550 m.,
Santesson M 746 (S-PA - non vidi).

Ecology: This species is sporadic in the Falklands, occurring
in moist feldmarks, high altitude cliffs and Cortaderia heaths; it
was not found below 455 m.

Phytogeography: This species is known from the Crozet and
Falkland Islands and Tierra del Fuego.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION,
southeast slope of Mt. Usborne 2, c. 455 m. (2614); summit of Mt.
Usborne 1, c. 700 m. (2496 A, 2499-c. o→, 2501 C & 2505 B). WEST

FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3128 & 3135).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TERR. TIERRA DEL FUEGO: I. de los Estados, Pto. Cook, 1903 Skottsberg s.n. (MSC, ex hb. Grolle); I. de los Estados, Spegazzini s.n. as A. magellanicus (FH).

Adelanthus lindenbergianus (Lehm.) Mitt.

Jungermannia lindenbergiana Lehm. Pug. Pl. 3: 53. 1831. Plagiochila lindenbergiana (Lehm.) G. L. & N. Syn. Hep. 59. 1844. Adelanthus lindenbergianus (Lehm.) Mitt. J. Proc. Linn. Soc. 7: 244. 1864.

Original material: South Africa, Ecklon (non vidi).

Jungermannia sphalera Hook. f. & Tayl. London Jour. Bot. 3: 458. 1844, syn. cf. Mitten (1860). Plagiochila sphalera (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 653. 1847. Adelanthus sphalerus (Hook. f. & Tayl.) Steph. Bull. Herb. Boissier II. 8 (8): 599. 1908 (= Sp. Hep. 3: 383). Original material: Chile, Prov. Magallanes, Cabo de Hornos, Hooker (non vidi).

Jungermannia unciformis Hook. f. & Tayl. London Jour. Bot. 3: 457. 1844, syn. cf. Mitten (1860). Plagiochila unciformis (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 653. 1847. Adelanthus unciformis (Hook. f. & Tayl.) Spruce, J. Bot., London 14: 200. 1876. Adelocolea unciformis (Hook. f. & Tayl.) Evans, Bull. Torrey Bot. Club 25 (8): 409. 1898. Original material: Chile, Prov. Magallanes, "Hermite Is., Cape Horn," Hooker (non vidi).

Plagiochila magellanica Lindenb. in G. L. & N. Syn. Hep. 53. 1844, syn. cf. Mitten (1860). Adelanthus magellanicus (Lindenb.) Mitt. J. Proc. Linn. Soc. 7: 244. 1864. Calyptrocolea magellanica (Lindenb.) Schust. J. Hattori Bot. Lab. 26: 287. 1963, nom. illeg. Original material: Strait of Magellan, without specific locality, sin. coll. (non vidi).

Jungermannia ? haliotiphylla De Not. Mem. Reale Accad. Sci. Torino II. 16: 217. pl. V. 1-7. 1855, syn. cf. Schiffner (1890). Original material: "Valparaiso," Puccio s.n. (non vidi).

Taxonomical remarks: I have been unable to locate the specimen on which the record of Adelanthus magellanicus from the Falklands was based. However, according to Grolle (in litt.), the type of Adelanthus magellanicus is conspecific with A. lindenbergianus, but nearly all other collections subsequently determined as A. magellanicus belongs to other taxa. Presumably the Falkland report is included among them.

Adelanthus lindenbergianus is highly variable and consists of two fairly distinct forms when plants representing extremes of a continuum in variation are examined. One form consists of plants which possess (a) leaf apices which vary from acute with a small to large apical lacinium to narrow to broadly rounded, (b) ventral leaf margins usually regularly dentate and (c) leaves deflexed at an angle of ca. 45° from the stem. The second form possesses (a) leaves truncate to narrow-broadly rounded at the apex, the latter denticulate, (b) ventral margins sparingly denticulate and (c) leaves strongly deflexed, often with the ventral leaf margins appressed. The forms represent

extremes of a continuum of variation, and I do not recognize them taxonomically.

Ecology: This common species has a wide ecological amplitude, growing in rock crevices or on a soil layer either over rock or under rock overhangs of outcrops in the dwarf shrub heath association as well as the sheltered high altitude cliffs. The taxon also grows on soil in the Cortaderia (commonly under grass cover) and dwarf shrub heaths. Further, it was gathered on soil at 700 m. in or at the margins of feldmark pools.

Phytogeography: This amphiatlantic temperate species occurs in the Mascarenes, South Africa, Tristan da Cunha, the Falklands, and the Andes north to Mexico. Among the Falkland taxa, it is one of the two (with Lophocolea semiteres) strictly austral taxa with an outpost in the British Isles (see Map 53).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as A. unciformis); Lechler (Mitten 1864 as A. magellanicus); Skottsberg - Port Stanley, Port Louis (Stephani 1905a as A. unciformis), Port Stanley (Skottsberg 1913 as A. unciformis); Skottsberg & Halle - Weddell Is., Port Harriet (Stephani 1911 as A. unciformis).

Additional Literature Reports: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as A. magellanicus & A. unciformis); Dusén - Fuegia (Stephani 1908 as A. sphalerus), Ushuaia (Stephani 1901a as A. unciformis), R. Azopardo, Pto. Angosto (Stephani 1901a as A. magellanicus & A. unciformis); Gasperi - B. Angelito, B. Ainsworth, Valle delle Fate (Gola 1923 as A. magellanicus & A. unciformis), M.

Sarmiento (Gola 1923 as A. unciformis); Hahn - I. Hoste (Bescherelle & Massalongo 1889 as A. unciformis); Hariot - I. Clarence (actually I. Capitan Arecena), I. Hermite (Bescherelle & Massalongo 1889 as A. unciformis); J. B. Hatcher - Lapataia (Evans 1898 as A. unciformis); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1847 as Plagiochila sphalera & P. unciformis, Mitten 1864 as A. magellanicus, Stephani 1908 as A. sphalerus), Taylor & Hooker 1847b as J. sphalera & J. unciformis), Strait of Magellan (in error, Spruce 1876 as A. magellanicus); Hyades - I. Hoste (Bescherelle & Massalongo 1889 as A. unciformis); Menzies - I. de los Estados (Mitten 1864 as A. magellanicus); Naumann - B. Tuesday (Schiffner 1890 as A. unciformis); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as A. unciformis); Santesson - Pto. Yartou, L. Cabezera, Ushuaia, between Ushuaia & M. Susana (Arnell 1955 as A. sphalerus), Ushuaia & between Ushuaia & M. Susana (Muller 1955 as A. sphalerus); Skottsberg - B. Tekenika & I. de los Estados, P. Cook (Stephani 1905a as A. unciformis), Pto. Cook (Stephani 1905a as A. magellanicus); Skottsberg & Halle - I. Dawson, R. Azopardo, R. Fontaine (Stephani 1911 as A. unciformis); Spegazzini - I. de los Estados, I. Hoste, Fuegia (Massalongo 1927 as A. sphalerus), I. Hoste, Ushuaia, M. Conegliano, Pto. Vancouver, M. Richardson, Pto. Cook, Pto. San Juan del Salvamiento, B. Blossom (Massalongo 1885 as A. unciformis), I. de los Estados (Massalongo 1885 as A. magellanicus). PATAGONIA: Anonymous - (Grolle 1969, Kühnemann 1937 & 1949 as A. magellanicus & A. unciformis), Strait of Magellan (Arnell 1953b as A. unciformis), Schiffner 1895 as

A. unciformis), Schuster 1967 as A. magellanicus, Bonner 1962 as A. sphalerus & A. unciformis); Albatross - B. Borja (Evans 1892 as A. unciformis); Andersson - Pto. del Hambre (Ångstrom 1872 as J. sphalera); Cunningham - Pto. Gallant (Stephani 1908 as A. sphalerus); Donat - R. Negro (Herzog 1957 as A. sphalerus); Dusen - Punta Arenas (Stephani 1901a as A. unciformis, 1908 as A. sphalerus), Pto. Bueno (Stephani 1900 as A. magellanicus & A. unciformis); Jacquinet - Strait of Magellan (Gay 1852 as P. magellanica); Lechler - C. de Raneo (Mitten 1864 as A. magellanicus); Santesson - Punta Arenas (Arnell 1955 as A. magellanicus & A. sphalerus), R. Rubens (Arnell 1955 as A. sphalerus and A. unciformis), C. Mina Rica (Arnell 1955 as A. magellanicus); Schwabe - C. Tesoro (Herzog 1939 as A. sphalerus), Pto. Puyuhuapi, C. Tesoro (Herzog 1954 as A. sphalerus); Huitrapulli - Aleucapi, Chaihuin - R. Colun, C. Lungoico (Herzog 1960 as A. sphalerus); Skottsberg & Halle - I. Chiloe, I. de San Pedro, Cta. Hale, Pto. Grappler, I. Atalaya, B. Pinto, Pto. Cutter (Stephani 1911 as A. unciformis); Spegazzini - Poyo - huapi (Massalonga 1906, 1927 as A. unciformis). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - Pangal - 795 m. (Herzog 1942 as A. sphalerus f. minor). COSTA RICA. PROV. SAN JOSE: Valerio & Standley, C. de las Vueltas (Grolle 1964a). VENEZUELA: Anonymous (Grolle 1969). TRISTAN DA CUNHA: Christophersen & Mejland (Arnell 1958 as A. unciformis); Wace - Soggy Plain - 740 m. (Arnell 1958 as A. unciformis). INACCESSIBLE: Christophersen & Mejland (Arnell 1958 as A. unciformis). AFRICA. CAPE PROV.: Anonymous - (Grolle 1969, Sim 1926 as A. unciformis); Esterhusen - Table Mt. (Arnell 1963 as A. unciformis &

A. sphalerus). MASCARENES: Anonymous (Grolle 1969); Pillans (Sim 1926 as A. unciformis). IRELAND: Anonymous (Grolle 1969). KERGUELEN: Naumann (Stephani 1908 as A. magellanicus). CAMPBELL IS.: Hooker, Kirk (Stephani 1908 as A. magellanicus). NEW ZEALAND: Kirk (Stephani 1908 as A. magellanicus). TASMANIA: Gunn - Acheron River (Mitten 1860 as Plagiochila magellanica).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3241). STANLEY REGION, near Sapper Hill, 29 October 1907 Halle & Skottsberg 113 as Frullanica boveana (S-PA); Tumbledown Mt., 155-230 m. (2373 & 2382 A); Goat Ridge, c. 180 m. (3190); summit ridge of north peak of Two Sisters, 245-290 m. (2733-c. per. & 2734); at summit of Mt. Kent, 455 m. (2763). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2625 C, 2626 B, 2628, 2632, 2634 A & 2640 D); southeast slope of Mt. Usborne 2, c. 455 m. (2600); ridge between Mt. Usbornes 1 & 2, 685 m. (2532-c. per., & 2554 A); The Gap, 275-290 m. (2462 B, 2463, 2469 & 2475); below The Gap, c. 90 m. (2562 A). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3146 & 3153); pass southwest of Mt. Maria summit, c. 610 m. (3080 A & 3133). FOX BAY REGION, summit of East Head, 180 m. (3417). MT. ADAM, east side of summit ridge, 670-700 m. (3019 A); east slope of main peak, c. 610 m. (3003 A). HILL COVE REGION, summit of East French Peak, 305 m. (2964 A-c. per.); summit of Mt. Fegen, 335-360 m. (3079). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3369 B); summit of Mt. Weddell, 380 m. (3335 B, 3345, 3350 & 3353).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I. Hoste, Hahn as A. unciformis (FH). ARGENTINA. TIERRA DEL FUEGO: Lapataia, J. B. Hatcher s.n. as A. unciformis (FH). CHILE. MAGALLANES: B. Tuesday, 2 February 1876 Naumann s.n. as A. unciformis var. major and A. unciformis f. typica (FH); Pto. Bueno, May 1896 Dusen 41 as A. unciformis (FH).

Adelanthus tenuis Engel & Grolle

Adelanthus tenuis Engel & Grolle, J. Hattori Bot. Lab., in prep.

Holotype: Chile, Prov. Magallanes, Brunswick Peninsula, La.

El Parrillar region, c. 365 m., Engel 2093 (MSC !).

Taxonomical remarks: As the species plays a conspicuous role in the Falkland hepatic flora and the original description is based to a large extent on Falkland Island material, a description is provided below.

Plants caespitose, rarely as scattered individuals among other Hepaticae, erect, to 2.3 cm. tall, light green to golden brown or brown, often light green toward apex of plant and brown toward base, nitid.

Branches frequent, exclusively of ventral intercalary type, leafy branches stiff, abruptly erect or prostrate and becoming erect, rarely becoming flagelliform toward the apex; flagelliform branches often arising from near base of ventral intercalary branch, prostrate to occasionally positively geotropic, with small scale-like leaves and

scattered rhizoids, occasionally becoming unright and producing enlarged leaves.

Stems 133-201 μ thick, 164-233 μ wide, in surface view cortex cells short to long rectangular, walls slightly to distinctly thickened, end walls transverse to oblique, cells 20-85 (-107) μ long, 13-23 μ wide. Stems in section 10-16 cells in diameter, cortex of 1-1-1/2-2 layers, poorly defined to distinct with 1 or 2 layers of very thick walled cells, cells 9-18 μ thick, the cuticle smooth; medulla cells thin walled with slightly thickened corners (13-) 16-30 (-33) μ wide.

Leaves (.48-) .56-1.08 (-1.16) mm. long, (.42) .56-1.0 (-1.16) mm. wide, orientation transverse to succubous, in robust plants succubous, erect to spreading, occasionally recurved, distant to imbricated, concave (often strongly so near dorsal base) to convex, orbicular to obliquely wide-ovate or obliquely wide-obovate in shape, margins entire, apex acute to broadly rounded to truncate, occasionally slightly bifid, then divided to 1/7, lobes acute to broadly rounded, sinus triangular to rounded, the angle obtuse to narrowly rounded to lunate, the dorsal margin slightly to occasionally strongly curved, often repand, slightly to strongly inflexed, especially toward the base, not to very short decurrent, ventral margin strongly curved, usually more strongly curved than dorsal margin, often repand, plane to recurved, not to very short decurrent, line of insertion slightly to distinctly succubous, occasionally slightly recurved at ventral end, insertion extending from 1/3 of ventral stem midline to 1/3 of midline of dorsal stem surface.

Leaf cells subsquarrose to subrectangular, thin to slightly thickened, trigones absent to small, occasionally intermediate thickenings toward base, median cells 13-25 (-27) μ long, 9-20 (-27) μ wide, the basal cells longer (23-) 28-47 (-51) μ long, marginal cells with nodular thickenings in outer radial walls, basal marginal cells in 1-3 rows of shorter cells, (8-) 10-18 (-23) μ long, bordering the elongated basal-median cells, leaf cuticle smooth.

Underleaves absent; oil bodies not seen; gemmae absent.

Plants dioicous. Androecia not seen. Gynoecia on reduced ventral intercalary branches which arise from lower portion of plant, mature gynoecia not seen.

Morphological Variation: Leaves, while usually subsuccubous, may be strongly succubous in robust plants, or transverse in orientation. The leaves vary considerably in size and configuration (see Figures 2-45). While the leaf apices exhibit a wide range of variability, usually at least some leaves with slightly bifid apices are present on a given plant. The ventral intercalary branches exhibit considerable variation. Normal leafy branches may become flagelliform toward the apex, or conversely a flagelliform branch may become erect and produce leaves typical of normal leafy shoots. In the latter, the flagelliform branches may be quite lengthy (to 11 mm.) prior to becoming negatively geotropic and producing normal leaves.

Ecology: This species appears to be restricted to relatively high altitudes in the southern cold temperate region. In the Brunswick Peninsula it was collected at ca. 365 m. in an open Sphagnum bog.

In the Falklands this species is rather common above 245 m., and occurs on soil under rock cover, in rock crevices, under ledges, etc., of outcrops in Cortaderia as well as dwarf shrub heath associations. Occasionally it may be found on soil in non-outcrop situations in these associations, growing with Gackstroemia magellanica and Adelanthus lindenbergianus, or on soil over rock where it may be associated with Balantiopsis bisbifida and a filmy fern, Serpyllopsis caespitosa.

Phytogeography: This species is known only from the type locality (Brunswick Peninsula, Lago Parrillar region) and the Falklands. It is of phytogeographical interest to note that the New Zealand A. gemmiparus is a very close ally of this species.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3220, 3221, 3224 A & 3232). STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2725 & 2732 A); summit of Mt. Kent, 455 m. (2761 A-c. ♀ & 2773-c. young per.). MT. USBORNE REGION, gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2640 C); ridge between Mt. Usbornes 1 & 2, 685 m. (2533 A & 2554 B); The Gap, 275-290 m. (2457). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3103-c. ♀ & 3114). FOX BAY REGION, summit of Fox Bay Mt., 307 m. (3444-c. young per., 3452 & 3453 A). MT. ADAM, east slope of main peak, c. 610 m. (3003 B). HILL COVE REGION, summit of East French Peak, 305 m. (2966-c. young - per. & 2969); summit of Mt. Fegen, 335-360 m. (3077). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3324 A-c. young per.); summit of Mt. Weddell, 380 m. (3343 B).

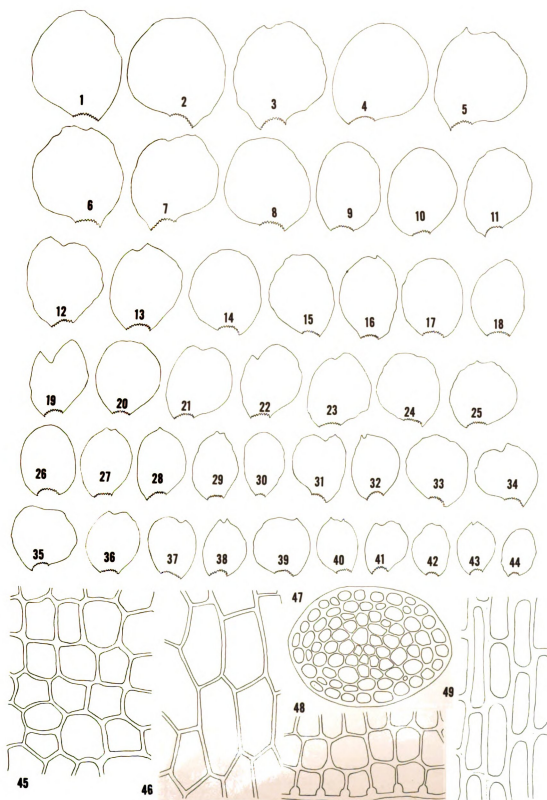
PLATE 7

Adelanthus tenuis Plant, X 11. From holotype material,
Engel 2093, southern Chile, Prov. Magallanes, Laguno El Parrillar.



PLATE 8

Adelanthus tenuis Figs. 1-44. Leaves, X 24. Fig. 45. Median leaf cells, X 530. Fig. 46. Basal-median leaf cells, X 530. Fig. 47. Stem, cross section, X 205. Fig. 48. Portion of upper, ventral leaf margin, X 530. Fig. 49. Cortical cells, surface view, X 530. Figs. 1, 8 from Engel 3232. Figs. 2- 4 from Engel 2533A. Figs. 3, 5-7 from Engel 3103. Figs. 9, 11 from Engel 2725. Figs. 10, 17 from Engel 2457. Figs. 12, 13 from Engel 2773. Figs. 14, 20 from Engel 3221. Figs. 15, 16 from Engel 3343B. Figs. 18, 38 from Engel 3452. Figs. 19, 22 from Engel 2966. Figs. 21, 31 from Engel 3003B. Figs. 23, 35 from Engel 3114. Figs. 24, 33, 39, 41, 45-49 from Engel 2093 (holotype). Figs. 25, 34 from Engel 2108C. Figs. 26, 44 from Engel 3453. Figs. 27, 40, 43 from Engel 3324A. Figs. 28, 29, 32 from Engel 3444. Figs. 30, 42 from Engel 2732. Figs. 36, 37 from Engel 2640C. Figs. 24, 25, 33, 34, 39, 41, 45-49 from southern Chilean material, remainder of figures from Falkland Island material.



Adelanthus Species Excluded from Falklands

Adelanthus falcatus (Hook.) Mitt. The report of Adelanthus falcatus from the Falkland Islands in Stephani (1905) is a misdetermined specimen of A. lindenbergianus, fide Grolle (in litt., specimens from S-PA examined). Adelanthus (Calypstrocolea) falcatus is a species of New Zealand (type from Dusky Bay, New Zealand, leg. Menzies).

Wettsteinia

Schiffn. Annls Jard. Bot. Buitenz. Suppl. 2: 44. 1898.

Wettsteinia densiretis (Herz.) Grolle

Tylunanthus densiretis Herz. in Skotts., Nat. Hist. Juan Fernandez and Easter Is. 2(5): 712 f. 3 a-d. 1942. Wettsteinia densiretis (Herz.) Grolle, J. Hattori Bot. Lab. 28: 99. 1965. Lectotype: fide Grolle 1965): Juan Fernandez, Mas Afuera, Camp Correspondencia, 1140 m., 1917 Skottsberg 92 (S - non vidi).

Ecology: This species is of rather frequent occurrence in crevices of outcrops, as well as on soil in non-outcrop situations in dwarf shrub heaths. It more rarely occurs on soil in Cortaderia heaths.

Phytogeography: This Valdivian species has a disjunct distribution, occurring in the Falklands, the Valdivian region (ca. 40° S., 73° 30' W.) and Mas Afuera (Juan Fernandez) (1140 m.) (see Map 54).

Literature records: PATAGONIA: Schwabe - Chaihuin - R. Colun (Grolle 1965). JUAN FERNANDEZ. MAS AFUERA: Skottsberg - Camp Correspondencia (Grolle 1965).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3225; ridge on Engineer Point peninsula, 18-25 m. (2823). STANLEY REGION, Tumbledown Mt., 155-230 m. (2377 A & 2381); Goat Ridge, c. 180 m. (3196 & 3204); summit ridge of north peak of Two Sisters, 245-290 m. (2701 A). MT. USBORNE REGION, below The Gap, c. 90 m. (2559 & 2563). WEST FALKLANDS: WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3316); summit of peak northeast of Mt. Weddell, 335 m. (3369 C & 3395).

RADULACEAE

Cavers, New Phytol. 9 (8-9): 292. 1910.

Radula

Dum. Comment. Bot. 112. 1822.

Radula helix (Hook. f.
& Tayl.) G. L. & N.

Jungermannia helix Hook. f. & Tayl. London Jour. Bot. 3: 475. 1844.

Radula helix (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 260. 1847.

Original material: Chile, Prov. Magallanes, I. Hermite, Hooker
(K, BM, NY) - cited in Castle (1963).

Radula magellanica Schiffn. in Naumann, Forschungsr. Gazelle 4 (4):

21. pl. 4. f. 14-15. 1890, syn. fide Castle (1963). Stephanina
magellanica (Schiffn.) Schiffn. in Engl. & Prantl. Natur. Pflanz-
enfam. 1 (3, 1): 114. 1895. Original material: Chile, Prov.
Magallanes, I. Desolacion, B. Tuesday, Naumann (FH) - cited in
Castle (1963).

Radula vagens Steph. K. Svenska VetenskAkad. Handl. 46 (9): 85. f.

34 b. 1911, syn. fide Castle (1963). Original material: Chile,
Prov. Magallanes, west end of L. Fagnano, Skottsberg (G) - cited
in Castle (1963).

Taxonomical remarks: This is perhaps the easiest species to recognize among the magellanian Radula taxa. The plants are small in size and yellow-green in coloration. The leaves are semierect and are inserted in such a manner that they are directed toward the apex of the plant, a condition which gives the latter a rather compact appearance. The dorsal lobes are strongly convex and obovate in shape with the distal portion slightly expanded, and with lobe apices broadly rounded or occasionally $\pm$ truncated (in Falkland material). The dorsal margin of the dorsal lobe has a slime papilla which varies in position, but is usually located in the proximal 1/2 portion. This papilla often at least partially disappears quite soon after leaf maturation, but papillae remnants may often be identified in mature leaves. The lobules are conspicuously inflated in the carinal portion and the distal portion is appressed to the dorsal lobe. The lobules are ca. 1/2 the size of the dorsal lobes, subrectangular in shape and with a conspicuous slime papilla at the lobule apex. The slime papillae eventually collapse and are in a progressively more collapsed condition on progressively more mature leaves.

The median dorsal leaf lobe cells are 16-23 μ long and 12-18 (-20) μ wide in size, and have thin to $\pm$ thickened walls, and trigones small to medium in size. Intermediate thickenings are present or absent. Oil bodies were present in Brunswick Peninsula material 14 months after collection. While several cells had many small spherical structures as a result of oil body disintegration, many

cells possessed 1-4 large, globose, homogeneous, strongly glistening oil bodies.

I have based this discussion mostly on Brunswick Peninsula material, but the single, rather small Falkland collection is also included. The Falkland plants differ slightly in having dorsal lobes which are $\pm$ cuneate in shape and lobe apices which are often truncate. The Falkland plants are otherwise identical with the mainland material.

Castle (1963), who includes the taxon in the section *Saccaetae*, provides a description and plate of the species, but omits several critical features, including slime papillae.

Ecology: This taxon is very rare in the Falklands. Only a few stems were gathered, intermixed with other *Hepaticae*, in a rock crevice of sheltered high altitude cliffs. This species is rather common on the wet, western side of the Brunswick Peninsula, and it is likely that a lack of a critical rainfall level accounts for the rarity of *R. helix* in the Falklands.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego (widespread), Patagonian Channels and in the Valdivian region at 39° 38' S. It has not been reported from Andean Patagonia. The Auckland Island locality in Stephani (1910) is doubtful, and the species is not mentioned in Hodgson (1962) (see Map 55).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 as *R. vagens*, 1949 as *R. helix* & *R. vagens*); Dusén

Pto. Angosto (Castle, 1963, Stephani 1901a); Gasperi - I. Laberinto (Gola 1923); Halle - L. Fagnano (Castle, 1963); Hariot - Tierra del Fuego (Castle 1963); Hooker - I. Hermite and/or Caboede Hornos (Castle 1963, G. L. & N. 1845, Taylor & Hooker 1847 as Jungermannia); Hyades - I. Hoste (Castle 1963); Naumann - without specific locality (Castle 1963, Stephani 1884); Skottsberg - L. Fagnano (Castle 1963, Stephani 1924 as R. vagens); Spegazzini - M. Sarmiento, Pto. Vancouver, I. Basket, I. Hoste, I. Navarino (Massalongo 1885), I. del los Estados, Fuegia (Massalongo 1927), I. Basket, I. de los Estados (Castle 1963). PATAGONIA: Anonymous - (Kühnemann 1937, 1949), Strait of Magellan (Stephani 1910 as R. helix & R. magellanica); Andersson - Pto. del Hambre (Ångstrom 1872 as Jungermannia); Ball - Patagonia (Castle 1963); Cunningham - Strait of Magellan, Pto. Eden (Castle 1963); Schwabe - C. Lungoico (Herzog 1960 as R. magellanica); Warnstorff - "Magellan" (Castle 1963). AUCKLAND: Anonymous - (Stephani 1910 as R. magellanica).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3019 C).

FRULLANIACEAE

Verdoorn, Ned. Kruidk. Archf, 1927.

Frullania

Raddi, Mem. Soc. It. Modena 18: 20. 1820.

Key to the Falkland Island Species of Frullania

1. Lobules mostly obliquely inserted, often with long axis of the lobule parallel with the ventral leaf margin; rim of perianth beak papillate. Plants dioicous; stylus acute, inconspicuous, of only a few cells. . . F. boveana
1. Lobules with long axis $\pm$ parallel with the stem axis; rim of perianth beak smooth, entire 2
2. Lobules with a conspicuous papilla inserted directly above the lateral slit; styli small, inconspicuous, terminated by a unicellular row of 2 cells; dorsal lobes acute. F. pseudolobulata
2. Lobules without papillae; styli large, conspicuous, the terminal 2 cell rows of 3-6 cells; dorsal lobes broadly rounded. F. magellanica

Frullania boveana Mass.

Frullania boveana Mass. Nuovo G. Bot. Ital. 17: 244. pl. 23.

f. 27. 1885. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados & I. Gable. Chile, Prov. Magallanes, I. Hoste, Spegazzini (non vidi).

Frullania boveana Falklands

Taxonomical remarks: The dorsal lobe apices of F. boveana are usually broadly rounded, but occasionally may taper to a very narrowly rounded apex. Dorsal lobes of branch leaves, however, are commonly acute.

When sterile, Frullania boveana must be separated from Frullania magellanica with care. The stylus of F. boveana is a fairly constant character and is critical in separating the two taxa. It is usually small, inconspicuous, of only a few cells and acute or rounded at the apex. However, occasionally an isolated leaf on an axis will produce an expanded, narrowly ovate, stylus with a rounded apex, which appears similar in shape to that of F. magellanica. Frullania magellanica on the other hand, has styli ca. 3/4 of, to greater than the lobule size, and is thus a conspicuous structure. Frullania boveana has lobules mostly obliquely inserted, and often with the long axis of the lobule parallel with the ventral leaf margin, while F. magellanica has the long lobule axis parallel with the stem axis. When fertile, however, the two species are

immediately distinguishable as F. boveana is dioicous while F. magellanica is monoecious. Further, F. boveana has a papillose rim of the perianth beak, while that of F. magellanica is smooth.

Of the 12 collections I made in the Falklands, 11 possess young gynoecia and all are in a very similar stage of development. Since this is a dioicous species and no androecia were observed, females may be the only sex represented in the Falkland Islands.

All previous reports of Frullania boveana from the Falkland Islands are in error and are actually based upon a single, misidentified specimen of Adelanthus lindenbergianus (Port Stanley, near Sapper Hill, 29/10 1907 Halle and Skottsberg). Skottsberg (1913) then listed the name as part of his "Blechnum magellanicum association," and Kühnemann (1949) reported the plant from the Falklands in his catalogue.

Ecology: Frullania boveana is quite common in the rock outcrops (above 135 m.) of the dwarf shrub heaths, where it is very commonly associated with the lichens Endocena informis and Sphaerophorous tener and the filmy fern Serpyllopsis caespitosa.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and in the Valdivian region north to 39° 53' S.

Literature records (FALKLANDS): Anonymous - (Kühnemann 1949); Skottsberg - Port Stanley, Port William (Skottsberg 1913); Skottsberg & Halle - Sapper Hill (Stephani 1911).

Additional Literature Records (TIERRA DEL FUEGO: Anonymous (Kühnemann 1937, 1949); Dusén - Pto. Angosto (Stephani 1901a);

Gasperi - M. Sarmiento (Gola 1923); Hariot - I. Clarence (actually I. Capitan Arecena) (Bescherelle & Massalongo 1889); J. B. Hatcher - Fuegia (Evans 1898); Naumann - B. Tuesday (Schiffner 1890); Spegazzini - I. de los Estados, I. Gable & I. Hoste (Massalongo 1927), M. Conegliano (Bonner 1965). PATAGONIA: Dusén - Pto. Aisen (Stephani 1900); Skottsberg & Halle - B. Arauz (Stephani 1911).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3223-c. young ♀); north side of Gypsy Cove, sea level (3262). STANLEY REGION, Port Stanley, 1907 Skottsberg 129 as F. patentiloba, (G - c. young ♀); Sapper Hill, 135 m. (2397 B-c. ♀, 2401-c. ♀ & 2415-c. ♀); Goat Ridge, c. 180 m. (3193-c. young ♀ & 3211-c. young ♀); summit ridge of north peak of Two Sisters, 245-290 m. (2726 A-c. ♀ & 2737-c. ♀); summit of Mt. Kent, 455 m. (2744). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3443-c. young ♀). HILL COVE REGION, summit of East French Peak, 305 m. (2968 A-c. young ♀); summit of West French Peak, 290 m. (2960).

ADDITIONAL SPECIMENS SEEN: CHILE. MAGALLANES: I. Desolacion, Pto. Angosto, 19 December 1896 Dusén 210 (NY). AISEN: R. Aisen, 19 January 1897 Dusen s.n. (NY); R. Aisen, February 1897 Dusén 300, (S-PA-c. o→); R. Aisen, 4 February 1897 Dusén 300 (S-PA-c. young ♀). CHILOE: I. Guaitecas, May 1896 Dusén s.n. as F. lobulata (FH-c. per.). VALDIVIA: Rinihue, Enco, 29 September 1940 Santesson M 232, M 864 (S-PA).

Frullania magellanica Web. & Nees

Frullania magellanica Web. & Nees in G. L. & N. Syn. Hep. 446.

1845. Jungermannia magellanica Spreng. Annls. Wetter. Ges. Naturk. 1 (1): 25. 1809, non Jungermannia magellanica Lam. Encycl. Method., Bot. 3: 284. 1789, (= Gackstroemia). Original material (fide Sprengel 1809): "Equidem in cortice Berberis ilicifoliae, quam e freto Magellanico Forsterus attulit, decerpsi" (non vidi).

Frullania fertilis De Not. Memorie Accad. Sci. Torino II. 16: 235. pl. XX, 1-6. 1855, syn. nov. Original material: Chile (Prov. Valparaiso, Puccio), ex hb. de Notaris (FH!).

Taxonomical remarks: The dorsal leaf lobe apices are nearly always broadly rounded. Occasionally, however, dorsal lobes may be narrowly rounded to $\pm$ acute. Both acute and broadly rounded leaf apices may be found on the same axis.

Useful description and helpful figures of Frullania magellanica may be found in Clark and Palm (1961). Their data, however, is not based upon an examination of the type.

Ecology: I found Frullania magellanica to be the most common Frullania in the Brunswick Peninsula (Strait of Magellan). There it was both corticolous and saxicolous. In the Falklands, however, the plants were collected exclusively on rock (in Cortaderia and dwarf shrub heaths, 90 to 455 m.) and were only occasionally encountered. The paucity of the corticolous habitat undoubtedly

at least partially accounts for the only scattered occurrence of F. magellanica in the Falklands.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, Valdivian region (West Patagonia and P. N. Nahuel Huapi in Andean Patagonia, Mas a Tierra (Juan Fernandez) (above 600 m.) and "Frai Jorge" (Prov. Coquimbo). The Campbell Island reports (in Hodgson 1962, Hooker 1867, and Taylor & Hooker 1847b) and Tasmanian reports (in Arnell 1958 and Herzog 1942) require confirmation; Hodgson (1962) expressed the possibility that Taylor may have misidentified the plant on which the Campbell Island report was based.

Literature records: TIERRA DEL FUEGO: Anonymous - (Hooker 1867. Kühnemann 1937, 1949, Schwaegrichen 1814 as Jungermannia); Dusén - I. Desolacion (Stephani 1901a as F. fertilis); Forster - Strait of Magellan (Gay 1852, G. L. & N. 1845, Hodgson 1962, Weber 1815 as Jungermannia); Naumann - B. Tuesday (Schiffner 1890); Santesson - S. de Sorondo, L. Cabezera, Pen. Dumas (Arnell 1955 as F. fertilis); Skottsberg & Halle - L. Fagnano (Stephani 1911); Spegazzini - I. Año Nuevo, M. Richardson, M. Conegliano, I. Clarence (actually I. Capitan Arecena) (Massalong 1885 as F. fertilis), Pto. Cook, I. Basket (Massalong 1885), I. Basket, I. de los Estados (Massalong 1927). PATAGONIA: Anonymous - (Kühnemann 1937, 1949); Dumont d'Urville - B. San Nicolas (Taylor & Hooker 1847b as Jungermannia); Kühnemann - L. Menendez, Torecillas (Clark & Palm 1961); Ljungner - Pto. Nuevo, Br. Blest (Herzog 1940); Santesson - I.

Riesco - Cta. Mina Elena, R. Rubens, Pto. Aisen (Arnell 1955 as F. fertilis); Schwabe - Termas de Puyehue (Herzog 1954); Skottsberg & Halle - R. Amarillo (Stephani 1911 as F. fertilis), Cta. Connor, F. Heinrichs (Stephani 1911); Thomasson - L. Villarica (Thomasson 1963). JUAN FERNANDEZ. MAS A TIERRA: Kunke1 - near summit of El Yunque (Arnell 1957); Skottsberg - Salsipuedes - 615 m. & Centinela - ca. 600 m. (Herzog 1942). CENTRAL CHILE: Anonymous (Arnell 1957); Schwabe - "Fra1 Jorge" (Herzog 1954); C. Talinay (Arnel 1956 as F. fertilis & F. magellanica). TRISTAN DA CUNHA: Christophersen & Mejland - above Burntwood - 1200-1400 m., S. of Round Hill - 650 m. (Arnell 1958); Wace - above Sandy Point - 300 m. (Arnell 1958). CAMPBELL: Hooker (Hodgson 1962. Hooker 1867, Taylor & Hooker 1847b as Jungermannia). TASMANIA: Anonymous - (Arnell 1958, Herzog 1942).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2714-c. per. + o→); summit of Mt. Kent, 455 m. (2767-c. per. + o→). MT. USBORNE REGION, below The Gap, c. 90 m. (2592 A-c. per.); south side of The Gap, 260-275 m. (2455-c. per.). WEST FALKLANDS: WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3376-c. per. + o→ & 3377).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO: Ushuaia, April 1896 Alboff 14 (FH-c. per. + o→). CHILE. MAGALLANES: sin. coll., Cabo de Hornos, as F. lobulata, ex. hb. Wilson (BM); B. Tuesday, 2 February, 1875 Naumann s.n. (FH); Patagonia, 1908

Skottsberg s.n. (FH-c. per. + o→). VALDIVIA: Corral, Thaxter 143 as F. fertilis (FH-c. per. + o→).

Frullania pseudolobulata Engel, sp. nov.

Frullania lobulata similis, sed differt a) plantis monoeciis b) amphigastriis cauli aequilatis vel parum latioribus, c) perianthii rostro recto, ad orem haud expanso, d) plantis saxicolis.

Holotype: Chile, Prov. Magallanes, Brunswick Peninsula, Puerto Gallant, Engel 6050 (MSC!).

Plants caespitose or mixed with other Hepaticae, prostrate or slightly erect, to 504 μ wide, vinaceous or blackish in color, occasionally becoming brown toward the base of the plant, nitid when dry.

Branching usually once to twice pinnate, occasionally tri-pinnate, branch leaves more closely imbricated than leaves of main axis, branches of Frullania type.

Stem apices of the main axis and branches pale, becoming deep red-brown in older portions, stems 90-106 μ thick, 117-143 μ wide, in surface view the cortical cells with conspicuous irregular thickenings; stems in section 6-8 cells in diameter, the cortex of a single row of thicker walled cells with small lumina, cortex pigmented red-brown, cuticle smooth; medullary cells very thick walled. Rhizoids, when present, in clusters from the stem at the base of the underleaves, rhizoid tips very thick walled, simple or branched.

Leaves with dorsal lobes incubous to incubous-subtransversely oriented, spreading, contiguous to loosely or closely imbricated, strongly convex, asymmetrically ovate, margins entire, apical portion of dorsal lobe strongly decurved, gradually tapering to an acute apex, occasionally tapering to a narrowly rounded apex, dorsal margin $\pm$ erect, strongly rounded, ca. 3 times the length of the ventral margin, constricted at point of stylus attachment, flaring distal to attachment, plane to slightly deflexed, not decurrent, ventral margin slightly curved, or "S"-shaped, plane. Leaf cells rectangular to subsquarrose, walls thin to $\pm$ thickened, trigones medium in size, intermediate thickenings present or absent, median leaf cells 13-25 μ long, 9-16 μ wide, basal, median cells 20-39 μ long, 13-23 μ wide, cuticle smooth.

Lobules 1.3 - 1.8 times longer than broad, galeate, inflated throughout, slightly obovate, narrowing evenly toward the mouth, the base narrowly rounded, mouth oval in shape, continuous with a lateral slit in the lobule, lobules with a conspicuous papilla positioned immediately above the lateral slit. Lobule cell walls with large, bulging, intermediate thickenings which are of greater magnitude than those of the dorsal lobe.

Stylus triangular, long decurrent on the stem, 3-4 cells wide at the widest point, terminating in a unicellular row of 2 cells, terminal cell a hyaline slime papilla which eventually collapses, slime papillae turgid on leaves toward stem apex and becoming progressively more collapsed on progressively older leaves.

Underleaves 106-186 μ long, 117-212 μ wide, usually as wide or slightly wider than the stem, occasionally ca. 1.5 times the stem width, distant, ovate to elliptic in shape, appressed, bifid to 1/2, sinus slit like to rounded, margins entire or with a single blunt tooth at the level of the sinus base, margins occasionally repand, segments triangular, straight or connivent, long decurrent on the stem.

Plants monocious; androecia on short, highly abbreviated Frullania-type branches issuing from the main axis, primary or secondary branches, bracts in groups of 2-3 pairs, very closely imbricated, strongly saccate, antheridia 2 per bract, stalks long, of 1 cell row, underleaves small. Gynoecia on main axis or on short to long Frullania-type branches; bracts in 2 series, bracts of innermost series bilobed, carinate, ventral lobes plane, not galeate, convex, base of bract with enlarged, unpigmented cells; bracteoles $\pm$ folded along the midline, margins entire, the base with enlarged unpigmented cells; perianth trigonous, obovate, $\pm$ truncated at the apex, beak cylindrical, the mouth smooth.

Seta gradually becoming wider toward the capsule, seta 5-6 cells in diameter, with a single row of outer cells 33 - 39 μ wide surrounding an inner core of cells 39 - 44 μ in diameter. Capsule valves wide ovate in shape and tapering to an acute apex, valves attached at the base, valves pigmented except for a circular unpigmented area within the cup-like base of the capsule, capsule wall 26 - 35 μ thick, of 2 layers, outer layer of cells subrectangular

to subsquarrose in shape, 46 - 53 μ long, 21 - 36 μ wide, exposed wall smooth, outer layer with hyaline to pale yellow-brown, nodular thickenings on the radial walls, thickenings slightly tangentially dilated, outer tangential wall considerably thicker; inner layer of cells, in surface view with 3 ridges parallel with the long valve axis, the cells of the inner layer irregularly subsquarrose to irregularly subrectangular in shape, 20 - 29 μ long, 17 - 26 μ wide, radial walls thin, radial and transverse walls with highly irregular thickenings, occasionally appearing as an anastomosing network of thickenings, exposed wall finely papillose. Spores light yellow-brown in color, irregularly ovoid, finely papillose, surface with irregularly placed, hemispherical thickenings projecting inward, in surface view appearing circular, the circular areas coarsely papillose, 52-64 μ long, 35-46 μ wide. Elaters attached to inner valve surface, dilated at the free end, unispiral, spirals red-brown, 9.1 - 10.4 μ wide.

Frullania pseudolobulata is a distinctive species with its closest relative appearing to be F. lobulata. The taxa share the following characters: a) small plant size with wire-like stems, b) dorsal lobes acute, c) slightly obovate lobules which only slightly narrow toward the mouth, d) lobules with a single conspicuous papilla positioned immediately above the lateral slit, e) styli small and narrow and composed of a relatively few number of cells and f) styli terminated by a unicellular row of 2 cells, the terminal cell of which is a slime papilla which eventually collapses.

Frullania pseudolobulata differs from F. lobulata in the following characters: a) plants monoecious, b) perianth beak straight and not at all expanded, c) underleaves usually as wide as or slightly wider than the stem, d) lobules smaller in proportion to the dorsal lobes, and e) plants saxicolous. Frullania lobulata on the other hand is characterized by (a) dioicous plants, (b) perianth beak expanded at the mouth, (c) underleaves (2.0-) 2.3 - 3.0 times the stem width, (d) lobules very large in proportion to the dorsal lobes and (e) plants corticolous.

Frullania magellanica, which is monoecious, should offer no confusion with F. pseudolobulata as the former has dorsal lobes usually broadly rounded, underleaves 1.5 - 2.0 times the stem width, no lobule papillae, and large styli, the terminal 2 cell rows of which are composed of 3 - 6 cells.

Ecology: This taxon is rare in the Falklands, where it occurred on rock walls and crevices of outcrops in dwarf shrub heaths (of 180 and 320 m.).

Phytogeography: This species is known only from the Falklands and southern Patagonian Channels (Brunswick Peninsula).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3187 A, 3192 B). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3144).

PLATE 9

Frullania pseudolobulata. Fig. 1. Portion of plant with perianth and androecia, ventral view, X 43. Fig. 2. Median leaf cells from dorsal lobe of main axis, X 530. Fig. 3. Leaf from main axis, dorsal view, X 105. Fig. 4. Leaf from main axis, ventral view, X 105. Fig. 5. Leaf lobule and stylus, ventral view, X 530. Fig. 6. Leaf lobule from main axis, lateral view, X 205. 7. Papilla of lobule, X 530. Fig. 8. Tip cell of stylus, X 530. Fig. 9. Tip cells of styli, showing a progressive series of collapse of slime papilla, A- from near axis apex, B through D- further distant from plant apex, X 530. Fig. 10. Stem, cross section, X 205. Fig. 11. Cortical cells, surface view, X 530. Figs. 1-6, 8, 10 from holotype material, Engel 6050, Chile, Prov. Magallanes, Pto. Gallant. Figs. 7, 9 from Engel 3144, West Falklands, Port Howard, Freezer Rocks. Fig. 11 from Engel 6075, Chile, Prov. Magallanes, Pto. Gallant.

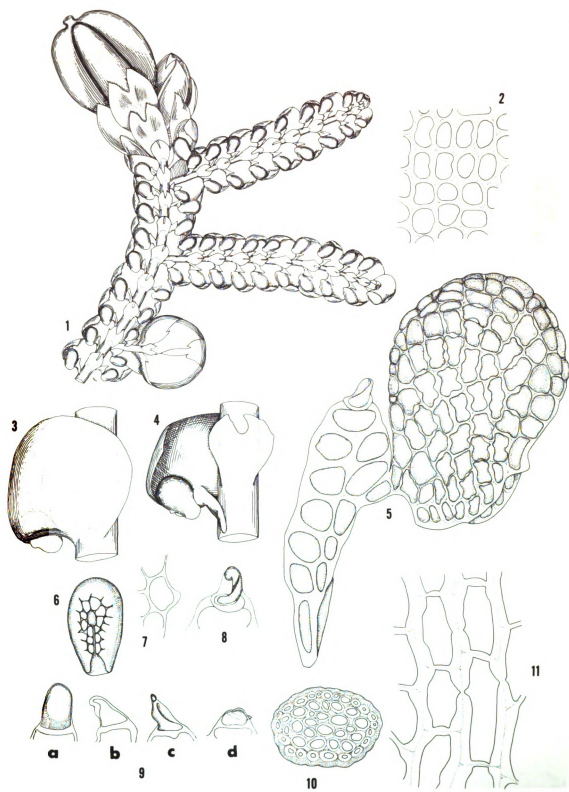
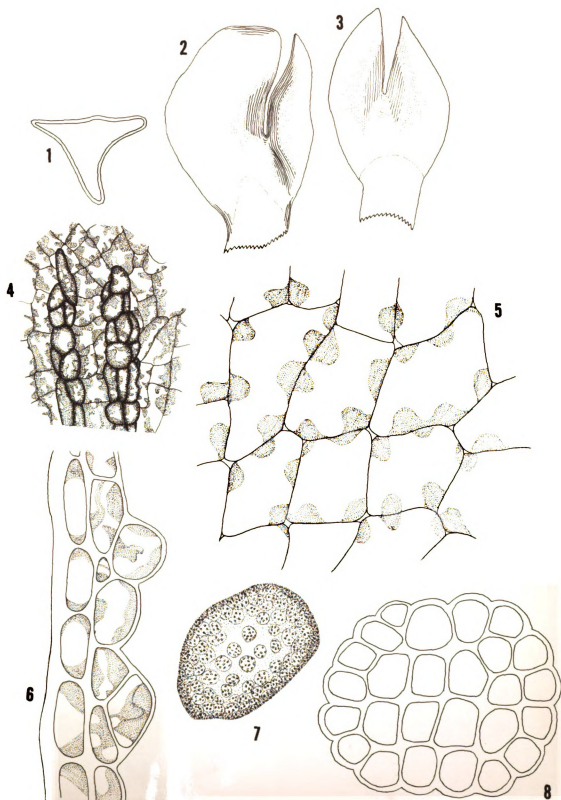


PLATE 10

Frullania pseudolobulata. Fig. 1. Perianth, cross section through middle, X 43. Fig. 2. Bract from innermost series, A-area with enlarged, colorless cells, X 80. Fig. 3. Bracteole from innermost series, A-area with enlarged, colorless cells, X 80. Fig. 4. Inner cells of capsule wall showing two ridges, semidiagramatic, X 205. Fig. 5. Outer cells of capsule wall, X 530. Fig. 6. Capsule wall, cross section, semidiagramatic, X 530. Fig. 7. Spore, X 530. Fig. 8. Seta, cross section, X 205. Figs. 1-3 from holotype material, Engel 6050, Chile, Prov. Magallanes, Pto. Gallant. Figs. 4-6, 8 from Engel 3187, East Falklands, Stanley, Outcrops along Goat Ridge. Fig. 7. from Engel 3144, West Falklands, Port Howard, Freezer Rocks.



Frullania Species Excluded from the Falklands

Frullania cognata Lindenb. This species was described for a Mertens collection from "Insulis Marianis" (Mariana Islands). Stephani (Sp. Hep. 4: 588. 1911) stated for the locality "Falklands (sic.) Insulae (olim Marianae)" and on the basis of this report Kühnemann (1937, 1949) and Bonner (1965) reported the species for the Falklands.

Frullania lagenifera Schwaegr. I have not seen the original reference, but Bonner (1965) states the type of this species was collected in Ins. Marianae by Gaudichaud. Stephani (Sp. Hep. 4: 430. 1910) states for the locality of F. lagenifera, "Falklands Insulae (Insulae Marianae olim)," and in doing so, again confused the Mariana Islands with the Falklands. Kühnemann (1937, 1949) reported the species from the Falklands in his catalogues.

Frullania lobulata (Hook.) Dum. This taxon has been reported for the Falklands by Taylor and Hooker (1847b as Jungermannia). I have been unable to locate a Falkland specimen of this taxon collected by Hooker (or anyone else), other than one in the Taylor herbarium (FH) labeled "Jungermannia hirsuta (= Lepicolea ochroleuca) with a Frullania allied to Jung. lobulata Hook." I am excluding this species from the Falklands as (a) the above specimen is probably the one on which the record is based, and this specimen is actually F. boveana, and (b) based upon personal

field experience with F. lobulata, this species is restricted to tree bark (a habitat not available in the Falklands) in the rain forests of the Magellanian region.

Frullania mertensiana Lindenb. This species was described for a Mertens collection from "Insulis Marianis (Mariana Islands) s. Carolinis." Stephani (Sp. Hep. 4: 664. 1911) again confused the Marianas with the Falklands when he reported F. mertensiana from the latter locality, and Kühnemann (1937, 1949) and Bonner (1965) based their Falkland reports of the species on Stephani.

Frullania patentiloba Steph. This species was reported for the Falklands by Stephani (Sp. Hep., 1911), Kühnemann (1949) and Bonner (1965). I have examined the specimen on which the Falkland record of Frullania patentiloba is based and it is a specimen of F. boveana. The Falkland specimen had young gonoecia.

LEJEUNEACEAE

Cavers, New Phytol. 9 (8-9): 291. 1910.

Cheilolejeunea

(Spruce) Steph. Hedwigia 29: 80. 1890.¹

Cheilolejeunea savatieriana (Besch. & Mass.) Engel, comb. nov.

Lejeunea Savatieriana Besch. & Mass. Bull. Mens. Soc. Linn. Paris

1 (80): 638. 1886. Harpalejeunea savatieriana (Besch. & Mass.)

Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 29. 1890.

Strepsilejeunea savatieri (sic.) (Besch. & Mass.) Steph. K.

Svenska VetenskAkad. Handl. 46 (9): 87. 1911. Original

material: Chile, Prov. Aisen, Pen. Tres Montes, Pto. Barroso,

Savatier (non vidi).

¹For the effective transfer date of Cheilolejeunea and Harpalejeunea I have followed the treatment of Bonner et al. (1961). These authors state that the two genera were transferred by Stephani (1890) and apply Article 39, clause 3 of the 1954 International Code to support their arguments. However, it may be argued that Stephani (loc. cit.) was himself uncertain if subgenera or genera should be applied to the subgenera described in Spruce (1884-85). See particularly the introduction (p. 1) of Stephani. Schiffner (1895) has clearly used Cheilolejeunea and Harpalejeunea as genera, and Schuster (1963a, b) accredits Schiffner as the transferring author of both these genera.

Taxonomical remarks: I am following the treatment of Schuster (1963 a, 1963b) in the broad delimitation of the Cheilolejeunea-Strepsilejeunea complex, the latter being treated as a subgenus of Cheilolejeunea.

The Falkland plants agree well with the original description of C. savatieriana (Bescherelle and Massalongo, 1886) and the figures in Bescherelle and Massalongo (1889), with the exception that the Falkland plants have perianth mouths with short beaks, while the apices of the original plants are described as ". . . inter angulos sub apice obliterations fere depresso-quinquefoveolata" As the beaks are hyaline and quite easily severed from the plants, a search for these structures in the type specimen is necessary.

Ecology: This species was collected only above 180 m. in the Falklands, where it was gathered on rock in dwarf shrub heaths. It is of rare occurrence on soil in Cortaderia heaths and in crevices and under rock cover of sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands, and north in Patagonian Channels to the southern portion of the Valdivian region (Pto. Barroso - 46° 49' S.).

Literature Records: TIERRA DEL FUEGO: J. B. Hatcher - Ens. Villarino (Evans 1898 as Lejeunea); Naumann - B. Tuesday (Schiffner 1890 as Harpalejeunea). PATAGONIA: Anonymous (Stephani 1913 as Strepsilejeunea); Savatier - Pto. Barroso (Bescherelle & Massalongo 1889 as Lejeunea); Skottsberg & Halle - Canal Gajardo, Pto. Pomar (Stephani 1911 as Strepsilejeunea).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Goat Ridge, c. 180 m. (3187 C); summit ridge of north peak of Two Sisters, 245-290 m. (2732 C). WEST FALKLANDS: MT. ADAM, east side of summit ridge, 670-700 m. (3019 B & 3020 A - c. sporo. + o→); east slope of main peak, c. 610 m. (3005). HILL COVE REGION, summit of East French Peak, 305 m. (2968 B-c. per. + o→). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 320 m. (3355 C).

Harpalejeunea

(Spruce) Steph. Hedwigia 29: 70. 1890.¹ Lejeunea subsp. Harpalejeunea
Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 76, 164. 1884.

Harpalejeunea marginalis (Hook. f. & Tayl.) Steph.

Jungermannia marginalis Hook. f. & Tayl. London Jour. Bot. 4: 91.

1845. Lejeunea marginalis (Hook. f. & Tayl.) G. L. & N. Syn.

Hep. 345. 1845. Harpalejeunea marginalis (Hook. f. & Tayl.)

Steph. Sp. Hep. 5: 271. 1913. Original material: Chile, Prov.

Magallanes, Cabo de Hornos, "on Sphaerophous coralloides," Hooker
s.n. (FH !).

Taxonomical remarks: Harpalejeunea marginalis is very closely related to H. parasitica. Harpalejeunea marginalis, which appears otherwise identical to H. parasitica, differs in possessing leaves

¹See footnote under Cheilolejeunea.

which are usually entire, but leaves with crenulated- ± denticulated margins may be of sporadic occurrence. Hooker and Taylor (1844), in the original description of Jungermannia parasitica state the leaves are entire. I have studied some of the original material (FH) and found the leaves to be sparingly to densely denticulate on the dorsal margins and only occasionally irregularly crenulated. Very rarely are the leaf margins entire. The ventral leaf margins are ± irregularly crenulated.

On the basis of the material I have studied, H. parasitica and H. marginalis appear to be distinct. More collections, however, must be studied before a definite statement can be made regarding the variability of the leaf margin armature in this pair of species.

Ecology: This species was gathered in crevices of rock outcrops in dwarf shrub heaths above 245 m. It commonly occurs intermixed with other plants, as Cephalolobus scabrellus, Adelanthus tenuis, Frullania boveana and Serpylloopsis caespitosa.

Phytogeography: This species is known from the Falklands and Tierra del Fuego (Cabo de Hornos).

Literature Records: TIERRA DEL FUEGO: Anonymous - Cabo de Hornos (Stephani 1913); Hooker - Cabo de Hornos (G. L. & N. 1845 as Lejeunea).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2738); summit of Mt. Kent, 455 m. (2769 B). WEST FALKLANDS: FOX BAY REGION, summit of Fox Bay Mt., 307 m. (3453 C, 3455). WEDDELL ISLAND: November 1907 Halle & Skottsberg 342 as H. subfenestrata (UPS).

Lejeunea

Lib.¹ Annls Gen. Sci. Phys. 6: 372. 1820.

Lejeunea corralensis Evans

Lejeunea corralensis Evans, Annls Bryol. 3: 86. 1930. Original material: Chile, Prov. Valdivia, Corral, Thaxter s.n. (non vidi).

Taxonomical remarks: The genus Lejeunea is represented in the Falklands by two collections. The plants agree quite well with the description and figures of L. corralensis in Evans (1930b), however, there are minor and perhaps significant differences. The Falkland plants have leaf apices $\pm$ narrowing to a broadly rounded apex, only occasionally are narrowly rounded, and are frequently without a tapering toward the apex. Evans describes the leaf apices as "distinctly narrowed at the rounded to obtuse apex." Further, the Falkland plants have trigones small or absent and intermediate cell wall thickenings while Evans states the cells of the species have "very indistinct trigones, an occasional intermediate thickening." The Falkland plants have median lobe cells 22-34 μ long and 20-29 μ wide, while those of the type, according to Evans, average 14 X 11 μ . The Falkland plants are unfortunately sterile. The type of L. corralensis is monoecious and possesses mature perianths.

¹For details of the typification of Lejeunea, see Bonner and Miller (1960).

Lejeunea corralensis is apparently described from a single collection and, as above stated, the species was collected but twice in the Falklands. It is necessary to study a large number of specimens of the species in order to properly assess its variation, especially with regard to the leaf apex and cell size and wall differences.

Ecology: This species is apparently very rare in the Falklands, where it was encountered on rock and in rock crevices of a stone run in a Cortaderia heath, c. 90 m.

Phytogeography: This species, known previously only from the type, occurs in the Falkland Islands and Valdivian region (39° 52' S., 73° 26' W.).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, below The Gap, c. 90 m. (2582, 2587).

Lejeuneaceae Species Excluded from Falklands

Archilejeunea bongardii Steph. Stephani (Sp. Hep. 4: 711. 1911) in his treatment of Archilejeunea bongardii, listed for the distribution "Falklands Insulae (vol Insulae Mariana).\" This is another example of Stephani's confusing the localities Falkland Islands (= Islas Malvinas or Iles Malouines) with the Mariana Islands. Kühnemenn (1937 and 1949) included the species from the Falklands in his catalogues. Archilejeunea bongardii was described by Stephani (1890) for a specimen collected by Bongard in the Mariana Islands.

Caudalejeunea recurvistipula (Gott.) Steph. This species was described for a Mertens collection from "Ins. Marianis (Mariana Islands) vel Carolinis." Stephani (Sp. Hep. 5: 15. 1912) reported the species from the Falklands (= Iles Malouines or Islas Malvinas).

Harpalejeunea subfenestrata (Mass.) Steph. Harpalejeunea subfenestrata is here treated as a synonym of H. parasitica (Hook. f. & Tayl.) Steph. I have examined a small portion of the original material of H. subfenestrata (Isla de los Estados, leg. Spegazzini, hb. G), and the leaf lobes, as in H. parasitica, are strongly crenulate-dentate, especially on the dorsal margins. The Falkland record of this taxon is based upon a specimen which is actually H. marginalis.

D. Order Metzgeriales: Key to the Genera
of the Falkland Islands¹

1. Plants with distinct, free, succubous lateral leaves.
Antheridia sunken in small cavities on upper surface
of axis; pseudoperianth tubular, contracted towards
the mouth. Noteroclada
1. Plants thallose, without leaf-like lateral lobes 2

¹Adapted and modified from Schuster (1963a) with notes from Hewson (1970); see also Schuster (1964b).

2. Sex organs dorsal on main thallus, neither lateral on small branches, nor on small ventral branches or in ventral masses. 3
2. Sex organs either lateral or ventral on extremely reduced branches, then seemingly sessile on ventral side of costa. 5
3. Each archegonial cluster subtended by a $\pm$ laciniate, scale-like involucre and with free involucral margins directed forward (not tubular or cup like); pseudo-perianth not developed after fertilization; shoot calyptra massive Symphyogyna
3. Each archegonial cluster surrounded by a short tubular or cup-like involucre (not scale or sack-like); long tubular pseudoperianth developed after fertilization; shoot calyptra short 4
4. Plants prostrate, usually without terminal branches, rarely 1 furcate; spores usually aerolate Pallavacinia
4. Plants erect and dendroid, from a slender stipe, repeatedly dichotomous at maturity; spores tuberculate. Jensenia
5. Thalli with a well-defined costa; sex organs ventral on the main thallus. Thallus of a unistratose frond and a sharply defined, narrow costa. Metzgeria

5. Thalli without a costa; sex organs lateral on the thallus, never ventral 6
6. Thallus usually narrow, thin (0.05-) 0.5-2 (-4) mm. wide, copiously divided, normally regularly or irregularly (1-) 2-4 pinnate, gemmae endogenous, often produced; oil bodies 1-15, large (2 X 3-12 X 150 μ), granulate, in some or all epidermal cells; sex organs on well defined lateral branches; capsule wall of Riccardia type, seta 4 cells in diameter . . Riccardia
6. Thallus flat, strongly thallose, thick, rigid, (1.5-) 2-6 (-12) mm. broad, not or regularly 1-2 pinnate; gemmae unknown (apparently rare or virtually absent; exogenous in only species known); oil bodies 1-40 +, small (1.5 X 2-15 X 20 μ), in all epidermal cells; gynoecia situated in small, lateral notches of thallus, only androecia on branches; capsule wall of Trichostylium or Lobatiriccardia type; seta massive, 8-16 cells in diameter Aneura

DILAENACEAE

Buch, Suomen Makasammalet 16 & 41. 1936.

Jensenia

Lindb. Notis. Sällsk. Faun. Flora Fenn. Förh. 9: 13. 1868.

Jensenia pisicolor (Hook. f. & Tayl.) Grolle

Jungermannia pisicolor Hook. f. & Tayl. London Jour. Bot. 3: 478.

1844. Blyttia pisicolor (Hook. f. & Tayl.) Nees in G. L. & N.

Syn. Hep. 478. 1846. Steetzia pisicolor (Hook. f. & Tayl.)

Mitt. in Hook. f. Bot. Ant. Voy. 3 (2): 238. 1859. Palla-

vicinia pisicolor (Hook. f. & Tayl.) Trev. Memorie Ist. Lomb.

Sci. Lett. III. 4: 427. 1877. Makednothallus pisicolor (Hook.

f. & Tayl.) Schust. J. Hattori Bot. Lab. 26: 292. 1963.

Jensenia pisicolor (Hook. f. & Tayl) Grolle, Revue Bryol.

Lichén. 33 (1-2): 228. 1964. Original material: Chile, Prov.

Magallanes, Cabo de Hornos, Hooker s.n. (non vidi).

Symphyogyna crassifrons Sull. Hooker's J. Bot. Kew Gdn Misc. 2: 317.

1850, syn. fide Hässel de Menendez (1961b). Original material:

Chile, Prov. Magallanes, B. Orange, U. S. Exploring Exped. s.n.

(non vidi)

Pallavicinius crassifrons Steph. Bih. K. Svenska VetenskAkad. Handl.

26 (III, 6): 20. 1900. Bull. Herb. Boissier I. 8 (11): 21.

April 1900 (= Sp. Hep. 1: 325), syn. fide Hässel de Menendez

(1961b). Makednothallus crassifrons (Steph.) Schust. J. Hattori

Bot. Lab. 26: 292. 1963. Original material: Chile, Prov.

Magallanes, Pto. Bueno, May 1896 Dusén 37 (S-PA) - cited in

Hässel de Menendez (1961b).

Pallavicinius subflabellatus Besch. in Steph. Bull. Herb. Boissier

8 (11): 22. 1900, syn. fide Hässel de Menendez (1961b). Maked-

nothallus subflabellatus (Besch. in Steph.) Schust. J. Hattori

Bot. Lab. 26: 292. 1963. Original material: Chile, Prov.

Magallanes, Pto. Bueno, May 1896 Dusén 37 (G) - cited in Hässel

de Menendez (1961b).

Symphyogyna campanulata Mass. & Steph. in Mass. Atti Ist. Veneto Sci.

87: 237. 1927, syn. fide Hässel de Menendez (1961b). Original

material: Chile, Prov. Magallanes, I. Chair & I. Basket, June

1882 Spegazzini 209 (LPS) - cited in Hässel de Menendez (1961b).

Symphyogyna tristaniana S. Arnell, Results Norw. Scient. Exped.

Tristan da Cunha no. 42: 33. f. 29. 1958, syn. fide Hässel

(1961b). Original material: Tristan da Cunha, Upper Road,

above Rookery, 600 m., Christophersen & Mejland (S-PA) - cited

in Hässel de Menendez (1961b).

Taxonomical remarks: See Grolle (1964d) for a discussion of the nomenclature of the genus. Grolle also provides a key to the species of Jensenia.

Ecology: This species is of rare occurrence in the Falklands, where it was encountered only above 575 m. in wet depressions of Cortaderia heaths, stream banks of dwarf shrub heaths and on soil of sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, Patagonian Channels, and it reaches its northerly point at 41° 02' S. in P. N. Nahuel Huapi (Andean Patagonia). It also occurs in Tristan da Cunha and Kerguelen. The report from Tasmania in Mitten (1860) is doubtful (see May 56).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Pallavacinia pisicolor & Symphyogyna crassifrons); Skottsberg - Mt. Adam (Skottsberg 1913 as S. crassifrons), Halfway Cove (Skottsberg 1913); Skottsberg & Halle - Mt. Adam (Hässel de Menendez 1961b, Stephani 1911 as S. crassifrons), Halfway Cove (Stephani 1911).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous (Kühnemann 1937 & 1949 as S. crassifrons); Dusén - R. Azopardo, Pto. Angosto (Hässel de Menendez 1961b, Stephani 1901a as S. crassifrons), I. 'Desolacion (Stephani 1900 as Pallavacinius subflabellatus); Hooker - I, Hermite and/or Cabo de Hornos (G. L. & N. 1846 as Blyttia, Taylor and Hooker 1847b as Jungermannia); Hyades - I. Hoste (Bescherelle & Massalonga 1889 as S. crassifrons, Hässel de Menendez 1961b); Tierra del Fuego (Stephani 1900 as S. crassifrons); Skottsberg & Halle - L. Fagnano (Stephani 1911 as S. crassifrons); Spegazzini - I. Basket & I. Chair (Hässel de Menéndez 1961b). PATAGONIA: Dusén - Pto. Bueno (Hässel de Menendez 1961b); Hässel - Puerto Blest (Hässel 1961);

Savatier - Strait of Magellan (Stephani 1900 as Pallavacinius subflabellatus); Schwabe - C. Tesoro (Herzog 1954 as S. crassifrons). TRISTAN DA CUNHA: Christophersen & Mejland (Hässel de Menendez 1961b); Wace - Soggy Plain - 740 m. (Arnell 1958 as S. tristaniana). KERGUELEN: Anonymous - (Stephani 1900 as P. crassifrons); Urbansky (Hässel de Menendez 1961b); Werth, Urbansky (Schiffner 1907 as P. crassifrons). TASMANIA: Gunn - Yorktown Rivulet, St. Patrick's River (Mitten 1860 as Steetzia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3166-c. young ♀). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3101 B-c. young ♀). MT. ADAM, basin east of summit, 580-595 m. (2997-c. young ♀).

Noteroclada

Tayl. ex Hook. & Wils. London Jour. Bot. 3: 166. 1844.

Noteroclada confluens Tayl.

Noteroclada confluens Tayl. in Hook. & Wils. London Jour. Bot. 3: 166.

1844. Jungermannia confluens (Tayl.) Hook. f. & Tayl. London Jour. Bot. 3: 478. 1844. Androcryphia confluens (Tayl.) Nees in G. L. & N. Syn. Hep. 471. 1846. Heteroclada confluens (Tayl.) K. Müll. (Freib.) Feddes Repert. Spec. Nov. Regni Veg. 58: 66.

1955, nom. illeg. Original material: Brazil, S. des Organos,
Gardner s.n. (FH - cited in Proskauer, 1955, NY! - c. sporo.).

Noteroclada leucorhiza Spruce, Trans. Proc. Bot. Soc. Edinb. 15: 530.

1885, syn. fide Evans (1930a). Original material: Andes Quitensis,
 Mt. Altar, 3000 m., Spruce s.n. (non vidi).

Taxonomical remarks: Several Falkland Islands plants are extremely large in size. However, within these collections there is some degree of variation in size. Proskauer (1955, p. 197) states, "Should there be after all a species characterized by larger size the name N. leucorhiza Spruce would be available for it."

Ecology: In the Falklands, this taxon seems to be restricted to soil and rocks of Cortaderia and dwarf shrub stream banks, especially under cover of Gunnera magellanica.

Phytogeography: This Andean South American species occur in the Falklands, Tierra del Fuego, Patagonian Channels (Brunswick Peninsula and at 44° 19' S.), Valdivian region (West Patagonia north to 39° 38' S., Andean Patagonia at P. N. Nahuel Huapi), and Juan Fernandez. It is disjunct in the Bolivian Andes (1800 m.), Brazil and (?) Kerguelen.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as Androcryphia); Hooker (Hooker & Taylor 1844 and Taylor & Hooker 1847b as Jungermannia); Skottsberg - Port Williams, Sparrow Cove, Port Philomel, Roy Cove & Port Howard (Stephani 1911 as Androcryphia), Sparrow Cove, Port Philomel, Roy Cove & Port Howard (Skottsberg 1913 as Androcryphia).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as Androcryphia); Dusén - R. Azopardo & R. Grande (Stephani 1901a as Androcryphia); Hooker - I. Hermite (Taylor & Hooker 1847b as Jungermannia); Racovitza - I. Clarence (actually I. Capitan Arecena) (Stephani 1901b as Androcryphia); Skottsberg - Ushuaia - R. Olivia (Stephani 1905a as Androcryphia); Skottsberg & Halle - R. Fontaine (Stephani 1911). PATAGONIA: Donat - R. Limay & Los Quilquiles (Herzog 1957 as Androcryphia); Dusén - Punta Arenas (Stephani 1901a as Androcryphia), Corral & Puerto Montt (Stephani 1900 as Androcryphia); Hollermayer - Panguipulli (Reimers 1926 as Androcryphia); Proskauer - Quitaluto (Corral) (Proskauer 1950); Savatier - Punta Arenas (Bescherelle & Massalongo 1889); Schwabe - Pto. Puyuhuapi - R. Ventisquero (Herzog 1954 as Androcryphia), Calbuco & La Vega (Herzog 1939 as Androcryphia); Skottsberg & Halle - near R. Carbon (Stephani 1911 Androcryphia). JUAN FERNANDEZ: Skottsberg (Espinosa 1940), Masafuera, Camp Correspondencia (Evans 1930a). BRAZIL: Dusén - S. do Itatiaia - 800-1000 m. (Stephani 1905b as Androcryphia); Gardner - S. des Organõs (Hooker & Taylor 1844 as Jungermannia, Proskauer 1955); Glaziou - Riode Janeiro (Spruce 1888); Puiggari - near Apiahy (Schiffner 1964); Schiffner - R. Blanco - 20-100 m., Alto da Serra - 900 m., nea São Paulo - 800 m., Apiahy - 1100 m., near Lagoas - ca. 800 m. (Schiffner 1964). KERGUELEN: Hooker (Hooker & Taylor 1844 and Taylor & Hooker 1847b as Jungermannia).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker s.n. (MICH, NY). STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m.

(3161, 3163 & 3186). MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2668). WEST FALKLANDS: FOX BAY REGION, near mouth of Cheeks' Creek, c. 12 m. (3480, 3490 & 3491); valley east of Sullivan House, c. 75 m. (3523).

ADDITIONAL SPECIMENS SEEN: ARGENTINA. TIERRA DEL FUEGO: B. Slogget, 29 March 1900 Brown 11h (NY). CHILE. MAGALLANES: Ens. Villarino, J. B. Hatcher 49 as N. porphyrorhiza (NY). VALDIVIA: Corral, June 1896 Dusen 103 as N. leucorhiza (NY). Province unknown, Patagonia, J. B. Hatcher (MICH); southern Chile, Gay s.n. as Pellia epiphylla (NY-c. sporo.). JUAN FERNANDEZ. MAS AFUERA: Near Camp Correspondencia, 5 March 1917 Skottsberg 101 (NY). BOLIVIA: Apolo, 18 July 1902 Williams 2234 (MICH), May 1911 Herzog 4173, 1800 m. (MICH).

Noteroclada Species Excluded from Falklands

Noteroclada porphyrorhiza (Nees) Mitt. Hooker (1867) reported Noteroclada porphyrorhiza from the Falkland Islands. As pointed out by Proskauer (1955), Noteroclada porphyrorhiza (Nees) Mitt. is a synonym of Fossombronia porphyrorhiza (Nees) Prosk. of Brazil. The Falkland report was based on previous reports of N. confluens from the Falklands, as Hooker (loc. cit.) includes N. confluens as a synonym and includes Hooker & Taylor (1844, p. 478) and Taylor and Hooker (1847b) as references. I have seen Hooker collected specimens of N. confluens from

MICH and NY labeled Noterclada confluens, Falkland Islands, which are a part of a Hooker collection on which the report of N. porphyrorhiza was made.

Pallavicinia

S. F. Gray, Nat. Arr. Brit. Pl. 1: 775. 1821 (Pallavicinius), corr.
Trev. R. Ist. Lombardo Sci. Lett. Rend. II. 7: 785. 1874.

Pallavicinia xiphoides (Hook. f. & Tayl.) Trev.

Jungermannia xiphoides Hook. f. & Tayl. London Jour. Bot. 3: 569.

1844. Blyttia xiphoides (Hook. f. & Tayl.) G. L. & N. Syn. Hep.

476. 1846. Steetzia xiphoides (Hook. f. & Tayl.) Mitt. in Hook.

f. Bot. Ant. Voy. 2 (2): 165. 1855. Pallavicinia xiphoides

(Hook. f. & Tayl) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 427.

1877. Original material: New Zealand, ex hb. Lehmann, 1843

Hooker s.n. (S-PA) - cited in Hässel de Menendez (1961b).

Pallavicinia falklandica Steph. K. Svenska VetenskAkad Handl. 46 (9):

14. f. 3 b. 1911, syn. fide Hässel de Menendez (1961b). Ori-

ginal material: Falkland Is., Roy Cove, 1907 Halle & Skottsberg

179, 361 (G! S-PA!).

Ecology: This species usually grows on stream banks, especially under cover, in Cortaderia and dwarf shrub heaths not above 75 m.

Phytogeography: This amphipacific temperate species occurs in the Falklands, southern South America only in Andean Patagonia (P. N. Nahuel Huapi), Juan Fernandez (200-500 m. where recorded) and New Zealand (see Map 57).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937, 1949 as P. falklandica); Skottsberg and/or Halle (Stephani 1917 as P. falklandica), Roy Cove (Hässel de Menendez 1961b, Skottsberg 1913 as P. falklandica).

Additional Literature Records: PATAGONIA: Hässel de Menendez - Puerto Blest, La. Frias (Hässel de Menendez 1961b); Kühnemann - L. Nahuel Huapi (Hässel de Menendez 1961b). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - Villagra, 400-500 m. (Arnell 1957 & Hässel de Menendez 1961b); Sparre - C. Alto (Arnell 1957). MAS AFUERA: Skottsberg - S. coast, Chorro Dona Maria (Arnell 1957, Hässel de Menendez 1961b); Q. del Mono, 570 m. (Evans 1930, Hässel de Menendez 1961b), Q. de las Casas, 200 m. (Espinosa 1940, Evans 1930, Hässel de Menendez 1961b). NEW ZEALAND. Berggren (Hässel de Menendez 1961b); Hooker (G. L. & N. 1846 as Blyttia, Hässel de Menendez 1961b). SOUTH ISLAND (NEW ZEALAND): Campbell - Franz Josef Glacier (Hodgson 1968); Martin - S. of Hokitika Bridge (Hodgson 1968). NORTH ISLAND: Allison - (Hässel de Menendez 1961b); Colenso - Manawatu River (Mitten 1855 as Steetzia); Greenwood - Mt. Wharite - South Ruahines (Hodgson 1968); Fristedt - ? Whangaroa (Hässel de Menendez 1961b); Hodgson - Mangahao Dams - Tararua Range (Hodgson 1968), Hooker - Bay of Islands (Mitten 1855).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3159-c. young ♀, 3170-c. young ♀, 3179-c. ♂, & 3184). MT. USBORNE REGION, base of Cantera Mt., c. 90 m. (2593 A-c. young ♀); southwest of Mt. Usborne, c. 60 m. (2648 B-c. ♂, 2658, 2665, & 2671). DARWIN SETTLEMENT, near mouth of Ceritos arroyo (2679-c. pseudoper.). WEST FALKLANDS: FOX BAY REGION, near mouth of Cheeks' Creek, c. 12 m. (3481-c. ♂ & 3483); north base of Fox Bay Mt., 75 m. (3461-c. pseudoper., 3463 c. young ♀ & 3467-c. young ♀); valley east of Sullivan House, c. 75 m. (3526-c. pseudoper. & 3527-c. ♂). WESTPOINT ISLAND, near The Waterfall, 39-90 m. (2847).

Symphyogyna

Nees & Mont. Annls Sci. Nat. II. 5: 66. 1836.

Key to the Falkland Island Species of Symphyogyna

1. Plants ribbon like, branched 1 to several times, apex procumbent or erect; margins with muscillaginous papillae (especially towards the apex), margins lobed, the lobes triangular to rounded and with a tooth . . . S. hochstetteri
1. Plants flabellated, dendroid, erect; margins without muscillaginous papillae, margins dentate, never lobed. S. hymenophyllum

Symphyogyna hochstetteri Nees & Mont.

Symphyogyna hochstetteri Nees & Mont. *Annls Sci. Nat.* II. 5: 68. 1835.

Original material: Juan Fernandez, ex hb. Lehmann & Mitten, 1830

Bertero s.n. (S-PA, NY) - cited in Evans (1925).

Ecology: This species is apparently very rare in the Falklands, where it was collected in a dwarf shrub heath on a stream bank under Gunnera magellanica cover.

Phytogeography: I have regarded this species as a Valdivian taxon. It occurs in the Falklands and is disjunct in Juan Fernandez (rather common on both Mas a Tierra and Mas Afuera from 250-900 .), as well as in the cool caves of Cumberland Bay. Hässel de Menendez (1961a) states the species does not occur on the continent of South America. The report from Andean Patagonia of S. hochstetteri f. simplicior is based upon a misdetermination of S. circinata (fide Hässel 1961a) (see Map 58).

Literature Records (FALKLANDS): Anonymous (Kühnemann 1937, 1949); Kitching (Hässel de Menendez 1961a); Skottsberg and/or Halle - Halfway Cove (Evans 1925, Hässel de Menendez 1961a, Skottsberg 1913, Stephani 1911).

Additional Literature Records: PATAGONIA: Anonymous - L. Nahuel Huapi (Kühnemann 1949); Dusén - Puerto Aisen, Puerto Varas (Stephani 1900); Hollermayer - Panguipulli. Pto. Suavedra - Mission Budi (Reimers 1926); Hosseus - Pucon (Herzog 1938); Neger - western slope of Andes (39° - 39° 30') (Neger 1899); Savatier - southern

Patagonia (Stephani 1900); Schwabe - Pto. Puyuhuapi (Herzog 1939); Skottsberg & Halle - I. Chiloe (Stephani 1911). JUAN FERNANDEZ: Anonymous - (Gay 1852); Bertero (Evans 1925, G. L. & N. 1846, Hässel de Menendez 1961a, Montagne 1846); Moseley (Evans 1925, Hässel de Menendez 1961a, Mitten 1885). MAS AFUERA: Skottsberg - (Espinosa 1940), Q. Blindado - 440 m. (Evans 1930, Hässel de Menendez 1961a), 1000 m. (Stephani 1911). MAS A TIERRA: Bertero (Evans 1930a); Kunkel - summit of El Yunque & Valle Frances-Cordon Chifladores (Arnell 1957, Hässel de Menendez 1961a); Moseley (Evans 1930a); Skottsberg - Q. Damajuana - 248 m., Anson Valley - near Plazoleta - 215 m., Cumberland Bay caves, Q. Gutierrez - 500-550 m. (Espinosa 1940, Evans 1930a); Port Frances - 500 m., El Yunque - n. slope - 400-500 m., Portezuelo - 550 m. (Evans 1930a, Hässel de Menendez 1961a); Cumberland Bay - Pico Central - 390 m. (Evans 1930a); Q. Damajuana, 400-500 m., Villagra - 400-500 m., Cumberland Bay - cave, La. Vaquería (Arnell 1957 & Hässel de Menendez 1961a); Valle Colonial & Portezuelo de Villagra (Arnell 1957). TRISTAN DA CUNHA: Christophersen & Mejland - above Burntwood - 600 m. (Arnell 1958, Hässel de Menendez 1961a).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, headwaters of Mullet Creek Stream, c. 60 m. (3185). MT. USBORNE REGION, below The Gap, c. 90 m. (2574 B).

Symphyogyna hymenophyllum (Hook.) Mont. & Nees

Jungermannia hymenophyllum Hook. Musci Exot. 1: pl. 14. f. 1-4. 1818.

Symphyogyna hymenophyllum (Hook.) Mont. & Nees in G. L. & N. Syn.
Hep. 480. 1846. Original material: New Zealand, Dusky Bay,
Menzies s.n. (S-PA) - cited in Hässel de Menendez (1961a).

Symphyogyna chiloensis Steph. K. Svenska VetenskAkad. Handl. 46 (9):
12. f. 2b. 1911, syn. fide Evans (1930a). Original material:
Chile, Prov. Chiloe, I. Chiloe, Pto. Quellon, 3 July 1908 Halle
317 (S-PA) - cited in Hässel de Menendez (1961a).

Symphyogyna dendroides Steph. K. Svenska VetenskAkad. Handl. 46 (9):
12. f. 2d. 1911, syn. fide Hässel de Menendez (1961a). Lecto-
type (nov.): Falkland Islands, Warrah River, 17 December 1907
Halle & Skottsberg 360 (S-PA !).

Symphyogyna lanceolata Steph. K. Svenska VetenskAkad. Handl. 46 (9):
13. f. 2f. 1911, syn. fide Evans (1930a). Original material:
Juan Fernandez, base of El Yunque, 24 August 1908 Skottsberg 46
(S-PA) - cited in Hässel de Menendez (1961a).

Ecology: This taxon may be found in crevices and under over-
hangs of rock outcrops or more rarely on stream banks in dwarf shrub
heaths. Occasionally it grows under rock ledges or in rock crevices
of sheltered high altitude cliffs.

Phytogeography: This species has an amphipacific distribution,
occurring in the Falklands, Tierra del Fuego (rare), Valdivian region
(West Patagonia north to 39° 48' S., Andean Patagonia in P. N. Nahuel

Huapi, East Patagonia in Prov. Cordoba), Juan Fernandez (400-1150 m.), Tristan da Cunha, Nightingale Island and New Zealand.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as S. dendroides); Halle (Stephani 1917 as S. dendroides); Skottsberg & Halle - Warrah River (Hässel de Menendez 1961a).

Additional Literature Records: TIERRA DEL FUEGO: Spegazzini - I. Basket (Hässel de Menendez 1961a). PATAGONIA: Gunckel - Corral (Hässel de Menendez 1961a); Halle - Pto. Quellon (Hässel de Menendez 1961a); Hässel de Menendez - L. Frias (Hässel de Menendez 1961a, Smith 1966); Hosseus - Prov. Cordoba, Pampa de Achala (Hässel de Menendez 1961a); Krause - Valdivia (Hässel de Menendez 1961a); Perez-Moreau - L. Frias (Hässel de Menendez 1961a); Skottsberg - I. Chiloe (Stephani 1917 as Symphyogyna chiloensis); Sparre - Puyehue (Hässel de Menendez 1961a). JUAN FERNANDEZ. Skottsberg (Espinosa 1940). MAS A TIERRA: Skottsberg (Stephani 1917 as Symphyogyna lanceolata); Kunkel - summit region of El Yunque, ca. 900 m. (Arnell 1957, Hässel de Menendez 1961a), ridge leading to C. Damajuana, ca. 500 m. (Arnell 1957); Skottsberg - Portezuelo - 550 m. (Evans 1930a, Hässel 1961a); C. Salsipuedes - 660 m. (Espinosa 1940, Evans 1930a, Hässel de Menendez 1961a), ridge between Q. Piedra & Q. Laura - 650 m. (Evans 1930a), Q. Damajuana - 400-500 m. (Arnell 1957, Hässel de Menendez 1961a), above Plazeoleta del Yunque & Villagra - 400-500 m. (Arnell 1957), base of El Yunque (Evans 1930a, Hässel de Menendez 1961a). MAS AFUERA: Skottsberg - Camp Correspondencia - 1100-1150 m. (Arnell 1957, Espinosa 1940, Evans 1930a, Hässel de Menendez 1961a), between Camp Correspondencia & Las Torres - 1150 m. (Arnell 1957, Evans 1930a, Hässel de Menendez

1961a). BRAZIL: Glaziou - Rio de Janeiro (Spruce 1888). NIGHTINGALE: Christophersen & Mejland - 250-300 m. (Hassel de Menendez 1961a), 450-475 m. (Arnell 1958). TRISTAN DA CUNHA: Christophersen & Mejland (Hassel de Menendez 1961a), 400-600 m. (Arnell 1958). NEW ZEALAND. STEWART ISLAND: Martin (Martin 1949). SOUTH ISLAND (NEW ZEALAND): Menzies: Dusky Bay (G. L. & N. 1846, Hassel de Menendez 1961a, Hodgson 1968, Mitten 1855). NORTH ISLAND (NEW ZEALAND): Anonymous - (Hooker 1867). Colenso - Ahuriri, Tarawera (Mitten 1855); Hooker - Bay of Islands (Hooker 1867, Mitten 1855); Lyall - Port Cooper (= Lyttelton) (Mitten 1855); Sinclair - Great Barrier Inlet (Mitten 1855). TASMANIA: Anonymous - (Hooker 1867, Rodway 1916), Bastow (Carrington & Pearson 1888). AUSTRALIA. NEW SOUTH WALES: Watts - Lerua Glen (Stephani & Watts 1914).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3226 A-c. o + young ♀). STANLEY REGION, Sapper Hill, 135 m. (2396-c. sporo.); Goat Ridge, c. 180 m. (3191-c. o); summit ridge of north peak of Two Sisters, 245-290 m. (2709). MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2547). WEST FALKLANDS: without specific locality, 1908 Halle 153, syntype of S. dendroides (G). MT. ADAM, east side of summit ridge, 670-700 m. (3013). HILL COVE REGION, summit of West French Peak, 290 m. (2954-c. young ♀). WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2854-c. o + young ♀ & 2862). WEDDELL ISLAND, Waterfall Valley west of settlement, c. 125 m. (3329-c. o + young ♀); summit of peak northeast of Mt. Weddell, 335 m. (3358-c. o & 3359-c. young ♀).

ANEURACEAE

Buch, Suomen Maksasammalet 16. 1936.

Anerua

Dum. Comment. Bot. 115. 1822.

Aneura cfr. pinguis (L.) Dum.

Jungermannia pinguis L. Sp. Pl. 1136. 1753. Riccardia pinguis (L.)

S. Gray, Nat. Arr. Brit. Pl. 1: 684. 1821. Aneura pinguis
(L.) Dum. Comment. Bot. 115. 1822. Original material: "in
Europae paludibus," sin. coll. (non vidi).

Taxonomical remarks: Dr. Hässel de Menendez (in litt.) informs me that the following specimens is an Aneura, but she "cannot now tell if it belongs to (A.) pinguis": number 335, Falkland Islands, near Port Stanley (UPS).

Phytogeography: This species has a widespread distribution, but the austral reports require confirmation. Evans (1921, p. 198) states, "Since R. pinguis is almost cosmopolitan in its distribution its occurrence in Chile would not be surprising, and it is possible that some of the records are correct." In southern South America, it has been reported from the Magellanian region but not the Valdivian.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937); Skottsberg and/or Halle - Port Stanley (Skottsberg 1913, Stephani 1911); Port Louis (Skottsberg 1913, Stephani 1905).

Additional Literature Records: TIERRA DEL FUEGO: Hariot - Cabo de Hornos (Bescherelle and Massalongo 1889); Hooker - I. Hermite and/or Cabo de Hornos (G. L. & N. 1846, Hooker and Taylor 1844 and Taylor and Hooker 1847b as Jungermannia); Santesson - Ushuaia (Müller 1955).

Riccardia

S. F. Gray, Nat. Arr. Brit. Pl. 1: 679, 683. 1821 (Riccardius), corr.
Trev. R. Ist. Lombardo Sci. Lett. Rend. II. 7: 785. 1874.

Key to the Falkland Island Species of Riccardia¹

1. Thallus covered with conical projecting cells. . . . R. prehensilis
1. Thallus without projecting epidermal cells 2
 2. Thallus band shaped. 3
 2. Thallus thread shaped, the axis and branches of
equal width. 9
3. Cuticle rough. R. granulata
3. Cuticle smooth 4

¹Key prepared by Dr. Hässel de Menendez; I have made only very minor alterations.

4. Plants monoecious. 5
4. Plants dioicous. 6
5. Thallus 7-8 cells thick, with a ventral, subepidermal,
central strip of isodiametric cells and a ventral,
epidermal strip of elongated, often collapsed cells
. R. georgiensis
5. Thallus 5 cells thick, without ventral strip R. regularis
6. Axis like the branches, the branches simple; cells
stratified, in section with 2 ventral layers of
cells which are small in diameter; male branches
with allantoid cells on dorsal surface 7
6. Axis conspicuous, unlike the branches, which are
pinnate-bipinnate and tapering; cells not strat-
ified; male branches without allantoid cells 8
7. Dorsal epidermal and inner cells of equal diameter
. R. opuntiformis
7. Dorsal epidermal cells narrower than inner cells
. R. pallidevirens
8. Branches 1.7-3 mm. apart, with endophytic
hyphae; dorsal papillae present. R. spectabilis
8. Branches 0.5-1.5 mm. apart, without endophytic
hyphae; dorsal papillae absent R. tenax

9. Axis more than 9 cells thick, surrounded by 2 layers of
small cells. R. papillosa
9. Axis less than 9 cells thick, not surrounded 2 layers
of smaller cells 10
10. Plants erect, thallus canaliculate, tips
emarginate R. saxicola
10. Plants procumbent, thallus not canaliculate,
tips obtuse. 11
11. Epidermal cells oriented in direction of growth,
papillae present only on ventral surface of apices;
plants dioicous; plants green or pale brownish . . R. fuscobrunnea
11. Epidermal cells not regularly oriented, both dorsal
and ventral papillae present at apices; plants
monoecious; plants green or brownish R. alcicornis

Riccardia alcicornis (Hook. f. & Tayl.) Trev.

Jungermannia alcicornia Hook. f. & Tayl. London Jour. Bot. 3: 479.

1844. Aneura alcicornis (Hook. f. & Tayl.) G. L. & N. Syn. Hep.

499. 1846. Sarcomitrium alcicorne (Hook. f. & Tayl.) Mitt. in
Hook. f. Bot. Ant. Voy. 3 (2): 240. 1859. Riccardia alcicornis
(Hook. f. & Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 431.

1877. Original material: Chile, Prov. Magallanes, I. Hermite,

Hooker s.n. (NY) - cited in Evans (1921).

Aneura subnigra Steph. K. Svenska VetenskAkad. Handl. 46 (9): 9. f. 1 h. 1911, syn. fide Evans (1921). Original material: Chile, Prov. Magallanes, F. Peel and F. de Los Ventisqueros, Skottsberg & Halle (non vidi).

Ecology: This species was collected but once in the Falklands, on sandy soil in a dwarf shrub heath near sea level.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, the Patagonian Channels and to 41° 46' S. in Valdivian West Patagonia.

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, Bonner 1962); Dusén - Pto. Angosto (Evans 1921); Gasperi - Valle delle Fate (Gola 1923); Hooker - I. Hermite and/or Cabo de Hornos (Evans 1921, G. L. & N. 1846 as Aneura, Hodgson 1962, Taylor & Hooker 1847b as Jungermannia); Roivainen - S. Staples (Arnell 1954), B. Sarmiento (Arnell 1954); Savatier - Fuegia (Stephani 1900 as Aneura); Spegazzini - Fuegia (Massalongo 1927, Stephani 1900 as Aneura). PATAGONIA: Anonymous - Strait of Magellan (Kühnemann 1937, Bonner 1962 as Aneura); Andersson - Pto. del Hambre (Ångstrom 1872 as Jungermannia); Schwabe - Calbuco (Herzog 1939), C. Tesoro (Herzog 1954); Skottsberg - F. Peel (Evans 1921); Skottsberg & Halle - S. Skyring (Stephani 1911 as Aneura).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3255).

Riccardia fuscobrunnea (Steph.) Evans

Aneura fuscobrunnea Steph. K. Svenska VetenskAkad. Handl. 46 (9): 7. f. 1 d. 1911. Riccardia fuscobrunnea (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 152. 1921. Original material: Chile, Prov. Magallanes, west end of L. Fagnano, Halle (UPS) - cited in Evans (1921).

Ecology: This species is apparently very local in the Falklands; it was gathered once in a Cortaderia heath and once in a dwarf shrub heath.

Phytogeography: This species occurs in the Falkland Islands, Tierra del Fuego, and West Patagonia.

Literature Records: TIERRA DEL FUEGO: Anonymous (Kühnemann 1937, 1949); Halle - L. Fagnano (Evans 1921), Fuegia (Stephani 1917 as Aneura); Roivainen - Pto. Arturo (Arnell 1954); Santesson - S. de Sorondo (Arnell 1955). PATAGONIA: Schwabe - West Patagonia (Herzog 1954).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, valley southwest of Mt. Usborne, c. 60 m. (2661). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3149).

Riccardia georgiensis (Steph.) Hässel

Aneura georgiensis Steph. Wiss. Ergebn. Schwed. Sudpolarexped.

4 (1): 2. 1905. Riccardia georgiensis (Steph.) Hässel, Revta

Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat., in prep. Original material: South Georgia, Cumberland Bay, 4 May 1902 Skottsberg s.n. (non vidi).

Ecology: This species is rather frequently encountered on soil of stream banks in dwarf shrub heaths. It is less common in Cortaderia heaths.

Phytogeography: This species is known from South Georgia and the Falklands.

Literature Records: SOUTH GEORGIA: Skottsberg - Cumberland Bay (Bonner 1962 as Aneura, Steere 1961).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, south shore of Cape Pembroke peninsula, near Surf Bay, sea level (2433 & 2439); ridge on Engineer Point peninsula, 18-25 m. (2827). STANLEY REGION, Sapper Hill, 135 m. (2400). MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2595); below The Gap, c. 90 m. (2579). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3108). FOX BAY REGION, near mouth of Cheeks Creek, c. 12 m. (3498); near peat cuttings in Ram Paddock, 45-60 m. (3506 & 3513); north base of Fox Bay Mt. 75 m. (3464 B); valley east of Sullivan House, c. 75 m. (3535). WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2875 B). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 355 m. (3369 D & 3371).

Riccardia granulata (Steph.) Evans

Aneura granulata Steph. Hedwigia 32: 21. 1893. Riccardia granulata (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 192. 1921. Original material: Argentina, Terr. Tierra del Fuego, I. de los Estados, Pto. Cook, Spegazzini 17 (VER, NY) - cited in Evans (1921).

Ecology: This species is seemingly very rare in the Falklands, where it was collected but once in a feldmark.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and the southern Patagonian Channels (Skyring region). This taxon may prove to be entirely Fuegian-Falkland in distribution, after study of the southern Patagonia collection reported in Stephani (1911).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937); Skottsberg and/or Halle - Port Stanley (Skottsberg 1913 and Stephani 1911 as Aneura).

Additional Literature Records: Anonymous (Kühnemann 1937, 1949); Hässel & Gamundi - S. Alvear (Hässel 1967); Hooker - Cabo de Hornos, Cabo Spencer (Evans 1921); Roivainen - Pto. Arturo (Arnell 1954); Spegazzini - Pto. Cook (Evans 1921, Massalongo 1927 as Aneura), I. de los Estados (Stephani 1899 as Aneura). PATAGONIA: Skottsberg & Halle - R. de las Minas (Stephani 1911 as Aneura).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, summit of Mt. Usborne 1, c. 700 m. (2487 B).

Riccardia opuntiformis S. Arnell

Riccardia opuntiformis S. Arnell, Suomal. Eläin - Ja Kasvit. Seur. Van. Tiedon. Pöytäk. 9 (1): 52. f. 7. 1954. Original material: Chile, Prov. Magallanes, B. Keta, Roivainen 2513 (S-PA - non vidi).

Ecology: This species is quite common in the Falklands, where it occurs on soil at the bases of Blechnum magellanicum or under rock ledges in dwarf shrub heaths, and on soil (especially small depressions) in Cortaderia heaths. It was also collected in feldmarks.

Phytogeography: This species is known from the Falklands and Tierra del Fuego.

Literature Records: TIERRA DEL FUEGO: Roivainen - Pto. Arturo, S. Staples (Arnell 1954).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, Tumbledown Mt., 155-230 m. (2375 B); Goat Ridge, c. 180 m. (3194 & 3213); summit ridge of north peat of Two Sisters, 245-290 m. (2700 B); summit of Mt. Kent, 455 m. (2748 & 2765). MT. USBORNE REGION, south-east slope of Mt. Usborne 2, c. 455 m. (2606); summit of Mt. Usborne 1, c. 700 m. (2487 A & 2507); The Gap, 275-290 m. (2458 & 2476). WEST FALKLANDS: PORT HOWARD, summit of Mt. Maria, 658 m. (3136). HILL COVE REGION, summit of East French Peak, 305 m. (2967). WEDDELL ISLAND, summit of Peak northeast of Mt. Weddell, 335 m. (3369).

Riccardia pallidevirens (Steph.) Evans

Aneura pallidevirens Steph. Bull. Herb. Boissier I. 7 (10): 762.

1899 (= Sp. Hep. 1: 272). Riccardia pallidevirens (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 189. 1921. Original material: Chile, Prov. Magallanes, I. Desolacion, Pto. Angosto, 1896 Dusén 171, 189 (NY, UPS) - cited in Evans (1921).

Ecology: This species was of rather sporadic occurrence in Cortaderia heaths above 580 m.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and the Valdivian region (West Patagonia north to 43° 36' S. at I. Guafo).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949); Dusen - Pto. Angosto (Bonner 1962 as Aneura, Evans 1921, Stephani 1901 as Aneura); Gasperi - S. Agostini (Gola 1923); Roivainen - S. Staples, B. Isla, B. Keta (Arnell 1954); Santesson - Ushuaia (Muller 1955); Skottsberg & Halle - R. Fontaine & L. Fagnano (Stephani 1911 as Aneura). PATAGONIA: Anonymous - (Kühnemann 1937); Schwabe - C. Tesoro (Herzog 1954); Skottsberg & Halle - I. Guafo (Stephani 1911 as Aneura).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2617 & 2618 A). WEST FALKLANDS: MT. ADAM, basin east of summit, 580-595 m. (3001); east slope of main peak, c. 610 m. (3004).

Riccardia papillosa (Mont. & Steph.) Hässel

Aneura papillosa Mass. & Steph. Atti Ist. Veneto Sci. 87: 241. pl. 7
f. 14-16. 1927. Riccardia papillosa (Mass. & Steph.) Hässel,
 Boln. Soc. Argent. Bot. 11 (2-3): 100. 1967, nom. illeg.
Riccardia papillosa (Mass. & Steph.) Hässel, Revta Mus. Argent.
 Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat.,
 in prep. Original material: Argentina, Terr. Tierra del Fuego,
 I. de los Estados, near M. Richardson, Spegazzini s.n. (non vidi).

Ecology: This species is rather common in dwarf shrub and
Cortaderia heaths, where it grows on soil at the base of outcrops and
 on stream banks. It occasionally occurs on Azorella cushions or
 hanging mats of vegetation in sheltered high altitude cliffs.

Phytogeography: This species occurs in the Falklands and
 Tierra del Fuego (I. de los Estados and the mountainous region of
 I. Grande de Tierra del Fuego).

Literature Records: TIERRA DEL FUEGO: Spegazzini - M. Rich-
 ardson (Bonner 1962 as Aneura); Hässel de Menendez & Gamundi - S.
 Alvear (Hässel de Menendez 1967).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION,
 summit ridge of Mt. Low, c. 245 m. (3234), north side of Gypsy Cove,
 sea level (3254); ridge on Engineer Point peninsula, 18-25 m. (2818
 & 2831). STANLEY REGION, Goat Ridge, c. 180 m. (3215); summit ridge
 of north peak of Two Sisters, 245-290 m. (2708). MT. USBORNE REGION,
 gap between Mt. Usborne 2 & Table Rock, c. 440 m. (2636); southeast

slope of Mt. Usborne 2, c. 455 m. (2598 & 2599); ridge between Mt. Usbornes 1 & 2, 685 m. (2537); valley southwest of Mt. Usborne, c. 60 m. (2666). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3139); pass southwest of Mt. Maria summit, c. 610 m. (3086 & 3104 A). HILL COVE REGION, summit of Mt. Fegen, 335-360 m. (3067). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3320).

Riccardia prehensilis (Hook. f. & Tayl.) Mass.

Jungermannia prehensilis Hook. f. & Tayl. London Jour. Bot. 3: 480.

1844. Metzgeria prehensilis (Hook. f. & Tayl.) G. L. & N. Syn. Hep. 505. 1846. Sarcomitrium prehensile (Hook. f. & Tayl.) Mitt. in Hook. f. Bot. Ant. Voy. 2 (2): 167. 1855. Aneura prehensilis (Hook. f. & Tayl.) Mitt. in Hook. f., Handb. N. Z. Flora 543. 1867. Acrostolia prehensilis (Hook. f. & Tayl.) Trev. Memorie Ist. Lomb. Sci. Lett. III. 4: 431. 1877. Riccardia prehensilis (Hook. f. & Tayl.) Mass. Nuovo G. Bot. Ital. 17: 255. 1885. Pseudoneura prehensilis (Hook. f. & Tayl.) Schiffn. in Naumann, Forschungrs. Gazelle 4 (4): 41. 1890. Original material: Chile, Prov. Magallanes, I. Hermite, Hooker s.n. (NY) - cited in Evans (1921).

Metzgeria eriocaula β chilensis G. L. & N. Syn. Hep. 505. 1846. syn. fide Evans (1921). Riccardia eriocaula var. β chilensis (G. L. & N.) Besch. & Mass. Mission Scient. Cap Horn 5: 244. 1889.

Original material: "in Chili invenit cl. Gay (Hb. M.)" (non vidi).

Pseudoneura Lechleri Steph. ex Besch. & Mass. Mission Scient. Cap Horn 5: 245. 1889, nom. nud., pro syn., syn. fide Evans (1921).
Aneura lechleri Steph. Hedwigia 32: 26. 1893, nom. nud., pro syn.

Pseudoneura marginata Gott. ex Schiffn. in Naumann, Forschungsr. Gazelle 4 (4): 41. 1890. nom. nud., pro syn., syn. fide Evans (1921).

Aneura Lindaviana Steph. Sp. Hep. 6: 33. 1917. Original material: "without definite locality, southern Chile," Reiche (G) - cited in Evans (1921).

Ecology: This taxon is rare in the Falklands; it was collected in outcrop crevices in a dwarf shrub heath (18-25 m.).

Phytogeography: This species occurs in the Falkland Islands, Tierra del Fuego, the Patagonian Channels, and Valdivian region, including P. N. Nahuel Huapi of Andean Patagonia. Within the Falklands, it was found only in the Port William region, and the cooler temperatures and higher rainfall in this region may account for its presence there.

See Evans (1921, p. 117) for remarks on non-southern South American reports of the species.

Literature Records: TIERRA DEL FUEGO: Anonymous - Hooker 1867 as Aneura, Kühnemann 1937 & 1949); Dusén - R. Azopardo, Pto. Angosto (Stephani 1901a as Aneura); Hariot - I. Hoste, I. Clarence

(actually I. Capitan Arecena)(Bescherelle & Massalongo 1889); J. B. Hatcher - Ens. Villarino (Evans 1898 as Aneura, Evans 1921); Hooker - I. Hermite - (Evans 1921, G. L. & N. 1846 as Metzgeria, Taylor & Hooker 1847b as Jungermannia); Naumann - B. Tuesday (Schiffner 1890 as Pseudoneura); Roivainen - S. Staples, Pto. Beaubasin, B. Keta (Arnell, 1954); Skottsberg & Halle - Cta. Gomez, L. Fagnano (Stephani 1911 as Aneura); Spegazzini - I. de los Estados, I. Gable, S. Melville (Massalongo 1927 as Aneura prehensilis var. savatieri), I. de los Estados, I. Basket, M. Sarmiento (Massalongo 1885), I. de los Estados (Evans 1921). PATAGONIA: Anonymous - (Kühnemann 1937). Andersson - Pto. del Hambre (Ångstrom 1872 as Jungermannia); Cunningham - Strait of Magellan (Stephani 1899 as Aneura), B. Halt (Evans 1921); Donat - A. Frias, R. Negro (Herzog 1957); Dusén - R. Aisen, I. Guaitecas, Puerto Blest (Stephani 1900 as Aneura); Hahn - Valdivia (Stephani 1899 as Aneura); Hässel & Pujals - between Puerto Blest & L. Frias (Hässel 1967); J. B. Hatcher - Strait of Magellan (Stephani 1899 as Aneura); Hollermayer - Panguipulli (Reimers 1926 as Aneura); Krause - Corral (Stephani 1899 as Aneura); Lechler - Arique (Stephani 1899 as Aneura); Naumann - Punta Arenas (Schiffner 1890 as Pseudoneura); Reiche - southern Chile (Evans 1921); Roivainen - Pto. San Isidro, Pto. Barroso (Arnell 1954); Santesson - Enco (Arnell 1955), Enco & Rinihus (Müller 1955); Savatier - Strait of Magellan (Stephani 1899 as Aneura), B. Isthmus, I. Madre de Dios, I. Wellington (Bescherelle & Massalongo 1899), Pto. Barroso (Evans 1921); Schwabe - I. Magdalena, Pto. Puyuhuapi & Termas de Puyehue (Herzog 1954), Huitrapulli-Aleucapi, R. Futa,

Chaihuin-R. Colun, C. Lungoico, L. Pellaifa (Herzog 1960); Skottsberg & Halle - Pto. Cutter, S. Skyring, I. Atalaya, F. Peel, Cta. Hale, I. Guafo (Stephani 1911 as Aneura); Spegazzini - Poyo-huapi (Massalongo 1906, 1927 as Aneura), Strait of Magellan (Stephani 1899 as Aneura); Thaxter - Corral (Evans 1921). NEW ZEALAND. SOUTH ISLAND: Lindsay - Otago (Hooker 1867 as Aneura). NORTH ISLAND (NEW ZEALAND): Colenso - Manuwatu River (Hooker 1867 as Aneura, Mitten 1855 as Sarcomitrium); Lyall - Port Nicholson (Hooker 1867 as Aneura, Mitten 1855 as Sarcomitrium). JAVA: Anonymous - (Stephani 1899, p. 664, as Aneura).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, ridge on Engineer Point peninsula, 18-25 m. (2826 & 2839).

Riccardia regularis (Steph.) Kuhnem.

Aneura regularis Steph. K. Svenska VetenskAkad. Handl. 46 (9): 9.

f. 1, f. 1911. Riccardia regularis (Steph.) Kuhnem. Revista Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 171. 1937. Original material: Falkland Is., Halfway Cove, Halle & Skottsberg (non vidi).

Phytogeography: The taxon is apparently endemic to the Falklands.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937, 1949); Halle and/or Skottsberg - Halfway Cove (Bonner 1962 as Aneura, Skottsberg 1913 as Aneura, Stephani 1917 as Aneura).

Riccardia saxicola Hässel

Riccardia saxicola Hässel, Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat., in prep. Original material: Tierra del Fuego.

Ecology: This apparently very rare species was collected but once, when it was gathered on an Azorella cushion on sheltered high altitude cliffs.

Phytogeography: This species is apparently known only from the Falklands and Tierra del Fuego.

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: MT. USBORNE REGION, ridge between Mt. Usbornes 1 & 2, 685 m. (2544).

Riccardia spectabilis (Steph.) Evans

Aneura spectabilis Steph. Bull. Herb. Boissier I. 7 (10): 746. 1899 (= Sp. Hep. 1: 256). Riccardia spectabilis (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 140. 1921. Original material: Chile, Prov. Magallanes, I. Desolacion, Dusén (non vidi).

Ecology: This species is rather common in the Falklands, where it grew in moist situations, i.e., stream banks, stream beds and wet rock walls of dwarf shrub and Cortaderia heaths.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego and southern Patagonian Channels (Brunswick Peninsula).

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949). Dusen - R. Grande, R. Azopardo, I. Desolacion (Stephani 1901a as Aneura), Pto. Angosto (Bonner 1962 as Aneura), Pto. Angosto, R. Azopardo (Evans 1921); J. B. Hatcher - Fuegia (Evans 1921); Racovitza - I. Clarence (actually I. Capitan Arecena)(Stephani 1901b as Aneura); Roivainen - Pta. Valdes, B. Isla, S. Agostini, B. Sarmiento, B. Pluschow (Arnell 1954); Skottsberg & Halle - L. Fagnano (Stephani 1911 as Aneura); Spegazzini - I. Burnt (Massalongo 1927 as Aneura). PATAGONIA: Cunningham - Pto. Gallant (Evans 1921).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, ridge on Engineer Point peninsula, 18-25 m. (2836). MT. USBORNE REGION, southeast slope of Mt. Usborne 2, c. 455 m. (2605 & 2612). WEST FALKLANDS: FOX BAY REGION, near peat cuttings in Ram Paddock, 45-60 m. (3501 B); north base of Fox Bay Mt., 75 m. (3471); valley east of Sullivan House, c. 75 m. (3525). MT. ADAM, basin east of summit, 580-595 m. (2995). WESTPOINT ISLAND, near The Waterfall, 30-90 m. (2853, 2856 & 2865). WEDDELL ISLAND, Waterfall Valley, west of settlement, c. 125 m. (3305 B); summit of peak northeast of Mt. Weddell, 335 m. (3370).

Riccardia tenax (Steph.) Evans

Aneura tenax Steph. Bull. Herb. Boissier I. 7 (10): 755. 1899 (= Sp. Hep. 1: 265). Riccardia tenax (Steph.) Evans, Trans. Conn. Acad. Arts Sci. 25: 186. 1921. Original material: "Fretum magellanicum (Cunningham, Dusén), Insula Desolacion (Dusén)" (non vidi).

Ecology: This taxon, apparently quite rare in the Falkland Islands, was found on rock of sheltered high altitude cliffs, and on sandy soil in a dwarf shrub heath (near sea level).

Phytogeography: This species occurs in the Falkland Islands, Tierra del Fuego and southern Patagonia (Strait of Magellan).

Literature records (FALKLANDS): Anonymous - (Kühnemann 1937). Skottsberg and/or Halle - Port Howard (Skottsberg 1913 and Stephani 1911 as Aneura).

Additional Literature Records: TIERRA DEL FUEGO: Anonymous- (Kühnemann 1937). Dusen - I. Desolacion (Stephani 1901a as Aneura), Pto. Angosto (Evans 1921); Skottsberg - R. Olivia, B. Tekenika, Pto. Cook (Stephani 1905a as Aneura); Skottsberg and/or Halle - Cta. Gomez, L. Fagnano, I. Wollaston (Stephani 1911 as Aneura). PATAGONIA: Anonymous - (Kühnemann 1937). Cunningham - Strait of Magellan (Stephani 1900 as Aneura).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, north side of Gypsy Cove, sea level (3247). WEST FALKLANDS: MT. ADAM, ridge south of northern lake, 610 m. (3045).

Riccardia Species Excluded from Falklands

Riccardia breviramosa (Steph.) Evans. This species was reported for the Falklands by Stephani (1911 as Aneura), Skottsberg (1913 as Aneura) and Kühnemann (1937, 1949). The collection on which these reports are based is actually one of R. opuntiformis (fide Hässel de Menendez, in litt.).

Riccardia cochleata (Hook. f. & Tayl.) Steph. This species was originally described (as a Riccia) from the Auckland Islands by Hooker and Taylor (1845). It was reported from the Falklands by Stephani (1911 as Aneura), Skottsberg (1913 as Aneura) and Kühnemann (1937, 1949) all of which are based upon a misdetermination of R. spectabilis (fide Hässel de Menendez, in litt.).

Riccardia floribunda (Steph.) Evans. This species was described for Cunningham and Dusen collections from "Fretum Magellanicum." The species was reported for the Falklands by Stephani (1905a, and 1911 as Aneura), Skottsberg (1913 as Aneura) and Kühnemann (1937). Hässel de Menendez (in litt.) has excluded the species from the Falklands, and states the Port Louis specimen is indeterminable and that from Port Harriet is R. pallidevirens.

Riccardia multifida (L.) Gray. This taxon has been reported for the Falklands by Hooker and Taylor (1844 and 1847b as Jungermannia), G. L. & N. (1846 as Aneura), Stephani (1905 as Aneura), Skottsberg (1913 as Aneura) and Kühnemann (1937). Hässel de Menendez (in litt.) has excluded the species from the Falklands, and states the Hooker collection is actually R. regularis.

METZGERIACEAE

Nees, Naturg. Eur. Leberm. 3: 479. 1838.

Metzgeria

Raddi, Mem. Soc. It. Modena 18: 43. 1820.

Key to the Falkland Island Species of Metzgeria

1. Thalli frequently without a midrib. Hairs marginal and on ventral midrib surface, borne singly; gemmae marginal, often copiously produced. M. multiformis
1. Thalli with midribs consistently present. 2
 2. Dried plants becoming bluish with age; gemmae convex, born on narrow $\pm$ ascending branches. Marginal hairs usually single M. violacea
 2. Dried plants pale to bright yellow-green, never becoming bluish with age; gemmae plane, borne on margins of unspecialized branches (gemmae not seen in M. leptoneura). 3
3. Marginal hairs paired; thallus strongly convex to involuted M. leptoneura

3. At least some of marginal hairs single; thallus
plane or only slightly convex 4
4. Thalli consistently with 2 rows of cortical cells
both dorsally and ventrally; gemmae occurring on
general thallus margin, not specifically at the
distal regions of branches, gemmae greatly elon-
gated, commonly over 20 cells long. M. decipiens
4. Thalli with 2-4 rows of ventral cortical cells,
and 2 rows dorsally; gemmae localized in distal
regions of dichotomous branches, gemmae usually
less than 10 cells long while attached to
thallus M. falklandensis

Metzgeria decipiens (Mass.) Schiffn.

Metzgeria furcata β decipiens Mass. Nuovo G. Bot. Ital. 17: 256.
pl. 28. f. 36. 1885. Metzgeria decipiens (Mass.) Schiffn. in
Naumann, Forschungsr. Gazelle 4 (4): 43. 1890. Original ma-
terial: Argentina, Terr. Tierra del Fuego, I. de los Estados,
near Pto. Basil Hall, Spegazzini (YU) - cited in Evans (1923).

Metzgeria glaberrima Steph. Bull. Herb. Boissier I. 7 (12): 939.
1899 (= Sp. Hep. 1: 287), syn. fide Evans (1923). Original
material: New Zealand, Auckland, Cheeseman (G); New Zealand,
Knight (G); Australia, Victoria, Lauterbach (G) - cited in
Kuwahara (1966).

Metzgeria quadriseriata Evans, Proc. Wash. Acad. Sci. 8: 142. pl. 6

f. 1-5. 1906, syn. fide Kuwahara (1966). Original material:

Japan, Tosa, Iokimura, Yoshinga (YU) - cited in Kuwahara (1966).

Metzgeria nuda Steph. K. Svenska VetenskAkad. Handl. 46 (9): 10.

f. 3a. 1911, syn. fide Evans (1923). Original material: Falk-

land Is., near Port Stanley, 1907 Skottsberg 356 (UPS) - cited in

Evans (1923).

Metzgeria Howeana Steph. in Steph. & Watts, R. Soc. H. S. W. 48: 126.

1914, syn. fide Kuwahara (1966). Lectotype (cf. Kuwahara 1966):

Australia, Watts (G - non vidi).

Metzgeria caledonica Steph. Sp. Hep. 6: 48. 1917, syn. fide Kuwahara

(1966). Lectotype (cf. Kuwahara 1966): New Caledonia, Le Rat

(G - non vidi).

Taxonomical remarks: Evans (1923) considered M. nuda, a plant described from the Falkland Islands, to be a synonym of M. decipiens.

I have seen a syntype and I agree with his treatment and comments.

The cortical cells of M. decipiens are consistently in two rows dorsally and usually in 2 rows ventrally. However, on the ventral surface a midrib may be 3 or 4 cells across locally. This condition is usually present immediately basal to the origin of a branch.

Ecology: This is easily the most common of the Metzgeria taxa in the Falklands. It is rather common in dwarf shrub heaths above 135 m. in moist rock crevices, and on rock under rock cover. It is rarer in Cortaderia heaths (stoneruns) and on Hebe in dwarf shrub heath associations.

Phytogeography: This amphipacific temperate species extends to 39° 38' S. in West Patagonia (also present on Juan Fernandez), and is well represented in temperate areas in the New Zealand sector with extension in this sector north to Japan (see Map 59).

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 & 1949 as M. decipiens, M. glaberrima & M. nuda, Kuwahara 1965a, b, 1968); Skottsberg - Port Stanley (Evans 1923, Skottsberg 1913 as M. glaberrima & M. nuda, Stephani 1905a as M. glaberrima, 1917 as M. nuda); Thaxter¹ - Port Stanley (Evans 1923).

Additional Literature Records (note - locality and collector data has been omitted for non-southern South American records):
 TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937 & 1949 as M. decipiens & M. glaberrima); Dusén - R. Azopardo (Evans 1923), R. Azopardo, Pto. Angosto (Stephani 1901a as M. glaberrima); Gasperi - B. Parry (Gola 1923 as M. glaberrima); Hooker - I. Hermite and/or Cabe de Hornos (Evans 1923); Naumann - B. Tuesday (Evans 1923, Schiffner 1890); Skottsberg - R. Olivia (Evans 1923, Stephani 1905a as M. glaberrima); Skottsberg & Halle - I. Dawson (Stephani 1911 as M. glaberrima); Spegazzini - Pto. Basil Hall (Evans 1923), I. de los Estados (Massalongo 1927). PATAGONIA: Anonymous - (Kühnemann 1937 & 1949 as M. glaberrima); Dusén - Pto. Gallant (Evans 1923, Strait of Magellan Stephani 1899 as M. glaberrima), R. Aisen, I. Guaitecas (Evans 1923), R. Aisen, I. Guaitecas, Puerto Varas (Stephani 1900 as M. Glaberrima); Douglas - Pto. Grappler (Evans 1923); Hahn - Valdivia (Evans 1923);

¹This report is in error as Thaxter did not visit the Falklands.

Halle - R. Pudeto, Pto. Chacabuco (Evans 1923); Hosseus - Corral (Herzog 1938); Naumann - Strait of Magellan (Stephani 1899 as M. glaberrima); Santesson - Rinihue, Ancud (Arnell 1955), Ancud (Müller 1955); Schwabe - Pto. Puyuhuapi (Herzog 1939, 1954), Termas de Puyehue (Herzog 1954), C. Lungoico (Herzog 1960); Skottsberg & Halle - Canal Gajardo, B. Chacabuco, R. Pudeto (Stephani 1911 as M. glaberrima); Spegazzini - Strait of Magellan (Stephani 1899 as M. glaberrima); Thaxter - Corral (Evans 1923). JUAN FERNANDEZ. Anonymous (Kuwahara 1965 a, b, 1968). MAS A TIERRA: (Arnell 1957, Espinosa 1940, Evans 1930a). MAS AFUERA: (Arnell 1957, Evans 1930a). CENTRAL CHILE: (Arnell 1956, Herzog 1950, Espinosa 1940). HAWAII: (Kuwahara 1960 as M. quadriseriata, 1966). ANTIPODES: (Hodgson 1962, Hodgson & Sainsbury 1948, Stephani 1909 as M. glaberrima). NEW ZEALAND. SOUTH ISLAND: (Hodgson 1961). NORTH ISLAND (NEW ZEALAND): (Hodgson 1961, Kuwahara 1966). TASMANIA: (Kuwahara 1966). AUSTRALIA: (Kuwahara 1966, Stephani 1917 as M. howeana). NEW SOUTH WALES: (Stephani & Watts 1914 as M. glaberrima). NEW CALEDONIA: (Kuwahara 1960 as M. caledonica, 1966). BORNEO: (Kuwahara 1965a). JAVA: (Kuwahara 1958 as M. quadriseriata). PHILIPPINES: (Kuwahara 1968). JAPAN: (Kuwahara 1958 as M. quadriseriata, 1966). NEPAL: (Kuwahara 1965b).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: PORT WILLIAM REGION, summit ridge of Mt. Low, c. 245 m. (3218 & 3219-c. ♀). STANLEY REGION, Port Stanley, 1907 Skottsberg 88, syntype of Metzgeria nuda (G); Sapper Hill, 135 m. (2404-c. ♀ & 2423-c. ♀); Tumbledown Mt., 155-230 m. (2376); summit ridge of north peak of Two Sisters, 245-290 m. (2717-c. ♀). MT. USBORNE REGION, below The Gap, c. 90 m.

(2584-c. ♀). WEST FALKLANDS: FOX BAY REGION, summit of East Head, 180 m. (3419-c. ♀ & 3426). HILL COVE REGION, summit of West French Peak, 290 m. (2945, 2952 c. ♀ & 2961); summit of Mt. Fegen, 335-360 m. (3071-c. ♀). WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2917). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3396-c. ♀ & 3399).

Metzgeria Falklandica Kuwah., sp. nov.

Dioica (flor. masc. haud visa). Frons dichotoma, parum convexa, ca. 1 cm longa, 0.45-1.2 mm lata; alae 8-19 cellulas latae. Cellulae alarum mediae 33-48 (-55) X 24-37 μ , marginales 24-40 (-52) X 18-32 μ , trigonis parvis. Costa tenuis, cellulis corticalibus anticae 2, posticae 2-4 seriatis. Gemmae marginales vicinus fronsapex.

Holotype: Falkland Islands, Port Howard, pass SW of Mt. Maria summit, 610 m., 28 January 1968 Engel 3099 (MSC).

Thallus dichotomously branched, obtuse to narrow-obtuse at apex, without apical notch, occasionally with slight apical hollow chiefly in younger adventitious shoots, the apex of which is sometimes broadly obtuse or truncate; green, yellowish green or pale greenish yellow when dry; plane or slightly decurved, about 1 cm long, 0.45-1.2 mm wide. Adventitious shoots common, sometimes abundantly produced.

Midrib regularly bounded by 2 rows of cortical cells on both sides, but on the ventral side cortical cells often in 3-4 rows not

only in short, abbreviated branches, but also in branches of ordinary length. Midrib 60-90 μ wide dorsally, 75-110 μ wide ventrally (75-90 μ for 2 rows, 90-110 μ for 3-4 rows); dorsal cortical cells 33-50 (-75) X 30-45 μ , the ventral 20-55 (-75) X 33-45 μ for 2 rows, 22-55 (-85) X 22-33 μ for 3-4 rows, thalli in cross section with midrib weakly arched on both sides, 80-120 μ thick, medullary cells in 3 tiers, somewhat thickened, 10-14 in number; dorsal cortical cells 13-26 μ thick, those of the ventral 11-22 μ thick, medullary cells 13-30 X 10-22 μ .

Lamina 8-19 cells wide, the lamina cells generally thin-walled and with minute trigones, occasionally more or less thickened and trigones somewhat developed, median lamina cells 33-48 (-55) X 24-37 μ , marginal lamina cells 24-40 (-52) X 18-32 μ ; thalli in section with lamina cells 23-32 (-37) μ thick.

Hairs generally poor throughout the thallus, occasionally present along the thallus margin and on the ventral side of the midrib, straight or flexuous; marginal hairs borne singly or in pairs.

Gemmae produced from the marginal cells of the thallus neighboring thallus apices, gemmae disc shaped, mostly detached from the thallus before reaching to 10 cells long.

Plants dioicous; male branches not seen. Female involucre broadly obovate, with an apical notch, 210-360 μ , 14-20 cells long, hairy along the margin and on the back (ventral) side; involucre cells 20-37 (-57) X 13-26 μ .

The specimens examined were rich and sufficient for studies, and the sexuality of dioicism is considered to be safe though the male branches were not found. To date, 10 monoecious species of Metzgeria have been described, and in all, both male and female branches are very common, and their monoecious condition is readily recognizable, as it may well be exemplified in Metzgeria conjugata Lindb. which is widely distributed over the northern temperate region. Both specimens, particularly the paratype, Engel 2768, contain many thalli in a juvenile state of development. A study of the male plants, which are taxonomically characteristic in the genus Metzgeria, would be helpful to evaluate the affinity of M. falklandica.

A unique feature of this new species is the localization of gemmae production to distal parts of the dichotomous branching thalli. The gemmiparous cells are very rich in cellular contents and easily distinguishable, being darker than the general thallus cells. A series of marginal cells produce gemmae, which often are produced so as to overlap one another. This gives an appearance that some are produced from the general lamina cells neighboring the marginal cells. The mode of the direction of cell division of the gemmiparous cells is irregular. The larger gemmae are usually connected by a 2-celled base to the marginal cell of the thallus. A series of broken and empty marginal cells which have discharged gemmae are commonly observable at the general thallus margin far behind the thallus apex. These are colorless and easily distinguishable from the chlorophyllous general cells. Abundant free gemmae were observed.

In the thallus tapered species of Metzgeria, gemmae occur at similar parts of the thallus, but these gemmae are commonly of two types, one is muscilagenous and another is of general form as it is seen in Metzgeria fruticulosa (Dicks.) Evans of the north temperate region. Metzgeria falklandica, which is a non-thallus tapered species, has gemmae only of the general form, the muscilagenous type absent. The mode of gemmae production of greatest similarity is seen in Metzgeria scyphigera Evans of Mexico, Peru, Chile¹ and Argentina² whose cortical cells of the midrib are in 2 rows both dorsally and ventrally, and blue colored when dry in the apical part of the thallus.

Metzgeria furcata (L.) Dum. of bipolar distribution, and M. decipiens (Mass.) Schiffn. & Gotts. which is widely distributed are cited for comparison. Metzgeria furcata has a midrib bounded typically by 2 rows of cortical cells dorsally and (3-) 4 (-5) rows ventrally. However, in M. furcata there is a strong tendency of degeneration toward a midrib structure with fewer number of cortical cell rows. These degenerated forms with the midrib of 2-4 rows of ventral cortical cells are superficially similar to this new species, from which M. furcata is distinguishable by the gemmae which are produced at the general thallus margin and which are much more elongated, being over 20 cells long while attached to the thallus. In Metzgeria decipiens, the cortical cells of the midrib are consistently in 2 rows on both sides, and the gemmae occur at the general thallus margin and

¹New to Chile. Prov. Coquimbo, Ovalle, 30 April 1955 I. & C. Skottsberg s.n. (H).

²New to Argentina. Rio Negro, Pico Quemado, Hassel de Menendez 329 (BA).

are greatly elongated, commonly reaching over 20 cells long. The size of the gemmae itself has little value in taxonomy of Metzgeria, but it represents the place of localization of gemmae production in the thallus.

The comparable species of subantarctic distribution are as follows, with distinctive features: Metzgeria campbelliensis Kuwah. of Campbell Is., thallus cells very small and thick walled, 19-32 X 14-25 μ at the middle of the lamina, ventral cortical cells of the midrib in 2-3 rows, no gemmae produced; M. grollei Kuwah. of Prince Edward Is., ventral cortical cells of the midrib in 3-4 rows, with bluish cellular inclusions 20-40 per lamina cell, gemmae lacking; M. pinnata Steph. of Auckland Is. and Australia (Victoria)¹ thallus cells large, 56-85 X 44-56 μ at the middle of the lamina, ventral cortical cells of the midrib in 2-3 (-4) rows, no gemmae produced.

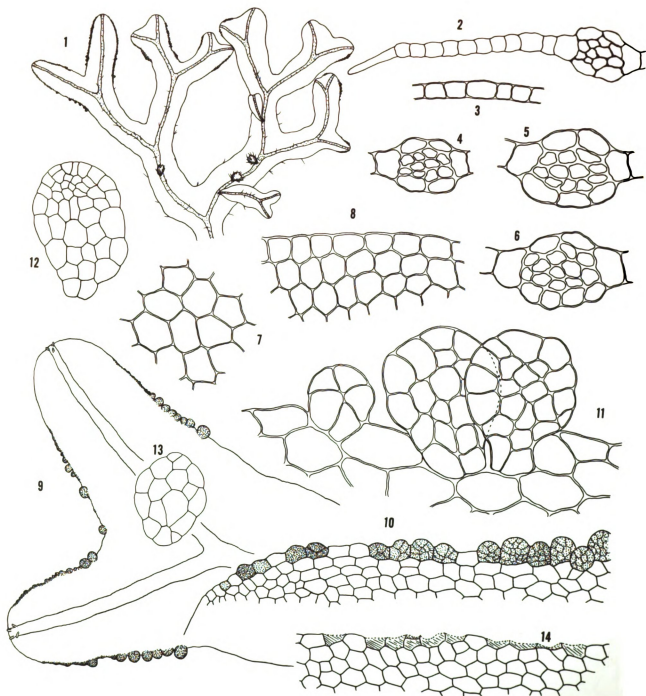
Ecology-Phytogeography: This rare species was collected on rock of sheltered high altitude cliffs and in crevices of rock outcrops in dwarf shrub heaths. It is endemic to the Falklands.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: STANLEY REGION, summit ridge of north peak of Two Sisters, 245-290 m. (2729 a form); summit of Mt. Kent, 455 m. (2768 paratype). WEST FALKLANDS: PORT HOWARD, pass southwest of Mt. Maria summit, c. 610 m. (3099 holotype).

¹New to Australia. Sin coll. Dandenong (near Melbourne), L (Leiden) no. 937, 279-560.

PLATE 11

Metzgeria falklandensis Kuwah. Fig. 1. Habit of the thallus, with female involucre and adventitious shoots, ventral view, X 10. Fig. 2. Thallus, cross section, X 150. Fig. 3. Median lamina cells, cross section, X 200. Figs. 4-6. Midribs, cross section, X 200. Fig. 7. Median lamina cells, X 200. Fig. 8. Cells along the thallus margin, X 200. Fig. 9. Apical part of the thallus, with a series of gemmae produced at the thallus margin, X 50. Fig. 10. A series of gemmae and gemmiparous marginal cells (dotted) near thallus apex, X 150. Fig. 11. Production of gemmae, X 380. Figs. 12-13. Gemmae detached, X 200. Fig. 14. A series of broken and empty marginal cells (shaded) which have discharged gemmae, X 150. All figures were drawn from the type specimen, Engel 3099, West Falkland, Port Howard, SW of Mt. Maria.



Metzgeria leptoneura Spruce

Metzgeria leptoneura Spruce, Trans. Proc. Bot. Soc. Edinb. 15 (2):

555. 1885. Original material: Peru, M. Campana, Spruce
(non vidi).

Metzgeria hamata Lindb. Acta Soc. Fauna Flora Fenn. 1: 25. f. 5.

1877, nom. illeg.¹ Original material: Chile, Prov. Magallanes,
I. Hermite, Hooker (non vidi).

Metzgeria nitida Mitt. J. Linn. Soc. 22: 243. 1886, syn. cf. Evans
(1923). Original material: Australia, Victoria, Apollo Bay,
von Mueller (NY) - cited in Kuwahara (1966).

Metzgeris hamatiformis Schiffn. Nova Acta Acad. Caesar Leop. Carol.
60: 272. 1893, syn. cf. Kuwahara (1966). Original material:
Moluccas, Amboina, Karsten (G-1053) - cited in Kuwahara (1966).

Metzgeria fuscescens Mitt. in Steph. Bull. Herb. Boissier I: 7 (12):
745. 1899 (= Sp. Hep. 1: 293), syn. cf. Kuwahara (1966). Lecto-
type (cf. Kuwahara 1966): Java, Mt. Megamendong, 1,220-1,830 m.,
Motley (G-1031 - non vidi).

Metzgeria longipila Steph. in Stephani & Watts, R. Soc. N.S.W. 48: 126.
1914, syn. cf. Kuwahara (1960). Lectotype (cf. Kuwahara 1966):
New Hebrides, Watts 60a (G-997 - non vidi).

Metzgeria allanii Steph. Sp. Hep. 6: 47. 1917, syn. cf. Kuwahara (1969).
Original material: Africa, Mt. Kenia, Allan (non vidi).

¹M. hamata is invalid as Lindberg included var. β procera
(Mitt.) Lindb., which was based upon a previously described species,
M. procera of Mitten (1855); see Lanjouw (1966, art. 63).

Metzgeria pilosa Steph. Sp. Hep. 6: 58. 1917, syn. cf. Kuwahara (1969). Original material: Ecuador, Gualaquiza, Allioni (non vidi).

Metzgeria concavula Pears. Bull. Misc. Inf. R. Bot. Gdns Kew 1924: 73. 1924, syn. cf. Kuwahara (1966). Original material: Tasmania, 19 January 1911 Weymouth 1652 (non vidi).

Metzgeria subhamata Hatt. in Herzog & Nagochi, J. Hattori Bot. Lab. 14: 30. f. 1 a-d. 1955, syn. cf. Kuwahara (1969). Original material: Formosa, 1400-1500 m., Schwabe 101 (? JE, non vidi).

Taxonomical remarks: Metzgeria leptoneura is apparently the oldest, available name for the "Metzgeria hamata" complex.

Metzgeria leptoneura and M. procera are apparently very closely related and both names were considered for the Falkland population. According to Kuwahara (1969, p. 365) M. procera and M. hamata differ in wing cell size with the former possessing quite large cells (67-105 μ long and 40-74 μ wide), while the latter has wing cells of 40-60 μ long and 25-35 μ wide. Further, Kuwahara states ". . . the size-range of the thallus-cell (of M. hamata) is quite distinct from that of Metzgeria procera, which would be better recognized as a good species." Spruce (1885), in his description of M. leptoneura, states the cells are 1/16 mm. (62.5 μ), and Stephani (Sp. Hep. 1: 297) states the cells are 45 X 63 μ . These figures for the cell size thus fit well within the range given for M. hamata by Kuwahara (1969). The measurements of median wing cells for the five Falkland Island collections are 33-62 μ long and 22-46 μ wide. Although the wing cells

of the Falkland plants are slightly wider, the measurements fit quite well within those given for M. hamata by Kuwahara (1969).

Evans (1923) provides a useful discussion of M. hamata.

Ecology: This species is rare in the Falklands, where it was gathered on soil among Empetrum in a dwarf shrub heath at sea level and on soil deep under rock overhangs of a rock dome at the summit of Mt. Weddell (335 m.).

Phytogeography: This species has a widespread distribution. It seems highly oceanic in distribution, and is absent from interior continental areas (see Map 60).

Literature Records (note - locality and collector data have been omitted for non-southern South American records): TIERRA DEL GUEGO: Anonymous - (Kühnemann 1937 & 1949 as M. hamata; Hariot - I. Otaries (Bescherelle & Massalongo - 1889 as M. hamata); Naumann - B. Tuesday (Evans 1923 as M. hamata); Spegazzini - I. de los Estados (Evans 1923 & Massalongo 1885 & 1927 as M. hamata). PATAGONIA: Anonymous - (Kühnemann 1949 as M. hamata); Dusén - Patagonia (Stephani 1899 as M. hamata), I. Newton (Evans 1923 as M. hamata), R. Aisen, Puerto Varas, Puerto Blest (Stephani 1900 as M. hamata); Hollermayer - Panguipulli (Reimers 1926 as M. hamata); Naumann - Punta Arenas (Evans 1923 as M. hamata), Strait of Magellan (Stephani 1899 as M. nitida); Schwabe - Pto. Puyuhuapi (Herzog 1954 as M. hamata); Skottsberg - I. Guafo (Evans 1923 as M. hamata); Thaxter - Corral (Evans 1923 as M. hamata). BOLIVIA: (Herzog 1942 as M. hamata & M. leptoneura, Spruce 1890 as M. hamata, Stephani 1916 as M. leptoneura). BRAZIL: (Stephani

1905b as M. hamata). BRITISH GUIANA: (Stephani 1899 as M. hamata). ST. VINCENT: (Spruce 1895 as M. leptoneura). MARTINIQUE: (Stephani 1899 as M. hamata). DOMINICA: (Stephani 1899 as M. hamata). GUADELOUPE: (Beschereille 1893 & Stephani 1899 as M. hamata). PUERTO RICO: (Pagan 1939 & 1942 & Stephani 1899 as M. hamata). DOMINICAN REPUBLIC: (Stephani 1899 as M. hamata). JAMAICA: (Pearson 1931 & Stephani 1899 as M. hamata). CUBA: (Arnell 1956 as M. hamata). ANTILLES: (Stephani 1899 as M. hamata). COSTA RICA: (Stephani 1899 as M. hamata). UNITED STATES: (Stephani 1899 as M. hamata). TRISTAN DA CUNHA: (Arnell 1958 as M. hamata). REUNION: (Arnell 1965 as M. hamata). MAURITIUS: (Arnell 1965 as M. hamata). SOUTH AFRICA: (Arnell 1963 as M. hamata). AZORES: (Allorge & Persson 1938 as M. hamata). SCOTLAND: (Stephani 1899 as M. hamata). IRELAND: (Stephani 1899 as M. hamata). CAMPBELL: (Hodgson 1962 as M. hamata). AUCKLAND: (Hodgson 1961, 1962 as M. hamata). NEW ZEALAND: (Rodway 1916 as M. nitida, Stephani 1899 as M. hamata & M. nitida). STEWART ISLAND (NEW ZEALAND): (Martin 1949 as M. hamata). SOUTH ISLAND (NEW ZEALAND): (Hodgson 1961 as M. hamata, Kuwahara 1966 as M. hamata). NORTH ISLAND (NEW ZEALAND): (Hodgson 1961 & Kuwahara 1966 as M. hamata). TASMANIA: (Kuwahara 1966 as M. hamata, Pearson 1924 as M. nitida, Rodway 1916 & Stephani 1899 as M. nitidia). AUSTRALIA: (Stephani 1899 as M. nitida). VICTORIA: (Kuwahara 1966 & Schiffner 1893 as M. hamata). LORD HOWE ISLAND: (Stephani & Watts 1914 as M. nitida). NEW CALEDONIA: (Kuwahara 1960 as M. hamata). NEW HEBRIDES: (Kuwahara 1960, 1966 as M. hamata, Stephani 1917 as

M. longipila). FIJI: (Kuwahara 1966 as M. hamata). SAMOA: (Kuwahara 1966 as M. hamata). TAHITI: (Bescherelle 1898 as M. hamata). HAWAII: (Miller 1963 as M. quadriseriata). NEW GUINEA: (Kuwahara 1966 & Stephani 1899 as M. hamata). AMBOINA: (Kuwahara 1966 as M. hamata). JAVA: (Kuwahara 1966 as M. hamata, Schiffner 1900 as M. hamata & M. hamatiformis; Stephani 1899 as M. hamata). SUMATRA: (Kuwahara 1966 & Stephani 1917 as M. hamata). BORNEO: (Kuwahara 1965a as M. hamata). PHILIPPINES: (Kuwahara 1968 as M. hamata). JAPAN: (Kuwahara 1958 as M. hamata). NEPAL: (Kuwahara 1965b as M. hamata). INDIA-SIKKIM: (Kuwahara 1965b & Stephani 1899 as M. hamata). INDIA - DARJEELING: (Kuwahara 1965b as M. hamata).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: DARWIN SETTLEMENT, south side of Carcass Bay, Darwin Harbour (2680 & 2684); Boca House on Brenton Lock, sea level (2697). WEST FALKLANDS: WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3367 & 3374-c. ♀).

Metzgeria multiformis Evans

Metzgeria multiformis Evans, in Skottsberg, Nat. Hist. Juan Fernandez, Easter Is. 2: 574. f. 5. 1930. Holotype: Juan Fernandez, Mas a Tierra, C. Centinela, 550 m., Skottsberg 50 (non vidi).

Ecology: This taxon was collected but once, in a rock crevice in a dwarf shrub heath.

Phytogeography: This Valdivian species has a disjunct distribution, occurring in the Falklands, Tristan da Cunha, Inaccessible

and Juan Fernandez Islands (200-660 m., where recorded). Within the Falklands it was found only in the Port William region, and the cooler temperatures and higher rainfall in this region may account for its presence there.

Literature Records: JUAN FERNANDEZ. MAS A TIERRA: Kunkel - Cordon Chifladores, C. Damajuana (Arnell 1957); Skottsberg - Co. Centinela - 530 m., Co. Salsipuedes - 660 m. (Espinosa 1940, Evans 1930a), trail to Portequelo de Villagra - 220 m. (Arnell 1957); Sparre - Valle Ingles (Arnell 1957). MAS AFUERA: Skottsberg - Q. Casas - 200 m., Q. Blindado - 440 m. Co. del Barril (Evans 1930a). TRISTAN DA CUNHA: Christophersen & Mejland - 100-650 m. (Arnell 1958); Wace - above Sandy Point, 300 m. (Arnell 1958). INACCESSIBLE: Christophersen & Mejland - 450 m. (Arnell 1958).

FALKLAND SPECIMEN SEEN: EAST FALKLANDS: PORT WILLIAM REGION, ridge on Engineer Point peninsula, 18-25 m. (2830).

Metzgeria violacea (Ach.) Dum.

Jungermannia violacea Ach. Beitr. Naturk. 1: 77. f. 1-3. 1805.

Fasciola violacea (Ach.) Dum. Comment. Bot. 114. 1822. Echinogyna

violacea (Ach.) Dum. Syll. Jung. 84. 1831. Echinomitrium

violaceum (Ach.) Corda in Sturm, Deutschl. Fl. 2: 81. 1832.

Echinomitrium furcatum δ violaceum Hub. Hep. Germ. 47. 1834.

Metzgeria violacea (Ach.) Dum. Recueil Obs. Jungerm. 26. 1835.

Metzgeria furcata δ 2 violacea Nees, Naturg. Eur. Leberm. 3: 489.

1838. Metzgeria conjugata var. β violacea Lindb. Acta Soc. Fauna Flora Fenn. 12: 34. 1877. Metzgeria decipiens var. violacea (Ach.) Hodg. in Hodgson & Sainsbury, Svensk. Bot. Tidskr. 42 (3): 278. 1948. Original material: New Zealand, Dusky Bay, 1773 Sparmann (LD) - cited in Evans (1923).

Ecology: It is of interest to note that the few collections of this species in the Falklands were gathered from Hebe bark, a habitat which is quite rare on these islands.

Phytogeography: This species occurs in the Falklands, Tierra del Fuego, southern Patagonian Channels (Brunswick Peninsula), Valdivian region (West Patagonia north of 39° 46' S., Andean Patagonia at P. N. Nahuel Huapi), Juan Fernandez and central Chile. If the reports of Hodgson (1962) for the Antipodes Islands, and Arnell (1963) for various localities in Africa prove correct, the species will have a considerably more widespread distribution. Kuwahara (1968) states for the distribution of this species, "Chile, Argentina, Bolivia."

Literature Records: TIERRA DEL FUEGO: Dusén - Porvenir (Evans 1923); Santesson - Pto. Yartou, R. Condor (Müller 1955), Pto. Yartou (Arnell 1955); Skottsberg - I. Navarino (Evans 1923). PATAGONIA: Anonymous - (Kühnemann 1937, 1949); Dusén - Punta Arenas (Evans 1923), R. Aisen, Corral, San Carlos de Bariloche (Evans 1923); Hollermayer - Panguipulli (Reimers 1926); Hosseus - Corral (Herzog 1938); Lechler - near Arique (Evans 1923); von Schrenk - Punta Arenas (Evans 1923); Schwabe - Puerto Montt (Herzog 1939); Skottsberg & Halle - Pto. Quellon (Evans 1923); Thaxter - Punta Arenas (Evans 1923). JUAN

FERNANDEZ. MAS AFUERA: Skottsberg - Cordon del Barri1 (Espinosa 1940, Evans 1930a); CENTRAL CHILE: Skottsberg - C. Talinay (Arnell 1956). SOUTH AFRICA. CAPE PROV.: Anonymous - (Arnell 1963). TRANSVAAL: Anonymous (Arnell 1963). NATAL: Anonymous - (Arnell 1963). CONGO: Anonymous - (Arnell 1963). ANTIPODES: Du Rietz (Hodgson & Sainsbury 1948 as M. decipiens var. violacea).

FALKLAND SPECIMENS SEEN: WEST FALKLANDS: WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2925 & 2926).

E. Order Marchangiales

MARCHANTIACEAE

Dum. Anal. Fam. 69. 1829.

Marchantia

L. Sp. Pl. 1137. 1753.

Marchantia berteriana Lehm. & Lindenb.

Marchantia berteriana Lehm. & Lindenb. in Lehm. Pug. Pl. 6: 21. 1834.

Original material: Juan Fernandez, 1830 Bertero (FH, NY) - cited in Evans (1917).

Marchantia tabularis Nees, Naturg. Eur. Leberm. 4: 71. 1838. Original material: South Africa, Table Mt. (non vidi).

Marchantia cephaloscypha Steph. Hedwigia 22: 51. 1883. Original material: "without definite locality, date, or collector's name . . ." (G) - cited in Evans (1917).

The typical variety of the species was reported from the Falkland Islands by Hässel (1962).

Marchantia berteriana Lehm. & Lindenb. var. polylepida Herz.

Marchantia berteriana Lehm. & Lindenb. var. polylepida Herz. Hedwigia 74 (2): 79. 1934. Original material: Columbia, near Bogotá, 3000-3200 m., Troll 2087 (JE - non vidi).

Taxonomical remarks: All observed collections from the Falklands are of M. berteriana var. polylepida.

Marchantia berteriana var. polylepida is distinguished by the possession of a third row of scales, marginal in position. There should be no confusion between this variety and M. polymorpha, which has median, laminar and marginal scales. Marchantia berteriana has smooth archegoniophore rays, cruciate pores, a scalloped, membranous thallus margin, appendages of median scales minutely and regularly crenulate, occasionally with scattered small teeth, appendate cells abruptly diminishing in size at the border, i.e., appendages with a clearly differentiated border of 1-3 rows of smaller cells. Marchantia polymorpha, on the other hand, has papillate archegoniophore rays, pores which are irregular in shape and non-cruciate, an entire

or minutely denticulate and plane or slightly undulated thallus margin, appendages of median scales irregularly crenulate to denticulate, and appendage cells gradually diminishing in size toward the border, i.e., without a distinct border of smaller cells. Further, the marginal scales of M. berteroana var. polylepida never reach the thallus border while those of M. polymorpha reach or extend slightly beyond the margin. Not every laminal scale of M. berteroana var. polylepida has an associated marginal scale, and the latter may be more or less scattered. This is shown in Hässel de Menendez (1962, p. 163, fig. 55H).

All of my Falkland collections are female or sterile, and it is possible that the islands have only one sex of the species, the plants of which are disseminated solely by gemmae.

Ecology: This taxon is common in the Falklands, and may be found in several ecological associations. It is common on soil and (occasionally) under rock ledges of outcrops in the dwarf shrub heath associations. It is not uncommon on stream banks of the former association. It is also present in the Poa flabellata association on grass bases, as well as on soil among the roots of Populus (Hill Cove settlement). It occasionally covers very large areas (see Photos 15-16).

Phytogeography: Marchantia berteroana has a pantemperate distribution; it occurs in the Falklands, the Magellanian and Valdivian regions, Juan Fernandez, the Argentine steppe region (Prov. Tucuman, Córdoba, San Luis, Buenos Aires), Inaccessible and Nightingale Islands,

St. Helena, South Africa, Marion, Corzets, Kerguelen, Auckland, and Campbell Islands, and New Zealand.

Literature Records (FALKLANDS): Anonymous - (Kühnemann 1937 as M. cephaloscypha and M. tabularis); Hooker (Evans 1917); Skottsberg - Port Stanley (Hässel 1962 as var. typica, Stephani 1905a as M. cephaloscypha), Halfway Cove, Westpoint Island, Port Stanley (Skottsberg 1913 as M. cephaloscypha).

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: Hooker, as M. polymorpha (BM-c. archegonio.). KIDNEY ISLAND, north of shanty (2791-c. archegonio. & 2799). PORT WILLIAM REGION, south shore of Cape Pembroke peninsula, near Surf Bay, sea level (2431-c. archegonio.); north side of Gypsy Cove, sea level (3244-c. archegonio., 3245 & 3246); ridge on Engineer Point peninsula, 18-25 m. (2832). STANLEY REGION, Sapper Hill, 135 m. (2400-c. archegonio.). WEST FALKLANDS: PORT HOWARD, Freezer Rocks, on east slope of Mt. Maria, 320 m. (3148-c. archegonio. & 3154). FOX BAY REGION, near mouth of Cheeks' Creek, c. 12 m. (3487-c. archegonio.); near peat cuttings in Ram Paddock, 45-60 m. (3507-c. archegonio.). HILL COVE REGION, in settlement 15 m. (3051). WESTPOINT ISLAND, steep slope & cliffs facing The Woolly Gut (2940); near The Waterfall, 30-90 m. (2846, 2858 & 2863). WEDDELL ISLAND, summit of peak northeast of Mt. Weddell, 335 m. (3357 & 3360-c. archegonio.). NEW ISLAND, shore of Ship Harbour north of Ship Island (3289); ridge between Bold Hill & Bold Point, 105 m. (3266).

Marchantia Species Excluded from Falklands

Marchantia polychnemos (sic.) Schwaegr. (= M. platychnemos) was reported from the Falklands by Gaudichaud (1825, 1826). This species is a synonym of M. papillata (see below).

Marchantia papillata Raddi. The Falkland record under this epithet was made by Evans (1917), and it is merely a literature citation of the Gaudichaud references to M. polychnemos (sic.), without examination of a specimen. Kühnemann (1949) based his report on Evans. As the source of the record is a 1825 and 1826 paper, and the species has not been subsequently reported, I regard it best to exclude M. papillata from the Falkland flora. The species is known from the West Indies, Peru, Bolivia, Paraguay, Uruguay, Brazil, and Argentina (Prov. Tucuman, Misiones, Cordoba, and Buenos Aires).

Marchantia polymorpha L. This species was reported for the Falklands by Gaudichaud (1825, 1826), Hooker and Taylor (1844), G. L. & N. (1846) and Taylor and Hooker (1847b). The Hepaticae on which Gaudichaud based his report were collected by Dumont d'Urville and they are not in PC. The remainder of reports are based upon a specimen which is actually M. berteriana.

F. Order Anthocerotales

ANTHOCEROTACEAE

Lindb. Acta Soc. Sci. Fenn. Vol. 10. 1875.

Megaceros

Campb. Annls Bot. 21: 469. 1907.

Megaceros fuegiensis Steph.

Megaceros fuegiensis Steph. K. Svenska VetenskAkad. Handl. 46 (9):

91. 1911. Dendroceros fuegiensis (Steph.) Hässel, Opera Lilloana 7: 32. 1962. Original material: Argentina, Terr. Tierra del Fuego, near L. Fagnano, 13 March 1908 Halle 252 (S-PA) - cited in Hässel (1962).

Ecology: Based upon positively identified specimens, this species was collected but once in the Falklands. It was gathered at the margin of a waterfall in a dwarf shrub heath.

Phytogeography: This taxon occurs in the Falklands, the deciduous forested region of Tierra del Fuego, the Valdivian region (West Patagonia north to 40° 40' S., Andean Patagonia north to 41° 02' S.), East Patagonia in Prov. Tucuman and Juan Fernandez. It has not been collected in the Patagonian Channels.

Literature Records: TIERRA DEL FUEGO: Anonymous - (Kühnemann 1937, 1949); Halle - Fuegia (Hässel de Menendez 1962 as Dendroceros, Stephani 1923), L. Fagnano (Hässel de Menendez 1962 as Dendroceros); Santesson - Ushuaia, Valle Lasifashaj, S. de Sorondo (Arnell 1955), Ushuaia, Las Cotorras (Hässel de Menendez 1962 as Dendroceros); Spegazzini - Tierra del Fuego (Hässel de Menendez 1962 as Dendroceros). PATAGONIA: Hässel de Menendez - Pto. Blest, L. Frias (Hässel de Menendez 1962 as Dendroceros); Kühnemann - A. Bravo, Torrecillas (Hässel de Menendez 1962 as Dendroceros); Schwabe - Pto. Puyuhuapi, L. Riso Patron, I. Magdalena (Herzog 1954); Sleumer - Pto. Alegre (Hässel de Menendez 1962 as Dendroceros); Sparre - R. Chanleufu (Hässel de Menendez 1962 as Dendroceros). JUAN FERNANDEZ. MAS A TIERRA: Skottsberg - C. Damajuana - 248 m. (Evans 1930, Hässel de Menendez 1962 as Dendroceros). MAS AFUERA: Skottsberg - Q. Casas - 200 m. (Espinosa 1940, Evans 1930, Hässel de Menendez 1962 as Dendroceros).

FALKLAND SPECIMEN SEEN: WEST FALKLANDS: WESTPOINT ISLAND: near The Waterfall, 30-90 m. (2844 - c. sporo. + o→).

Notes on Anthocerotae

Megaceros sp. I have collected several specimens of Megaceros, which are without sporophytes. I have placed them in Megaceros because of the presence of a unistratose wing, a character absent in Anthoceros. The unistratose wings are variable and may be entirely absent in certain portions of the thallus. For a discussion of the variability of the thallus wing in the Anthocerotae, see Hässel de Menendez (1962, p. 9).

I have studied two British Museum collections labeled "Anthoceros punctatus" from the Falklands (both without collector indicated, but were likely gathered by Hooker). Both specimens are without sporophytes, but possess a unistratose wing which is occasionally quite undulated. These collections are also referable to the genus Megaceros.

It is likely that, if sporophytes were present, these specimens would be referable to Megaceros fuegiensis.

FALKLAND SPECIMENS SEEN: EAST FALKLANDS: MT. USBORNE REGION: below The Gap, c. 90 m. (2591 - c. o→). WEST FALKLANDS: FOX BAY REGION: north base of Fox Bay Mt., 75 m. (3468 - c. o→); WESTPOINT ISLAND: cliffs facing The Woolly Gut (2938); NEW ISLAND: shore of Ship Harbour north of Ship Island (3290).

Anthoceros maritimus Steph. This species was described by Stephani (1916) for a Falkland Island Skottsberg collection. Hässel de Menendez (1962) includes this species under her "Especies Dudosas" and states the Geneva syntype plant which she studied possessed archegonia but neither antheridia nor sporophytes.

Anthocerotae Species Excluded from the Falklands

Anthoceros punctatus L. This species was reported from the Falklands by Gaudichaud (1825 and 1826), Kühnemann (1937 and 1949) and Taylor and Hooker (1847b). The specimens on which the Taylor and Hooker report were based are referable to Megaceros sp.; see note

above. I have not located the specimen on which the Gaudichaud report was based, but I regard it probable that it will prove to be a specimen of Megaceros.

LITERATURE CITED

LITERATURE CITED

- Adie, R. J. 1952. The position of the Falkland Islands in a reconstruction of Gondwanaland. *Geol. Mag.* 89 (6): 401-410.
- . 1952. Representatives of the Gondwana System in the Falkland Islands. *Symposium sur les series de Gondwana*, 19th Int. Geol. Congr., Algiers, 1952. 385-392.
- . 1953. New evidence of sea-level changes in the Falkland Islands. *Falkland Islands Dependencies Survey Scientific Reports*, no. 9, 8 pp.
- . 1958. Falkland Islands. (Iles Malouines ou Falkland; Islas Malvinas). In: *Lexique stratigraphique international*. Vol. 5. *Amérique Latine*, Fasc. 9c, 35-55.
- Allorge, P. and H. Persson, 1938. Contribution a la flore hepaticologique des iles Acores. *Annls Bryol.* 11: 6-14.
- American Geographical Society of New York. American Geographical Society Map of Hispanic America, publication no. 5. Index to map of Hispanic America 1: 1,000,000. Vol. 10. Geographical names in Argentina. United States Government Printing Offices, Washington, 1944.
- Andersson, J. G. 1907. Contributions to the geology of the Falkland Islands. *Wiss. Ergebn. Schwed. Sudpolarexped.* 3, Lief. 2, 38 pp.
- Ångström, J. 1872. Forteckning och beskrifning ofver mossor, samlade . . . manad 1852. *Öfvers. K. VetenskAkad. Förh.* 29 (4): 3-13.
- Arnell, S. 1953a. List of Hepaticae collected in Marion Island by Mr. R. W. Rand Dec. 1951-April 1952. *Svensk Bot. Tidskr.* 47 (3): 411-425. f. 1-13.
- . 1953b. Notes on South African Hepaticae. *Revue Bryol. Lichén.* 22 (1-2): 3-5.
- . 1954. Species of *Riccardia* collected by H. Roivainen in Tierra del Fuego and West Patagonia, 1928-29. *Suomal. Eläin- Ja Kasvit. Seur. Van. Tiedon. Pöytäk.* 9 (1): 48-55. f. 1-10.

- _____. 1955. Hepaticae of Chile and Argentina collected by R. Santesson. *Svensk Bot. Tidskr.* 49: 229-239.
- _____. 1956. Hepaticae collected by Dr. and Mrs. Carl Skottsberg on Cerro Talinay, Prov. Coquimbo, Chile, 1955. *Svensk Bot. Tidskr.* 50 (2): 308-312. f. 1-3.
- _____. 1956. Hepaticae collected in Cuba and Hispaniola by E. L. Ekman. *Bryologist* 59 (4): 271-276. 1 pl.
- _____. 1957. Hepaticae collected during Dr. and Mrs. C. Skottsberg's second expedition to the Juan Fernandez Islands, Dec. 1954-March 1955. *Ark. Bot. II.* 4: 1-21. f. 1-4.
- _____. 1958. Hepatics from Tristan da Cunha. *Results Norw. Scient. Exped. Tristan da Cunha 1937-1938*, no. 42: 1-76. 30 figs.
- _____. 1961. Some new American Species of hepatics. *Svensk Bot. Tidskr.* 55: 205-210.
- _____. 1963. Hepaticae of South Africa. Pp. 1-411. Stockholm.
- _____. 1965. Hepaticae collected by Mr. Gillis Een in Mauritius and Reunion in 1962. *Svensk Bot. Tidskr.* 59 (1): 65-84.
- Ashton, D. H. and A. M. Gill. 1965. Pattern and process in a Macquarie Island Feldmark. *Proc. R. Soc. of Vict.* 79 (1): 235-245. pl. 28-29.
- Baker, H. A. 1922. Final report on geological investigations in the Falkland Islands, 1920-1922. Port Stanley, Government Printer.
- Berggren, S. 1898. On New Zealand Hepaticae. Pp. 1-48. f. 1-32. Lund (E. Malström).
- Bescherelle, E. 1893. Énumération des Hépatiques. *J. Bot.*, Paris 7: 183-194.
- _____. 1898. Énumération des Hépatiques connues dans les îles de la Société (principalement à Tahiti) et dans les îles Marquises. *J. Bot.*, Paris 12: 136-150.
- _____. and C. Massalongo. 1886. Hepaticae novae americanae-australes. *Bull. Mens. Soc. Linn. Paris* 1 (79): 626-632; (80): 637-640.
- _____. and _____. 1889. Muscinees. I.-Hépatiques. *Mission Scient. Cap Horn. 1882-1883.* 5: 201-252. pl. 1-5.
- Bonner, C. E. B. 1953. De Hepaticis I. The Genus Alobiella (Spruce) Schiffner emend. Stephani. *Candollea* 14: 93-99.

- _____. 1962-66. Index Hepaticarum. Parts 1-6. Cramer.
- _____, H. Bischler and H. A. Miller. 1961. The transition, subgenus--genus, of Spruce's segregates of Lejeunea. Nova Hedwigia 3 (2-3): 351-359.
- _____, and H. A. Miller. 1960. Studies in Lejeuneaceae. I. The typification of Lejeunea. Bryologist 63 (4): 217-225. 2 pl. 1 table.
- Brown, Peter and George B. Stratton [ed]. 1963-65. World list of Scientific Periodicals published in the years 1900-1960, fourth ed. Vol. 1-3. Butterworths, London.
- Buch, Hans. 1934. Verzeichnis der von H. Roivainen in Südchile während der Auer'schen feuerlandexpedition um jahre 1929 gassammelten Plagiochila-arten. Annls Bryol. 7: 1-5. f. 1-8.
- Carl, H. 1931. Beiträge zur Kenntniss der Lebermoosgattungen Syzygiella Spruce und Jamesoniella Spruce. Hedwigia 71: 283-304. f. 1-11.
- Carrington, B. and W. H. Pearson. 1888. List of Hepaticae collected by R. A. Bastow, Esq., F. L. S., near Hobart, Tasmania, 1885-6. Pap. Proc. R. Soc. Tasm. 1887: 49-52.
- Castle, H. 1963. A revision of the genus Radula. Part II. Subgenus Acroradula. Section 6. Saccatae. Revue Bryol. Lichén. 32: 1-48.
- Cawkell, M. B. R., D. H. Maling, and E. M. Cawkell. 1960. The Falkland Islands. Pp. i-xii, 1-252. pl. 1-16. Macmillan & Co. Ltd., London.
- Clark, Lois and Carol Palm. 1961. Frullania magellanica. Bryologist 64 (1): 76-80. f. 1-26.
- Corda, A. J. C. 1829. Genera Hepaticarum in Opiz [ed.] Beitr. Naturg. 12: 643-655.
- Crandall, B. J. 1969. Morphology and development of branches in the leafy Hepaticae. Beih. Nova Hedwigia 30: i-vii, 1-261. pl. 1-78.
- Dallimore, W. 1919. XI. - The Falkland Islands. Forestry. Tussock Grass. Bull. Misc. Inf. R. Bot. Gdns Kew 1919: 209-221. pl. 1-2.
- Davies, William. 1939. The grasslands of the Falkland Islands. Pp. i-x, 1-86. pl. 1-18, maps 1-2. Port Stanley, Government Printer.

- De Notaris, J. 1855. *Jungermanniearum americanarum pugillus*. *Memorie Accad. Sci. Torino* II. 16: 211-238. pl. 1-21.
- Dugas, Marguerite. 1929. Contribution a l'etude du genre "Plagiochila" *Dum. Annls Sci. Nat.* X. 11: 1-199. f. 1-179.
- Dusén, P. 1905. Mousses et Hépatiques en Autran E., Enumeration des plantes recoltées par M. Stuart Pennington en Tierra del Fuego. *Trab. Inst. Bot. Farmac., B. Aires* 10: 15-16.
- Engel, John J. 1968. A taxonomic monograph of the genus Balantiopsis (Hepaticae). *Nova Hedwigia* 16: 83-130. pl. 27 (1)-59 (33).
- _____ and R. Grolle. 1971. Marsupidium in South America. *J. Hattori Bot. Lab.* 34: 437-444. pl. 1-2.
- Espinosa Bustos, M. R. 1940. Hepaticas chilensas fernandecinas y del continente. *Boln Mus. Nac. Hist. Nat. Chile* 18: 125-128.
- Evans, A. W. 1892. 5. List of liverworts from southern Patagonia. In: List of plants collected by the U.S.S. Albatross in 1887-'91 along the western coast of America. *Contr. U.S. Natn. Herb.* 1: 140-142. pl. 15, 16.
- _____. 1898. An enumeration of the Hepaticae collected by John B. Hatcher in southern Patagonia. *Bull. Torrey Bot. Club.* 25 (8): 407-431. pl. 345-348. [Reprinted as pp. 35-62 in W. B. Scott, [ed.], *Reports of the Princeton University Expeditions to Patagonia, 1896-1899, J. B. Hatcher in charge. Vol. 8, Botany. Patagonia & Stuttgart.*]
- _____. 1917. The American species of Marchantia. *Trans. Conn. Acad. Arts Sci.* 21: 201-313.
- _____. 1921. The genus Riccardia in Chile. *Trans. Conn. Acad. Arts Sci.* 25: 93-209.
- _____. 1923. The Chilean species of Metzgeria. *Proc. Am. Acad. Sci.* 58 (7): 269-324. f. 1-10.
- _____. 1925. The lobate species of Symphyogyna. *Trans. Conn. Acad. Arts Sci.* 27: 1-50.
- _____. 1930a. The thallose Hepaticae of the Juan Fernandez Islands. In: C. Skottsberg, *The Natural History of Juan Fernandez and Easter Island* 2: 551-586. f. 1-6.
- _____. 1930b. Two species of Lejeunea from Chile. *Annls Bryol.* 3: 83-88. f. 1-2.

- Fulford, M. 1962. Segregate genera of the Lepidozia complex (Hepaticae) Part 3. Microlepidozia Jörg. and Micrisophytia gen. nov. Brittonia 14 (1): 121-136.
- _____. 1963a. Segregate genera of the Lepidozia complex (Hepaticae). Part 4. Telaranea and a review of the Lepidoziaceae. Brittonia 15 (1): 65-86.
- _____. 1963b. Manual of the Leafy Hepaticae of Latin America. Part I. Mem. N.Y. Bot. Gdn 11 (1): 1-172. pl. 1-37 (unnumbered).
- _____. 1963c. Continental drift and distribution patterns in the leafy Hepaticae. Soc. Econ. Paleont. Miner. 1963: 140-145. 2 fig.
- _____. 1966. Manual of the Leafy Hepaticae of Latin America. Part II. Mem. N.Y. Bot. Gdn 11 (2): 173-276. pl. 38-65.
- _____. 1968. Manual of the Leafy Hepaticae of Latin America. Part III. Mem. N.Y. Bot. Gdn 11 (3): 277-392. pl. 66-107.
- _____ and R. E. Hatcher. 1959. Triandrophyllum, a new genus of Leafy Hepaticae. Bryologist 61 (4): 276-285. f. 1-29.
- _____ and _____. 1962. The genus Triandrophyllum--some nomenclatural changes. Bryologist 64 (4): 348-351.
- _____ and J. Taylor 1961. The segregate genera of the Lepidozia complex (Hepaticae) Part 2. Two new genera, Bonneria and Paracromastigum. Brittonia 13 (4): 334-339.
- Gaudichaud, C. 1825. Rapport sur la flore des Iles Malouines. Annls Sci. Nat. 5: 89-110. (Hepaticae, p. 98).
- _____. 1826. Voyage Autour du Monde. Voyage, avec L'Uranie et Le Physicienne, 1817-20. Botanique, par. Gaudichaud, C. Paris, 1826. 1 vol. text + 1 vol. atlas. (Hepaticae, pp. 130, 215-221).
- Gay, C. 1852. Historia física y política de Chile. Botánica 7: 5-515. (See Montagne, 1852).
- Gillham, Mary. 1967. Sub-Antarctic Sanctuary. Summertime on Macquarie Island. Pp. 1-223. Reed.
- Godley, E. J. 1960. The botany of southern Chile in relation to New Zealand and the subantarctic. Proc. R. Soc. ser. B. 152 (949): 457-75.

- Gola, G. 1923. Le epatiche raccolte dal Dott. G. B. de Gasperi nella Terra del Fuoco sud-occidentale. *Nuovo G. Bot. Ital.* 29: 162-173.
- Gottsche, C. M. 1857. Pugillus novarum Hepaticarum, e recensione Herbarii Musei Parisiensis, congestus. *Annls Sci. Nat.* IV. 8: 318-348.
- _____, J. B. G. Lindenberg, and C. G. Nees ab Esenbeck 1844-1847. *Synopsis Hepaticarum*. 1-834. Hamburg, 834 pp. [Fasc. I, pp. 1-144, 1844; Fasc. II-III, pp. 145-464, 1845; Fasc. IV, pp. 465-624, 1846; Fasc. V, pp. 625-834, 1847].
- Greene, S. W. 1964. Plants of the Land. In: Priestley [ed.], *Antarctic Research*. Pp. 240-251. Butterworth & Co. Ltd., London.
- _____, and D. M. Greene. 1963. Check list of the sub-antarctic vascular flora. *The Polar Record* 11 (73): 411-18.
- Grolle, R. 1956. Revision der Clasmatocolea-Arten. *Revue Bryol. Lichén.* 25 (3-4): 288-303.
- _____. 1959a. Beitrag zur Kenntnis der afrikanischen Lophocoleen. *Trans. Br. Bryol. Soc.* 3 (4): 582-598. pl. 1-3.
- _____. 1959b. Über Herpocladium fissum Mitt. Ein Nachtrag zu "Was ist Pachyglossa." *Revue Bryol. Lichén.* 28: 346-352.
- _____. 1960a. Beiträge zur Kenntnis von Barbilophozia, insbesondere B. floerkei und B. hatcheri. *Nova Hedwigia* 2: 555-566.
- _____. 1960b. Über Saccogyna Dum. und Saccogynidium, eine neue Lebermoosegattung. *J. Hattori Bot. Lab.* 23: 41-67.
- _____. 1960c. Nachtrag zur "Revision der Clasmatocolea-Arten." *Revue Bryol. Lichén.* 29 (1-2): 68-91.
- _____. 1961. Notulae hepaticologicae IV.-V.-VI. *Revue Bryol. Lichén.* 30 (1-2): 80-84.
- _____. 1962. Monographie der Lebermoosegattung Leptoscyphus Mitt. *Nova Acta Leopoldina* 25 (161): 1-143. pl. 1-25.
- _____. 1963a. Notulae hepaticologicae VII-IX. *Revue Bryol. Lichén.* 32: 157-165.
- _____. 1963b. Über Kurzia v. Martens. *Revue Bryol. Lichén.* 32: 166-180.

- _____. 1964a. Temnoma-Blepharostoma Miszellen. J. Hattori Bot. Lab. 27: 47-50. f. 1.
- _____. 1964b. Miscellanea hepaticologica (11-20). J. Jap. Bot. 39 (6): 173-178.
- _____. 1964c. Miscellanea hepaticologica 21-30. J. Jap. Bot. 39 (8): 236-241.
- _____. 1964d. Notulae hepaticologicae X-XIII. Revue Bryol. Lichen. 33 (1-2): 224-229.
- _____. 1965a. Über Gymnanthe concinna und Lethocolea. Bot. Mag., Tokyo 78 (921): 79-84. f. 1.
- _____. 1965b. Die Lebermoosgattungen Blepharidophyllum Angstr. und Krunodiplophyllum nov. gen. (Scapaniaceae). J. Hattori Bot. Lab. 28: 55-74.
- _____. 1965c. Wettsteinia Schiffn. J. Hattori Bot. Lab. 28: 94-100.
- _____. 1965d. Miscellanea hepaticologica 31-40. J. Hattori Bot. Lab. 28: 101-106. f. 1.
- _____. 1966a. Herzogobryum--eine beblätterte Lebermoosgattung mit dorsal verzähnten merophyten. Öst. Bot. Z. 113: 220-234.
- _____. 1966b. Miscellanea hepaticologica (61-70). J. Jap. Bot. 41 (8): 225-232. f. 1-2.
- _____. 1967. Monographie der Lepidolaenaceae. J. Hattori Bot. Lab. 30: 1-53. pl. 1-14.
- _____. 1969. Grossdisjunktionen in artarealen Lateinamerikanischer Lebermoose. In: Fittkau, E. J., J. Illies, H. Kinge, G. H. Schwabe & H. Sioli (ed.). Biogeography and ecology in South America. pp. 562-582. f. 1-11. W. Junk. N. Y.
- _____. 1970a. Cephaloziella divaricata (Sm.) Schiffn. statt der illegitimen C. starkei (Funck ex Nees) Schiffn. Herzogia 1: 377-383. f. 1.
- _____. 1970. Nomina Conservanda Proposita (312). Taxon 19 (4): 646-647.
- _____. 1971. Jamesoniella und Verwandte. Feddes Repert. 82 (1): 1-100. pl. 1-23.
- Halle, T. G. 1912. On the geological structure and history of the Falkland Islands. Bull. Geol. Instn Univ. Upsala, 11: 115-229.

- Hässel de Menendez, G. G. 1961a. Las especies argentinas del genero Symphyogyna. Boln Soc. Argent. Bot. 9: 233-260.
- _____. 1961b. Las especies sudamericanas del genero Pallavicinia. Boln Soc. Argent. Bot. 9: 261-282.
- _____. 1962. Estudio de las Anthocerotales y Marchantiales de la Argentina. Opera Lilloana 7: 1-297. f. 1-105. p. 1-12.
- _____. 1967. Estados iniciales de especies Sudamericanas del genero Riccardia I. Boln Soc. Argent. Bot. 11 (2-3): 97-104. f. 1-3.
- _____. in prep. Revision taxonómica de los generos Riccardia y Anerua (especies andinopatagonicas y subantarcticas incluyendo las Islas Juan Fernandez, Malvinas, Georgias de Sud, etc.). Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat.
- _____ and Silvia S. Solari. 1970. Consideraciones sobre el genero "Austrolophozia" ("Hepaticae"). Revta Mus. Argent. Cienc. Nat. Bernardino Rivadavia Inst. Nac. Invest. Cienc. Nat. 3 (6): 239-247. f. 1-2.
- Hatcher, Raymond E. 1960-61. A monograph of the genus Isotachis (Hepaticae). Part I. Nova Hedwigia 2: 573-608. 1960. Part II. Nova Hedwigia 3: 1-35. pl. 1-30. 1961.
- Herzog, T. 1923. Beitrage zur Bryophytenflora Chiles. Hedwigia 64: 1-18.
- _____. 1926. Geographie der Moose. Pp. x-xi, 1-439. f. 1-151. pl. 1-8. Jena.
- _____. 1934. Die Bryophyten der Andenreisen von C. Troll (Bolivia, Columbia, Panama). Hedwigia 74: 79-114. f. 1-13.
- _____. 1938. Hepaticae. In: T. Herzog & C. C. Hosseus, Contribucion al Conocimiento de la Flora Briofita del Sur de Chile. Archos Esc. Farm. Córdoba 7: 1-56.
- _____. 1938. Hepaticae Standleyanae Costaricensis et Hondurenses. Revue Bryol. Lichén. 11 (1-2): 5-30. f. 1-6.
- _____. 1939. I. Verzeichnis der gesammelten Bryophyten. In: Herzog, Schwabe & Schwabe, Zur Bryophytenflora Sudchiles. Beih. Bot. Zbl. 60 (B): 1-35. f. 1-10.
- _____. 1940. Die Moose der Expedition Ljungner nach Patagonien, 1932/34. Ark. Bot. 29A (21): 1-17.

- _____. 1942. Die foliosen Lebermoose der Juan Fernandez-Inseln und der Osterinsel. In: Skottsberg, Nat. Hist. Juan Fernandez, Easter Island 2 (5): 697-752. f. 1-14.
- _____. 1943. Eine kleine Lebermoos-Sammlung aus Chile. Acta Horti Gothoburg. 15: 157-162. f. 1.
- _____. 1948. III. Hepaticas. In: Skottsberg, Apuntes sobre la flora y vegetacion de Frai Jorge (Coquimbo, Chile). Acta Horti Gothoburg. 18: 177, 178.
- _____. 1951. Revision der Lebermoosgattung Lembidium Mitt. Ark. Bot. II. 1 (13): 471-503. f. 1-13.
- _____. 1954. Zur Bryophytenflora Chiles. Revue Bryol. Lichén. 23: 27-99. f. 1-24.
- _____. 1957. Eine Briophytensammlung aus dem argentinischen Nationalpark Nahuelhuapi. Darwiniana 11: 207-222.
- _____. 1960. Weitere Beiträge zur Bryophytenflora von Chile. Revue Bryol. Lichén. 29 (3-4): 183-206. f. 1-6.
- _____ and R. Grolle. 1958. Was ist Pachyglossa? Revue Bryol. Lichén. 27 (3-4): 147-165. f. 1-5.
- Hewson, H. J. 1970. The family Aneuraceae in Australia and New Guinea: I. the genus Anerua. Proc. Linn. Soc. N. S. W. 94 (2): 173-193. f. 1-3. pl. 11-12.
- Hodgson, E. Amy. 1943. A review of the New Zealand species of the genus Chiloscyphus. Being the second of a series of papers on New Zealand Hepaticae. Trans. R. Soc. N. Z. 73 (1): 27-52. f. 1-29.
- _____. 1946. New Zealand Hepaticae (Liverworts). V. The family Jungermanniaceae. Trans. R. Soc. N. Z. 76 (1): 68-86.
- _____. 1949. A review of the New Zealand species of the genus Isotachis. Bryol. Lichén. 18 (1-2): 25-31.
- _____. 1953. New Zealand Hepaticae (Liverworts)--VII. A review of the New Zealand species of the genus Lophocolea with notes on Chiloscyphus. Trans. R. Soc. N. Z. 80 (3-4): 329-358. pl. 75-77.
- _____. 1956. New Zealand Hepaticae (Liverworts)--IX. A review of the New Zealand species of the genus Lepidozia. Trans. R. Soc. N. Z. 83 (4): 589-620. f. 1-2.

- _____. 1958. New Zealand Hepaticae (Liverworts)--X. Marsupidal genera of New Zealand. Trans. R. Soc. N. Z. 85 (4): 565-584. f. 1-2.
- _____. 1959. New Zealand Hepaticae. XI. A review of the New Zealand species of the genus Lepidolaena. Trans. R. Soc. N. Z. 87 (3-4): 199-210. fig. 1.
- _____. 1961. New Zealand Hepaticae (Liverworts). XI--A review of the New Zealand species of the genus Metzgeria. Trans. R. Soc. N. Z. 88 (4): 713-725. f. 1-2.
- _____. 1962. Hepatics from the subantarctic islands of New Zealand including "Cape Expedition" collections from the Auckland and Campbell Islands. Rec. Dom. Mus., Wellington 4 (11): 101-132.
- _____. 1965. New Zealand Hepaticae (Liverworts)--XVI. A miscellany of new genera, new species and notes, part I. Trans. R. Soc. N. Z. 3 (4): 67-97. f. 1-2.
- _____. 1967. New Zealand Hepaticae (Liverworts)--XVII. A miscellany of taxonomic notes. Part 2. Trans. R. Soc. N. Z. 3 (11): 175-198. f. 1-5.
- _____. 1968. New Zealand Hepaticae (Liverworts)--XVIII. A review of the New Zealand species of the genera Pallavicinia and Symphyogyna. Trans. R. Soc. N. Z. (15): 221-230.
- _____ and K. W. Allison. 1962. New Zealand Hepaticae (Liverworts)--XIII. A review of the New Zealand species of the genus Temnoma and of Anoplostoma, a new genus. Trans. R. Soc. N. Z. 1 (12): 139-154. f. 1-2.
- _____ and G. O. K. Sainsbury. 1948. Bryophytes collected by G. E. Du Rietz on the Antipodes Islands. Svensk Bot. Tidskr. 42: 273-280.
- Holdgate, M. W. 1961. Vegetation and soils in the south Chilean islands. J. Ecol. 49: 559-80.
- Hooker, J. D. 1847. Botany Antarctic Voyage . . . 1839-1843. 1 (2): 209-574.
- _____. 1867. Handbook of the New Zealand Flora. London. (Hepaticae, pp. 497-549, 750-755).
- _____ and T. Taylor. 1844. Hepaticae antarcticae. London Jour. Bot. 3: 366-400, 454-481, 556-582.

- _____ and _____. 1845. *Hepaticae Antarcticae, supplementum: or specific characters, with brief descriptions, of some additional species of the Hepaticae of the Antarctic Regions, New Zealand Tasmania, together with a few from the Atlantic Island and New Holland.* London Jour. Bot. 4: 79-97.
- Hooker, W. J. 1818-1820. *Musci Exotici; containing figures and descriptions of new or little known foreign mosses and other cryptogamic subjects.* Vol. I. pl. 1-96, 1818. Vol. II. pl. 97-176, 1820.
- Hueck, Kurt. 1966. *Die Wälder Südamerikas. Ökologie, Zusammensetzung und wirtschaftliche Bedeutung.* Stuttgart. Gustav Fischer.
- Inoue, H. 1972. *Plagiochilaceae notes II. Critical notes on some Plagiochila species from southern South America.* Bull. Natn. Sci. Mus., Tokyo 15 (1): 171-179.
- _____ and R. M. Schuster. 1971. *A monograph of the New Zealand and Tasmanian Plagiochilaceae.* J. Hattori Bot. Lab. 34: 1-225. f. 1-77.
- Kühnemann, Otto. 1937. *Contribucion al catalogo briologico argentino.* Revta Cent. Estud. Doct. Cienc. Nat., B. Aires 1: 85-97, 155-181.
- _____. 1949. *Catalogo de las hepaticas Argentinas.* Lilloa 19: 319-375.
- Kuschel, G. 1960. *Terrestrial zoology in southern Chile.* Proc. R. Soc. ser. B. 152 (949): 540-550.
- Kuwahara, Y. 1958. *A revision of the Japanese species of the genus Metzgeria.* J. Hattori Bot. Lab. 20: 124-141. f. 1-7.
- _____. 1960. *The genus Metzgeria in Pacific Oceania.* J. Hattori Bot. Lab. 23: 3-28. f. 1-10.
- _____. 1965a. *The Metzgeriaceae of Mt. Kinabalu, North Borneo.* Jour. Hattori Bot. Lab. 28: 166-170. f. 1.
- _____. 1965b. *A short survey of the Himalayan Metzgeriaceae.* J. Hattori Bot. Lab. 28: 292-298. f. 1.
- _____. 1966. *The family Metzgeriaceae in North and South East Asia, Pacific Oceania, Australia and New Zealand.* Revue Bryol. Lichén. 34 (1-2): 191-239. f. 1-22.

- _____. 1968. Studies of a recent collection of Metzgeriaceae in the Philippines. J. Hattori Bot. Lab. 31: 159-175. f. 1-8.
- _____. 1969. Taxonomic accounts of the "hair falcate" species of the hepatic genus Metzgeria. Nova Hedwigia 17: 359-368. pl. 1-6.
- Lanjouw, J. [ed.] 1950. Synopsis of Proposals concerning the International Rules of Botanical Nomenclature submitted to the Seventh International Botanical Congress-Stockholm 1950. Utrecht, Netherlands.
- _____. 1952. International Code of Botanical Nomenclature. Adopted by the Seventh International Botanical Congress, Stockholm, July 1950. Utrecht, Netherlands.
- _____. 1966. International Code of Botanical Nomenclature. Adopted by the tenth international Botanical Congress. Edinburgh, August 1964. Utrecht, Netherlands.
- _____ and F. A. Stafleu. 1964. Index Herbariorum. Part 1. The herbaria of the world. Fifth Edition. Regnum Veg. 31: 1-251.
- Martin, William. 1949. The Bryophytes of Stewart Island. Part I. Trans. R. Soc. N. Z. 77 (2): 257-277.
- Massalongo, C. 1885. Epatiche raccolte alla Terra del Fuoco dal Dott. C. Spegazzini Nell'Anno 1882, Illustrate dal Dott. Nuovo G. Bot. Ital. I. 17: 201-277. pl. 12-28.
- _____. 1906. Epatiche della Republica Argentina raccolte dal Prof. C. Spegazzini. Atti Accad. Sci. Med. Nat. Ferrara. 80 (3-4): 7-18. f. 1-15.
- _____. 1927. Revisio critica Hepaticarum quas in Republica Argentina Prof. C. Spegazzinius legebat, additis (speciebus) novis. Atti Ist. Veneto Sci. 87: 215-252.
- Miller, H. A. 1963. Notes on Hawaiian Hepaticae V. Collections from recent Swedish expeditions. Ark. Bott. II. 5 (2): 489-531. f. 1-11.
- Mitten, William. 1851. Catalogue of cryptogamic plants collected by Professor W. Jameson in the vicinity of Quito. Hooker's J. Bot. Kew Gdn Misc. 3: 49-57, 351-361.
- _____. 1854-55. Nat. Ord. CI. Hepaticae, L. In: Hooker f. Botany Antarctic Voyage 2 (2): 125-160, 11 July 1854; 161-172, 9 February 1855.

- _____. 1859. Nat. Ord. VI. Hepaticae. In: Hooker f. Botany Antarctic Voyage 3 (2): 221-241.
- _____. 1864. A new genus of Hepaticae. Adelanthus. J. Proc. Linn. Soc. 7: 243-244.
- _____. 1876. The Musci and Hepaticae collected by H. N. Moseley, M. A., Naturalist to H. M. S. Challenger. J. Linn. Soc. 15: 59-73.
- _____. 1877. List of Hepaticae collected by Rev. A. E. Eaton at the Cape of Good Hope (August and September 1874). J. Linn. Soc. 16: 187-196. pl. 4-5.
- _____. 1879. III. Hepaticae. Phil. Trans. R. Soc. 168 (extra vol.): 40-45.
- _____. 1884-85. Hepaticae. In: Thomson C. W. and J. Murray, Rep. Scient. Results Challenger. Botany 1 (1): 92-93. 1884. 1 (2): 43-45, 105-108, 176-178, 202-203, 229-232, 257, 278-279. 1884. 1 (3): 84-89, 213-214, 262-263. 1885.
- Mizutani, Masami and Sinske Hattori. 1959. On some little known species of Lophocolea (Hepaticae) from the Southern Hemisphere. J. Jap. Bot. 34 (6): 167-173. f. 1-2.
- Montagne, J. F. G. 1845. Plantes cellulaire. In: Hombron & Jacquinot, Botanique. Voyage au pôle sud et dans l'Océanie, sur les corvettes l'Astrolabe et la Zélée, exécuté par ordre du roi pendant les années 1837-1838-~~1839~~-1840, sous le commandement de M. Dumont-d'Urville, Capitaine de vaisseau, publié par ordonnance de sa majesté, sous la direction supérieure de M. Jacquinot, capitaine de vaisseau, commandant de la Zélée. Vol. 1, pp. i-xiv, 1-349. (Hepaticae, pp. 210-280). [Plates appeared separately prior to 1844, fide W. J. Hooker in Lond. J. Bot. 3: 127-130. 1844.]
- _____. 1852. II. Hepaticas. In: Gay, Historia física y política de Chile. Botánica. 7: 202-237.
- _____. 1856. Sylloge generum specierumque cryptogamarum. Pp. i-xxiv, 1-498. (Hepaticae, 52-95).
- Moore, D. M. 1968. The vascular flora of the Falkland Islands. British Antarctic Survey Scientific Reports no. 60: 1-202, pl. 1-6. 2 foldout maps.
- Müller, K. 1955. Lebermoose aus Sudamerika. Feddes Repert. Spec. Nov. Regni Veg. 58: 59-74.

- Neger, F. W. 1899. Informe sobre observaciones botanicas efectuadas en la Cordillera de Villarica en el verano de 1896-1897. An. Univ. Chile 103: 903-967. 1 map.
- New Zealand. Dept. of Lands and Survey, 1968. Gazetteer of New Zealand place names. Published by the Department of Lands and Survey, New Zealand. Pp. 1-576. Wellington.
- Ogura, Y. et al. [ed.] 1943. A list of Professor Nakai's papers with indices to names of plants and plant groups published as new to science by him. Ordines, familiae, tribi, genera, sectiones, species, varietates, formae et combinationes novae a Prof. Nakai-Takenosin adhuc ut novis edita. Pp. i-vii, 1-256. Tokyo Imperial University.
- Pagan, F. M. 1939. A preliminary list of the Hepaticae of Puerto Rico including Vieques and Mona Island. Bryologist 42 (1): 1-12, (2): 37-50.
- . 1942. Catalogue of the Hepaticae of Guadeloupe. Bryologist 45 (4): 76-110.
- Paton, Jean A. 1965. Lophocolea semiteres (Lehm.) Mitt. and Telaranea murphyae sp. nov. established on Tresco. Trans. Brit. Bryol. Soc. 4: 775-779. f. 1.
- Pearson, W. H. 1887. Blepharostoma palmatum Lindb. J. Bot., Lond. 25: 193-195. pl. 275.
- . 1924. V.-Notes on Tasmanian Hepatics. Bull. Misc. Inf. R. Bot. Gdns Kew 1924: 66-75. 5 figs.
- . 1931. Notes on a collection of Hepaticae from Jamaica. Annls Bryol. 4: 95-112.
- Persson, H. and R. Grolle. 1961. Roivainenia Persson, eine neue Gattung der Lophoziaceae. Nova Hedwigia 3: 43-46. pl. 1.
- Proskauer, J. 1955. Notes on Hepaticae. III. Bryologist 58 (3): 192-200.
- Reimers, H. 1926. Beiträge zur Bryophytenflora Südamerikas. I u. II. Hedwigia 66: 27-78. f. 1-6b.
- Riggi, Agustin E. 1934. Las Islas Malvinas. Una reseña geográfica de divulgación sobre las solitarias islas cuya posesión reivindica la República Argentina. Revta Geogra. Am. 1 (10): 1-10.

- Rodway, L. 1916. Tasmanian Bryophyta. Vol. II. Hepatics. Pap. Proc. R. Soc. Tasm. 1916: 51-143. (reprint pp. i-vii, 1-95).
- Rudolph, Emanuel D. 1971. Ecology of land plants in Antarctica. Research in the Antarctic pp. 191-211.
- Sayre, G., C. E. B. Bonner, and William L. Culberson. 1964. The authorities for the epithets of Mosses, Hepatics and Lichens. Bryologist 67 (2): 113-135.
- Schiffner, V. 1890. Lebermoose (Hepaticae). In: Naumann, Forschungsr. Gazelle 4 (4): 1-48. pl. 1-8.
- _____. 1893-95. Hepaticae (Lebermoose). In Engl. & Prantl, Natürl. Pflanzenfam. 1 (Abt. 3, 1 Hälfte): 1 (3): 3-141, figs. 1-73. Leipzig. [Pp. 1-96, 10 Oct. 1893; pp. 97-143, 13 January 1895].
- _____. 1900. Die Hepaticae der Flora von Buitenzorg. I. Pp. 1-220. Leiden.
- _____. 1907. Die Lebermoose der deutschen Südpolar-Expedition 1901-1903. Dt. Südpol.-Exped. 8: 59-80. pl. 6.
- _____. 1916. Über Lophozia Hatcheri und L. Baueriana. Öst. Bot. Z. 66 (3-4): 83-88. f. 1-7.
- _____. and S. Arnell. 1964. Hepaticae. (Lebermoose). In: Ergebnisse der Botanischen Expedition der Kaiserlichen Akademie der Wissenschaften nach Sudbrasilien 1901. II. Band (Thallophyta und Bryophyta). Denkschr. Öst. Akad. Wiss. 111: 1-156. f. 1-158.
- Schuster, R. M. 1959. Studies on Hepaticae. I. Temnoma. Bryologist 62 (4): 233-242.
- _____. 1963a. Studies on antipodal Hepaticae. I. Annotated keys to the genera of antipodal Hepaticae with special reference to New Zealand and Tasmania. J. Hattori Bot. Lab. 26: 185-309.
- _____. 1963b. An annotated synopsis of the genera and subgenera of Lejeuneaceae. I. Introduction; annotated keys to subfamilies and genera. Beih. Nova Hedwigia 9: 1-203.
- _____. 1963c. Studies on Hepaticae XI-XIII. On Temnoma, Vetaforma and Lophochaete (Blepharostomaceae; Hepaticae). Nova Hedwigia 5 (1-2): 27-46.
- _____. 1964a. Studies on Hepaticae XIV. The genus Austrolophozia Schust. Bryologist 67 (2): 179-186.

- _____. 1964b. Studies on Antipodal Hepaticae, IV. Metzgeriales. J. Hattori Bot. Lab. 27: 183-216.
- _____. 1964c. Studies on Hepaticae XXI. Cephaloziaceae, with particular reference to Metahygrobiella Schust. and Cephalozia Dumort. Nova Hedwigia 8 (1-2): 211-223.
- _____. 1964d. Studies on Hepaticae XXII-XXV. Pleurocladiopsis Schust., gen. n., Eoisotachis Schust., gen. n., Groffea Schust., gen. n. with critical notes on Anthelia Dumort. Nova Hedwigia 8 (3-4): 275-296.
- _____. 1964e. Studies on Hepaticae XIX-XX. Cephaloziopsis (Spr.) Schiffn. and Andrewsianthus Schust. Nova Hedwigia 8: 201-209.
- _____. 1965a. Studies on Hepaticae XXVI. The Bonneria-Paracromastigum-Pseudocephalozia-Hyalolepidozia-Zoopsis-Pteropsiella complex and its allies: a phylogenetic study (Part I). Nova Hedwigia 10 (1-2): 19-61.
- _____. 1965b. Studies on Antipodal Hepaticae. II. Archeophylla Schuster and Archeochaete Schuster, new genera of Blepharostomaceae. Trans. Br. Bryol. Soc. 4 (5): 801-817. f. 1-5.
- _____. 1965c. Studies on Hepaticae, XXVII. Xenocephalozia Schust. J. Hattori Bot. Lab. 28: 139-145. f. 1, 2.
- _____. 1966a. Studies in Lophoziaceae. 1. The genera Anastrophyllum and Sphenolobus and their segregates. 2. Cephalotobus gen. n. Acrotlophozia gen. n. and Protomarsupella gen. n. Revue Bryol. Lichén. 34: 240-287. f. 1-4.
- _____. 1966b. The Hepaticae and Anthocerotae of North America east of the hundredth meridian. Vol. 1. Pp. i-xvii, 1-802. f. 1-84. Columbia University Press.
- _____. 1966c. A memoir on the family Blepharostomataceae, I. and II. Candollea 21 (1): 59-136; 21 (2): 241-355.
- _____. 1967. Studies on Hepaticae, VII-X. On Adelanthus Mitten and Calypetrocolea Schuster, gen. n. Revue Bryol. Lichén. 34 (3-4): 676-703.
- _____. 1968a. Studies on Antipodal Hepaticae, X. Subantarctic Scapaniaceae, Balantiopsidaceae and Schistochilaceae. Bull. Natn. Sci. Mus., Tokyo 11 (1): 13-31. f. 1-3.
- _____. 1968b. Studies on Hepaticae, XXIX-XLIV. A miscellany of new taxa and new range extensions. Nova Hedwigia 15 (2-4): 437-529. pl. 49-67.

- _____. 1969a. Studies on Hepaticae XLVI-XLVII. On Alobiella (Spr.) Schiffn. and Alobiellopsis Schust. Bull. Natn. Sci. Mus., Tokyo 12 (3): 659-683. f. 1-3.
- _____. 1969b. The Hepaticae and Anthocerotae of North America east of the hundredth meridian. Vol. 2. Pp. i-xii. 1-1062. Columbia University Press.
- _____. 1969c. Problems of Antipodal distribution in lower land plants. Taxon 18: 46-91. maps 1-24.
- Schwaegrichen, C. F. 1814. Historiae muscorum hepaticarum. Prodromus. Commentatio qua hortum botanicum Lipsiensem feliciter instrauratum. Pp. 1-39. 1 pl. Leipzig.
- Scott, Edith B. 1960. A monograph of the genus Lepicolea (Hepaticae). Nova Hedwigia 2: 129-172. f. 1-192.
- Sim, T. R. 1926. The Bryophyta of South Africa. Comprising Sphaerocarpaceae, Marchantiales, Jungermanniales, Anthocerotales, Sphagnales, Andreaeales, Polytrichales, Bryales. Trans. R. Soc. S. Afr. 15: 1-475.
- Skottsberg, C. 1909. Studien über das Pflanzenleben der Falklandinseln. Wiss. Ergebn. Schwed. Sudpolarexped., 4 (10): 58 pp.
- _____. 1910. Botanische ergebnisse der Schwedischen expedition nach Patagonien und dem Feuerlande 1907-1909. I. Übersicht über die wichtigsten pflanzenformationen sudamerikas S. von 41, ihre geographische verbreitung und beziehungen zum klima. K. Svenska VetenskAkad. Handl. 46 (3): 1-28. 1 map.
- _____. 1911. The Wilds of Patagonia. London, Arnold.
- _____. 1913. Botanische ergebnisse der Schwedischen Expedition nach Patagonien und dem Feuerlande 1907-1909. III. A Botanical Survey of the Falkland Islands. K. Svenska VetenskAkad. Handl. 50 (N: 3): 1-129.
- _____. 1916. Die Vegetationsverhältnisse langs der Cordillera de los Andes S. von 41 S. br. Ein Beitrag zur Kenntniss der Vegetation in Chiloe, Westpatagonien, dem andinen Patagonien und Feuerland. K. Svenska VetenskAkad. Handl. 56.
- _____. 1960. Remarks on the plant geography of the southern cold temperate zone. Proc. R. Soc. ser. B. 152 (949): 447-57.
- Smith, James L. 1966. The liverworts Pallavicinia and Symphyogyna and their conducting system. Univ. Calif. Publs Bot. 39: 1-83. pl. 1-18.

Sprengel, Kurt. 1809. Observationes de Jungermanniis aut plane nondum aut minus bene delineatis. Annln Wetter. Ges. Naturk. 1: 21-26.

Spruce, R. 1876. On *Anomoclada*, a new genus of Hepaticae, and on its allied genera, *Odontoschisma* and *Adelanthus*. J. Bot., London 14: 129-136, 161-170, 193-203, 230-235. pl. 178, 179.

_____. 1884-85. Hepaticae Amazonicae et Andinae. Quas in itinere suo per tractus montium et fluviorum Americae aequinoctialis a fluminis amazonum otis ad maris pacifici litora usque, necnon a cataractis fluminis orinoci, cis aequatorem, adusque fluvii huallaga cataractas, lat. 6° - 7° australi, annis 1849-1862. Trans. Proc. Bot. Soc. Edinb. 15: 1-308. pl. 1-4, 1884 (part 1); i-xi, 309-589. pl. 5-22, 1885 (part 2).

_____. 1888. Hepaticae in prov. Rio Janeiro a Gloziou lectae. Revue Bryol. 15 (3): 33-35.

_____. 1890. Hepaticae bolivianae, in Andibus Bolivae orientalis, annis 1885-6, a cl. H. H. Rusby lectae. Mem. Torrey Bot. Club. 1: 114-140.

_____. 1895. Hepaticae elliottianae, insulis Antillanis St. Vincentii et Dominica a clar. W. R. Elliott, annis 1891-92 lectae. J. Linn. Soc. 30: 331-372. pl. 20-30.

_____. 1961. The Bryophytes of South Georgia. National Academy of Sciences, National Research Council Publication 839, p. 34-48.

Stephani, F. 1890. Die Gattung *Lejeunea* im Herbarium Lindenberg. Hedwigia 29 (1): 1-23. 29 (2): 68-99. 29 (3): 133-142.

_____. 1892. Colenso's New Zealand Hepaticae. J. Linn. Soc. 29: 263-280. pl. 26-28.

_____. 1898-1924. Species Hepaticarum. Geneve & Bale, 6 vols. [Vol. 1, pp. 1-304, originally published in Bull. Herb. Boissier I. 6: 309-343, 361-378, 757-799. 1898. 7: 84-110, 198-225, 381-407, 518-533, 655-695, 727-764, 927-956. 1899. Vol. 1, pp. 305-400 originally published in Mém. Herb. Boissier 11: 1-49. 1900. 12: 1-46. 1900. Vol. 2 originally published in Bull. Herb. Boissier II. 1: 140-177, 477-521, 1022-1040, 1122-1151. 1901; 2: 35-48, 157-179, 454-474, 657-688, 857-888, 969-987. 1902; 3: 98-129, 326-341, 522-537, 596-611, 873-888, 959-974. 1903; 4: 18-32, 153-168, 345-360, 586-601, 775-790, 973-988, 1097-1214. 1904; 5: 175-190, 351-366, 736-751, 885-900, 917-946. 1905. Vol. 3, pp. 1-522, originally published in Bull. Herb. Boissier II. 5: 1129-1144. 1905; 6: 217-232, 377-392, 535-550, 649-664, 781-796, 872-889, 935-966. 1906; 7: 59-72, 297-312, 477-492, 683-698, 837-852. 1907; 8: 49-64, 125-148, 205-220, 267-282, 371-375, 426-436, 483-514, 561-608, 661-696, 745-776, 837-866, 941-972. 1908.]

- _____. 1900. Beiträge zur Lebermoos-Flora Westpatagoniens und des Südlichen Chile. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 6): 1-69.
- _____. 1901a. Lebermoose der Magellansländer. Bih. K. Svenska VetenskAkad. Handl. 26 (III, 17): 1-36. (Reprinted in pp. 317-350 in Svenska Expeditionen till Magellansländerna. Wissenschaftliche Ergebnisse der Schwedischen Expedition nach den Magellansländern 1895-1897 unter Leitung von Dr. Otto Norden-skjöld. Vol. 3, Botanik.).
- _____. 1901b. Hepatiques. Résult. Voyage S. Y. Belgica 6 (5): 1-6.
- _____. 1905a. Hepaticae gesammelt von C. Skottsberg während der Schwedischen Südpolarexpedition 1901-1903. Wiss. Ergebn. Schwed. Südpolarexped. 4 (1): 1-11. f. 1-6.
- _____. 1905b. Tableau des Hepatiques. In: Dusén, Sur la flore de la Serra do Itatiaya au Bresil. Archos Mus. Nac., Rio de J. 13: 109-119.
- _____. 1909. Hepaticae. in Chilton, C. [ed.]. The subantarctic islands of New Zealand, 22: 532-534.
- _____. 1911. II. Die Lebermoose. In: Skottsberg, Botanische Ergebnisse der Schwedischen Expedition nach Patagonien und dem Feuerland 1907-1909. K. Svenska VetenskAkad. Handl. 46 (9): 3-92. f. 1-35.
- _____. 1916. Hepaticae. In: Herzog, Die Bryophyten meiner zweiten Reise durch Bolivia. Bibliotheca Bot. 21 (87): 1-347. f. 1-234. pl. I-VIII. 1 map. (Hepaticae, pp. 173-268).
- _____ and W. Watts. 1914. Hepaticae Australes. R. Roc. N. S. W. 48: 94-135.
- Swails, Lawrence F. 1970. The genus Porella in Latin America. Nova Hedwigia 19 (1-2): 201-291. f. 1-23.
- Taylor, Jane. 1960. The genus Lepidozia in Latin America; a taxonomic monograph. Ph.D. Thesis, Univ. Cincinnati, 1960. Library of Congress Microcard, No. Jane Taylor, Mic. 60-3301.
- Taylor, T. and Hooker, J. D. 1847a. XXXIV. Hepaticae, Juss. In: Hooker f. Botany Antarctic Voyage 1 (1): 144-169.
- _____ and _____. 1847b. Ord. LIII. Hepaticae, Juss. In: Hooker f. Botany Antarctic Voyage 1 (2): 423-446.

- Thomasson, K. 1963. Araucanian Lakes. Plankton studies in north Patagonia with notes on terrestrial vegetation. *Acta Phytogeogr. Suec.* 47: 1-139.
- Troupin, Georges. 1949. La Terminologie des Types en Botanique Systematique. *Bull. Soc. R. Bot. Belg.* 82: 57-66.
- U.S. Office of Geography. Chile: official standard names approved by the United States board on geographic names. Second ed. Washington, 1967. Pp. i-vii, 1-591.
- Wace, N. M. 1960. The botany of the southern oceanic islands. *Proc. R. Soc. ser. B.* 152 (949): 475-90.
- _____. 1965. Vascular plants. In: *Monographiae biologicae* Vol. 15: 201-266. Junk Pub. The Hague.
- _____ and J. H. Dickson. 1965. Part II. The Terrestrial Botany of the Tristan da Cunha Islands. *Phil. Trans. R. Soc. ser. B.* 249 (759): 273-360.
- Werth, E. 1928. Die Vegetation der Subantarktischen Inseln Kerguelen, Possession und Heard Eiland. *Dt. Südpol-Exped.* 8 (1): 125-176.
- Wijk, R. van der, W. D. Margadant and P. A. Florschütz. 1959-69. *Index Muscorum*, 5 Vol., Buckram.



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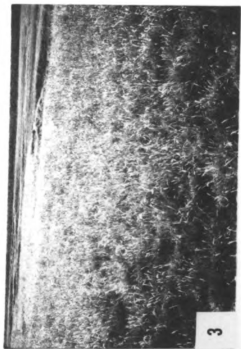
VIII. PHOTOGRAPHS

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Photograph 2. Interlacing blades of Poa flabellata at Kidney Island; photo by H. A. Imshaug.

Photograph 3. Cortaderia association near Mt. Usborne caravan; photo by R. C. Harris.

Photograph 4. Stream through Cortaderia association near Mt. Usborne caravan.

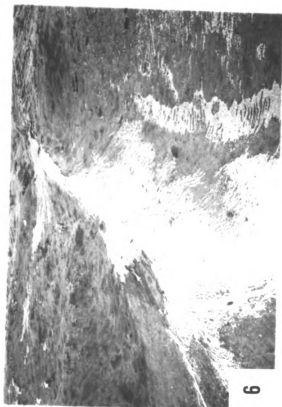


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Photograph 6. Stonerun as seen from air over East Falkland.

Photograph 7. Bolax gummifera in stonerun.

Photograph 8. Dwarf shrub heath association near Mt. Adam.



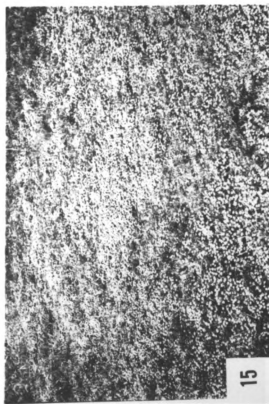
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IX. MAPS

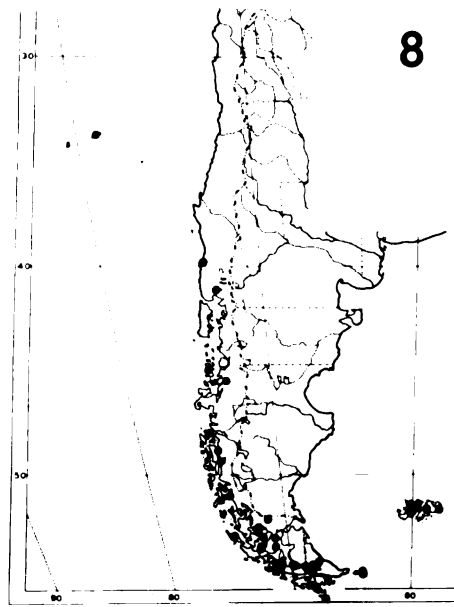
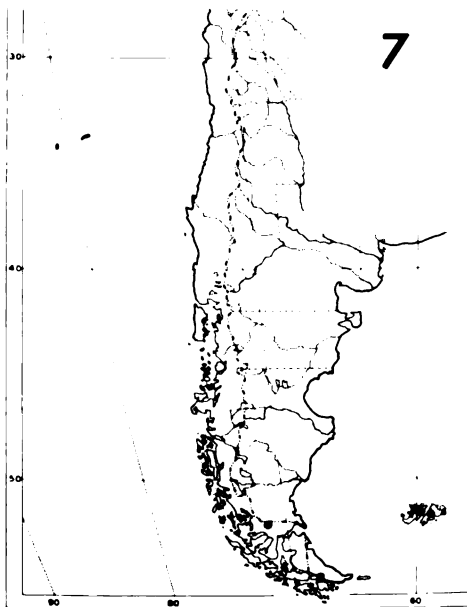
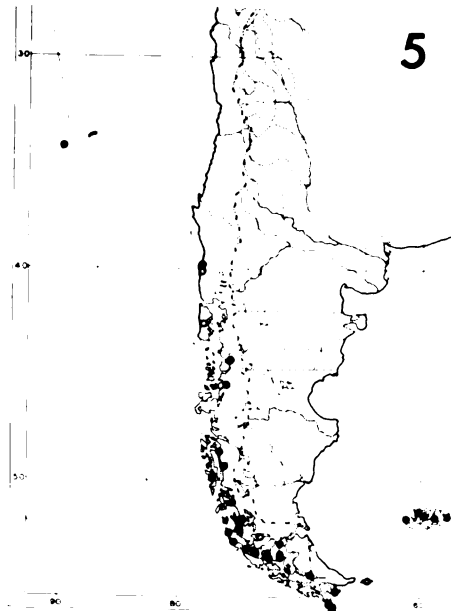
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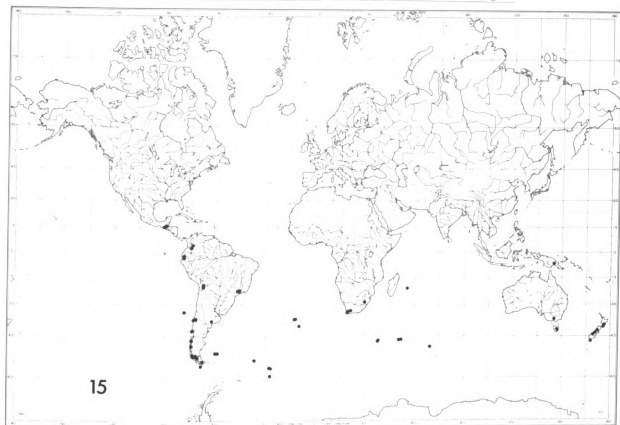
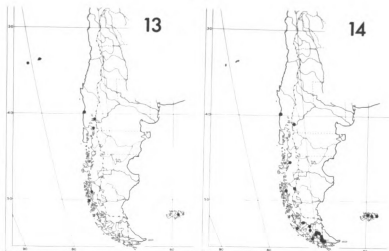
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Map 15. Cryptochila grandiflora (Lindenb. & Gott.) Grolle.
After Grolle 1971.

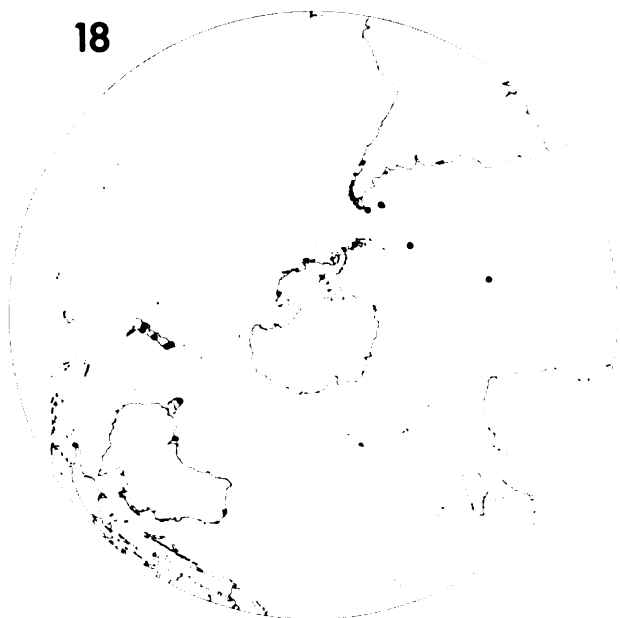


Map 16. Cryptochila paludosa (Steph.) Grolle. Plus Tristan da Cunha. Open circle indicates precise locality unknown.

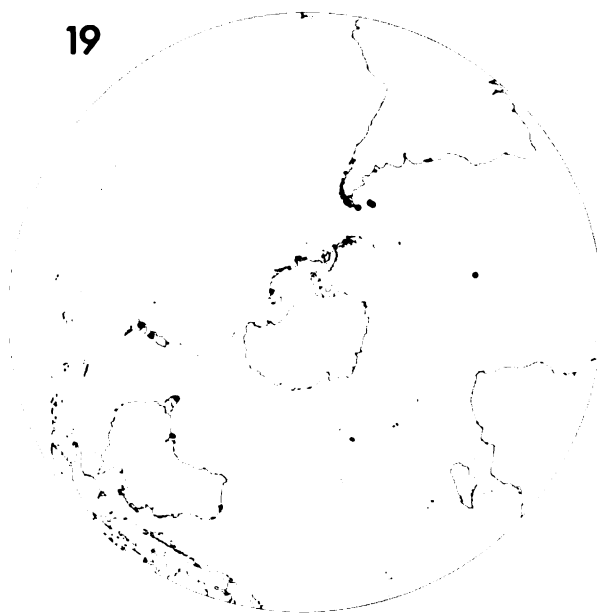
Map 17. Jamesoniella colorata (Lehm.) Schiffn. After Grolle 1971.

- Map 18. Herzogobryum erosum (Carring. & Pears.) Grolle
- Map 19. Herzogobryum teres (Carring. & Pears.) Grolle
- Map 20. Herzogobryum vermiculare (Schiffn.) Grolle
- Map 21. Blepharidophyllum clandestinum (Mont. em. Grolle)
Grolle

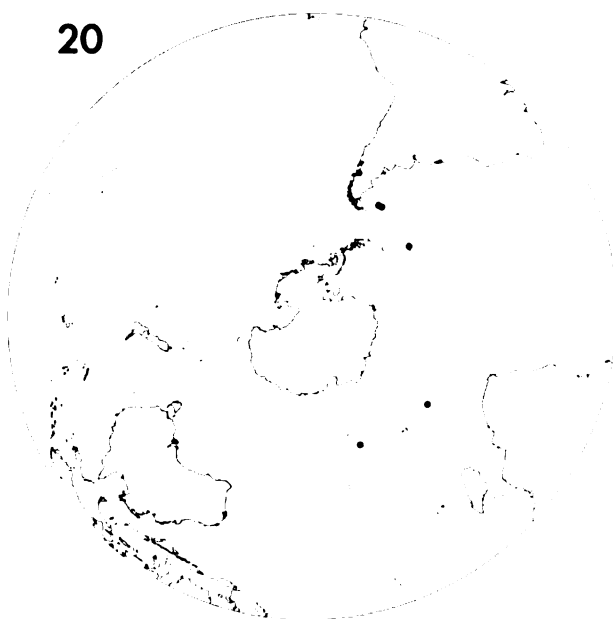
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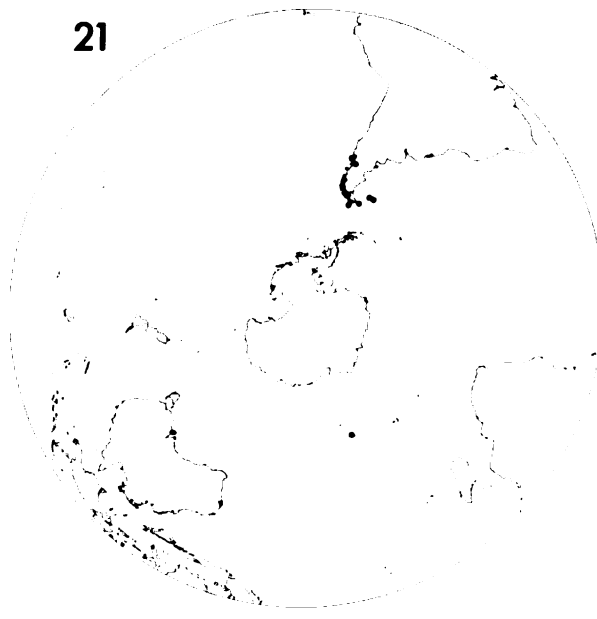
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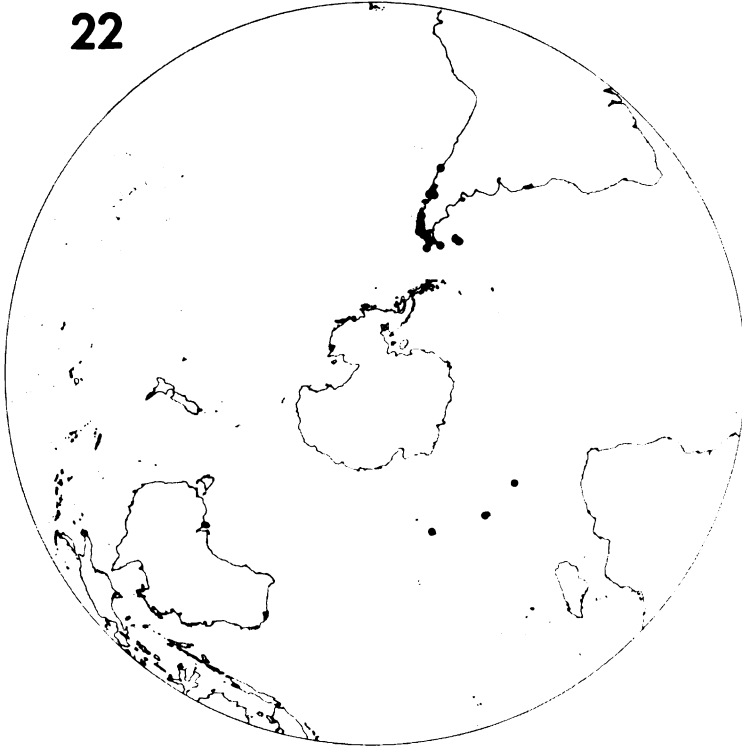
Map 22. Blepharidophyllum densifolium (Hook.) ^oÅngstr. ex Mass.

Map 23. Blepharidophyllum gottscheanum Grolle. Open circle indicates precise locality.

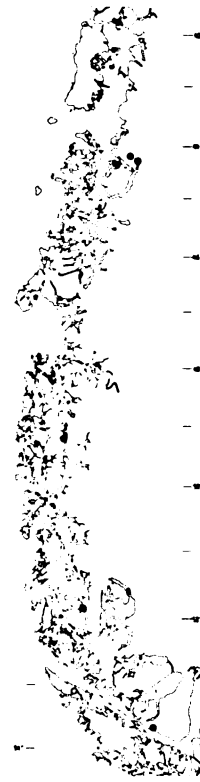
Map 24. Balantiopsis cancellata (Nees) Steph.

Map 25. Balantiopsis eriancea (Hook. f. & Tayl.) Mitt.

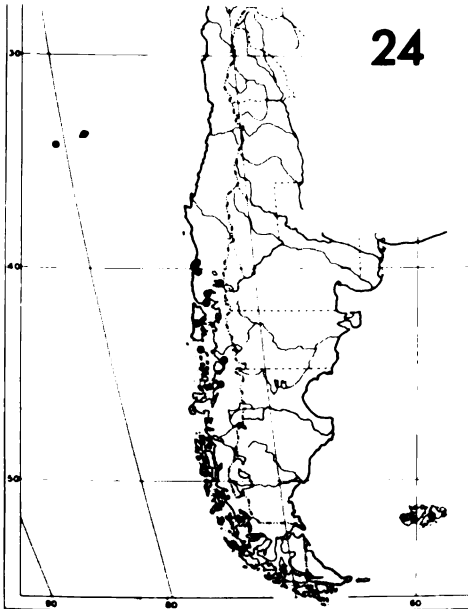
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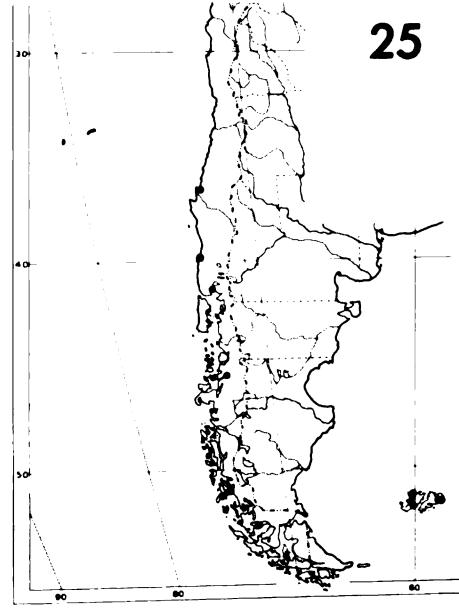
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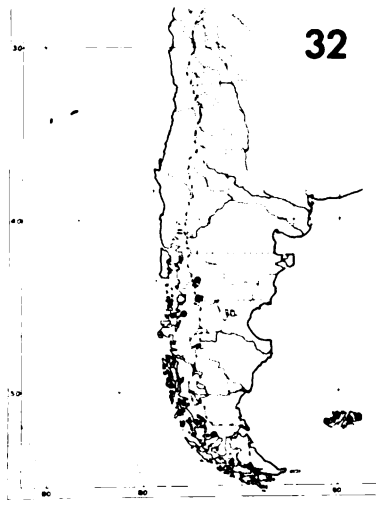
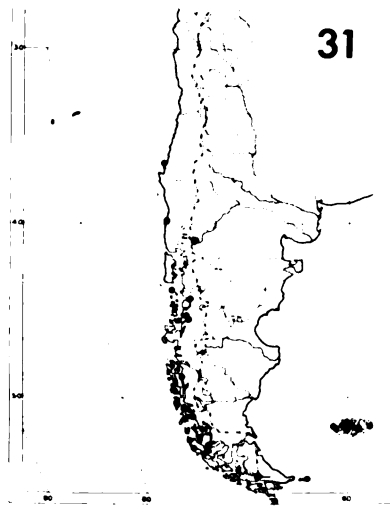
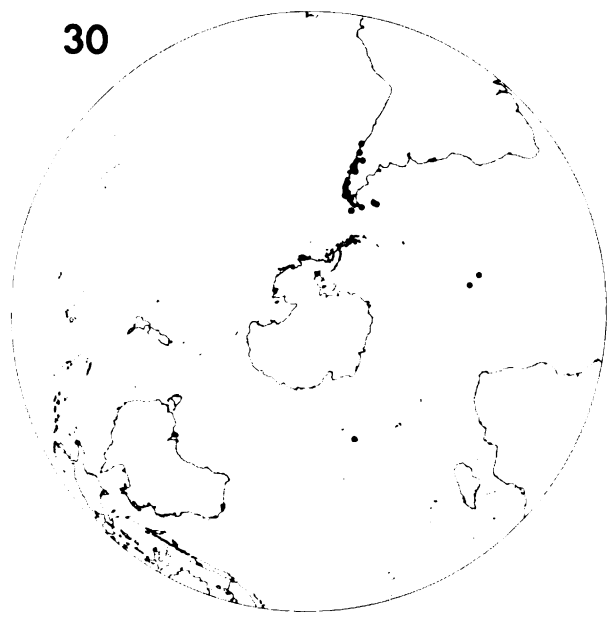
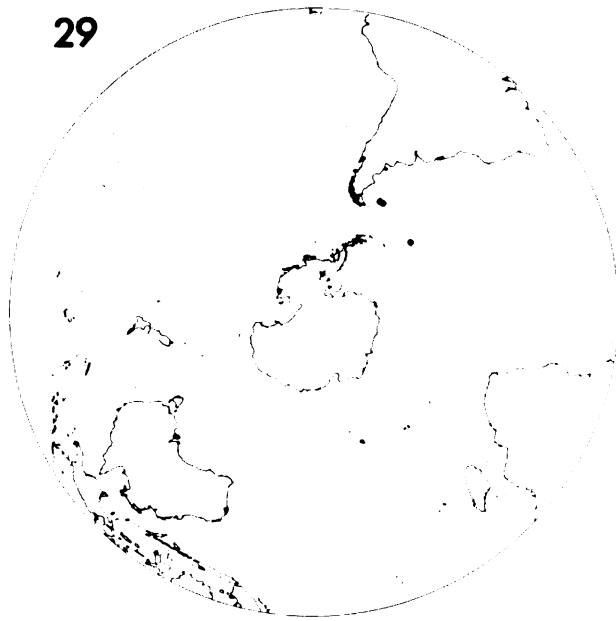


Map 26. Chiloscyphus hookeri Engel. Subspecies hookeri plus
49° 02' S., subspecies constantifolius - open circle.

Map 27. Clasmatocolea cookiana (Mass.) Engel

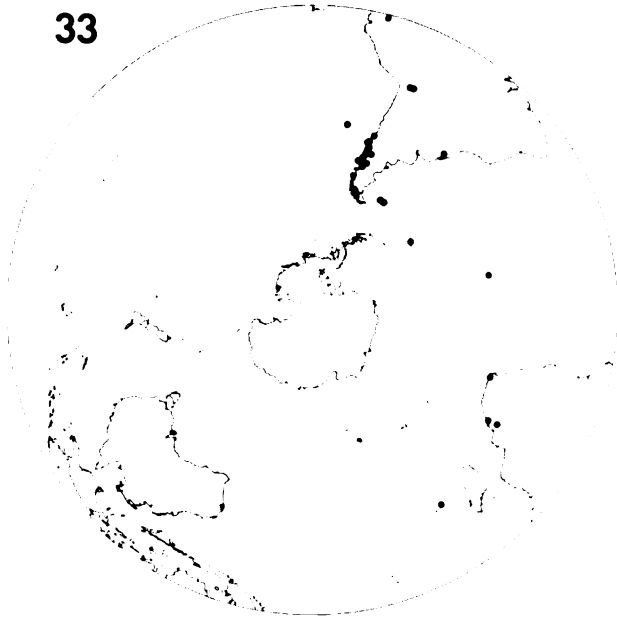
Map 28. Clasmatocolea fulvella (Hook. f. & Tayl.) Grolle

- Map 29. Clasmatocolea georgiensis (Gott.) Engel
- Map 30. Clasmatocolea humilis (Hook. f. & Tayl.) Grolle
- Map 31. Clasmatocolea humilis (Hook. f. & Tayl.) Grolle.
American sector localities only.
- Map 32. Clasmatocolea koeppensis (Gott.) Grolle. Plus
South Georgia.

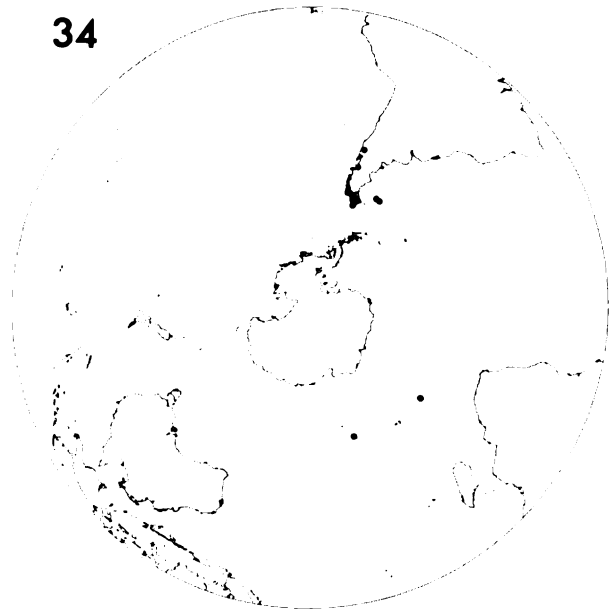


- Map 33. Clasmatocolea vermicularis (Lehm.) Grolle. Plus Colombia and Costa Rica.
- Map 34. Leptoscyphus abditus (Sull.) Dugas
- Map 35. Leptoscyphus aequatus (Hook. f. & Tayl.) Mitt. Open circle indicates precise locality unknown.
- Map 36. Leptoscyphus expansus (Lehm.) Grolle. Open circle indicates precise locality in Mascarenes unknown.

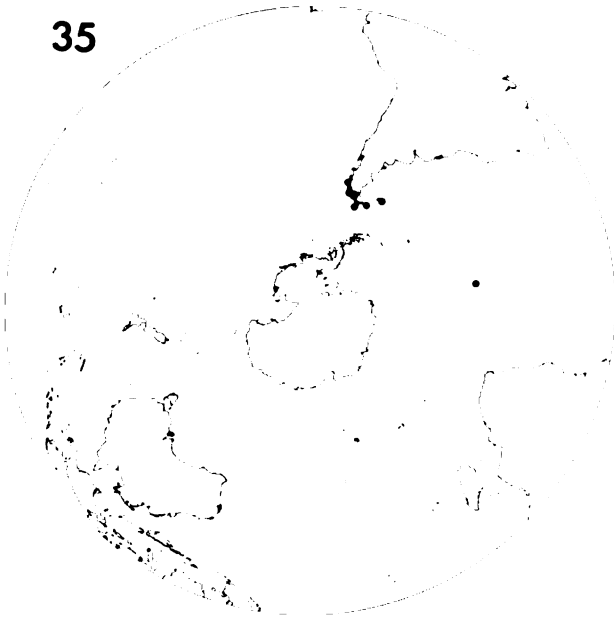
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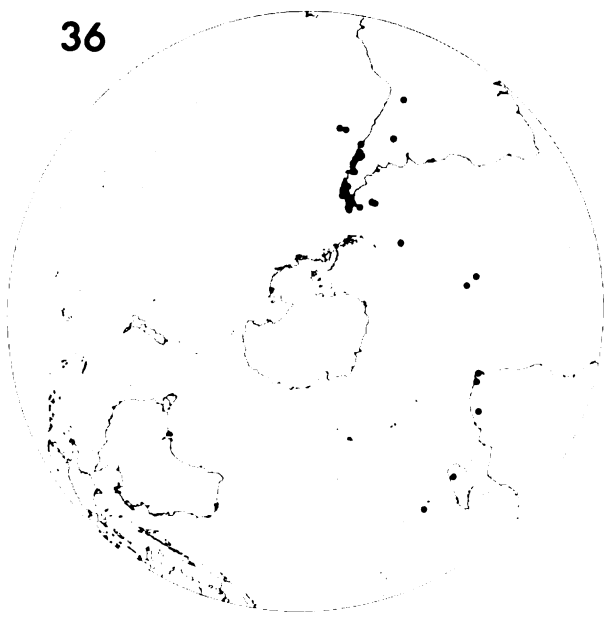
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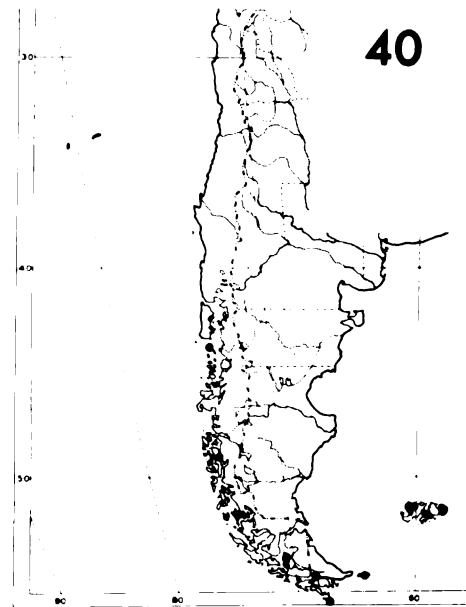
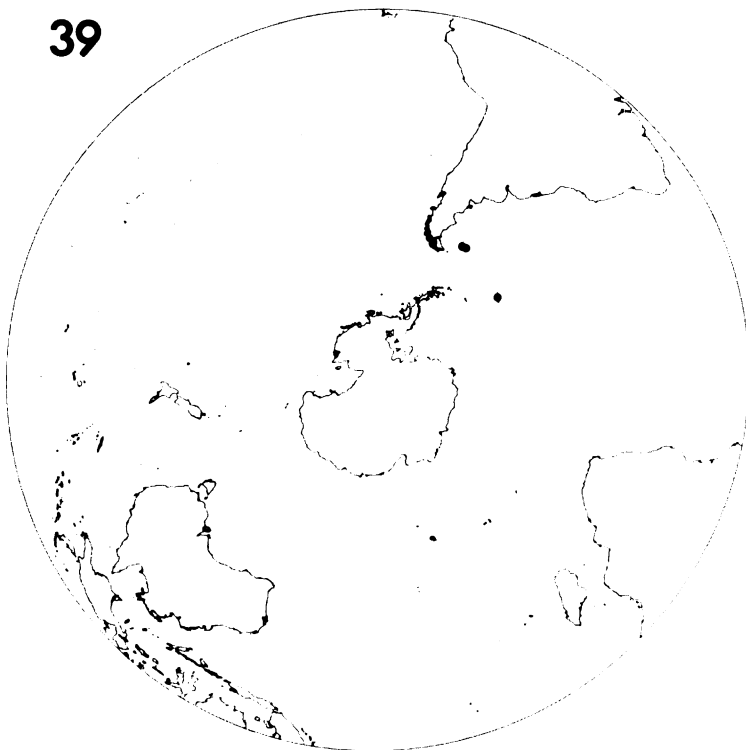
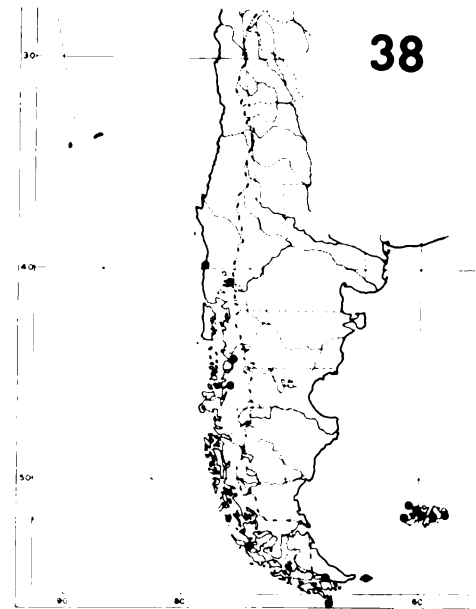
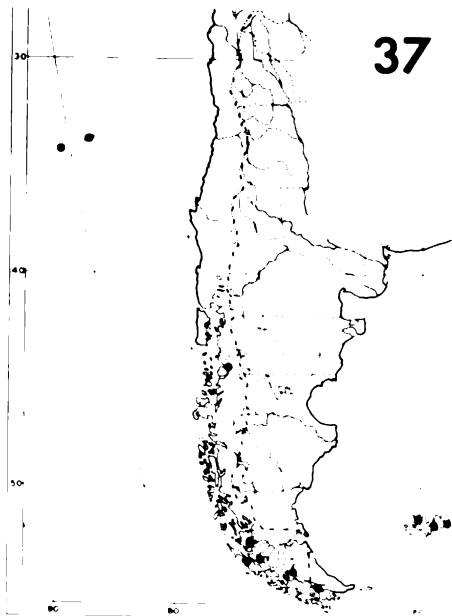
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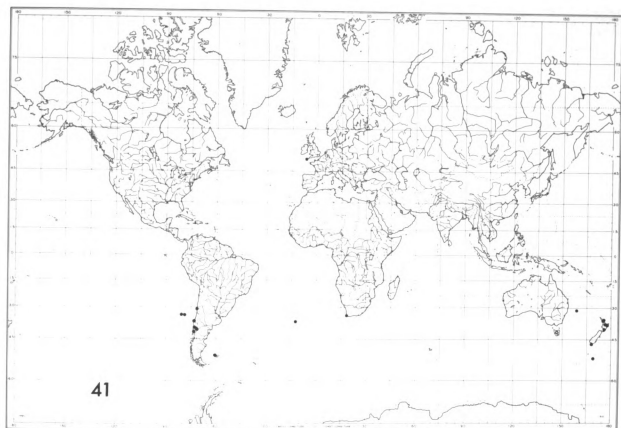
- Map 37. Leptoscyphus patagonicus (Steph.) Grolle
- Map 38. Lophocolea austrigena (Hook. f. & Tayl.) G. L. & N.
Plus Tristan da Cunha. Open circle indicates precise
locality unknown.
- Map 39. Lophocolea elata (Gott.) Steph.
- Map 40. Lophocolea leptantha (Hook. f. & Tayl.) G. L. & N.
Open circle indicates precise locality unknown.



Map 41. Lophocolea semiteres (Lehm.) Mitt. Open circle indicates precise locality unknown.

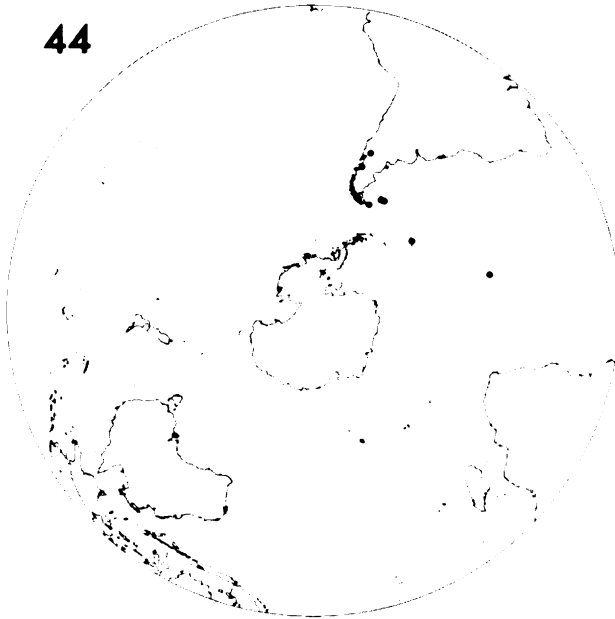
Map 42. Lophocolea sylvantica (Mitt.)

Map 43. Lophocolea textilis (Hook. f. & Tayl.) G. L. & N.

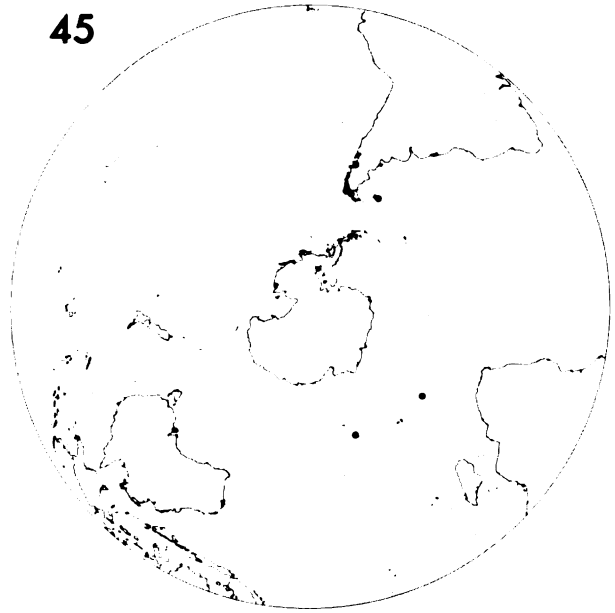


- Map 44. Pachyglossa dissitifolia Herz. & Grolle
- Map 45. Pachyglossa fissa (Mitt.) Herz. & Grolle
- Map 46. Pachyglossa spegazziniana (Mass.) Herz. & Grolle
- Map 47. Saccogynidium australe (Mitt.) Grolle

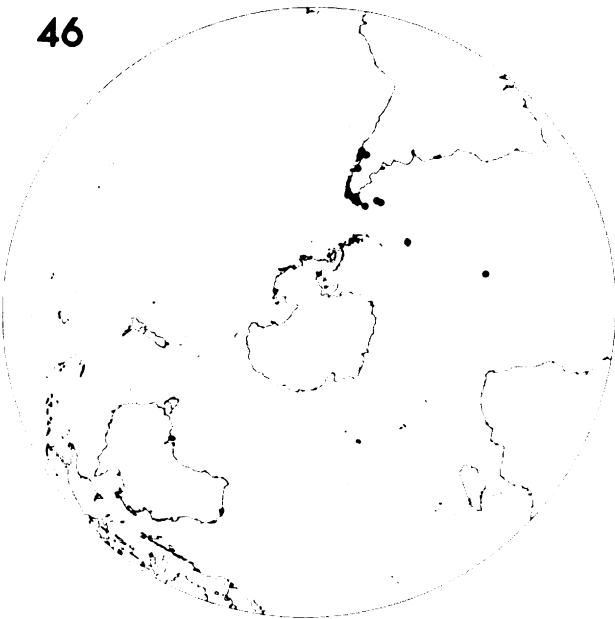
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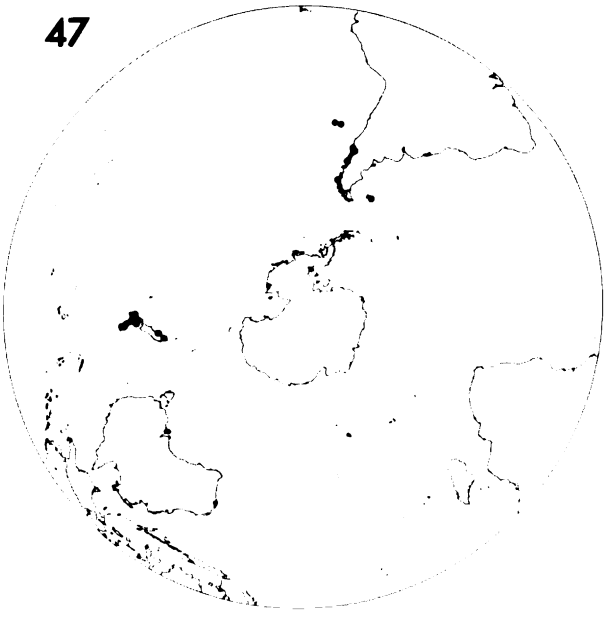
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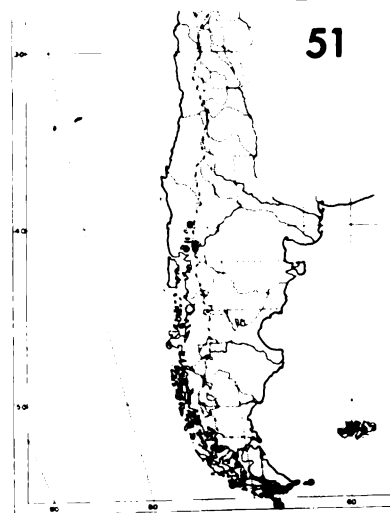
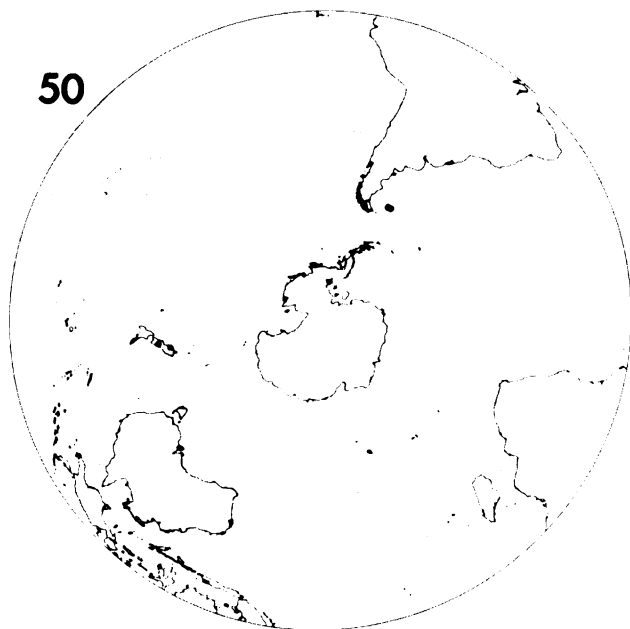
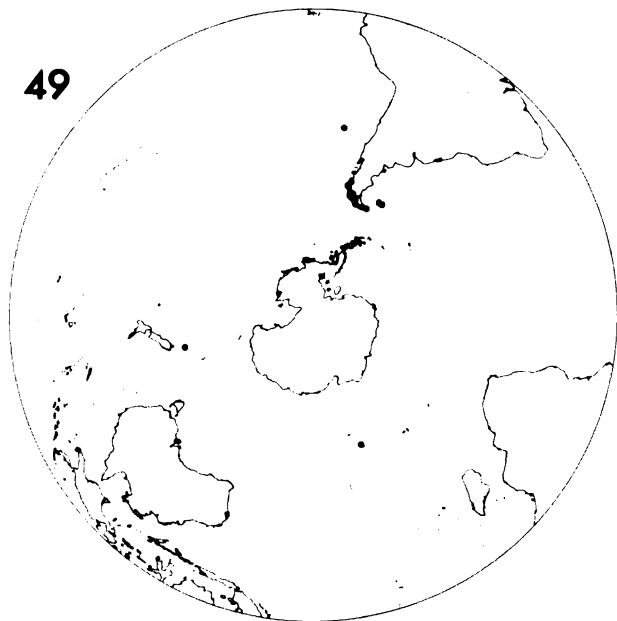
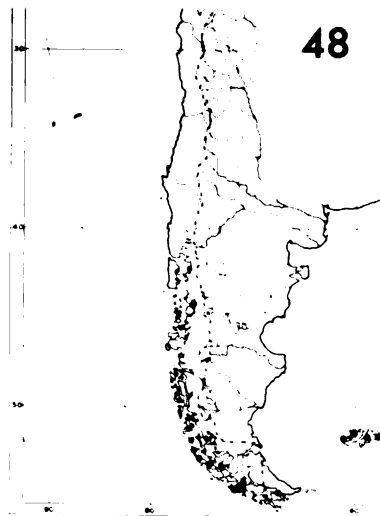
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- Map 48. Plagiochila hirta Tayl. ex Mitt.
- Map 49. Acrobolbus ochrophyllus (Hook. f. & Tayl.) Schust.
- Map 50. Austrolophozia fuegiensis (Steph.) Schust.
- Map 51. Marsupidium urvilleanum (Mont.) Mitt. Open circle indicates precise locality unknown.



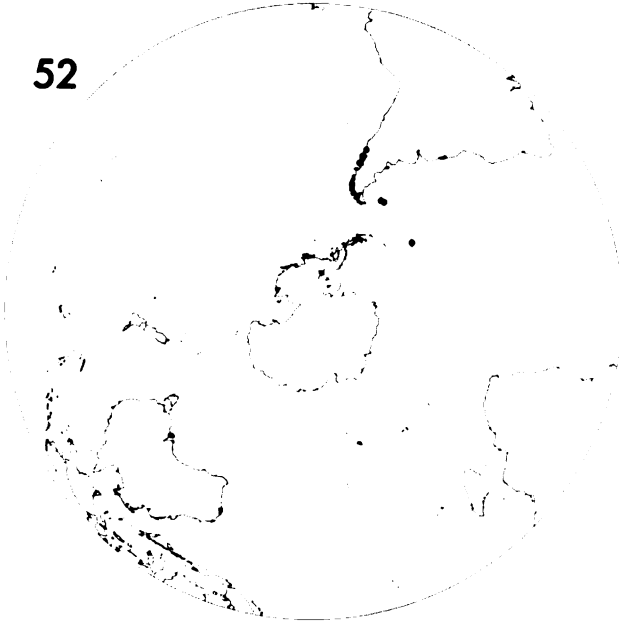
Map 52. Cephaloziella dusenii Steph.

Map 53. Adelanthus lindenbergianus (Lehm.) Mitt. North to
Venezuela and Costa Rica; plus Ireland, after Grolle
1969.

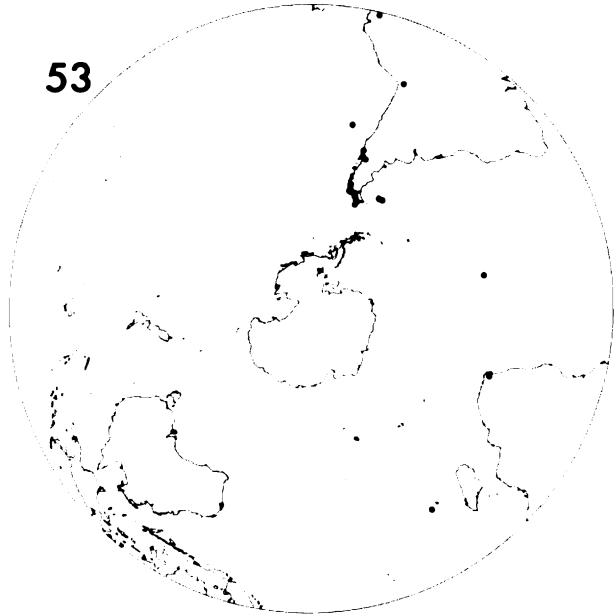
Map 54. Wettsteinia densiretis (Herz.) Grolle

Map 55. Radula helix (Hook. f. & Tayl.) G. L. & N.

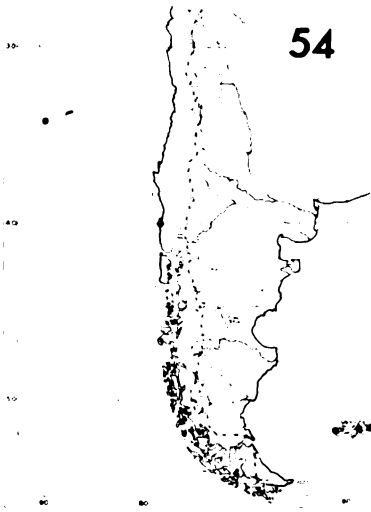
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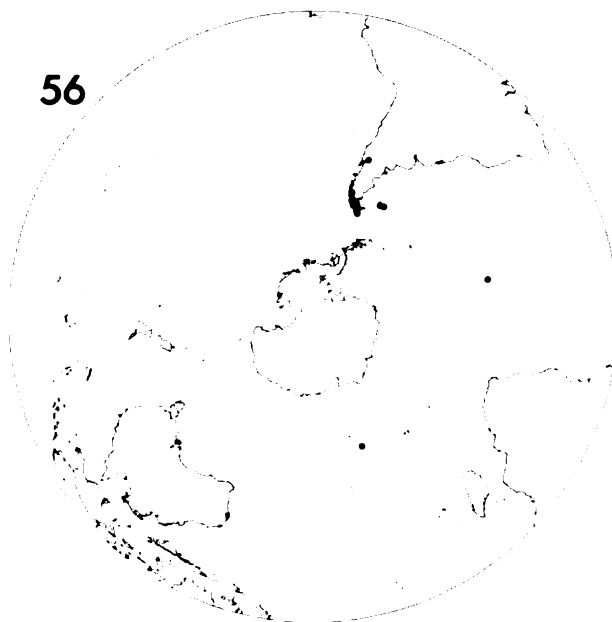


Map 56. Jensenia pisicolor (Hook. f. & Tayl.) Grolle

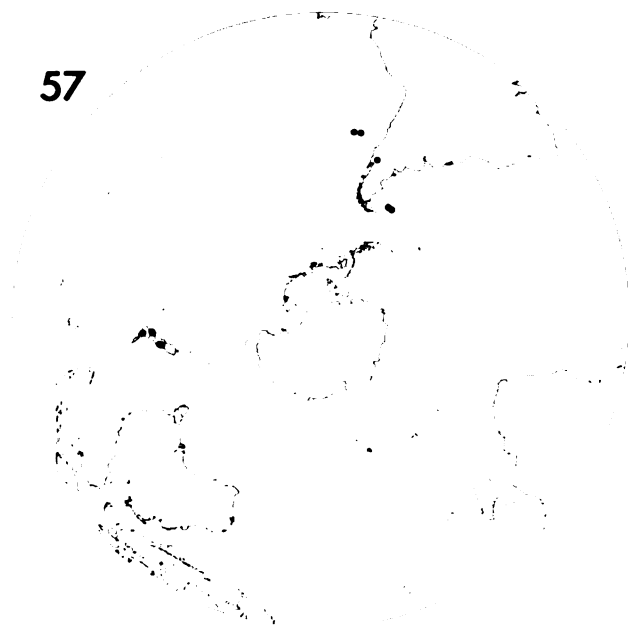
Map 57. Pallavacinia xiphoides (Hook. f. & Tayl.) Trev.

Map 58. Symphyogyna hochstetteri Nees & Mont. Open circle indicates precise locality unknown.

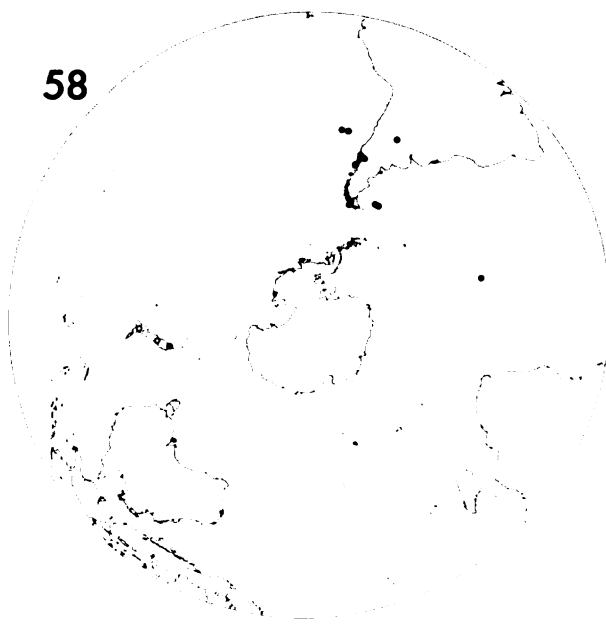
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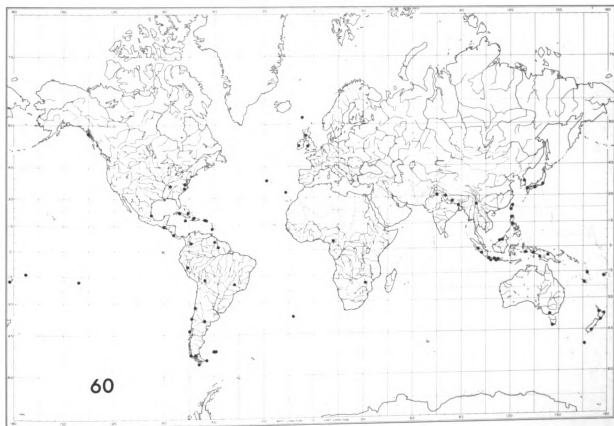
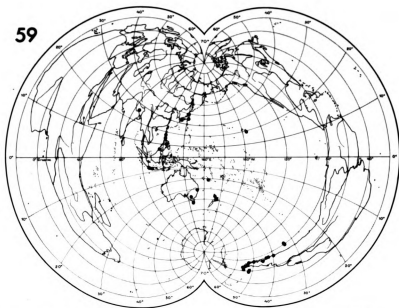
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Map 59. Metzgeria decipiens (Mass.) Schiffn. Adapted and modified from Kuwahara (1966).

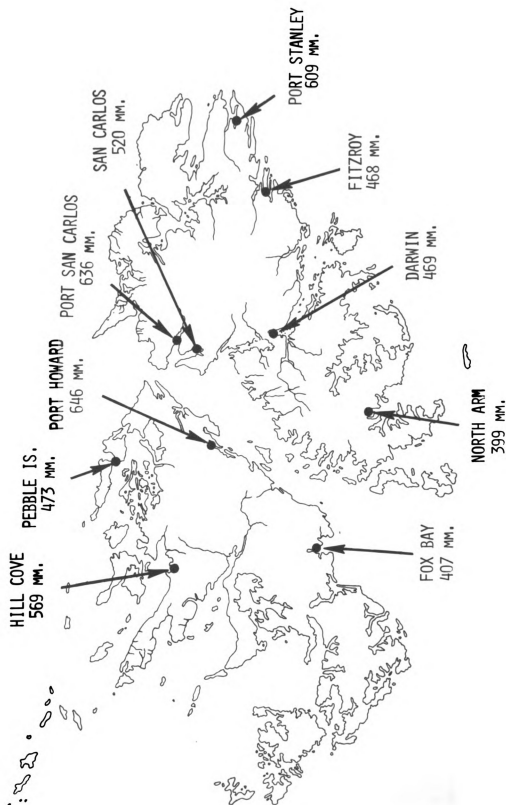
Map 60. Metzgeria leptoneura Spruce. Adapted and modified from Kuwahara (1966).

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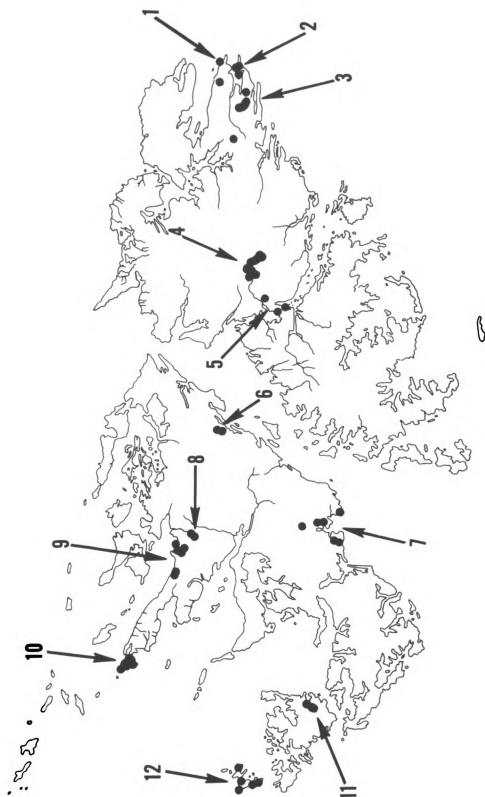
60

Map 61. Map showing mean annual rainfall at stations in the Falkland Islands for which records are available for six or more years (data extracted from Moore, 1968). The stations with the highest available figures lie on the immediate lee side of mountain ranges. Hill Cove is located on the lee side of Mt. Adam, Port Howard on the lee of the Hornby Mountains, San Carlos on the lee side of the Sussex Mountains, with The Verde Mountains between San Carlos and Port San Carlos.

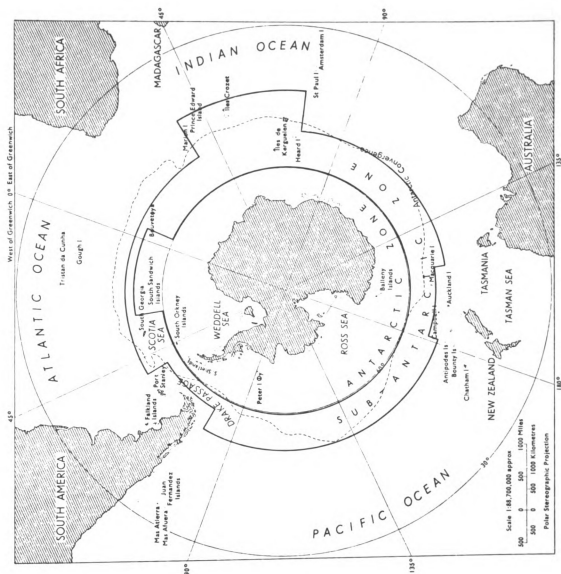


Map 62. Map of personal collection localities.

The numbers indicate regions or islands, which are as follows: 1) Kidney Is., 2) Port William (includes Mt. Low), 3) Port Stanley (includes Mt. Kent), 4) Mt. Usborne, 5) Darwin Settlement, 6) Port Howard, 7) Fox Bay, 8) Mt. Adam, 9) Hill Cove, 10) Westpoint Is., 11) Weddell Is., 12) New Is.



Map 63. South polar projection showing delimitation of sub-antarctic region (after Green 1964).



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